IMPACT OF INTEREST AND EXCHANGE RATES ON STOCK MARKET PERFORMANCE IN SUB-SAHARAN AFRICA

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ABSTRACT
This study investigated the impact of macroeconomic variables specifically, central bank policy rates (interest rates) and nominal exchange rates on stock market performance in Sub-Saharan Africa, focusing on Nigeria, South Africa, Ghana, and Namibia. Motivated by the need to understand how economic fundamentals influence financial markets in developing economies, the study employed quarterly panel data from 2010Q2 to 2025Q1. The analysis utilized a Fixed Effects Model to account for country-specific heterogeneity in assessing stock market performance, proxied by the All Share Index (ASI). The findings revealed that nominal exchange rates had a positive but statistically insignificant impact on stock market performance, suggesting a potentially weak but directional relationship. In contrast, interest rates showed a negative and statistically insignificant effect, indicating limited immediate influence on market behaviour. Other macroeconomic control variables including inflation and foreign direct investment also exhibited no significant impact. The results highlight the complex nature of macro-financial interactions in the region and underscore the need for cautious monetary policy calibration. The study concluded that while macroeconomic fundamentals do influence market trajectories, their effects may be moderated by structural and institutional factors unique to Sub-Saharan Africa. It recommends strengthening financial market infrastructure and deepening macroeconomic coordination to enhance resilience and investor confidence.
Keywords: Arbitrage Pricing Theory, Macroeconomic Variables, Stock Market Performance, Sub-Saharan Africa.
JEL Codes: E44, E52, F31, G15.

1. INTRODUCTION
Countries consciously work to boost economic growth to improve the quality of life for their people (Hauwa, 2024). The stock market with respect to the economy serves as a vital indicator of economic health, reflecting the collective expectations and behaviours of investors in response to domestic and global macroeconomic conditions, this is buttressed according to Majeed et al, (2025). Globally, stock market performance is influenced by a blend of monetary policy decisions, macroeconomic fundamentals, geopolitical events, and market sentiment. However, while developed economies such as the United States, the United Kingdom, and the Eurozone operate under well-established financial systems with strong regulatory frameworks and deep market liquidity, emerging markets often exhibit greater volatility due to political instability, regulatory gaps, and vulnerability to external shocks (Chen et al., 2022). This is buttressed by Iania et al. (2025) as they stated uncertainty is embedded in many aspects of our

lives. It is a broad concept, encompassing uncertainty surrounding economic phenomena like inflation and economic growth, as well as non-economic events such as geopolitical instability and climate change.

In Africa, stock markets have expanded significantly over recent decades, propelled by economic liberalization, foreign investment, and financial sector reforms. Leading exchanges like the Johannesburg Stock Exchange (JSE), Nigerian Exchange Group (NGX), and Nairobi Securities Exchange (NSE) have attracted growing participation from both domestic and international investors. Nonetheless, Sub-Saharan African (SSA) markets continue to face challenges such as limited liquidity, low investor confidence, and exposure to external risks (Agyapong & Mensah, 2023). Among the macroeconomic factors influencing equity markets, monetary policy rates and exchange rates are particularly critical as lower policy rates generally reduce borrowing costs, stimulating business activity and boosting stock prices. Conversely, higher policy rates increase financing costs and may suppress equity valuations (Okafor & Nwosu, 2023).

Despite existing research on the effects of monetary and exchange rate policies on financial markets in both developed and emerging economies, there is a notable gap in literature specific to Sub-Saharan Africa. Existing studies often overlook the unique structural features, policy environments, and external dependencies that characterize SSA markets. Therefore, this paper seeks to fill this gap by examining how monetary policy rates and nominal exchange rates impact stock market performance in four key SSA countries Nigeria, South Africa, Ghana, and Namibia.

2. LITERATURE REVIEW
2.1 Theoretical Review
This study adopts the Arbitrage Pricing Theory (APT) as its theoretical underpinning. Developed by Ross (1976), APT is a multi-factor asset pricing model that explains the expected return of a financial asset as a linear function of various macroeconomic risk factors. Unlike the Capital Asset Pricing Model (CAPM), which assumes that market risk (beta) alone explains expected returns, APT allows for multiple sources of systematic risk, such as inflation, interest rates, exchange rates, and industrial production.

According to APT, investors will exploit any mispricing in securities by arbitraging until prices return to equilibrium, assuming no arbitrage opportunities persist in efficient markets. This theory is particularly relevant in understanding stock market behaviour under varying macroeconomic conditions, as it provides flexibility in incorporating context-specific risk factors that influence asset prices.

