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Financial Development, Globalization, and Economic Growth in The Next-11 Countries: Evidence from a Panel ARDL Model

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Abstract: Given the growing importance of financial development and globalization in shaping economic growth over recent decades, particularly in the context of the Next-11 countries, policymakers need to carefully assess both the individual and joint effects of these factors to design policies that maximize their growth-enhancing potential. Accordingly, this study investigates the short-run and long-run effects of financial development and globalization—both independently and interactively—on economic growth in the Next-11 countries over the period 1990–2023, employing a panel ARDL framework. The empirical results reveal that financial development and globalization each have negative and significant effects on economic growth in both the short-run and long-run. However, the interaction term between financial development and globalization is positive and significant across both time horizons, providing strong support for the complementarity hypothesis. This finding suggests that, although each factor individually constrains growth, their joint effect mitigates these adverse impacts and ultimately enhances growth outcomes. With respect to the control variables, labor has a positive and significant impact on economic growth in both the short-run and the long-run, highlighting the critical role of human capital and labor force expansion. Physical capital is found to be insignificant in the long run but exhibits mixed effects in the short-run. Inflation remains insignificant in the long-run but shows a small yet positive and significant effect in the short-run. Overall, these results offer important policy implications, emphasizing the need for coordinated financial and external-sector policies to promote sustainable economic growth in the Next-11 countries.

Keywords: Economic Growth, Financial Development, Globalization, Panel ARDL Model. NEXT-11 Countries

JEL Classification: F16, D53, O40, B40

1. Introduction

In recent decades, financial development and globalization have become central forces shaping the growth trajectories of emerging and developing economies. Financial development is widely viewed as a key mechanism for mobilizing savings, financing investment, allocating resources efficiently, and supporting entrepreneurial activity. Similarly, globalization has intensified cross-border flows of goods, services, capital, technology, knowledge, and labor, thereby influencing productivity, competitiveness, and long-term economic performance (Abeka et al., 2021; Taiwo, 2021; Demir et al., 2021; Heimberger, 2022; Yinusa et al., 2022; Elfaki & Ahmed, 2024). For the Next-11 countries, which are characterized by rapid structural transformation, expanding financial systems, increasing trade openness, and deeper integration into the global economy, understanding the growth implications of financial development and globalization is particularly important.

Globalization is a multidimensional process that encompasses economic, financial, political, social, and technological integration. It promotes economic growth by reducing trade barriers, expanding market access, encouraging foreign direct investment, facilitating technology transfer, and increasing the movement of capital and knowledge across national borders (Dreher, 2006; Savrul & İncekara, 2017; Demir et al., 2021; Heimberger, 2022; Yameogo et al., 2021; Elfaki & Ahmed, 2024). Through these channels, globalization may enhance productivity, stimulate innovation, and support economic diversification. However, the growth benefits of globalization are not automatic. In structurally constrained economies, increased global exposure may also generate vulnerability to external shocks, capital-flow volatility, import dependence, and competitive pressures on domestic industries. Therefore, the effect of globalization on economic growth may differ across countries depending on their institutional quality, productive capacity, financial depth, and ability to absorb external opportunities.

Financial development also plays a crucial role in determining whether economies can benefit from globalization. A well-functioning financial system can improve the allocation of resources, reduce transaction costs, support private-sector investment, and enable firms to respond more effectively to opportunities created by global integration. Moreover, financial globalization may strengthen domestic financial systems by encouraging competition, improving information transparency, enhancing corporate governance, and promoting the adoption of international financial practices (Tovar-García, 2012; Gülcemal, 2021). At the same time, financial development may not always generate positive growth outcomes. In countries with weak regulatory frameworks, inefficient credit allocation, shallow capital mar-

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-kets, or institutional constraints, financial expansion may contribute to instability, speculative lending, or misallocation of resources. As a result, the finance–growth relationship remains theoretically and empirically contested.

The interaction between financial development and globalization is therefore especially important. Globalization may enhance the growth effect of financial development by providing access to foreign capital, international markets, advanced technologies, and managerial knowledge. Conversely, financial development may strengthen economies' capacity to absorb and utilize the benefits of globalization by channeling external resources toward productive investment. This suggests that financial development and globalization may operate as complementary forces. However, if financial systems are weak or global integration is poorly managed, these two processes may fail to reinforce each other and may even generate adverse growth effects. This issue is particularly relevant for the Next-11 countries, where financial structures, institutional capacity, industrial development, and exposure to global markets vary considerably.

Although a large body of literature has examined the relationship between financial development and economic growth (Schumpeter, 1911; Beck et al., 2000; Beck & Levine, 2004; Taiwo, 2021; Yinusa et al., 2022; Abeka et al., 2021), and another strand has investigated the globalization–growth nexus (Dreher, 2006; Savrul & İncekara, 2017; Demir et al., 2021; Heimberger, 2022; Elfaki & Ahmed, 2024), comparatively less attention has been given to the joint effect of financial development and globalization on economic growth. Existing studies often examine these variables separately or rely on narrow indicators of globalization, such as trade openness, foreign direct investment, or remittances. However, such measures may not fully capture the multidimensional nature of globalization. Furthermore, limited evidence exists on whether financial development and globalization act as complements or substitutes in shaping growth outcomes in the Next-11 economies.

Against this background, this study investigates the short-run and long-run effects of financial development, globalization, and their interaction on economic growth in the Next-11 countries over the period 1990–2023. Specifically, the study seeks to determine whether financial development and globalization independently promote or hinder economic growth, and whether their combined effect strengthens growth performance. By focusing on the Next-11 countries, this study contributes to the literature by examining a group of emerging economies that are increasingly important in global production, trade, investment, and financial networks.

This study makes three main contributions. First, it provides updated empirical evidence on the individual effects of financial development and globalization on economic growth using recent panel data covering the period 1990–2023. Second, it explicitly examines the interaction between financial development and globalization, thereby testing whether the two variables operate as complementary or substitutive forces in the growth process. Third, unlike many previous studies that use narrow proxies for globalization, this study employs the KOF Globalization Index, which captures economic, social, and political dimensions of global integration. Methodologically, the study applies a panel Autoregressive Distributed Lag framework to estimate both short-run dynamics and long-run relationships. In addition, second-generation panel unit root and cointegration tests are used to account for cross-sectional dependence, while Fully Modified Ordinary Least Squares and Canonical Cointegrating Regression are employed as robustness checks.

2. Literature Review

2.1. Theoretical Framework

Figure 1 presents the theoretical framework linking globalization, financial development, and economic growth. Arrows indicate both the direct effect of globalization on economic growth and its indirect effect through financial development.

