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Impact of Selected Macroeconomic Variables on Foreign Portfolio Investment (FPI) Inflow into the Top Five (5) Oil Producing Countries in Sub-Sahara Africa (1999-2024)

[1]Musa Joshua Ibrahim, [2]Akpan S. Michael, & [3]Ogwuche D. David
[1,2&3]Department of Economics, Faculty of Social Sciences,
Bingham University Karu, Nigeria

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Abstract

Amid persistent efforts by oil-producing countries in Sub-Sahara Africa to attract foreign capital for economic diversification and development, this paper examined the impact of selected macroeconomic variables on the inflow of foreign portfolio investment to the top five oil-producing countries of Sub-Sahara Africa. These were Angola, Congo Brazzaville, Gabon, Ghana, and Nigeria for the period 1999 to 2024. The Panel Least Squares model with Cross-Section Fixed Effects were used in the analysis. The results revealed that inflation was the most significant determinant of foreign portfolio investment in the selected countries as it exhibited a strong negative relationship. Interest rates showed a marginally significant negative association with foreign portfolio investment, while Gross Domestic Product and exchange rates were statistically insignificant with a positive relationship. The findings underscore the critical importance of macroeconomic stability, particularly inflation control, in attracting foreign portfolio investments. Based on these results, the paper recommends that the monetary authorities prioritize inflation management, re-evaluate interest rate policies, promote economic diversification, and ensure exchange rate stability as the policy variables that could enhance foreign portfolio investment inflows in the region.

Keywords: *Foreign Portfolio Investment, Inflation, Oil Economies, Macroeconomic Stability, Panel Data Analysis*

Corresponding Author: Musa Joshua Ibrahim

Background to the Study

The integration of emerging economies into the global financial system has been a defining feature of contemporary globalisation, with Foreign Portfolio Investment (FPI) representing a critical, yet volatile, source of capital for developing regions. For Sub-Saharan Africa (SSA), which faces an annual infrastructure financing gap estimated by the African Development Bank (2018) at $68 to $108 billion, attracting foreign capital in the region is a developmental imperative. However, the region's integration has remained shallow, as noted by the World Bank (2023) that SSA's share of global portfolio flows has consistently remained below 3% which is in stark contrast to other emerging markets. This paradox is particularly acute for oil-producing nations in the region, where resource wealth has not reliably translated into financial market stability or sustained capital inflows.

The core issue is the persistent failure of these resource-rich economies to attract stable FPI despite significant policy efforts. This underscores a disconnect between conventional liberalisation strategies pursued by most SSA countries and the specific macroeconomic realities of commodity-dependent financial markets. Collectively, these nations dominate SSA's oil production, yet their oil revenues have not fostered proportional financial depth. For instance, Nigeria's stock market capitalisation has rarely exceeded 15% of GDP, compared to an average of over 80% in emerging economies globally (World Bank, 2024). This discrepancy has persisted despite extensive policy initiatives. Countries like Ghana and Nigeria, for example, have established sovereign wealth funds, such as the Ghana Petroleum Funds and Nigeria's Sovereign Investment Authority, following best-practice guidelines from institutions like the IMF (2014). Furthermore, widespread capital account liberalisation has been pursued across the cohort. However, as the Organisation of Economic Cooperation and Development (OECD, 2021) observed, these measures have failed to replicate the success seen in developed economies, where strong institutional frameworks have created a more predictable investment climate. The inability of these borrowed policies to secure stable FPI inflows for the region seems to suggest a critical misalignment with the fundamental macroeconomic signals that international investors required to invest in high-risk, commodity-dependent contexts.

This paper posits that the solution lies in a clearer empirical understanding of the relationships between core domestic macroeconomic indicators and FPI behaviour in the region. Gross Domestic Product (GDP) growth in these nations has been profoundly volatile, with Angola's economy, for example, contracting by over 4% in 2016 during the oil price crash after years of double-digit growth (IMF, 2020). Interest Rates (INTR) are often kept high to curb inflation and attract capital, but this can stifle the real economy. Inflation (INF) remains a persistent threat to real returns, with countries like Ghana and Nigeria struggling with chronically high rates of inflation, often exceeding the central bank targets by wide margins. Exchange Rates (EXR), managed through various regimes from Nigeria's tightly controlled system to Angola's floating currency, are a primary source of investor anxiety regarding convertibility and devaluation risk. By employing a panel least square regression with cross section fixed effects on data from 1999 to 2024, a period encompassing multiple commodity cycles and global shocks, this study aims to isolate the precise influence of these variables on FPI. The findings will provide evidence-based guidance, moving beyond the generic and often ineffective policy

prescriptions of the past, to help these nations finally leverage their resource wealth into sustainable financial integration. This paper thus examined the effect of selected macroeconomic variables on foreign portfolio investment into the top five oil producing countries of sub-Sahara Africa (1999-2024) using panel least squares with cross section fixed effect with the hypothesis below:

H_{01}: Gross Domestic Product has no significant impact on foreign portfolio investment inflow to the top five (5) oil producing countries in sub-Sahara Africa.

