Effect of Financial Integration on Economic Stability in Sub-Saharan African Economies: A Panel Spatial Approach.

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ABSTRACT

This study examines financial integration, institutional quality, trade openness, inflation, and economic performance in Sub-Saharan Africa, addressing the gap in existing literature that overlooks spatial dependence and cross-country spillovers. Many prior studies rely on conventional panel methods that fail to capture the interconnected nature of African economies. This study adopts a panel spatial framework to provide more robust and policy-relevant evidence. Annual data from the World Bank covering 1990 to 2022 are utilized. The study applies Pooled Mean Group, Mean Group, and Dynamic Fixed Effects estimators, complemented by Driscoll–Kraay spatial correlation consistent estimates and threshold regression techniques. The analysis is based on five countries with 165 observations, capturing both short-run and long-run dynamics. The findings reveal that financial integration proxied by FDI to GDP ratio has a negative and statistically significant effect on economic performance ($\beta = –1.757$, $p < .001$). Institutional quality also shows a negative significant effect ($\beta = –0.075$, $p = .021$). In contrast, inflation and trade openness exert positive and significant effects ($\beta = 0.987$, $p < .001$; $\beta = 1.436$, $p = .001$). Threshold results indicate some non-linearity, although the threshold effect itself is not statistically significant. The study recommends strengthening institutional capacity, improving governance, and aligning trade and investment policies with domestic productive capacity.

Keywords: Economic Stability, Financial Integration, Spatial Econometrics, Trade Openness, sub-Saharan African Economies.

INTRODUCTION

Financial integration has become a central pillar in the development strategy of many economies in Sub-Saharan Africa, where access to global capital is widely seen as a pathway to improving economic stability and growth. By enabling the convergence of risk adjusted returns and expanding access to international financial markets, integration is expected to enhance capital flows, improve resource allocation, and facilitate technology transfer (Emmanuel, 2018). Empirical studies suggest that it can stimulate savings, boost investment, and strengthen macroeconomic discipline, thereby supporting economic performance (Orji, Ogbuabor, and Anthony Orji, 2015; Omankhanlen, 2012). For a region characterized by capital scarcity and structural constraints, these potential benefits make financial integration particularly important.

Despite these theoretical benefits, empirical evidence on the relationship between financial integration and economic stability remains inconclusive. While some studies argue that financial openness promotes growth and resilience (Ajide et al., 2018; Anyanwu, 2020), others suggest that it may increase vulnerability to external shocks, capital flight, and financial crises—especially in economies with weak institutional frameworks (Rodrik & Subramanian, 2008; Berger et al., 2021).

A key limitation in the existing literature is the lack of consensus and methodological consistency in assessing the long run effects of financial integration on economic stability. Many studies rely on conventional panel techniques that ignore cross country interdependence and spatial spillovers, thereby providing incomplete or biased conclusions (Schularick and Steger, 2010; Brooks and Liscow, 2023). This leaves an important gap,

particularly for Sub-Saharan Africa where economies are increasingly interconnected and susceptible to shared external shocks. The instability in regional growth patterns, including sharp fluctuations in recent years, further underscores the need for a more robust and comprehensive analytical approach (WDI, 2024).

In response to these gaps, this study examines the impact of financial integration on economic stability in Sub-Saharan Africa, with specific focus on foreign direct investment and trade openness. The study addresses the following questions: does financial integration enhance economic stability in the region, and how do institutional and structural factors influence this relationship? To answer these questions, the study employs advanced econometric techniques that account for heterogeneity and spatial dependence, providing more reliable and policy relevant evidence.

The study contributes to the literature by integrating spatial econometric analysis into the finance growth nexus, offering new insights into the conditional nature of financial integration in Sub-Saharan Africa. By doing so, it provides a clearer understanding of whether financial openness strengthens economic resilience or exacerbates existing vulnerabilities, while also offering practical guidance for policymakers seeking to harness the benefits of global financial integration.

REVIEW OF RELEVANT LITERATURE

The relationship between financial integration and economic performance has been widely examined, yet findings remain mixed due to differences in methodologies, data coverage, and institutional contexts.

