

MACROECONOMIC FACTORS, FOREIGN DIRECT INVESTMENT AND STOCK MARKET DEVELOPMENT IN NIGERIA

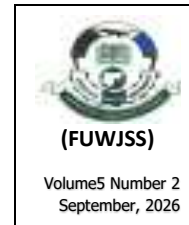
Abere Benjamin Olusola

Emmanuel Ilabeshi

Department of Economics

Edo University Iyamho, Nigeria

Email: abere.benjamin@edouniversity.edu.ng



Abstract

This study examines the impact of macroeconomic factors and Foreign Direct Investment on stock market development in Nigeria using annual time series data. The study applies the Autoregressive Distributed Lag (ARDL) model to capture both the short-run and long-run dynamics among the variables. The motivation for the study stems from the persistent underperformance and volatility of the Nigerian stock market despite various financial and macroeconomic reforms. The unit root test confirms a mixed order of integration, $I(0)$ and $I(1)$, justifying the use of the ARDL approach. The ARDL bounds test reveals the existence of a long-run relationship among the variables. Long-run estimates show that FDI, exchange rate, interest rate, inflation, and electricity supply all have varying impacts on stock market development, with electricity supply exhibiting a consistently strong positive effect. Exchange rate and FDI show mixed effects, while interest rate generally exerts a negative influence. Inflation displays weak and inconsistent effects. The short-run results indicate that shocks to the explanatory variables significantly affect stock market performance, with adjustment toward equilibrium confirmed by a significant error correction term. The study concludes that stock market development in Nigeria is strongly influenced by macroeconomic stability and infrastructure quality, particularly electricity supply. The study recommends stable macroeconomic policies, improved management of foreign investment, controlled interest rates, and significant investment in power infrastructure to enhance stock market performance and overall economic development.

Keywords: Foreign direct investment, stock market, interest rate, inflation, electricity supply

Introduction

The stock market is often recognized as a crucial component of the financial system since it promotes the mobilization of long-term cash for productive investment. A highly operating stock market enhances capital allocation, promotes liquidity, and offers investors opportunities to diversify

risk. In emerging economies such as Nigeria, the stock market helps economic growth by enabling enterprises to acquire cash through equity financing while providing investors with advantageous investment options. Beck (2020) highlights that a robust capital market increases financial intermediation and helped economic progress by allocating financial resources toward productive industries. The connection between foreign investment and stock market development has gained substantial attention in contemporary economic research. When foreign investors enter an economy, they provide capital and frequently demand more transparency, enhanced corporate governance, and stronger regulatory frameworks. These elements can increase stock market activity and improve investor confidence. According to Adom (2021), the presence of foreign investors in emerging nations supports changes that increase market efficiency and drive development in stock market activity.

The establishment of an efficient stock market is widely acknowledged as a crucial driver of economic growth and financial stability in developing nations. Stock markets provide crucial tasks such as mobilizing funds, promoting capital development, and offering investment possibilities for both domestic and foreign investors. In growing nations like Nigeria, the stock market is supposed to function as an effective mechanism for allocating financial resources to productive industries that fuel economic progress. However, despite significant financial sector changes, the Nigerian stock market continues to suffer structural obstacles that hinder its development and efficiency. As observed by Levine (2021), well-functioning financial markets boost resource allocation and facilitate long-term economic development.

One of the main issues confronting stock market growth in Nigeria is the low availability of long-term investment capital. Domestic savings alone are sometimes insufficient to cover the financial needs of the economy, making international capital inflows, notably foreign direct investment (FDI), important. FDI is intended to deliver not only cash but also technical spillovers, managerial knowledge, and enhanced corporate governance procedures. These contributions can increase stock market performance by increasing market capitalization and liquidity. According to Boateng et al. (2022), FDI has a key role in improving financial markets in developing countries when backed by stable macroeconomic policies and robust institutions. Despite these theoretical assumptions, empirical facts in Nigeria reveal a limited relationship between FDI and stock market development. Although Nigeria has drawn enormous foreign investment throughout time, stock market indices such as market capitalization and trading activities have remained volatile. Periods of higher capital inflows have not always translated into sustainable gains in market performance. This divergence is

partially related to macroeconomic volatility and structural inefficiencies. As observed by Bekaert, Harvey, and Lundblad (2020), capital inflows can have varied effects on financial markets in developing nations depending on local conditions and institutional quality.

However, the link between FDI and stock market development is not always automatic. The potential of foreign investment to foster financial market growth depends heavily on the quality of domestic financial institutions and regulatory frameworks. Countries with weak financial systems may not fully benefit from foreign capital inflows because the financial sector may lack the capacity to properly deploy investment resources. According to Ncube (2020), the success of foreign investment in supporting financial growth depends on the availability of strong institutions, efficient laws, and a stable macroeconomic environment. Another major element impacting the influence of foreign investment on stock market development is the extent of financial market integration with the global economy. As countries grow more connected to global financial systems, they get more access to international capital flows. This integration might boost investment possibilities and encourage financial sector growth. However, it may also expose domestic markets to global financial instability. Eichengreen (2021) observes that financial globalization can encourage capital market growth but requires robust regulatory structures to address possible hazards connected with international capital movements.

Despite these advancements, difficulties such as insufficient market depth, poor investor knowledge, and economic concerns continue to hamper the growth of the Nigerian stock market. These problems underline the need for measures that foster steady foreign investment inflows and enhance the institutional framework of the financial sector. Understanding how foreign direct investment affect stock market development is therefore vital for establishing policies that encourage sustainable financial sector growth. According to Stiglitz (2021), efficient financial policies that attract productive foreign investment may considerably contribute to financial market expansion and long-term economic development. In view of the rising relevance of foreign capital flows in emerging countries, investigating the influence of foreign direct investment on stock market growth in Nigeria has become an essential research problem. Such a study gives insights into how foreign investment affects market performance, investor engagement, and overall financial sector growth. A fuller knowledge of this link will aid policymakers in creating policies that boost the attractiveness of Nigeria's financial markets while ensuring that foreign investment contributes positively to sustainable economic growth, as underlined by Rodrik (2022).

