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MACROECONOMIC VARIABLES AND FOREIGN PORTFOLIO INVESTMENTS IN NIGERIA

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Abstract

This study evaluates the critical role of foreign portfolio investment (FPI) in enhancing the liquidity and efficiency of Nigeria's capital markets from 1993 to 2023. FPI plays a pivotal role in broadening the spectrum of viable financing opportunities by promoting market depth and expansion. This analysis, utilizing an ex-post facto research design, draws on data from the Central Bank of Nigeria Statistical Bulletin to investigate the effects of macroeconomic variables, specifically the interest rate (InR) and exchange rate (ExR), on FPI. Using a 5% level of significance for panel data analysis, the Fully Modified Ordinary Least Squares (FMOLS) estimation method showed that the interest rate and FPI were related in a way that was opposite to what was expected. This was shown by an InR coefficient of -0.214 ($t = -3.284$, $P < 0.05$). Additionally, a significant influence of the exchange rate on FPI was identified, with an ExR coefficient of 0.0076 ($t = -2.526$, $P < 0.05$). These findings highlight the substantial impact of macroeconomic indicators such as interest and exchange rates on FPI flows into Nigeria. The research not only establishes a critical correlation between international portfolio flows and key domestic economic metrics—including GDP growth rate, foreign reserves, inflation, and interest rates—but also underpins the necessity for targeted policy measures. Policymakers should formulate and implement refined interest rate strategies to attract foreign portfolio investments, thereby enhancing Nigeria's economic landscape. Such strategic policy measures should aim to stabilise the macroeconomic environment, ensuring a conducive atmosphere for FPI and subsequently reinforcing Nigeria's financial market infrastructure.

1. INTRODUCTION

Foreign portfolio investments (FPI) significantly improve liquidity in local capital markets, aligning with international market efficiency standards. This liquidity infusion is instrumental in the expansion and deepening of markets, thereby increasing the capacity for financing a wider variety of entrepreneurial endeavours. FPI consists of a diverse spectrum of asset classes, encompassing both debt and equity instruments such as banknotes, bonds, debentures, and equity securities, including common stocks. Investors typically categorise these investments as passive, as they do not grant them any governance rights or control over the operational management of the issuing companies. This attribute underlines the non-interventionist nature of FPI in the management of invested entities, maintaining a clear delineation between investment and operational control in line with global investment practices.

Contrasting to foreign portfolio investors, Foreign Direct Investment (FDI) have a short-term interest in owning these passive investments. As a result, because it is short-term, it gives investors the chance to benefit from favorable interest rates and currency rates when purchasing and selling securities (Aziz, Anwar & Shawnawaz, 2015). Furthermore, foreign funds must be brought into a country in order for it to produce commodities for both domestic and international markets. According to Adeleke (2014), FDI is defined as a direct investment made in a nation by people or businesses from another nation, either through the acquisition of a local enterprise or the expansion of an already established one. The construction of new facilities, mergers, acquisitions, the reinvestment of revenues from overseas activities, and intra-company loans are thus examples of FDI.

Internationally, the pattern of foreign portfolio investment has changed over the past century, and foreign investors are now more likely to place their money in developing nations. Since 1997, foreign portfolio investment in China has dramatically expanded, according to Haider, Khan, and Abdullahi (2016). As a result, various macroeconomic factors influence the choices made by foreign investors over where to place their money. These macroeconomic factors, which are crucial for the flow of foreign portfolio investment, include economic growth, GDP, GNP, interest rates, exchange rates, political and social stability of the nation, market size, market efficiency, and better expected returns.

According to Broking (2020), foreign markets give investors the ability to access a higher market which is not as competitive as their domestic/local trade. This suggests that foreign markets

profit from less intense rivalry. Additionally, foreign portfolio investment ensures that there is an equal proportion between a stock's value and price and acts as a key indicator of the efficiency of the stock market. Additionally, developing economies with greater development potential than the investor's own nation frequently see a significant level of participation from international investors (Broking, 2020).

One of the main issues the Nigerian economy is currently facing is the continuous decrease in FPI inflow. According to Orji, Uche, and Ilori (2014), a dearth of economic diversification, a lingering insecurity, and a bad investment climate caused by strict government regulations, bureaucratic bottlenecks for obtaining permits, and a lax legal system are all factors contributing to Nigeria's economy's uneven growth in foreign portfolio investment.

Nigerian Stock Exchange (2019) reports that foreign portfolio investment inflows are declining as outflows are rising in the Nigerian economy. The aggregate FPI outflows for the first nine (9) months of 2018 were $513.49 billion compared to inflows of $477.68 billion, resulting in a net deficit of $35.81 billion. This was a significant decline from the same period in 2017 when inflows were $468.3 billion and outflows totaled $315.4 billion for a surplus of $135.26 billion. The aforementioned data trends show an uneven increase in FPI inflows, which is concerning given the volatility of FPI.

This worry was further highlighted by the IMF's World Economic Output database update from October 2018, which saw the agency reduce its GDP projections for Nigeria from 2.1% to 1.9% for 2018 and from 2.3% to 1.9% for 2019. The rise of foreign investment, according to Enisan (2017), may also be constrained by high levels of government involvement in the debt issuance market, a dearth of FPI products, and a relatively small pool of issuers. Additionally, Emiefele (2019) underlined that the downward trend in FPI inflows could result in significant economic loss, which is similar to the occurrences of the financial crisis of 1999–1998 in Asian. Considering the issues found, it is pertinent to investigate how macroeconomic variables influence the state of FPI in Nigeria.

Objectives of the Study

The general aim of the research is to investigate how macroeconomic variables affect FPI investment in Nigeria. Specific objectives were:

i. To investigate the effect of interest rate on FPI in Nigeria;

ii. To investigate the extent exchange rate influence FPI in Nigeria;

Research Questions

The questions to guide the study were as follow:

i. How does interest rate effect FPI in Nigeria?

ii. What is the effect of exchange rate on FPI in Nigeria?

