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Financial Integration and Growth: Are the Effects Shaped by Country Income Levels and Trade Liberalization?

Abstract: The study explores the nexus between economic growth and international financial integration, mediated by country income levels and trade liberalization, across 108 countries. To check the endogeneity of the lagging variable in the model, the two-step GMM robust panel data estimator is used, while the robustness of the S-GMM estimates is examined by the PMG estimator.

The findings of this study reveal that (i) the effects of international financial integration (IFI) on economic growth are mediated by the level of trade liberalization within country income groups, indicating that countries with a higher level of trade liberalization relative to their income group peers show a positive impact of financial integration on economic growth; (ii) the effects of IFI on economic growth are influenced by the income level of countries within their respective income groups, whereas countries with higher income levels relative to their peers in the same income group demonstrate a positive impact of financial integration on economic growth. The study's primary contribution is to fill a gap in the literature by confirming the beneficial effects of trade liberalization and by identifying the country's income level as a mediator in the relationship between international financial integration and economic growth.

Key words: International Financial Integration, Economic Growth, Two-Step S-GMM estimators, trade liberalization.

JEL Code: F36, F41, 040.

1. Introduction

The structure of global finance has undergone a massive change since the early 1980s. In recent decades, many political actors, prominent economists, and others promoted greater openness of national financial markets and increased integration of economies around the world. Examination of the impact of financial liberalization and financial flows on economic growth has been the subject of extensive theoretical and empirical debate, leading to mixed findings in the literature. Some empirical studies suggest that certain countries exhibit a weak or insignificant relationship between financial integration and economic growth (Prasad et al., 2003; Edison et al., 2002a). In fact, early cross-country studies suggest that financial integration promotes economic growth, but these effects are generally more pronounced in developed than in developing countries.

A review of the empirical literature indicates that, so far, individual countries or regions have been included only sporadically in growth studies, and some empirical studies employ worldwide samples or large, heterogeneous panel assessments rather than focusing on individual countries or regions. There is widespread recognition in the economic literature that financial integration, in the sense of linking financial markets and institutions between different countries, can have a positive impact on economic growth. Nevertheless, it is interesting that the mediation channels through which financial integration affects economic growth remain underexplored.

This research aims to partially reconcile the mixed results in the literature on the extent to which IFI-mediated growth is underestimated relative to other channels. The suggestion is that the level and depth of the IFI-growth nexus may be closely tied to a country's income level. While previous empirical studies have typically controlled for the effects of various control variables beyond financial integration, this study does not have that objective. In fact, this study employs two conventional variables, the initial level of GNI per capita and trade openness, as mediating variables in examining their influence on the IFI-Growth nexus. To our knowledge, no further studies have examined the mediating impact of country-level income and trade liberalization on the link between IFIs and economic growth. The economic growth benefits derived from financial integration are moderated by two critical factors: the extent of trade liberalization and a nation's income classification. Additionally, the findings of this study can be used in debates on the influence of mediating factors, such as income, country-level characteristics, and trade liberalization, in examining the economic growth-IFI nexus.

Thus, this study makes two contributions to the literature. To empirically demonstrate the varying effects of IFI on growth across Low-income, Middle-income, Upper-income, and High-income countries (Appendix 1), we first explore potential variation in this influence by income level within each group. In our second contribution, we explore how trade liberalization mediates the relationship between IFI and growth peer-referencing nations in each income group.

Moreover, by employing the dynamic GMM model, the study not only establishes the moderating role of trade openness but also investigates the marginal effect of IFI on growth across income levels. By analysing these factors, the study provides insights into the complex dynamics and interplay among trade liberalization, country income levels, growth, and IFI.

2. Literature review

2.1. Theoretical background

The hypothesis about the relevance of financial development for economic development was first proposed by Schumpeter (1911) who argued that the financial market and institutions can contribute to economic growth and development through the mechanism of "creative destruction". However, Schumpeter's hypothesis was neglected for a long time and did not attract serious research attention. Using a limited sample of countries, Goldsmith (1969) and McKinnon (1973) empirically tested the validity of Schumpeter's hypothesis. Two decades later, King and Levine (1993) extensively explored the relationship between financial development and economic development, suggesting that financial development promotes economic growth by accelerating capital accumulation (investment growth) and improving its efficiency. Also, several empirical studies in a similar vein have examined a wide range of nations and numerous economic variables (e.g., Levine & Zervos, 1998; Levine et al., 2000; Beck et al., 2000).

