Foreign Portfolio Investment Flow and Nigerian Stock Exchange Market

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Abstract	Journal of Policy and Development Studies (JPDS)
This study examined the influence of foreign portfolio investment on the Nigerian stock market from 1986 to 2023. The analysis employed Augmented Dickey-Fuller (ADF) and Kwiatkowski-Phillips-Schmidt-Shin unit root tests, together with the Autoregressive Distributed Lag (ARDL) method and the ARDL technique. The research findings revealed that trade openness and gross domestic investment has a positive and significant impact on the Nigerian stock market. Foreign Portfolio Investment (FPI) indicators, such as the currency rate, interest rate, and inflation rate, negatively affect the stock market. Gross domestic savings have little to no significant effect on the stock market. Again, Foreign Portfolio Investment (FPI), gross domestic savings, currency rate, and interest rate positively influence Nigeria's economic growth. Gross domestic investment has a negligible and adverse effect on economic growth. Finally, the inflation rate significantly harms Nigeria's economic growth. Consequently, it is recommended that the government enhance and uphold its current policies on foreign portfolio investment. Implementing suitable policies is crucial to attract foreign investors to local financial products.

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1. Introduction

Foreign Portfolio Investment (FPI) plays a significant role in the economic development of emerging markets, including Nigeria. In particular, FPI involves foreign investors purchasing stocks, bonds, and other financial assets in a country's capital markets (Olofin & Ojedele, 2019). The inflow of foreign capital not only enhances the liquidity of the financial markets but also fosters the development of various sectors within the economy by stimulating investment in productive assets. Over the years, the Nigerian economy has experienced fluctuating levels of foreign portfolio investment, which have had varying effects on the growth of its stock market and overall economic development (Ezeanyeji & Ifeako, 2019).

The Nigerian Stock Exchange (NSE) plays a crucial role in facilitating capital formation and enabling businesses to raise funds for expansion. As the country seeks to diversify its economy away from oil dependency, foreign investments in the stock market have the potential to drive sustainable economic growth by increasing market depth, improving investor confidence, and enhancing the country's financial integration with the global economy. However, Nigeria's stock market has faced challenges such as limited liquidity, regulatory concerns, and political instability, which have impacted foreign investor participation (Adeoye & Oyetunji, 2021).

The relationship between FPI and the stock market is complex, as it is influenced by several macroeconomic factors, including the exchange rate, inflation, interest rates, and gross domestic savings (GDS). Macroeconomic stability is essential for the attractiveness of a country's financial markets, and fluctuations in these variables often determine the extent of foreign capital inflows. Previous studies have examined the impact of foreign portfolio investment on economic growth, with some indicating a positive relationship between FPI and market capitalization, while others note the negative consequences of excessive dependence on external capital (Ezeanyeji & Ifeako, 2019; Olofin & Ojedele, 2019).

This study aims to explore the dynamics of foreign portfolio investment flows and their impact on the Nigerian Stock Exchange, with a specific focus on how macroeconomic variables such as inflation, exchange rates, and domestic savings affect FPI and market performance. Understanding these relationships is crucial for policymakers and investors seeking to enhance the efficiency and stability of the Nigerian stock market, thereby fostering sustainable economic growth.

1.1 Statement of the Problem

Globalization exposes local financial markets to external economic risks (Amel & Mohd, 2014), with foreign investors often favoring developed markets for their size and stability (Masoud & Abu, 2014). However, emerging markets offer opportunities for quick profits, which can lead to risks, especially when influenced by global economic conditions, monetary and fiscal policies, and political events (Naumoski, 2012; Georgiadis & Grab, 2015). While Foreign Portfolio Investments (FPI) improve market liquidity and lower capital costs, the small and illiquid nature of emerging markets like Nigeria can lead to significant volatility when foreign capital flows in and out (Pavabutr& Yan, 2007).

FPI inflows are crucial for the Nigerian stock market as they improve market access, capital allocation efficiency, and financial system productivity (IMF, 2016; Obadan & Adegboye, 2016).

However, the rapid decline of FPIs can negatively impact the development of banking and capital markets, causing volatility and irrational market speculation (Calvo & Reinhart, 2000; Gourinchas & Obstfeld, 2012). In emerging markets with weak regulatory institutions, like Nigeria, volatility is heightened, and price signals for investment allocation are less effective (Yartey & Adjasi, 2007; IMF, 2016).

Nigeria's underdeveloped stock market and economic framework have hindered the country from fully benefiting from foreign investments. Factors such as low public savings, high inflation, unemployment, and low per capita income further complicate stock market growth (Sanusi, 2010). The lack of transparency and poor information about FPIs has also deterred foreign investment (Obadan, 2017). As FPIs are highly volatile, their sudden withdrawal can destabilize domestic markets, making it crucial to study their impact on the Nigerian stock market.

1.3 Objectives of the Study
This study's primary goal is to investigate how foreign portfolio investments affect a developing nation's local stock market. The following are some of the study's precise goals:
1. To investigate how macroeconomic indicators of FPIaffects Stock Exchange performance in Nigeria;
2. To look at how foreign portfolio investment influx affects Nigeria's economic growth.

2. Review of Related Literature
2.1 Conceptual Framework

Foreign Portfolio Investment
Foreign Portfolio Investment (FPI) refers to investments in financial assets, such as stocks, bonds, and other money market instruments, that are made by foreign investors in the capital markets of another country (Okonkwo, 2018). FPIs are an essential source of capital for many emerging economies, providing liquidity to markets and offering an opportunity for investors to diversify their portfolios internationally (Wang, 2019). These investments typically represent a passive stake in a country's financial markets and do not give investors control over the companies in which they invest (Agbogun&Ehiedu, 2022; Bayem, et al., 2022). As such, FPIs are highly liquid and can be easily bought or sold in global financial markets, which makes them an attractive option for foreign investors (Okonkwo, 2018).

Stock Exchange Market
A stock exchange market refers to a platform or a marketplace where securities, such as stocks, bonds, and other financial instruments, are bought and sold. It plays a crucial role in the functioning of an economy by providing businesses with the opportunity to raise capital through the issuance of stocks and bonds. For investors, the stock exchange offers a venue to buy and sell securities, contributing to liquidity and market efficiency (Gerlach & Yook, 2018; Kumar, Gupta, & Sharma, 2017).