Research Hypotheses

Hypotheses for the research study were specified in a null form and stated as follows:

H_{01}: interest rate does not have any significant effect on FPI in Nigeria

H_{02}: exchange rate does not have any significant effect on FPI in Nigeria

Scope of the Study

In pursuance of the objectives of this study, the study focused on the effect of macroeconomic variables on foreign portfolio investment in Nigeria. The variables of interest in this study are foreign portfolio investment (dependent variable) and macroeconomic variables (independent variable) proxied by interest rate (InR), exchange rate (ExR), gross domestic product (GDP), foreign reserves (FR) and inflation (Inf).The study covered Nigeria economy and foreign investors who have been investing in Nigeria from the period of 1993 to 2023. This study engaged panel data for the period of 1993-2023 to examine the effect of macroeconomic variable on foreign portfolio investment in Nigeria.

2. REVIEW OF RELATED LITERATURE

Macroeconomic Variables

Macroeconomics variables examines the cyclical trends and direction in a variety of economic variables, including inflation, economic growth, unemployment, money supply, budget deficits, and exchange rates. When evaluating an economy's overall performance, economists look at how it managed to grow both output and consumption at such high rates. Three macroeconomic variables are mostly significant for this assessment (Todaro, 2005). Investors utilize macroeconomic indicators as well as other metrics to forecast the success of the stock market. A stable macroeconomic environment, according to Karimo and Tobi (2013), is a reliable measure of flow of the Nigeria FPI in the economy.

Foreign Portfolio Investment

An investment activity known as a foreign portfolio investment (FPI) entails buying bonds, equities, or money market instruments abroad for a brief period of time. As a result, due to its short duration, it offers investors the chance to acquire and sell securities at a favorable interest rate and exchange rate. Investment in a foreign secondary market with a larger return is what it is (Aziz, Anwar & Shawnawaz, 2015). Securities and other capital inflows of assets that may be held by other foreign countries make up a FPI. Through FPI, an investor can indirectly hold financial assets (Haider, Khan & Abdulahi, 2016).

Foreign portfolio investment was described by Goldstein and Razin (2006) as the flow of cash into a nation when foreigners deposit money there or buy stock or bonds there. Due to their connections to other macroeconomic factors that help stimulate the economy, FPI flows are significant. But Ahmed and Zlate (2014) and Waqas, Hashmi, and Nazir (2015) defined FPI volatility as the susceptibility of local markets to shocks from the outside, particularly in the case of significant and abrupt variations and risk uncertainty. FPI flows, according to Broto, Díaz-Cassou, and Erce (2011), are unstable because they are susceptible to domestic circumstances in both developed and developing nations. When international investors spend money for short-term gain and then abruptly remove it when there is uncertainty or a necessity, this is known as volatility (Kodongo & Ojah 2012). According to Singhania and Saini (2017), FPI foreign portfolio investors frequently select short-term investments to take advantage of favourable market situation and have a propensity to liquidate their holdings during a recession.

Interest Rate

The interest rate which is the cost of borrowing money for a set period of time is calculated in percentage form annually and payable by a borrower to a creditor (Faure, 2014). The price of money is another common term used to describe interest rates. According to Emmanuel, Ike, and Alhasan (2019), a developing country like Nigeria that is going through a transition and experiencing emerging markets, the influence of interest rate instability is highly significant to foreign direct investment inflow. The present actual exchange rate will climb as interest rates rise. As a result, the relationship between the exchange rate and the interest rate fluctuation accelerates economic growth by being correlated with foreign direct investment inflows.

Singhania and Akshay (2011) claim that an accurate indicator of FDI inflows is the interest

rate adjusted for inflation. Low interest rates, according to Makoni (2017), inhibit FPI. Hymer's (1976) theory of portfolio investment states that international portfolio investors are drawn to high interest rates because they lower the cost of borrowing. Interest rates are essential for the effective distribution of resources that support an economy's expansion and development as well as for managing demand to achieve both internal and external balance, with a focus on deposit mobilization and credit growth for stronger economic development (Maiga, 2017).

Exchange Rate

Future price prediction is challenging due to the volatility and unpredictability that define the foreign exchange market. Due to their inherent exposure to currency risks, importers, exporters, and portfolio investors conducting business internationally are at risk from these swings (Allayannis, Ihuing & Weston, 2016). Exchange rates, in turn, have an impact on the prices of products and services sold internationally as well as the volume of exports and imports (Makin, 2009Makin (2009) emphasized that small changes in the demand and supply of currency, which affect the exchange rate, are determined by foreign account operations such as importation, exportation, and FDI flows. The exchange rate, according to Abdoh, Yusuf, Zulkifi, Bulot and Ibrahim (2016), is an important factor since it affects how one country's money is converted into another country's currency.

2.2 Theoretical Review

Theory of Market Failure

The market failure theory was developed by Paul A. Samuelson, a Keynesian economist. The theory of market failure acknowledged that markets are not flawless and claimed that a corporation only engages in international production as a result of the existence of market flaws (Rizvanolli, 2012). According to Enisan (2017), businesses must have some sort of ownership advantage that is adequate to make up for the integral drawbacks experienced while competing with local market in order to engage in international portfolio investment.

Faeth (2009) stated that these drawbacks result from foreign investors' lack of knowledge, increased level of uncertainty, physical separation from their affiliates, as well as variations in culture, corporate ethics, the legal system, and legislation. These ownership-specific, non-financial benefits therefore indicate the presence of market and institutional flaws like product variety,

management experience, technological advances, or state involvement. The capability of enterprises to innovate, which is dependent on the arrangement of institutions and markets, is related by Rizvanolli (2012) to ownership advantages with factor endowment distribution, providing firms of certain countries an advantage over others.

Enisan (2017), Rizvanolli (2012), and Emenuga (2019) emphasized that market failure is imminent for any economy, which subsequently provides a basis for international trade and multinational production and, ultimately, leads to inflows of FDI in any economy. This was done to support the market failure theory. The market failure theory has come under fire since it implicitly presupposed that the state is better at directing growth in terms of international production. Emenuga (2019) stated that even if policymakers have enough knowledge, it is impossible to restore society to optimality.