Early studies such as Aziakpono (2017) report a generally positive relationship between financial integration and growth. Similarly, Arif-Ur-Rahman and Inaba (2020) find that financial integration enhances total factor productivity through improved capital allocation and technological spillovers.

However, contrasting evidence exists. Samia and Sofia (2017) show that financial integration may negatively affect financial stability in the long run. Likewise, Orji et al. (2015) report a negative relationship between financial liberalization and output growth in Nigeria, suggesting that integration without strong institutional support can be detrimental.

Institutional quality emerges as a critical moderating factor. Osada and Saito (2010) argue that countries with stronger governance frameworks benefit more from financial integration. Conversely, weak institutions can lead to inefficient allocation of capital and increased economic instability.

Trade openness has also been identified as an important component of financial integration. Studies such as Okoye et al. (2016) show that trade openness positively influences industrial output, although its impact depends on complementary economic structures. Obamuyi and Demehin (2012), using co-integration and Vector Error Correction Models, report a positive long run relationship between interest rate reforms and financial deepening, highlighting the role of financial policy reforms in shaping outcomes. In contrast, Orji, Anthony-Orji, and Mba (2015) observe a negative relationship between financial liberalization and output growth in Nigeria, suggesting that liberalization without adequate institutional support may hinder economic performance.

The inconsistencies across these studies can be attributed to several factors. First, differences in methodology such as ARDL, GMM, OLS, and panel regressions lead to variations in how short run and long run effects are captured. Second, sample composition varies widely across studies, with some focusing on individual countries while others use cross country panels, limiting comparability. Third, institutional heterogeneity across countries significantly influences how financial integration translates into economic outcomes.

A critical gap in the literature is the limited application of spatial econometric techniques in analyzing Sub Saharan Africa, despite clear evidence of cross country interdependence and spillover effects. Most existing studies ignore spatial dependence, leading to potential bias in estimated relationships. In addition, relatively few studies simultaneously incorporate financial integration, institutional quality, trade openness, and inflation within a unified spatial framework. This omission restricts understanding of how these variables interact to

influence economic stability in the region. Addressing these gaps requires approaches that account for heterogeneity, cross sectional dependence, and the institutional context that shapes economic outcomes.

The study conceptualizes economic stability (GDP) as a function of FDI as a percentage of GDP, Trade Openness, Institutional quality, and Inflation rate. FDI/GDP ratio (FGDP), Trade Openness (TOP), Institutional quality (ISQ) and inflation rate (INF) representing the independent variables

These variables capture both the extent of financial integration and the domestic conditions that shape its effectiveness.

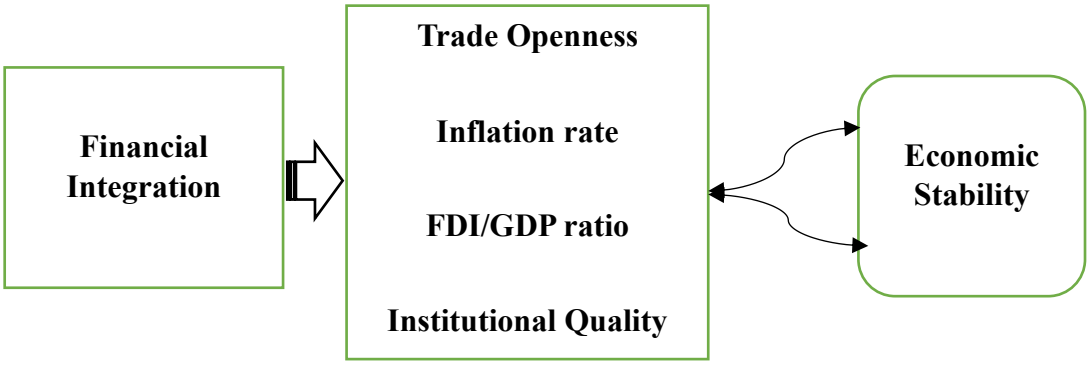

Figure 1. The conceptual framework of FDI/GDP ratio, Trade Openness (TOP) and economic growth in Africa.

