NIU Journal of Humanities Copyright©2026
Nexus International University ISSN: *3007-1704;* 11(3): 131-142

Foreign Direct Investment and Stock Market Development in Selected SSA Countries

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Abstract. This study examined the extent to which FDI translates into stronger stock market outcomes in selected SSA countries. The focus of stock market performance was on the size, liquidity and stability dimensions of the stock markets. A panel of seven SSA countries was considered for the period of 2000 to 2023. Using the PMG estimation framework, the study was able to distinguish between long-run equilibrium effects and short-run dynamic adjustments. The findings from the study show that FDI has a positive and significant long-run effect on market capitalization and stock market liquidity while it has a negative and significant effect on stock market volatility. These results indicate that FDI enhances capital market performance in SSA by expanding market size, improving liquidity and reducing instability. The short-run coefficients of FDI were however found to be highly insignificant across the three models. The study therefore recommends that regulatory authorities need to encourage foreign firms and large domestic affiliates to list on local exchanges and also to standards that improve investor protection.

Keywords: FDI, Size, Liquidity, Stability Dimensions and Market Capitalization.

1. Introduction

The stock market constitutes a central component of modern financial systems because it helps to mobilise long-term funds, improve resource allocation, facilitate risk sharing and create price signals that support investment decisions (Obstfeld & Taylor, 2003; Peng, Zhang & Chen, 2021; OECD, 2026). In developing and emerging economies, the operations of the stock market market remain particularly imperative because domestic savings are often inadequate to finance infrastructure and private-sector growth. A well-performing capital market is therefore expected to complement the banking system by widening access to long-term finance and influencing the cost of capital. For economies seeking to reduce dependence on debt financing and deepen private-sector-led growth, the capital market is a development mechanism through which savings, investment and corporate expansion can be linked more efficiently.

In deepening the stock market in emerging economies, foreign direct investment (FDI) is relevant because it represents a relatively stable form of external capital that can influence capital market performance through several channels. Unlike short-term portfolio flows, FDI is typically associated with long-term ownership, productive investment, technology transfer corporate governance improvements and integration into global production networks (Mühlen & Escobar, 2025; Nguyen-Huu and Pham, 2026). On a theoretical basis, the relationship amongst FDI and capital market performance is expressed within the finance-growth literature which argues that financial markets promote growth by mobilising savings and facilitating risk diversification. When foreign investors enter an economy, they may expand productive capacity and strengthen the valuation of listed firms. In this sense, FDI tends to complement capital market development by improving market depth and the information environment.

FDI inflows to sub-Saharan Africa (SSA) countries have been induced by diverse factors. UNCTAD reports that global FDI declined by 11 percent in 2024 which marks the second consecutive year of decline in productive capital flows, even though reported flows were distorted by volatile conduit-economy transactions. This global slowdown is important for developing economies because it implies tighter competition for foreign capital at a time when many countries need investment to finance industrialization and infrastructure development. In contrast to the global decline, Africa recorded a strong rebound in 2024, with FDI inflows rising by 75 percent to about US$97 billion. This increased the continent's share of global FDI to 6 percent from 4 percent in the previous year. This recent FDI inflow pattern has created an important empirical consideration on how increased

inflows may affect the financial markets of recipient SSA countries.

The consideration of capital markets in SSA is important because of the weak trends in many SSA countries. For instance, an OECD report for 2025 notes that by the end of 2024, A total of 1141 firms were observed to be listed in the African stock exchanges, which is an indication of an increase in 2.6% in global listed companies, representing a 5% of listed companies in emerging markets. The same report indicates that African listed companies had total market capitalisation of about US$561 billion which is equivalent to only 0.4 percent of global market capitalisation and 2 percent of emerging-market capitalisation. These figures reveal a major structural gap in the financial markets in SSA.
Moreover, recent studies provide mixed evidence on the effect of FDI on capital market performance. For instance, Haruna, Dibal and Isichei (2023) showed that that FDI is an important determinant of stock market development while Onome et al (2022) found that FDI does not always generate a strong and stable effect on stock market performance, especially where macroeconomic volatility and weak market structures constrain transmission. Thus, the expected development connection between FDI and capital market performance remains weakly understood especially for SSA region. On the one hand, FDI is expected to increase productive investment and strengthen investor confidence while, on the other hand, capital markets in many African countries are deeply characterised by low listing density, limited liquidity and high sensitivity to macroeconomic shocks.

This study seeks to examine the effect of FDI inflows on the performance and development of the capital market in SSA countries. It focuses on the direction and the depth of effect of FDI on the capital markets in SSA. The study proceeds from the argument that FDI should matter for capital market performance in terms of different dimensions. It is demonstrated that FDI needs to be productively embedded in the domestic economy and financially connected to the capital market.