The application of APT in Sub-Saharan Africa is justified by the region's high macroeconomic volatility, policy uncertainty, and sensitivity to global financial conditions. SSA stock markets are relatively shallow and are often influenced by macroeconomic fundamentals particularly monetary policy shifts and external shocks.

2.2 Empirical Review
Humpe et al. (2025) conducted a comprehensive comparative study examining the macroeconomic determinants of stock market performance across two distinct economic blocs: the Anglosphere (comprising developed, capital market-based economies) and BRICS (representing emerging, state-influenced economies). Using quarterly data spanning from 1995Q3 to 2023Q3, the authors employed a Pooled Mean Group (PMG) estimator within a panel ARDL cointegration framework to analyze long-run and short-run dynamics. Their findings revealed stark differences between the two groups. In Anglosphere countries, real GDP exhibited a statistically significant positive relationship with stock prices, while inflation (proxied by the consumer price index) showed a significant negative relationship. These results align with classical finance theory, where economic growth boosts firm performance and

inflation erodes asset values. Interestingly, policy interest rates and money supply were not statistically significant in explaining stock price movements in these developed economies. In contrast, for the BRICS countries, inflation was the only variable showing a significant long-run effect on stock market performance, and the relationship was positive indicating that stock markets in these emerging economies may serve as an inflation hedge. This divergence underscores the differentiated roles macroeconomic fundamentals play in shaping stock market behaviour across economic systems. The authors argue that the insignificance of policy rates and money supply may be due to their indirect effects being captured by GDP and inflation.

Xuet al. (2024) conducted an empirical analysis examining the impact of macroeconomic shocks on volatility spillovers between stock, bond, gold, and crude oil markets. Utilizing a novel vector Multiplicative Error Model (vMEM-X), the study treated macroeconomic conditions as external factors influencing market volatility, distinguishing between internal financial volatility spillovers and external macroeconomic shocks.

Their findings revealed that, in the absence of macroeconomic shocks, the stock market served as the predominant source of volatility spillovers, particularly affecting the crude oil market. However, this relationship changed significantly when macroeconomic shocks were introduced, with crude oil experiencing the most substantial impact from these external factors. The bond and gold markets exhibited lower volatility transmission and were less affected by macroeconomic shocks, reinforcing their roles as stabilizers within the financial system.

Madueke et al. (2024) conducted an empirical investigation into the macroeconomic effects of monetary and fiscal policy coordination on economic growth in Nigeria from 1985 to 2021. Using time series data sourced from the Central Bank of Nigeria Statistical Bulletin, the study employed multiple regression analysis to evaluate the impact of key monetary and fiscal variables on Nigeria's GDP.

Their findings revealed that the money supply, government expenditure, government revenue, inflation, and exchange rate exhibited a statistically insignificant but positive effect on Nigeria's economic growth. However, the monetary policy rate was found to have a statistically significant impact, suggesting that monetary policy adjustments play a more direct role in influencing economic stability. The study further established that effective coordination between fiscal and monetary policy had a substantial impact on economic growth, reinforcing the necessity for harmonized policy frameworks.

Patel and Roy (2023) researched interest rate adjustments and stock market performance: evidence from Asia-Pacific economies. This study focused on the Asia-Pacific region, encompassing both developed and emerging markets. The authors investigated how interest rate adjustments (independent variable) affect stock market performance indices while controlling for liquidity measures and other macroeconomic indicators. Employing a difference-in-differences (DiD) approach, the study compares market performance before and after interest rate changes, isolating the causal impact of monetary policy shifts. The findings reveal that stock market performance generally declines following rate hikes, though the adverse effect is moderated in markets with higher liquidity. Based on these results, the authors recommend that emerging economies focus on enhancing market liquidity to cushion against negative impacts, and they advise investors to adjust their portfolios in anticipation of liquidity conditions during policy shifts.

Garcia and Patel (2023) examined the impact of exchange rate volatility on stock market performance within the Asian financial markets. The authors treated exchange rate volatility as the independent variable and stock market performance as the dependent variable while controlling for key macroeconomic factors. They employed a time-series analysis combined with a GARCH model to capture the dynamic fluctuations and associated risks. The findings revealed that increased exchange rate volatility led to heightened uncertainty in the stock markets, resulting in lower returns during periods of significant depreciation. The authors

recommended that investors adopt hedging strategies and that policymakers consider measures to stabilize exchange rates.

3. METHODOLOGY
3.1 Research Design and Approach
This study adopts a quantitative research methodology utilizing panel data econometric techniques to investigate the impact of selected macroeconomic variables on stock market performance in Sub-Saharan Africa. Specifically, it employs quarterly data spanning the period 2010Q2 to 2025Q1 across four countries Nigeria, Ghana, South Africa, and Namibia.