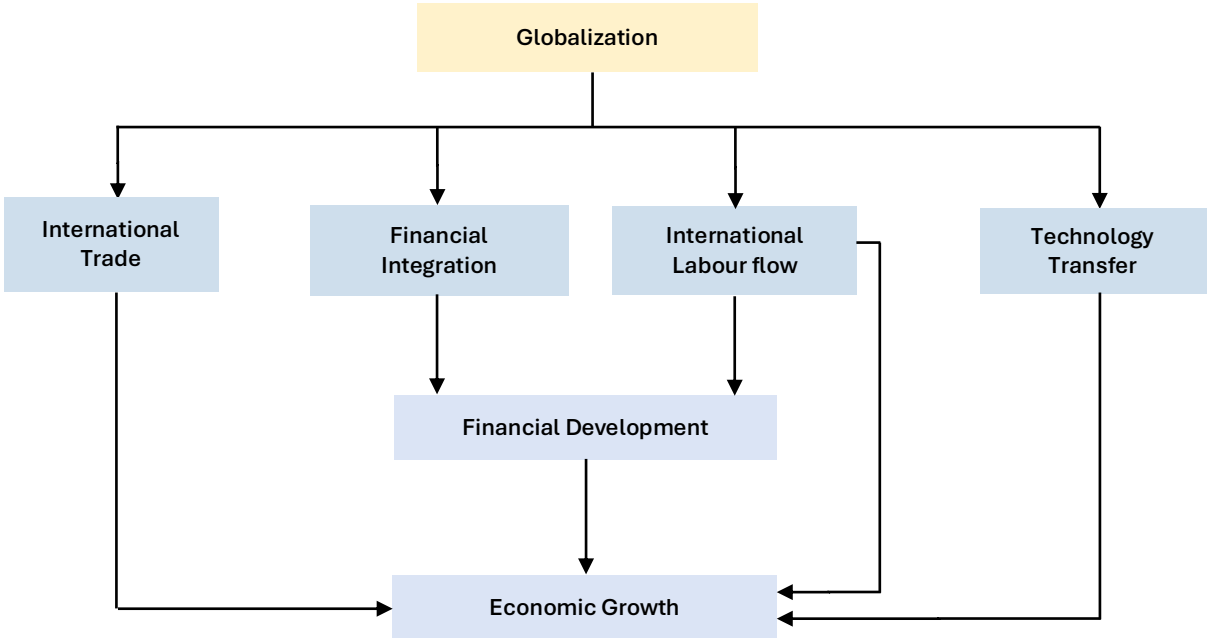

Figure 1: Theoretical framework linking globalization, financial development, and economic growth. Source: Authors' design.

At the core of the framework, globalization is depicted as a key exogenous driver of financial development, operating through three main transmission channels: financial integration, technology transfer, and international labor mobility. These relationships are illustrated by directed arrows running from globalization to financial development. Financial integration

facilitates cross-border capital flows—particularly foreign direct investment—which enhance liquidity, promote risk diversification, and improve the efficiency of financial intermediation (Lee and Vivarelli, 2006; Awad, 2024). It also enables domestic institutions to diversify funding sources and expand investment opportunities, thereby strengthening the depth and resilience of the financial system.

A second channel operates through international labor mobility. Globalization facilitates the inflow of skilled labor into emerging economies such as the Next-11 countries, where human capital constraints are often binding. This process supports knowledge upgrading, enhances managerial capabilities, and fosters innovation within financial institutions, ultimately improving financial sector performance. The third channel, represented by the link between globalization and financial development, is technology transfer and knowledge diffusion. In line with endogenous growth theory (Young, 1991; Yanikkaya, 2003), globalization provides access to advanced technologies and international best practices, generating spillover effects that enhance innovation and productivity in both the financial sector and the broader economy.

Beyond these indirect channels, Figure 1 also illustrates a direct pathway from globalization to economic growth, capturing its independent effects on growth. Trade openness expands access to international markets, generating efficiency gains, economies of scale, and productivity improvements (Baidoo et al., 2023). The framework further incorporates a feedback loop between financial development and economic growth, represented by bidirectional arrows. While financial development stimulates growth through more efficient resource allocation and increased investment, sustained economic growth, in turn, deepens the financial system by raising demand for financial services and strengthening institutional capacity. Finally, the interaction between globalization and financial development is depicted as a combined pathway influencing economic growth. This interaction effect implies that the growth impact of globalization depends on the level of financial development, and vice versa, highlighting a strong complementarity between the two. Overall, the framework reflects a system of interconnected relationships in which globalization affects economic growth both directly and indirectly through financial development, with feedback mechanisms and interaction effects reinforcing long-term growth dynamics.

2.2. Empirical Literature

Empirical evidence on the relationships among financial development, globalization, and economic growth remains inconclusive. Existing studies report positive, negative, mixed, and non-linear effects, depending on the country group, estimation technique, time period, institutional context, and the indicators used to measure financial development and globalization. This diversity of findings suggests that the growth effects of financial development and globalization are not uniform but are shaped by structural conditions, absorptive capacity, institutional quality, and the level of economic integration. Therefore, a careful review of the literature is necessary to identify the empirical patterns, methodological limitations, and remaining gaps that motivate the present study.

A substantial strand of the literature examines the direct effect of globalization on economic growth. Several studies suggest that globalization enhances long-run growth by expanding market access, facilitating capital inflows, promoting technology transfer, and improving productivity. For example, Hasan (2019), using a panel ARDL approach for South Asian countries over the period 1971–2014, found that globalization had no significant short-run effect but that its economic and political dimensions contributed positively to long-run growth. Similarly, Fosah et al. (2023), using Dynamic Common Correlated Effects (DCCE) and System-GMM estimators for 35 Sub-Saharan African countries from 1995 to 2018, reported a positive association between globalization and economic growth. These findings support the argument that global integration can strengthen economic performance when countries possess sufficient institutional and productive capacity to absorb external opportunities.

However, another group of studies provides evidence of adverse or heterogeneous effects. Baidoo et al. (2023) found that globalization negatively affected Ghana's economic growth in both the short and long run. Kilic (2015), using panel data for 74 countries over the period 1981–2011, showed that the effects of globalization vary across its dimensions: social globalization was found to reduce growth, whereas political and economic globalization supported it. Hordofa (2024) reached a similar conclusion for Ethiopia, showing that economic globalization impeded growth, political globalization promoted growth, and social globalization produced mixed long-run effects. Qamruzzaman, Jianguo, Jahan, and Yingjun (2023) also emphasized the multidimensional nature of globalization, demonstrating that political and economic globalization may hinder growth, while social globalization can enhance it. Taken together, these studies indicate that globalization does not automatically generate growth. Rather, its impact depends on the form of globalization, the domestic economic structure, and countries' ability to translate external integration into productivity gains.