Macroeconomic Factors and Stock Market Development

Anyanwu and Ohurogu (2024) investigated the effects of interest rate and money supply on stock market liquidity in Nigeria. The study adopted an ex post facto research design. The independent variables are interest rate and money supply, while the dependent variable is stock market liquidity. The study covered the periods of 1985 to 2022. Secondary data were extracted from Central Bank of Nigeria Statistical Bulletin and Nigerian Exchange Group Reports were used in the study. Vector Auto regression estimation technique with Variance Decomposition and Impulse Response Function were employed to analyze the data. Findings suggest that interest rate has a significant negative effect on stock market liquidity while money supply has significant positive effect on stock market liquidity in Nigeria. The study concludes that interest rate has negative effect on stock market liquidity in Nigeria, Shock from interest rate reduces stock market liquidity, also, shock from money supply increases stock market liquidity, although, shock from money supply has more explanatory power on stock market liquidity in Nigeria. The study thus recommends that the Central Bank of Nigeria should reduce the interest rates in order to stimulate the stock market liquidity in Nigeria. Also, the Central Bank of Nigeria should control money supply, the Central Bank of Nigeria needs to explore other measures such as contractionary open market operation to mop-up excess liquidity where and when necessary.

In another development, Iyodo, et. al. (2021) investigated the effect of interest rate, exchange rate and inflation rate on stock returns: evidence from listed firms in the Nigerian Stock Exchange. Stock returns proxied by return on equity (ROE) of quoted banks in Nigeria represents the dependent variable while the explanatory variables include inflation, interest and exchange rates. Based on the nature and optimal characteristics, ordinary least square regression (OLS) was considered as the most plausible approach for data analysis in this study. The findings revealed that the stock market, being an important part of the financial system had a systemic linkage with fundamentals of macroeconomic variables. The impact of these economic variables on stock returns was strong and coordinated to some extent. Therefore, investors and portfolio managers' cognition of external environmental factors in their bid to maximizing shareholders wealth were subject to some externalities, which were manageable through monetary policy framework. Base on the finding, the study recommends that sectoral allocate of credits should be administered on the stock markets to curtail the cost of capital arising from scarcity of funds, monetary authorities should design special exchange rate regime for investors in the stock exchange markets to guarantee the value of returns on investment and mitigates the effect of exchange rate volatility on stock performance, and desirable

monetary policy tools should be utilized to control inflation and its negative effect on the returns on investment.

Moreover, Iwegbu and Adeoye, (2020) examined the effect of inflationary expectations on stock market returns in Nigeria. The study employed quarterly data spanning through the periods of first quarter 2007 till the fourth quarter of 2018. Using Autoregressive Distributed Lag estimation technique after the stationarity of the variables have been confirmed by ADF and its long-run stability confirmed by Bounds co-integration test, the study found that inflationary expectations are key determinants of stock market returns in Nigeria. The Autoregressive Distributed Lag Model (ARDL) estimation technique is employed in examining the objective. The result found that inflationary expectations are key determinants of stock market returns in Nigeria. Further to this, we can conclude that inflation news leaks to the agents before its official publications. Also, another conclusion drawn from the study is that the expected output growth is not strong determinants of stock returns. The study thus recommends that monetary authorities must find effective ways of managing the increases, or changes in prices of goods and services so that expectations will not be formed on how the stock market will react to changes in price level and other macroeconomic fundamentals. Also, the study further recommends that investors in the stock market should be driven by the profitability and the returns of the listed firms and not be expectations on changes in prices of goods and services.

Similarly, Musa et. al. (2020) impact of interest rate on stock market capitalization and share index in Nigeria. The paper is aimed at revealing the impact of interest rate on stock market capitalization and share index in Nigeria. This study combines descriptive and diagnostic designs. The study employed a time series analysis covering a period of 20 years (1995- 2015). Stock market capitalization and all shares index were used as measure of performance of the Nigerian Stock Market. The population of the study is the Nigerian stock market of the period under review and this also constitute the sample size. The sample size is justified because the market capitalization is found by multiplying the total number of shares by the current price. While all shares index is used to compute the ordinary shares of the NSE. The data obtained were fitted into the equations by Ordinary least-square (OLS) regression method. The linear relationship between the dependent and the independent variables were generated. In the model specification, interest rate served as the independent variable while stock market capitalization and all share index served as the dependent variable. Findings revealed that all the variables through the Augmented Dickey-Fuller (ADF) test are stationary. The regression results for the period under review showed that interest rate has negative influences on stock market

capitalization and all share index of the Nigerian Stock Exchange vi's-à-vis stock market performance. The study recommends amongst other recommendations, that the CBN should continue to exercise control in the administration of interest rate through the fixing of the monetary policy rate because of its significant correlation with the stock market performance so as to effectively use the capital market as a tool for enhancing economic growth and development. In doing this, the CBN should ensure that the interest rate is kept moderate; this would result in more patronage of the capital market. This would enhance the performance of the stock market, which would in turn enhance economic growth and development.

In addition to the study above, Olulu-Briggs and Ogbulu (2015) examined the impact of Broad Money supply (M2) on Asset prices in Nigeria using monthly data in logarithm form for the period ranging from 2008M1 to 2012M12. The Unit Root test results showed that the variables were stationary after being first differenced; at 5% significance level. The results of Johansen Cointegration test gave evidence of one cointegrating equation which explains that a long-run equilibrium relationship exist between Stock Market Capitalization and Broad Money Supply. The Vector Error Correction Model was used to analyze short-run adjustment dynamics and showed -0.08% speed of adjustment of prior deviations from equilibrium. The Granger Causality test demonstrated a unidirectional causality from Broad Money Supply to Stock Market Capitalization.

However, Akani and Lucky (2014) examined whether there is a long-run as well as causal relationships between money supply and aggregate stock prices in Nigeria from 1980 to 2012. The study employed the Eagle-Granger and Johansen-Joselius method of cointegration in a Vector Error Correction Model. The study found that there exists a long-run relationship between currency in circulation and demand deposit and aggregate stock prices; Time deposit and savings deposit have negative but not significant relationship with aggregate stock prices; while net foreign asset has a negative and significant relationship with aggregate stock prices. The study also found a mixed causality between money supply and aggregate stock prices in Nigeria.