The Nigerian Stock Exchange (NSE) is a key component of Nigeria's financial market, offering companies the opportunity to list and raise capital for expansion and development. By listing on the NSE, businesses can access funds from a broad range of investors, improving their ability to grow and invest in the economy. The market is an important source of financing, facilitating the

mobilization of savings for productive investment (Iriobe, et al., 2018). One of the key advantages of the stock market is its liquidity, which makes it easier for investors to buy and sell securities, thereby reducing the risks associated with long-term investments (Gerlach & Yook, 2018).

Nigerian Stock Exchange
The Nigerian Stock Exchange (NSE) is a prominent financial institution that provides a platform for buying and selling securities, primarily stocks and bonds. It plays a crucial role in facilitating economic growth by helping companies raise capital and offering investors opportunities to participate in the financial markets. Established in 1960, the NSE has become an essential part of Nigeria's financial infrastructure, providing liquidity, transparency, and market efficiency for both local and international investors (Okereke, 2010; Iriobe, et al., 2018).

The NSE is responsible for providing a regulated environment where securities are listed and traded. It functions as a facilitator of capital formation, where companies can access funds by issuing shares to the public. This process helps businesses to expand, improve operations, and contribute to the country's economic development. The NSE also plays a role in enhancing investor confidence by ensuring that market activities are conducted in a transparent and fair manner, governed by strict regulatory standards (Okonkwo, 2018).

2.2 Theoretical Review
   (1) The Markowitz Efficient Frontier Model
In Modern Portfolio Theory, Markowitz (1952, 1958) made two key contributions. First, he recognized that mathematical models could identify a set of efficient portfolios rather than a single "perfect" one. His second insight was that the risk of a portfolio should not only be measured by the variance of its individual assets, but also by the covariances between those assets. Markowitz discovered that the covariance of a portfolio's assets is more important than the individual variances. He showed that the ideal portfolio would consist of assets that are inversely correlated, although even less-than-perfect negative correlations could still offer diversification benefits. By combining assets with a correlation coefficient less than 1.0, risk could be reduced.

Markowitz proposed that investors focus on expected returns and the variance of returns, selecting portfolios that offer the best returns for a specific level of risk (Markowitz, 1959). His "E-V maxim" method helped investors choose portfolios that optimized returns for a given degree of risk. He identified portfolios on the "efficient frontier," where each portfolio had the highest return for a given risk level or the lowest risk for a given return. Markowitz's Efficient-Variance maximization principle recommended limiting the number of portfolio selections made from the efficient frontier.

To define an "optimal" portfolio, investors could either pick the portfolio with the highest return for a given level of risk, or choose the portfolio with the least risk for a given expected return. Both approaches lead to the same optimal portfolio. In 1956, Markowitz introduced the "critical line algorithm" to identify the efficient frontier, considering factors such as expected returns, standard deviations, and variation coefficients. This algorithm traces the efficient frontier, taking into account two key restrictions: portfolios must represent favorable or neutral combinations of assets, and the sum of asset weights must equal one.

(2) International Capital Flows Portfolio Theory
The 2006 publication *International Capital Flows* by Michael B. Devereux and Makoto Saito presents a theoretical framework based on portfolio theory to explain international capital movements. It emphasizes the role of nominal bonds and net foreign asset composition in facilitating capital flows across countries. The effectiveness of domestic and foreign currency-denominated bonds in hedging country-specific consumption risks depends on national monetary policies. As a result, the bond composition in each country's portfolio varies by currency. Countries can adjust their net foreign assets, or current account, by manipulating their holdings in different currency-denominated bonds, which aids in capital movement across borders. Additionally, the risk characteristics of optimal portfolios help stabilize current account fluctuations, as countries with net debt tend to earn lower returns on liabilities than assets, maintaining the wealth distribution among nations (Devereux & Saito, 2006).

(3)Solow Growth Model
The important role of capital, which encompasses investment fund, in the growth process was acknowledged in the Solow Growth Model. The production function is depicted as:

$$Y(t) = AK(t)^{\alpha}L(t)^{\beta}, \quad \alpha >= 1; \beta > 1; \alpha + \beta = 1$$

Where Y(t)	-	Output level at time (t)
K(t)	-	Capital Stock at time (t)
L(t)	-	Labour Inputs at time (t)
A	-	Total Productivity of the production sector
A and β	-	Elasticities of capital and labour of capital and labour inputs

Based on the tenets of the Neoclassical school of capital flow theory, it may be posited that the process of financial integration is likely to stimulate the movement of capital from nations with abundant capital resources to those with limited capital resources. This is true because, in the absence of capital mobility limitations, investment money will shift from nations with low capital return rates (capital-rich countries) to those with high capital return rates (capital-scare countries). As such, foreign investment inflows will augment domestic investment in capital-scare countries thereby allowing for portfolio diversification, higher profitability of investment, and growth (Bhattacharyaa, *et al*., 2018).

The Solow Growth Model is based on the following assumptions:
a) It assumes a closed economy;
b) It assumes that all inputs have a constant return to scale, decreasing returns, and some degree of substitution.
c) It is postulated that a uniform savings rate is present throughout all nations.
d) It is assumed that technology is constant.
e) It is assumed that all markets are perfectly competitive.

This theory is relevant to the present research as it underscores the impact of financial openness on both productivity growth and output growth, particularly in relation to aggregate efficiency. Total factor productivity (TFP) is used to measure aggregate efficiency. So, foreign investment can have direct or indirect effects on Total factor productivity (TFP). Foreign portfolio investment indirectly impacts positively on Total factor productivity (TFP) through more efficient capital allocation, which could also include domestic financial sector development, better macroeconomic

policies, upgrades to institutions, etc(Kose, *et al*., 2009).However, there are cases where financial integration impairs growth as a result of the short-term risks associated with financial openness (Bhattacharyaa, *et al*., 2018).

2.3 Empirical Literature

Okolie and Ehiedu (2023) explored the relationship between Foreign Portfolio Investment Flow (FPIF) and the Nigerian Stock Exchange (NSE) from 1981 to 2020. Their findings showed that foreign investments in bonds and money market instruments positively impacted market capitalization, while foreign investments in stocks had a minimal effect. Similarly, Abdulkarim (2023) analyzed the effects of various investments on Nigeria's economic growth from 1981 to 2020. Using stationarity tests and the autoregressive distributed lag (ARDL) approach, the study found that credit to the private sector, domestic investment, economic liberalization, foreign portfolio investment, and interest rates positively impacted long-term economic growth, whereas foreign direct investment, capital expenditure, and inflation negatively affected growth.