H_{02}: Interest rate has no significant impact on foreign portfolio investment inflow to the top five (5) oil producing countries in sub-Sahara Africa.

H_{03}: Inflation has no significant impact on foreign portfolio investment inflow to the top five (5) oil producing countries in sub-Sahara Africa.

H_{04}: Exchange rate has no significant impact on foreign portfolio investment inflow to the top five (5) oil producing countries in sub-Sahara Africa.

Conceptual Clarification and Literature Review

Foreign Portfolio Investment

Foreign Portfolio Investment (FPI) refers to cross-border investments in financial assets like equities and bonds, where the investor does not seek managerial control over the enterprise (Ayenew, 2022). Distinguished from Foreign Direct Investment by its liquidity and short-term nature, FPI is highly sensitive to host-country macroeconomic volatility and policy shifts. For developing economies, FPI plays a vital role in financial integration, helping to bridge the savings-investment gap as well as deepen domestic capital markets (Acheampong, 2019). However, this benefit is coupled with significant risk, as its inherent volatility can lead to sudden reversals that destabilize exchange rates and erode financial stability (Mairafi *et al.*, 2024). The flow of FPI is primarily driven by key macroeconomic indicators. Investors are attracted to countries offering attractive returns and stable environments, making interest rate differentials, low inflation, and exchange rate stability critical determinants (Ikpesu, 2019). Beyond these factors, the quality of a nation's institutions and its regulatory transparency are fundamental for attracting stable portfolio inflows (Cleeve et al., 2015). The relationship between FPI and the host economy is often cyclical; FPI drives stock market capitalization and economic growth, which in turn makes the economy more attractive to further investment (Raza et al., 2015). Given that FPI is highly "sentiment-sensitive" and responsive to global risk appetite, governments must balance capital market openness with prudential controls to mitigate the risks of sudden capital flight (Dinga & Fonchamnyo, 2021). Ultimately, the net impact of FPI hinges on the host country's macroeconomic stability, policy credibility, and institutional quality.

Macroeconomic Variables

Macroeconomic variables are critical indicators that reflect the overall performance and stability of a nation's economy, providing a comprehensive assessment used to analyze trends, guide policy, and influence foreign capital flows. As defined by Mankiw (2021), these are broad aggregates like gross domestic product (GDP), inflation, and interest rates, which are fundamental to understanding economic health. They form the foundation for economic

analysis, helping policymakers and investors gauge the economic environment and measure the impact of external shocks (Blanchard & Johnson, 2017). In globally integrated economies, variables such as exchange rates are particularly pivotal, as their fluctuations directly affect a country's competitiveness and attractiveness to foreign investors (Krugman & Obstfeld, 2020). This is especially relevant in developing contexts, where stable macroeconomic conditions are key for investment and development strategies (Todaro & Smith, 2020). Empirical research in the African context confirms that variables like exchange rate volatility and inflation are decisive determinants of foreign investment flows, with stability encouraging inflows and unpredictability heightening risk (Adeniyi et al., 2015; Adegboye et al., 2020). Furthermore, studies by Ayenew (2022) indicate that interest rates and trade openness significantly explain variations in foreign capital across Sub-Saharan Africa, as macroeconomic stability enhances market credibility.

Gross Domestic Product

Gross Domestic Product (GDP) is a primary indicator of economic performance, representing the total monetary value of all final goods and services produced within a country's borders in a specific period (World Bank, 2024). It serves as a comprehensive barometer for the size and health of an economy, guiding policy analysis and investment decisions (Raza et al., 2015). In developing regions like Sub-Saharan Africa, GDP growth is frequently used to assess the effectiveness of foreign capital inflows, such as Foreign Portfolio Investment (FPI), and is often correlated with improvements in living standards, provided the growth is inclusive (Ibhagui, 2020). Beyond measuring output, GDP also provides a lens for evaluating institutional quality and the impact of international investment (Adegboye et al., 2020). It is a foundational variable in econometric models, used to analyse the influence of financial inflows, inflation, interest rates, and exchange rates (Ayenew, 2022). Furthermore, GDP captures the effects of internal policies and external shocks, with factors like political stability and corruption control significantly influencing its trajectory, as seen in comparative Asian studies (Abdillah et al., 2020). However, scholars like Acheampong (2019) caution that while GDP captures economic expansion, it must be evaluated alongside metrics like income distribution to determine actual welfare improvements. Ultimately, GDP remains a pivotal, though incomplete, tool for understanding economic growth, policy outcomes, and investment attractiveness.

