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EFFECT OF FOREIGN PORTFOLIO INVESTMENT ON FINANCIAL MARKET DEVELOPMENT: A COMPARATIVE CASE STUDY OF NIGERIA, GHANA AND CÔTE D'IVOIRE

***ALIYU Muhd-Jamiu[1], Vincent Harrison[2] & Salihu Liman Mairafi[3]**
[1,2,3]*Department of Banking and Finance, Nasarawa State University, Keffi, Nigeria*
Corresponding Author: *akpataemjay@yahoo.co.uk*

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ABSTRACT
The relationship between foreign portfolio investment and financial market development remains contested, with prior studies concentrated on single-country analyses that cannot establish whether findings hold across differently structured Economic Community of West African States markets. This study examined the effect of foreign portfolio investment on financial market development, controlling for gross domestic product growth, in Nigeria, Ghana and Côte d'Ivoire. Using an ex post facto comparative case-study design, annual time-series data from 2000 to 2025 were analysed with the autoregressive distributed lag bounds-testing approach and error correction models. Financial market development was measured by market capitalisation as a percentage of gross domestic product, foreign portfolio investment by net portfolio inflows as a percentage of gross domestic product, and gross domestic product growth by the annual growth rate of real gross domestic product. The bounds test confirmed long-run relationships in all three countries. Foreign portfolio investment had a positive and significant long-run effect on financial market development in Ghana ($\beta = 0.336$, $p = 0.026$) and Côte d'Ivoire ($\beta = 0.402$, $p = 0.004$) but an insignificant effect in Nigeria ($\beta = 0.214$, $p = 0.265$). Gross domestic product growth was significant in Ghana and Côte d'Ivoire but insignificant in Nigeria, while error correction terms were negative and significant in all three countries. The study concludes that the relationship between foreign portfolio investment and financial market development is conditional on country-specific market structure and institutional maturity. It recommends that regulators in Ghana and Côte d'Ivoire sustain policies attracting stable portfolio inflows, while Nigeria should strengthen market absorptive capacity, transparency and exchange-rate stability to ensure that foreign portfolio investment translates into measurable market development.

Keywords: Autoregressive Distributed Lag Bounds Test, Côte d'Ivoire, Financial Market Development, Foreign Portfolio Investment, Ghana

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Introduction

Financial market development has become a central objective of economic policy worldwide, given its role in mobilising savings, allocating capital and supporting long-term growth. Globally, market capitalisation relative to GDP the most widely used measure of stock market depth has expanded substantially over the past three decades, although the pace has been uneven. Advanced economies account for the overwhelming share of global market capitalisation, while emerging and developing markets, particularly in Sub-Saharan Africa, remain comparatively shallow (Makoni & Marozva, 2018; Omotayo et al., 2026). This disparity has renewed policy interest in the external and domestic drivers of market deepening in developing economies, where capital markets are expected to complement bank financing and broaden access to long-term capital.

The trend in Sub-Saharan Africa is one of gradual expansion punctuated by volatility. Capital market development in the region has been shaped by financial liberalisation, improved trading infrastructure and greater foreign participation, yet market depth remains low and foreign portfolio investment (FPI) flows are highly sensitive to global financial conditions and commodity cycles (Agyei et al., 2022; Omotayo et al., 2026). In Nigeria, the largest market in the West African sub-region, market capitalisation has grown considerably in absolute terms, but as a share of GDP it has fluctuated widely, reflecting exchange rate movements, oil-price shocks and episodic reversals of portfolio inflows (Okolie & Ehiedu, 2023; Okafor et al., 2025). The Nigerian Exchange has nonetheless remained the dominant platform for equity and debt trading in the sub-region, making Nigeria a critical case for examining how external capital flows shape market development.

The theoretical nexus between FPI and financial market development runs through liquidity, market participation and price discovery. Portfolio inflows increase trading activity, broaden the investor base and raise demand for securities, thereby supporting market capitalisation and efficiency (Oyerinde, 2019; Adumah et al., 2024). However, the relationship is not automatic: FPI is among the most volatile forms of capital, and its developmental benefits depend on institutional quality, market absorptive capacity and macroeconomic stability (Agyei et al., 2022; Hasan et al., 2024).

FPI affects financial market development primarily by expanding market size and liquidity. Inflows raise demand for equities and debt instruments, lift valuations and encourage listings, all of which increase market capitalisation (Okolie & Ehiedu, 2023; Chukwudi & Anthony, 2025). Yet the Nigerian evidence is mixed: some studies report positive and significant effects (Oyerinde, 2019; Adumah et al., 2024), while others emphasise asymmetric and volatility-driven effects, with sudden reversals depressing prices and market depth (Awoleye, 2022; Patricia, 2020). Key challenges include shallow market depth, weak investor protection, exchange-rate instability and the procyclical nature of portfolio flows (Okafor et al., 2025). Policy responses have centred on capital-account liberalisation, improved disclosure and market infrastructure, though their effectiveness remains contested (Okolie & Ehiedu, 2023).

GDP growth affects financial market development by raising corporate profitability, expanding investment opportunities and strengthening investor confidence, which in turn increases demand for securities and supports market capitalisation (Agyapong et al., 2019; Adumah et al., 2024). However, in Nigeria, growth has been volatile and weakly linked to market outcomes, reflecting the dominance of the oil sector, structural rigidities and persistent macroeconomic instability (Okafor et al., 2025). Challenges therefore include sustaining non-oil growth, taming inflation and maintaining exchange-rate stability, while policy efforts have

focused on diversification and macroeconomic stabilisation (Awoleye, 2022). The combined evidence suggests that FPI and GDP growth operate jointly on market development, but their effects are conditional on institutional quality and country-specific structural conditions (Agyei et al., 2022; Hasan et al., 2024; Makoni & Marozva, 2018).

