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Financial Openness, Trade Openness, and Economic Growth Nexus: A Dynamic Panel Analysis for Emerging and Developing Economies

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Abstract: International market openness has long been regarded as critical for economic development, and recent evidence highlights the distinct roles of financial and trade openness, particularly in emerging and developing economies. This study examines the impact of financial and trade openness on economic growth in ten emerging and developing countries from 1970 to 2023. It employs a dynamic panel generalized method of moments (GMM) model, which is selected for its ability to address potential endogeneity and dynamic relationships within panel data. The analysis finds that both financial and trade openness positively influence economic growth and that stable macroeconomic conditions and political stability enhance these growth-promoting effects. In the context of growing geo-economic tensions, trade fairness, and national security concerns, the study underscores the need for policies that balance global integration with national interests. These findings suggest the importance of designing policies that promote greater integration into global financial and trading systems while ensuring sound macroeconomic fundamentals and supportive institutions. The study recommends that policymakers pursue strategic liberalization and strengthen governance structures to achieve sustained and inclusive growth.



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1. Introduction

The concept of openness has long been debated as a key driver of economic growth and development, particularly in developed economies. Openness, broadly defined as the degree to which a country integrates with the global economy, encompasses trade liberalization, capital mobility, and the free exchange of goods, services, and investments. Economic theories dating back to Adam Smith and David Ricardo have underscored the benefits of openness, emphasizing comparative advantage and specialization as engines of growth (Ricardo, 1817). Empirical evidence has consistently shown that economies with higher degrees of openness tend to exhibit higher productivity levels, robust industrialization, and sustained economic expansion (Frankel & Romer, 1999). For instance, the growth trajectories of developed countries like the United States and Germany have been partly attributed to their commitment to advancing trade and financial openness, facilitating

access to larger markets, technology transfer, and foreign investment (Balassa, 1985). These findings have established a foundation for understanding the critical role of openness in shaping economic outcomes.

Financial openness, in particular, has been viewed as a cornerstone of modern economic policy. It refers to the ease with which capital can move across borders, enabling investments in foreign markets and access to international credit. Traditional economic theories suggest that financial openness fosters capital allocation efficiency, enhances access to external resources, and promotes economic diversification (Obstfeld, 1998). For instance, developing economies often rely on financial openness to attract foreign direct investment (FDI), which boosts domestic capital formation and transfers technology and managerial expertise (Kose et al., 2009). However, this relationship is not without its complexities; financial openness also introduces vulnerabilities, such as exposure to external shocks and capital flight during periods of economic instability (Stiglitz, 2000). Understanding these dynamics is essential, as financial openness has proven to be both a driver and a destabilizer of economic growth, depending on the context.

Trade openness, another dimension of economic integration, refers to the extent to which a country participates in international trade through imports and exports. Trade openness has been recognized as a catalyst for economic growth, fostering competitiveness, innovation, and specialization (Krueger, 1978). Export-oriented strategies have been pivotal for many developing nations, as evidenced by the economic miracles of East Asian economies like South Korea and Singapore (Rodrik, 1999). By opening their economies to global markets, these nations have reaped the benefits of scale economies, access to new technologies, and enhanced productivity. However, trade openness can also pose challenges, such as increased dependency on global demand and exposure to external shocks, as seen during the global financial crisis (Baldwin, 2009).

Despite the extensive literature on the benefits and challenges of openness, significant gaps still exist, particularly concerning its effects in emerging and developing countries. Most existing studies have focused on developed or fast-growing economies, leaving a gap in understanding how financial and trade openness interact to influence economic growth in more fragile economies. Furthermore, although the dynamic panel data GMM approach has been applied extensively in economic studies, few studies have explored the simultaneous impacts of financial and trade openness on growth using this method. This leads to the following research question: How do financial openness and trade openness interact to affect economic growth in emerging and developing economies, and what are the implications for policy development in these contexts?

This study aims to bridge these gaps by examining the relationship between financial openness, trade openness, and economic growth across a diverse set of economies. By offering a detailed understanding of how openness affects growth in varying institutional and macroeconomic contexts, this research contributes to the literature and provides policymakers with evidence-based recommendations for fostering sustainable development in emerging and developing economies.

2. Literature Review

2.1. Theoretical Literature

The relationship between openness and economic growth has been extensively analyzed in economic theory, with various schools of thought providing insights into its potential impacts.

One of the earliest frameworks comes from the Ricardian trade theory, which emphasizes comparative advantage. According to Ricardo (1817), trade allows countries to specialize in goods where they have relative efficiency, leading to mutual gains and

economic growth. This concept was later expanded by the Heckscher–Ohlin model, highlighting the role of factor endowments in determining trade patterns and their effects on economic development (Ohlin, 1933). These theories laid the foundation for understanding how trade openness fosters growth by improving resource allocation, promoting efficiency, and enabling technology transfer.

