

## **BOND MARKET PERFORMANCE AND EDUCATION SECTOR GROWTH IN NIGERIA: A CAUSAL INFERENCE**

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### **ABSTRACT**

The bond market as a financial market has been regarded as a source of debt capital for the economy and for any meaningful growth in any sector to be recorded, capital is important. Therefore, this study investigated the causality between bond market performance and education sector growth in Nigeria during the period, 1981-2023. In the study, bond market performance, education sector growth, and government expenditure were measured as bond market capitalization, education sector's value-added to gross domestic product, and government recurrent expenditure on education, respectively. The annual time series data employed in the study were obtained from Central Bank of Nigeria's Statistical Bulletin and the analysis was conducted using pairwise Granger causality test to determine the direction of causality between the variables of study. The study found that bond market performance and education sector growth have bi-directional causal relationship in Nigeria, which implies the existence of feedback effect between bond market and education sector growth. It can therefore be concluded that bond market performance and education sector growth reinforce each other in Nigeria. To facilitate education sector growth, the instrument of bond market should be considered and applied, and vice versa, to enhance bond market performance, the role of the education sector is key.

**Key Words:** Bond Market Performance, Capital Markets, Causality, Development Finance, Educational Finance, Education Sector Growth, Gross Domestic Product.

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### **INTRODUCTION**

Education is having been considered as a potent tool for all-round development of an individual or a nation (Joel et al., 2019). Education is capital intensive and investments thereon are expected develop individuals in all aspect and most especially improve their capacity for more productivity and by extension expand the human capital stock of the nation. For the education sector to actually fulfil its role, funding is a key factor. However, inadequate funding in education has been a major challenge in the realization of most educational policies and programmes (Joel et al., 2019). This implies that funding education is key to educational sector's growth. In Nigeria, the education sector is under-funded and it was very critical in the late 90s and this was

gradually followed by infrastructural degradation and brain drain (Ihugba et al., 2022).

To finance education, several models for sustainable funding such as private investment model, public-private partnership model, community-based funding model, cost-sharing model, deferred payment model, graduate tax model, entrepreneurship model, cost-savings model, Donations by alumni model, research-based model, performance-based model, market-based model, funding mobilization model, financial market instruments model, have proposed but less emphasis has been placed on the financial instrument approach in practice most especially in a developing country like Nigeria.

Capital market is the market place for exchange of long-term financial securities such as ordinary stocks, debentures, loose debt stock, and translatable bonds (Omodero & Alege, 2021). The bond market is an aspect of the capital market, is where debt instruments like bonds, debentures and other fixed-income long-tenored securities are traded. According to Mbelu and Ebi (2024), the bond market provides streams of funding to corporation while it assists the government to boost development and production. Therefore, individuals and the public sector as well as business firms are actively involved in the bond market in a bid to secure debt-fund needed for their operations. Government bond, corporate bond, sukuk bond, supernatural bond, green bond and sovereign bond are various types of bonds traded in the Nigerian bond market (Mbelu & Eli, 2024).

Although, many previous studies have investigated financial market long tenured debt instruments their relationship with economic growth. Likewise, there are several studies that examined the impact of bond market growth on economic growth but the direction of causality is still an open question and at the same time, relatively few studies have examined capital market nexus with education sector performance. However, specifically, the direction of causality between bond market performance and education sector growth has remain an under-explored subject in past studies. This is a gap which this study tried to fill by examining the causality between bond market performance and education sector growth in Nigeria.

The main objective of the study was to examine the causality between bond market performance and educational sector's growth in Nigeria, The specific objectives of the study are to: (i). examine the causality between bond market capitalization and education value-added to economic growth in Nigeria; (ii) examine the causality between recurrent educational expenditure and education value-added to economic growth in Nigeria; and (iii) assess the causality between recurrent educational expenditure and bond market capitalization in Nigeria.

## **LITERATURE REVIEW**

### **Conceptual Review**

Economic growth popularly measured as gross domestic product (GDP), refers to the increase in the value of goods and services produced in an economy (Balogun & Fapetu, 2022). Economic growth is often viewed to be affected by the degree of development of the financial institutions and markets (Balogun & Fapetu, 2022). By extension, the extent of contribution of the educational sector to economic growth, is also linked to the performance of the financial market, particularly, the market where long-term loanable debt funds are made available.