Financial integration, encompassing the linkage between a country's financial system and the global financial framework, yields diverse effects on economic stability, contingent upon several factors. It facilitates increased access to capital, technology, and markets, potentially bolstering domestic productivity, competitiveness, and growth prospects. Moreover, it enables risk sharing and diversification, thereby potentially mitigating exposure to domestic shocks and enhancing resilience against external disturbances. Key metrics such as the FDI/GDP ratio and trade openness serve as measures of financial integration, offering insights into the degree of openness and integration with the global economy (Rakshit, 2022).

Despite the numerous financial integration studies, there is inconsistency in the findings with regard to the financial integration-stability nexus. Some studies lack the inclusion of trade openness as a robust variable that can enhance long-term economic stability in Sub-Sahara . Meanwhile, others mirrored the early and well-known studies that found that financial integration is essentially uncorrelated with long-term economic performance. This study fills these gaps by incorporating spatial dependence and threshold effects.

METHODLOGY

The study adopts an explanatory research design, aimed at identifying causal relationships between financial integration and economic stability. The selection stems from the fact that it aims to uncover the underlying causes and relationships between different variables. It seeks to explain why a particular phenomenon like economic stability occurs and how it relates to other factors like trade openness and FDI/GDP ratio.

The population of the study is the 49 sub-Saharan economies while the sample size comprises of the 5 largest economies in the sub region: Angola, Ethiopia, Nigeria, South Africa, and Kenya. Angola is the third-largest economy in the region, with $106.8 billion. Ethiopia is the fourth largest economy with a GDP of $126.8 billion. Nigeria, the continent's largest economy, has a GDP of $472.6 billion while South Africa is the second largest with a GDP of $405.3 billion. Kenya, despite slower growth, remains a significant economic player, with a GDP of $113.4 billion (IMF, 2023). The study covers 1990–2022, providing 33 observations per country and a total of 165 observations.

The data are secondary in nature and were sourced from the World Bank Development Indicator (2022) from 1990 to 2022. The data collected include Trade Openness (TOP), FDI/GDP ratio (FGDP), Inflation rate (INF),

Institutional Quality measured by CPIA financial sector rating and Economic stability (GDP). These variables have been widely adopted by researchers in finance literature (Cantah et al., 2018; George & Merkus, 2021; Rakshit, 2022; Bleaney & Tia, 2022; Giraldo, Gomez-Gonzelez & Uribe, 2024).

Panel Spatial Correlation Consistent (PSCC) regression developed by Driscoll and Kray (1998) and Threshold Regression developed by Hansen (1999) were used to estimate the model due to their ability to account for correctional dependence, heterogeneity and structural break.

Model Specifications

From the Capital Market Integration Model and following Chen & Kim (2023) model on financial integration and economic growth: Directional heterogeneity and threshold effect., Autoregressive Distributed Lag Model (ARDL) model is thus specified. The current study this specify the model as;

$$GDP_{it}=\beta_0+\beta_1 TOP_{it}+\beta_2 FGDP_{it}+\beta_3 INFR_{it}+\beta_4 INQ_{it}+\mu i+ \epsilon_{it}$$

In the equation above, GDP_{it} is the dependent variable, representing the Gross Domestic Product for country at time t. The term β_0 is the intercept, and $\beta_1 TOP_{it}$ captures the effect of trade openness on GDP. Similarly, β_2 $FGDP_{it}$ represents the impact of FDI to GDP ratio, $\beta_3 INFR_{it}$ reflects the influence of inflation rate, and $\beta_4 INQ_{it}$ measures the effect of institutional quality on GDP. The β1…..β4 are the parameters to be estimated while the error term μ_{it} accounts for idiosyncratic errors specific to each entity at each time point, while μi denotes the country-specific effects that remain constant over time, and ϵ_{it} is the random disturbance term.

RESULTS & DISCUSSIONS

The descriptive statistics of the variables were analyzed to determine the nature, characteristics and patterns in the distribution of the variables overtime.