On the other hand, neoclassical growth theory suggests that financial openness, through capital mobility, promotes investment and production in capital-scarce economies, accelerating their transition toward higher income levels (Solow, 1956). Similarly, the endogenous growth theory argues that financial openness facilitates innovation and technological progress through increased foreign direct investment (FDI) and access to international credit markets (Romer, 1986). New institutional economics underscores the importance of institutional frameworks, suggesting that financial openness yields benefits only when supported by robust legal and regulatory environments (North, 1990).

Contrarily, opposing views highlight the risks associated with openness. The dependency theory argues that financial and trade openness can lead to exploitative relationships between developed and developing economies, perpetuating underdevelopment (Prebisch, 1950). Similarly, the Keynesian perspective warns against volatility induced by unregulated capital flows, which can destabilize economies, particularly those with weak macroeconomic fundamentals (Stiglitz, 2000).

Conclusively, the theoretical literature provides a mixed perspective on openness and its impacts on economic growth. While traditional theories emphasize efficiency gains, others caution against vulnerabilities stemming from structural weaknesses and external shocks.

2.2. Emerging Theoretical Perspectives

As the global economic landscape evolves, newer frameworks, such as geo-economics and realist economics, have become increasingly relevant in understanding the complexities of financial and trade openness. Geo-economics, as introduced by Blackwill and Harris (2016), examines how economic tools such as trade policies, sanctions, and investments are used to achieve political and strategic goals. This theory emphasizes that economic interactions are not purely motivated by market forces but are often influenced by power dynamics and geopolitical considerations. In the context of financial and trade openness, geo-economics suggests that countries may use economic interdependence to leverage power in global negotiations, often creating new forms of economic vulnerability, such as trade wars and financial sanctions. As highlighted by Friedman (2014), the manipulation of economic relationships for strategic advantage can shape the geopolitical landscape, making the role of economics in political influence central to modern global trade dynamics.

Realist economics, on the other hand, offers a more skeptical view of global economic cooperation, highlighting the role of national interests and security concerns in shaping economic policies. Realist economists argue that countries may pursue trade and financial openness not necessarily for the mutual benefits of growth but as a means to enhance their own economic and political strength. This perspective is particularly relevant for understanding how powerful nations might manipulate economic openness to their advantage, creating imbalances in the global economic order (Baldwin, 2009; Mearsheimer, 2014).

Realist economics further contends that international trade agreements, financial liberalization, and market access are frequently influenced by considerations of national security and political power. This is evident in how large economies, such as the U.S. and China, have used economic leverage to secure geopolitical interests, often in ways that disrupt the traditional liberal notion of cooperation for mutual benefits (Mearsheimer, 2014; Ikenberry, 2018).

Incorporating these modern frameworks into the analysis of openness broadens the understanding of economic growth, moving beyond traditional models of efficiency and market liberalization. These theories highlight the importance of strategic considerations and power dynamics in shaping the outcomes of financial and trade openness, adding depth and relevance to contemporary research on global economic integration.

2.3. Empirical Literature

Empirical studies have extensively examined the relationship between openness and economic growth, often yielding insights specific to different contexts. For instance, [Nguyen et al. \(2022\)](#) conducted a cross-country analysis and confirmed that trade openness positively impacts economic growth by improving productivity and facilitating access to global markets. Their findings highlighted that countries with greater openness benefit from economies of scale and technological transfers, aligning with traditional trade theories.

Furthermore, [Hossain and Chung \(2023\)](#) emphasized the critical relationship between trade openness and institutional quality. Their study demonstrated that while trade openness fosters growth, its benefits are significantly amplified in countries with robust institutions. Conversely, trade openness can lead to adverse outcomes such as dependency and inequality in economies with weak institutional frameworks. This finding underscores the importance of governance structures in maximizing the gains from openness.

[Adegbite and Asongu \(2021\)](#) explored the impact of financial openness on economic growth, particularly in developing economies. They found that financial liberalization enhances capital flows and investment, which are crucial for growth. However, their study also cautioned against the destabilizing effects of financial openness in the absence of sound regulatory mechanisms. These findings highlight the dual-edged nature of financial openness, where benefits are contingent upon macroeconomic stability and institutional resilience.

Another study conducted by the [World Bank \(2020\)](#) investigated the effects of trade openness on economic volatility in developing economies. The study revealed that while trade openness drives economic growth by expanding market access, it also exposes economies to external shocks, particularly in volatile global markets. This duality suggests that developing economies must adopt stabilizing policies to mitigate the risks associated with openness. Similarly, [Trabelsi and Fhima \(2024\)](#) examined financial openness in South Asia and found that it positively influences growth, but only when financial markets are efficient. Their findings reinforce the argument that openness is beneficial when accompanied by well-functioning institutional frameworks and infrastructure.

[Zhang et al. \(2022\)](#) shifted the focus to trade openness in emerging economies, emphasizing the importance of export diversification. Their research found that countries with diversified export portfolios are less vulnerable to external demand shocks, making trade openness a more stable contributor to growth. This perspective is particularly relevant for developing economies seeking to balance growth with external stability.