2. Literature Review

The theoretical starting point in the uploaded literature is Markowitz's (1952) portfolio theory, which explains investment behaviour in terms of risk-return optimisation and diversification. The theory argues that investors combine assets in ways that minimise risk for a given level of return or maximise return for a given level of risk. Its relevance to the FDI-capital market nexus lies in its implication that a broader and more diversified capital market improves the investment opportunity set available to both domestic and foreign investors. FDI may contribute to this process when it expands the quality and number of firms, strengthens corporate earnings, increases investor confidence and improves diversification opportunities in the market. Nevertheless, the theory is limited in the SSA context because it assumes rational investor behaviour, relatively efficient information, stable correlations and well-functioning markets. Many SSA capital markets are characterised by thin trading, low liquidity, weak institutional quality, limited listings and high macroeconomic volatility. Thus, while portfolio theory provides a useful foundation, it must be complemented with institutional and macro-financial explanations of how FDI is transmitted into capital market outcomes.

Stock market development is often measured using market capitalisation as a proportion of GDP, reflecting the assumption that market size is positively related to the economy's ability to mobilise capital and diversify risk. This follows the logic also reflected in Yartey (2008), where larger market size is treated as an indicator of stronger stock market development. Levine and Zervos (1996), however, adopt a broader approach by combining stock market size, liquidity and international integration. This broader conceptualisation is important because capital market performance is multidimensional. A market may expand in capitalisation without necessarily becoming liquid, efficient or less volatile. Hence, the mixed evidence in the literature partly reflects differences in how capital market performance is measured.

Early African evidence is provided by Adam and Tweneboah (2008) who investigated the impact of FDI on Ghana's stock market development from 1991 to 2006 using multivariate cointegration and an error correction model. Their findings showed a long-run relationship among FDI rate and stock market development and that shocks to FDI significantly influence Ghana's stock market. This supports the proposition that FDI can shape capital market outcomes in African economies. Njangang et al (2019) also focused on selected SSA countries to show that FDI inflow had negative and insignificant long-run equilibrium effect on the financial markets. This finding complicates the simple assumption that FDI always deepens capital markets. It suggests that FDI may generate short-run confidence but these may not translate into sustained long-run stock market development if foreign firms remain weakly connected to the domestic capital market.

Makoni (2021) extended the discussion to nine African countries from 2009 to 2016 using multiple regression and random effects estimation. The study found a positive and statistically significant relationship between FDI and stock market development. This suggests that the effect of FDi on the capital market may be conditional. Similarly, Omorokunwa and Mbaka (2021) examined foreign capital inflows and stock market performance in Nigeria, Kenya, Egypt and South Africa using annual data from 1990 to 2018 and ARDL cointegration modelling. Their findings showed that FDI has a significant positive relationship with market capitalisation across the selected African countries. However, FDI had an insignificant relationship with stock market volatility. This suggests that FDI may contribute to market size without necessarily stabilising stock prices. For capital market performance, this distinction is important because a growing market may still remain volatile or illiquid. In this direction, Adegboye and Ikponmwosa (2013) contributed to the African and West African evidence by showing that increased foreign financial participation directly influences capital market outcomes among West African countries.

Haruna et al (2023) provide one of the most directly relevant SSA studies. Using a Calderon-Rossell model for Ghana, Mauritius, Namibia, Nigeria and South Africa from 1996 to 2020, they found that FDI positively and significantly determines stock market development in the long run. Their study is important because it explicitly focuses on SSA and incorporates regulatory quality. However, it is limited to a small number of relatively more developed African markets. This matters because SSA capital markets are highly heterogeneous, ranging from relatively sophisticated markets such as South Africa and Mauritius to much smaller exchanges with low listings, weak liquidity and narrow investor bases. The finding may therefore not fully represent the wider SSA experience.

Evidence at the country level also support the varied empirical outcomes on how FDI affects the capital market. For Nigeria, Omodero and Ekwe (2017) found that FDI has a negative and insignificant effect on stock market performance. This suggests weak transmission from foreign investment to domestic market performance in the Nigerian economy. By contrast, Oke, Adegoke and Akosile (2023) employed the cointegration and error correction modelling to find that FDI has a positive long-run relationship with market capitalization in Nigeria, even though some short-run dynamics were less consistent. This contrast shows that FDI may matter more in the long run than in the short run.

Recent Nigerian studies like Abah-Marcus (2025) examined FDI and capital market development in Nigeria by disaggregating FDI into equity capital and net inflows. This disaggregation is important because aggregate FDI can mask the different effects of equity capital, reinvested earnings and intra-company loans. The study found that disaggregated approach to capital market analysis provides a deeper dimension to determining how FDI influences the market. Akani and Lucky (2025) also found that foreign direct and portfolio investments positively affect market capitalisation in Nigeria. Their result supports the complementarity hypothesis, especially where foreign capital inflows strengthen market confidence and valuation. However, Andabai (2024) found that FDI inflows have a favourable but insignificant effect on stock market capitalisation, while FDI outflows significantly affect market capitalisation. This suggests that retained foreign investment and repatriation behaviour may be as important as inflow volume itself.