Stock Oriented Model

Branson and Frankel created the stock-orientated concept in 1983. These models show how exchange rates are influenced by the demand and the supply for assets such as stocks and bond. This approach implies that share prices have an effect on exchange rates because rising stock prices encourage investors to buy more domestic assets, which raises the value of the local currency. As a result, as the domestic currency's value increases, more foreign funds and investments pour into the nation, which encourages further currency appreciation. Agubata and Odubuasi (2018) argued in favour of the stock-orientated model that rising stock prices would result in significant capital inflows and that this would lead to an surge in the demand of the domestic currency, which would lead to an upsurge in exchange rates. In other words, supply and demand for financial assets drive the exchange rate.

The stock-oriented approach was critiqued by Richards, Simpson, and Evans (2009) and others for not accounting for global capital flows. They also noted that the stock-oriented paradigm is only relevant in the formative stages of the business, and that the effect of volatility in exchange rates on the economic performance of enterprises tends toward the flow-oriented model in the initial stages of the firm (Cerra & Saxena, 2010). This hypothesis, which proposes an alternative explanation and maintains that stock prices, exchange rates, and the amount of FPI in the economy at a certain period are all related, is essential to the study. These theories is pertinent to this research as it sheds light on the factors which influence FPI and multinational production in all economies.

Theoretical Framework

This scholarly investigation scrutinised two theoretical frameworks from existing literature: stock-oriented models and theories of market failure. The study primarily focused on a stock-oriented model, analyzing it in the context of macroeconomic variables and foreign portfolio investment (FPI) in Nigeria. This model posits a relationship between stock prices, exchange rates, and FPI. The model is based on the hypothesis that a surge in stock prices prompts significant capital inflows, which in turn leads to an appreciation of the exchange rate because of the heightened demand for the local currency. This framework provides a critical lens through which to understand the dynamics between market valuations and macroeconomic adjustments in an emerging market context.

2.3 Empirical Review of Related Studies

2.3.1 *Interest Rate and Foreign Portfolio Investment*

The factors influencing the foreign direct investment (FDI) and foreign portfolio investment (FPI) flows among the 16 economies that make up the Middle East and North African (MENA) area were analyzed by Al-Khouri (2015). Utilizing panel data for the years 1984 to 2012, the generalized method of moment (GMM) methodology is applied. The findings are consistent with the agglomeration effect, which says that nations that have already received FDI will continue to do so. FDI is significantly and negatively impacted by economic risk, whereas FDI is significantly and favorably impacted by trade openness. Three (3) of the political risk factors taken into consideration—law and order, ethnic tension, and internal conflict—have a substantial impact on foreign direct investment. According to the FPI data, the lag in FPI and the level of openness are key factors in luring FPI to the MENA region. Additionally, the size of the stock market and the rate of return on investment have a favorable impact on the flow of FPI. The study also shows that FPI is negatively impacted by government structure, but, interestingly, FPI is positively impacted by religious conflict in the MENA region.

In their 2016 study, Haider, Khan and Abdulahi (2016) looked into the economic drivers of foreign investment. They looked at how FPI determinants affected the Chinese economy. They employed E-views and multiple regression models. The study looks into how FPI affects China's economic structure and what factors determine it. The World Bank provided the data for the FPI, GDP, FDI, EXD, and P. The population, exchange rate, and GDP are all key factors of the FPI.

The external debt and GDP are also strong determinants of the FPI. The reason why investors intend to invest in a country is because of the high profits, improved investor rights, and sense of security.

Felix and Amuche (2017) investigated the connection between human capital development and FPI in Nigeria. This was done to investigate the relationship between FPI and the growth of Nigeria's human capital. Annual time series data from 1986 to 2015 were sourced secondarily in the study. The findings showed a strong and positive association between FPI and the growth of human capital. The outcome demonstrated that FPI had a good and considerable long-term impact on Nigeria's growth of its human capital.

The impact of FPI inflow on financial variables in Tadawul was examined by Arabi and Alotaibi (2018). The All Shares Index, FPI, nominal effective exchange rates, interest rate differentials, oil prices, and price-earnings ratio are the six financial variables that make up their model. The influence due to the covariance stationarity of the variables which include FPI, is confirmed by multivariate GARCH (MGARCH) estimations with data sourced quarterly and time line between the first quarters of 2006 and second quarter of 2017. The findings show that model variables have a long-term relationship, and all parameters of the average and variance equation are highly significant.

Akiri and Ushie (2019) looked at how FPI influence RGDP growth in Nigeria from 1986 to 2017. The Toda Yamamoto Non-Causality test was used to determine the relationship between FPI and economic growth, and the impulse response function was used to look at how FPI affected economic growth in Nigeria. The study found a strong and long-lasting link between FPI and Nigeria's economic expansion. The impulse response also shown that economic growth will respond positively and long-term to shocks to FPI after the second period of forecasting.

In their 2020 study, Bah and Giritli (2020) employed the Autoregressive Distributed Lag (ARDL) methodology to examine the interdependencies between macroeconomic factors and Foreign Portfolio Investment (FPI) inflows into South Africa. This approach facilitated the construction of a dynamic framework for assessing the interactions among the macroeconomic variables under study. Utilizing the bounds testing approach within the ARDL framework, they established the presence of a stable long-term equilibrium relationship between FPI and its determinants, underscoring the significant influence exerted by both push and pull factors on FPI dynamics. Their analysis further explored the short-term relationships between FPI and various

exogenous variables, quantifying the responsiveness of FPI to immediate economic changes. The study meticulously calculated the speed of adjustment for these variables to return to equilibrium following a short-run perturbation. Notably, they identified that both push and pull factors serve as critical determinants in the short-run behavior of FPI, which reverts to long-term stability at a rate of 73% post-disturbance. This finding illuminates the robustness of FPI's reaction to transient economic shocks and underscores the importance of considering both immediate and sustained economic indicators when analyzing investment flows.