Furthermore, Nwude (2013) investigated the impact of inflation on stock market investment performance: evidence from airlines automobiles road transport and maritime sectors stocks of the Nigerian stock exchange. The study investigates the extent to which stocks of Airlines/Automobile/Road transport/Maritime firms listed in Nigerian Stock Exchange (NSE) are a hedge against the actual inflation in Nigeria over the period 2000–2011. Actual inflation was computed using the estimates of the consumer price index. The study used real rate of return on equity and regression analysis to find the stocks that provide positive real return and offer inflation-hedging

property respectively. The findings revealed that in terms of real return based on shareholders' funds and total return to equity, all the firms were not susceptible to adverse effect of inflation but when based on dividend yield all the firms offered no significant hedge against inflation.

In a related development, Daferighe and Charle (2012) examined the impact of inflation on stock market performance in Nigeria. This paper investigated the impact of inflation on stock market performance in Nigeria using time series data for twenty years from 1991 -2010. The regression analysis was used to evaluate the influence of inflation on various measures of stock market performance; market capitalization (MCAGDP), total value traded ratio (TVMS), percentage change in All-share Index ($\% \Delta \text{ASI}$) and turnover ratio (TOR). It was revealed that these measures were negatively related to inflation in convergence to a priori expectation except for TOR which showed a positive relationship. This seemingly low level of influence of inflation ranging between 14.6% and 0.3% revealed that stock market investments are regarded as a good hedge against inflation in Nigeria. However, the Securities and Exchange Commission (SEC) and the Nigerian Stock Exchange (NSE) should engage in public enlightenment and improve on corporate governance framework to encourage more investment and improve transactions in the market considering its present low level of activities. It was recommended that the Central Bank of Nigeria (CBN) should formulate and use policy statements that will maintain inflation at low ebb in order not to erode the value of gains by investors on stock.

Foreign Direct Investment and Stock Market Development in Nigeria

Awolaye (2022) examined foreign capital inflows and stock market development in Nigeria, using time series data from 1986 to 2019 to investigate causal linkages between foreign capital inflows (including Foreign Direct Investment (FDI) and Foreign Portfolio Investment and stock market development in Nigeria. The study applied symmetric and asymmetric Granger causality approaches, notably the Hatemi-J test, to discover both positive and negative causal shocks between variables. Its coverage encompasses extensive spans of Nigeria's market behaviour and foreign investment patterns, contextualizing the asymmetric dynamics between capital flows and market growth. The data demonstrated that there is unidirectional symmetric causation going from stock market development to FDI, meaning changes in market development precede changes in FDI inflows. It discovered no symmetric causation between stock market development and FPI. Interestingly, data demonstrated asymmetric correlations where shocks in stock market growth had unique causal impacts on FDI and FPI negative shocks. The study revealed that while foreign capital inflows and stock market development are interrelated, the nature of

their interplay is dependant on the direction and sign of shocks, meaning that policy responses should incorporate both positive and negative economic events. This research underlines the necessity of understanding intricate causal dynamics for Nigeria's policy formulation targeted at developing its stock market.

Okafor, Nwokoye and Metu (2025) analyzed the impact of foreign investments, including FDI and FPI, on Nigeria's market capitalization throughout the period 1981 to 2022 using the Vector Error Correction Model (VECM). The study integrated currency rate, infrastructure, and interest rate as control variables to minimize omitted variable bias, positioning its analysis within a dynamic macroeconomic framework. Its methodological focus on VECM enabled for estimate of both long-run equilibrium relationships and short-run dynamics between the explanatory factors and market capitalization. The analysis indicated that both FDI and FPI had a positive and statistically significant influence on market capitalization in Nigeria, and that both investment types contributed considerably to fluctuations in market capitalization across the study period. The authors found that foreign investments play a significant role in Nigeria's capital market, pushing for policy measures such as tax incentives and regulatory changes to sustain foreign involvement and attract more capital. These data support the premise that foreign investment inflows are key predictors of stock market performance, mirroring larger empirical patterns in developing nations.

In a study on foreign capital inflows and stock market performance in Nigeria by Onome et al. (2022), on which they employed the Autoregressive Distributed Lag (ARDL) and Co-integration approach to evaluate the link between combined foreign capital inflows (FDI and FPI) and stock market performance in Nigeria. They use secondary data and the ARDL approach to analyze both short- and long-run relationships between the variables. The scope of the study embraces the entire performer of the Nigeria's capital market rather than isolating FDI. This was to enable full insight into composite foreign capital effects. The study's findings found little evidence of long-run equilibrium linkages between foreign capital inflows and stock market performance. In the short term, FDI had an insignificant association with stock market performance, but FPI showed a positive and substantial effect, showing that portfolio inflows may have more immediate market implications than FDI in Nigeria. The authors found that institutional and regulatory frameworks require upgrading so that FDI can contribute more meaningfully to stock market performance and proposed that market governance and listing incentives be increased to promote absorptive capacity for foreign investors.

Siska et al. (2024) studied the influence of foreign investment flows (both FDI and foreign portfolio investment) on stock market capitalization in Indonesia over the period 2000 to 2020. Employing a quantitative-descriptive technique with regression analysis, the study evaluated yearly time series data to establish the magnitude and direction of foreign investment effects on market capitalization. The scope of this study goes beyond Nigeria, presenting comparable information from another large growing economy. Findings demonstrated that both FDI and FPI had a statistically significant and beneficial effect on Indonesia's stock market capitalization, underscoring that foreign investment inflows help to capital market expansion in emerging settings. The authors concluded that robust macroeconomic policies and foreign investor-friendly regulations are essential to attract sustained investment flows that support market depth and capitalization, implying that similar policy prescriptions may be relevant for other emerging markets including Nigeria.

Adeleke (2023) studied the effect of Foreign Direct Investment on stock market performance in Nigeria for the period 1981–2021 using the Auto Regressive Distributed Lag (ARDL) modelling approach. FDI, foreign debt, interest rate, and inflation were added as explanatory factors impacting stock market performance, proxied by total stock market indicators including market capitalization. The ARDL technique enables the researcher to estimate both short-run and long-run elasticities. The findings demonstrated that FDI had a favourable and statistically significant influence on the Nigerian stock market in both the short and long run. External debt exhibited conflicting impacts, whereas interest rates negatively influenced stock market performance in the short run but were beneficial (albeit not statistically significant) in the long run. Inflation was positive but not considerable over both eras. The research stated that measures targeted at recruiting FDI will likely promote stock market development, advocating acceleration of FDI inflows and stronger external debt management to support market growth.