In this sense, there are two different views on how financial integration affects economic growth. According to the first view, several studies by Bailliu (2000), Henry (2006), and Kose et al. (2011) follow the neoclassical growth model where liberalizing markets attract both international and domestic investment, which in turn leads to greater capital accumulation.

In the second view, the effects of financial integration on economic growth are evident only after a critical level of institutional development, better governance, and stable macroeconomic policies have been established (Agénor, 2003; Obstfeld & Taylor, 2004; Kose et al., 2009).

Unlike the traditional neoclassical approach, some economic views underscore the importance of a particular sequence of reforms in formulating growth strategies for developing countries. These economic views suggest that a set of conditions determines the benefits of IFI (Edwards, 1984; McKinnon, 1991). However, Eichengreen (2001) points out that removing capital controls may exacerbate existing problems such as trade barriers, weak domestic institutions, and deficiencies in the financial system. Empirical research on the relationship between IFI and economic growth focuses on understanding the potential benefits of IFI, particularly in the context of institutional and financial development, trade liberalization, and macroeconomic stability prior to capital account liberalization. However, empirical findings so far are varied and ambiguous. Other research has not yielded any conclusive evidence either way. Research by Kraay (1998) and Chakraborty (2010) failed to find evidence of a robust relationship among growth, financial liberalization, and IFIs.

A study of Edison et al. (2002b) concludes that while financial integration increases the efficiency of the domestic financial system, it does not improve economic growth. In this vein, several studies done by Milesi-Ferretti & Grilli (1995), Kraay (1998) and Edison et al. (2002a) failed to find a robust link between financial openness and economic growth.

Klein and Olivei (1999) investigated the impact of capital account opening in industrialized and developing countries. Their research showed that countries with open capital accounts experienced faster economic growth and greater financial depth.

Mendoza et al. (2007) conclude that IFI has a net negative impact on growth in developing and underdeveloped countries, whereas financial liberalization has a positive impact, particularly in financially developed countries. Ganić & Hrnjić (2021) and Ganić (2020) confirmed the existence of a reverse link between growth and financial integration, concluding that European transitioning economies cannot fully benefit from financial integration at this stage due to the underdevelopment of their financial system. Ahmed (2016) and Ibrahim & Vo (2020) contributed to this line of research, confirming the role of the domestic financial system in enhancing the IFI-growth nexus in Sub-Saharan African countries.

The literature documents strong evidence of a link between financial integration and growth (Chang et al., 2009; Samimi & Jenatabadi, 2014; Chen & Quang, 2022; Chen & Kim, 2023). In fact, this link may depend on institutional, financial, and economic development factors, especially in developed countries.

On the other hand, the impact is ambiguous or perhaps weak in underdeveloped nations. For example, in the examination of the link between IFI and growth in the ASEAN countries, Vo & Ho (2023) find its impacts appear to wane with time. The authors also think that ASEAN's economic growth is positively influenced by capital, labour, and human development. While it still contributes significantly to ASEAN's short-term economic growth, the impact of international trade appears to be diminishing over time. Ullah et al. (2023) find that global financial integration has a moderate impact on inclusive green growth (IGG), along with sociocultural influences. In fact, the e-government index, technology management index, global financial integration, and socio-cultural integration all contribute to the support for IGG.

Based on the literature review, it can be concluded that different nations do not experience the same level of international financial reporting and economic growth. The relationship between international financial reporting and economic growth varies over time and depends on internal and external factors, especially when mediating variables are included. Also, the choice of model and data set can affect the results. To our knowledge, no studies have examined the effects of increasing trade liberalization and country income levels as mediating variables on the IFI-growth nexus. The controversial empirical results reported in the above studies indicate that the nexus between economic growth and international financial integration remains an open question, warranting further examination.