Osuka, Ezedike, and Mbanasor (2022) studied the impact of foreign portfolio investment (FPI) on Nigeria's capital market growth from 1990 to 2020. Using the Autoregressive Distributive Lag (ARDL) Bound test, they found a strong and lasting relationship between FPI and market growth. The exchange rate and external reserve had minimal effects, while inflation had a significant negative impact. Agu, Ogu, and Ezeanyeji (2019) used the Ordinary Least Squares (OLS) and ARDL models to assess the impact of FPI on stock market returns in Nigeria from 1986 to 2017. They found that while exchange rate and FPI positively influenced stock returns, the interest rate had a negative but insignificant effect, with no long-term relationship between FPI and stock market returns.

Ezewulu and Ugwunna (2023) examined the impact of monetary and fiscal policies on stock market capitalization in five African countries, including Nigeria, from 2000 to 2022. The study found a long-term relationship between these policies and stock market capitalization, with money supply, interest rates, and GDP growth having long-term effects. However, short-term effects were statistically insignificant. Ezeanyeji, Usifoh, Olayinka, and Ejefobihi (2023) found that the capital market had a significant positive impact on industrial output growth in Nigeria, while factors such as the prime lending rate, inflation rate, and labor force were not significant.

Ndugbu, Otiwu, and Uzowuru (2021) analyzed the correlation between FPI and economic growth in Nigeria from 1986 to 2017 using the Granger Causality Model and Vector Error Correction Model. They found that FPI had a negative and insignificant impact, while trade openness and market capitalization were key drivers of economic growth. They emphasized the need for increased capital market activity to boost economic performance. Iriobe, Obamuyi, and Abayomi (2018) examined the relationship between FPI in bond stocks and the Nigerian stock market's performance from 2007 to 2017. Their findings indicated that foreign portfolio equity investments significantly enhanced market performance.

Lastly, Ezeanyeji and Ifebi (2016) explored the role of foreign direct investment in the development of Nigeria's telecommunications sector, concluding that FDI significantly contributed to the sector's performance. Oguanobi, et al., (2014) studied Nigeria's responses to intra-regional trade within the ECOWAS countries from 1996 to 2008. They found that while

Nigeria's services sector positively responded to trade, its agricultural sector responded negatively to imports, and the oil sector showed mixed responses, ultimately concluding that Nigeria's sectors had not significantly responded to intra-ECOWAS trade.

2.4 Literature Gap
While several studies have explored the relationship between Foreign Portfolio Investment (FPI) and Nigeria's economic growth, stock market performance, and capital market development, the majority of these studies have focused on data spanning from 1981 to 2020. For instance, Okolie and Ehiedu (2023) examined the period from 1981 to 2020, Abdulkarim (2023) also focused on the same time frame, and Osuka, et al., (2022) investigated the period from 1990 to 2020. These studies have provided valuable insights into the dynamics between FPI, market capitalization, and economic growth. However, they did not account for the most recent developments and trends that have emerged beyond 2020.

This study bridges this gap by extending the time frame of analysis to 2023, incorporating more recent data that could reflect the evolving economic conditions, changes in market dynamics, and the effects of global economic shifts in the past few years. By doing so, it provides a more up-to-date examination of the relationship between FPI and the Nigerian Stock Exchange (NSE), as well as its broader impact on economic growth and capital market development. Furthermore, while previous studies such as those by Agu, et al. (2019) and Ndugbu, et al., (2021) focused on data sets that stopped at 2017 or 2020, this study's inclusion of data up to 2023 ensures that it captures the potential effects of recent events, such as the COVID-19 pandemic's economic aftermath and subsequent recovery, policy changes, and shifts in foreign investment flows. Thus, the study contributes to filling the gap in understanding the continued or changing impact of FPI on Nigeria's economic and stock market performance as of 2023.

3. Methodology
3.1 Theoretical Framework
This study examines real-world phenomena in light of the Augmented Solow Growth Model, which posits that economic growth and total factor productivity can be enhanced through capital accumulation. When contemplating the classic Cobb-Douglas production function:

$$Y = AK^{\alpha}L^{1-\alpha}$$

Where; Y - Aggregate Output
K - Capital Stock
L - Labour Force
A - Total Factor Productivity

Total factor productivity (TFP), the indicator of stock market performance, is simple to compute. Since foreign portfolio investment flows are included in the capital stock:

$$TFP = \int(K, L, FPI)$$

Foreign Portfolio Investment (FPI) is often attracted to developing countries due to their high investment returns and is considered an endogenous factor (Dauda, 2007). The integration of financial markets can enhance market returns and deepen local financial markets by facilitating international investment participation. With the Nigerian Stock Exchange's integration into global

financial markets and its openness to foreign investors, it is expected to experience improved liquidity and higher trading volumes, thereby boosting profitability. The models in this study are based on the expectation that there will be positive relationships between the movement of foreign portfolio investment flows and the returns and liquidity of the Nigerian Stock Exchange. This study employs a simplified econometric model to address the varying outcomes in the literature regarding the impact of international portfolio investments on domestic market volatility.

3.2 Model Specification

Objective One:To investigate how macroeconomic indicators of FPI affects Stock Exchange performance in Nigeria

The model formulation in this study is based on the increased production function, where productivity is jointly determined by capital stock, labor, and other endogenous factors. One such factor is foreign portfolio investment, a form of hedge fund. The model used in this study was developed from Iriobe, et al., (2018) framework, which was designed to assess the impact of net foreign portfolio investment flows on the performance of the Nigerian stock market. The following models will be estimated throughout this study:

GMC = f(TOP, GDS, GDI, EXR, INT, INF)--(1)
The econometric representation of the model can be expressed as follows:
$GMC = \beta_0 + \beta_1 TOP_{t-1} + \beta_2 GDS_{t-1} + \beta_3 GDI_{t-1} + \beta_4 EXR_{t-1} + \beta_5 INT_{t-1} + \beta_6 INF_{t-1} + \mu_{t-1}$ ------(2)
where;
GMC = Growth rate of market capitalisation(proxy for Nigerian stock market)
TOP= Trade Openness
GDS = Gross domestic savings,
GDI = Gross domestic investment
EXR = Exchange rate.
INT = Interest rate
INF = Inflation rate

Where,μ_{t-1} is the error term, which is anticipated to follow a normal distribution with a zero mean and a constant standard deviation, and current period $_{t-1}$ is the immediately preceding time period, and β_0 is the constant; β_1 ,β_2, β_3, β_4,β_5 and $\beta_6$are matrices of coefficients to be estimated.