The finance–growth literature is similarly divided. A large body of research supports the view that financial development promotes economic growth by mobilizing savings, improving capital allocation, reducing information asymmetries, and facilitating productive investment. Beck et al. (2000), for example, found that financial development positively influenced growth across 74 developed and developing countries during 1960–1995. This finding is consistent with Ahmed et al. (2022), who reported a positive role of financial development in South Asian economies from 2000 to 2018. Foundational and subsequent studies, including Schumpeter (1911), King and Levine (1993), Gertler and Rose (1994), Beck and Levine (2004), and Bist (2018), also support the argument that well-functioning financial systems stimulate investment, innovation, and long-term economic performance.

Nevertheless, the positive effect of financial development is not universally supported. Several studies suggest that excessive or poorly regulated financial development may weaken growth by encouraging inefficient credit allocation, speculative activity, financial instability, or resource diversion away from the real sector. Iheanacho (2016) and Adeniyi et al. (2015), for instance, found negative short-run effects of financial development on economic growth in Nigeria, although non-linear specifications suggest that the relationship may change beyond certain thresholds. Taiwo (2021) reported detrimental effects of financial development in Sub-Saharan Africa during 1986–2015, while Samargandi et al. (2015) found that financial development may reduce growth in upper-middle-income countries. Similarly, Cecchetti and Kharroubi (2012), Cottarelli and Jaramillo (2013), Allen et al. (2014), Ductor and Grechyna (2015), and Singh et al. (2023) indicate that the finance–growth relationship may become negative when financial expansion exceeds the productive capacity of the economy or when financial institutions fail to channel resources efficiently. These findings highlight the possibility that financial development may be growth-enhancing only under appropriate institutional, regulatory, and structural conditions.

Compared with the separate effects of globalization and financial development, fewer studies have examined their joint or interactive influence on economic growth. This is an important limitation because globalization may affect growth partly through financial channels, while the benefits of globalization may depend on the depth and efficiency of the domestic financial system. Elfaki and Ahmed (2024), for example, found that globalization positively affected Sudan's economic growth over the period 1978–2021, whereas financial development exerted a negative long-run effect. Kazar and Kazar (2016) reported heterogeneous effects across income groups, showing that financial development promotes growth in high- and middle-income countries but reduces it in low-income countries, while the effects of political and economic globalization differ according to income level. Fuinhas et al. (2019) further demonstrated that financial market development and globalization have complementary but distinct effects, with banking development, stock market development, and different dimensions of globalization influencing growth differently across time horizons. These studies suggest that the interaction between financial development and globalization is complex and may vary across countries, income groups, and institutional environments.

Despite these contributions, important gaps remain. First, much of the existing literature examines financial development and globalization separately, thereby overlooking the possibility that their effects on economic growth may be conditional on each other. Second, many studies rely on narrow indicators of globalization, such as trade openness, foreign direct investment, or remittances, which do not fully capture the economic, social, and political dimensions of global integration. Third, limited evidence exists on the Next-11 countries, despite their growing importance in global trade, finance, production networks, and emerging-market development. These economies are particularly relevant because they combine rapid financial expansion, increasing exposure to globalization, institutional diversity, and structural development challenges. Therefore, examining whether financial development and globalization operate as complementary or substitutive forces in the Next-11 context can provide useful empirical and policy insights.

Building on the foregoing discussion, this study empirically investigates the direct and interactive effects of financial development and globalization on economic growth in the Next-11 countries. Theoretically, financial development may enhance growth by improving financial intermediation, supporting investment, and allocating capital toward productive sectors. However, its effect may be weakened where financial systems are inefficient, poorly regulated, or disconnected from the real economy. Similarly, globalization may promote growth through trade integration, capital mobility, technology diffusion, and knowledge transfer, although its benefits may be constrained by weak institutions, external vulnerability, and limited absorptive capacity. More importantly, financial development and globalization may reinforce each other: globalization can provide access to foreign capital, technology, and markets, while financial development can improve the capacity of economies to absorb and productively use these external opportunities. Accordingly, the following hypotheses are proposed:

H1: Financial development exerts a significant effect on economic growth in the Next-11 countries.

H2: Globalization exerts a significant effect on economic growth in the Next-11 countries.

H3: The interaction between financial development and globalization exerts a positive and significant effect on economic growth in the Next-11 countries

3. Data and Methodology

3.1. Data

This study employs annual data for the NEXT-11 countries covering the period from 1990 to 2023. The NEXT-11 group comprises Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, Philippines, South Korea, Turkey, and Vietnam. The choice of this period is determined primarily by data availability and the need to capture the structural and policy changes in the NEXT-11 emerging economies over the past four decades, including financial reforms, trade liberalization, and the deepening of globalization.

The dependent variable in this study is economic growth, proxied by real GDP per capita. Real GDP per capita is used because it accounts for population differences and provides a more accurate measure of average income and economic welfare than aggregate GDP. In the empirical analysis, real GDP per capita is transformed into natural logarithmic form and denoted as lnGDPpc. This log-level specification is appropriate for examining the long-run equilibrium relationship between economic performance, financial development, globalization, and the control variables within a panel ARDL framework. In the short-run error-correction specification, the first difference of this variable, ΔlnGDPpc, is used to capture short-run changes in real GDP per capita.

The model also includes a set of control variables commonly used in growth-related empirical studies. Labor (LAB) is measured by the total labor force aged 15 years and above, reflecting the contribution of human resources to economic activity. Physical capital (PCAP) is proxied by gross fixed capital formation as a percentage of GDP, capturing investment in productive capacity. Inflation (INF), measured using the consumer price index, is included to account for macroeconomic stability and its potential influence on economic performance. Data on real GDP per capita, financial development, labor, physical capital, and inflation are obtained from the World Development Indicators published by the World Bank. Globalization (GLOB) is measured using the KOF Globalization Index, sourced from the KOF Globalisation Database compiled by the Swiss Economic Institute. Table 1 presents the definitions of all variables and their corresponding data sources.

Table 1: Variable definitions and data sources.