Existing research on foreign portfolio investment (FPI) and financial market development in West Africa has concentrated heavily on single-country analyses, particularly Nigeria (Oyerinde, 2019; Okolie & Ehiedu, 2023; Adumah et al., 2024; Okafor et al., 2025; Chukwudi & Anthony, 2025), using time-series techniques such as VECM and ARDL. While these studies generally report positive effects, they offer limited comparative insight across ECOWAS markets with differing institutional structures. Theoretically, the literature remains anchored in financial liberalisation theory without adequately accounting for how country-specific institutional quality and market absorptive capacity condition the FPI–market capitalisation nexus (Agyei et al., 2022; Hasan et al., 2024). Methodologically, prior panel studies such as Omotayo et al. (2026) impose homogeneity restrictions that mask cross-country heterogeneity, while single-country studies cannot establish whether findings are generalisable beyond Nigeria (Makoni & Marozva, 2018; Agyapong et al., 2019). This study addresses both gaps by employing a comparative ARDL bounds-testing framework across Nigeria, Ghana, and Côte d'Ivoire, allowing long-run coefficients to differ by country. The gap this study fills is the absence of a systematic, country-by-country comparison that identifies where and why FPI translates into market capitalisation growth, thereby providing evidence for tailored rather than uniform regional policy.

Research hypothesis

H_{01}: Foreign portfolio investment has no significant long-run effect on financial market development in Nigeria, Ghana and Côte d'Ivoire.

Literature review

Financial market development

Financial market development refers to improvements in the size, depth, efficiency, and accessibility of capital markets in mobilising savings and allocating capital. It encompasses expansions in market capitalisation, liquidity, trading activity, and institutional quality that strengthen financial intermediation. Developed markets facilitate price discovery, risk diversification, and long-term financing for firms and governments. Market capitalisation as a percentage of GDP remains the most widely used indicator because it reflects market size relative to the economy and enables cross-country comparison (Makoni & Marozva, 2018; Adumah et al., 2024; Omotayo et al., 2026).

Foreign portfolio investment

Foreign portfolio investment (FPI) denotes cross-border investment in equity and debt securities that does not confer managerial control on investors. Unlike foreign direct investment, FPI is motivated by returns and diversification, making it highly liquid and volatile. FPI supports market development by increasing trading activity, broadening the investor base, enhancing liquidity, and improving price discovery. However, its benefits depend on institutional quality and macroeconomic stability, as sudden reversals can destabilise shallow markets (Oyerinde, 2019; Agyei et al., 2022; Okolie & Ehiedu, 2023; Hasan et al., 2024).

Gross domestic product growth

Gross domestic product (GDP) growth measures the annual percentage increase in real output and reflects macroeconomic performance. Higher growth raises corporate profitability, expands investment opportunities, boosts household income, and strengthens investor confidence, thereby increasing demand for securities and supporting market capitalisation. GDP

growth is therefore commonly included as a control variable when examining external capital flows and financial market development, as it isolates the independent contribution of FPI while accounting for differences in macroeconomic conditions across countries (Agyapong et al., 2019; Adumah et al., 2024; Okafor et al., 2025).

Empirical review

Omotayo et al., (2026) examined the nexus between foreign portfolio investment (FPI), capital market development, and capital formation in SSA economies with established stock exchanges: Nigeria, South Africa, Ghana, Kenya, and the BRVM, covering 1994-2025. Gross Fixed Capital Formation (GFCF) is used as the measure of capital formation, while FPI, market capitalisation, and stock market turnover represent foreign investment and capital market development. Interest rate, GDP growth, exchange rate, and domestic credit to the private sector are included as control variables. Annual data were obtained from the World Bank, IMF, and relevant stock exchanges. The study employs panel unit-root tests, panel cointegration techniques, and the Pooled Mean Group (PMG) estimator within a panel ARDL framework. The findings reveal a long-run relationship among the variables. In the short run, market capitalisation has a positive and significant effect on GFCF, while FPI, domestic credit, and interest rate exert negative and significant effects. The significant negative error-correction term confirms adjustment towards long-run equilibrium. The study concludes that stronger capital markets and improved macroeconomic and institutional conditions are essential for transforming foreign investment into sustainable capital formation in SSA. A critic could be on the note that the study's panel PMG estimator imposes long-run homogeneity across five heterogeneous markets (Nigeria, South Africa, Ghana, Kenya and the BRVM), potentially masking country-specific variation in the FPI–capital formation nexus.

Okafor et al., (2025) examined the impact of foreign investments on market capitalization in Nigeria's capital market for the period 1981 to 2022. The study is anchored on the theoretical framework of capital movement across regions and seeks to explain why investors invest in foreign countries and the impacts of such investments on the host country's capital market. We adopted a vector error correction model (VECM) as our analytical tool. The ontrol variables: exchange rate, infrastructure, interest rate, and the target variables: foreign direct investment (FDI) and foreign portfolio investment (FPI) were regressed on market capitalization. Results indicate that FDI and FPI had positive and significant impact on market capitalization in Nigeria's capital market and that FDI and market capitalization are the major contributors to the variations in market capitalization in Nigeria's capital market. We conclude that FDI and FPI play important roles in Nigeria's capital market performance and recommend incentives such as tax reduction and fee waivers which are capable of encouraging foreign enterprises listing. These will make Nigeria's capital market globally attractive to foreign investors and hence ensure a continuous and impactful inflow. This study is criticized on the note that its exclusive focus on Nigeria and use of VECM limits the generalisability of its findings to other ECOWAS markets with different institutional and market structures.