3.2 Model Specification
The model specification directly operationalizes APT such as Huang et al. (2025) by using interest and exchange rates as risk factors assumed to influence expected returns in the selected SSA markets. By applying a fixed effects panel model, the study accounts for country-specific unobserved heterogeneity, thereby tailoring APT's multi-factor structure to reflect SSA's economic diversity and structural characteristics. The dependent variable, stock market performance, is proxied by the All Share Index (ASI), which has been differenced to ensure stationarity. The explanatory variables include the interest rate (INT), nominal exchange rate (EXG), inflation rate (INF), and foreign direct investment (FDI). The fixed effects (FE) model is specified as follows:

$$\Delta ASI_{it} = \alpha_i + \beta_1 INT_{it} + \beta_2 EXG_{it} + \beta_3 \Delta INF_{it} + \beta_4 FDI_{it} + \varepsilon_{it} \qquad (1)$$

Where, ΔASI_{it} is the first-differenced All Share Index for country iii at time *t*, representing changes in stock market performance. INT_{it} is the interest rate, proxied by the Monetary Policy Rate. EXG_{it} is the nominal exchange rate (local currency per US dollar). ΔINF_{it} is the first-differenced inflation rate, measured by changes in the Consumer Price Index. FDI_{it} is foreign direct investment inflow measured in millions of U.S. dollars. α_i captures the country-specific fixed effects while ε_{it} is the stochastic error term.

3.3 Estimation Strategy
Panel diagnostic tests, including unit root, heterogeneity, and cross-sectional dependence tests, were performed prior to calculating coefficients to comprehend the data and choose appropriate estimation techniques. The first of the estimating methods was cross-sectional dependence (CD) tested using the Pesaran (2004) and Breusch and Pagan (1980) methods.

While traditional first-generation unit root tests, such as those by Im et al. (2003), Levin et al. (2002), and Breitung (2000), do not address the CD, the Cross-sectionally Augmented IPS (CIPS) test by Pesaran (2007) was used to account for cross-sectional dependence when testing for unit roots Majeed et al. (2025). The model adopted,

$$\Delta Y_{it} = \alpha_i + \beta_i Y_{i,t-1} + \gamma_i Y_{t-1} + \sum_{i=0}^{n} \delta \, it \Delta Y_{i,t-j} + \sum_{i=0}^{n} \emptyset \, it \Delta Y_{i,t-j} \qquad (2)$$

Variable	Symbol	Measurement	Transformation	Frequency	Source
All Share Index	ASI	Country specific Index value	First differenced	Quarterly	Investing.com
Interest Rate	INT	Monetary Policy Rate (%)	Level	Quarterly	Country-specific Central Bank Reports
Exchange Rate	EXG	Nominal rate (Local Currency Units per USD)	Level	Quarterly	World Bank Open data
Inflation	INF	Year-on-year % change in CPI	First differenced	Quarterly	World Bank Open data
Foreign Direct Investment	FDI	% of GDP	Level	Quarterly	World Bank Open data

Researchers Computation, 2025

3. RESULTS AND DISCUSSION

Table 2: Descriptive Statistics

Variables	Mean	Std. Dev.	Max	Min	Obs
ASI	24615.33	27157.28	116732.4	719.5	244
INT	7.457974	6.55874	27.000	-2.34444	244
EXG	56.5545	43.58253	133.1639	0.0000	244
INF	25.37081	30.55642	100.000	2.209382	244
FDI	3.219052	3.244473	18.5764	-1.4189	244

Researchers EViews Computation, 2025

The descriptive statistics from Table 2 show significant volatility in the All Share Index and macroeconomic indicators across the four SSA countries. High standard deviations for inflation and exchange rates reflect economic instability in the region. These variations support the selection of variables under the APT framework as key macroeconomic risk factors influencing stock performance.

Table 3: Cross-Section Dependence Test

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	17.22088	6	0.0085[a]
Pesaran scaled LM	3.239189		0.0012[a]
Pesaran CD	1.27185		0.2034

Researchers EViews Computation, 2025   *Notes: [a] and [b] denote significance levels at 1 % and 5 %, respectively*

The Breusch-Pagan LM and Pesaran scaled LM tests from Table 3 confirm the presence of cross-sectional dependence, suggesting interconnectedness among SSA economies. Although the Pesaran CD test is not significant, the results justify concern over residual correlation.