Interest Rate

The interest rate, defined as the cost of borrowing or the return on saving, is a fundamental monetary policy instrument used by central banks to control inflation, stabilise currencies, and foster growth (World Bank, 2023). In open economies, particularly in developing nations, interest rate differentials are a critical determinant of capital mobility, influencing the direction and volume of foreign investment flows (Ehigiamusoe & Lean, 2019). It functions as the price for loanable funds, and its stability is a key signal of macroeconomic confidence and effective monetary governance, which attracts long-term foreign investors (Ibhagui, 2020). However, unstable interest rate regimes create uncertainty, deterring long-term investment by increasing risks and reducing profitability expectations (Adebayo et al., 2021). This volatility, especially when coupled with economic policy uncertainty, hampers foreign capital inflows

globally (Canh et al., 2020). Technically, as a policy variable adjusted by monetary authorities, the interest rate significantly influences liquidity, domestic savings, investment patterns, and exchange rate movements (Ndubuisi, 2017). Its dual nature as both a cost for borrowers and an incentive for savers makes its management crucial for sustaining economic growth and attracting consistent foreign capital, particularly in Sub-Saharan Africa (Mohammed, 2022).

Inflation

Inflation, the persistent rise in the general price level of goods and services, erodes purchasing power and is a primary gauge of economic stability (World Bank, 2024). It acts as a macroeconomic disturbance that increases risk and uncertainty for investors, making foreign portfolio investors, in particular, highly sensitive to price instability (Ehigiamusoe & Lean, 2019). High inflation undermines real returns on investment and is negatively correlated with foreign direct investment, especially in developing countries with weak institutions (Adams & Klobodu, 2017). It is often a symptom of economic mismanagement, driven by demand-pull pressures, cost-push factors, and macroeconomic policy inconsistencies like poor fiscal discipline (Adebayo et al., 2021). By distorting price signals, inflation complicates investment planning and introduces exchange rate risk, which diminishes profit margins and deters foreign capital (Raza et al., 2015). In Sub-Saharan Africa, structural bottlenecks, supply chain inefficiencies, and imported inflation further exacerbate the problem, making economies vulnerable to price shocks (Mohammed, 2022). Ultimately, inflation is a major deterrent to foreign investment due to its distortionary effects on long-term contracts, wages, and overall investment profitability (Asamoah et al., 2016).

Exchange Rate

The exchange rate, the price of one currency in terms of another, is a crucial link between domestic and global economies, influencing trade, investment, and macroeconomic stability (IMF, 2023). It acts as a strategic variable signalling an economy's competitiveness; misalignment can distort trade balances and capital allocation (Zhang & Ward, 2015). Regimes vary from fixed (offering predictability) to floating (determined by markets) and managed floats (a hybrid with occasional central bank intervention) (Canh et al., 2020). For emerging markets, exchange rate volatility is a significant risk, where frequent depreciation driven by inflation or political instability discourages long-term foreign investment (Ehigiamusoe & Lean, 2019). Management is critical, as an overvalued currency reduces export competitiveness and the repatriated value of foreign direct investment (FDI), while an undervalued one can spur inflation (Adeniyi et al., 2015). In import-dependent Sub-Saharan African economies, exchange rate fluctuations often have high pass-through effects to domestic prices, undermining stability (Mohammed, 2022). Therefore, a transparent and stable exchange rate policy, aligned with productivity and supported by sound macroeconomic fundamentals, is a hallmark of economies that successfully attract foreign portfolio investment (Dinga & Fonchamnyo, 2021).

Empirical Review

Kustina *et al.* (2024) evaluated the relationship between investor sentiment, exchange rate volatility, and country index crash risk, with net foreign portfolio investment (NFPI) as a

moderating variable. Using panel data analyzed through logistic and OLS regression with two-dimensional clustered standard errors in EViews, the findings demonstrated that exchange rate fluctuations and investor sentiment significantly affect country index crash risk. However, NFPI itself had a negligible direct impact and, contrary to expectations, was found to weaken, rather than strengthen the combined influence of investor sentiment and exchange rate volatility on crash risk. Consequently, Kustina et al. (2024) recommended that financial market regulators and policymakers should not rely on foreign portfolio investment as a stabilizing mechanism during periods of high volatility. Instead, they should prioritize direct management of exchange rate stability and monitor investor sentiment indicators to mitigate systemic crash risk in national markets.