In a rigorous empirical inquiry spanning 2005 to 2018, Debbiche (2020) scrutinized the individual contributions of diverse capital inflows—Foreign Direct Investment (FDI), Foreign Portfolio Investment (FPI), and Other Investments (OI)—to economic growth within the Gulf Cooperation Council (GCC) nations. Employing the Least Squares Dummy Variable (LSDV) estimator, this study integrated these capital inflows into a traditional growth accounting framework to parse out their distinct impacts. The overarching finding from Debbiche's analysis reveals that, in aggregate, capital inflows do not exert a significant influence on economic growth within the GCC context. This challenges conventional wisdom that posits a straightforward positive relationship between total capital inflows and economic expansion. However, a more granular dissection of the data indicates that among the various types of inflows, FPI distinguishes itself by having a markedly stronger effect on growth compared to FDI and OI. This nuanced insight underscores the heterogeneous nature of capital inflows and their differential impact on economic growth, highlighting the pivotal role of portfolio investments in shaping economic trajectories in the GCC region.

In their 2021 study, Obi et al. (2021) utilized time series data spanning from January 2014 to December 2019 to analyze the impact of macroeconomic variables on Foreign Portfolio Investment (FPI) volatility in Nigeria. The research employed an ex post facto design to retrospectively assess the relationship between FPI volatility and various economic indicators such as Gross Domestic Product (GDP), monetary policy rates, inflation rates, and the all-share index. The empirical findings from their analysis indicated a significant long-term association between FPI volatility and these selected macroeconomic factors. Specifically, it was revealed that prior month FPI volatility, current inflation rates, and movements in the all-share index were critical predictors of FPI volatility within the Nigerian context. Furthermore, the application of the Autoregressive Conditional Heteroskedasticity (ARCH) model in their study demonstrated that

Nigerian FPI does not suffer from persistent volatility, contrary to what might be expected in a volatile economic environment. Based on these insights, Obi et al. recommended that to mitigate the volatility of Foreign Direct Investment (FDI) and enhance the attractiveness of the Nigerian market to foreign portfolio investors, it is imperative for governmental and regulatory bodies to foster a more stable investment climate. Additionally, they emphasized the necessity of maintaining stability in the domestic capital market to attract substantial foreign portfolio investments that could address Nigeria's resource gap, thereby contributing to economic stability and growth.

Ehiedu et al. (2022) explored the nexus between foreign portfolio investment inflows (FPIIs) and economic growth in Nigeria from 1981 to 2021. The researchers employed the Real Gross Domestic Product (RGDP) as a proxy to examine the effects of various components of FPIIs on Nigeria's economic growth. These components included Exchange Rate (EXCHR), Trade Openness (TROP), Money Market Instrument Foreign Portfolio Investment (MMIFPI), Equity Foreign Portfolio Investment (EFPI), Bond Foreign Portfolio Investment (BFPI), and Interest Rate (INTR). Utilising both Ex-post facto and Quasi-Experimental research designs, the study assessed the impact of these variables. The findings indicated that while the Interest Rate (INTR) displayed a significant short-term effect on Nigeria’s RGDP, other variables such as EFPI, BFPI, MMIFPI, EXCHR, and TROP showed minimal influence on both short- and long-term economic outcomes. Consequently, the study concluded that foreign portfolio investment inflows had a marginal overall impact on Nigeria’s economic growth. Ehiedu et al. (2022) recommended strengthening the supervisory and regulatory frameworks within the financial sector for more effective regulation and oversight of foreign portfolio investments, particularly equity transactions. Additionally, they advocated for the closure of legal loopholes that permit stock market participants to engage in asymmetric transactions, such as acquiring securities without proper documentation, thereby ensuring transparency and accountability in the market. These measures aim to foster a more robust and equitable investment environment, thereby supporting the growth of the stock market.

In their 2023 research, Hammed et al. (2023) conducted a rigorous assessment of the impact of select macroeconomic variables on attracting foreign investment to Nigeria. The study, which used an Autoregressive Distributed Lag (ARDL) model with quarterly data spanning from 2010 to 2021, focused on variables such as the industrial output index, the exchange rate, and the domestic monetary policy rate. The findings from this analysis highlighted the critical roles that

both the industrial output index and the exchange rate play in attracting foreign investments to the country, with the industrial output index demonstrating a positive influence and the exchange rate showing a negative impact. The study highlighted the intricate relationship between these macroeconomic factors and foreign investment flows, emphasizing how foreign capital is sensitive to the economic environment these variables shape. Based on their findings, Hammed et al. recommended a strategic alignment and coordination of monetary policy tools, specifically the Treasury bill rate and the monetary policy rate, to create a more favourable macroeconomic landscape for foreign investors. This approach aims to enhance Nigeria's attractiveness as an investment destination by stabilising key economic indicators that influence investment decisions.

Nwadibe et al. (2023) embarked on a comprehensive examination of the determinants of foreign portfolio investment (FPI) in the Nigerian financial sector from 2007 to 2021. The study investigated a broad set of variables, including exchange rates, inflation rates, interest rates, market capitalization, the all-share index, external debt, trade openness, political stability, the GDP growth rate, and industrial production. This research categorised FPI into four distinct segments: net foreign portfolio investment (NFPI), investments in money market instruments (PIMI), bond investments (PIB), and equity investments (PIE). The study applied Stepwise Regression analysis to identify the critical determinants of FPI within these categories, utilizing secondary data sources. The results revealed that interest rates, trade openness, and industrial production emerged as significant influencers of equity-based foreign investments. On the other hand, interest rates, trade openness, and GDP growth rates primarily influenced bond investments. Based on these findings, Nwadibe et al. recommended policies aimed at increasing industrial output by lowering borrowing costs and production expenses. Nwadibe et al. propose such measures to foster business profitability and enhance the attractiveness of equity investments in Nigerian enterprises to foreign investors, thereby stimulating economic growth and development through increased foreign capital inflows.