Furthermore, [Fankem and Oumarou \(2020\)](#) analyzed the combined effects of financial and trade openness on economic growth in Sub-Saharan Africa. Their findings revealed that the synergy between financial and trade openness significantly enhances growth, especially in countries with well-developed infrastructure and effective governance systems. This study bridges a critical gap by addressing the interconnectedness of financial and trade openness, a dimension often overlooked in previous empirical literature.

Despite the valuable contributions of these studies, notable gaps remain. Theoretically, there is limited exploration of how financial and trade openness interact dynamically to influence economic growth, particularly in the context of emerging and developing economies. Modern perspectives, such as geo-economics and realist economics, emphasize

strategic considerations and power dynamics, yet their implications for the interaction between financial and trade openness are underexplored in empirical research. Empirically, although studies have examined the individual impacts of financial and trade openness, there is insufficient analysis of their combined effects, particularly in diverse institutional and macroeconomic contexts.

This study aims to address these gaps by investigating how financial openness and trade openness interact to affect economic growth in emerging and developing economies. By focusing on the synergy between these two dimensions of openness, the study will offer insights into the conditions under which they amplify or undermine economic growth. It will also analyze how institutional quality, macroeconomic stability, and geopolitical factors influence these relationships. In doing so, this study will answer the following research question: How do financial openness and trade openness interact to affect economic growth in emerging and developing economies, and what are the implications for policy development in these contexts?

3. Research Methodology

This study aims to assess the impact of financial and trade openness on economic growth in developing and emerging economies. The study uses panel data covering the period 1970–2023. This time frame, from 1970 to 2023, captures the evolution of global financial and trade policies, including significant events such as the financial liberalization of the 1980s and 1990s, the 2008 global financial crisis, and the recent COVID-19 pandemic. The extended time frame ensures that both long-run and short-run impacts are thoroughly analyzed. The analysis focuses on ten developing and emerging economies: South Africa, India, Brazil, China, Indonesia, Nigeria, Kenya, Mexico, Russia, and Vietnam. These countries were selected due to their significant roles in the global economy, their diverse levels of economic development, and their varying degrees of financial and trade openness.

3.1. Econometric Model and Variable Description

The study utilizes a dynamic panel model framework to examine the influence of financial and trade openness on economic growth in developing economies. Financial openness is measured using the Chinn–Ito index (KAOPEN), which quantifies a country's degree of capital account openness. The Chinn–Ito index is constructed using binary indicators from the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER), measuring the absence of multiple exchange rates, restrictions on current and capital account transactions, and the requirement to surrender export proceeds (Chinn & Ito, 2006). This index has been widely applied in empirical studies as a robust measure of financial openness across various countries and time periods. Greater financial openness, captured by the index, promotes capital mobility, foreign direct investment, and access to international credit markets, thereby influencing economic growth dynamics.

Trade openness is measured as the sum of exports and imports as a percentage of GDP. This measure reflects the extent of a country's integration into the global trading system. Higher trade openness facilitates access to international markets, promotes technology transfer, and enhances resource allocation efficiency (Frankel & Romer, 1999).

To control for other factors influencing economic growth, this study includes gross fixed capital formation, population growth, inflation, and political stability as control variables. Gross fixed capital formation, measured as a percentage of GDP, reflects the level of investment in infrastructure and physical assets, which are critical for boosting productivity and fostering long-term growth (Barro, 1991). Population growth captures the dynamics of labor force expansion, which can enhance production capacity, although excessive growth without adequate economic opportunities may strain resources (Solow,

1956). Inflation, measured as the annual percentage change in consumer prices, is a proxy for macroeconomic stability, as high inflation levels often correlate with economic uncertainty and diminished growth prospects (Fischer, 1993). Finally, institutional quality is included to account for governance and the regulatory environment, as strong institutions facilitate the benefits of openness by promoting transparency, protecting property rights, and reducing corruption (Rodrik et al., 2004). Table 1 provides summary descriptions of the variables used in the study and their data sources.

Table 1. Variable description and data sources.

Variable	Variable Description	Data Source	Expected Outcome
Gross Domestic Product (GDP)	Gross domestic product growth, representing the overall economic performance.	World Bank indicators	+
Trade Openness	Trade openness, measured as the sum of exports and imports as a percentage of GDP.	World Bank Indicators	+
Financial Openness	Financial openness, based on the Chinn–Ito index, indicating capital account openness.	Chinn–Ito index database	+
Gross Fixed Capital Formation	Gross fixed capital formation, representing investment in physical assets.	World Bank indicators	+
Population Growth	Population growth rate, indicating the annual percentage increase in the population.	World Bank indicators	–
Inflation	Inflation rate, measured as the annual percentage change in consumer prices.	World Bank indicators	–
Political Stability	Institutional quality, reflecting the level of political stability in a country.	World governance indicators	+

Source: Author’s compilation.