Table 1: Descriptive Statistics

	GDP	TOP	INFR	FGDP	INQ
\ Mean	10.95406	10.39987	10.19902	10.56513	1.120995
Median	10.92104	10.38483	10.26126	10.54791	1.007566
Maximum	11.72863	11.07386	11.10584	11.21051	3.617536
Minimum	10.04982	9.448407	8.878044	9.673382	-0.178842
Std. Dev.	0.457454	0.457479	0.541768	0.420532	0.557613
Skewness	-0.010964	-0.144890	-0.238440	-0.136932	1.658866
Kurtosis	1.872177	1.631516	2.267659	1.812792	7.965245
Jarque-Bera	8.589142	13.20787	5.155234	10.02014	240.7118
Probability	0.013642	0.001355	0.075955	0.006670	0.000000
Sum	1774.557	1684.779	1652.241	1711.550	181.6012
Sum Sq. Dev.	33.69151	33.69525	47.25557	28.47242	50.06002
Observations	165	165	165	165	165

Source: Researchers' computation (2026)

The descriptive statistics shown in Table 1 shows the characteristics of economic indicators such as GDP, trade openness, inflation Rate, FDI to GDP ratio and Institutional quality. Each statistic offers essential insights into the distributional characteristics. The finding revealed that the gross domestic product (GDP) has an average value of around 10.95406 million dollars, with a standard deviation of 0.457 million dollars. This implies that

there is little deviation in GDP figures from the mean. The skewness value of -0.010 indicates a slight leftward skewness, while the kurtosis value of 1.872177 suggests a platykurtic distribution. The Jarque-Bera test statistic is 8.589142 with a corresponding p-value of 0.013642 indicates the likely occurrence of non-normality, which might be related to structural traits.

The average trade openness is 10.39987 percent, with a standard deviation of 0.457479. The data also exhibits a slight negative skewness with a skewness coefficient of -0.144890, and a moderate level of kurtosis with a kurtosis coefficient of 1.631516. The Jarque-Bera test statistic of 13.207 with a p-value of 0.001355, indicates a departure from normality. Furthermore, the inflation rate, which has an average of 10.19% and a standard deviation of 0.54%, has a skewness of -0.2384 and a higher kurtosis of 2.267. The Jarque-Bera test statistic is 5.155 with a p-value of 0.075 suggest that data generating process is normally distributed

The FDI to GDP ratio has a mean of 10.56% and a standard deviation of 0.420%. It shows a skewness of -0.1369 and a moderate kurtosis of 1.8127. The Jarque-Bera test statistic is 10.0201, and the p-value is 0.006670. These results suggest a deviation from normalcy, which might be attributed to specific economic policies that impact foreign direct investment. Finally, the institutional quality, which is assessed using percentile rank with a mean of 1.1209 and a standard deviation of 0.5576, exhibits a considerable positive skewness (skewness = 1.658866) and a very high kurtosis (kurtosis = 7.965245). The Jarque-Bera test statistic is 240.7118 with a p-value of less than 0.0001, indicates that the data generating process is not normally distributed.

Table 2: Correlation Matrix

	GDP	**TOP**	**INFR**	**FGDP**	**INQ**
GDP	1.000000				
TOP	0.320823	1.000000			
INFR	-0.195124	-0.064944	1.000000		
FGDP	0.441000	0.975882	-0.114992	1.000000	
INQ	-0.234916	-0.272313	0.638740	-0.333841	1.000000

Source: Reserchers' Computation (2026)

The correlation matrix presented in Table 2 offers useful insights into the interrelationships among GDP, trade openness (TOP), inflation rate (INFR), FDI-to-GDP ratio (FGDP), and institutional quality (INQ). The analysis indicates that there is a modest positive relationship between GDP and both FGDP (0.441) and TOP (0.321). This suggests that nations with higher GDP levels are more likely to attract greater amounts of foreign direct investment and participate more actively in international commerce. These connections suggest that there may be beneficial interactions where economic growth is strengthened by higher levels of trade and foreign investment coming into the country. Nevertheless, the inverse relationship between INQ (-0.235) and INFR (-0.1951) implies that a stronger institutional quality does not always correspond to a greater GDP. This demonstrates that there are intricate dynamics at play in how institutional characteristics impact economic production. Conversely, an elevated inflation rate is expected to gradually diminish GDP since it erodes the ability to buy goods and services and raises the expenses of production. This indicates that elevated inflation rates might discourage economic expansion, emphasising the possible economic weaknesses linked to inflationary pressures.