Variables	Symbol	Definition	Source
Economic Growth	lnGDPpc	Natural logarithm of real GDP per capita, measured in constant US dollars	World Development Indicators (WDI)
Financial Development	FD	Domestic credit to private sector (% of GDP)	World Development Indicators (WDI)

Variables	Symbol	Definition	Source
Globalization	GLOB	KOF Globalization Index (average of de facto and de jure indices)	KOF Globalization Database, Swiss Economic Institute
Labor	LAB	Total labor force (aged 15+ who are employed or seeking employment)	World Development Indicators (WDI)
Physical Capital	PCAP	Gross fixed capital formation (% of GDP)	World Development Indicators (WDI)
Inflation	INF	Consumer price index (CPI)	World Development Indicators (WDI)

Source: Author. Note: In the long-run model, economic growth is proxied by lnGDPpc. In the short-run error-correction model, Δ lnGDPpc represents the first difference of logged real GDP per capita

3.2. Model Specification

This study follows Kazar and Kazar (2016), Fuinhas et al. (2019), and Elfaki and Ahmed (2024) by examining the direct and interactive effects of financial development and globalization on economic performance. The theoretical foundation is drawn from endogenous growth theory, trade theory, and financial intermediation theory. Endogenous growth theory emphasizes the role of innovation, knowledge spillovers, and technological diffusion in long-term growth, while trade theory suggests that openness to international markets can enhance productivity through competition, scale effects, and technology transfer. Financial intermediation theory further argues that a well-functioning financial system promotes growth by mobilizing savings, allocating capital efficiently, and supporting productive investment.

Trade theory, as advanced by Romer (1994), suggests that openness to international trade and integration with global markets can stimulate productivity and growth through access to larger markets, competition, and technology transfer. Hence, globalization—particularly through its economic dimension—can promote efficiency and expand investment opportunities, thereby reinforcing growth outcomes in emerging economies, such as the NEXT-11 countries. Financial Intermediation Theory (Schumpeter, 1911) posits that a well-functioning financial system promotes economic growth by mobilizing savings, allocating capital to productive investments, and fostering entrepreneurial innovation. Thus, financial development supports growth directly and may also complement the positive effects of globalization by providing the financial infrastructure required to absorb global capital and technology flows effectively.

Given these theoretical linkages, financial development and globalization are incorporated as the main explanatory variables. Labor and physical capital are included as standard growth determinants, while inflation is added to control for macroeconomic stability. The functional form of the model is specified as follows:

$$GDPpc_{it} = f(FD_{it}, GLOB_{it}, LAB_{it}, PCAP_{it}, INF_{it})$$

where $GDPpc$ denotes real GDP per capita, FD represents financial development, $GLOB$ denotes globalization, LAB represents labor, $PCAP$ denotes physical capital, and INF captures inflation.

To achieve linearity and reduce potential heteroskedasticity, all variables except inflation are transformed into natural logarithmic form. Accordingly, the baseline long-run empirical model is specified as follows:

$$\ln GDPpc_{it} = \alpha_i + \lambda_t + \beta_1 \ln FD_{it} + \beta_2 \ln GLOB_{it} + \beta_3 \ln LAB_{it} + \beta_4 \ln PCAP_{it} + \beta_5 INF_{it} + \varepsilon_{it}$$

where i denotes country, t denotes time, α_i captures country-specific effects, λ_t captures time-specific effects, and ε_{it} is the error term.

To examine whether globalization moderates the effect of financial development on economic performance, an interaction term between financial development and globalization is introduced. The extended model is specified as follows:

$$\ln GDPpc_{it} = \alpha_i + \lambda_t + \beta_1 \ln FD_{it} + \beta_2 \ln GLOB_{it} + \beta_3 (\ln FD_{it} \times \ln GLOB_{it}) + \beta_4 \ln LAB_{it} + \beta_5 \ln PCAP_{it} + \beta_6 INF_{it} + \varepsilon_{it}$$

In this specification, β_1 measures the conditional effect of financial development when globalization is held constant, β_2 measures the conditional effect of globalization when financial development is held constant, and β_3 captures the interaction effect between financial development and globalization. A positive and statistically significant β_3 indicates complementarity between financial development and globalization, whereas a negative coefficient indicates substitutability.

To capture both short-run dynamics and long-run equilibrium relationships, the study employs the panel Autoregressive Distributed Lag framework in error-correction form. The panel ARDL model is specified as follows:

$$\begin{aligned}\Delta \ln GDPpc_{it} = {} & \phi_i \big[\ln GDPpc_{i,t-1} - \theta_1 \ln FD_{i,t-1} - \theta_2 \ln GLOB_{i,t-1} - \theta_3 (\ln FD_{i,t-1} \times \ln GLOB_{i,t-1}) - \theta_4 \ln LAB_{i,t-1} - \theta_5 \ln PCAP_{i,t-1} \\ & - \theta_6 INF_{i,t-1}\big] + \sum_{j=1}^{p-1} \gamma_{ij} \Delta \ln GDPpc_{i,t-j} + \sum_{j=0}^{q-1} \delta_{1ij} \Delta \ln FD_{i,t-j} + \sum_{j=0}^{q-1} \delta_{2ij} \Delta \ln GLOB_{i,t-j} + \sum_{j=0}^{q-1} \delta_{3ij} \Delta (\ln FD_{i,t-j} \times \ln GLOB_{i,t-j}) \\ & + \sum_{j=0}^{q-1} \delta_{4ij} \Delta \ln LAB_{i,t-j} + \sum_{j=0}^{q-1} \delta_{5ij} \Delta \ln PCAP_{i,t-j} + \sum_{j=0}^{q-1} \delta_{6ij} \Delta INF_{i,t-j} + \mu_i + \varepsilon_{it}\end{aligned}$$

where ϕ_i is the error-correction coefficient, and is expected to be negative and statistically significant. The parameters θ_1 to $\theta_6$represent the long-run coefficients, while the differenced variables capture short-run dynamics. In this framework, ln $GDPpc$is used in the long-run relationship, whereas $\Delta \ln GDPpc$represents short-run changes in real GDP per capita.

The inclusion of the interaction term implies that the marginal effect of financial development on economic performance depends on the level of globalization. Therefore, the marginal effect of financial development is expressed as:

$$\frac{\partial \ln GDPpc}{\partial \ln FD} = \beta_1 + \beta_3 \ln GLOB$$

Similarly, the marginal effect of globalization depends on the level of financial development and is expressed as:

$$\frac{\partial \ln GDPpc}{\partial \ln GLOB} = \beta_2 + \beta_3 \ln FD$$

The corresponding threshold level of globalization is calculated as:

$$\ln GLOB^* = \frac{-\beta_1}{\beta_3}$$

Likewise, the threshold level of financial development is calculated as:

$$\ln FD^* = \frac{-\beta_2}{\beta_3}$$

These threshold values indicate the levels at which the marginal effects of financial development and globalization change sign. Therefore, the coefficients of financial development and globalization should not be interpreted in isolation when the interaction term is included.