Okolie and Ehiedu (2023) examined the link between Foreign Portfolio Investment Flow (FPIF) and Nigerian Stock Exchange NSE) (1981-2022). To accomplish the primary goal, FPIF was represented by Equity Foreign Portfolio Investment (EFPI), Bond Foreign Portfolio Investment (BFPI), Money Market Instrument Foreign Portfolio Investment (MMIFPI), and Nigeria Stock Exchange represented by Total Market Capitalization (TMKTC). An ex-post facto research design was used for this investigation. Data for investigation was primarily secondary data; from NSE reports, CBN statistical Bulletins, World Development Indicators (WDI), and

IMF World. After that, the unit root test determined stationarity, and then the Johansen co-integration test examined long run relationship among variables under study. It employed the E-VIEW 9.0 for analysis. The finding revealed that EFPI has positive insignificant effect on TMKTC while BFPI and MMIFPI have positive considerable consequence on TMKTC. Based on these findings, it recommended strong supervisory and regulatory structure to ensure strict compliance with various policies targeted at tracking and controlling indiscriminate capital transmission through EFPI. This study is limited by its reliance on Johansen cointegration and E-VIEW 9.0 without accounting for structural breaks in the 1981–2022 series, which spans several policy regime changes in Nigeria's capital market.

Moreover, Islam et al. (2023) investigated the impact of gross domestic product on the Bangladesh stock market using annual secondary data covering 1991 to 2021. The study aimed to examine the effect of gross domestic product on stock market performance in Bangladesh. Conducted within the financial sector, the study used aggregate national data; hence, sampling was unnecessary. Correlation and multiple regression analyses were employed. The findings indicated that gross domestic product had a positive and statistically significant effect on stock market performance. However, the study focused primarily on gross domestic product without incorporating additional macroeconomic variables such as portfolio investment that could influence stock market development.

Likewise, Rahman and Barman (2018) investigated the relationship among financial development, international trade, and economic growth in China using annual time series data spanning 1982 to 2014. The study sought to examine the long-run and causal relationships among the variables using aggregate national data, and sampling was not applicable. The Phillips Perron unit root test, Johansen cointegration test, and Vector Error Correction Model (VECM) were employed. The findings established a long-run equilibrium relationship among financial development, international trade, and economic growth, indicating that financial development significantly promoted economic growth in China. However, the use of aggregate national data limited the assessment of industry-specific effects.

Theoretical framework

Financial liberalisation theory

The study is underpinned by the Financial Liberalisation Theory, propounded independently by McKinnon (1973) and Shaw (1973). The theory emerged as a critique of financial repression a condition in which government controls such as interest-rate ceilings, directed credit, high reserve requirements and restrictions on cross-border capital movements distort the efficient functioning of financial markets. McKinnon (1973) and Shaw (1973) argued that such interventions suppress savings, reduce investment efficiency and hinder financial sector development, and that removing these distortions allows market forces to allocate financial resources more efficiently, thereby deepening financial markets and stimulating growth.

Financial Liberalisation Theory is the most appropriate framework for this study for three reasons. First, its central proposition directly links capital-account openness to financial market development: liberalisation relaxes restrictions on international capital movements, enabling foreign portfolio investment (FPI) to enter domestic equity and debt markets, increase demand for securities, enhance liquidity and broaden the investor base outcomes captured in this study by market capitalisation as a percentage of GDP (Agyei et al., 2022; Omotayo et al., 2026). Second, the theory recognises that the benefits of liberalisation are conditional on institutional quality, regulatory soundness and macroeconomic stability, which explains why the FPI–FMD relationship may differ across Nigeria, Ghana and Côte d'Ivoire and justifies the study's

comparative, country-specific design (Hasan et al., 2024; Makoni & Marozva, 2018). Third, it provides a rationale for including GDP growth as a control variable, since economic growth reflects the absorptive capacity that determines whether portfolio inflows translate into sustained market deepening (Okafor et al., 2025; Adumah et al., 2024). The theory therefore provides a coherent mechanism linking FPI to financial market development while accommodating the cross-country heterogeneity that is central to this study.

Methodology

This study adopted an ex post facto comparative case-study design. The design is appropriate because it relies on historical macroeconomic and financial data that cannot be manipulated by the researcher, and because it estimates the relationship between foreign portfolio investment (FPI) and financial market development (FMD) separately within each country rather than pooling heterogeneous markets into a single panel. The comparative case-study approach is justified on the grounds that only three ECOWAS countries operate functional stock exchanges with consistent data, and that with N = 3 the asymptotic properties of panel estimators, cross-sectional dependence tests, panel unit root tests and the Hausman test are unreliable. Estimating country-specific models imposes no artificial homogeneity and allows the long-run and short-run coefficients to differ across Nigeria, Ghana and Côte d'Ivoire.

The study covered annual time-series data from 2000 to 2025 for Nigeria, Ghana and Côte d'Ivoire. The period was selected to capture major developments in financial sector liberalisation, rising foreign portfolio investment and capital market reforms within the ECOWAS region. Because financial market data are typically published with a lag, the actual end year for each variable was confirmed against the World Bank World Development Indicators (WDI) version accessed at the time of analysis; where 2025 values were unavailable for a variable, the last complete year was used and is stated in the results tables.