Objective Two: To look at how foreign portfolio investment influx affects Nigeria's economic growth.
The model was modified somewhat from the Ndugbu, et al., (2021) model in order to give an empirical understanding of the second goal of this work. Consequently, the functional form of the model is specified as follows:

GDPG = f(FPI, GDS, GDI, EXR, INT, INF)---(3)
Where:
GDPG= Growth rate of real GDP
FPI = Net foreign portfolio investment (% of GDP)
GDS = Gross domestic savings,

GDI = Gross domestic investment
EXR = Exchange rate.
INT = Interest rate
INF = Inflation rate

The model's linear form is given by equation (3) as follows:
$$GDPG = \alpha_0 + \alpha_1\, FPI_{t-1} + \alpha_2\, GDS_{t-1} + \alpha_3\, GDI_{t-1} + \alpha_4\, EXR_{t-1} + \alpha_5 INT_{t-1} + \alpha_6 INF_{t-1} + \mu_{t-1} \text{------(4)}$$

Where μ is the stochastic error term is and the coefficients are α_1 through α_6, and the intercept is α_0. According to economic theory, α_1, α_2 and $\alpha_3 > 0$, while α_4, α_5, $\alpha_6 < 0$. The $\beta_1 > 0$ suggests that foreign capital inflows should have a positive impact on economic growth; the $\alpha_2 > 0$ and $\alpha_3 > 0$ indicate that greater openness is anticipated to encourage foreign capital inflows, and the α_4, α_5, $\alpha_6 > 0$ indicates that unexpected behaviour is anticipated due to the volatile nature of the foreign exchange market.

3.4 Method of Estimation
This study contributes to the existing literature by enhancing the analytical framework through the estimation of regression model parameters and validating the long-term relationships between variables. To achieve this, the study employs a combination of cointegration techniques and the Autoregressive Distributed Lag (ARDL) approach. The Augmented Dickey Fuller (ADF) unit root test will be used to prevent false positives in heteroscedasticity tests and spurious regression. The study focuses on data from 1986 to 2023 and applies the ARDL methodology for cointegration, despite the availability of other econometric methods for estimating parameters in economic interactions (Koutisyannis, 2003). ARDL was chosen for its desirable Blue Properties (Best, Linear, Unbiased, Estimator), its simplicity in calculation, suitable data requirements, and its relevance to other estimation methods.

This analysis uses only secondary data, primarily sourced from the World Bank and the publications of the Central Bank of Nigeria (CBN), including the CBN Statistical Bulletin (2023) and World Development Indicators 2023. The following variables were examined: gross domestic savings, gross domestic investment, real GDP growth rate, net foreign portfolio investment as a percentage of GDP, exchange rate, interest rate, and inflation rate for the period between 1986 and 2023. To prepare the data for analysis, we will utilize econometric software tools, specifically E-View 12 and Microsoft Excel 2007.

4. Data Presentation and Discussion of Results

4.1 Descriptive Statistics
Descriptive statistics summarize the key characteristics of a dataset, including measures of central tendency (mean, median, mode) and variability (standard deviation, variance). They also provide information on the minimum and maximum values, as well as skewness and kurtosis. These statistics are essential for understanding and describing the dataset. Table 4.1 presents the descriptive statistics for the models from 1986 to 2023.

Table 4.1 Descriptive Analysis of the Variables considered in the Study

	GMC	TOP	GDS	GDI	EXR	INT	INF	GDPG	FPI
Mean	13.25556	1.661667	19.89111	12.96944	123.0888	18.33250	19.81361	4.547500	1.664167
Median	12.98000	1.410000	18.73000	12.50000	123.4017	17.77000	12.95000	4.130000	1.410000
Maximum	27.53000	5.790000	39.32000	18.40000	399.9600	29.80000	76.80000	14.60000	5.790000
Minimum	4.040000	0.350000	1.830000	7.800000	2.020600	10.50000	0.200000	-1.920000	0.350000
Std. Dev.	5.752389	1.220610	8.445708	2.443630	109.2170	3.927990	18.16642	3.846239	1.218590
Skewness	0.546549	1.784647	0.562227	0.227152	0.854789	0.772914	1.793152	0.474845	1.791254
Kurtosis	3.047706	6.079411	2.994769	2.437426	3.004736	4.323483	5.109958	2.807544	6.100672
Jarque-Bera	1.795706	33.33396	1.896633	0.784322	4.384019	6.211785	25.97025	1.408429	33.67278
Probability	0.407443	0.000000	0.387393	0.675595	0.111692	0.044785	0.000002	0.494497	0.000000
Sum	477.2000	59.82000	716.0800	466.9000	4431.196	659.9700	713.2900	163.7100	59.91000
Sum Sq. Dev.	1158.149	52.14610	2496.549	208.9964	417492.6	540.0187	11550.66	517.7743	51.97368
Observations	38	38	38	38	38	38	38	38	38

Source: Author's Compilation Using E-views 12 Output

This section presents the descriptive statistics for the variables, providing a summary of central tendency and variability. Table 4.1 outlines key data points. The highest growth rate of market capitalization (GMC) in the Nigerian stock market between 1986 and 2023 was 27.5%, while the lowest was 4.04%, with an average of 13.25% and a standard deviation of 5.75%. This indicates a high spread, as the mean exceeds the standard deviation. Trade openness (TOP) peaked at 5.79%, its lowest value was 0.35%, and the average was 1.66%, with a standard deviation of 1.22%, indicating significant dispersion. Gross domestic savings (GDS) ranged from 1.8% to 39.3%, with an average of 19.89% and a standard deviation of 8.4%, reflecting high variability. Gross Domestic Investment (GDI) varied between 7.8% and 18.4%, with an average of 12.96% and a standard deviation of 2.4%, showing notable dispersion. The exchange rate (EXR) ranged from 2.02% to 399.96%, with an average of 123.08% and a standard deviation of 109.2%, indicating a narrow dispersion. The interest rate (INT) ranged from 10.5% to 29.8%, with an average of 18.33% and a standard deviation of 3.9%, demonstrating a broad spread.