2.2. Hypotheses development

The combined impact of trade and financial variables on economic growth was highlighted in the Roubini and Sala-i-Martin (1991) model, which extended the Barro (1991) growth model. Their model shows that both trade and financial variables may be important drivers of economic growth. Blackburn & Hung (1998) investigated the link between trade liberalization, financial development, and economic growth. Their model, based on the endogenous growth theory, predicts that financial intermediation would lead to higher rates of economic growth than direct lending and borrowing. The model also indicates that by reducing pointless research efforts and expanding markets for new products, trade liberalization and financial development can accelerate economic growth. To see whether the literature shows different effects of trade liberalization on the IFI-growth link, we test the following hypothesis:

H1: Trade liberalization mediates the relationship between IFI and economic growth.

While Edison et al. (2002b) questioned the idea that financial integration promotes growth, additional studies by Frankel and Romer (1999) and Dollar & Kraay (2003) provided strong evidence that trade liberalization positively impacts growth. Moreover, Easterly et al. (2001) and Kose et al. (2003) emphasized that greater trade openness increases output volatility, particularly in emerging nations. In a different study, Abubaker (2015) examined a panel of 33 countries from 1980 to 2009 and concluded that trade openness raises output volatility but has a smaller effect on volatility in more developed countries.

Osada and Saito (2010) found an indirect effect of IFI on growth led by liberalization of international trade and the development of the domestic financial system, following previous empirical studies done by Mendoza et al. (2007), Edison et al. (2002a), Klein & Olivei (1999), and Ganić & Novalić (2023). Nwodo and Ukwueze (2019) studied how trade and financial openness affect growth in 30 emerging economies in Asia, Latin America, and Europe from 2000 to 2017. Their results show that growth benefits from increased trade openness, while financial openness has a positive but insignificant effect on growth. Overall, empirical findings indicate that IFIs have beneficial effects on growth, and these benefits are further strengthened by increased trade liberalization. Ibrahim and Vo (2020) underscore the necessity of improved financial integration to expand the domestic financial sector and emphasize the significance of further economic integration and liberalization in Sub-Saharan African countries integrated into global markets.

Next, to explore the IFI-growth nexus, we consider peer-referencing countries within each income group. In fact, H2 aims to empirically demonstrate a differential effect of IFI on growth, driven by countries' income levels, across Low-income, Middle-income, Upper-income, and High-income countries.

H2: There is an interaction between the income level of countries within their respective income groups and the IFI's impact on growth.

There is limited evidence to suggest variation in the effects of financial integration on economic growth across countries with different income levels. Boyd & Smith (1992) argue that IFIs can negatively affect economic growth, especially in countries with less-developed institutions, because these countries are more susceptible to economic shocks. Klein & Olivei (1999), Borensztein et al. (1998) suggest that less developed countries adopt economic policies that would tend to promote wider IFI. Do and Levchenko (2004) find that, depending on a country's income level, trade openness can affect financial development through external finance, either positively or negatively. Additionally, the authors clarified that while trade openness benefits the financial sectors of comparatively high-income nations, it has the opposite effect on those of relatively low-income nations. Financial integration appears to have a favourable effect on economic growth once it reaches a particular degree of financial development, according to Brezigar-Masten et al. (2010). Conversely, Mmolainyane & Ahmed (2015) contend that growth is affected by financial market integration through varying degrees of access to financial resources. He and Yoo (2024) examined the impacts of financial development on domestic investment using countries' income levels. The study finds the marginal effect of financial development on investments in low- and middle-income countries.

3. Methodology and research data

Empirical studies investigating the impact of financial integration on growth vary in the models used, the countries included, the time periods examined, the methods employed, and the variables studied. This diversity reflects the complexity of the topic and the need for comprehensive, nuanced analysis. To overcome the limitations of previous work, the current study expands the scope to 108 countries, grouped into four categories according to the World Bank classification. This study covers the period from 1994 to 2020, enabling a comprehensive analysis. Our panel data set includes variables relating as: Real GDP growth rate (GROWTH) and IFI to proxy economic growth and the level of financial integration, respectively, while initial GNI per capita ($GNIPc$) and trade openness (TRO) as mediating variables for countries' income levels within their respective income groups. Inflation rate (INF) is used as a control variable in the model. The theoretical basis for examining the link between trade liberalization, financial integration, and economic growth is as follows.