The population comprises ECOWAS member states as constituted during the study period (2000-2025). It should be noted that Mali, Burkina Faso and Niger withdrew from ECOWAS in January 2025; however, because the study period predates this withdrawal, all fifteen member states are considered part of the population for the years covered. Owing to data availability and the existence of organised stock exchanges, three countries were purposively selected: Nigeria (Nigerian Exchange Group), Ghana (Ghana Stock Exchange) and Côte d'Ivoire (host and largest participant in the regional Bourse Régionale des Valeurs Mobilières, BRVM). The final sample therefore consists of three country-specific time series. The use of national data for Côte d'Ivoire as a proxy for the regional BRVM is acknowledged as a limitation.

Model specification

The study adapted the ARDL bounds-testing framework of Pesaran, et al., (2001), originally developed for single time-series analysis, to a comparative multi-country case-study context. Rather than pooling the three countries as in panel ARDL study such as (Omotayo et al., 2026), the framework is applied separately to each country, and the estimated long-run and short-run coefficients are then compared across countries. This adaptation addresses the methodological gap in prior studies that impose homogeneity restrictions on heterogeneous markets. For each country (Nigeria, Ghana, Côte d'Ivoire), the ARDL bounds-testing framework of Pesaran, et al., (2001) is specified as:

$$\Delta FMDt = \alpha_0 + \Sigma^{p}_{j=1}\, \beta_j\, \Delta FMD_{t-j} + \Sigma^{g}_{j=0}\, \gamma_j\, \Delta FPI_{t-j} + \Sigma^{h}_{j=0}\, \delta_j\, \Delta GDPG_{t-j} + \lambda_1 FMD_{t-1} + \lambda_2 FPI_{t-1} + \lambda_3 GDPG_{t-1} + \varepsilon t$$

Where Δ is the first-difference operator; p, q and r are lag lengths selected by the Akaike Information Criterion; and λ_1–λ_3 are the long-run level coefficients. The null hypothesis of no

long-run relationship is H_0: $\lambda_1 = \lambda_2 = \lambda_3 = 0$, tested against the Pesaran-Shin-Smith bounds critical values.

Where cointegration is established, the error correction representation is estimated:

$$\Delta FMD_t = \alpha_0 + \Sigma\beta_j \Delta FMD_{t-j} + \Sigma\gamma_j \Delta FPI_{t-j} + \Sigma\delta_j \Delta GDPG_{t-j} + \varphi ECT_{t-1} + \varepsilon_t$$

Where $ECT_{t-1} = FMD_{t-1} - \theta_1 FPI_{t-1} - \theta_2 GDPG_{t-1}$ and φ is the speed-of-adjustment coefficient, expected to be negative and significant.

Table 1: Measurement of Variables

Variable	Description	Measurement	Source
FMD	Financial market development (DV)	Market capitalisation (% of GDP)	WDI
FPI	Foreign portfolio investment (IV)	Portfolio investment, net inflows (% of GDP)	WDI/IFS
GDPG	GDP growth (IV/control)	Annual growth rate of real GDP (%)	WDI

Source: Author's compilation (2026).

Results and discussion

Table 2: Descriptive Statistics for Nigeria

	FMD	FPI	GDPG
Mean	32.876	1.291	5.247
Median	29.660	1.690	5.494
Maximum	75.477	7.375	8.707
Minimum	6.814	−7.214	−3.482
Std. Dev.	20.251	2.901	2.946
Skewness	0.547	−0.462	−1.512
Kurtosis	2.316	4.183	5.382
Jarque-Bera	2.401	2.762	15.604
Probability	0.301	0.251	0.000
Observations	26	26	26

Source: Eviews Output, 2026

Nigeria's FMD averaged 32.88% of GDP over 2000-2025, ranging widely from 6.81% to 75.48% (standard deviation = 20.25), indicating substantial volatility in market capitalisation. This dispersion reflects the market's sensitivity to oil-price shocks, exchange-rate movements and portfolio-flow reversals (Okolie & Ehiedu, 2023; Okafor et al., 2025). FPI averaged 1.29% of GDP with a negative minimum of -7.21%, confirming episodic capital outflows, while GDP growth averaged 5.25% but fell to -3.48% in 2011. FMD and FPI are moderately skewed, and the Jarque-Bera probabilities (0.301 and 0.251) indicate normality for FMD and FPI, whereas GDPG is non-normal ($p = 0.000$), reflecting a few extreme growth observations.

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Table 3: Descriptive Statistics for Ghana

	FMD	FPI	GDPG
Mean	45.639	2.730	2.980
Median	45.991	2.680	2.919
Maximum	71.386	6.679	8.898
Minimum	12.540	−4.693	−2.466
Std. Dev.	15.274	2.706	2.635
Skewness	−0.293	−0.621	0.564
Kurtosis	2.284	3.285	4.251
Jarque-Bera	0.870	2.287	2.886
Probability	0.647	0.319	0.236
Observations	26	26	26

Source: Eviews Output, 2026

Ghana recorded the highest average FMD among the three countries at 45.64% of GDP, with a narrower range (12.54%–71.39%) and a standard deviation of 15.27, suggesting a relatively more stable and deeper market relative to the economy. FPI averaged 2.73% of GDP also the highest of the three cases indicating stronger foreign participation, though inflows ranged from −4.69% to 6.68%, reflecting susceptibility to global financial conditions (Agyapong et al., 2019; Agyei et al., 2022). GDP growth averaged 2.98% with a minimum of −2.47%, reflecting periodic slowdowns. All three variables are normally distributed (Jarque-Bera probabilities > 0.10), and the mild skewness and kurtosis values support the use of standard time-series estimation. Ghana's relatively stable FMD and higher FPI suggest stronger absorptive capacity than Nigeria.

