



ANALYZING THE DETERMINANTS OF BOND MARKET DEVELOPMENT IN NIGERIA

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ABSTRACT

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This study examines the key factors influencing the development of Nigeria's bond market using time series data from 1981 to 2022. While employing quantitative methods, the study identifies a strong long-term relationship between key economic variables and bond market development. Major findings highlight the critical roles of inflation, fiscal deficit, foreign direct investment, and per capita income in shaping market growth. The study provides practical policy recommendations, including measures to boost market liquidity, improve transparency, and promote public-private partnerships for sustainable bond market development. These findings contribute significantly to understanding the dynamics of emerging bond markets and their potential for economic development in Nigeria.

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1. INTRODUCTION

The bond market has long played a vital role in global financial systems, offering governments and businesses a stable means of financing projects through debt securities. Over the past few decades, bond markets have seen substantial growth worldwide, with outstanding bonds surpassing \$100 trillion by 2020 (SIFMA, 2020). While developed countries have established mature bond markets, African countries, including Nigeria, have been working to develop theirs. Nigeria's bond market has shown significant growth since the early 2000s, driven by regulatory reforms and efforts to diversify the economy beyond oil dependency. However, despite this progress, challenges such as limited liquidity, a small investor base, and a regulatory framework still hinder further development. However, many African bond markets are still facing challenges including the ones outlined as follows: The bond markets remain limited by factors including restricted liquidity, a limited pool of investors, and regulation (African Development Bank, 2018).

In recent decades, there has been significant growth in bond market in Nigeria. Earlier the number of different kinds of debts instruments was very limited and the market was under-developed and it was inactive. On the other hand, capital market especially Nigerian bond market has recorded tremendous improvement from the mid of 2000s. Some of the reasons include the establishment of new regulation system, government alteration towards the development of other sources for economic other than oil, and efforts to attract both local and international investors for the expansion. Thus, Nigeria's bond market has expanded in terms of its size, from \$74.

The result is from \$1 million in 2001 to \$23 million in 2007, the overall volume of the outstanding government bonds and bills increased, and reached the level of about \$21 million. \$317 billion was the total foreign exchange reserve of the country in the year 2008 (Central Bank of Nigeria, 2019). Bond markets play pivotal roles in the growth of economic activities and maintaining financial systems all over the world. In developed economies, these markets are relatively evolved and are characterized by the availability of a wide range of products and number of players. Foreign, especially African markets, have been yearning for such level of sophistication. This sentiment is echoed in the work of Kodongo et al. (2023), who highlight the potential of bond market development in reducing infrastructure gaps in Sub-Saharan Africa.

Mainly focusing on Nigeria, it could be seen that the country's bond market is relatively much younger compared to that of other developed countries but it has revealed great potential. In theory, corporate bonds, government bonds, and other debt securities that include Eurobonds constitute Nigeria's bond market. The authorities have taken action to boost the confidence of the investors, increase the level of transparency of the market, and also to enhance the regulatory framework as part of the measures towards improving the market. However, these efforts can be said that the market still facing challenges like limited availability of corporate bonds, issues related to less liquidity, and a small investor base. From the latest statistics, it can be pointed out that the growth of Nigeria's bond market is still, but the pace is slowing down and is no longer maximum. The amount of the market capitalization of government bonds in 2019, for instance, stood at about N195. Ninety-four billion US dollars in the country's foreign reserves, by the Central Bank of Nigeria. Similar changes have occurred in corporate bonds, although at a more moderate scale, and significant spikes have been recorded right before the end of the previous ten years. For instance, the amount of corporate bonds mobilized to the market enhanced to \$2 by the end of the study period. Naturally, the volume of investments has gradually increased from 174 million to the figure of 657 million USD more than in the private sector (Central Bank of Nigeria, 2019).

The market size, trading frequency and the regulatory framework, the amount and source of investors and the macroeconomic stability are some of the key concepts in bond market analysis; Mu et al. (2013) post those long-term bonds and economic balance are promoted by a well-developed bond market. Additionally, Ifionu & Omojefe (2013) also highlight the inevitability of maintaining long-term relations while focusing on furthering economic predictability. Thus, the object of study in this paper is the bond market in Nigeria since its promotion can contribute towards stability and economic development. FGN bonds are the most frequently traded bonds in the Nigerian bond market with the latter being characterized by the high relevance of government bonds. This market however faces challenges that include; limited issues in corporate bonds and few investors despite tremendous growth in the recent past. For these reasons, the mentioned problems be inevitably solved to attain the optimal potential of the market and to attract domestic and foreign investors at the same time.