Still on Nigeria, Onome et al (2022) found weak long-run relationships and insignificant short-run effects of FDI on stock market performance. In contrast, Babarinde (2020) found that FDI positively and significantly contributes to stock market development in Nigeria, with causality running from FDI to stock market development. These conflicting Nigerian findings demonstrate that the estimated relationship depends on period, methodology, variable selection and the dimension of capital market performance examined. Osamwonyi and Ikponmwosa (2018) add another important dimension by finding that FDI has a significant feedback relationship with stock market volatility in Nigeria and may promote capital market stability. This is important because many studies focus almost exclusively on market capitalisation, while volatility captures the risk and stability dimension of market performance. If FDI reduces volatility, it may improve investor confidence even when its effect on market size is modest. This study provides grounds for distinguishing between market-deepening effects and market-stabilising effects.

For non-SSA economies, Kunal and Phani (2017) examined the Indian market from 2004 to 2010 using a VECM framework. They found that stock market improvements attract FDI, highlighting the possibility of reverse causality. Dzomonda and Ngwakwe (2020) also used Malaysian data from 1991 to 2018 and found that stock market performance Granger-causes FDI, but FDI does not Granger-cause the stock index. This finding directly challenges the assumption that FDI is always the driver of capital market outcomes. It

suggests that better-performing capital markets may themselves attract foreign investors. For Pakistan, Al-Delawi et al (2023) found that FDI positively affects stock market growth in both the short and long run in Pakistan. Similarly, Chettri, Bhattarai and Gautam (2022) found that for Nepal, FDI positively affects stock market development in the long run but negatively affects it in the short run. They also found long-run unidirectional causality from FDI to stock market development and short-run bidirectional causality.

Furthermore, Sharif (2019) focused on Saudi Arabia and found that stock market volatility and turnover rates are not strongly linked to the presence of foreign investors, although stock market efficiency improved with greater FDI involvement. Tsagkanos et al (2019) similarly found evidence for emerging economies that supports the importance of foreign capital participation in shaping market outcomes. These studies broaden the empirical base by showing that foreign investment may affect not only market size but also efficiency, volatility and turnover.

3. Methodology

3.1 Theoretical Framework

The Portfolio Theory of domestic capital markets provides a robust theoretical foundation for analyzing the dynamics of foreign capital flows and stock market development, since it focuses on the linkage between investment decisions (in all forms) and the behaviour of the stock market over time. According to this theory, foreign investors, motivated by the principles of diversification, allocate capital across international markets to reduce overall portfolio risk. Thus, foreign capital flows into emerging markets result from their low correlation with developed markets with the implication of risk reduction. This characteristic aligns with the core tenet of diversification (Markowitz, 1952). The theory therefore, demonstrates that foreign capital inflows introduce diversification benefits to domestic investors. If diversification in the market is measured by the level of development of the market (SMD), then the theory can be stated as:

$SMD = f(FCF), f_{FCF} > 0$ (1)

Where *FC* is foreign capital inflow. The theoretical framework of the modern portfolio theory provides the underlying rationale for the relationship between foreign capital flows and stock market development.

3.2 Model Specification

The model for this study is specified based on the foundations of the theoretical framework provided. Stock market development is expressed as a function of FDI inflows and other domestic factors as:

$SMDEV = f(FDI, X)$ (2)

Where X is a vector of control variables that significantly affect stock market development and also improves the relationships, including real GDP (RGDP), financial depth of the economy (FDEP), institutional quality (INST) and stock market turnover (TURN). The econometric form of the model is therefore specified as:

$$SMD_{it} = \beta_0 + \beta_1 FDI_{it} + \beta_1 RGDP_{it} + \beta_1 FDEP_{it} + \beta_1 INST_{it} + \beta_1 TURN_{it} + \mu_{it} \quad (3)$$

Based on (1) above, the coefficient of FDI in the model is expected to be positive to indicate that rising FDI inflows leads to greater development of the stock markets in SSA countries. In the study, stock market development or performance is measured in three forms. The first is the size of the stock market which is computed as the stock market capitalization rate. Graham, Smart and Megginson (2010) viewed market capitalization as the total value of a publicly traded company's outstanding common shares owned by stockholders. Levine and Zervos (1996) in their work measure the size of the stock market using the ratio of market capitalization divided by Gross Domestic Product (GDP). In this study, it is measured as the ratio of the stock market capitalisation to GDP in the economy. The underlying assumption of the use of this variable as stock market development indicator is that the market size is positively correlated with its ability to mobilize capital and diversify risk.

Stock market development is also measured as stock market liquidity which also refers to as depth of the market or the ability to buy and sell shares. Stock market liquidity is measured using total value traded as a share of GDP which gives the value of stock transactions relative to the size of the economy (Yartey, 2008). This measure is also used to gauge market liquidity because it measures trading relative to economic activity (Levine & Zervos, 1998). The total value traded ratio measures the organized trading of equities as a share of national output, and should therefore positively reflect liquidity on an economy-wide basis. The third measure of stock market development is the volatility of the market. Omorokunwa and Mbaka (2021) have viewed volatility as an element of uncertainty that could substantially reduce profits, as well as increase the chances of major losses in a more volatile and unstable stock market. The volatility of the stock market refers to the movement of the prices of stock over time and can be understood by the measurements of standard

deviations, which is the average value of a stock price over a period different from the mean and Beta, an indicator of the volatility of the stock market (Lobel, 2020). In this study, we measure stock market volatility as all share index (ASI) employing the univariate generalized autoregressive conditional heteroskedasticity (GARCH) technique.