Cross Sectional Dependence Test

The Cross-Sectional Dependence Test was conducted to assess the presence of cross-sectional dependence among the variables in the panel data. The test is essential for determining whether the residuals across the countries are correlated, which could impact the reliability of the results. The null hypothesis of no cross-sectional dependence is assumed.

Table 3: Cross sectional Dependence Test Results

Variable	BP LM Statistic	PS LM Statistic	BCS LM Statistic	Decision
GDP	310.6105***	67.21856***	67.14043***	Reject
TOP	136.1933***	28.21769***	28.13956***	Reject
INFR	269.0009***	(57.91436***	57.83623***	Reject
FGDP	173.6891***	36.60200***	36.52387***	Reject
INQ	45.31336***	7.896308***	7.818183***	Reject

Source: Reserchers' Computation (2026)

The results from the Cross-Sectional Dependence Test indicate that all variables—GDP, TOP, INFR, FGDP, and INQ—exhibit significant cross-sectional dependence. This is demonstrated by the Breusch-Pagan LM (BP LM), Pesaran Scaled LM (PS LM), and Bias-Corrected Scaled LM (BCS LM) statistics, all of which show high significance levels, leading to the rejection of the null hypothesis of no cross-sectional dependence for each variable. These findings suggest that the variables are correlated across different cross-sections, necessitating the use of econometric techniques that account for this dependence in subsequent analyses.

Panel Unit root Test.

To assess the stationarity of the panel data and ensure the reliability of subsequent econometric analyses, a Panel Cross-Sectional Dependence Unit Root Test was conducted. This test combines traditional unit root tests with cross-sectional dependence considerations, addressing potential correlations across the cross-sections, ensuring that the econometric models built on this data are robust and free from biases that could arise from non-stationary data or ignored cross-sectional correlations.

Table 4: Cross-Sectionally Im-Pesaran and Shin (CIPS) Unit root test result

Variable	CIPS	Critical Values 5%	CONCLUSION
GDP	-2.878	-2.33	I(1)
TOP	-1.529	-2.33	I(1)
INFR	-2.306	-2.33	I(1)
FGDP	-2.011	-2.33	I(1)
INQ	-3.307	-2.33	I(0)

Source: Reserchers' Computation (2026) Note: *1%, ** 5% and *** 10% level of significance

The results from the Cross-Sectionally Augmented Dickey-Fuller (CADF) unit root test presented in Table 4 reveal the integration order of the variables studied. The CIPS values for GDP (-2.878), TOP (-1.529), and FGDP (-2.011) are all greater than the critical value of -2.33 at the 5% significance level, indicating that these variables are non-stationary at levels and integrated of order one, I(1). In contrast, the CIPS value for INFR (-2.306) is also greater than the critical value but still indicates that it is non-stationary at levels and integrated of order one, I(1). However, INQ (-3.307) is less than -2.33, suggesting it is stationary at levels, thus integrated of order zero, I(0). Overall, this indicates that INQ can be used in the analysis without differencing, while the other variables will require differencing to achieve stationarity.

Slope Heterogeneity Test

The slope homogeneity test was conducted to assess whether the relationships among the variables are consistent across different cross-sections in the panel data.

Table 5: Slope Heterogeneity Result

	Delta	**p-value**
	9.740	0.000
Adj. Delta	10.768	0.000

Source**:** Reserchers' Computation (2026)

The results of the slope homogeneity test indicate a significant difference in the slopes across the groups, as evidenced by the Delta value of 9.740 and an associated p-value of 0.000. This suggests that the relationship between the independent and dependent variables varies significantly between the groups analyzed. The adjusted Delta value of 10.768, also with a p-value of 0.000, reinforces this conclusion, confirming that the differences in slopes are not due to random chance. Thus, the null hypothesis of slope homogeneity is rejected, indicating that different groups experience varying impacts of the independent variables on the dependent variable. This implies that the impact of the independent variables on the dependent variable is not uniform across all entities in the panel, highlighting the necessity for further analysis using heterogeneous panel methods to accurately capture these differences.