A bond market is a market for long term debt securities of government and corporations (Ejike et al., 2024). A bond is an IOU issued by a corporation or government agency that pays interest to the lender (Chidi-Okeke et al., 2023). The Debt Management Office (DMO) Nigeria, defines a bond as a contract of debt whereby investors loan money to a borrower, where the holder of the bond is the moneylender (Omodero & Alege, 2021). The bond market principally consists of government and corporate securities and government securities consist of Federal Government Development Stock, the Treasury certificates, Treasury bonds, and the development bonds whereas debentures and loan stocks exemplify corporate securities (Eleje et al., 2022).

### **Theoretical Review**

The idea of education as the bedrock of growth and development is enshrined in the consideration of the investments in education as that which are capable of stimulating both individual and national growth. This line of thought was portrayed in the human capital theory by Schultz (1960, 1961), and popularized by Becker (1964). According to the theorists, educational investment (investment in humans) produces returns like investment in physical capital. For instance, this is typified in the contribution of education to the economic growth in Nigeria which as at 1981 stood at ₦3.40billion and grew substantially to reach ₦3,114.91billion in 2023. The average contribution of education sector to gross domestic product (economic growth) in Nigeria between 1981 and 2023 stood as ₦826.4777billion while the series ranges

between a minimum of ₦3.398465billion to a maximum of ₦3114.911billion (Central Bank of Nigeria's Statistical Bulletin, 2023).

Furthermore, the finance has been considered as a catalyst to economic development in the theory of economic development postulated by Schumpeter (1934). Thus, financial intermediation impacts positively on the effective allocation of savings and investments that produce the goods and services, which lead to improved productivity, innovation, technological change and increased economic growth (Balogun & Fapetu, 2022). Unlike the supply leading hypothesis which considers financial market as a determinant of economic growth (McKinnon (1972), Patrick (1976), Shaw (1973)); and demand-following hypothesis, which considers economic growth as a determinant of financial market development (Patrick, 1966); the interdependence theory posits a bidirectional causal relationship between the financial sector and real sector performance.

In another postulate, the theory of financial intermediation emphasizes the role of financial intermediation as the channel for funding productive sectors of the economy. Financial intermediation facilitates the efficient mobilisations of resource from surplus savings units to deficit economic units for productive purposes. Furthermore, in explaining economic growth, the endogenous growth theory posits that economic growth endogenously determined by technology and other factors of production. The theory incorporated a new idea of human capital, knowledge and skills that assist workers to be more productive (George-Anokwuru, 2023).

### **Empirical Review**

Mbelu and Ebi (2024) investigated the impact of bond market on economic growth in Nigeria, from 1981-2021 using error correction and Granger causality test. The study indicates that corporate bonds and federal government bond are significantly related to economic growth in Nigeria. Also, it was found that bond market promotes economic growth in Nigeria.

In another study, Ejike et al. (2024) examined the effect of bond market development on economic growth in Nigeria from 2003- 2020. The study revealed that bond market capitalization and government bond

performance have insignificant negative effect on Nigeria's economic growth whereas bond market size has insignificant positive effect on economic growth.

Furthermore, George-Anokwuru (2023) assessed the influence of treasury bills on economic growth in Nigeria from 1985 to 2019 using Autoregressive Distributed Lag (ARDL) technique. The results showed that in the long run, treasury bills have negative and insignificant relationship with economic growth. But in short run, treasury bills have negative and significant relationship with economic growth.

Uchegbu et al. (2023) analysed the impact of bonds market on economic growth on Nigeria. The study found that Federal Government bond has positive and insignificant impact on economic growth in Nigeria in the long run. Likewise, corporate and state government bond were found to have positive and insignificant impact on economic growth in Nigeria in the long run.

Also in the Nigerian context, Eleje et al. (2022) investigated the effect of federal, state, and corporate bonds on economic growth between 2003 and 2020. From the multiple regression analysis, the study reveals that federal government bonds have strong positive impact on economic growth whereas both state government and corporate bonds have weak but positive effect on economic growth in Nigeria.