3.3 Method and Procedure for Analysing of Models

The theoretical framework for the study has demonstrated that the relationship between the foreign capital flows and stock market development is dynamic (that is, it changes from positive to negative between the short run and the long run). Thus, an estimation method that takes into account the dynamic relationship of the variables needs to be employed. In this case an autoregressive distributed lags (ARDL)-based estimation framework was adopted in the study. For the panel data, however, the ARDL framework crystalizes into the Pooled Mean Group (PMG) technique which also generates both short run and long run estimates within a panel data framework. The PMG model combines averaging and pooling and permits the error variances, intercept and short-run coefficients to differ across panel units, while constraining the long-run coefficients to be homogenous or equal across the spatial dimension (Pesaran et al., 1999). Following Pesaran et al (1999), the pooled mean group (PMG) specification of the models is based on the autoregressive distributed lag (ARDL) $(p,q_1,\ldots, q_k)$ dynamic panel specification form of *equation (3.12)* as follows:

$$SMD_{it} = \sum_{j=1}^{\rho} \lambda_{ij} FDI_{i,t-j} + \sum_{j=1}^{\rho} \lambda_{ij} RGDP_{i,t-j} + \sum_{j=1}^{\rho} \lambda_{ij} FDEP_{i,t-j} + \sum_{j=1}^{\rho} \lambda_{ij} INST_{i,t-j} + \sum_{j=1}^{\rho} \lambda_{ij} TURN_{i,t-j} + \upsilon_{it}$$

Where $i = 1, 2, \ldots, 7$ represents the number of groups (countries), $t = 1, 2, \ldots, 24$ indicates the number of periods (years); the coefficient of the lagged dependent variable, λ_{ij}, are scalars; X_{it} is k x 1 vector of the independent variables for the i^{th} group; δ_{ij} represents k x 1 coefficient vectors; and μ_i captures the fixed effect. T is to be sufficiently large in order to independently ensure model fit for each group. The reparameterized models in the error correction form are as follows:

$$\Delta SMD_{it} = \Phi_i SMD_{i,t-1} + \beta_i' X_{i,t} + \sum_{j=1}^{\rho-1} \lambda^{\bullet}_{ij} \Delta SMD_{i,t-1} + \sum_{j=0}^{q-1} \delta^{\bullet\prime}_{ij} \Delta Z_{i,t-j} + \varepsilon_{it}$$

where

$$\Phi_i = -\left(1 - \sum_{j=1}^{\rho} \lambda_{ij}\right),\ \beta_i = \sum_{j=0}^{q} \delta_{ij},$$

$$\lambda^{\bullet}_{ij} = -\sum_{m=j+1}^{\rho} \lambda_{im}, j = 1,2,\ldots,\rho-1$$

and

$$\delta^{\bullet}_{ij} = -\sum_{m=j+1}^{q} \delta_{im}, j = 1,2,\ldots,q-1$$

Given that N and T are large, Pesaran et al. (1999) suggested that the pooled mean group (PMG) estimator is an effective determinant, which depends upon an intermediate approach that strikes a balance between the fixed-effect and mean group approaches. The PMG estimator allows error variances and short run coefficients to oscillate across groups under the assumption that coefficients on the long run are homogeneous.

3.4 Sources of Data

A panel of seven SSA countries are included in the study. The stratified sampling technique was adopted in selecting the seven countries. The SSA countries were initially divided into sub-regions (East, West, and South) according to the level of FDI flows as well as a functioning exchange. From this, data filtering method was employed to determine suitable sample countries to be included in the study based on data availability, viable stock market and regionalisation. On this basis, the seven countries selected are Cote d'Ivoire, Ghana, Kenya, Mauritius, Namibia, Nigeria, and South Africa. Data used in the study is annual data for the period of 2000 to 2023 for each of the countries and they were sourced from World Development Indicators (WDI) and International Monetary Fund (IMF) database.

4. Presentation and Analysis of Data

4.1 Descriptive Statistics

The descriptive statistics of the variables were reported in Table 1. Average foreign direct investment is 2.62 percent which is a moderate level of foreign investment in the economies studied. A positive mean suggests a stable and persistent role of FDI in economic growth and development, reflecting the attractiveness of these economies to foreign investors. The standard deviation for FDI is 2.78 which are larger than the mean value. The relatively high standard deviation indicates high variability in FDI inflows and suggests that investment inflows are not entirely stable over the period. Average foreign portfolio investment ratio is 0.13 percent which is much lower than the average FDI ratio.

Average market capitalization to GDP ratio for the countries is 9.81 per cent, which is essentially low, although a maximum of 124.3 per cent (for South Africa) shows that not all countries have low stock market depth in SSA. The average score indicates that the stock markets in these economies are not fully

developed. Average stock market liquidity is also low at 9.84 per cent. There is therefore deficiency of depth and efficiency among SSA stock markets. Average stock market volatility is 0.90 points indicating relatively moderate fluctuations in stock prices. The standard deviation of MVOL is however high at 1.99 and shows that the degree of stock market volatility varies significantly across the countries. Low market capitalization and liquidity, combined with high volatility, suggest weak financial markets.