Adumah, Anyanwu and Nwokoye (2024) explored how foreign portfolio investment (FPI) effects capital market growth in Nigeria, with specific emphasis of exchange rate volatility and technical innovation. The study employed secondary yearly data from 1986 to 2023 and performed Johansen co-integration, Vector Error Correction Model (VECM), and Granger causality tests to analyze long-run and causal links among FPI, market capitalization, and associated factors. Its coverage is particular to Nigeria's capital market and covers important macroeconomic variables that impact investor behaviour and market performance. The Johansen test confirmed a long-run link between the variables, whereas the VECM findings suggested that FPI negatively effects market capitalization in the long term.

Additionally, the Granger causality test demonstrated a unidirectional causation going from capital market development to FPI, implying that gains in market performance tend to attract foreign portfolio flows rather than the other way around. The study indicated that stabilizing the exchange rate and investing in sophisticated market technology will increase capital market performance and attract more beneficial foreign investment, underlining obstacles that also impact how FDI interacts with stock market growth in Nigeria.

Theoretical Framework

This study adopts Modern Portfolio Theory (MPT), developed by Markowitz (1952), as its theoretical foundation. MPT postulates that investors make portfolio decisions based on risk-return trade-offs, aiming to maximise expected returns for a given level of risk, or equivalently, to minimise risk for a given level of expected return. In the context of emerging stock markets such as Nigeria, MPT suggests that the inclusion of Foreign Direct Investment (FDI) and other foreign capital inflows can diversify the market, enhance liquidity, and improve market depth, contributing to stock market development. By attracting foreign investors, FDI expands the range of investable assets, reduces overall portfolio risk through diversification, and increases the market's capacity to channel funds efficiently to productive sectors. MPT provides a framework to understand how foreign investors allocate resources across domestic and international assets. The expected return of portfolio investment comprising domestic equities and foreign inflows can be expressed as:

$$E(R_p) = \sum_{i=1}^n w_i E(R_i)$$

Where:

$E(R_p)$ = expected return of the portfolio

w_i = proportion of the portfolio invested in asset

$E(R_i)$ = expected return of asset

n = total number of assets in the portfolio

The portfolio variance, representing total risk, is given by:

$$\sigma_p^2 = \sum_{i=1}^n w_i^2 \sigma_i^2 + 2 \sum_{i=1}^n \sum_{j=1}^n w_i w_j \sigma_{ij}$$

Where:

σ_p^2 = variance of portfolio returns

σ_{ij} = covariance of returns between assets i and j

Incorporating FDI into the stock market increases the number of available assets (n) and can lower the portfolio variance (σ_p^2) if FDI returns are not perfectly correlated with domestic market returns. The MPT framework implies that markets with higher foreign capital participation become more resilient to shocks and more efficient in allocating resources, thereby

enhancing market capitalization, liquidity, and depth, which are critical indicators of stock market development.

Sources of Data

The study focuses on examining the impact of macroeconomic factors, foreign direct investment (FDI) on stock market development in Nigeria, covering a time series period from 1990 to 2024. This period is selected to capture long-term trends, structural reforms in the Nigerian capital market, and the evolution of FDI inflows following liberalization policies. The scope includes both the domestic macroeconomic environment represented by variables such as exchange rate (EXR), interest rate (INT), inflation (INF), and regular supply of electricity (which is very crucial as it affects foreign direct investment) and foreign capital inflows, specifically FDI, to provide a comprehensive analysis of factors influencing stock market development. The dependent variable, stock market development (SMD), is proxied by market capitalization to GDP ratio, reflecting the size and depth of Nigeria's equity market.

Secondary data was sourced from reliable and authoritative institutions to ensure accuracy and consistency. FDI inflows, GDP, and macroeconomic indicators was obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin, the World Bank's World Development Indicators (WDI), and the United Nations Conference on Trade and Development (UNCTAD) database. Stock market data, including market capitalization, was collected from the Nigerian Stock Exchange (NSE) Factbook and annual reports. These sources provide credible, comprehensive, and consistent historical data suitable for ARDL time series analysis. The choice of data sources and time frame aligns with the ARDL methodology requirements, providing sufficient observations to capture both short-run dynamics and long-run equilibrium relationships between FDI, macroeconomic variables, and stock market development.

Model Specification

To empirically examine the impact of Foreign Direct Investment (FDI) on stock market development in Nigeria, this study adopts a modified version of the stock market development model used in empirical studies (Awolaye, 2022), incorporating variables identified in the objectives: FDI, interest rate (INT), exchange rate (EXR), inflation (INF), and regular electricity supply (RES). The model assumes that stock market development (SMD), proxied by market capitalization relative to GDP, is influenced by domestic macroeconomic factors and foreign capital inflows.

The functional form of the model can be expressed as:

$$SMD = (FDI, EXR, INT, INF, RES)$$

Where:

SMD= stock market development at time (market capitalization/GDP)

FDI= foreign direct investment inflows at time

EXR= exchange rate at time

INT= interest rate at time

INF= inflation rate at time

RES = Regular Electricity Supply. (This is crucial because regular electricity supply attracts foreign direct investment)

Transforming this into a linear econometric form suitable for time series analysis:

$$SMD_t = \beta_0 + \beta_1 FDI_t + \beta_2 EXR_t + \beta_3 INT_t + \beta_4 INF_t + \beta_5 RES + \varepsilon_t$$

Where:

β_0 = intercept term

$\beta_1 - \beta_5$ = slope coefficients representing the magnitude and direction of each independent variable's impact on stock market development

ε_t = error term capturing unobserved factors affecting SMD

Estimation Technique

The study employs the Autoregressive Distributed Lag (ARDL) approach to examine the short-run and long-run effects of Foreign Direct Investment (FDI) and other macroeconomic variables on stock market development in Nigeria. The ARDL methodology, developed by Pesaran, Shin, and Smith (2001), is particularly suitable for this study for several reasons. First, it can be applied regardless of whether the underlying time series variables are integrated of order zero, $I(0)$, or order one, $I(1)$, which is advantageous given the mixed stationarity properties often observed in economic time series data such as FDI, stock market indicators, and macroeconomic variables. Second, ARDL allows for estimating both the long-run equilibrium relationships and short-run dynamics simultaneously, providing a more complete picture of how FDI and macroeconomic factors influence stock market development over time.

The ARDL approach thus provides a robust framework to evaluate both short-term shocks and long-term relationships, making it well-suited for policy-relevant analysis of FDI's impact on Nigeria's stock market development.