This paper focuses on analyzing the determinants of bond market development in Nigeria, a relatively young but fast-growing market. While previous studies have explored various aspects of bond markets globally, there is a clear gap in understanding the specific factors driving the growth of Nigeria's bond market. This study aims to fill this gap by providing a comprehensive analysis of the economic variables influencing bond market development and offering practical policy recommendations. The work of Lakshan and Dissanayake (2023) on factors affecting bond market development in Asian developing countries provides a useful comparative perspective for our analysis of the Nigerian context.

2. RESEARCH METHODS

This study employs time series data from the World Bank covering the years 1981–2022, using quantitative research techniques. The analysis is performed using the Autoregressive Distributed Lag (ARDL) model to explore both short- and long-term relationships between bond market development and several key independent variables, including fiscal deficit, real interest rate, foreign direct investment, and per capita income.

The Augmented Dickey-Fuller (ADF) test is used to check the stationarity of the data, and the cointegration test ensures the existence of a long-term relationship among the variables. The choice of the ARDL model is due to its ability to handle variables that are integrated at different orders, making it suitable for this type of time-series analysis.

$$\Delta Y_t = \alpha + i = 1 \sum p \beta_i \Delta Y_t - i + j = 0 \sum q \gamma_j \Delta X_t - j + \lambda Y_t - 1 + \delta X_t - 1 + \epsilon_t \dots \dots \dots (1)$$

Where as:

- Δ : denotes the first difference.
- α : is the intercept.
- β_i : and γ_j are short-run coefficients.
- λ, δ : represent the long-run relationship.
- ϵ_t : is the error term.

3. RESULTS AND DISCUSSION

3.1. RESULTS

The results from Table 1 provide valuable insights into the key determinants of bond market development (BMD) in Nigeria, revealing both short-term and long-term dynamics. Over the study period, bond market development averaged 5.08%, with fiscal deficit (FD) showing a negative trend (-2.56% on average). The findings also show that inflation was particularly volatile, ranging from 5.39% to a peak of 72.84%, reflecting significant macroeconomic instability. This volatility is crucial, as inflation plays a pivotal role in the economic environment, impacting long-term investment decisions in bond markets. These findings align with the work of Fischer (1993), who emphasized the role of macroeconomic factors in growth.

Per capita income (PCI) showed a positive relationship with BMD, averaging 5.42% during the period, suggesting that as household incomes rise, there is greater potential for investment in bonds. Meanwhile, foreign direct investment (FDI) had a significant positive influence on BMD, with a 2.42% increase for every unit rise in FDI, indicating that foreign capital inflows are critical for bond market expansion. However, GDP and monetary policy rate (MPR) did not show statistically significant effects on bond market development, suggesting that other economic factors may be more influential in this context. These findings are consistent with the research of Adeyemi et al. (2021) on macroeconomic determinants of capital market development in Nigeria.

Table 1. Summary Statistics of the Variables

	BMD	FD	STOCK	PCI	INF	MPR	GDP	RIR	FDI
Mean	5.08	-2.56	8.06	5.42	18.95	13.08	3.05	0.45	2.47
Maximum	11.27	0.80	29.36	5.58	72.84	26.00	15.33	18.18	8.84
Minimum	1.51	-8.60	0.67	5.30	5.39	6.00	-13.13	-65.86	-1.87

Source: Processed data (2024)

The alternative was put to the test against the null hypothesis, which claims that the data are not stationary. Because the p-value for each of the variables in Table 2 was less than the level of significance, the results showed that variables like GDP, FD, INF, and MPR were stationary in level. The ADF test statistic p-value was found to be greater than the p-value 5%, indicating that the null hypothesis that the variables are not stationary was accepted at the 5% level of significance. However, BMD, FDI, PCI, and STOCK proved to be non-stationary in level.

Table 2. Results Summary of the Unit Root Tests

Variables	P Values in Level	Stationary In Level	P Values at 1 st Difference	Stationary at 1 st
BMD	0.1052	Non-Stationary	0.0000	Stationary
FD	0.0344	Stationary		
FDI	0.4936	Non- stationary	0.0000	Stationary
GDP	0.0271	Stationary		
INF	0.0385	Stationary		
MPR	0.0172	Stationary		
PCI	0.7030	Non- Stationary	0.0022	Stationary
RIR	0.0000	Stationary		
STOCK	0.2373	Non- Stationary	0.0000	Stationary

Source: Processed data (2024)

From Table 3, it can be shown that EC term (CintEq(1)) has a -0.532280 associated coefficient estimate, indicating a negative value. This suggests that 53.22% of disequilibrium movements are corrected in a single period. Furthermore, at a 5% level of significance, the p-value of 0.0000, which is less than 0.05, indicates that the coefficient is very significant. Since the p-value of FD is 0.000 less than 0.05, the effect is statistically significant at 5%. The coefficient value for FD is -0.53, meaning that a one unit increase in FD from the previous value will reduce the current value of BMD by 0.53. This effect is statistically significant at 5% since the P-value is 0.04, which is less than the 0.05 threshold. The coefficient value of FDI is 2.42, meaning that a 1% increase in foreign direct investment in the previous value will increase the current value of MBD by 2.42%.