Structural Break Test

The structural break test was conducted to determine whether there are significant changes in the relationship between the variables over time. Using Bai and Perron's (2003) technique, the study employed the sequential test in this investigation for numerous breaks at unknown breakpoints.

Table 6: Structural Break Test result

	Test Statistic	**5% Critical Values**	**#**	**Index**	**Date**	**[95% Conf. Interval]**	
F(1|0)	35.79	4.05	1	10	1999	1998	2000
F(2|1)	5.15	4.53	2	25	2014	2013	2015
F(3|2)	2.69	4.73					
F(4|3)	1.45	4.91					
F(5|4)	0.69	5.05					
Detected Breaks		2					
Estimation Breakpoint							
NO	5						
Time Periods (T)	33						
SSR	0.13						
Trimming	0.15						

Source**:** Reserchers' Computation (2026)

The structural break test results in Table 4.6 reveal significant findings regarding the stability of the analyzed data over time. The F(1|0) statistic of 35.79, which exceeds the critical value of 4.05 at the 5% significance level,

indicates a robust structural break in the year 1999, suggesting that substantial changes occurred in the underlying process of the variable being studied during this period. Additionally, the F(2|1) statistic of 5.15 also surpasses its critical value of 4.53, pointing to another break around 2014, reinforcing the notion that significant shifts in the data structure took place during this timeframe. In contrast, the F(3|2) and subsequent tests yield lower statistics, indicating no further significant breaks detected beyond these two key periods. The identified breaks and their corresponding time intervals suggest that external factors may have influenced the variables in the dataset, highlighting the importance of considering these breaks in further analysis. Overall, the detection of two distinct breaks underscores the necessity for a nuanced understanding of the dynamics at play in the observed trends, especially in the years 1999 and 2014.

Co-integration Test

The Westerlund cointegration test was conducted to evaluate the long-term relationships among the variables in the study. This test is particularly useful for panel data as it allows for the presence of both cross-sectional dependence and heterogeneity across the individual units. The results of which are presented in Tables 7

Table 7: Westerlund Co-integration

Statistics	Value	Z value	P-value
Gt	-2.153	-0.379	0.352
Ga	-3.730	1.034	0.973
Pt	-1.777	-1.451	0.927
Pa	-1.311	-1.469	0.929

Source**:** Reserchers' Computation (2026)

The results from the Westerlund co-integration test presented in Table 7 indicate that there is no evidence of a long-term equilibrium relationship among the variables analyzed. The Gt statistic of -2.153 has a z-value of -0.379 and a p-value of 0.352, suggesting that we fail to reject the null hypothesis of no co-integration. Similarly, the Ga statistic of -3.730, with a z-value of 1.034 and a p-value of 0.973, further supports the conclusion of no co-integration among the variables. The Pt statistic of -1.777, with a z-value of -1.451 and a p-value of 0.927, along with the Pa statistic of -1.311, which has a z-value of -1.469 and a p-value of 0.929, also yield high p-values. These results confirm the absence of significant long-term relationships among the variables, indicating that they do not share a common stochastic trend. As a result, any econometric models used to analyze the relationships between these variables should account for this lack of co-integration.

In this study, the Driscoll and Kraay (1998) panel spatial correlation consistent (PSCC) approach was utilised. This approach provides robust standard errors that are robust to general forms of cross-sectional dependence (spatial correlation), heteroskedasticity, and serial correlation. It's particularly useful for panel data with a large time dimension (T) and a smaller cross-sectional dimension (N) unlike the CCEMG that requires many cross-sectional units (N) to perform. To account for structural break, Seo and Shin (2016) Dynamic panels with threshold effect and endogeneity was estimated. The findings are presented in Table 8.