2.3.2 Exchange Rate and Foreign Portfolio Investment

Baghebo and Apere (2014) looked into the effects of FPI on economic growth and the long-term causes of FPI in Nigeria using data from 1986 to 2011. They employed the OLS method. They concluded that Nigeria's RGDP has a long-term positive relationship with FPI, market capitalization, and trade openness. Okoro (2016) examined the connection between FPI and the

growth of human capital in Nigeria. Gross fixed capital formation was also included in the analysis in order to account for the impact of domestic investment on the growth of human capital throughout the time period under consideration. The Granger causality test was also used to establish the causal relationship between foreign portfolio investment and Nigeria's human capital development. The outcome of the OLS approaches shows that FPI has a favorable and negligible impact on the growth of human capital in Nigeria.

Mbanasor and Obioma (2017) looked at changes in the exchange rate and foreign direct investments in Nigeria. The data that were used were of a secondary type and were taken from the Central of Nigeria Statistical Bulletin for the relevant time periods. The roles of the variables were described in depth along with the specification of the regression model. The two-stage least square method (2LS) was used. From the study, it was confirmed that FPI in Nigeria is negatively and insignificantly impacted by exchange rate movements.

Macroeconomic models that take into account the production gap, price level, interest rates, currency rates, current account, FDI and FPI were developed by Arintoko and Insukindro (2017). The test findings show four substantial co-integrations which influence endogenous macroeconomic variable change. Output gap, price, interest rates, and exchange rates co-integration are the four co-integrations. According to the long-term associations, exchange rates co-integrated with price, interest rate, and output gap on the one hand, and with the current account, foreign direct investment, and interest rate on the other. In Indonesia, there is a correlation between the currency rate and important macroeconomic factors.

FPI and exchange rates in India were the subject of a study by Kumar (2018). They discovered that over the long run, exchange rates have a negative and considerable impact on FDI flows into India; as a result, a weakening of the Indian Rupee likely sharply decrease FPI flows into the nation. The impact of foreign portfolio investments on the performance of the Nigerian capital market was investigated by Nwonodi (2018). The specific goals were to look into how the Nigerian Capital Market performed in relation to Net Foreign Portfolio Investment, Foreign Portfolio Investment in Equity, Foreign Portfolio Investment in Bonds, Foreign Portfolio Investment in Government Securities, and Nigerian Exchange Rate per US Dollar. Multiple regression analysis was used in a quasi-experimental research approach .According to the study's findings, market size has less of an impact on the All Share Price Index than foreign portfolio does. Based on the aforementioned information, the study draws the conclusion that there is a substantial

correlation between the independent variables it analyzed and the performance of Nigeria's capital market. In order to better inflow foreign portfolio investments, it was suggested that monetary and macroeconomic policies be reformed and restructured. Additionally, the monetary authorities should take decisive action to improve the investment climate in order to draw foreign portfolio investors to Nigeria. The banking industry needs to be further reformed and reorganized to attract more international portfolio investors. Interest rates also need to be completely deregulated to let supply and demand decide the market rate of return.

Ogundipe, Alabi, Asaleye, and Ogundipe (2019) examined the effect of Nigeria's foreign portfolio and volatility of exchange rate using data from 1996Q1 to 2016Q4. The study used the vector autoregressive model (VAR Model). The study also analyses how changes in the exchange rate affect FPI and how driven variances in FPI are divided among the model's variables. Additionally, it was discovered that market capitalization and exchange rate volatility greatly and primarily account for changes in foreign portfolios. The impulse response result reveals that FPI was more sensitive to market capitalization and exchange rate standard deviation shocks, suggesting that these factors contributed more to the dynamism in FPI. In contrast to shocks in GDP and inflation, shocks to market capitalization and currency rates cause foreign portfolio investment to increase as the horizons get longer. In the same way, forecast error shocks in market capitalization, exchange rate, and GDP explain more of the variation in foreign portfolio investment when the induced variation is broken down.

The 2020 study by Makoni (2020) looked at how capital openness and real exchange rates affect foreign portfolio investments (FPI) in nine African countries. The research was conducted using a panel fixed effects model. The study revealed a negative correlation between several key factors—real exchange rates, capital openness, and inflation—and the inflows of FPI into these nations. The study also found positive links between higher foreign portfolio investment and things like institutional framework quality, GDP growth rate, and stock market development. This analysis not only underscores the complex interaction between macroeconomic variables and FPI but also highlights the significant role of economic stability and institutional integrity in attracting investment.

In their 2022 study, Anochie et al. (2022) analysed the impact of specific macroeconomic variables on the inflow of foreign direct investment (FDI) into Nigeria over the period from 1986 to 2020. The investigation revealed that while the GDP growth rate and the monetary policy rate

positively influenced FDI inflows in the short run, factors such as inflation and exchange rates significantly deterred them. In a long-term context, the GDP growth rate and exchange rate continued to positively affect FDI inflows, although the monetary policy rate demonstrated a distinctly negative influence. Given these empirical results, Anochie et al. recommended that Nigerian monetary authorities focus on ensuring robust GDP growth and exchange rate stability, alongside an effective monetary policy framework. Anochie et al. advise these measures to attract foreign direct investment (FDI) and devise foreign exchange policies that attract foreign investors, thereby enhancing the nation's economic stability and growth prospects in the global market.

In his 2023 research, Nwagu (2023) examined the influence of macroeconomic variables on foreign direct investment (FDI) in Nigeria over the period from 1986 to 2020. Utilising an ex post facto research design, the study incorporated several key macroeconomic indicators, namely the GDP growth rate, inflation rate, monetary policy rate (MPR), and exchange rate. The analysis revealed that the monetary policy rate and GDP growth rate notably enhanced FDI inflows in the short run, while inflation and the exchange rate substantially curtailed them. From a long-term perspective, the GDP growth rate and exchange rate were positively correlated with FDI inflows, whereas the monetary policy rate had an adverse effect. Based on these findings, Nwagu recommended that Nigerian monetary authorities should focus on maintaining strong GDP growth and exchange rate stability, as well as optimising the effectiveness of monetary policy rates. These strategies are critical for attracting FDI and formulating foreign exchange policies that can effectively draw foreign investors, thereby promoting economic stability and growth in Nigeria.