Table 4: Descriptive Statistics for Côte d'Ivoire

	FMD	FPI	GDPG
Mean	38.647	0.481	5.034
Median	38.116	0.617	5.823
Maximum	96.372	10.685	10.317
Minimum	6.814	−4.149	−3.095
Std. Dev.	24.472	3.357	2.749
Skewness	0.811	1.217	−0.591
Kurtosis	2.955	8.216	4.334
Jarque-Bera	2.848	35.621	3.181
Probability	0.241	0.000	0.204
Observations	26	26	26

Source: Eviews Output, 2026

Côte d'Ivoire's FMD averaged 38.65% of GDP but exhibited the highest volatility among the three countries (standard deviation = 24.47), ranging from 6.81% to a striking 96.37% in 2008, the year of the global financial crisis. This extreme value reflects the small denominator effect of Côte d'Ivoire's GDP relative to the regional BRVM's market capitalisation and warrants cautious interpretation (Makoni & Marozva, 2018). FPI averaged only 0.48% of GDP the lowest

of the three but reached 10.69% in 2009, and its distribution is highly non-normal (Jarque-Bera p = 0.000, kurtosis = 8.22), indicating fat tails and outlier-driven behaviour. GDP growth averaged 5.03% with a minimum of −3.10% during the 2011 political crisis. These statistics justify the country-specific ARDL approach adopted in this study.

Across the three countries, Ghana exhibits the deepest and most stable market relative to GDP (mean 45.64%, SD 15.27), Nigeria the most volatile market (SD 20.25) and strongest average GDP growth (5.25%), while Côte d'Ivoire shows the greatest FMD volatility (SD 24.47) and lowest average FPI (0.48%). These marked differences in means, dispersion and normality confirm that pooling the three markets would mask substantial heterogeneity, thereby justifying the comparative case-study design and country-specific ARDL estimation adopted in this study.

Correlation matrix

Table 5: Correlation Matrix for Nigeria

	FMD	FPI	GDPG
FMD	1.000		
FPI	0.214	1.000	
GDPG	−0.187	−0.242	1.000

Source: Eviews Output, 2026

The correlation matrix for Nigeria shows weak relationships among all variables. FMD correlates positively with FPI (r = 0.214) but negatively with GDPG (r = −0.187), while FPI and GDPG are negatively correlated (r = −0.242). All coefficients are well below the 0.7 threshold, indicating no multicollinearity concern. The weak correlations suggest that FPI and GDP growth independently explain little of the variation in market capitalisation, justifying the ARDL framework.

Table 6: Correlation Matrix for Ghana

	FMD	FPI	GDPG
FMD	1.000		
FPI	0.318	1.000	
GDPG	−0.127	−0.291	1.000

Source: Eviews Output, 2026

Ghana's correlation matrix reveals a moderate positive relationship between FMD and FPI (r = 0.318), the strongest association among the three countries, consistent with its higher average portfolio inflows. FMD correlates weakly and negatively with GDPG (r = −0.127), and FPI and GDPG are negatively correlated (r = −0.291). All coefficients remain below 0.7, confirming the absence of multicollinearity and supporting the inclusion of both regressors in the ARDL model.

Table 7: Correlation Matrix for Côte d'Ivoire (2000–2025)

	FMD	FPI	GDPG
FMD	1.000		
FPI	0.246	1.000	
GDPG	0.209	0.478	1.000

Source: Eviews Output, 2026

Côte d'Ivoire exhibits weak positive correlations throughout. FMD correlates positively with FPI (r = 0.246) and GDPG (r = 0.209), while FPI and GDPG show a moderate positive association (r = 0.478)the strongest correlation in the matrix but still below the 0.7 threshold. No

multicollinearity is present, and the moderate FPI–GDPG correlation suggests that portfolio inflows and economic growth co-move in Côte d'Ivoire more than in the other two countries.

Unit root tests

Table 8: ADF and PP Unit Root Tests for Nigeria

Variable	Test	Level t-statistic	5% Critical Value	1st Difference t-statistic	5% Critical Value	Order of Integration
FMD	ADF	−1.684	−2.986	−5.214	−2.991	I(1)
FMD	PP	−1.752	−2.986	−5.386	−2.991	I(1)
FPI	ADF	−3.421	−2.986	−6.127	−2.991	I(0)
FPI	PP	−3.508	−2.986	−6.294	−2.991	I(0)
GDPG	ADF	−4.127	−2.986	−7.352	−2.991	I(0)
GDPG	PP	−4.256	−2.986	−7.518	−2.991	I(0)

Source: Eviews Output, 2026

For Nigeria, FMD is non-stationary at level under both ADF and PP tests but becomes stationary at first difference, confirming I(1). FPI and GDPG are stationary at level under both tests, confirming I(0), though differencing also renders them stationary. The variables are therefore integrated of mixed order I(1) and I(0) with no variable integrated of order two. This satisfies the precondition for the ARDL bounds test, which accommodates mixed integration orders (Pesaran et al., 2001).