Table 4: CIPS Unit Root Test

Variables	*1(0)*	*1(1)*
	t-stat	t-stat
ASI	-7.30300[a]	-7.56070[a]
INT	-3.72236[a]	-4.13523[a]
EXG	-1.92073[a]	-3.28232[a]
INF	-2.23497	-3.07408[a]
FDI	-2.37279[b]	-4.26566[a]

Researchers EViews Computation, 2025   *Notes: [a] and [b] denote significance levels at 1 % and 5 %, respectively*

Table 4 presents the results of the cross-sectional augmented IPS (CIPS) unit root test, which accounts for cross-sectional dependence. The results show that most variables are stationary at first difference, supporting the model's specification. Specifically, ASI, INT, and EXG are all significant at the 1% level in both levels and first differences, indicating that while trends exist, their differenced forms are appropriate for regression. Inflation (INF) and FDI are not stationary in levels but become stationary after first differencing, which justifies their transformation.

Table 5: Panel Fixed Effects Regression Results (White Cross-Section SEs)

Variable	Coefficient	Std. Error	t-Statistic	p-Value

INT	-48.08	72.69	-0.66	0.511
EXG	45.1	32.02	1.41	0.164
Control				
INF	-235.46	256.33	-0.92	0.362
FDI	-12.39	78.89	-0.16	0.876
Constant	-1495.52	1546.78	-0.97	0.338

Researchers EViews Computation, 2025

Table 5 displays the fixed effects regression results, estimating the impact of macroeconomic variables on stock market performance. While none of the coefficients are statistically significant at the 5% level, the directions of the coefficients align with economic theory and the Arbitrage Pricing Theory. The coefficient of interest rate (INT) is negative (-48.08), consistent with the hypothesis that higher monetary policy rates discourage investment and reduce stock market activity. However, the lack of significance (p = 0.511) suggests that monetary transmission mechanisms may be weak or inconsistent across SSA countries, possibly due to shallow financial markets or structural inefficiencies.

The exchange rate (EXG) has a positive coefficient (45.10), implying that currency depreciation may be associated with stock market gains, possibly due to an export-boosting effect or inflation hedge behaviour by investors. Yet, the coefficient is statistically insignificant (p = 0.164), which may reflect the complexity and heterogeneity of exchange rate pass-through in the region. Inflation (INF) has a large negative coefficient (-235.46), indicating that rising price levels could adversely impact stock market returns by eroding purchasing power and increasing uncertainty. While not statistically significant (p = 0.362), this finding is in line with previous studies and highlights the potential long-term risk inflation poses to investor confidence. FDI also shows a negative coefficient (-12.39), but with a very high p-value (0.876), suggesting no short-term relationship with stock performance.

CONCLUSION AND POLICY RECOMMENDATIONS
Conclusion
This study examined the impact of key macroeconomic variables interest rates, exchange rates, inflation, and foreign direct investment on stock market performance in four Sub-Saharan African countries using a panel fixed effects model within the framework of the Arbitrage Pricing Theory (APT). The analysis, covering quarterly data from 2010Q2 to 2025Q1, finds that none of the explanatory variables had statistically significant effects on stock market performance, although their coefficient signs were largely consistent with theoretical expectations.

The negative relationship between interest rates and stock market performance supports the theoretical view that tighter monetary policy may dampen investor activity and asset valuations. This aligns with the findings of Patel and Roy (2023), who observed that stock markets in Asia-Pacific economies tend to react negatively to rate hikes, particularly in less liquid markets. However, the absence of statistical significance in this study suggests that monetary policy in SSA may not be effectively transmitted through capital markets, possibly due to shallow market depth or institutional inefficiencies an issue echoed in Madueke et al. (2024), who observed mixed macroeconomic effects in Nigeria.

The positive, though insignificant, effect of exchange rates on stock returns contrasts with Garcia and Patel (2023), who found that exchange rate volatility generally suppressed equity returns in Asian markets. The divergence may reflect different market structures or the fact that this study uses nominal levels, not volatility measures.

Policy Recommendations

Central banks in SSA (e.g., Central Bank of Nigeria, Bank of Ghana) should enhance the effectiveness of interest rate policies by deepening financial markets, improving policy credibility, and reducing lag in transmission. This can be achieved through better coordination with fiscal authorities and transparency in rate-setting decisions.

Given the potential role of exchange rate signals in investor behaviour, monetary authorities should focus on stabilizing exchange rate movements through sound external reserve management, managed float regimes, and macro-prudential oversight.

This study contributes to the growing body of literature on African financial markets by applying a theoretical and empirical framework tailored to regional conditions. However, it also highlights the complexity and limitations of using conventional macroeconomic variables to explain market behaviour in SSA.

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