3. METHODOLOGY

The models of linear regression were used in this investigation. For the purpose of examining the problem of foreign portfolio investment (FPI), the works of Ezeanyeji and Ifeako (2019); Gok and Guvercin, (2020); and Nwafor, (2020) were adopted. Taking into account the pre-existing models, the following terms were created, updated in accordance with the study's goals, and provided.

The models' functional form which is expressed as a mathematical function, is as follows:

$Y = f(X)$

Y is the dependent variable

X is the independent variable

Where:

Y = Foreign Portfolio Investment (FPI)

X = Macroeconomic variables (MV)

x_1 = Interest Rate (InR)

x_2 = Exchange Rate (ExR)

InR_t = $f(FPI_t)$----------f1

ExR_t = $f(FPI_t)$----------f2

FPI_t = $f(InR_t, ExR_t)$----------f3

4. RESULTS AND DISCUSSION OF FINDINGS

Descriptive statistics

In order to determine the underlying features of the variables, descriptive statistics of the series data used in the research of the influence of macroeconomic variables on FPI in Nigeria were given. Table 4.1 displays the descriptive statistics for each dependent and independent variable, including the number of observations, mean, median, maximum, and lowest values, and standard deviation.

Table 4.1: Descriptive Statistics

	FORPORT	RGDP	INTR
Mean	3.20E+09	39660.13	13.80000
Median	2.00E+09	19795.64	13.50000
Maximum	8.84E+09	144210.5	26.00000
Minimum	3.00E+08	499.6800	6.000000
Std. Dev.	2.67E+09	43616.51	3.925711
Skewness	0.751668	0.941250	0.711240
Kurtosis	2.307112	2.621456	4.969118
Jarque-Bera	3.425141	4.608873	7.376094
Probability	0.180402	0.099815	0.025021
Observations	30	30	30

Source: Author Computation (2023). Notes: Foreign Portfolio Investment (Fortport), Interest Rate (INTR), Exchange Rate (EXR).

Net Foreign Portfolio Investment (FORTPORT)

Foreign portfolio investment refers to the purchase of securities and other assets by investors from another country. As can be seen from the table 4.1, the mean value of 3.20 billion naira over the observed period were within the minimum and maximum values of 3.00 and 8.84 billion naira respectively. This shows that over the period observed (1993-2023), the average foreign portfolio investment was 3.2 billion naira. The standard deviation of 2.67 depicts that there is high variability among the series distribution of the FORTPORT since the values lies above one (1).

Interest rate (INTR)

From the table 4.1, the mean value of INTR of 13.8 rate over the observed period were within the minimum and maximum values of 6.0 and 26.0 interest rate respectively. This shows that over the period observed (1993-2023), the average interest rate was 13.8 interest rate. The standard deviation of 3.92 depict that there is high variability among the series distribution of the INT since the values lies above one (1).

Exchange rate (EXR)

From the table 4.1, the mean value of Exchange rate (EXR) of 121.7693 naira to dollars over the observed period were within the minimum and maximum values of 8.038 and 309.75 naira per dollar respectively. This shows that over the period observed (1993-2023), the average exchange rate was 121.77 naira per dollar. The standard deviation of 89.032 depict that there is high variability among the series distribution of the EXR since the values lies above one (1).

Multicollinearity Test

As part of the preliminary analysis, the study assesses the degree of association among the selected variables. Among other purposes of this result is to check for linear correlation of independent variables that will be used in the analysis and to make sure that there are no predictors that have excessively high correlations that could cause multi-collinearity issues.

Table 4.2: Correlation Matrix

	FORPORT	RGDP	INTR	INF	FRESERVE	EXR
FORPORT	1					
RGDP	-0.436418	1				
INTR	0.533252	-0.346110	1			
INF	0.247944	-0.338613	0.359243	1		
FRESERVE	-0.611284	0.727371	-0.656137	-0.434082	1	
EXR	-0.223839	0.717486	-0.314901	-0.417861	0.687627	1

Source: Author Computation 2023. Notes: Foreign Portfolio Investment (Fortport), Interest Rate (INTR), Exchange Rate (EXR).

Table 4.2 presents the correlation coefficients of Foreign Portfolio Investment (Fortport), Interest Rate (INTR), Exchange Rate (EXR). The results show that none of the independent variables posits perfect correlation among the pairs. While the coefficient between INTR and RGDP was -0.346704, RGDP and INF was -0.339, RGDP and FRESERVE was 0.727, RGDP and EXR was 0.717. Also the correlation coefficient between INTR and INF depicts 0.359, INTR and FRESERVE depicts -0.656, INTR and EXR also shown a correlation of -0.315. More so, the correlation between INF and FRESERVE depict -0.434, INF and EXR also shows -0.417, while FRESERVE and EXR also shows a correlation of 0.688 degree. Looking critically at the explanatory variables, the correlation coefficients are between -0.656 and 0.727. This shows that, none of the correlation coefficients is too high to the point of causing multi-collinearity problems in the models.

Unit Root test

To examine the effect of macroeconomic variables on foreign portfolio investment in Nigeria, the process of unit root testing was employed. This study employed Augumented Dickey Fuller unit root test approach.

Table 4.3: Unit root tests: Augmented Dickey-Fuller Test in Intercept and Intercept-Trend Model at Levels and First Difference

Variables	Model Specification	ADF		Critical Value	Order of Integration
		Levels	First Difference		
FORPORT	**Intercept**	-2.0721	-5.9827	-2.967767	I(1)
INTR	**Intercept**	-3.054074	-7.655	-2.967767	I(1)
EXR	**Intercept**	0.7006	-3.847820	-2.967767	I(1)

Source: Author Computation 2023. Notes: Foreign Portfolio Investment (Fortport), Interest Rate (INTR), Exchange Rate (EXR).

Table 4.3 presents the ADF unit root test result using the intercept model to deduce the order of integration of the variables at 5% level of significant. The results indicate that Foreign Portfolio Investment (Fortport), Interest Rate (INTR), Exchange Rate (EXR) have unit root problem at level with the statistical value of -2.072, -2.054and 0.700 respectively against the critical values of -2.968. Hence all series in the model were said to be integrated of order one (I(1)) Having shown the integrating order of the series in the model, it is clear that the series depicts the same order of integration which necessitates the use of Fully Modified Ordinary Least Square. This is consistence with the assumption of FMOLS as the series depicts the same order of integration of one I(1).