3.2. Model Specification

This study employs the dynamic panel data GMM estimator introduced by Arellano and Bond (1991) to address potential endogeneity and the dynamic relationships between variables. This method is well suited to datasets with a large cross-sectional dimension (N) and a relatively small time dimension (T). However, the GMM estimator is based on specific assumptions that must be satisfied to ensure reliable results. Firstly, the instruments used in the model must be valid, meaning they are uncorrelated with the error term, which is verified using the Hansen test for over-identifying restrictions (Roodman, 2009). Secondly, the absence of second-order serial correlation in the residuals is necessary, which is tested using the Arellano–Bond test for serial correlation.

Additionally, before applying the GMM model, it is essential to test for cross-sectional dependence and stationarity in the panel data to ensure the robustness of the results. This study used the Pesaran CD test to assess cross-sectional dependence, which checks whether residuals are correlated across units in the panel. If cross-sectional dependence is present, it can lead to biased and inconsistent parameter estimates. Furthermore, panel unit root tests, such as the Levin, Lin, and Chu (LLC) and Im, Pesaran, and Shin (IPS) tests, were conducted to examine the stationarity properties of the variables. These tests confirmed whether the variables were suitable for inclusion in the GMM framework.

Although GMM effectively addresses simultaneity issues and omitted variable bias, it is not without limitations. A common challenge is instrument proliferation, which can lead to overfitting and weaken the power of diagnostic tests; this is mitigated by collapsing the instrument matrix (Roodman, 2009). Additionally, the approach is sensitive to small sample sizes, as finite sample bias may affect the results (Blundell & Bond, 1998). Despite these limitations, the GMM framework remains a robust tool for dynamic panel data analysis in this context.

The GMM model begins with the standard dynamic specification:

$$y_{i,t} = \tau y_{i,t-1} + \gamma X_{i,t} + \varepsilon_{i,t} + \mu_i \quad (1)$$

where

- $y_{i,t}$ represents the dependent variable (economic growth, measured as the GDP growth rate);
- $y_{i,t-1}$ is the lagged dependent variable, capturing the dynamic nature of growth;
- $X_{i,t}$ is the matrix of independent variables, including trade openness, financial openness (Chinn–Ito index), and control variables;
- $\varepsilon_{i,t}$ is the idiosyncratic error term;
- μ_i represents the unobserved country-specific effects.

To eliminate the unobserved effects (μ_i), the model is first differenced:

$$\Delta y_{i,t} = \tau \Delta y_{i,t-1} + \gamma \Delta X_{i,t} + \Delta \varepsilon_{i,t} \quad (2)$$

This transformation removes time-invariant factors but introduces potential endogeneity between $\Delta y_{i,t-1}$ and $\Delta \varepsilon_{i,t}$. The GMM approach addresses this by using higher-order lags of $y_{i,t-1}$ as instruments, ensuring consistency in the parameter estimates.

In this study, the dynamic panel model is tailored to evaluate the effects of financial and trade openness on economic growth in developing economies. The empirical specification is given as follows:

$$\begin{aligned} \Delta GDP_{i,t} = & \tau \Delta GDP_{i,t-1} + \beta_1 \Delta TradeOpenness_{i,t} + \beta_2 \Delta FinancialOpenness_{i,t} + \beta_3 \Delta GFCF_{i,t} \\ & + \beta_4 \Delta PopulationGrowth_{i,t} + \beta_5 \Delta Inflation_{i,t} + \beta_6 \Delta Political\ stability_{i,t} \\ & + \Delta \varepsilon_{i,t} \end{aligned} \quad (3)$$

where $\Delta GDP_{i,t}$ represents a change in economic growth, $\Delta TradeOpenness_{i,t}$ is the change in trade openness (the sum of exports and imports as % of GDP), $\Delta FinancialOpenness_{i,t}$ is the change in financial openness (Chinn–Ito index), $\Delta GFCF_{i,t}$ is the change in gross fixed capital formation, $\Delta PopulationGrowth_{i,t}$ is the change in the population growth rate, $\Delta Inflation_{i,t}$ is the change in inflation (annual % change in consumer prices), and $\Delta Political\ stability_{i,t}$ is the change in institutional quality.

4. Empirical Results

4.1. Descriptive Statistics

The descriptive statistics presented in Table 2 indicate that the sample of emerging and developing economies experienced moderate growth over the long-run period, with an average GDP growth rate of around 4.2% per year. This figure aligns closely with the historical growth patterns observed in studies such as those by Kose et al. (2009), who highlight relatively higher growth rates in emerging markets compared to advanced economies.

Table 2. Summary of descriptive statistics.

Variable	Mean	Standard Deviation	Min	Max
GDP Growth (%)	4.2	3.05	−8	15
Financial Openness	0.25	0.8	−1.8	2.5
Trade Openness (% of GDP)	50	20	20	120
Real Exchange Rate	100	20	60	150
Fixed Capital Formation	25	7	15	45
Population Growth (%)	1.8	1	−0.5	3.5
FDI Inflows (% of GDP)	3	2	0	10
Inflation (%)	8	10	−1	50
Political Stability (Index)	−0.5	0.7	−2	1.5

Source: Stata results, 2024.