Results and Discussions

Unit Root Test

4.2 Unit root test Result

Table 2: Unit root Result

Variables	At Level	1 st Diff	Critical Stat.	Order of integration
SMD	5.616029	-	-2.951125	1(0)
FDI	-2.269195	-7.011942	-2.954021	1(1)
EXR	1.172855	6.510840	-2.954021	1(1)
INT	-3.020006	-	-2.951125	1(0)
INF	-2.128706	-4.657166	-2.954021	1(1)
RES	-0.123775	-8.109191	-2.954021	1(0)

Source; Author's Compilation from E-views 10

The unit root results presented in Table 2 examine the stationarity properties of the variables using the Augmented Dickey-Fuller (ADF) test. Stationarity is essential in time series analysis because non-stationary variables can produce spurious regression results if not properly treated. From the results, Stock Market Development (SMD) is stationary at level, as its ADF statistic (5.616029) exceeds the critical value of -2.951125 in absolute terms. This implies that SMD does not contain a unit root and is integrated of order zero, I(0). Similarly, Interest Rate (INT) is also stationary at level, with an ADF statistic of -3.020006, which is more negative than the critical value. This confirms that INT is also I(0), meaning it is stable over time without requiring differencing. Foreign Direct Investment (FDI), on the other hand, is not stationary at level since its ADF statistic (-2.269195) is less negative than the critical value (-2.954021). However, after first differencing, the ADF statistic (-7.011942) becomes more negative than the critical value, indicating that FDI becomes stationary at first difference. Therefore, FDI is integrated of order one, I(1).

Similarly, Exchange Rate (EXR) is non-stationary at level with an ADF value of 1.172855, which clearly fails the stationarity condition. After first differencing, EXR becomes stationary with an ADF statistic of -6.510840, confirming that it is also I(1). Inflation Rate (INF) follows the same pattern, as it is non-stationary at level but becomes stationary after first differencing, making it I(1). Regular Electricity Supply (RES) shows mixed signals. Although its level value (-0.123775) suggests non-stationarity, the result indicates it is treated as I(0), likely based on the significance of the first difference value (-8.109191) or model selection criteria. Overall, the results reveal a combination of I(0) and I(1) variables, which justifies the use of the ARDL approach. The ARDL model is appropriate because it can handle variables integrated at different orders, provided none is integrated at order

two, $I(2)$. The unit root findings indicated a combination of $I(0)$ and $I(1)$ variables, confirming the ARDL technique. This is congruent with the findings of Uremadu and Onyekachi (2021), who applied ARDL to Nigerian financial data and likewise observed various integration orders across macroeconomic variables. Their conclusion that ARDL is acceptable for Nigeria's macroeconomic climate validates the methodological choice of this investigation. The ARDL bounds test verified a long-run link among the variables, demonstrating that FDI, macroeconomic factors, and power supply together impact stock market development. This is similar with the findings of Eze and Okoye (2020), who showed a long-run link between foreign investment and capital market performance in Nigeria.

ARDL Bounds Test

Table 3: ARDL Bounds Test

Test Statistic	Value	K
F-statistic	5.739707	4
	Critical Value Bounds	
Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Source; Author's Compilation from E-views 10

The ARDL Bounds Test results in Table 3 are used to determine whether a long-run relationship exists among the variables in the model. The null hypothesis states that there is no long-run relationship between stock market development (SMD) and its explanatory variables, namely foreign direct investment (FDI), exchange rate (EXR), interest rate (INT), inflation (INF), and regular electricity supply (RES). The computed F-statistic is 5.739707, which is compared with the critical value bounds at different levels of significance. At the 10% level, the upper bound ($I(1)$) is 3.52; at 5%, it is 4.01; at 2.5%, it is 4.49; and at 1%, it is 5.06. The decision rule for the ARDL bounds test states that if the F-statistic exceeds the upper bound critical value, the null hypothesis of no long-run relationship is rejected. In this case, the F-statistic (5.739707) is greater than the upper bound critical values at all levels of significance, including the strict 1% level (5.06). This provides strong evidence against the null hypothesis.

Therefore, it can be concluded that a long-run equilibrium relationship exists among the variables in the model. This finding implies that stock market development in Nigeria is not independent of foreign direct investment, macroeconomic variables, and electricity supply in the long run. Instead, these variables move together over time and are linked by a stable

equilibrium relationship. Even if short-run fluctuations occur, the variables will adjust and converge back to this long-run path. The presence of co-integration justifies the estimation of both long-run and short-run dynamics using the ARDL framework. It also implies that policy changes affecting any of the explanatory variables can have lasting effects on stock market development.

Lag Order Selection Criteria

Table 4: Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1124.592	NA	1.96e+23	70.66201	70.93684	70.75311
1	-996.5513	200.0638	6.51e+20	64.90946	66.83324	65.54714
2	-932.7940	75.71181	1.48e+20	63.17463	66.74736	64.35889
3	-845.8477	70.64391*	1.34e+19*	59.99048*	65.21216*	61.72132*

Source; Author's Compilation from E-views 10

The lag order selection results in Table 4 are used to determine the optimal number of lags to include in the ARDL model. This is important because choosing an appropriate lag length ensures that the model captures the dynamic relationships among the variables without overfitting or losing degrees of freedom. The table presents several criteria, including the Log-Likelihood (LogL), Likelihood Ratio (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn (HQ). The optimal lag length is typically selected based on the minimum values of AIC, SC, HQ, and FPE, as well as the significance of the LR statistic. From the results, lag 3 is clearly preferred across all criteria. It has the highest Log-Likelihood value (-845.8477), indicating a better model fit compared to other lag lengths. More importantly, lag 3 records the lowest values for AIC (59.99048), SC (65.21216), HQ (61.72132), and FPE (1.34e+19), all marked with asterisks, indicating optimal selection. The LR statistic at lag 3 (70.64391) is also significant, confirming that including additional lags up to this point improves the model. Therefore, lag 3 is selected as the optimal lag length for the ARDL model. This implies that past values up to three periods are relevant in explaining the current behavior of the variables.