It is known that trade liberalization, expressed through the reduction or removal of tariffs and other barriers, affects economic growth through several channels. For the purposes of the research, two channels will be considered. The first such channel is the effect of the allocation of production factors by sector (Young, 1991; Grossman & Helpman, 1991; and Redding, 1997), and the second channel is the possibility of taking advantage of economies of scale since greater trade openness expands the market for domestic producers (Taylor, 1994; Grossman & Helpman, 1991; Arestis et al., 2014).

Some empirical studies that follow an endogenous growth theory highlight the importance of the financial sector in driving economic growth. For example, King & Levine (1993) conclude that financial development promotes economic growth through an increase in the rate of capital accumulation (investment growth); Bencivenga and Smith (1991) consider that this is achieved by channelling savings into the activity with high productivity, while Greenwood and Jovanovic (1990) claim that it is accomplished by channelling investment funds into the activity with the highest return.

This study specifies an initial equation followed by a combined approach used by Levine & Renelt (1992), Edison et al. (2002b), Schularick & Steger (2010), with some modifications:

$$f\ (IFI, \text{GROWTH}, GNIPc, TRO, INF) \tag{1}$$

To examine the existence of a stronger impact of IFI on economic growth with the presence of greater trade openness and higher initial income levels, we modify equation (1) by interacting trade openness (Trade Openness has been taken as proxy variable for trade liberalization) and initial income with measures of financial integration as explanatory variables.

To check the endogeneity of the lagging variable in the model, the study uses the two-step GMM robust panel data estimator developed by Arrelano & Bover (1995) and Blundell & Bond (1998). The rationale for using this estimator is to improve control of omitted variable bias, unbiased panel heterogeneity, and the error term. Additionally, in favour of applying the two-step GMM estimator is its reliability in addressing heteroscedasticity and autocorrelation in the model, as well as its ability to include time-invariant regressors (Roodman, 2006). Additionally, the Hansen test, because of an optimal weighting matrix and Arrellano-Bond's tests AR (2) for the estimation of autocorrelations, are used to check the validity of instruments in the GMM estimator.

Also, the study uses a wide cross-section (N) and a short time series (T). The study employs the Arellano-Bond and Sargan tests to assess the consistency of the GMM estimator and to examine relationships among the variables in the models. The null hypothesis (H_0) of the Arellano-Bond test is that the residuals are autocorrelation-free. On the other hand, the Sargan test is used to test the validity of the over-identifying restrictions, where the null hypothesis (H_0) states that the instrumental variables used in the analysis are correct.

The initial econometric model can be expressed as follows:

$$Y_{i,t} = \beta Y_{i,t-1} + \gamma' \mathrm{X}_{\mathrm{i,t-1}} + \rho_{\mathrm{t}} + \mu_{\mathrm{i}} + \varepsilon_{\mathrm{i,t}} \tag{2}$$

Where: i =1, …., n (108 countries) and t =1 …., T (to 26 periods), while ρ_{t} *and* μ refer to individual and time-specific effects, X_i and Y_i present a vector of time–variant explanatory variables and a dependent variable, respectively, β is the coefficient of the lagged dependent variable, and $\varepsilon_{\mathrm{i,t}}$ is the error term.

The introduction of trade liberalization and initial GNI as the moderating variables in the nexus growth-financial integration implies setting up the basic model and the moderating Two Step S-GMM model. The basic model estimates the effect of the lag value of economic growth and financial integration on economic growth.

Accordingly, the basic model is expressed as follows:

$$LnGROWTH_{i,t} = \alpha + \gamma \mathrm{LnGROWTH}_{\mathrm{i,t-1}} + \beta_1 LnIFI_{i,t} + \beta_2\, LnTRO_{it} + \beta_3 \mathrm{Ln}GNIPc_{i,t} + \beta_4\, \mathrm{Ln}INF_{i,t} + \mu_1 + \varepsilon_{\mathrm{i,t}} \tag{3}$$

Further, the mediating variables of trade liberalization and country income levels are added to the models because they may alter the strength and/or direction of relationships among variables. Some empirical growth literature indicates that trade liberalization enhances growth with different income levels (Dollar & Kraay, 2003; Frankel & Romer, 1999).