Table 3. ECM Regression for Short-run Output

Variables	Coefficient	Std. Error	T-statistics	Value
D(FD)	-0.539154	0.103892	-5.189577	0.0000
D(FDI)	2.42E-10	1.12E-10	2.168965	0.0407
D(GDP)	-0.303472	0.048831	-6.214693	0.0000
D(INF)	-0.015861	0.011611	-1.366003	0.1851
D(MPR)	0.101228	0.046000	2.200600	0.0381
D(PCI)	34.90730	10.03041	3.480145	0.0020
D(RIR)	0.025768	0.014835	1.736970	0.0958
D(STOCK)	0.107374	0.039024	2.751469	0.0114
CintEq(-1)*	-0.532280	0.061320	-8.680302	0.0000

Source: Processed data (2024)

From the Table 4, it can be interpreted that the long-run regression results from the ECM model indicate that several variables have a significant impact on BMD (the dependent variable) over the long term. First, the lagged value of BMD (BMD(-1)) has a positive and significant effect on the current BMD. The coefficient of 0.467720 with a p-value of 0.0006 indicates that an increase in the previous period's BMD leads to an increase of 0.467 units in the current BMD. This result is highly significant at the 1% level. Financial Development (FD) shows a negative and significant influence on BMD, with a coefficient of -0.539154 and a p-value of 0.0031. This suggests that an increase in FD will reduce BMD by 0.539 units in the long run. This impact is significant at the 5% level, indicating that changes in financial development have a negative contribution to BMD over a longer period. Inflation (INF) does not exhibit a significant impact in the current period. However, the lagged value of inflation (INF(-1)) has a positive coefficient of 0.060477 and a p-value of 0.0014. This indicates that inflation in the previous period significantly affects the current BMD in a positive manner, suggesting a delayed adjustment in the relationship between inflation and BMD.

Stock prices (STOCK) also have a positive effect on BMD, with a coefficient of 0.107374 and a p-value of 0.0740, though this is only significant at the 10% level. This means that an increase in stock prices correlates with an increase in BMD over the long term. In contrast, other variables such as Foreign Direct Investment (FDI), GDP, Market Price (MPR), and Per Capita Income (PCI) do not show significant long-term effects on BMD. Although these variables generate coefficients, their p-values are above the 0.05 threshold, indicating that they do not contribute meaningfully to changes in BMD in the long run.

Table 4. ECM Regression for Long-run Output

Variables	Coefficient	Std. Error	T-statistics	P-Value
BMD(-1)	0.467720	0.117304	3.987240	0.0006
FD	-0.539154	0.162943	-3.308850	0.0031
FD(-1)	0.018570	1.66E-10	1.461717	0.9252
FDI	2.42E-10	1.66E-10	1.461717	0.1573
FDI(-1)	3.76E-11	1.73E-10	0.217975	0.8294
GDP	-0.303472	0.344325	-0.881352	0.3872
GDP(-1)	-0.068818	0.052747	-1.304682	0.2049
INF	-0.015861	-0.821985	-0.821985	0.4195
INF(-1)	0.060477	0.016720	3.617055	0.0014
MPR	0.101228	0.072566	1.394988	0.1763
MPR(-1)	0.071156	0.073502	0.968089	0.3431
PCI	34.90730	81.00408	0.430933	0.6705
PCI(-1)	-34.27608	81.08437	-0.422721	0.6764
RIR	0.025768	0.036520	0.705583	0.4875
RIR(-1)	0.034679	0.018525	1.871993	0.0740
STOCK	0.107374	0.053672	2.000551	0.0740
STOCK(-1)	0.034229	0.067626	0.506148	0.6176
C	-5.834932	17.13129	-0.340601	0.7365

Source: Processed data (2024)

From Table 5, F-statistics refers to 5.42 is higher than the maximum value of 3.77 at 1%, 3.42 at 2.5%, 3.15 at 5%, and 2.85 at 10%. The null hypothesis, according to this series, is that there is an equilibrating relationship (cointegration). The bond test of cointegration results show that the variables under investigation have a substantial long-term link. Cointegration is strongly supported by the F-statistics value of 5.42 and the corresponding p-values below the selected significance levels. This implies that the variables move in tandem over time, pointing to a steady and dependable link between them.