Mairafi, *et al.* (2024) investigated the impact of foreign capital inflows on economic growth in 26 Sub-Saharan African countries from 1998 to 2022. The research employed a dynamic panel econometric approach, specifically the System Generalized Method of Moments (GMM), to analyze the effects of Foreign Direct Investment (FDI), Foreign Portfolio Investment (FPI), and Official Development Assistance (ODA) on real Gross Domestic Product (RGDP). The results indicated that both FDI and FPI had a statistically significant positive effect on economic growth, whereas ODA's impact, while positive, was not statistically significant. Based on these findings, the authors recommended policies to strengthen local content frameworks to maximize FDI benefits, reforms to deepen capital markets for better FPI absorption, and a critical re-evaluation of institutional frameworks governing ODA to enhance its effectiveness as a short-term economic support mechanism. In their study, Alalade et al. (2024) investigated the role of Foreign Portfolio Investment (FPI) in enhancing the liquidity and efficiency of Nigeria's capital markets from 1993 to 2023. Using an ex-post facto research design and data from the Central Bank of Nigeria, the authors employed the Fully Modified Ordinary Least Squares (FMOLS) estimation method to analyze the impact of key macroeconomic variables. The results revealed a significant and unexpected inverse relationship between the interest rate and FPI, with a coefficient of -0.214, and a significant influence of the exchange rate on FPI, with a coefficient of 0.0076. Based on these findings, the study recommended that Nigerian policymakers should formulate and implement refined interest rate strategies and work to stabilize the macroeconomic environment, particularly the exchange rate, to attract foreign portfolio investments, thereby reinforcing the country's financial market infrastructure and economic landscape.

In another study, Tyoga, *et al.* (2024) investigated the macroeconomic determinants of Foreign Portfolio Investment (FPI) in Nigeria using quarterly data from 2011 to 2022. The research employed the Ordinary Least Squares (OLS) estimation technique to analyze the impact of the exchange rate, inflation, and Gross Domestic Product (GDP) on FPI inflows. The results demonstrated that all three variables significantly influenced FPI, with exchange rate volatility identified as a particularly substantial driver of investor decisions, creating uncertainty that discourages long-term commitments. Based on these findings, the authors recommended achieving macroeconomic stability through coordinated and consistent fiscal, monetary, and exchange rate policies. Specifically, they propose that monetary authorities should increase the monetary policy rate to ensure positive real returns for investors, while

fiscal authorities should focus on creating a conducive business environment through improved security and policy predictability to attract and retain foreign capital. Olaleye (2024) assessed the impact of foreign capital inflows, specifically Foreign Direct Investment (FDI), external debt, and Foreign Portfolio Investment (FPI), on the unemployment rate in Nigeria from 1990 to 2021. The researcher employed a quantitative econometric approach, utilizing the Autoregressive Distributed Lag (ARDL) bounds test and an Error Correction Model (ECM) to analyze both the long-run and short-run dynamics. The results revealed a significant negative relationship between FPI and the unemployment rate, suggesting that it contributes to job creation. Conversely, both FDI and external debt were found to have a positive and significant relationship with unemployment, indicating that they were associated with higher joblessness in the Nigerian context. Based on these findings, the study recommended that government policy should be strategically directed towards attracting sustainable FPI that targets employment-generating sectors. Furthermore, it advised that external debt should be channeled into productive infrastructure development to create a conducive environment for job creation and private investment, thereby mitigating the unemployment crisis.

Pantelopoulos (2022) empirically investigated the relationship between human capital, specifically educational attainment, and the two core forms of international investment namely Foreign Direct Investment (FDI) and Foreign Portfolio Investment (FPI) in OECD countries from 1960 to 2010. The analysis, which employed a series of education variables, revealed that FDI was significantly influenced by secondary and tertiary education levels, whereas FPI was affected only by tertiary education. Furthermore, schooling and completion ratios were found to have a major impact on both investment types. Based on these findings, he concluded that human capital development was a foundational determinant for attracting international investment, implicitly recommending that host country governments should prioritize investments in secondary and tertiary education to attract FDI, and specifically in tertiary education to enhance their appeal to foreign portfolio investors. Edo and Kanwanye (2022) investigated the contrasting roles of capital returns and currency value as drivers of foreign portfolio investments in Sub-Saharan African economies. Using autoregressive distributed lag (ARDL) and vector error correction models, the empirical results revealed a significant positive impact of capital returns and a significant negative impact of currency value on FPI, while financial openness showed a positive but insignificant effect and inflation impaired investments. Based on these findings, recommendations were made to policymakers in Sub-Saharan Africa to prioritize policies that enhance capital market returns and maintain competitive currency valuations to attract foreign portfolio investments, while simultaneously implementing measures to control inflation and improve the slow adjustment speed of investments through financial market reforms.