Focusing on the Sub-Saharan Africa (SSA), Musah and Aawaar (2022) examined the effect of financial development on educational quality for the period 1990-2019 using two—step system generalised method of moment. The study reveals that financial development, financial access, financial depth, and financial efficiency enhanced educational quality in SSA.

Using ARDL technique, Oke et al. (2021) assessed the impact of bond market development on economic growth in Nigeria from 1986-2018. The study showed that corporate bonds and value of bonds traded predict output growth in Nigeria. Government bond had positive and insignificant relationship with Nigeria's economic growth, while bond yield indicated negative relationship with output level. Government bond exhibited an insignificant positive relationship; corporate

bond and value of bond traded were positive and statistically significant.

In an examination of the effect of bond market development on economic development in Nigeria using ARDL regression model, Chidi-Okeke et al. (2020) found that government bond and corporate bond do not increase human development index in Nigeria.

Ogunbunmi and Abiola (2017) investigated causal relationship between education and economic growth in Nigeria using Ordinary Least Squares (OLS) method. The study found that educational expenditure enhances economic development in Nigeria.

Employing OLS method, Aigbedion et al. (2017) investigated the impact of education sector on economic growth in Nigeria. The study revealed that education sector has a positive impact on economic growth in Nigeria but government educational expenditure had negative and significant impact on the Nigerian economy.

Investigating the role of bond market trading in economic growth of Nigeria from 1982-2014, Ogboi et al. (2016) found from generalized method of moment and granger causality test, that bond market exerted positive but non-significant impact on economic growth in Nigeria.

In a vector autoregressive (VAR) analysis of the link between bond market development and economic growth of developing countries (G-20) from 1990-2011, Pradhan et al. (2015) found that existence of feedback effects between bond market development and economic growth in G-20 countries.

The review of empirical literature reveals that relatively scanty empirical studies were conducted on the linkage between bond market performance and education sector growth. Most of the past studies (reviewed) focused on the impact of bond market on economic growth.

## METHODOLOGY

Based ex-post facto research design, which permits the use of secondary data to evaluate the cause- and-effect as well as relationship between variables of interest; this employed annual time series data obtained from Central Bank of Nigeria statistical bulletin to investigate the causality between bond market

performance and the growth of education sector in Nigeria for the period, 1981-2023.

In the study, bond market performance, education sector growth, and government expenditure were measured as bond market capitalization, education sector's contribution to gross domestic product, and government recurrent expenditure on education, respectively.

The analysis of the annual time series data was conducted using econometric techniques such as Augmented Dickey-Fuller (ADF) unit root test, Johansen's cointegration test, and pairwise Granger causality test as proposed by Granger (1969). The stationarity test was performed in order to determine the order of co-integration and the unit root property of the series, such that if stationarity is attained in level, there is no need for cointegration test before the Granger causality test is conducted. However, if the variables become stationary by differencing, then suitable co-integration test is necessary before Granger causality test is conducted. Thus, since all the variables of the study are I(1) series (see Table 1), then Johansen's co-integration test was applied to variables to determine whether or not there is long-run relationship among the variables. Having confirmed from the Johansen's cointegration test (in Table 2), the existence of long-run equilibrium between bond market performance and education sector's growth, the study examined the interrelationship between bond market performance and education sector's growth in Nigeria using pairwise Granger causality test.

The Granger causality equation specification for this study are as follows:

$$\begin{aligned} EDUGDP_t &= \theta_0 + \theta_1 EDUGDP_t + \theta_2 BMCAP_t \\ &+ \theta_3 REDU_t \\ &+ \epsilon_{t1} \end{aligned} \quad (1)$$

$$\begin{aligned} BMCAP_t &= \alpha_0 + \alpha_1 BMCAP_t + \alpha_2 EDUGDP_t \\ &+ \alpha_3 REDU_t \\ &+ \epsilon_{t2} \end{aligned} \quad (2)$$

$$\begin{aligned} REDU_t &= \beta_0 + \beta_1 REDU_t + \beta_2 BMCAP_t \\ &+ \beta_3 EDUGDP_t \\ &+ \epsilon_{t1} \end{aligned} \quad (3)$$

Where: BMCAP denotes bond market capitalization; EDUGDP represents education value-added to economic growth; and REDU is

an abbreviation for recurrent educational expenditure

## RESULTS AND DISCUSSION

### Unit Root Test

Table 1 reports the result of the Augmented Dickey-Fuller (ADF) unit root test.