Table 5. Long Run Form and Bound Test for Cointegrations

Test Statistics	Value	Significant	1(0)	1(1)
F-Statistics	5.4156128	10%	1.85	2.85
		5%	2.11	3.15
		2.5%	2.33	3.42
		1%	2.62	3.77

Source: Processed data (2024)

3.2. DISCUSSION

The findings highlight several important relationships between the economic variables and bond market development in Nigeria. The negative relationship between fiscal deficit (FD) and BMD (-0.53 coefficient) underscores the crowding-out effect, where high government borrowing diminishes private sector access to capital, hindering bond market growth. This result aligns with economic theory, particularly in emerging markets where fiscal imbalances often lead to higher inflation and reduced investor confidence.

For Nigeria, this suggests the need for fiscal discipline and effective debt management policies to foster a more robust bond market. By reducing fiscal deficits, the government could encourage greater private investment in bonds, helping to stabilize the market. This finding is consistent with the work of Nkwede et al. (2016), who examined the impact of macroeconomic factors on corporate bond market development in Nigeria.

The positive impact of foreign direct investment (FDI) on bond market development, with a coefficient of 2.42, suggests that attracting foreign capital is crucial for enhancing market liquidity and stability. In this context, Nigerian policymakers should focus on creating a more favorable investment environment through regulatory reforms, improved transparency, and stronger legal frameworks. This would not only attract more foreign investors but also bolster confidence in the domestic market. For instance, reducing bureaucratic hurdles and enhancing ease of doing business could make the Nigerian bond market more appealing to international investors. These recommendations align with the insights provided by Adelegan and Radzewicz-Bak (2009) in their study on determinants of bond market development in Sub-Saharan Africa.

Interestingly, while inflation showed a negative short-term impact on bond market development, its lagged effect was positive. This suggests that bond markets in Nigeria may adjust to inflationary pressures over time, possibly due to the issuance of inflation-linked bonds or other instruments that protect investors from inflation risks. Policymakers could consider further development of such instruments to attract long-term investment, particularly from institutional investors seeking inflation protection.

Per capita income (PCI) had a significant long-term positive impact on bond market development. This result is indicative of the broader relationship between economic growth, household income, and savings rates. As incomes rise, households are more likely to invest in bonds, contributing to market expansion. This highlights the importance of policies aimed at boosting income levels, reducing poverty, and enhancing economic stability to support bond market growth. The work of Ahmad et al. (2015) on the impact of macroeconomic variables on stock market development in Nigeria provides additional context for understanding these relationships in the Nigerian financial system.

While GDP and monetary policy rate (MPR) did not show significant long-term effects on bond market development, this finding may reflect the complexity of bond market dynamics in emerging economies. Bond markets are often influenced by more specific factors, such as liquidity, investor confidence, and regulatory stability, rather than broader macroeconomic indicators. Therefore, Nigerian policymakers should focus on strengthening these areas to further develop the bond market. This nuanced understanding of bond market dynamics is supported by the comprehensive analysis provided in Fabozzi and Fabozzi's (2021) book on bond markets, analysis, and strategies.

The results suggest several important policy implications. First, fiscal discipline is essential to reducing the crowding-out effect and enhancing bond market growth. Second, the positive role of FDI indicates that creating a more attractive investment climate through legal reforms and market transparency will be crucial. Third, inflation control measures, including the promotion of inflation-indexed bonds, could help stabilize the bond market and attract long-term investment. Finally, efforts to raise household incomes and promote economic stability will further boost bond market development by increasing domestic investment capacity. These policy recommendations are in line with the findings of Eke et al. (2020) on bond market liquidity and real sector output in selected African economies.

4. CONCLUSION

This study provides a thorough analysis of the determinants of bond market development in Nigeria, with a particular focus on how fiscal, monetary, and economic factors interact to influence the market's growth. The findings contribute to a better understanding of the economic and policy environments necessary for sustaining bond market development in emerging markets like Nigeria. Importantly, the study highlights the need for policies that improve market transparency, attract foreign investment, and strengthen public-private partnerships. By implementing these measures, Nigeria can continue to grow its bond market and enhance its role in long-term economic development. Additionally, the practical applications of these findings can guide policymakers in addressing current market challenges and ensuring the sustainable expansion of the bond market.

The study's results align with broader research on financial innovation and economic growth, such as the work of Laeven et al. (2015), which emphasizes the importance of financial development for overall economic progress. Furthermore, the challenges and opportunities identified in Nigeria's bond market development mirror those observed in other emerging markets, as discussed by Herring and Chatusripitak (2006) in their analysis of bond market development and its importance for financial development.

Future research could explore the impact of technological advancements, such as blockchain and digital currencies, on bond market development in emerging economies like Nigeria. Additionally, comparative studies with other African nations could provide valuable insights into regional trends and best practices for bond market development.

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