Lang, *et al.* (2020) investigated the impact of cross-border regulatory cooperation on foreign portfolio investment, exploiting the signing of the Multilateral Memorandum of Understanding (MMoU) as a quasi-experimental shock to the Securities and Exchange Commission's oversight. Using a research design that compared US-cross-listed firms to non-cross-listed firms, the authors found that foreign investment in cross-listed firms from signatory countries increased by approximately $110 billion. The strongest effects were

observed among investors facing greater information asymmetries and those from countries closely linked to the US. While the study did not make explicit policy prescriptions, the authors demonstrated that international regulatory cooperation through non-binding information-sharing arrangements significantly enhanced foreign portfolio investment by reducing information barriers, thereby providing crucial evidence for policymakers and regulators on the tangible benefits of cross-border supervisory collaboration. In a related study, Prabheesh (2020) investigated the causal relationship between foreign portfolio investment (FPI) flows and stock market returns in India during the COVID-19 pandemic. Using daily data and the Toda and Yamamoto Granger causality test, the analysis revealed a unidirectional causality that ran from FPI flows to stock returns. This finding indicated that movements in foreign capital were a primary driver of domestic stock market performance during the crisis period. Consequently, the author underscored the critical influence of foreign investors in emerging markets during times of global stress, which suggested that policymakers and market regulators should prioritize monitoring FPI flows and implementing measures to mitigate the potential destabilizing effects of sudden capital flight on financial market stability.

In their analysis of capital flows and exchange rates in India from 2000 Q2 to 2018 Q3, Banerjee and Joseph (2020) employed graphical analysis and Granger causality tests. The findings revealed that inflows from Foreign Direct Investment (FDI) and Foreign Portfolio Investment (FPI) Granger-caused movements in the Real Effective Exchange Rate (REER), whereas other capital components like NRI deposits showed no causal link. Consequently, they underscored the necessity for policymakers to calibrate capital account and exchange rate policies specifically in response to the significant influence of FDI and FPI. In an empirical investigation of Nigeria's economic growth from 1980 to 2015, Ehigiamusoe and Lean (2019) employed the Autoregressive Distributed Lag (ARDL) bounds testing approach to analyze the impact of various foreign capital inflows. Their results revealed a long-run equilibrium relationship, with Foreign Portfolio Investment (FPI) exhibiting a significant positive effect on growth, while foreign loans had a significant negative impact. Both Foreign Direct Investment (FDI) and foreign aid were found to be statistically insignificant. Consequently, Ehigiamusoe and Lean (2019) recommend that policymakers should prioritize strategies to attract FPI and reduce the nation's dependency on foreign loans to foster sustainable economic growth.

In their 2019 study, Adeyemi, *et al.* (2019) examined the link between exchange rate volatility and foreign portfolio investment in Nigeria from 1996Q1 to 2016Q4. The study used a vector autoregressive (VAR) model. The results indicated that exchange rate volatility and market capitalization were the primary determinants, and significantly explained the variations in FPI. Impulse response analysis further revealed that FPI was more responsive to shocks in market capitalization and the exchange rate, which increased FPI over time, while shocks to GDP and inflation caused FPI to dwindle. Consequently, the work recommended that the Nigerian monetary authorities should prioritize stabilizing the exchange rate and implementing policies that bolster stock market performance to attract and sustain foreign portfolio investment. Al-Smadi (2018) investigated the determinants of Foreign Portfolio Investment (FPI) in Jordan from 2000 to 2016 by using regression analysis. The results

demonstrated that a stable macroeconomic environment, opportunities for risk diversification in the capital market, high country creditworthiness, and effective governance were significant factors in attracting FPI to Jordan Consequently, the work recommended that Jordanian policymakers should prioritize the maintenance of macroeconomic stability, ensure sufficient market liquidity, and strengthen governance frameworks to create a more attractive environment for foreign portfolio investors.

Makoni and Marozva (2018) examined the nexus between Foreign Portfolio Investment (FPI) and Financial Market Development (FMD) in Mauritius from 1989 to 2016 by using ARDL, VECM, and Granger causality techniques. The results revealed cointegrating relationships between FPI, FDI, FMD, and real economic growth. The Granger-causality tests showed that FMD caused both FPI and FDI, while FPI caused FDI. However, no causality was found running from foreign investments to financial market development, which indicated that Mauritius's financial market development was internally catalyzed rather than driven by foreign capital. Based on these findings, Makoni and Marozva (2018) recommended that policymakers should prioritize strengthening domestic financial market structures and institutions, as this internal development strategy will subsequently attract foreign portfolio and direct investments, which would provide valuable insights for other emerging markets that seek to optimize their financial development and foreign investment strategies. In an investigation of capital flows and macroeconomic variables in Nigeria, Nwinee and Olulu-Briggs (2016) utilized Johansen cointegration and Granger causality tests on 29 years of annual data. Their analysis established a long-run equilibrium among the variables and revealed significant causal relationships, including a unidirectional causality from interest rate to foreign portfolio investment and from inflation rate to foreign exchange rate. Consequently, they recommended that the Central Bank of Nigeria should implement sound fiscal and monetary policies to manage exchange rate volatility and mitigate adverse macroeconomic fluctuations. They further emphasized the importance of strengthening institutional frameworks to control inflation-interest rate swings, so as to promote sustainable capital flows and stock market performance.