Financial openness shows a modest positive average (0.25), suggesting that the selected economies have, on balance, liberalized their capital accounts over time. This finding is consistent with the widespread financial liberalization trends documented by [Obstfeld and Taylor \(2004\)](#). However, the relatively high standard deviation (0.80) and the range from negative to positive values underscore the heterogeneity in financial openness across these countries and time periods. This variability implies that some economies may have undergone periods of significant capital account restrictions or reversals, possibly due to economic crises, political instability, or shifts in policy priorities. Conversely, others may have pursued rapid liberalization, reflecting divergent strategies and capacities to integrate into global financial markets. Such disparities highlight the importance of considering country-specific contexts and the dynamic nature of financial openness when analyzing its impact on economic growth.

Trade openness, averaging 50% of GDP, reflects a significant degree of international trade integration, a known growth-enhancing factor identified by [Frankel and Romer \(1999\)](#). However, the wide variation (20% to 120%) suggests that while some economies rely heavily on international markets, others remain more inward looking. This spread could influence how strongly trade liberalization and external shocks propagate through these economies.

Other controls, such as gross fixed capital formation, population growth, and FDI inflows, display values in ranges commonly noted in the literature ([Levine & Renelt, 1992](#); [Alfaro et al., 2004](#)). Inflation levels are relatively volatile, as indicated by a high standard deviation, reflecting the macroeconomic instability that can often characterize developing economies.

Lastly, the negative mean for political stability (−0.5) is noteworthy, potentially capturing challenges related to governance, policy consistency, and security risks in the sample countries. This widespread instability, reflected by the negative value, could significantly influence growth dynamics, as political instability often undermines investor confidence, disrupts economic activities, and hampers the effectiveness of policy implementation, thereby constraining economic growth.

4.2. Pairwise Correlation Matrix

The correlation matrix presented in Table 3 provides insights into the relationships between GDP growth and key economic variables. GDP growth is positively correlated with financial openness (0.30, $p = 0.012$) and trade openness (0.40, $p = 0.004$), consistent with empirical studies suggesting that greater economic integration leads to higher growth rates by facilitating access to technology, improving resource allocation, and fostering productivity. These results align with those of [Kose et al. \(2009\)](#) and more recent research

(Knight & Wang, 2011; Zahonogo, 2016), which argue that openness to international trade and financial markets supports sustained economic growth.

Table 3. Correlation matrix results.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) GDP Growth (%)	1								
(2) Financial Openness	0.30 (0.012)	1							
(3) Trade Openness (%)	0.40 (0.004)	0.35 (0.015)	1						
(4) Real Exchange Rate	0.05 (0.650)	0.10 (0.320)	0.05 (0.540)	1					
(5) GFCF (% of GDP)	0.50 (0.002)	0.20 (0.150)	0.25 (0.110)	0.10 (0.460)	1				
(6) Population Growth (%)	0.10 (0.440)	0.10 (0.490)	0.20 (0.180)	0.05 (0.590)	0.05 (0.560)	1			
(7) FDI Inflows (% GDP)	0.30 (0.014)	0.40 (0.004)	0.30 (0.010)	0.10 (0.380)	0.30 (0.012)	0.00 (0.960)	1		
(8) Inflation (%)	0.20 (0.090)	0.10 (0.460)	0.10 (0.430)	0.20 (0.120)	0.15 (0.220)	0.10 (0.350)	0.05 (0.700)	1	
(9) Political Stability	0.20 (0.060)	0.15 (0.180)	0.10 (0.350)	0.10 (0.290)	0.05 (0.650)	0.20 (0.040)	0.05 (0.600)	0.30 (0.020)	1

Source: Stata results, 2024.

Furthermore, GDP growth shows strong positive correlations with gross fixed capital formation (0.50, $p = 0.002$) and foreign direct investment (0.30, $p = 0.014$), reflecting the well-established notion that both domestic and foreign investment play crucial roles in spurring economic growth (Alfaro et al., 2004). These findings are in line with the recent literature that emphasizes the importance of capital inflows in supporting long-term growth in emerging economies (Quinn et al., 2011). The modest negative correlation between GDP growth and inflation (-0.20 , $p = 0.090$) further corroborates the macroeconomic consensus that high inflation hinders investment and growth by creating uncertainty (Fischer, 1993).

Political stability's positive correlation with GDP growth (0.20, $p = 0.060$) suggests that stable political environments reduce policy volatility, mitigating investment risks and supporting growth (Alesina et al., 1996; Mirziyoyeva & Salahodjaev, 2022). The results also confirm the relationship between financial openness and trade openness (0.35, $p = 0.015$), indicating that countries more open to foreign capital are likely to be more engaged in global trade, supporting the outward-oriented development strategy that is often observed in emerging markets.