Two estimators are considered for the panel ARDL model: the Pooled Mean Group estimator and the Mean Group estimator. The PMG estimator imposes homogeneity on the long-run coefficients while allowing short-run coefficients, error variances, and adjustment speeds to differ across countries. In contrast, the MG estimator allows both long-run and short-run coefficients to vary across cross-sectional units. The Hausman test is used to determine the preferred estimator. Failure to reject the null hypothesis supports the PMG estimator, while rejection of the null suggests that the MG estimator is more appropriate. Because macroeconomic panels are often affected by common shocks, the study first tests for cross-sectional dependence. When cross-sectional dependence is detected, second-generation panel unit root and cointegration tests are employed. Specifically, the CIPS and CADF tests are used to examine stationarity, while the Westerlund cointegration test is applied to assess the existence of a long-run relationship among the variables. These tests are appropriate because they account for cross-sectional dependence and heterogeneity across countries.

However, because the PMG estimator may not fully eliminate the influence of unobserved common factors, the baseline results should be further validated using a robustness estimator that explicitly accounts for cross-sectional dependence, such as the Dynamic Common Correlated Effects estimator, Common Correlated Effects Mean Group estimator, Cross-Sectionally Augmented ARDL estimator, or Augmented Mean Group estimator. This additional robustness check is important because the Next-11 countries may be jointly affected by global financial shocks, trade-cycle fluctuations, commodity price movements, and international capital-flow volatility.

4. Empirical Results and Discussion

4.1. Descriptive Statistics

Table 2 reports the descriptive statistics and correlation matrix for the variables used in the analysis.

Table 2: Descriptive statistics and correlation matrix.

	ΔlnGDPpc	lnFD	lnGLOB	lnLAB	lnPCAP	INF
Mean	3.495	1.012	1.785	1.615	1.538	19.275
Median	3.455	0.980	1.806	1.574	1.546	13.778
Maximum	3.668	1.383	1.878	1.861	1.862	77.934
Minimum	3.306	0.730	1.634	1.303	1.108	5.657
Std. Dev.	0.108	0.163	0.075	0.129	0.204	17.564
Skewness	0.342	0.405	-0.354	0.202	-0.243	1.965
Kurtosis	1.515	2.412	1.678	2.009	2.025	5.572
Jarque-Bera (p-value)	0.502	0.258	0.331	0.396	0.287	0.154
Obs.	374	374	374	374	374	374
Correlation						
ΔlnGDPpc	1					
lnFD	0.755	1				
lnGLOB	0.796	0.818	1			
lnLAB	0.832	0.725	0.773	1		
lnPCAP	-0.602	-0.529	-0.468	-0.637	1	
INF	-0.351	-0.321	-0.282	-0.354	0.371	1

Source: Author's own calculations. Notes: lnGDPpc denotes the natural logarithm of real GDP per capita. lnFD, lnGLOB, lnLAB, and lnPCAP represent the natural logarithms of financial development, globalization, labor, and physical capital, respectively, while INF refers to inflation. In the short-run model, Δ lnGDPpc denotes the first difference of lnGDPpc.

The descriptive statistics indicate moderate variability across the variables. The mean value of lnGDPpc is 3.495, with a relatively low standard deviation of 0.108, suggesting limited dispersion in logged real GDP per capita across the sample. Financial development (lnFD) and globalization (lnGLOB) report mean values of 1.012 and 1.785, respectively, with relatively low dispersion, indicating relative stability across countries and over time. Similarly, labor force (lnLAB) and physical capital (lnPCAP) show moderate variation, reflecting differences in factor endowments across the Next-11 economies. By contrast, inflation (INF) exhibits substantial variability, highlighting macroeconomic fluctuations within the sample.

The skewness and kurtosis values suggest that most variables are approximately normally distributed. This is further supported by the Jarque–Bera test results, as all associated p-values exceed the 5% significance level. Therefore, the null hypothesis of normality cannot be rejected. The correlation matrix shows that lnGDPpc is positively associated with lnFD, lnGLOB, and lnLAB, indicating that higher levels of financial development, globalization, and labor force participation are associated with higher real GDP per capita. In contrast, lnPCAP and INF are negatively correlated with lnGDPpc, suggesting that inefficient capital utilization and higher inflation may be associated with weaker economic performance. In addition, the

relatively strong correlations among some explanatory variables, particularly between lnFD and lnGLOB, and between lnGLOB and lnLAB, may indicate potential multicollinearity. However, since these correlation coefficients remain below the conventional threshold of 0.90, multicollinearity is unlikely to pose a serious concern. Nevertheless, this issue is further examined using variance inflation factors (VIF).

The VIF results confirm that multicollinearity is not a serious concern in the model. All variables report VIF values well below the conventional threshold of 10, with the highest value observed for globalization (lnGLOB = 3.33), followed by financial development (lnFD = 3.05). The remaining variables, namely lnLAB = 2.38, lnPCAP = 1.96, and INF = 1.35, show even lower values, indicating weak linear relationships among the regressors (see Appendix 1). Consistently, the tolerance values (1/VIF) are all above 0.10, further confirming the absence of problematic multicollinearity. Overall, these results indicate that the explanatory variables can be included simultaneously in the regression model without substantially distorting coefficient estimates or inflating standard errors.

4.2. Cross-Sectional Dependence Test

In panel data analyses involving macroeconomic variables, cross-sectional dependence is a common issue arising from shared shocks, regional spillovers, and unobserved common factors across countries. Ignoring such dependence may lead to biased and inconsistent estimators. Accordingly, this study first examines the presence of cross-sectional dependence before conducting panel unit root and cointegration analyses. To this end, four cross-sectional dependence (CD) tests are employed: the Breusch and Pagan (1980) LM test, the scaled LM test proposed by Pesaran (2004), the bias-corrected scaled LM test developed by Baltagi et al. (2012), and Pesaran's (2004) CD test. For all tests, the null hypothesis assumes cross-sectional independence, while the alternative hypothesis indicates the presence of cross-sectional dependence.

Table 3: Cross-sectional dependence test results.

Test	Breusch-Pagan LM		Pesaran scaled LM		Bias-corrected scaled LM		Pesaran CD	
	Statistic	Prob.	Statistic	Prob.	Statistic	Prob.	Statistic	Prob.
lnGDPpc	1278.843***	(0.000)	145.528***	(0.000)	145.355***	(0.000)	29.471***	(0.000)
lnFD	427.196***	(0.000)	59.885***	(0.000)	46.987***	(0.000)	17.503***	(0.000)
lnGLOB	995.375***	(0.000)	164.963***	(0.000)	162.925***	(0.000)	48.772***	(0.000)
lnLAB	744.216***	(0.001)	249.455***	(0.000)	32.661***	(0.000)	23.885***	(0.001)
lnPCAP	942.840***	(0.000)	216.308***	(0.000)	77.358***	(0.000)	19.379***	(0.000)
INF	672.413***	(0.000)	287.958***	(0.000)	126.563***	(0.000)	12.788***	(0.000)

*Source: Authors' own calculations. Notes: *** indicates the rejection of the null hypothesis of cross-sectional dependence at the 1% significance level.*

The results of the cross-sectional dependence (CD) tests reported in Table 3 strongly reject the null hypothesis of cross-sectional independence, providing clear evidence of cross-sectional dependence among the NEXT-11 countries. These findings justify the use of second-generation panel unit root and cointegration tests that explicitly account for cross-sectional dependence, such as the Pesaran (2007) CIPS unit root test and the Westerlund (2007) cointegration test.