The average inflation rate was 19.8%, with a median of 12.9%, a peak of 76.8%, and a minimum of 0.2%, and a standard deviation of 18.166%. This shows substantial fluctuation in inflation, with the mean surpassing the median, indicating asymmetry. Nigeria's inflation rate exceeded the threshold for harmful economic growth, as noted by Doguwa (2012). Real GDP growth (GDPG) ranged from -1.92% to 14.6%, with an average of 4.54% and a standard deviation of 3.8%, indicating a broad spread. Net foreign portfolio investment (FPI) averaged 1.66%, with a median of 1.41%, a peak of 5.79%, and a low of 0.35%, and a standard deviation of 1.2%, suggesting significant variability.

Skewness measures asymmetry, and kurtosis quantifies the distribution's peakedness. All variables, including market capitalization growth, trade openness, GDS, GDI, EXR, INT, inflation rate, GDP growth, and FPI, exhibited positive skewness and platykurtic behavior, indicating a flatter distribution. The Jarque-Bera test showed that GMC, GDS, GDI, EXR, and GDP growth followed a normal distribution, as their probability values were above 0.05. However, trade openness, INT, inflation rate, and FPI were not normally distributed, as their probability values were below 0.05.

4.2 Pre-estimation Tests
4.2.1 Unit Roots Test
Since many macroeconomic time series data exhibit non-stationary behavior, this can present challenges in econometric analysis and lead to inaccurate results if not properly addressed. To tackle this issue, this study assessed the time series properties using the Augmented Dickey-Fuller (ADF) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) unit root tests. The results of this analysis are shown in Table 4.1 below.

Table 4.2: Tests for the Unit Roots of the Models Using ADF and KPSS Respectively

Model(s)	Augmented Dickey-Fuller (ADF)				Kwiatkowski-Phillips-Schmidt-Shin			
	Variables	ADF--Statistic	5% Critical Value	Order of Int.	Variables	KPSS-Statistic	5% Critical Value	Order of Int.
Model I	GMC	-3.882885	-2.957110	1(0)	GMC	0.217745	0.463000	1(0)
	TOP	-4.062965	-2.948404	1(0)	TOP	0.298263	0.463000	1(0)
	GDS	-3.871643	-2.948404	1(0)	GDS	0.318758	0.463000	1(0)
	GDI	-5.856184	-2.954021	1(1)	GDI	0.093583	0.463000	1(0)
	EXR	-3.909277	-2.951125	1(1)	EXR	0.447505	0.463000	1(1)
	INT	-4.696762	-2.967767	1(1)	INT	0.220115	0.463000	1(1)
	INF	-5.189534	-2.960411	1(1)	INF	0.224844	0.463000	1(1)
Model II	GDPG	-3.174289	-2.948404	1(1)	GDPG	0.160893	0.463000	1(0)
	FPI	-3.909040	-2.948404	1(0)	FPI	0.221105	0.463000	1(0)
	GDS	-3.871643	-2.948404	1(0)	GDS	0.318758	0.463000	1(0)
	GDI	-5.856184	-2.954021	1(1)	GDI	0.093583	0.463000	1(0)
	EXR	-3.909277	-2.951125	1(1)	EXR	0.447505	0.463000	1(1)
	INT	-4.696762	-2.967767	1(1)	INT	0.220115	0.463000	1(1)
	INF	-5.189534	-2.960411	1(1)	INF	0.224844	0.463000	1(1)

Source: Author's Compilation **with the use of** *E-views 12 Output*

The diagnostic test results for unit roots are presented in Table 4.2. Both the ADF and KPSS unit root tests showed that the growth rates of market capitalization (GMC), trade openness (TOP), net foreign portfolio investment (FPI), and gross domestic savings (GDS) remained stationary at level form (1(0)) in Model 1. Additionally, the ADF test indicated that gross domestic investment (GDI) was stationary at the first difference (1(1)), while the exchange rate (EXR), interest rate (INT), and inflation rate (INF) were stationary at the first difference (1(1)) in both the ADF and KPSS tests. In Model 2, the ADF and KPSS tests revealed that the growth rate of real GDP (GDPG), GDS, and FPI were stationary at level form (1(0)). However, GDI was stationary at first difference in the ADF test (1(1)), but stationary at level form (1(0)) in the KPSS test. The EXR, INT, and INF were all stationary at the first difference (1(1)) according to both tests. This suggests that the variables exhibit stationarity at levels and first differences (I(0) and I(1)), which indicates mixed integration orders. Based on these findings, the Johansen cointegration test's prerequisites are not met. Since conflicting results between tests are common (Shahbaz & Rahman, 2012), and as Ouattara (2004) notes, the bounds test approach is suitable when variables exhibit I(0) and/or I(1) characteristics, the ARDL Bounds test will be used for cointegration analysis in this study instead of the Johansen method.

4.2.2 ARDL Bounds Testing Procedure
The results of the ARDL cointegration analysis are presented in Table 4.3.

Table 4.3: ARDL Bound Tests for the Models Respectively

Model(s)	Test Statistic	Value	K
	Null Hypothesis: No Long-run Relationships Exist		
Model I	F-statistic	5.476554	6
	Critical Value Bounds		
	Significance	10 Bound	11 Bound
	10%	2.12	3.23
	5%	2.45	3.61
	2.5%	2.75	3.99
	1%	3.15	4.43
Model II	F-statistic	3.546135	6
	Critical Value Bounds		
	Significance	10 Bound	11 Bound
	10%	2.12	3.23
	5%	2.45	3.61
	2.5%	2.75	3.99
	1%	3.15	4.43