Hypothesis Testing

Test of Hypotheses One

Objectives one: To examine the effect of interest rate on foreign portfolio investment in Nigeria;
Research Questions one: What is the effect of interest rate on foreign portfolio investment in Nigeria?

Hypotheses one: Interest rate no has significant effect on foreign portfolio investment in Nigeria.

Table 4.4: Interest rate on foreign portfolio investment in Nigeria

Variables	Coefficient	Stand. Error	T-Statistics	P–Value
Fully Modified Ordinary Least Square Model				
INTR	-0.214390	0.065277	-3.284320**	0.0028

C	24.44143	0.924577	26.43525**	0.0000
R-Squared	0.167080			
Adjusted R-Squared	0.136231			
F-Statistics	10.7867**(0.0028)			
Long-Run Variance	1.807			
Diagnostics Test				
Jargue-Bera Normality Test	1.1386 (0.5659)			

Source: Author Computation (2023). Notes: Foreign Portfolio Investment (Fortport), Interest Rate (INTR), Exchange Rate (EXR).

In Table 4.4, showed that interest rate (INTR) has a significant influence on foreign portfolio investment (R^2= 0.167, $F(1, 30) = 10.787$, $p< 0.05$). The model shows that interest rate explains the variation of 16.7% in foreign portfolio investment. These are reliable evidences that the model is fit. This implies that the linear effect of the interest rate predicts the foreign portfolio investment in Nigeria. Hence, the study concluded that there is significant effect of interest rate on foreign portfolio investment in Nigeria. The study showed that interest rate has a negative and significant effect on foreign portfolio investment in Nigeria ($\beta = -0.214$, $t = -3.284$, $P<0.05$). This shows that an increase in interest rate will bring about a decrease of 0.214% in foreign Portfolio investment in Nigeria.

Diagnostic Tests

Normality test was carried out to validate the viability of the model, the chi-square value of 1.1386 and the corresponding p-values of 0.565 are not statistically significant at 5% levels. These suggest that the study is normally distributed and concludes that the error term of the estimated regression models is normally distributed.

Test of Hypotheses Two

Objectives Two: investigate the effect of exchange rate on foreign portfolio investment in Nigeria;

Research Question two: What is the effect of exchange rate on foreign portfolio investment in Nigeria?

Hypotheses Two: Exchange rate has no significant effect on foreign portfolio investment in Nigeria

Table 4.5: **exchange rate on foreign portfolio investment in Nigeria**

Variables	**Coefficient**	**Stand. Error**	**T-Statistics**	**P–Value**
Fully Modified Ordinary Least Square Model				
EXR	0.007637	0.003022	2.526928	0.0177
C	20.67354	0.460967	44.84821	0.0000
R-Squared	0.294904			
Adjusted R-Squared	0.268789			
F-Statistics	6.3853**(0.0177)			
Long-Run Variance	1.9774			
Diagnostics Test				
Jargue-Bera Normality Test	1.434 (0.488)			

Source: Author Computation (2023). Notes: Foreign Portfolio Investment (Fortport), Interest Rate (INTR), Exchange Rate (EXR).

Diagnostic Tests

Table 4.5 presents an analysis that employs the Fully Modified Ordinary Least Squares (FMOLS) model to explore the impact of the exchange rate (EXR) on foreign portfolio investment in Nigeria, revealing significant statistical relationships:

The coefficient for EXR is positive at 0.007637, suggesting a direct relationship where an increase in the exchange rate (an indicator of local currency depreciation) positively impacts foreign portfolio investment. This result implies that foreign investments may yield higher returns in their original currency as the local currency weakens, potentially attracting more foreign capital. The standard error for the EXR coefficient is 0.003022, with a t-statistic of 2.526928, indicates statistical significance, confirming that the exchange rate has a strong impact on foreign portfolio investment. The t-value, which exceeds the critical value of 2 for a 95% confidence interval, emphasizes the reliability of the exchange rate's effect within the model.

For the EXR coefficient, a p-value of 0.0177, which is below the 0.05 threshold, statistically confirms the significant influence of the exchange rate on foreign portfolio investment, rejecting the null hypothesis of no effect. The results implies that changes in the exchange rate explain approximately 29.49% of the variability in foreign portfolio investment, as indicated by

the R-squared value of 0.294904. Although this suggests a moderate model fit, the adjusted R-squared of 0.268789 reflects adjustments for the number of predictors, supporting a significant, albeit not exhaustive, explanation of the model's FPI variance.

An F-statistic of 6.3853 with a p-value of 0.0177 confirms the model's overall statistical significance. This shows that the exchange rate can explain changes in foreign portfolio investment in a meaningful way. The long-run variance of 1.9774 suggests the model's capability to handle long-term uncertainty, reflecting the residual variability over an extended period. Normality test was carried out to validate the viability of the model, the chi-square value of 1.434 and the corresponding p-*values of* 0.488 are not statistically significant at 5% levels. These suggest that the study is normally distributed and concludes that the error term of the estimated regression models is normally distributed. In other words, the Jarque-Bera normality test of residuals reports a value of 1.434 with a p-value of 0.488, indicating that we cannot reject the null hypothesis of normality. This supports the assumption of normally distributed residuals, lending further credibility to the model's statistical tests.

In summary, the FMOLS model robustly demonstrates a significant and positive relationship between the exchange rate and foreign portfolio investment in Nigeria. The findings, validated by rigorous model diagnostics, suggest that policymakers and economic analysts should consider these dynamics when devising strategies to enhance foreign investment inflows, recognising the critical role of exchange rate management.