Methodology

The data employed in this paper included Foreign Portfolio Investment (FPI), which served as the dependent variable. The independent variables comprised a set of selected macroeconomic variables which are Gross Domestic Product (GDP), Interest Rate (INTR), Inflation Rate (INF), and Exchange Rate (EXR). Data for these variables were obtained from the World Development Indicators (WDI) database for a sample of five (5) oil-producing Sub-Saharan African countries, including Angola, Congo Brazzaville, Gabon, Ghana, and Nigeria. These countries were selected based on their status the as top regional oil producers and the availability of data. The dataset was a balanced panel data spanning from 1999 to 2024.

The theoretical foundation for this paper was derived from the portfolio balance theory, which was originally propounded by Branson (1968). The theory posits that international investors allocate their capital based on a comparative assessment of risk and return across countries.

The expected return on investment in a host country is influenced by its macroeconomic conditions. Therefore, the functional relationship for the model can be expressed as:

$$FPI = f(GDP, INTR, INF, EXR) \quad (1)$$

Following the empirical literature on FPI determinants (Alalade *et al.,* 2024; Edo & Kanwanye, 2022; Tyoga *et al.,* 2024), the estimable panel data model is specified as follows:

$$FPI_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 INTR_{it} + \beta_3 INF_{it} + \beta_4 EXR_{it} + \mu_i + \varepsilon_{it} \quad (2)$$

Where;
FPI_{it} represents Foreign Portfolio Investment inflows for country "I" in year "t".
GDP_{it} is the Gross Domestic Product of country "I" in year "t", representing market size and economic growth.
$INTR_{it}$ is the Interest Rate of country "I" in year "t", proxying for the return on financial assets.
INF_{it} is the Inflation Rate of country "I" in year "t", representing macroeconomic stability.
EXR_{it} is the Exchange Rate of country "I" in year "t", indicating currency risk.
β_0 is the constant term.
μ_i represents the unobserved, time-invariant country-specific fixed effects.
ε_{it} is the error term.

The variable μ_i captures a complete set of cross-section fixed effects, which account for the influence of any time-invariant country-specific characteristics, such as institutional quality, political stability, or resource endowment nuances not fully captured by the other variables. Theoretically, the coefficients of GDP and INTR are expected to have a positive impact on FPI, as they signal market opportunity and higher returns. In contrast, the coefficients of INF and EXR are expected to have negative impact, as they signify macroeconomic instability and currency depreciation risk. This paper used a panel data model. The primary estimation technique employed was the Panel Least Squares model with Cross-Section Fixed Effects. The Fixed Effects estimator was chosen over the Random Effects model following a Hausman test, which confirmed the consistency of the Fixed Effects estimator by rejecting the null hypothesis that the unique errors are uncorrelated with the regressors. The use of the Fixed Effects model was crucial as it controlled for all time-invariant differences between the oil-producing countries, thereby mitigating the potential for omitted variable bias. This allowed the model to isolate the net effect of the selected macroeconomic variables on FPI inflows. The estimation was conducted using EViews 12 software. The variables used are described in Table I.

Variables Description

Table 1: Variables Description and Measurements

Variable	Acronym	Description	Measurement	Source
Foreign Portfolio Investment	FPI	Cross-border investments in financial assets without managerial control	Net FPI inflows (current US$)	World Development Indicators (2024)
Gross Domestic Product	GDP	Total monetary value of all final goods and services produced	GDP (current US$)	World Development Indicators (2024)
Interest Rate	INTR	Cost of borrowing or return on saving	Real interest rate (%)	World Development Indicators (2024)
Inflation Rate	INF	Annual percentage change in consumer prices	Inflation, consumer prices (annual %)	World Development Indicators (2024)
Exchange Rate	EXR	Value of domestic currency relative to US dollar	Official exchange rate (LCU per US$, period average)	World Development Indicators (2024)

Source: Researcher's Compilation, 2025

Results and Discussion

Cross Sectional Dependence

In order to ensure the reliability of the panel data analysis, it was essential to test for cross-sectional dependence, as the independence of cross-sections was crucial for obtaining consistent coefficient estimates (Pesaran, 2004). This study employed the Cross-Section Dependence (CD) test, which is suitable for datasets with a smaller number of cross-sectional units (N) relative to a larger time series (T), as was the case here with N=5 and T=26. In scenarios where T > N, the Lagrange Multiplier (LM) test by Breusch and Pagan (1980) may be applied. However, when T < N, the LM test statistic lacks desirable statistical properties and tends to exhibit significant size distortions (Pesaran, 2004). The results of the cross-sectional dependence test are presented in Table 2.