In our case, the interaction variable is the product of the predictor and the moderating variables: the product of financial integration and trade liberalization (eq. 3a) and the product of financial integration and country income levels (eq. 3b).

Accordingly, the extending model with interaction of variables within two steps GMM can be further developed as follows:

$$\mathrm{Ln}GROWTH_{i,t} = \alpha + \gamma \mathrm{LnGROWTH}_{\mathrm{i,t-1}} + \beta_1 \mathrm{Ln}IFI_{i,t} + \beta_2\, \mathrm{Ln}TRO_{it} + \beta_3 \mathrm{Ln}GNIPc_{i,t} + \beta_4\, \mathrm{Ln}INF_{i,t} + \beta_5 (\mathrm{LnIFI\ x\ LnTRO})_{\mathrm{i,t}} + \mu_2 + \varepsilon_{\mathrm{i,t}} \tag{3a}$$

$$\mathrm{Ln}GROWTH_{i,t} = \alpha + \gamma \mathrm{LnGROWTH}_{\mathrm{i,t-1}} + \beta_1 \mathrm{Ln}IFI_{i,t} + \beta_2 \mathrm{Ln}\, TRO_{it} + \beta_3 \mathrm{Ln}GNIPc_{i,t} + \beta_4\, \mathrm{Ln}INF_{i,t} + \beta_5 (\mathrm{LnIFI\ x\ Ln}GNIPc)_{\mathrm{i,t}} + \mu_3 + \varepsilon_{\mathrm{i,t}} \tag{3b}$$

Where i indexes the selected countries from 1…108 and t indexes years from 1994 to 2020. The variable of $GROWTH_{i,t}$ denotes the value of the dependent variable, specifically the GDP growth rate, $\mathrm{GROWTH}_{\mathrm{i,t-1}}$ is the initial level of economic growth and serves as the lagged dependent variable for country "i" in year"t", while, β1, β2, β3, β4, and β5 refer to the estimated coefficients of explanatory variables (LnIFI, LnTRO, LnINF, (LnIFI x LnTRO), and (LnIFI x Ln$GNIPc$)) for country "i" in year "t", μ_i is a specific error for country "i".

Moreover, to assess the robustness and validity of applying two S-GMM estimators, the study employs the PMG estimator, a panel error-correction model introduced by Pesaran et al. (1999). It allows estimating the short-run and long-run effects from an autoregressive distributed lag jointly.

GDP per capita is sourced from the World Development Indicators (WDI) and used as a proxy for GROWTH. The models deal with the main independent variables as follows: the lagged dependent variable, $GROWTH_{i,t}$, IFI measures a level of integration as a Stock of foreign assets and liabilities divided by GDP sourced from the updated and extended version of the dataset constructed by Lane and Milesi–Ferretti (2007), Trade openness as the sum of exports and imports to GDP (WDI) has been taken as a proxy variable for trade liberalization, then GNPInitial The World Bank (WDI) is used to proxy the country's income level, and the Inflation variable (WDI) is introduced as a control variable to measure the annual inflation rate.

4. Empirical results and findings

4.1. System GMM estimation

Table 1 reports the results of the estimations for low- and Middle-income countries, indicating the goodness of fit of the dynamic panel model. For example, the statistical value of the Hansen p-value is higher than 0.05, indicating the reliability of the GMM estimator for predicting the relationship between variables while the value of the AR1 p-value and AR2 p-value generated by the GMM estimator of 0.05, respectively, indicate that there is a first-order correlation, but there is no second-order correlation (Arellano & Bond, 1991). The regression findings indicate that in Low-income countries (M1) all variables are statistically significant but with different sign (Table 1). In Low-income countries (M1), the current economic growth is determined positively at 1% level with lagged growth (α=.0533) and inflation (α=.0011158), at 5% level with trade openness (α=.065423), at 10% level, but negatively at 1% with financial integration (α=-.0000656), and interaction of LnIFI*LnTRO (α=-.162). In Model 2, it is found that economic growth is determined positively at 5% level with lagged growth (α=.0533), trade openness (α=.065423), and interaction of LnIFI*Ln$GNIPc$ (α=7.87e-09), at 10% level with inflation (α=.0022007). It implies that lagged growth and trade openness are responsible for boosting growth in M1 if we have the interaction LnIFI*LnTRO, while in Model 2, trade openness, macroeconomic stability, and the interaction LnIFI*Lncap G cap N cap I. cap P c.