4.3. Panel Unit Root Test

Table 4 presents the results of the Pesaran (2007) CIPS and CADF panel unit root tests. The findings indicate that inflation (INF) is stationary at levels under the CIPS test, indicating an I(0) process. In contrast, the remaining variables (lnGDP, lnFD, lnGLOB, lnLAB, and lnPCAP) become stationary after first differencing under both tests, suggesting integration of order one, I(1). These results confirm that none of the variables is integrated of order two, I(2), thereby supporting the suitability of the ARDL modeling framework for this study.

Table 4: Pesaran (2007) CIPS and CADF panel unit root test results.

Variables	Pesaran-CIPS		Pesaran-CADF	
	Level	Difference	Level	Difference
lnGDPpc	0.1914	-4.535***	1.195	-3.270***
lnFD	-0.1736	-9.197***	-0.251	-5.475***
lnGLOB	1.285	-5.673***	1.364	-6.672***
lnLAB	-1.465	-4.586***	2.025	-4.638***
lnPCAP	-0.216	-9.182***	-0.277	-5.982***
INF	-1.678*	-12.635***	-1.192	-6.197***

*Source: Authors' own calculations. Notes: The null hypothesis is that all series contain a unit root. * and *** denote statistical significance at the 10% and 1% levels, respectively.*

4.4. Panel Cointegration Test

To examine the existence of a long-run relationship among the variables, this study employs the panel cointegration test proposed by Westerlund (2007), which is robust to cross-sectional dependence and heterogeneity across panel groups. This test is based on an error-correction framework and assesses cointegration by examining the significance of the error-correction term. Table 5 reports the panel cointegration test results based on Westerlund (2007). Under both the constant and the constant-and-trend specifications, the group-mean statistic Gt is statistically significant, whereas Ga fails to reject the null hypothesis of no cointegration. In contrast, the panel statistic Pt is significant at the 1% level in both specifications, whereas Pa fails to reject the null. However, the significance of Gt and, more importantly, Pt provides evidence of cointegration at the panel level, indicating a stable long-run equilibrium relationship among the variables. Accordingly, the panel ARDL approach is appropriate for estimating the model's long-run and short-run dynamics.

Table 5: Westerlund (2007) panel cointegration test results.

Statistic	With constant			With constant and trend		
	Value	*z*-value	*p*-value	Value	*z*-value	*p*-value
Gt	-3.596***	-4.328	0.000	-3.587***	-2.455	0.000
Ga	-6.945	6.235	1.000	-6.715	7.812	1.000
Pt	-21.135***	-6.525	0.000	-20.901***	-4.785	0.000
Pa	-10.692	1.597	1.000	-10.038	4.364	1.000

*Source: Authors' own calculations. Notes: Gt and Ga are group-mean test statistics. Pt and Pa are the panel test statistics. *** indicates the rejection of the null hypothesis at the 1% significance level.*

4.5. Long-Run and Short-Run ARDL Estimates

As noted above, the Hausman (1978) test was employed to select between the PMG and MG estimators. The Hausman test results presented in Appendix 2 fail to reject the null hypothesis of no systematic difference between the MG and PMG estimators ($\chi^2(6) = 5.137$, $p = 0.855$), supporting the assumption of long-run parameter homogeneity across countries. Consequently, the PMG estimator is preferred due to its efficiency under the null hypothesis. Accordingly, the panel ARDL estimations are conducted using the PMG approach.

Table 6 reports the panel ARDL-PMG estimation results. The long-run estimates indicate that FD exerts a negative and statistically significant effect on economic growth in the Next-11 countries. Specifically, a 1% increase in FD reduces real GDP per capita growth by approximately 0.076 percentage points. This finding suggests that, beyond a certain threshold, FD may hinder growth, reflecting inefficiencies in credit allocation, poor institutional quality, or excessive financial deepening. In line with the literature (e.g., Cecchetti & Kharroubi, 2012; Allen et al., 2014; Adeniyi et al., 2015; Ductor & Grechyna, 2015; Taiwo, 2021; Yinusa et al., 2022; Singh et al., 2023; Elfaki & Ahmed, 2024), an overly expanded financial sector may divert resources away from productive activities, generating suboptimal investment outcomes and weakening the finance–growth nexus.

Table 6: Long-run and short-run ARDL results.

Variables	Coefficient	t-Statistic	p-value
Long-run estimation			
lnFD	-0.076**	-2.194	0.010
lnGLOB	-0.051*	-1.782	0.061
lnFD × lnGLOB	0.048**	2.215	0.013
lnLAB	0.035**	2.261	0.022
lnPCAP	-0.013	-1.514	0.335
INF	0.0007	1.345	0.571
Short-run estimation			
ECT(-1)	-0.725***	-5.815	0.000
ΔlnFD	-0.055***	-3.732	0.000
ΔlnFD(-1)	0.008	0.982	0.572
ΔlnFD(-2)	-0.042***	-5.131	0.000
ΔlnFD(-3)	-0.061***	-5.427	0.000
ΔlnGLOB	-0.038***	-4.302	0.003
ΔlnGLOB(-1)	0.007	0.667	0.682
ΔlnGLOB(-2)	-0.031***	-5.465	0.000
ΔlnGLOB(-3)	-0.040***	-5.974	0.000
ΔlnFD × ΔlnGLOB	0.033***	5.724	0.000
ΔlnFD × ΔlnGLOB(-1)	-0.005	-0.396	0.528
ΔlnFD × ΔlnGLOB(-2)	0.028***	5.234	0.000
ΔlnFD × ΔlnGLOB(-3)	0.036***	5.446	0.000
ΔlnLAB	0.028**	2.251	0.049
ΔlnLAB(-1)	-0.011	-1.249	0.415
ΔlnPCAP	0.004	0.118	0.662
ΔlnPCAP(-1)	0.006***	3.969	0.007
ΔlnPCAP(-2)	0.007**	2.197	0.022
ΔlnPCAP(-3)	-0.005*	-1.695	0.070
INF	0.001***	4.192	0.003
ΔINF(-1)	0.001***	4.315	0.003
ΔINF(-2)	0.0007***	3.767	0.005
Constant	7.225***	3.891	0.002
R^2	0.915		
Adj R^2	0.891		