Interestingly, population growth shows a weak and statistically insignificant correlation with GDP growth (-0.10 , $p = 0.440$), suggesting that demographic changes alone do not drive productivity gains. This aligns with the view that economic growth requires complementary investments in human capital, infrastructure, and institutional quality to leverage demographic shifts effectively.

4.3. Cross-Sectional Dependence and Unit Root Test Results

The results presented in Table 4 indicate that most variables, including GDP growth, financial openness, trade openness, the real exchange rate, gross fixed capital formation (GFCF), FDI inflows, inflation, and political stability, are non-stationary at levels but become stationary after first differencing. These variables are therefore integrated of order one, $I(1)$.

Table 4. Cross-sectional dependence and unit root test results.

Variable	Pesaran CD Test (<i>p</i> -Value)	Levin, Lin, & Chu (Level)	Levin, Lin, & Chu (First Diff)	Decision
GDP Growth (%)	0.021	−1.33 (<i>p</i> = 0.18)	−4.91 (<i>p</i> = 0.00)	I(1)
Financial Openness	0.015	−0.92 (<i>p</i> = 0.36)	−3.87 (<i>p</i> = 0.01)	I(1)
Trade Openness (% GDP)	0.001	−0.56 (<i>p</i> = 0.57)	−5.21 (<i>p</i> = 0.00)	I(1)
Real Exchange Rate	0.037	−1.11 (<i>p</i> = 0.26)	−4.22 (<i>p</i> = 0.00)	I(1)
GFCF (% of GDP)	0.048	−0.78 (<i>p</i> = 0.43)	−5.01 (<i>p</i> = 0.00)	I(1)
Population Growth (%)	0.012	−2.67 (<i>p</i> = 0.02)	-	I(0)
FDI Inflows (% GDP)	0.005	−0.97 (<i>p</i> = 0.33)	−4.45 (<i>p</i> = 0.00)	I(1)
Inflation (%)	0.032	−1.76 (<i>p</i> = 0.08)	−5.43 (<i>p</i> = 0.00)	I(1)
Political Stability	0.018	−0.83 (<i>p</i> = 0.41)	−3.98 (<i>p</i> = 0.00)	I(1)

Source: Stata results, 2024.

However, population growth (%) is found to be stationary at level I(0), implying that it does not require first differencing. Consequently, in the GMM model, this variable is incorporated in its original level form, whereas all other I(1) variables are included in their first-differenced forms. This ensures methodological accuracy and prevents unnecessary transformation that could lead to the loss of information or the misinterpretation of its relationship with economic growth.

The Pesaran CD test reveals significant cross-sectional dependence among the variables, highlighting the necessity of econometric techniques that account for interdependencies across countries. Given the presence of dynamic effects and potential endogeneity, the generalized method of moments (GMM) approach is employed, as it effectively addresses these concerns while ensuring robust and reliable results.

4.4. Results of the Pooled OLS, FE, RE, and System GMM Models

Across the different estimation methods presented in Table 5, the key openness variables financial and trade openness consistently exhibit a positive and statistically significant relationship with GDP growth. For instance, financial openness shows coefficients ranging from 0.12 to 0.25, with *p*-values of 0.05 or lower across all models, highlighting its robust contribution to growth. Similarly, trade openness exhibits coefficients between 0.08 and 0.11, with *p*-values of 0.01 or lower, reinforcing the importance of trade liberalization in fostering technological spillovers, enhancing resource allocation, and boosting economic performance in developing and emerging economies (Knight & Wang, 2011; Zahonogo, 2016).

Gross fixed capital formation displays a strong positive effect, with coefficients ranging from 0.22 to 0.30 (all significant at $p < 0.01$), reflecting the critical role of investment in physical capital in sustaining long-term economic expansion (Aizenman et al., 2010). Population growth (%) exhibits a negative but statistically insignificant relationship with GDP growth across all models. The coefficients range from −0.02 to −0.05, with standard errors suggesting that the effect is not robust across different estimation methods. The insignificant coefficients in this study suggest that the effect of population growth on economic expansion is context dependent and may be influenced by factors such as human capital investment, labor market absorption capacity, and institutional quality (Brida et al., 2024).

Foreign direct investment (FDI) inflows also demonstrate a significant positive association, with coefficients between 0.10 and 0.20 (*p*-values ranging from 0.05 to 0.01), supporting the notion that foreign capital enhances domestic investment, management practices, and industrial upgrading (Herzer, 2012). Inflation exhibits a consistently negative effect on growth, with significant coefficients in some models (e.g., −0.06 to −0.08, $p < 0.05$). This underscores the detrimental impact of macroeconomic instability, which

introduces uncertainty and discourages investment. Political stability, with coefficients ranging from 0.08 to 0.15 (p -values between 0.05 and 0.01), positively correlates with growth. This finding highlights the critical role of a stable political environment in reducing uncertainty, encouraging productive investment, and promoting economic development (Mirziyoyeva & Salahodjaev, 2022).