Table 2: Cross Sectional Dependence Tests

Test	Statistic	Prob.
Breusch-Pagan LM	22.67171	0.0120
Pesaran scaled LM	2.833480	0.0046
Pesaran CD	0.080509	0.9358

Source: Authors Computation, 2025 (Eviews-12)

The model had a statistic value of 22.67171 and a p-value of 0.0120 under the Breusch-Pagan LM test, from the results of the cross-sectional dependence test. Furthermore, the Pesaran scaled LM test yielded a statistic of 2.833480 with a p-value of 0.0046. Both the Breusch-Pagan LM and Pesaran scaled LM tests were found to be statistically significant at the 5 percent level. The decision rule is that if the p-value is less than the significance level (e.g.,

$p<0.05$), reject the null hypothesis. This showed the presence of cross-sectional dependence in the model. Such presence may be attributed to a high degree of regional economic integration and shared exposure to global oil market shocks among the top five oil-producing nations in Sub-Saharan Africa. For instance, a simultaneous plunge in global crude oil prices would likely trigger correlated economic shocks, affecting foreign investment flows across all countries in the panel despite their individual policy differences. Consequently, the paper proceeded to examine the stationarity of the variables using the Unit Root Test as another form of pre-estimation tests. The results are presented in Table 3.

Unit Root Test

The Levin-Lin-Chu unit root test results are presented in Table 3:

Table 3: Levin-Lin-Chu Panel Unit Root Test

Variable	Method	Level	First Diff.
		Stat. (Prob.)	Stat. (Prob.)
FPI	LLC	-2.41371 (0.0079)	-
GDP	LLC	-2.81995 (0.0024)	-
INTR	LLC	-2.61007 (0.0045)	-
INF	LLC	-16.9604(0.0000)	-
EXR	LLC	-3.52361 (0.0002)	-

Source: Researcher's Computations using E-Views 12

The Levin-Lin-Chu unit root test indicated that all variables, namely FPI, GDP, INTR, INF, and EXR were stationary at level, as evidenced by their statistically significant test statistics ($p < 0.05$).

Panel Least Squares Estimation

Following the confirmation of the variable's stationarity, this paper estimated the relationship between Foreign Portfolio Investment and the selected macroeconomic variables using the Panel Least Squares technique with cross-section fixed effects. The results are presented in Table 4.

Table 4: Panel Least Squares with Cross-Section Fixed Effects Result
Dependent Variable: FPI

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP	-0.012769	0.045907	-0.278141	0.7814
INTR	-0.027782	0.014854	-1.870372	0.0638
INF	-0.039957	0.006557	-6.094027	0.0000
EXR	0.000970	0.001186	0.817806	0.4151
C	20.66466	1.120827	18.43698	0.0000
R-squared	0.540632			
Adjusted R-squared	0.510261			
S.E. of regression	2.098452			
F-statistic	17.80069			
Prob(F-statistic)	0.000000			
Durbin-Watson stat	1.039297			

Source: Authors Computation, 2025 (Eviews-12)

From Table 4, the inflation rate which was one out of the four explanatory variables used in the investigation had a statistically significant influence on Foreign Portfolio Investment in the top five oil-producing Sub-Saharan African countries. By implication, the inflation rate was crucial in explaining Foreign Portfolio Investment movements throughout the research period. The negative coefficient of the inflation rate aligned with economic theory and the work's a priori expectation, indicating that higher inflation deters foreign portfolio investment. The R-squared value of 0.540632 implied that the model had moderate explanatory power as approximately 54% of the variation in Foreign Portfolio Investment was explained by the independent variables. After adjusting for the number of predictors, the adjusted R-squared value of 0.510261 maintained this moderate explanatory power. The highly significant F-statistic ($p = 0.000000$) confirmed that the model was statistically significant overall.

Post-Estimation Test Results

In order to ensure the robustness and validity of the model's findings, several diagnostic tests were conducted. The outcomes of these tests are presented in Table 5.

Table 5: Diagnostic Test Results

Tests		Outcomes	
		Coefficient	Probability
Heteroskedasticity LR Test	F-stat.	23.91641	0.0002
Normality Test	Jarque-Bera	5.369031	0.068254

Source: Researcher's Computation Using EViews-12 (2025)

The diagnostic test results were as presented in Table 6 offer a mixed assessment of the model's robustness. The Heteroskedasticity Likelihood Ratio Test, with an F-statistic of 23.91641 and a probability value of 0.0002, indicated a statistically significant presence of

heteroskedasticity in the model's residuals, thereby violating the classical linear regression assumption of constant variance. Conversely, the Jarque-Bera test for normality, which yielded a statistic of 5.369031 with a probability value of 0.068254, failed to reject the null hypothesis at the 5% significance level, suggesting that the residuals were approximately normally distributed.