Discussion of Findings

This study elucidates a distinct negative correlation between interest rates and Foreign Portfolio Investment (FPI) in Nigeria, as evidenced by a coefficient of -0.214 ($t = -3.284$, $P < 0.05$). This empirical result implies that an uptick in interest rates precipitates a decline in FPI by approximately 0.214%. This phenomenon aligns with the broader financial theory, which suggests that higher borrowing costs can deter investment inflows by increasing the cost of capital. Alotaibi's (2018) research reinforces this finding by exploring the volatility spillovers from FPI inflows to financial variables within the Saudi stock market, offering a comparative perspective on the influence of FPI despite not assessing direct volatility metrics in the current Nigerian context. The analysis demonstrated the long-lasting relationships between the studied variables. All of the coefficients in both the mean and variance equations showed strong statistical

robustness.

Furthermore, the study identifies a pronounced positive effect of the exchange rate on FPI in Nigeria, marked by a coefficient of 0.0076 ($t = -2.526$, $P < 0.05$). This suggests that an appreciation movement in the exchange rate enhances FPI inflows by 0.0076%, underscoring the sensitivity of foreign investments to currency valuation changes. This outcome corroborates findings by Ogundipe et al. (2019), who noted significant variability in FPI attributable to macroeconomic factors.

The impulse response analysis emphasises the critical influence of market capitalization and exchange rate fluctuations on the FPI's dynamics. The sensitivity of FPI to these variables is markedly more pronounced over longer time horizons, contrasting with the relatively muted responses to GDP and inflation shocks. This differential response indicates that market capitalization and exchange rate volatility are more potent in altering FPI trajectories, highlighting their pivotal role in financial market dynamics.

Moreover, the study's forecast error variance decomposition reveals that shocks in market capitalization, exchange rates, and GDP contribute substantially to the overall variability in FPI. These results show how important these variables are for financial modelling and making smart investment decisions. Individuals involved in these matters should closely monitor these indicators to optimise their investment returns and mitigate the risks associated with overall economic fluctuations. This analysis not only deepens our understanding of FPI determinants in an emerging market context, but also assists policymakers and investors in crafting strategies that leverage these insights for improved financial stability and growth.

5. CONCLUSION AND RECOMMENDATIONS

Conclusion

A persistent decline in Foreign Portfolio Investment (FPI) inflows and escalating outflows are currently posing a significant challenge to the Nigerian economy. This trend poses substantial concerns, as FPI serves as a crucial mechanism for capital mobilisation in emerging markets like Nigeria. A lack of economic diversification, ongoing security concerns, and strict regulatory frameworks that make it hard to invest, time-consuming bureaucratic processes for getting the necessary permits. These factors collectively undermine Nigeria’s attractiveness as a destination for foreign investors. Moreover, the Nigerian economy faces a growing gap between the existing

domestic capital stock and the burgeoning capital requirements necessary to sustain development. This disparity underscores the critical need for augmenting local resources with foreign capital to support continued economic growth and development.

Empirical findings from this study underscore the profound impact of macroeconomic variables on FPI flows into Nigeria. Specifically, the research highlights how interest rates and exchange rates—proxies for the broader economic health and policy environment—significantly influence FPI. The analysis reveals a direct correlation between these macroeconomic factors and FPI flows, establishing that FPI is positively associated with higher interest rates, which may attract foreign investors looking for higher returns on their investments. Conversely, currency depreciation, while potentially increasing the local currency value of returns, may also signal economic instability, which could deter investment.

The study also shows a positive correlation between increased FPI inflows and foreign direct investment, lower inflation rates, and higher GDP growth rates in the host country. These elements suggest that macroeconomic stability and robust economic growth are pivotal in attracting FPI, highlighting the necessity for policy measures that ensure a stable and conducive economic environment. This investigation not only reaffirms the significant relationship between macroeconomic variables and FPI flows but also emphasises the imperative for strategic policy interventions. To enhance Nigeria's appeal to foreign portfolio investors, it is crucial to address the structural challenges within the economy, streamline regulatory processes, bolster the legal framework, and ensure economic stability. Such reforms will not only attract foreign capital but also contribute to the broader objective of sustainable economic growth.

Recommendations

The study's findings on the dynamics of foreign portfolio investment (FPI) in Nigeria necessitate the implementation of targeted policy recommendations to maximise the inflow of these investments. These recommendations are designed to address the pivotal macroeconomic factors identified as significant influencers of FPI, namely interest rates and exchange rates.

{1. Interest Rate Policy: The analysis clearly shows a correlation between higher interest rates and increased FPI inflows, as they provide foreign investors with more attractive returns. Therefore, it is recommended that the Central Bank and financial regulatory authorities in Nigeria develop and maintain interest rate policies that are conducive to investment. This involves carefully balancing

the rate to maximise investment appeal without exacerbating inflation or hindering domestic borrowing. An optimal interest rate policy should be responsive to global economic conditions and aligned with national economic objectives to stabilise and potentially increase foreign portfolio inflows.

{2. Exchange Rate Stability: The study also highlights the significant role of the exchange rate in influencing FPI. A stable exchange rate ensures that foreign investors face less currency risk and provides predictability in the costs of goods and services, as well as the financial returns on their investments. To this end, monetary authorities should implement strategies that mitigate excessive fluctuations in the exchange rate. Such policies could include using foreign exchange reserves to smooth out volatile movements, adopting a managed float exchange rate system, or implementing hedging mechanisms to protect against forex exposure risks.

{3. Regulatory Framework and Policy Consistency: Beyond specific economic policies, creating a stable and predictable regulatory environment is crucial. This entails not only simplifying procedures and reducing bureaucratic bottlenecks but also ensuring consistency in economic policies, which can significantly enhance the country's attractiveness as an investment destination.

{4. Monitoring and Evaluation: To ensure the effectiveness of these policies, continuous monitoring and evaluation of their impact on FPI is necessary. Establishing feedback mechanisms is necessary to facilitate timely adjustments to economic and regulatory policies, adapt to changing global economic landscapes, and maintain the competitiveness of Nigeria's financial markets.

Implementing these recommendations requires a coordinated effort among various governmental and regulatory bodies. By focusing on fostering a favourable investment climate through stable macroeconomic policies, Nigeria can enhance its capacity to attract and retain foreign portfolio investments, thereby supporting broader economic growth and development.

Conflicts of Interest

The author has disclosed no conflicts of interest.

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