Source: Author's Compilation **with the use of** *E-views 12 Output*

The ARDL approach offers the advantage of estimating both short-term and long-term effects of independent variables on the dependent variable, even with a small sample size. Pesaran, Shin, and Smith (2001) proposed a method for determining the optimal cointegration arrangement of variables, with a constraint on the distribution of the F-statistic's critical value. The results in Table 4.3 show that the F-statistic for Model 1 is 5.476554, which exceeds both the lower and upper critical values at all significance levels. For Model 2, the F-statistic of 3.546135 exceeds the critical values at the 10% significance level, indicating a significant long-term relationship between the variables. This suggests that the calculated F-statistic surpasses the upper critical threshold, leading to the rejection of the null hypothesis of no long-term relationship, in favor of the alternative hypothesis. To further investigate, an empirical analysis using the Foreign Portfolio Investments equation and the ARDL approach was conducted. As certain variables exhibited stationarity at different levels, the ARDL approach was suitable. Before performing the ARDL cointegration test, the optimal lag length for each variable was determined using the Akaike Information Criterion, with results shown in Figures 4.1 and 4.2.
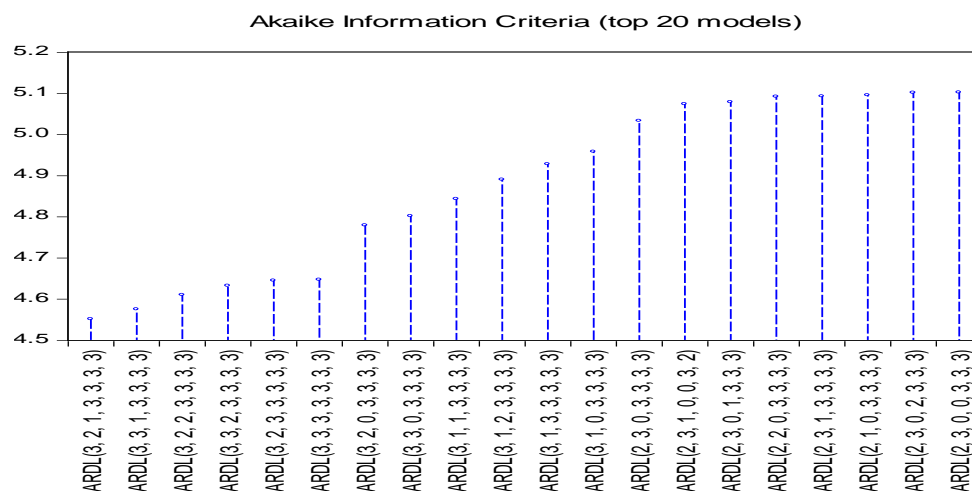
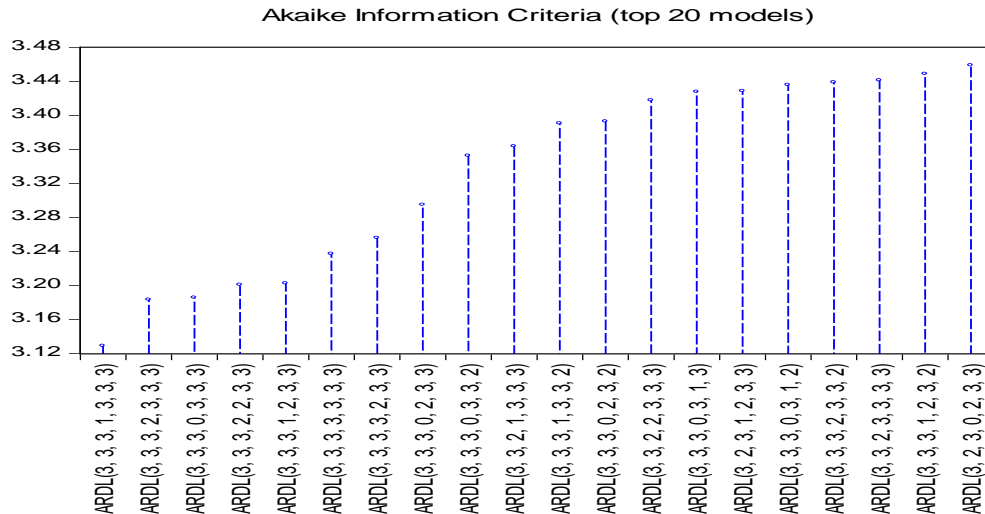**Figure 4.1: Akaike Information Criterion Lag Length for Model One**

Figure 4.2: Akaike Information Criterion Lag Lengthfor Model Two
The appropriate lag times for ARDL models are determined using the least Akaike Information Criterion. The best lag length was shown in Figures 4.1 and 4.2 to be in the orders of ARDL (2, 1, 1, 2, 1, 3, 0 and 3, 3, 3, 1, 3, 3, 3 correspondingly).

4.2.3 Estimation of Long-run Elasticities and Short Run Dynamics for Models

The long-run coefficients of the variables under consideration are determined through the utilisation of the most appropriate ARDL model selection method, which is based on the AIC criterion. The examination of long-term elasticities and their corresponding coefficients in the models was grounded in the research obstacles deliberated in the first chapter.

4.2.3.1 Discussion of the Results According to Research Objective One

The objective of this study is to examine the impact of macroeconomic indicators related to Foreign Portfolio Investment (FPI) on the performance of the Stock Exchange in Nigeria. The results of the estimations conducted for the long-run and short-run parameters of the ARDL (2, 1, 1, 2, 1, 3, 0) are presented in Table 4.4 for model one (1).

Table 4.4Coefficients in the Long Run and the Short Run that are Estimated for Model One

	Regressor	Coefficient	Std. Error	t-Statistic	Prob.
	D(GMC(-1))	1.210504	0.279589	4.329584	0.0025*
Short-run	D(GMC(-2))	0.663444	0.244207	2.716734	0.0264*
	D(TOP)	6.674578	1.868838	3.571513	0.0073*
	D(TOP(-1))	-0.931107	0.506155	-1.839570	0.1031
	D(GDS)	-0.285733	0.095715	-2.985247	0.0175*
	D(GDI)	-0.540603	0.528600	-1.022708	0.3364
	D(GDI(-1))	-0.029225	0.370453	-0.078889	0.9391
	D(GDI(-2))	-1.098631	0.361908	-3.035664	0.0162*
	D(EXR)	-0.008211	0.030612	-0.268247	0.7953
	D(EXR(-1))	0.129029	0.050618	2.549083	0.0342*
	D(EXR(-2))	-0.146993	0.043902	-3.348220	0.0101*
	D(INT)	0.932683	0.282953	3.296244	0.0109*
	D(INT(-1))	0.178512	0.378071	0.472164	0.6494
	D(INT(-2))	0.690941	0.210707	3.279160	0.0112*
	D(INF)	-0.614647	0.136680	-4.496970	0.0020*
	D(INF)	0.444541	0.095117	4.673602	0.0016*
	D(INF)	-0.448846	0.140468	-3.195364	0.0127*
	CointEq(-1)	-1.963182	0.366534	-5.356070	0.0007*
	R-squared = 0.732064 Adjusted R-squared = 0.642614 F-statistics = 4.241926 Prob (F-statistics) = 0.000932				