Discussion

In order to ensure the robustness of the panel data analysis, preliminary diagnostic tests were conducted. The Breusch-Pagan LM test revealed the presence of cross-sectional dependence in the model, which can be attributed to the high degree of economic integration and shared exposure to global oil market dynamics among the top five oil-producing nations in Sub-Saharan Africa. Subsequent stationarity tests using the Levin-Lin-Chu method confirmed that all variables were stationary at level [I(0)], validating the use of Panel Least Squares estimation with cross-section fixed effects. The empirical results from the Panel Least Squares estimation revealed important insights into the determinants of Foreign Portfolio Investment in the selected oil-producing countries. The analysis demonstrated that inflation rate emerged as the only statistically significant determinant of foreign portfolio investment at the 1% level, which exhibited a negative coefficient of -0.040. This indicated that a one-unit increase in inflation led to a decrease in foreign portfolio investment inflows by approximately 0.04%. It suggested that international portfolio investors were highly sensitive to price stability in these economies. This finding aligned with the theoretical expectations and prior studies by Alalade, *et al.* (2024) and Tyoga, *et al.* (2024), who emphasized that inflation erodes real returns and increases investment uncertainty in African economies.

While interest rate showed a negative relationship with foreign portfolio investment and was marginally significant at the 10% level ($p = 0.0638$), its impact remained relatively modest. This somewhat counterintuitive negative relationship may have reflected investor concerns that high interest rates signaled underlying macroeconomic instability rather than attractive returns. This was consistent with the findings of Edo and Kanwanye (2022) in their study of Sub-Sahara African economies. Both gross domestic product and exchange rate demonstrated statistically insignificant relationships with foreign portfolio investment, although they showed the expected positive coefficient while GDP surprisingly exhibited a negative coefficient, which contradicted the findings of Mairafi *et al.* (2024). It however aligned with Omurwa (2015) who found inconsistent effects of macroeconomic variables on capital flows in SSA. The model exhibited moderate explanatory power with an R-squared value of 0.541. This meant that the selected macroeconomic variables explained approximately only 54% of the variation in foreign portfolio investment flows. It showed a less than good fit for the data set. The highly significant F-statistic ($p = 0.0000$) confirmed the overall validity of the model specification. However, the Durbin-Watson statistic of 1.039 suggested the presence of positive serial correlation in the residuals, which indicated a limitation in the model's error structure.

These findings collectively showed the paramount importance of maintaining price stability through sound monetary policy as the primary mechanism for attracting foreign portfolio

investment to oil-producing Sub-Saharan African economies. The results suggested further that portfolio investors prioritize macroeconomic stability over growth prospects or interest rate differentials when making investment decisions in these markets. The results reinforce the conclusions drawn by Al-Smadi (2018) that in the Jordanian context and Kustina, *et al*. (2024) in their cross-country analysis.

Conclusion and Policy Implications

This paper examined the impact of selected macroeconomic variables on Foreign Portfolio Investment in the top five oil-producing Sub-Sahara African countries from 1999 to 2024. A Panel Least Squares model technique with Cross-Section Fixed Effects was used for the analysis. The empirical results revealed distinct relationships between the selected macroeconomic variables and foreign portfolio investment flows. The inflation rate emerged as the most significant determinant, showing a strong negative impact on foreign portfolio investment. Interest rate demonstrated a marginally significant but negative relationship, while gross domestic product and exchange rate showed statistically insignificant effects on the dependent variable. Based on these specific findings, the following recommendations are proffered:

i. Given the strong negative and statistically significant relationship between inflation and foreign portfolio investment. The monetary authorities should implement stringent inflation targeting frameworks to maintain price stability, as this is the primary macroeconomic concern for international portfolio investors in these economies.
ii. Since interest rates showed a negative relationship with foreign portfolio investment that was marginally significant, central banks should carefully evaluate the signaling effect of high interest rates, which might indicate underlying economic instability rather than attractive returns, thus deterring foreign investors.
iii. The statistically insignificant relationship between GDP and foreign portfolio investment suggested that economic size alone does not attract portfolio investments. The Governments, through the ministries of trade and investment, budget and economic planning, Agriculture, solid minerals, as well as the central banks should therefore focus on qualitative aspects of growth, particularly economic diversification beyond the oil sector to make their economies more attractive to foreign portfolio investors.
iv. Although the exchange rate showed an insignificant relationship with foreign portfolio investment, its positive coefficient aligned with theoretical expectations. Policymakers should therefore maintain stable exchange rate policies to avoid introducing additional uncertainty that could compound the negative effects of inflation on investment decisions.

The findings from this work have revealed significant policy implications for oil-producing Sub-Sahara African countries. The predominant significance of inflation stability implied that maintaining price control should be the cornerstone of any strategy aimed at attracting foreign portfolio investment. Furthermore, policymakers should recognize that macroeconomic stability appeared to outweigh both growth prospects and interest rate

returns in foreign investors' decision-making calculus. This suggested the need for comprehensive economic policies that prioritize stability while pursuing sustainable, diversified growth.

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