*Source: Authors' own calculations. Notes: *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. The dependent variable in the long-run equation is lnGDPpc, the natural logarithm of real GDP per capita. In the short-run error-correction specification, the dependent variable is ΔlnGDPpc, representing short-run changes in logged real GDP per capita. A maximum of three lags is imposed to avoid over-parameterization while capturing short-run dynamics. The reported coefficients, t-statistics, p-values, and significance levels should be verified against the original econometric output.*

Similarly, GLOB exhibits a negative and statistically significant association with economic performance. Specifically, a 1% increase in GLOB is associated with an approximately 0.051% decrease in real GDP per capita in the long run, holding other factors constant. This result supports the structuralist view (Papanek, 1973), which argues that globalization does not uniformly promote growth, particularly in structurally constrained economies. This finding is consistent with Polat et al. (2015), Duodu and Baidoo (2022), Baidoo et al. (2023), and Chibalamula et al. (2023), but contradicts Feridun et al. (2006),

Jaho et al. (2023), and Oluwagbade and Ibidapo (2024), who report positive effects. In the Next-11 context, limited industrial diversification, low productivity, and high import dependence may reduce the potential gains from global integration, while exposure to external shocks, volatile capital flows, and weak institutional frameworks may further constrain its growth-enhancing effects.

In contrast, the interaction term between FD and GLOB (lnFD × lnGLOB) is positive and statistically significant, indicating a complementarity effect. This suggests that the effect of financial development on economic performance depends on the level of globalization, and the effect of globalization depends on the level of financial development. Therefore, the coefficients of FD and GLOB should not be interpreted in isolation. Rather, the positive interaction term indicates that the negative conditional effects of each variable may be weakened, and potentially reversed, when both financial development and globalization improve together. GLOB may enhance financial efficiency through access to foreign capital, advanced technologies, and improved financial practices, while FD may increase the capacity of economies to absorb and productively use the benefits of global integration (Baldwin et al., 2005). This complementarity highlights the importance of coordinated financial and external-sector reforms.

To further clarify this relationship, the marginal effects are derived as follows:

$$\frac{\partial(\ln\text{GDPpc})}{\partial \ln\text{FD}} = \beta_1 + \beta_3 \ln\text{GLO}B = -0.076 + 0.048\ \ln\text{GLOB}$$

and

$$\frac{\partial(\ln\text{GDPpc})}{\partial \ln\text{GLOB}} = \beta_2 + \beta_3 \ln\text{FD} = -0.051 + 0.048\ \ln\text{FD}$$

These expressions show that the impact of each variable depends on the level of the other. Given $\beta_1(-0.076) < 0$, $\beta_2(-0.051) < 0$, and $\beta_3(-0.048) > 0$, the marginal effects become less negative as the complementary variable increases, and may eventually turn positive beyond certain threshold levels. The corresponding turning points are given by:

$$\ln\text{GLOB}^* = -\frac{\beta_1}{\beta_3} \approx 1.583\ ;\ \text{and}\ \ln\text{FD}^* = -\frac{\beta_2}{\beta_3} \approx 1.062$$

These thresholds confirm the presence of non-linearity in the FD–GLOB–economic performance relationship. However, because the interaction term is included, the coefficients of FD and GLOB should not be interpreted in isolation. The threshold analysis indicates that the marginal effect of financial development depends on the level of globalization, while the marginal effect of globalization depends on the level of financial development. In particular, the estimated globalization threshold suggests that the marginal effect of FD becomes more favorable when globalization exceeds the critical level. Similarly, the estimated financial development threshold indicates that globalization becomes more growth-enhancing when the financial system reaches a sufficient level of development. Accordingly, the results suggest that FD and GLOB operate as complementary forces when adequate financial depth and global integration are present. This finding underscores the importance of coordinated development strategies, whereby financial-sector reforms and global integration are pursued simultaneously to improve long-term economic performance.

Among the control variables, LAB exhibits a positive and statistically significant association with economic performance. Specifically, a 1% increase in LAB is associated with an approximately 0.035% increase in real GDP per capita in the long run, holding other factors constant. This finding underscores the role of human capital and labor force expansion in supporting output performance. It is consistent with endogenous growth theory, which identifies labor and human capital as key drivers of long-term economic development. It also aligns with the results of Akinlo and Oyeleke (2020) and Nwaogu and Ikenyiri (2022), although it contrasts with Mhaka and Taonezvi (2024), who report an insignificant relationship. In contrast, PCAP is statistically insignificant in the long run, suggesting possible inefficiencies in capital allocation and limited productivity gains from investment. INF also appears insignificant in the long run, indicating that inflation does not have a dominant long-term association with economic performance in the sample.

The short-run results broadly mirror the long-run findings. FD continues to exhibit a negative and statistically significant association with short-run changes in real GDP per capita, with a 1% increase in FD associated with an approximately 0.055% decrease in the short-run growth proxy. The persistence of significant lagged effects points to adjustment frictions and structural inefficiencies within the financial sector. Likewise, GLOB maintains a negative and significant short-run association, suggesting that the immediate costs of integration, such as adjustment pressures on domestic industries and exposure to external volatility, may outweigh short-term benefits. Notably, the interaction term between FD and GLOB remains positive and statistically significant in the short run, reinforcing the complementarity hypothesis. This indicates that globalization may weaken the adverse short-run association between financial development and growth, while financial development may improve the capacity of economies to absorb the benefits of globalization, even in the presence of short-term adjustment costs.

Regarding the control variables, LAB has a positive and significant short-run association with growth, although its magnitude remains modest. PCAP exhibits mixed effects, suggesting delayed and heterogeneous returns to investment across countries. INF shows a small but significant positive short-run association, suggesting that moderate inflation may temporarily accompany higher economic activity, although its overall economic significance remains limited. The error-correction term (ECT) is negative and statistically significant at the 1% level, confirming the existence of a stable long-run equilibrium relationship among the variables. The estimated coefficient of −0.725 indicates a relatively fast speed of adjustment, with approximately 72.5% of deviations from the long-run equilibrium corrected within one period. This suggests that the system adjusts relatively quickly following short-run shocks.

Finally, the results suggest that the effects of FD and GLOB are conditional rather than uniform. While their individual coefficients are negative in the estimated model, the positive interaction term indicates that their joint effect may become favorable when financial development and globalization advance together. These findings highlight the importance of

considering the joint effects of financial and global integration, as well as the structural characteristics of emerging economies, when explaining long-run economic performance in the Next-11 countries.