Table 8: Panel Spatial Correlation Consistent Estimates. DV: LGDP. Full Panel

Variables	Drisc/Kraay Statistics	Sig.	Threshold Statistics	Sig.
lfgdp	-1.75739	0.000	0.4097191	0.0260
linfr	0.986852	0.000	0.4055439	0.0000
ltop	1.436299	0.001	-0.4644064	0.0020
linq	-0.07504	0.021	0.0140195	0.377

_cons	4.602893	0.000	7.311758	0.0000
Country	5			
F[4(5), 32(155)]	777.74		393.10	
Prob > F	0.0000		0.0000	
R-squared	0.7983		0.6961	
Root MSE	0.2099		0.0042	
Number of Obs.	165			
sigma_u	0.31413			
sigma_e	0.05965			
rho	0.96519			
Threshold	1			
F Statistics	8.08	0.33950		

Source: Reserchers' Computation (2026)

The results from the Driscoll-Kray and threshold regression analyses in Table 8 provide valuable insights into the effect of financial integration on economic stability in sub-Saharan Africa. From the finding, trade openness (ltop) (β=1.436299, p=0.001) has a significant positive effect on GDP, suggesting that an increase in trade openness is associated with higher GD in sub-Saharan Africa. The result also indicates that inflation rate (linfr) (β=0.986852, p=0.000) has a positive signifcant effect on GDP, implying that moderate inflation may stimulate economic activity, potentially through increased consumption and investment. However, this relationship warrants careful monitoring, as excessive inflation could have detrimental effects on economic stability. Institutional quality (linq) (β=−0.07504, p=0.021) has negative signifcant effect on GDP suggesting that poorer institutional quality is associated with lower GDP. This underscores the necessity for effective governance and robust institutions, as they are crucial for facilitating economic growth and ensuring a conducive environment for investment and development.

Meanwhile, the FDI ratio to GDP (lfgdp) (β=−1.75739, p=0.000), has a significant negative effect o GDP within the sub-Saharan Africa. This finding suggests that higher FDI ratios may be associated with reduced GDP in this context. This could reflect potential crowding out of local businesses or ineffective use of foreign investments, prompting a need for policies that ensure FDI contributes positively to the local economy.

The threshold regression analysis indicates that foreign direct investment ratio to GDP, has a positive effect on GDP (β = 0.4097; p = 0.026). This indicates that a 1% increase in FDI is associated with an approximate 0.41% increase in GDP, suggesting that FDI plays a crucial role in enhancing economic growth. Similarly, the inflation rate exhibits a strong positive coefficient (β = 0.4055; p = 0.000), indicating that a 1% increase in inflation is linked to a 0.41% rise in GDP. This significant result may imply that moderate inflation could stimulate economic activity, possibly due to increased consumer spending or investment.

In contrast, trade openness reveals a negative coefficient (β = -0.4644; p = 0.002), suggesting that a 1% increase in trade openness is associated with a 0.46% decrease in GDP. This statistically significant finding may indicate that greater trade openness could lead to increased competition for local industries or trade imbalances, which may adversely affect domestic economic performance. Policymakers should consider this potential downside when formulating trade policies.

The model also includes a categorical variable for institutional quality, which highlights its role in moderating the effects of the independent variables. In the first regime (linq = 0), the coefficient is not statistically significant (β = 0.0140; p = 0.377), indicating that institutional quality at this level does not have a meaningful impact on GDP. However, in the second regime (linq = 1), the coefficient is marginally significant (β = 0.01579; p = 0.065),

suggesting that improved institutional quality could improve the positive effects of FGDP, TOP and inflation on GDP. This

Lastly, the model fit indicators show a high F-statistic ($F(4, 155) = 453.11$; $p < 0.0000$), indicating that the independent variables collectively explain a significant portion of the variability in GDP. The rho value ($\rho = 0.9652$) suggests that a substantial fraction of the variance in GDP is attributable to unobserved factors, such as country-specific effects. Overall, these results highlight the importance of FDI and inflation in driving GDP growth while cautioning against potential adverse effects of trade openness. Additionally, improving institutional quality could enhance the effectiveness of economic policies aimed at fostering growth

Post-Estimation Test

A post-estimation evaluation was undertaken to assess the appropriateness, overall importance, and stability of the estimated model. A Wald test was performed to determine the significance of the explanatory variables in the model.