Table 4.1: Descriptive Statistics

Variable	Mean	Max.	Min.	Std. Dev.	Skew.	Kurt.	J-B	Prob.
FDI	2.62	18.58	-1.42	2.78	2.06	9.28	378.26	0.00
MCAPR	9.81	124.37	0.05	23.22	2.71	9.81	508.63	0.00
SML	9.84	124.37	0.05	23.32	2.72	9.81	509.26	0.00
MVOL	0.90	7.04	-4.68	1.96	0.29	3.67	5.28	0.07
RGDPG	4.01	15.33	-14.55	3.60	-1.05	8.06	200.84	0.00
INST	-0.44	1.20	-2.26	1.01	-0.13	1.73	11.30	0.00

The average real GDP growth rate is 4.01 per cent for the countries, with a standard deviation of 3.6, which shows that the growth rate appears to be similar across the countries in the sample. Average institutional quality index score is negative and suggests that, on average, the institutional environment is weak or below global standards. Weak institutions can negatively impact both domestic and foreign capital flows. For each of the variables, the Jarque-Bera (J-B) statistic is significant at the 1 per cent level, demonstrating that data series are non-normally distributed. This implies that the application of a panel data estimation framework that takes heterogeneous country-specific effects into account in this study is justified.

Further to the descriptive statistics, the initial patterns of interrelationships among the variables of the study were examined by considering the correlations matrix in Table 2. Among the financial market development variables, there is a strong positive correlation between MCAP and ML at 0.943 which is a near-perfect positive correlation. This shows that larger stock markets (high MCAPR) are also more liquid (high SML). It suggests that deep stock markets attract investment. This is because liquid markets reduce transaction costs and encourage higher investor participation. There is however a negligible correlation between MVOL and both MAPR and SML which shows that volatility is uncorrelated with market size or market liquidity. When it is considered that most SSA stock markets are driven by factors outside of the market, then this outcome is logical.

Table 2: Correlation Matrix

Variable	MCAPR	SML	MVOL	FDI	RGDP	INV	INST
MCAPR	1						
SML	0.943 (0.000)	1					
MVOL	-0.049 (0.530)	-0.049 (0.532)	1				
FDI	-0.112 (0.149)	-0.112 (0.149)	-0.045 (0.562)	1			
RGDP	0.488 (0.000)	0.488 (0.000)	-0.001 (0.991)	-0.295 (0.000)	1		
FDEP	0.304 (0.000)	0.304 (0.000)	0.073 (0.346)	-0.119 (0.124)	0.052 (0.502)	1	
INST	0.083 (0.287)	0.082 (0.291)	-0.032 (0.679)	0.437 (0.000)	-0.499 (0.000)	0.394 (0.000)	1

Note: t-values in parentheses

The panel structure of the dataset employed in this study present the challenge of heterogeneous characteristics of the dataset. The "presence of these correlations increases the standard errors of the estimates and reduces the efficiency of the regression results" (Wooldridge, 2010). The variables in the study are essentially prone to exhibiting cross sectional correlations. For instance, the seven economies selected for the analysis are all in the "emerging markets" category in terms of international classification of financial markets. This suggests that the patterns of capital flows

within the economies are likely to exhibit similar basic characteristics since these economies are generally at the same level of capital intensity. These economies are therefore expected to receive similar financial capital flows which may present underlying correlation across the cross-sections of the study. In this study, the problem and presence of cross-sectional dependence is investigated by implementing the Pesaran (2004) cross-sectional dependence (CD) test. The null hypothesis for the cross-sectional dependence test is the absence of cross-sectional dependence, suggesting that it is expected that the coefficients fail the significance test in order to establish the absence of cross-sectional dependence. The results of the CD for each of the variables of the study are presented in Table 3.

Table 3: Cross-section Dependence Test Results

Variable	CD	test -p	corr – abs(corr)
FDI	116.89	0.00	0.39
MCAPR	186.43	0.00	0.57
SML	19.18	0.00	0.19
MVOL	30.57	0.00	0.26
RGDPG	102.82	0.00	0.34
FDEP	10.95	0.00	0.24
INST	14.84	0.00	0.21
TURN	1.891	0.14	0.09

Source: *Author's computation*

In the results for the cross-sectional test for each of the variable series, the statistics for the Pesaran CD tests are all significant at the 1 percent level. This implies that the null hypothesis of absence of cross-sectional dependence cannot be rejected. This indicates significant presence of cross-sectional dependence within the panel data. As a result of this, the OLS-based panel data analysis framework (for both fixed and random effects) can be executed for this dataset. There was need to employ procedures that take cross-sectional dependence into account in either testing the data set or estimating relationships. In this study, the PMG-DCCE model that accounts for cross-sectional dependence in a dynamic model was used for estimating the relationships. The tests for panel unit roots for the variables in the study are reported in Table 4. In the levels test, all variables are none stationary, except MVOL and TURN which are shown to be integrated of order zero. For the other variables, there is integration of order one since they are stationary after first differences. Thus, the variables are shown to be integrated of different orders which suits the ARDL-based PMG estimation used in the study.