4.6. Robustness Checks: FMOLS and CCR Estimates

To ensure the robustness of the panel ARDL results, Fully Modified Ordinary Least Squares (FMOLS) and Canonical Cointegrating Regression (CCR) techniques are employed to re-examine the long-run relationships among the variables. These estimators are particularly suitable as they correct for potential endogeneity and serial correlation, thereby providing reliable long-run coefficients in cointegrated panels. The FMOLS and CCR long-run estimates reported in Table 7 provide robust and largely consistent evidence on the determinants of economic growth in the sample countries.

Table 7: Robustness check: FMOLS and CCR estimates.

	FMOLS			CCR		
Variables	**Coefficient**	**t-Statistic**	**p-value**	**Coefficient**	**t-Statistic**	**p-value**
lnFD	-0.082**	-2.280	0.025	-0.085**	-2.136	0.023
lnGLOB	-0.043*	-1.748	0.072	-0.038*	-1.695	0.070
lnFD × lnGLOB	0.050**	2.365	0.020	0.052**	2.273	0.022
lnLAB	0.038**	2.241	0.012	0.045**	2.198	0.014
lnPCAP	-0.022	-1.372	0.312	0.009	0.565	0.297
INF	-0.0002	-0.558	0.571	-0.0005	-1.227	0.568
Constant	5.265***	4.815	0.000	5.273***	4.788	0.000
R^2	0.910			0.908		
Adj R^2	0.892			0.890		

*Source: Authors' own calculations. Notes: *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. FMOLS and CCR estimators correct for endogeneity and serial correlation, providing robust long-run estimates.*

FD exhibits a statistically significant negative effect on economic growth across both estimators, suggesting that the current stage of financial sector development is associated with inefficiencies in resource allocation or weak financial intermediation, thereby limiting its growth-enhancing role. Similarly, GLOB has a negative and statistically significant impact in both models at the 10% level, indicating that the gains from international integration are not fully realized and may be offset by structural vulnerabilities or limited absorptive capacity within the domestic economy. In contrast, LAB consistently shows a positive and significant effect, confirming its importance as a key driver of long-run economic performance.

A central finding of the analysis is the positive and statistically significant interaction between FD and GLOB, suggesting a complementarity effect whereby the growth benefits of globalization are amplified when financial systems are more developed. This highlights the crucial role of financial sector development in enabling economies to effectively channel the gains from global integration into productive investment and output growth. By contrast, PCAP and INF are statistically insignificant, implying that their direct long-run effects on growth are limited within the specified model. Overall, the results underscore that while FD and GLOB may exert negative effects individually, their joint interaction is growth-enhancing, emphasizing the importance of coordinated financial and external-sector policies in the NEXT-11 economies.

5. Conclusions and Policy Implications

This study examines the effects of financial development, globalization, and their interaction on economic growth in the Next-11 countries over the period 1990–2023 using a panel ARDL framework. The results indicate that both financial development and globalization have negative and significant effects on economic growth in both the short and long run. However, the interaction term between financial development and globalization is positive and significant across both time horizons, providing strong support for the complementarity hypothesis. This suggests that, although each variable individually constrains growth, their joint effect mitigates these adverse impacts and enhances growth outcomes. Regarding the control variables, labor exerts a positive and significant effect on economic growth in both the short run and the long run, underscoring the importance of human capital and labor force expansion. Physical capital is insignificant in the long run but exhibits mixed effects in the short run. Inflation remains insignificant in the long run but shows a small yet positive and significant effect in the short run. Finally, robustness checks using FMOLS and CCR yield results broadly consistent with the baseline estimates, thereby reinforcing the reliability of the findings.

Based on these findings, several policy implications emerge. First, policymakers in the NEXT-11 countries should reassess and strengthen globalization-related policies, given their negative standalone impact on growth. This includes improving the design and implementation of trade agreements, foreign direct investment frameworks, and cross-border financial regulations. Greater policy coordination and effective enforcement are essential to minimize revenue losses and mitigate adverse effects on growth. Emphasis should be placed on export diversification and upgrading, alongside reducing excessive reliance on imports, to avoid persistent trade imbalances. In particular, moving beyond primary commodity exports toward higher value-added goods and services is crucial for sustainable income generation and long-term growth. Second, strengthening financial sector development should be a key priority. The negative effect of financial development observed in this study likely reflects structural inefficiencies, poor institutional quality, and suboptimal allocation of financial resources. Policymakers should focus on enhancing financial infrastructure, improving regulatory and supervisory frameworks, and ensuring that financial resources are efficiently channeled toward productive sectors of the economy. Promoting financial innovation, expanding access to credit, facilitating technology transfer, and reducing transaction costs can further support investment and economic growth. Third, the positive interaction between financial development and globalization underscores the importance of coordinated, complementary policy strategies. Advancing one dimension in isolation may yield limited or even adverse outcomes. Instead, policies should aim to simultaneously deepen financial systems and enhance global integration, as financial development benefits from globalization-driven inflows of capital, technology, and skills, while globalization becomes more growth-enhancing in the presence of a well-functioning financial system.

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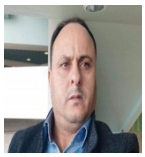

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Appendix 1: Variance Inflation Factor (VIF) results.

Variables	VIF	1/VIF
lnFD	3.05	0.33
lnGLOB	3.33	0.30
lnLAB	2.38	0.42
lnPCAP	1.96	0.51
INF	1.35	0.74

Source: Authors' own calculations. This table reports the VIF and its reciprocal (1/VIF) for the explanatory variables. The VIF measures the degree of multicollinearity among regressors, while the tolerance (1/VIF) reflects the proportion of variance not explained by other variables. A VIF value above 10 is typically considered indicative of severe multicollinearity.

Appendix 2: Hausman test results for MG versus PMG estimators.

Variable	MG (*b*)	PMG (*B*)	Difference (*b*-*B*)	S.E.
lnFD	-64.233	4.264	-40.292	103.214
lnGLOB	3.249	-0.295	3.544	5.229
lnFD × lnGLOB	2.593	0.472	2.121	0.415
lnLAB	2.825	1.628	1.197	0.367
lnPCAP	2.096	0.204	1.892	0.332
INF	-0.015	0.012	-0.003	0.154
Hausman test statistic: $\chi^2(6) = 5.137$; Prob > $\chi^2 = 0.855$				

Source: Authors' own calculations. Notes: b denotes the MG estimator, which is consistent under both the null and alternative hypotheses; B denotes the PMG estimator, which is efficient under the null but inconsistent under the alternative. The null hypothesis is that the difference in coefficients is not systematic.