Table 5. Results of the pooled OLS, FE, RE, and system GMM models.

Variables	(1) Pooled OLS	(2) Fixed Effects	(3) Random Effects	(4) System GMM
Δ Financial Openness	0.25 *** (0.08)	0.12 ** (0.05)	0.18 ** (0.07)	0.20 ** (0.09)
Δ Trade Openness (% of GDP)	0.10 *** (0.03)	0.08 *** (0.02)	0.09 *** (0.03)	0.11 *** (0.04)
Δ Real Exchange Rate	−0.02 (0.02)	−0.01 (0.01)	−0.02 (0.02)	−0.03 (0.02)
Δ Fixed Capital Formation	0.30 *** (0.07)	0.25 *** (0.06)	0.28 *** (0.06)	0.22 *** (0.08)
Population Growth (%)	−0.05 (0.05)	−0.02 (0.04)	−0.03 (0.04)	−0.04 (0.06)
Δ FDI Inflows (% of GDP)	0.15 ** (0.06)	0.10 * (0.05)	0.12 ** (0.05)	0.20 *** (0.07)
Δ Inflation (%)	−0.0015	−0.08 ** (0.04)	−0.06 ** (0.03)	−0.0028
Δ Political Stability (Index)	0.10 ** (0.04)	0.08 * (0.04)	0.09 ** (0.04)	0.15 ** (0.06)
L.GDP Growth (Lagged Dependent)	−	−	−	0.30 *** (0.10)
Constant	2.00 ** (0.80)	3.00 *** (0.70)	2.50 *** (0.75)	2.20 ** (1.00)
Observations	530	530	530	530
R-squared	0.4	0.35	0.38	−
Arellano–Bond AR(2) p -value	−	−	−	0.25
Hansen/Sargan Test p -value	−	−	−	0.3

Notes: ***, **, * Significance at the 1%, 5%, and 10% levels, respectively. Δ indicates first-differenced variables. Population growth (%) was included in its level form, as it is stationary at level $I(0)$, while all other $I(1)$ variables were differenced to achieve stationarity. Source: Stata results, 2024.

The lagged dependent variable in the system GMM model, with a coefficient of 0.30 ($p < 0.01$), captures the persistence in GDP growth and confirms the importance of accounting for dynamic effects. The pooled OLS model, while showing higher R-squared values (0.40), may suffer from omitted variable bias and endogeneity. The fixed effects and random effects models mitigate some of these concerns by accounting for country-specific heterogeneity, with R-squared values of 0.35 and 0.38, respectively. However, these methods cannot fully address endogeneity concerns.

The results of the system GMM model offer the most credible inference for dynamic relationships by employing internal instruments to address endogeneity issues. The validity of the GMM specification is supported by the Arellano–Bond AR(2) test ($p = 0.25$), indicating no second-order autocorrelation, and the Hansen/Sargan test ($p = 0.30$), suggesting that the instruments used are appropriate.

4.5. Robustness Checks

The study performed a robustness check to validate the consistency and reliability of its core findings, ensuring that the observed relationships between the openness indicators and economic growth were not merely artifacts of the specific model choices or sample periods. Employing alternative measures of financial and trade openness and conducting a sub-sample analysis enhance the credibility of the results and provide further reassurance that the positive growth effects persist across different specifications and temporal contexts. The choice of alternative measures accounts for potential limitations or biases in standard indicators, offering a more comprehensive assessment of the openness–growth nexus and

ensuring that the findings are robust to different data constructions and methodological approaches.

The robustness checks presented in Table 6 confirm the core findings observed in the primary analysis. Replacing the initial financial openness measure with an alternative indicator yields a positive and significant coefficient, reinforcing that capital account liberalization, regardless of its specific measure, is associated with improved growth performance. Similarly, using an alternative trade openness measure produces consistently positive and significant results, indicating that the growth-enhancing effects of global market integration are not confined to a single trade metric.

Table 6. Robustness checks using system GMM.

Variable	(1) Alt. Fin. Openness	(2) Alt. Trade Openness	(3) Pre-1997 Sub-Sample	(4) Post-1997 Sub-Sample
Alternative Financial Openness	0.18 ** (0.08)	-	0.15 * (0.09)	0.20 ** (0.10)
Alternative Trade Openness	-	0.09 *** (0.03)	0.08 *** (0.03)	0.10 *** (0.04)
Gross Fixed Capital Formation (%)	0.20 *** (0.07)	0.22 *** (0.07)	0.18 *** (0.06)	0.25 *** (0.08)
FDI Inflows (% of GDP)	0.15 ** (0.06)	0.14 ** (0.06)	0.12 * (0.07)	0.18 ** (0.08)
Inflation (%)	−0.06 ** (0.03)	−0.05 ** (0.03)	−0.07 ** (0.03)	−0.08 ** (0.04)
Political Stability (Index)	0.12 ** (0.05)	0.10 * (0.05)	0.09 * (0.05)	0.13 ** (0.05)
L.GDP Growth	0.25 *** (0.09)	0.28 *** (0.10)	0.20 ** (0.08)	0.30 *** (0.09)
Observations	530	530	265	265
Arellano–Bond AR(2) <i>p</i> -value	0.22	0.25	0.3	0.28
Hansen Test <i>p</i> -value	0.2	0.18	0.25	0.15

Notes: ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively. Source: Stata results, 2024.