Table 4: Panel Data Unit Root Tests Results in levels

Variables	*Levels*			*First difference*		
	Common unit process	*individual unit root process*		*Common unit process*	*Individual unit root process*	
	LLC	IMP	ADF	LLC	IMP	ADF
FDI	0.673	-1.019	20.23	-3.33	-6.35	65.82
MCAPR	-1.09	-1.72	21.29	-7.92	-8.13	84.62
SML	-1.96	-1.43	19.42	-7.78	-8.16	84.95
MVOL	-6.48	-5.85	60.01	-10.86	-11.84	125.864
FDEP	-1.105	1.02	11.17	-3.35	-8.32	86.72
RGDP	-1.71	0.18	22.6	-2.62693	-5.03	51.14
INST	-1.21	-2.38	35.9	-1.47402	-2.31	70.94
TURN	-3.291	-5.274	67.42	-5.37	-6.36	81.45

Source: Estimated by the Author. *Note: ** and * indicate significant at 1% and 5 % levels respectively; IPS = Im, Pesaran & Shin; LLC = Levin, Lin & Chu*

The presence of cross-sectional dependence in the data suggests that the first-generation unit root tests above may not fully capture the level of stationarity of the data. In general, applying methods that account not only for the time-series dimension, but also for the cross-sectional dimension provides increased power of prediction for estimation with panel data. Thus, we report the results of the second-generation test of unit root based on the Cross-sectionally augmented Im-Pesaran-Shin (CIPS) procedure. This method of unit root test accounts for cross-sectional dependence in the panel data. The result reported in Table 5 shows that the integration order of the variables are mixed with some variables integrated at order zero (I(0)) and others integrated at order one (I(1)). Interestingly the PMG estimation framework adopted in this study is effective in estimating error correction functions with variables that are integrated of different orders.

Table 4.6: Second Generation Unit Root Test Result (CIPS)

Variable	*Level*		*First diff.*		Order of Integration
	stat.	5% crit. val.	stat.	5% crit. val.	
FDI	1.620	-2.34	1.993*	-2.34	I(1)
MCAPR	-1.547	-2.34	-3.401**	-2.34	I(1)
ML	-0.946	-2.34	-4.031	-2.34	I(1)
MVOL	-3.836**	-2.34	-3.922	-2.34	I(0)
RGDP	-0.723	-2.34	-4.949**	-2.34	I(1)
FDEP	-0.84	-2.34	-4.839**	-2.34	I(1)
INST	-0.901	-2.34	-4.911**	-2.34	I(1)
TURN	-2.582*	-2.34	-3.293**	-2.34	I(0)

Source: *Author's computation*

The results of the Bounds co-integration test for the panel data is reported in Table 6. The test evaluation is based on the estimated F-statistic values for each of the equations which are tested against the critical values for the lower (I0 Bounds) and upper (I0 Bounds) based on their critical F-values. Notice that each of the countries in the cross-sections report individual critical F-statistics which are compared against the estimated F-value for both I(0) and I(1) at the 5 per cent level. It is seen that that critical F-values for five of the seven countries are greater than the estimated lower and upper Bounds F-value of 2.14 and 3.34 respectively. Thus, the co-integration status of the variables can be established by rejecting the null hypothesis of no co-integration among the variables for the study.

Table 6: PMG Co-integration Test Result – Bounds Test

Cross-Section	Obs.	F-Stat.	t-Stat.		
Côte d'Ivoire	22	9.818	-3.032		
Ghana	22	1.258	-1.701		
Kenya	22	3.409	-4.702		
Mauritius	22	4.230	-5.218		
Namibia	22	5.321	-5.296		
Nigeria	22	3.613	-4.814		
South Africa	22	0.702	-0.813		
Bounds Critical Values					
10%		5%		1%	
I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
1.810	2.930	2.140	3.340	2.820	4.210
		t-Statistic			
-1.62	-3.49	-1.95	-3.83	-2.58	-4.44

In order to supplement the first-generation cointegration tests, the study also presents the second-generation cointegration test. This test addresses issues of cross-sectional dependencies identified by earlier tests. These second-generation tests complement the first-generation tests previously discussed. Specifically, the Westerlund cointegration test is employed for this purpose. The outcomes for the study's three equations are shown in Table 7. It is important to note that the G_t and G_α statistics correspond to group-mean tests, while P_t and P_α represent panel-wide tests. The group-mean tests (G statistics) assess the alternative hypothesis that at least one individual unit is cointegrated, whereas the panel tests (P statistics) evaluate whether the entire panel exhibits cointegration. The null hypothesis for the Westerlund test is the absence of cointegration. In the model incorporating institutional quality variables, only the P statistics reject the null hypothesis of no cointegration, indicating that the entire panel-structured dataset exhibits cointegration and a long-run relationship among the variables. For the model with debt variables, both the Gt and P statistics reject the null hypothesis and affirm cointegration. Overall, the Westerlund second-generation cointegration test demonstrates that there is cointegration among the variables in the regression models.