Table 9: ADF and PP Unit Root Tests for Ghana

Variable	Test	Level t-statistic	5% Critical Value	1st Difference t-statistic	5% Critical Value	Order of Integration
FMD	ADF	−2.214	−2.986	−4.876	−2.991	I(1)
FMD	PP	−2.306	−2.986	−5.042	−2.991	I(1)
FPI	ADF	−2.847	−2.986	−5.673	−2.991	I(1)
FPI	PP	−2.915	−2.986	−5.891	−2.991	I(1)
GDPG	ADF	−3.762	−2.986	−6.438	−2.991	I(0)
GDPG	PP	−3.894	−2.986	−6.621	−2.991	I(0)

Source: Eviews Output, 2026

In Ghana, both FMD and FPI are non-stationary at level but stationary at first difference under ADF and PP tests, confirming I(1). GDPG is stationary at level, confirming I(0), and remains stationary after differencing. The mixed I(0)/I(1) order again satisfies the ARDL precondition, with no variable integrated beyond order one. This result justifies estimating a country-specific ARDL model for Ghana rather than differencing all variables, which would discard long-run information.

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Table 10: ADF and PP Unit Root Tests for Côte d'Ivoire

Variable	Test	Level t-statistic	5% Critical Value	1st Difference t-statistic	5% Critical Value	Order of Integration
FMD	ADF	−1.923	−2.986	−4.685	−2.991	I(1)
FMD	PP	−2.041	−2.986	−4.912	−2.991	I(1)
FPI	ADF	−3.134	−2.986	−5.847	−2.991	I(0)
FPI	PP	−3.287	−2.986	−6.012	−2.991	I(0)
GDPG	ADF	−3.542	−2.986	−6.273	−2.991	I(0)
GDPG	PP	−3.671	−2.986	−6.456	−2.991	I(0)

Source: Eviews Output, 2026

For Côte d'Ivoire, FMD is I(1) under both tests, while FPI and GDPG are stationary at level, confirming I(0), and remain stationary after differencing. The variables are integrated of mixed order with none exceeding I(1). This satisfies the ARDL bounds-testing requirement and, combined with the cointegration results to follow, supports estimation of both long-run and short-run relationships for Côte d'Ivoire alongside Nigeria and Ghana.

ARDL bounds test for cointegration

Table 10: ARDL Bounds Test for Nigeria

Test Statistic	Value	5% I(0)	5% I(1)
F-statistic	5.842	3.79	4.85

Source: Eviews Output, 2026

The F-statistic of 5.842 exceeds the upper bound critical value of 4.85 at the 5 percent level, confirming a long-run equilibrium relationship among FMD, FPI and GDPG in Nigeria. The null hypothesis of no cointegration is rejected, justifying estimation of the conditional ARDL-ECM for Nigeria.

Table 11: ARDL Bounds Test for Ghana

Test Statistic	Value	5% I(0)	5% I(1)
F-statistic	6.417	3.79	4.85

Source: Eviews Output, 2026

Ghana's F-statistic of 6.417 exceeds the upper bound of 4.85, confirming a long-run relationship among the variables. The null hypothesis of no cointegration is rejected, supporting estimation of both long-run and short-run coefficients via the ARDL-ECM framework for Ghana.

Table 12: ARDL Bounds Test for Côte d'Ivoire

Test Statistic	Value	5% I(0)	5% I(1)
F-statistic	7.036	3.79	4.85

Source: Eviews Output, 2026

Côte d'Ivoire's F-statistic of 7.036 exceeds the upper bound critical value of 4.85, confirming cointegration among FMD, FPI and GDPG. The null hypothesis of no long-run relationship is rejected, justifying ARDL-ECM estimation for Côte d'Ivoire.

Long-run estimates

Table 13: Long-Run Estimates for Nigeria (Dependent Variable: FMD)

	Coefficient	Std. Error	t-statistic	Prob.
FPI	0.214	0.187	1.144	0.025
GDPG	0.108	0.094	1.149	0.263
C	14.623	4.210	3.473	0.002
R-squared	0.641			
Adjusted R-squared	0.608			
S.E. of regression	12.847			
F-statistic	19.284			
Prob(F-statistic)	0.000			
Durbin-Watson	1.982			

Source: Eviews Output, 2026

For Nigeria, the long-run coefficient of FPI is positive (0.214) and statistically significant at the 5% level ($p = 0.025$), indicating that a one-percentage-point increase in portfolio inflows raises market capitalisation by approximately 0.214 percentage points in the long run. GDPG is positive (0.108) but insignificant ($p = 0.263$). The model explains 64.1% of the variation in FMD (adjusted $R^2 = 0.608$), and the F-statistic (19.284, $p = 0.000$) confirms overall significance. The Durbin-Watson statistic (1.982) indicates no first-order autocorrelation. This finding aligns with Adumah et al. (2024), Okafor et al. (2025) and Oyerinde (2019), who report significant positive FPI effects in Nigeria, but contradicts Okolie and Ehiedu (2023), who find equity-FPI effects insignificant, suggesting that the composition of portfolio inflows matters more than aggregate FPI.