Table 9: Wald Test Result: RGDP

Test Statistic	Value	df	Probability
F-statistic	89.84585	(2, 138)	0.0000
Chi-square	179.6917	2	0.0000
Null Hypothesis: C(1)=0, C(3)=2*C(4)			
Null Hypothesis Summary:			
Normalized Restriction (= 0)		Value	Std. Err.
C(1)		0.597869	0.349725
C(3) - 2*C(4)		0.813968	0.112832

Source: Reserchers' Computation (2026)

The outcome of the Wald Test in the RGDP model is displayed in Table 9. The probability of the F-distribution ($p < 0.0000$) and chi-square distribution ($p < 0.0000$) are both below 5%. This implies that the explanatory variables have a combined and substantial influence on economic stability in Sub-Saharan Africa. Consequently, the null hypothesis is rejected , suggesting that the explanatory variables have a substantial influence on economic growth in Africa.

Table 10: Residual Cross-Section Dependence Test

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	24.78136	10	0.0058
Pesaran scaled LM	3.305212		0.0009
Pesaran CD	1.481516		0.1385

Source: Reserchers' Computation (2026)

The results from Table 10, which presents the residual cross-section dependence test, provide valuable insights into the presence of cross-sectional dependence among the residuals of the panel data model. Focusing on the Pesaran CD statistic (T>N), the test statistic is reported as 1.481516 with a corresponding p-value of 0.1385. This p-value is above the common significance levels (0.01, 0.05, and 0.10), suggesting that the study fails to reject the null hypothesis of cross-sectional independence. In other words, the results indicate that there is no strong evidence of cross-sectional dependence among the residuals across the different units in the panel data.

CONCLUSION AND RECOMMENDATION

From the examination of financial integration and economic stability in Sub-Saharan Africa, the findings indicate that the effects of foreign direct investment and trade openness operate through distinct transmission channels that shape macroeconomic outcomes. The negative and significant long run effect of FDI to GDP on economic stability suggests that capital inflows may not automatically translate into stable growth, particularly in environments where absorptive capacity is limited. One key mechanism underlying this outcome is the role of weak institutional quality, which can hinder efficient allocation of foreign capital and allow leakages through corruption, rent seeking, and inefficient public spending. In addition, limited human capital reduces the ability of the domestic economy to effectively absorb and utilize foreign technologies embedded in FDI, thereby weakening productivity gains. Exchange rate volatility and profit repatriation by multinational firms may also contribute to external imbalances, further reducing stability.

In contrast, trade openness exhibits a positive and significant long run effect on economic stability, reflecting several reinforcing mechanisms. Greater openness facilitates diversification of economic activities by allowing countries to expand beyond narrow production bases, thereby reducing exposure to sector specific shocks. It also enhances market access, enabling firms to benefit from larger demand pools and improved economies of scale. Through increased interaction with global markets, trade openness supports technology transfer, learning by doing, and productivity improvements. These channels collectively strengthen the resilience of the economy. Furthermore, trade openness can complement financial integration by creating additional incentives for foreign investment, although its effectiveness is often contingent on supportive domestic policies and stable macroeconomic conditions.

Overall, the contrasting effects of FDI and trade openness suggest that financial integration does not operate in isolation but is mediated by structural factors such as institutional quality, human capital development, and macroeconomic management. Where these supporting conditions are weak, capital inflows may generate instability rather than stability, whereas trade integration tends to provide more immediate and broadly distributed gains through diversification and efficiency improvements..

Based on the findings and insights gathered from the analysis, the following are recommended for policymakers and stakeholders to consider:

- Policy that can help improve on FDI inflows through improvement in business environment, infrastructure, governance, and human capital, as well as by diversifying FDI sources and sectors should be undertaken by sub-Saharan Africa countries.

- Promotion of integration and spillovers between foreign and domestic firms, fostering innovation and technology transfer, and ensuring environmental and social sustainability should be adopted by sub-Saharan African countries.

- Sub-Saharan Africa countries should adopt a strategic and selective approach to trade liberalization, taking into account their comparative advantages, development goals, and regional integration.

- Sub-Saharan Africa countries should also mitigate the risks and costs of trade openness by strengthening their macroeconomic management, building resilience to external shocks, enhancing their productive capacities, and reducing their dependence on primary commodities.

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