**Table 1: Augmented Dickey-Fuller Unit Root Test Statistics**

Variable:	ADF Test in Level			ADF Test in at First Difference		
	ADF-Statistic	Prob.	Remarks	ADF-Statistic	Prob.	Remarks
BMCAP	-1.737444	0.4056	Not stationary	-5.630027	0.0000	Stationary
EDUGDP	1.418590	0.9988	Not stationary	-4.707623	0.0026	Stationary
REDU	-0.274702	0.9889	Not stationary	-5.006952	0.0002	Stationary

The result of the Augmented Dickey-Fuller test of unit root in Table 1, reveals that all the variables to be non-stationary at levels. As a result, all the variables were differenced once, to check their stationarity status. Therefore, at

first differencing, the ADF test statistic clearly rejects the null hypothesis of unit root in the series, hence the confirmation that each of the variables attain stationarity at the same order integration one.

### Cointegration Test

Table 2 reports the Johansen cointegration test's result.

**Table 2: Johansen Cointegration Test**

[I]. Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.
None *	0.474653	43.98574	29.79707	0.0006
At most 1 *	0.233231	17.59420	15.49471	0.0238
At most 2 *	0.150882	6.705821	3.841466	0.0096
[II]. Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.
None *	0.474653	26.39153	21.13162	0.0083
At most 1	0.233231	10.88838	14.26460	0.1599
At most 2 *	0.150882	6.705821	3.841466	0.0096

Note: \* denotes rejection of the hypothesis at the 0.05 level

The result of the Trace test (in Panel I of Table 2) indicates that there is at least three cointegrating equations among the series at the 5% level of significance. This is corroborated by the result of the Maximum eigenvalue test (in Panel II of Table 2), that there is at least one

cointegrating equation among the series. The results imply the existence of a long-run equilibrium relationship between bond market performance and education sector's economic in Nigeria.



## Causality Analysis

The results of the pairwise Granger causality test is a summarized in Table 3.

**Table 3: Pairwise Granger Causality Test**

Null Hypothesis (H <sub>0</sub> ):	F-Statistic	Prob.	Decision on H <sub>0</sub>
BMCAP does not Granger Cause EDUGDP	3.64879	0.0361**	Reject
EDUGDP does not Granger Cause BMCAP	3.12404	0.0561***	Reject
REDU does not Granger Cause EDUGDP	6.25005	0.0047*	Reject
EDUGDP does not Granger Cause REDU	3.59958	0.0376**	Reject
REDU does not Granger Cause BMCAP	4.17537	0.0234**	Reject
BMCAP does not Granger Cause REDU	2.16934	0.1290	Do not reject

Note: \*,\*\* and \*\*\* denotes statistically significant and rejection of null hypothesis at 1%, 5% and 10% significance level respectively.

The confirmation of cointegrating relationship between the I(1) series, suggests the suitability of Granger causality test in investigating the direction of causality between bond market performance and education sector's economic in Nigeria. Therefore, the result of the Granger causality test as presented in Table 3 indicates the existence of a bidirectional causality between bond market capitalization and education value-added to economic growth in Nigeria. The means that there is feedback effect between recurrent bond market performance and education sector growth in Nigeria.

Likewise, the study found a bidirectional causality between recurrent educational expenditure and education value-added to economic growth in Nigeria. The means that there is feedback effect between public educational investment and education sector growth in Nigeria.

Moreover, the study established the existence of a unidirectional causality flowing from recurrent educational expenditure to bond market capitalization in Nigeria, which implies that there is one-way effect of public educational investment on bond market performance in Nigeria in the study period.

## CONCLUSION AND RECOMMENDATIONS

This study investigated the causality between bond market performance and education sector growth in Nigeria, during the period, 1981-2023. The study found that bond market performance and education sector growth have bi-directional causal relationship in Nigeria, which implies the existence of feedback effect between bond market and education sector

growth. It can therefore be concluded that bond market performance and education sector growth reinforce each other in Nigeria. Therefore, to facilitate education sector growth, the instrument of bond market should be considered and applied, and vice versa, to enhance bond market performance, the role of the education sector is key.

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