	Durbin Watson = 2.404017				
Long-run	TOP	6.257844	0.725311	8.627807	0.0000*
	GDS	-0.037892	0.061265	-0.618493	0.5534
	GDI	1.045888	0.182083	5.744010	0.0004*
	EXR	-0.071438	0.007827	-9.127515	0.0000*
	INT	-0.688494	0.190933	-3.605953	0.0069*
	INF	-0.297267	0.043278	-6.868737	0.0001*
	C	-25.508896	5.051718	-5.049549	0.0010*

Source: Author's Compilation using E-views 12 Output
Note: * denote statistical significance at the 5% level.

The analysis in Table 4.4 reveals that trade openness (TOP) has a significant positive long-term effect on the Nigerian stock market, with a 1% increase in trade openness leading to a 625.78% rise in market capitalization. This indicates that trade openness positively influences the market. Conversely, gross domestic savings (GDS) shows a negative relationship with market capitalization, as a 1% rise in GDS leads to a 3.79% decrease in stock market capitalization. This supports the theory that increased savings may shift investments away from the stock market.

Gross domestic investment (GDI) also shows a positive effect, with a 1% increase in GDI leading to a 104.59% rise in market capitalization, which highlights the importance of investment in the economy. However, the exchange rate (EXR) negatively impacts market capitalization, with a 1% increase in exchange rates leading to a 7.14% decrease in market value, reflecting the adverse effect of currency devaluation on stock trading.

Interest rates have an inverse relationship with market capitalization, with a 1% increase in interest rates causing a 68.8% decrease in market value, as investors tend to move funds from the stock market to the money market when borrowing costs rise. Similarly, inflation (INF) negatively impacts the stock market, with a 1% increase in inflation leading to a 29.7% decrease in market capitalization, confirming the detrimental effect of inflation on investor purchasing power.

In the short term, trade openness (D(TOP)) has a positive effect on the Nigerian stock market, with a 1% rise in D(TOP) leading to a 667.5% increase in market capitalization. However, the lagged value of trade openness (D(TOP(-1))) shows a negative impact. Gross domestic savings (GDS) is found to have a significant positive influence on stock market growth, with a 1% rise in GDS resulting in a 28.57% increase in market capitalization.

Gross domestic investment (GDI) and its lagged values, however, show negative effects on the stock market in the short term, with a 1% rise in D(GDI), D(GDI(-1)), and D(GDI(-2)) resulting in a decrease of approximately 54.06%, 2.92%, and 109.86%, respectively. The exchange rate (D(EXR)) and its lagged values also show minimal or negative effects on the market. A 1% rise in D(EXR) and D(EXR(-2)) leads to a 0.8% and 14.7% decrease in market value, while D(EXR(-1)) has a positive impact.

Interest rates (D(INT)) show a significant negative correlation with the stock market, with a 1% increase in D(INT), D(INT(-1)), and D(INT(-2)) linked to a decline of 93.26%, 17.85%, and 69.09% in market capitalization. Inflation (D(INF)) also has a strong negative effect, with a 1% increase in D(INF) leading to a 61.46% and 44.88% reduction in market value.

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The R2 value of the model is 0.732064, meaning the model explains 73.2% of the variation in market capitalization. The adjusted R2 value of 0.642614 indicates that 64.26% of the variation is explained, suggesting the model has a moderate fit. The F-statistics show statistical significance at the 1% level, confirming the importance of the explanatory variables. The Durbin-Watson statistic of 2.404017 indicates no autocorrelation. The CointEq(-1) coefficient of -1.963182 suggests a strong long-term relationship, with discrepancies in the long-term equilibrium being corrected at a rate of approximately 196.3%. This supports the existence of a stable long-term connection between the variables.

4.2.3.2 Discussion of Results based on Research Objective Two

To look at how foreign portfolio investment influx affects Nigeria's economic growth, the estimations of the ARDL's long-run and short-run parameters for model 2 are displayed in Table 4.5. These parameters are as follows (3, 3, 4, 1, 3, 3, 3).

Table 4.5 Estimated Long-run and Short-run Coefficients for Model Two

	Regressor	Coefficient	Std. Error	t-Statistic	Prob.
Short-run	D(GDPG(-1))	0.354220	0.183260	1.932886	0.0945
	D(GDPG(-2))	0.541765	0.130393	4.154860	0.0043*
	D(FPI)	1.756862	0.727813	2.413893	0.0465*
	D(FPI(-1))	-0.527371	0.316895	-1.664181	0.1400
	D(FPI(-2))	-0.624972	0.331449	-1.885576	0.1013
	D(GDS)	-0.016052	0.048213	-0.332950	0.7489
	D(GDS(-1))	-0.137271	0.044843	-3.061146	0.0183*
	D(GDS(-2))	-0.102079	0.065807	-1.551201	0.1648
	D(GDI)	0.028381	0.262484	0.108123	0.9169
	D(EXR)	-0.076374	0.014788	-5.164713	0.0013*
	D(EXR(-1))	0.140735	0.031005	4.539066	0.0027*
	D(EXR(-2))	-0.023113	0.023052	-1.002633	0.3494
	D(INT)	0.068470	0.164407	0.416469	0.6895
	D(INT(-1))	-0.071716	0.171642	-0.417822	0.6886
	D(INT(-2))	-0.338525	0.169300	-1.999560	0.0857
	D(INF)	-0.283568	0.082254	-3.447492	0.0107*
	D(INF)	0.154795	0.054090	2.861818	0.0243*
	D(INF)	0.071291	0.043683	1.632025	0.1467
	CointEq(-1)	-0.792714	0.144557	-5.483766	0.0009*
	R-squared = 0.846422 Adjusted R-squared = 0.453943 F-statistics = 3.156608 Prob (F-statistics) = 0.003088 Durbin Watson = 1.552595				
Long-run	FPI	4.070045	1.507459	2.699937	0.0306*
	GDS	0.400321	0.158990	2.517904	0.0399*
	GDI	-0.247029	0.215483	-1.146399	0.2893
	EXR	0.007207	0.012066	0.597318	0.5691
	INT	0.746966	0.328596	2.273207	0.0572
	INF	-0.433234	0.073986	-5.855591	0.0006*
	C	-15.426987	10.152223	-1.519567	0.1724

Source: Author's Compilation using E-views 12 Output
Note: * denote statistical significance at the 5% level.