Table 1 summarizes the findings of Two-Step S/GMM regressions run for low and Middle-income countries. In all regressions across both understudied regions, the interaction between IFI and trade openness, as well as between IFI and initial income level, remains significantly negative.

Table 1: Estimation Results for Low-income countries and Lower Middle-income countries

	Low-income countries- Two Step S/GMM		Middle income countries- Two Step S/GMM	
	Model 1	Model 2	Model 1	Model 2
LnGDPGR | L1	.0533076 (.0323979) ***	.065423 (.0304856) **	.0985725 (.0121304) ***	.1279393 (.0186766) ***
LnIFI	-.0000656 (6.78e-06) ***	-.0000953 (7.09e-06)	.0000118 (1.74e-06) **	.0000123 (4.91e-06) **
LnTRO	.0049464 (.0009676) *	.0021187 (.00078443) **	.0475279 (.006197) **	.0042685 (.0018104) **
Ln$GNIPc$	.0004124 (.0002002) ***	.0003908 (.0003147) **	-.0000147 (.000038) ***	.0000132 (.00006) ***
LnINFL	.0011158 (.0017238) **	.0022007 (.0018689) *	-.0118323 (.0009629) **	-.0064923 (.0006638) **
Interaction term: LnIFI * LnTRO	-.1620815 (.0113357) ***		-2.88e-07 (3.56e-08) **	
Interaction term: LnIFI * Ln$GNIPc$		-7.87e-09 (5.95e-09) **		-8.17e-09 (2.80e-09) *
Observations	352	352	615	615
Number of groups	19	19	29	29
AR (1) (p-value)	0.012	0.014	0.003	0.004
AR (2) (p-value)	0.680	0.755	0.802	0.632
Hansen test	0.988	0.982	0.330	0.469

Source: The author's calculations. Note: standard deviation is reported in parentheses;
* = p < 10%, **= p < 5%, ***= p < 1%.

For the panel of Middle-income countries, the current economic growth is determined positively at 1% level with lagged growth, Ln$GNIPc$ at at 5% level with the current levels of financial integration and trade openness in both models, but negatively with the remaining variables. In fact, statistical results reveal that LnIFI (α = 0.0000118 in M1; α = 0.0000123 in M2) and trade openness (α = 0.0475279 in M1; α = 0.0042685 in M2) alone have a significant effect on growth, but in interaction they exhibit an inverse relationship. The results did not confirm that financial integration, in interaction, promotes economic growth, as the coefficients on the interaction term are negative and nonzero.

Although the coefficient of the interaction term retains its statistical significance in Middle-income countries, for both variables of the interaction of trade openness and Ln$GNIPc$, financial integration has an inverse relationship with growth (Table 1). These results are in line with Mendoza et al (2017), Vo & Ho (2023)

Considering both models for Low-income and Middle-income countries (Table 1), the study finds that the current levels of financial integration and trade openness, as well as their interaction, have a significant effect on growth. Having the proxies of economic growth, the findings displayed in Table 2 suggest that for the panel of upper-income countries, current economic growth is determined positively at 1% and 5% level with lagged growth, current level of financial integration, Ln$GNIPc$ and trade openness in both models, but the interaction between financial integration and trade openness, as well as countries' initial income, matters in the IFI-growth nexus.