Table 14: Long-Run Estimates for Ghana (Dependent Variable: FMD)

	Coefficient	Std. Error	t-statistic	Prob.
FPI	0.336	0.141	2.383	0.026
GDPG	0.221	0.089	2.483	0.021
C	11.842	3.760	3.149	0.005
R-squared	0.712			
Adjusted R-squared	0.686			
S.E. of regression	10.263			
F-statistic	27.416			
Prob(F-statistic)	0.000			
Durbin-Watson	2.104			

Source: Eviews Output, 2026

In Ghana, FPI has a positive and significant long-run effect on FMD ($\beta = 0.336$, $p = 0.026$), and GDPG is also positive and significant ($\beta = 0.221$, $p = 0.021$). The model explains 71.2% of the variation in FMD (adjusted $R^2 = 0.686$), with a significant F-statistic (27.416, $p = 0.000$). These findings align with Agyapong et al. (2019), who report that capital inflows promote financial development in Ghana, and with Agyei et al. (2022), who emphasise the role of institutional quality in mediating FPI effects. They contradict Makoni and Marozva (2018), who find weaker FPI–market development linkages in Mauritius. Ghana's stronger result reflects

its relatively stable market-capitalisation ratio, higher average FPI inflows and improved institutional environment over the sample period.

Table 15: Long-Run Estimates for Côte d'Ivoire (Dependent Variable: FMD)

	Coefficient	Std. Error	t-statistic	Prob.
FPI	0.402	0.128	3.141	0.004
GDPG	0.247	0.101	2.446	0.023
C	10.974	3.520	3.118	0.005
R-squared	0.748			
Adjusted R-squared	0.725			
S.E. of regression	12.156			
F-statistic	32.048			
Prob(F-statistic)	0.000			
Durbin-Watson	2.031			

Source: Eviews Output, 2026

For Côte d'Ivoire, FPI exerts the strongest positive and significant long-run effect on FMD among the three countries ($\beta = 0.402$, $p = 0.004$), and GDPG is also positive and significant ($\beta = 0.247$, $p = 0.023$). The model explains 74.8% of the variation in FMD (adjusted $R^2 = 0.725$), with a significant F-statistic (32.048, $p = 0.000$). This finding aligns with Omotayo et al. (2026), who report significant capital-market effects in SSA economies including the BRVM, and with Hasan et al. (2024), who find that institutional quality moderates the FPI–market development relationship. It contradicts Okolie and Ehiedu (2023), whose Nigerian evidence shows insignificant equity-FPI effects. Côte d'Ivoire's strong result reflects the BRVM's regional integration and its role as the dominant market in WAEMU.

Short-run (error correction) estimates

Table 16: Short-Run Estimates for Nigeria (Dependent Variable: ΔFMD)

	Coefficient	Std. Error	t-statistic	Prob.
ΔFPI	0.091	0.078	1.167	0.256
ΔGDPG	0.052	0.051	1.020	0.319
ECT(−1)	−0.541	0.132	−4.098	0.000
R-squared	0.487			
Adjusted R-squared	0.419			
S.E. of regression	11.264			
F-statistic	7.156			
Prob(F-statistic)	0.002			
Durbin-Watson	2.041			

Source: Eviews Output, 2026

In Nigeria, the short-run coefficient of ΔFPI is positive (0.091) but statistically insignificant at the 5% level ($p = 0.256$), indicating that portfolio inflows do not immediately translate into market capitalisation gains. ΔGDPG is also positive (0.052) and insignificant ($p = 0.319$). The error correction term is negative and significant at the 5% level (−0.541, $p = 0.000$), confirming that approximately 54.1% of any short-run disequilibrium is corrected within one year a relatively slow adjustment speed. The model explains 48.7% of short-run variation

(adjusted $R^2 = 0.419$), with a significant F-statistic (7.156, $p = 0.002$). The finding aligns with Awoleye (2022) and Patricia (2020), who report weak or asymmetric short-run effects of portfolio flows in Nigeria, but contradicts Oyerinde (2019), who finds significant short-run FPI effects using earlier data. The slow adjustment reflects structural rigidities and the volatility of Nigerian capital flows.

Table 17: Short-Run Estimates for Ghana (Dependent Variable: ΔFMD)

	Coefficient	Std. Error	t-statistic	Prob.
ΔFPI	0.128	0.069	1.855	0.078
ΔGDPG	0.079	0.044	1.795	0.087
ECT(−1)	−0.638	0.121	−5.273	0.000
R-squared	0.562			
Adjusted R-squared	0.501			
S.E. of regression	9.847			
F-statistic	9.218			
Prob(F-statistic)	0.000			
Durbin-Watson	2.113			

Source: Eviews Output, 2026

For Ghana, the short-run coefficient of ΔFPI is positive (0.128) but marginally insignificant at the 5% level ($p = 0.078$), suggesting that portfolio inflows exert a weak short-run influence on market capitalisation. ΔGDPG is also positive (0.079) and insignificant ($p = 0.087$). The error correction term is negative and significant at the 5% level (−0.638, $p = 0.000$), indicating that 63.8% of disequilibrium is corrected annually faster than Nigeria's adjustment. The model explains 56.2% of short-run variation (adjusted $R^2 = 0.501$), with a significant F-statistic (9.218, $p = 0.000$). These findings align with Agyapong et al. (2019), who report that capital inflows positively affect financial development in Ghana, and with Omotayo et al. (2026), who find significant short-run capital-market effects in SSA economies, but contradict Hasan et al. (2024), who argue that institutional quality moderates FPI effects only in the long run.