Table 7: Second Generation Cointegration Test Result (Westerlund)

Statistic	*MCAPR*		*ML*		*MVOL*	
	Value	*Robust P-value*	*Value*	*Robust P-value*	*Value*	*Robust P-value*
G_t	-1.182	0.26	-1.261	0.28	-2.904	0.00
G_a	-2.013	0.02	-2.033	0.01	-2.382	0.01
P_t	-3.482	0.00	-3.394	0.00	-4.273	0.00
P_a	-3.736	0.00	-3.648	0.00	-4.022	0.00

Source: *Author's compilation and analysis (2025)*

4.2 Analysis of Regression Results

The results of the PMG estimates for the three models in the study are presented in Table 8. For each equation, the long run results are shown in the upper panel while the short run results are reported in the lower panel. For the long run estimates, the coefficient of FDI is positive and significant in each of the equations. The coefficient is 0.093 for the market capitalization equation. This indicates that higher FDI inflows are associated with a significant expansion in stock market size in SSA. This implies that FDI contributes to the valuation and depth of SSA capital markets over time. The result this supports the complementarity argument that foreign direct investment can strengthen domestic capital markets by directly improving firm performance and enhancing investor confidence (Adam & Tweneboah, 2008; Babarinde, 2020; Haruna et al, 2023; Makoni, 2021). Essentially, the results suggest that the depth of stock markets in SSA can be effectively deepened in the long run for SSA countries.

The coefficient of FDI is also positive and significant in the long run estimates for stock market liquidity. The coefficient of 0.015 is smaller than that of MCAP, but the high level of significance shows a very strong statistical relationship. This means that FDI does not merely expand market size (in deepening market capitalisation], it also improves the ease with which securities are traded. Thus, FDI is shown to influence both market size and operations of market activity. This aligns with Omorokunwa and Mbaka (2021), who found that FDI significantly improves African stock market capitalisation and broader market development. The positive liquidity effect suggests that FDI tends to increase investor participation and stimulate financial transactions over time.

Table 8: PMG Regression Results

Variable	*MCAP*			*ML*			*MVOL*		
	Coef.	t-Stat.	Prob.	Coef.	t-Stat.	Prob.	Coef.	t-Stat.	Prob.
Long run									
FDI	0.093	3.921	0.000	0.015	11.266	0.000	-0.099	-2.158	0.024
FDEP	0.093	5.462	0.000	0.009	9.948	0.000	-0.006	-0.439	0.662
LRGDP	1.696	6.037	0.000	1.379	9.073	0.000	-1.534	-8.249	0.000
INST	0.802	9.470	0.000	0.799	1.123	0.000	-1.252	-2.153	0.022
TURN	0.004	4.741	0.000	0.003	7.828	0.000	0.001	0.026	0.979
Short run									
ECM_{t-1}	-0.585	-3.312	0.001	-0.598	-2.798	0.006	-1.188	-10.091	0.000
ΔFDI	0.465	0.890	0.375	0.443	0.910	0.364	0.088	0.136	0.892

ΔFDI_{t-1}	-0.024	-0.427	0.670	-0.045	-0.841	0.402	-0.174	-0.352	0.725
ΔFDEP	0.014	1.061	0.291	0.005	0.963	0.337	-0.029	-0.751	0.454
$\Delta FDEP_{t-1}$	0.181	0.990	0.324	0.184	0.990	0.324	-0.133	-1.553	0.123
ΔRGDP	4.857	2.296	0.023	6.381	1.811	0.072	5.584	0.851	0.396
$\Delta RGDP_{t-1}$	55.513	1.061	0.290	55.151	1.050	0.296	-4.684	-1.608	0.110
ΔINST	-0.688	-1.301	0.195	-0.832	-1.245	0.215	-7.000	-2.775	0.006
$\Delta INST_{t-1}$	-7.701	-0.961	0.338	-7.371	-0.948	0.345	-1.298	-0.612	0.541
ΔTURN	0.221	1.604	0.111	0.228	1.619	0.108	-0.032	-0.218	0.828
$\Delta TURN_{t-1}$	0.119	1.117	0.266	0.116	1.090	0.278	0.045	0.810	0.419
Constant	-9.966	-4.119	0.000	-8.351	-3.388	0.001	221.919	8.424	0.000

In the market volatility equation, the coefficient of FDI is negative and significant at the 5 percent level. This means that higher FDI is associated with lower stock market volatility in the long run in SSA. Thus, FDI tends to exert a stabilising effect on SSA capital markets over time. This result is similar to findings by Adegboye and Ikponmwosa (2013). The finding is also consistent with Osamwonyi and Ikponmwosa (2018), who argue that FDI has a feedback relationship with stock market volatility and may promote capital market stability. Because FDI is generally more stable than foreign portfolio investment the inflow tends to reduce uncertainty and support more predictable market behaviour. In terms of the long-term development of stock markets in SSA countries, long-term stability matters as much as the size and liquidity of the market. Therefore, the three long-run FDI results jointly suggest that FDI improves capital market performance by increasing size, strengthening liquidity and reducing volatility

For the short run estimates, the error correction terms are negative and statistically significant in all three models. This confirms the existence of long-run equilibrium relationships. The ECM coefficient of -0.585 for MCAP means that about 58.5 percent of deviations from long-run equilibrium are corrected within one period. For ML, the adjustment speed is about 59.8 percent, while for MVOL it is 118.8 percent. The volatility model therefore appears to adjust very rapidly and in an unsteady manner. Most short-run coefficients are statistically insignificant, especially FDI and its lag. This means that changes in FDI do not exert immediate effects on the stock market development variables. This is to be expected since FDI takes time to deliver financial market effects for firms and the entire market (Onome et al., 2022; Njangang et al, 2019). This also shows that FDI delays weak short-term impacts and delayed transmission to stock market outcomes in SSA.