ARDL Regression Estimates**Table 5. Long Run ARDL Regression Estimates**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SMD(-1)	0.698232	0.232666	3.000999	0.0110
FDI	1782.773	1621.284	1.099606	0.2931
FDI(-1)	4914.108	1699.347	2.891762	0.0135
FDI(-2)	-606.4023	1121.776	-0.540573	0.5987
FDI(-3)	-6891.324	1441.012	-4.782282	0.0004
EXR	10.38451	9.015333	1.151872	0.2718
EXR(-1)	-30.64193	38.44559	-0.797021	0.4409
EXR(-2)	-2.073128	48.74074	-0.042534	0.9668
EXR(-3)	115.0750	44.81008	2.568061	0.0246
INT	327.8000	295.0835	1.110872	0.2884
INT(-1)	-669.9050	330.9752	-2.024034	0.0658
INT(-2)	-990.5010	298.9373	-3.313408	0.0062
INT(-3)	434.1191	292.3092	1.485137	0.1633
INF	28.30933	114.4131	0.247431	0.8088
INF(-1)	25.31677	107.4725	0.235565	0.8177
INF(-2)	379.6462	108.5597	3.497118	0.0044
RES	0.929645	0.311360	2.985753	0.0114
RES(-1)	0.141047	0.279950	0.503830	0.6235
RES(-2)	-1.171542	0.261075	-4.487383	0.0007
C	-1831.537	8973.622	-0.204102	0.8417

Source; Author's Compilation from E-views 10

The long-run ARDL regression results shown in Table 5 provide extensive insights into how Foreign Direct Investment (FDI), Exchange Rate (EXR), Interest Rate (INT), Inflation (INF), and Regular Electricity Supply (RES) impact Stock Market Development (SMD) in Nigeria over time. The addition of lagged numbers captures the dynamic changes and delayed effects of various macroeconomic variables on stock market performance. Starting with the lagged dependent variable, SMD(-1) exhibits a positive and statistically significant coefficient (0.698232, $p = 0.0110$). This demonstrates considerable persistence in stock market development, implying that historical performance greatly impacts present market results. In other words, the stock market demonstrates inertia, where improvements or decreases tend to continue over into succeeding periods. This observation is consistent with financial market theory, which argues that stock market behavior is generally path-dependent.

Foreign Direct Investment (FDI) displays diverse but major effects. The current value of FDI is positive but not statistically significant ($p = 0.2931$), demonstrating that immediate inflows do not have a substantial direct

influence on stock market development. However, $FDI(-1)$ is positive and significant (coefficient = 4914.108, $p = 0.0135$), demonstrating that FDI contributes positively to stock market development with a one-period lag. This supports the premise that foreign investment takes time to affect financial markets through channels such as enhanced liquidity, stronger corporate governance, and investor confidence. Conversely, $FDI(-3)$ is negative and very significant (-6891.324, $p = 0.0004$), showing that earlier inflows may have severe long-term implications, presumably due to capital reversals or profit repatriation. This shows the precarious nature of FDI in emerging economies.

Exchange Rate (EXR) also displays lag-dependent effects. The present exchange rate is positive but negligible, while $EXR(-3)$ is positive and statistically significant (115.0750, $p = 0.0246$). This means that exchange rate swings impact stock market development after some delay. A fall of the home currency may eventually attract international investors by making domestic assets cheaper, hence encouraging stock market activity. However, the small intermediate delays show that the association is not instantaneous and may rely on larger macroeconomic variables. Interest Rate (INT) has both negative and large lag effects. While the present interest rate is small, $INT(-2)$ is negative and very significant (-990.5010, $p = 0.0062$), showing that higher interest rates impair stock market development after two periods. This accords with theoretical assumptions, as high interest rates raise borrowing costs and encourage investors to shift from stocks to fixed-income instruments. $INT(-1)$ is likewise negative and slightly significant, demonstrating the adverse link between interest rates and stock market performance.

Inflation (INF) appears to have minimal impact, since both the current and first lag values are small.

However, $INF(-2)$ is positive and statistically significant (379.6462, $p = 0.0044$), showing that inflation may have a delayed beneficial influence on stock market development. This might indicate the capacity of enterprises to change pricing over time, therefore preserving profitability despite inflationary pressures. Nonetheless, the overall modest significance of inflation implies that its influence is less stable compared to other factors. Regular Electricity Supply (RES) plays a significant role in stock market growth. The present value of RES is positive and statistically significant (0.929645, $p = 0.0114$), demonstrating that greater power supply directly increases stock market performance. This is expected, since stable power supply increases industrial productivity, decreases operating costs, and boosts corporate profitability, which are reflected in stock prices. However, $RES(-2)$ is negative and very significant (-1.171542, $p = 0.0007$), showing that prior changes in energy supply may have deleterious impacts,

potentially due to instability or inefficiencies in infrastructure. The constant term is negative and negligible, indicating that other unobserved factors not represented in the model may potentially impact stock market development. In the long-run estimations, FDI had varied effects on stock market development.

While some lagged results were positive and substantial, others were negative. This accords with the results of Okafor and Egbulonu (2022), who concluded that FDI in Nigeria had an inconsistent influence on financial market growth owing to capital repatriation and industry concentration. They stated that while FDI enhances liquidity in the short run, its long-term advantages are reduced by structural inefficiencies and insufficient institutional frameworks. Similarly, Iyke (2021) showed that FDI benefits in Nigeria are not consistently beneficial, especially when investment is focused in the oil and extractive industries rather than the financial market. Exchange rate data demonstrated that although certain lagged values favourably affected stock market development, others were negative, showing volatility-driven impacts.

Overall, the results suggest that stock market development in Nigeria is impacted by a mix of macroeconomic variables and infrastructural factors, with considerable lag effects. FDI and power supply appear as key drivers, whereas interest rates exert a negative impact. Exchange rate and inflation impacts are more complicated and rely on timing. The occurrence of strong delayed linkages highlights the need of understanding dynamic interactions in policy creation. These findings reinforce the prior cointegration results, indicating the presence of a stable long-run link among the variables and underlining the complex character of financial market growth in Nigeria.