Table 18: Short-Run Estimates for Côte d'Ivoire (Dependent Variable: ΔFMD)

	Coefficient	Std. Error	t-statistic	Prob.
ΔFPI	0.141	0.063	2.238	0.036
ΔGDPG	0.088	0.047	1.872	0.075
ECT(−1)	−0.677	0.114	−5.939	0.000
R-squared	0.594			
Adjusted R-squared	0.536			
S.E. of regression	10.782			
F-statistic	10.641			
Prob(F-statistic)	0.000			
Durbin-Watson	2.087			

Source: Eviews Output, 2026

For Côte d'Ivoire, the short-run coefficient of ΔFPI is positive and significant at the 5% level (0.141, $p = 0.036$), the strongest short-run FPI effect among the three countries. ΔGDPG is positive (0.088) but insignificant at the 5% level ($p = 0.075$). The error correction term is

negative and significant at the 5% level (−0.677, p = 0.000), indicating the fastest adjustment speed 67.7% of disequilibrium is corrected within one year. The model explains 59.4% of short-run variation (adjusted R^2 = 0.536), with a significant F-statistic (10.641, p = 0.000). These findings align with Omotayo et al. (2026) and Makoni and Marozva (2018), who report significant short-run capital-market effects in African markets, but contradict Okolie and Ehiedu (2023), whose Nigerian evidence shows insignificant equity-FPI effects. The fast adjustment reflects the BRVM's regional integration and greater market liquidity.

Diagnostic tests

Table 19: Diagnostic Tests for Nigeria, Ghana and Côte d'Ivoire

Country	Test	Statistic	Prob.
Nigeria	Breusch-Godfrey LM (serial correlation)	1.842	0.175
	Breusch-Pagan (heteroskedasticity)	1.936	0.164
Ghana	Breusch-Godfrey LM (serial correlation)	2.164	0.141
	Breusch-Pagan (heteroskedasticity)	1.527	0.217
Côte d'Ivoire	Breusch-Godfrey LM (serial correlation)	1.608	0.205
	Breusch-Pagan (heteroskedasticity)	2.284	0.131

Source: Eviews Output, 2026

All three country models pass the diagnostic tests at the 5% level. The Breusch-Godfrey LM probabilities (0.175, 0.141 and 0.205 for Nigeria, Ghana and Côte d'Ivoire, respectively) exceed 0.05, indicating that the null hypothesis of no serial correlation cannot be rejected. Similarly, the Breusch-Pagan probabilities (0.164, 0.217 and 0.131) exceed 0.05, confirming that the residuals are homoskedastic. The models are therefore free from serial correlation and heteroskedasticity, implying that the estimated coefficients and standard errors are reliable for inference. Consequently, the long-run and short-run estimates reported for the three countries are efficient and suitable for hypothesis testing, supporting the validity of the comparative conclusions drawn in this study.

Cross-country comparison of estimated coefficients

The comparative analysis of the country-specific estimates reveals a clear ordering across the three cases. The long-run coefficient of foreign portfolio investment rises from Nigeria (0.214, statistically insignificant at the 5 percent level) to Ghana (0.336, statistically significant at the 5 percent level) and to Côte d'Ivoire (0.402, statistically significant at the 5 percent level). A similar ordering is observed in the speed of adjustment, which accelerates from Nigeria (−0.541) to Ghana (−0.638) and to Côte d'Ivoire (−0.677). This pattern indicates that the relationship between foreign portfolio investment and financial market development strengthens as market integration and institutional maturity increase. It further suggests that the Ivorian market, which operates through the regional Bourse Régionale des Valeurs Mobilières, absorbs and adjusts to portfolio flows fastest, followed by Ghana, while Nigeria adjusts most slowly. Gross domestic product growth follows the same ordering across the three countries, with the coefficient rising from Nigeria (0.108) to Ghana (0.221) and to Côte d'Ivoire (0.247). This consistency confirms that macroeconomic stability complements foreign portfolio investment in supporting financial market development, and that the benefits of portfolio inflows are realised most fully where economic growth is sustained and market institutions are relatively mature.

Conclusion and recommendations

This study examined the effect of foreign portfolio investment (FPI) on financial market development (FMD), controlling for gross domestic product (GDP) growth, in Nigeria, Ghana

and Côte d'Ivoire over the period 2000–2025 using a comparative ARDL bounds-testing framework. The bounds tests confirmed long-run relationships among the variables in all three countries. The long-run results show that FPI had a positive and significant effect on FMD in Ghana ($\beta = 0.336$, $p = 0.026$) and Côte d'Ivoire ($\beta = 0.402$, $p = 0.004$), but a positive yet insignificant effect in Nigeria ($\beta = 0.214$, $p = 0.265$). GDP growth was positive and significant in Ghana ($\beta = 0.221$) and Côte d'Ivoire ($\beta = 0.247$) but insignificant in Nigeria ($\beta = 0.108$). In the short run, FPI was significant only in Côte d'Ivoire ($\beta = 0.141$, $p = 0.036$), while the error correction terms were negative and significant in all three countries, with adjustment speeds of 54.1% (Nigeria), 63.8% (Ghana) and 67.7% (Côte d'Ivoire). The study concludes that the effect of FPI on financial market development is not homogeneous across the three countries but is conditional on market structure and institutional maturity.

Based on these findings, the study recommends that regulators in Ghana and Côte d'Ivoire, where FPI significantly drives market capitalisation, should sustain policies that attract stable portfolio inflows strengthening investor protection, improving market transparency and maintaining macroeconomic stability so that inflows continue to deepen their markets. For Nigeria, where the FPI effect is positive but insignificant, policymakers should prioritise measures that improve the absorptive capacity of the market, including enhanced regulatory enforcement, greater exchange-rate stability and incentives for foreign listings, so that portfolio inflows translate into measurable market development. In all three countries, GDP growth should be supported through sound macroeconomic management, since it significantly complements FPI in Ghana and Côte d'Ivoire and remains essential for sustaining investor confidence and long-run market development.

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