The study reveals that foreign portfolio investment (FPI) significantly boosts Nigeria's long-term economic growth, with an estimated 407% increase expected from a rise in FPI. This supports the idea, outlined by Chenery and others (1962), that foreign capital plays a vital role in bridging the

financial gap in developing countries like Nigeria. Similarly, gross domestic savings (GDS) positively impacts Nigeria's economic growth, projecting a 40.03 percentage point increase in growth with a rise in savings. This aligns with economic theories suggesting that higher savings promote investment, which in turn fuels economic growth.

The exchange rate (EXR) has a limited positive effect on long-term economic growth, with a 1% increase in exchange rates leading to a 0.72% growth. This could be due to the potential for investors to acquire more shares when stock values drop. Interestingly, interest rates show a positive influence on Nigeria's growth, with a 1% rise in interest rates resulting in a 0.72% increase in GDP, possibly because higher interest rates stimulate bank deposits, which then fuel economic growth.

However, gross domestic investment (GDI) shows a negative impact on growth, with a 1% increase in GDI causing a 24.7% decline in economic growth. This contradicts other studies that suggest a positive relationship between investment and growth. Possible reasons for this negative correlation include low investor confidence, high lending rates, and Nigeria's reliance on a rural economy with limited industrial capacity.

Inflation significantly hinders economic growth, with a 1% increase in inflation leading to a 43.3% decline in growth. This highlights the need for Nigeria to manage inflation effectively, as rising inflation erodes purchasing power and discourages investment.

In the short term, FPI also has a positive impact on GDP growth, with a 1% rise in FPI resulting in a 175.68% surge in GDP. However, the effects of FPI become negative and insignificant in the following periods, possibly due to Nigeria's underdeveloped financial sector. Gross domestic savings also show a negative short-term effect on economic growth, with a 1% increase in savings leading to a 1.6% decrease in GDP.

Other factors like domestic investment and exchange rates also influence growth, but their impact is often statistically insignificant. Inflation, in particular, continues to dampen economic growth in both the short and long term. The study recommends policies to attract foreign investment, stabilize inflation, and boost local savings to support Nigeria's economic growth.

The model's R-squared value of 84.6% indicates that the explanatory variables explain most of the variation in economic growth. The Durbin-Watson statistic suggests positive serial correlation, while the model's error correction term (CointEqt-1) shows that 79% of short-term deviations will be corrected within a year or two, contributing to long-term equilibrium.

4.5 Discussion of Findings and Policy Implications
The study's findings have key policy implications for Nigeria's economy and stock market. It was found that trade openness positively impacts Nigeria's stock market growth. However, an over-reliance on imports rather than exports can hinder the growth of other sectors and negatively affect stock market capitalization. Additionally, local investment plays a crucial role in advancing the Nigerian stock market, which has historically been limited. To encourage growth, Nigeria should enact laws to promote domestic investment and attract foreign capital, especially given the country's low savings rate.

The study also found that gross domestic savings have a small negative impact on Nigeria's stock market, possibly due to weak monetary policies, low savings, and poor savings mobilization by financial institutions. Contrary to economic theory, stocks serve as a safeguard against inflation, which still has a modest adverse effect on the market. The exchange rate also negatively impacts stock market returns, and an appreciation in exchange rates could reduce market activity.

Interest rates were found to negatively correlate with stock market capitalization, as higher rates lead to a shift of investments from the stock market to the money market. This suppresses market activity, particularly in a domestic market. Analysts suggest that low interest rates may encourage investors to transfer funds from stocks to treasury bills, affecting market dynamics.

The study concluded that foreign portfolio investment has a significant positive effect on Nigeria's economic growth, supporting findings from Ezeanyeji and Ifeako (2019). However, foreign portfolio investments have historically had a limited impact on the secondary market, mainly due to speculative trading. Despite this, it remains important for the government to implement measures to sustain capital market growth and allocate more durable funding to beneficial sectors.

5. Conclusion and Recommendations
This study highlighted the significant roles that macroeconomic variables, such as exchange rates, interest rates, and inflation rates, play in shaping the dynamics of Nigeria's stock market and economic growth. Specifically, the findings suggest that exchange rates, interest rates, and inflation rates have a statistically significant negative impact on the Nigerian Stock Exchange. While gross domestic savings also showed a negative relationship with the stock market, this effect was not statistically significant, suggesting that other factors may play a more decisive role.

The study also found a positive relationship between gross domestic savings and foreign portfolio investment, indicating that these factors can positively influence Nigeria's economic growth. However, the research reveals that the exchange rate has only a marginal positive effect on Nigeria's economic growth, while gross domestic investment appears to have a slight negative impact. Most notably, inflation remains a critical factor, as it significantly hinders Nigeria's economic growth.

Based on the findings of the study, the following two recommendations are proposed:
1. Given the significant negative impact of inflation and the adverse influence of exchange rate fluctuations on both the stock market and economic growth, it is recommended that the Nigerian government focus on stabilizing inflation and the exchange rate. This could involve adopting more effective monetary policies, such as tightening inflation control measures, improving foreign exchange reserves, and reducing dependency on volatile global factors. Stability in these areas will create a more predictable environment, encouraging both domestic and foreign investments, which will ultimately benefit the stock market and overall economic growth.

2. The positive relationship between gross domestic savings and foreign portfolio investment in boosting economic growth suggests that fostering an environment conducive to higher foreign portfolio inflows could further strengthen Nigeria's economy. To achieve this, it is

recommended that the Nigerian government implement policies aimed at attracting more foreign capital into the stock market, such as improving market transparency, regulatory frameworks, and investor protections. Additionally, increasing efforts to mobilize domestic savings through incentivizing savings programs and improving financial literacy could create a more robust financial sector, leading to higher investment opportunities and long-term economic growth.

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