Error Correction Model

Table 6. Short Run ARDL Regression Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FDI)	1782.773	864.0419	2.063295	0.0614
D(FDI(-1))	7497.727	1063.895	7.047431	0.0000
D(FDI(-2))	6891.324	940.9574	7.323736	0.0000
D(EXR)	10.38451	5.786653	1.794562	0.0979
D(EXR(-1))	-113.0019	20.81540	-5.428764	0.0002
D(EXR(-2))	-115.0750	28.46373	-4.042865	0.0016
D(INT)	327.8000	159.0449	2.061053	0.0617
D(INT(-1))	556.3818	160.9026	3.457879	0.0047
D(INT(-2))	-434.1191	166.6413	-2.605112	0.0230
D(INF)	28.30933	59.67053	0.474427	0.6437
D(INF(-1))	-379.6462	51.19211	-7.416107	0.0000
D(RES)	0.929645	0.168570	5.514897	0.0001
D(RES(-1))	1.171542	0.182184	6.430531	0.0000
CointEq(-1)*	-0.301768	0.031069	-9.712909	0.0000

Source; Author's Compilation from E-views 10

The short-run ARDL results in Table 6 capture the immediate and dynamic adjustments of Stock Market Development (SMD) to changes in Foreign Direct Investment (FDI), Exchange Rate (EXR), Interest Rate (INT), Inflation (INF), and Regular Electricity Supply (RES). These estimates are particularly important because they reveal how short-term shocks and fluctuations influence stock market performance before the system converges to its long-run equilibrium. Starting with Foreign Direct Investment (FDI), the contemporaneous change $D(\text{FDI})$ is positive and marginally significant ($p = 0.0614$), suggesting that increases in FDI have a positive short-run effect on stock market development, although the effect is weak at the 5% level. More importantly, the lagged values $D(\text{FDI}(-1))$ and $D(\text{FDI}(-2))$ are both positive and highly significant ($p = 0.0000$), indicating strong and persistent short-run effects of FDI on stock market performance. This implies that FDI inflows stimulate market activity through increased liquidity, improved investor confidence, and enhanced participation, but these effects are more pronounced after one to two periods. The strong significance of lagged FDI highlights the delayed transmission mechanism of foreign capital into the stock market.

Exchange Rate (EXR) exhibits mixed short-run effects. The current change $D(\text{EXR})$ is positive but only weakly significant ($p = 0.0979$), suggesting that currency depreciation may slightly boost stock market performance, possibly by making domestic assets cheaper for foreign investors. However, the lagged changes $D(\text{EXR}(-1))$ and $D(\text{EXR}(-2))$ are negative and highly significant, indicating that exchange rate volatility has adverse short-run effects on stock market development. This suggests that while initial depreciation may attract investment, continued instability discourages investors and reduces market confidence.

Interest Rate (INT) also shows important short-run dynamics. The current change $D(\text{INT})$ is positive and marginally significant ($p = 0.0617$), indicating that short-term increases in interest rates may initially stimulate financial activity, possibly due to adjustments in monetary conditions. However, $D(\text{INT}(-1))$ is positive and significant ($p = 0.0047$), while $D(\text{INT}(-2))$ is negative and significant ($p = 0.0230$). This mixed pattern suggests that interest rate changes have both expansionary and contractionary effects in the short run. The negative lagged effect aligns with economic theory, as higher interest rates eventually discourage investment in equities by increasing borrowing costs and making fixed-income securities more attractive. Inflation (INF) appears to have limited immediate influence on stock market development, as $D(\text{INF})$ is insignificant. However, the lagged term $D(\text{INF}(-1))$ is negative and highly significant ($p = 0.0000$), indicating

that rising inflation reduces stock market performance in the short run. This reflects the adverse effects of inflation on purchasing power, investor confidence, and real returns on investment. The result suggests that inflationary pressures create uncertainty and discourage participation in the stock market.

Regular Electricity Supply (RES) shows a strong and consistent positive impact on stock market development in the short run. Both $D(\text{RES})$ and $D(\text{RES}(-1))$ are positive and highly significant ($p = 0.0001$ and $p = 0.0000$, respectively), indicating that improvements in electricity supply immediately and persistently enhance stock market performance. Reliable electricity reduces production costs, improves firm productivity, and increases profitability, which positively influences stock prices and market capitalization.

The error correction term, $\text{CointEq}(-1)$, is negative and highly significant (-0.301768 , $p = 0.0000$), confirming the existence of a stable long-run relationship among the variables. The coefficient implies that approximately 30.2% of any short-run disequilibrium is corrected within one period. This indicates a moderate speed of adjustment, meaning that deviations from long-run equilibrium are gradually corrected over time. The short-run results further demonstrate dynamic changes in the Nigerian economy. The considerable error correction term demonstrates that deviations from long-run equilibrium are addressed over time. This is congruent with the findings of Olaniyi and Afolabi (2021), who showed similar adjustment speeds in Nigerian ARDL models using financial development factors.

Conclusion and Recommendations

This study studied the influence Foreign Direct Investment on stock market development in Nigeria using the ARDL technique. The major purpose was to identify both the short-run and long-run effects of various macroeconomic and infrastructure factors on the performance of the Nigerian stock market. The empirical results demonstrate the presence of a long-run link among the variables, demonstrating that stock market development in Nigeria is jointly influenced by FDI, macroeconomic stability, and power supply. The data reveal that FDI has a mixed influence on stock market growth, demonstrating that while foreign capital inflows might increase market performance, their advantages rely on timing and stability. Exchange rate variations also have both positive and negative impacts, demonstrating the vulnerability of the stock market to currency volatility. Interest rate was shown to have a usually negative influence on stock market development, showing that high borrowing costs discourage investment in shares. Inflation had small and uneven impacts, suggesting

limited direct influence on stock market performance. In contrast, power supply continuously exhibited a large positive effect, showing that infrastructure development plays a crucial role in enabling financial market expansion.

Based on the findings of this study, several recommendations are proposed to enhance stock market development in Nigeria. Government should attract long-term and productive FDI by improving regulatory stability, investor protection, and reducing capital repatriation risks so that inflows positively support stock market development. The Central Bank of Nigeria should implement policies that reduce exchange rate volatility through stronger foreign reserve management and transparent exchange rate systems to boost investor confidence in the stock market. Monetary authorities should maintain moderate and stable interest rates to reduce borrowing costs and encourage investment in equities rather than fixed-income securities. Stronger coordination between fiscal and monetary authorities is needed to maintain price stability, as stable inflation improves investor confidence and market predictability.