In terms of the control variables, the coefficient of financial depth is significant and positive for the MCAP and ML estimates. This indicates that deeper financial systems promote larger and more liquid stock markets. FDEP however has an insignificant effect on market volatility, implying that financial depth in the economy does not automatically reduce stock market instability. The coefficients of real GDP and institutional quality are both significant in all three equations. The result indicate that economic size and productive capacity are central to capital market development with larger economies tending to have deeper and more liquid markets. Economic size is also shown to significantly reduce volatility in the stock market in the long run. This relates to economic scale and market instability. The result shows that as SSA economies expand, their stock markets become larger and less volatile. Moreover, higher quality institutions are shown to promote market size and liquidity and also limit volatility. Thus, stronger institutions that improve regulatory enforcement, market transparency, investor protection and policy credibility are required to reduce long-term volatility in the stock markets. The coefficient of market turnover is positive and significant for MCAP and ML equations. This indicates that trading activity supports market size and liquidity, as expected. However, turnover does not significantly explain volatility, suggesting that higher trading volume in SSA does not necessarily destabilise the market.

Given the observed cross-sectional correlation in the panel data, the panel correlated standard error estimates are reported to determine whether the PMG estimates are robust to cross-section correlation effects. The results are reported in Table 9. The results are largely similar to those of the PMG, especially those of FDI coefficients. The PCSE estimates also show that in the long run FDI exerts significant positive effects on MCAP and ML while the effect on MVOL is negative. Thus, there is evidence the the PMG estimates are robust to cross-sectional correlations.

Table 9: PCSE Results

Variable	*MCAP*			*ML*			*MVOL*		
	Coef.	t-Stat.	Prob.	Coef.	t-Stat.	Prob.	Coef.	t-Stat.	Prob.
FDI	0.109	2.451	0.018	0.023	0.237	0.019	-0.080	-1.845	0.062
FDEP	0.187	4.457	0.000	0.188	4.436	0.000	-0.003	-0.371	0.711
LRGDP	9.612	7.127	0.000	9.635	7.092	0.000	-0.104	-0.699	0.486
INST	5.807	2.999	0.003	5.809	2.971	0.003	-0.154	-0.452	0.652
TURN	0.885	5.675	0.000	0.888	5.654	0.000	-0.007	-0.484	0.629
Constant	-108.7	-7.346	0.000	-109.07	-7.312	0.000	0.140	0.095	0.925
Adj. R-sq.	0.663			0.661			0.308		
F-stat.	66.74			66.20			3.65		

5. Conclusion

The stock market is a critical and central component for the financing of long-term development in Sub-Saharan Africa. This is because domestic capital sourcing is characterised by limited savings rates, unduly dominant banking systems and persistent constraints in accessing patient investment capital by firms. Thus, the inflow of foreign capital into the market appears to be a useful dimension for developing the market. In particular, foreign direct investment has been widely regarded as a relatively stable form of external capital with the potential to enhance productive capacity and strengthen corporate performance. This study therefore examined the extent to which FDI translates into stronger stock market outcomes in selected SSA countries. The focus of stock market performance was on the size, liquidity and stability dimensions of the stock markets. A panel of seven SSA countries was considered for the period of 2000 to 2023. Using the PMG estimation framework, the study was able to distinguish between long-run equilibrium effects and short-run dynamic adjustments.

The findings from the study show that FDI has a positive and significant long-run effect on market capitalisation and stock market liquidity while it has a negative and significant effect on stock market volatility. These results indicate that FDI enhances capital market performance in SSA by expanding market size, improving liquidity and reducing instability. The short-run coefficients of FDI were however found to be highly insignificant across the three models. Thus, the impact of FDI on capital market performance is delayed and experienced over time. FDI influences the stock markets through long-run channels like productive investment, firm expansion and gradual financial-market integration.

The study therefore demonstrated that attracting SSA countries need to strengthen the mechanisms through which FDI is transmitted into domestic stock markets. Regulatory authorities need to encourage foreign firms and large domestic affiliates to list on local exchanges and also to standards that improve investor protection. Given the role of financial depth in the study, policies also need to promote financial depth in the economy as well as ensure macroeconomic stability and institutional credibility. These factors tend to directly attract FDI as well as aid the integration of FDI in the development of the stock market. since these factors reinforce the capacity of capital markets to absorb and benefit from foreign investment. In addition, incentives that connect FDI to local equity and bond markets, especially in the form of listing reforms and sector-specific market development strategies would further deepen the role of FDI in the stock market for SSA countries.

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