The sub-sample analysis further supports the stability of the main results. In both the pre-1997 and post-1997 periods, financial and trade openness remain positively associated with economic growth. Although the magnitudes differ slightly between the two eras, reflecting changes in the global financial architecture and trade dynamics, the direction and significance of the coefficients remain broadly consistent. This temporal stability aligns with recent analyses highlighting how developing economies have continued to benefit from integration into global markets over several decades (Kose et al., 2009; Zahonogo, 2016). Overall, these robustness checks strengthen the credibility of the main findings.

5. Discussion and Policy Implications

This study aimed to assess the impact of financial and trade openness on economic growth in emerging and developing economies using a dynamic panel GMM approach. Drawing on a dataset covering the period 1970–2023 for ten selected countries, the analysis highlights that both dimensions of openness consistently show positive associations with economic growth. These findings align with the recent literature suggesting that deeper engagement with global capital and trade markets facilitates efficient resource allocation, encourages technology transfer, and fosters productivity gains (Adegbite & Asongu, 2021; Nguyen et al., 2022; Knight & Wang, 2011; Zahonogo, 2016). The results also underscore the importance of stable macroeconomic environments and institutional quality; variables such as political stability and controlled inflation are significantly correlated with enhanced

growth performance, as noted in realist economics theory (Mearsheimer, 2014; Ikenberry, 2018).

Foreign direct investment (FDI) also demonstrates a significant positive relationship with GDP growth. These findings align with Romer (1986), who emphasizes the role of FDI in enhancing domestic investment, improving management practices, and facilitating industrial upgrading. FDI inflows are crucial for the development of emerging economies, as they bring both capital and expertise that are necessary for boosting productivity and competitiveness. Inflation is shown to have a consistently negative effect on economic growth, with coefficients ranging from -0.06 to -0.08 . This aligns with existing studies highlighting the detrimental impact of macroeconomic instability on economic performance. High inflation creates uncertainty, discouraging both domestic and foreign investment, and can erode the purchasing power of consumers, hindering overall economic activity (Stiglitz, 2000).

The robustness checks reinforce the stability of the core findings. Employing alternative measures of financial and trade openness and conducting a sub-sample analysis over two distinct periods confirm that the positive relationship between openness and economic growth remains broadly consistent. These additional tests mitigate concerns about model-specific bias and highlight the general applicability of the results, indicating that the growth benefits of openness are not confined to a particular indicator or historical time frame.

The key findings of this study align with modern economic theories, such as the endogenous growth theory, which emphasizes the role of trade and financial openness in driving economic growth through technological spillovers and capital accumulation. However, the contradictory insignificance of population growth challenges traditional demographic models like the Malthusian theory, which posits that higher population growth impedes economic development. From a geo-economic perspective, these findings reinforce the notion that global integration through financial and trade openness can enhance the growth prospects of emerging economies, yet they highlight the contextual nature of growth determinants, particularly in regions with unique institutional and demographic characteristics.

While the study presents valuable insights, it is not without limitations. One key limitation is the selection of only ten countries for the analysis. Although these countries are representative of emerging and developing economies, the findings may not be universally applicable to all countries within this category. Future research could expand the sample size to include a broader range of countries, especially those from different regions, to test the robustness of the findings across diverse contexts. Another limitation is the reliance on historical data, which may not fully capture the dynamic and evolving nature of financial and trade openness in the modern global economy. The relationship between openness and economic growth may vary over time due to changes in global economic conditions, technological advancements, and shifts in international trade policies. Future studies could incorporate more recent data or conduct a comparative analysis of different time periods to account for these evolving dynamics.

In conclusion, this study offers empirical evidence that financial and trade openness, supported by sound macroeconomic policies and stable political conditions, is crucial in fostering economic growth in emerging and developing economies. These results have important implications for policymakers. Although openness can catalyze development, it should be accompanied by prudent macroeconomic management and efforts to strengthen institutional quality. This study recommends that policymakers gradually liberalize capital accounts and expand trade linkages, complemented by reforms that enhance political sta-

bility and maintain price stability, to ensure that integration with global markets translates into sustained and equitable economic development.

Lastly, South Africa, as a key emerging market, could benefit from a focused analysis of financial cycles to better understand the timing and scope of financial openness measures. By doing so, policymakers could craft strategies that mitigate financial volatility while enhancing long-term growth prospects, thereby tailoring openness policies to align with the country's unique economic conditions and development goals.

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