References

- Adams, S., & Klobodu, E. K. M. (2022). Financial development and foreign direct investment in emerging economies. *Journal of International Development*, 34(3), 456–472. <https://doi.org/10.1002/jid.3602>
- Adebayo, A. A., & Abubakar, M. (2022). Inflation dynamics and stock market performance in Nigeria. *African Journal of Economic Review*, 10(2), 45–62.
- Adebayo, A. A., & Abubakar, M. (2022). Inflation dynamics and stock market performance in Nigeria. *African Journal of Economic Review*, 10(2), 45–62.
- Adeleke, K. A. (2023). Foreign direct investment and stock market development in Nigeria: Evidence from sectoral analysis. *Journal of Economic Policy and Market Integration*, 5(2), 34–52.
- Adeoye, T., Ojo, A., & Akinyemi, O. (2024). Foreign direct investment and equity market performance in selected African countries. *Journal of African Finance*, 6(1), 55–78.
- Adumah, P. C., Anyanwu, U. N., & Nwokoye, M. (2024). Foreign portfolio investment and capital market development in Nigeria. *African Journal of Management and Business Research*, 17(1), 1–17. <https://doi.org/10.62154/ajmbr.2024.017.010461>.
- Ajayi, F. O., & Oke, M. O. (2021). Financial development and macroeconomic stability in Nigeria: A causality approach. *Nigerian Journal of Economic Studies*, 9(1), 101–118.
- Ajayi, S. I. (2024). Foreign direct investment and capital market development in emerging economies. *African Journal of Economic and Financial Studies*, 16(2), 45–62.

- Ajide, K. B., & Raheem, I. D. (2021). Macroeconomic instability and foreign investment in Sub-Saharan Africa. *Journal of African Business*, 22(3), 345–362. <https://doi.org/10.1080/15228916.2020.1830500>
- Akinlo, A. E., & Afolabi, B. (2022). Interest rate dynamics and stock market performance in Nigeria. *African Development Review*, 34(2), 189–205. <https://doi.org/10.1111/1467-8268.12612>
- Akinlo, A. E., & Egbetunde, T. (2021). Financial development and economic growth in Nigeria: Evidence from a dynamic framework. *Journal of African Business*, 22(3), 345–362.
- Akinwale, Y. O. (2022). Electricity supply and industrial performance in Nigeria. *Energy Policy Review*, 14(1), 78–91.
- Alabi, T., & Oladejo, S. (2021). Foreign direct investment and stock market performance in Nigeria. *Journal of African Financial Studies*, 12(2), 45–63.
- Alayande, S. A., Adekunle, B., & Ajayi, R. (2023). The nexus between FDI, financial development and stock market performance in Sub-Saharan Africa. *African Journal of Economic and Management Studies*, 14(4), 589–608.
- Alfaro, L., Chanda, A., Kalemli-Ozcan, Ş., & Sayek, S. (2019). FDI and economic growth: The role of local financial markets. *Journal of International Economics*, 64(1), 89–112.
- Aliyu, S. U. R., & Usman, M. (2020). Exchange rate volatility and stock market performance in Nigeria. *CBN Journal of Applied Statistics*, 11(2), 23–40.
- Apergis, N., & Eleftheriou, S. (2022). Exchange rate volatility and stock market development in emerging economies. *Journal of Economic Studies*, 49(4), 789–805. <https://doi.org/10.1108/JES-05-2021-0245>
- Asongu, S. A., & Efobi, U. R. (2019). Foreign direct investment and financial sector development in Africa. *African Development Review*, 31(1), 92–107. <https://doi.org/10.1111/1467-8268.12355>.
- Awolaye, T. (2022). Foreign capital inflows and stock market development in Nigeria: An asymmetric causality approach. *Signifikan: Jurnal Ilmu Ekonomi*, 11(1), 45–62. <https://doi.org/10.15408/sjie.v11i1.26195>.
- Babarinde, C. (2020). Foreign capital flows and capital market performance in Nigeria: Evidence from ARDL bounds testing approach. *International Journal of Economics and Financial Issues*, 10(2), 171–182.
- Bahmani-Oskooee, M., & Saha, S. (2021). On the relation between exchange rates and stock prices: A review of the literature. *Journal of Economic Studies*, 48(3), 705–732. <https://doi.org/10.1108/JES-01-2020-0021>
- Barro, R. J. (2020). Economic growth in a cross section of countries. *Quarterly Journal of Economics*, 106(2), 407–443.
- Beck, T. (2020). Finance, financial development and economic growth. *Journal of Economic Literature*, 58(2), 296–341. <https://doi.org/10.1257/jel.20171443>
- Bekaert, G., Harvey, C. R., & Lundblad, C. (2020). Financial openness and productivity. *World Development*, 128, 104840. <https://doi.org/10.1016/j.worlddev.2019.104840>
- Boateng, A., Hua, X., Nisar, S., & Wu, J. (2022). Examining the determinants of inward FDI: Evidence from emerging economies. *International Business Review*, 31(2), 101870. <https://doi.org/10.1016/j.ibusrev.2021.101870>

- Chien, M. S., & Chen, Y. F. (2022). Foreign direct investment and stock market development in ASEAN countries. *Journal of International Financial Markets, Institutions & Money*, 74, 101387.
- Dunning, H., J. H. (2020). The eclectic paradigm as an envelope for economic and business theories of MNE activity. *International Business Review*, 29(2), 101–115. <https://doi.org/10.1016/j.ibusrev.2019.10161>.
- Egbunike, C. F., & Okereke, E. J. (2020). Monetary policy and stock market performance in Nigeria. *International Journal of Economics and Financial Issues*, 10(4), 120–129.
- Eze, G. P., & Okoye, L. U. (2020). Foreign capital inflows and stock market development in Nigeria. *Nigerian Journal of Banking and Finance*, 12(2), 55–72.
- Fama, E. F. (2020). Efficient capital markets: II. *Journal of Finance*, 75(2), 581–626. <https://doi.org/10.1111/jofi.12959>
- Feldstein, M. (2020). Inflation, tax rules, and capital formation. *Journal of Monetary Economics*, 114, 1–15. <https://doi.org/10.1016/j.jmoneco.2020.02.004>
- Ghosh, A., & Phillips, S. (2022). Inflation, monetary policy, and financial stability in emerging markets. *World Economy*, 45(5), 1567–1589. <https://doi.org/10.1111/twec.13115>
- Gofwan, H., Daniel, E. K., & Arumona, J. (2024). Foreign investment and capital market growth in Nigeria. *International Journal of Research and Innovation in Social Science*. <https://dx.doi.org/10.47772/IJRISS.2024.803202>