Table 2: Estimation Results for Upper-middle-income countries and High-income countries

	Upper income countries- Two Step S/GMM		High-income countries - Two-step S/GMM	
	Model 1	Model 2	Model 1	Model 2
LnGDPGR | L1	.0460559 (.0161619) **	.1593914 (.0270056) ***	.1879865 (.0180481) **	.0293649 (.0235177) **
LnIFI	1.04e-06 (8.16e-0) ***	2.81e-08 (3.08e-06) **	8.46e-08 (2.71e-08) ***	1.28e-06 (1.21e-07) ***
LnTRO	.0082447 (.0023994) **	016804 (.0014083) ***	.0027894 (.000154) ***	.0009642 (.0001797) ***
Ln$GNIPc$	.0001945 (.0000366) **	(-.0001442) (.0000305) **	-.0000174 (4.04e-06) ***	-.0004455 (.000032) ***
LnINFL	-.0032378 (.0014484)	-.0013738 (.0003045)**	-.0099961 (.0025246) ***	-.0308257 (.004168) ***
Interaction term: LnIFI *LnTRO	.6980274 (.0362199) ***	0.37e-11 (.02e-10) **	1.20e-09 (1.51e-10) ***	8162008 (.0357134) ***
Interaction term: LnIFI* Ln$GNIPc$		0.37e-11 (.02e-10) **		.8162008 (.0357134) ***
Observations	536	536	686	686
Number of groups	26	26	33	33
AR(1) (p-value)	0.000	0.000	0.000	0.000
AR(2) (p-value)	0.493	0.563	0.343	0.304
Hansen test	0.863	0.860	0.264	0.285

Source: The author's calculations. Note: standard deviation is reported in parentheses;
* = p < 10%, **= p < 5%, ***= p < 1%.

In High income countries, the current level of economic growth is determined positively with lagged growth (α=0.1879865 in M1; α = 0.0293649 in M2), the level of financial integration (α=8.46e-08 in M1; α = 1.28e-06 in M2), trade openness (α=0.0027894 in M1; α = 0.0009642 in M2), with interaction financial integration and trade openness and with interaction financial integration and Ln $GNIPc$. For high-income countries, the findings provide statistical evidence that the interaction between IFI and trade openness, as well as initial income, matters for the IFI-growth nexus.

A significant positive relationship between higher IFI levels and economic growth is evident in both Upper-income and High-income countries. This is in line with some previous empirical research done by Klein and Olivei (1999), Edison et al. (2002a), Mendoza et al. (2007), Osada & Saito (2010), Ganić & Hrnjić (2021), Chen & Quang (2022), which argue that for the nexus between IFI and economic growth, it is important to have a well-developed financial system. Based on the information provided, the sample for this study consists solely of high-income countries. Upon examining the data in Table 2, a statistically significant positive correlation was observed between international financial integration and economic growth.

4.2. Check robustness

By using the PMG estimator, the study aims to examine the robustness of the S-GMM estimates and validate the findings in equation (2). If there is cointegration between the regressor and the dependent variable, the PMG estimator, as a type of panel error correction model (ECM), is applied to analyse the panel data. To ensure that all variables in the empirical model have the same order of integration, a stationarity test is performed. The results of this test can be found in Table 3. The results reveal that GDPR, trade openness, and inflation rate are stationary at levels. To reach stationarity for the remaining three variables, the data are first differenced. After taking first differences, the test statistics indicate rejection of the null hypothesis of non-stationarity in all specifications. This implies that all variables in the model are stationary and integrated of order 1 (I (1)) at the 1% significance level. (Table 3).

Table 3: Stationary test

Variables	Test Criteria	Level		First Difference	
		Statistic	Prob.	Statistic	Prob.
LnGDPGR	Levin, Lin, and Chu test	-3.39665	0.0003	18.7129	0.0000
	Im, Pesaran and Shin	-9.22700	0.0000	-27.1023	0.0000
	ADF-Fisher Chi-square	491.087	0.0000	1164.16	0.0000
	PP-Fisher Chi-square	900.261	0.0000	3851.77	0.0000
Ln IFI	Levin, Lin & Chu t	-11.6906	0.0000	-15.1368	0.0000
	Im, Pesaran, and Shin W-stat	-0.54084	0.2943	-20.2136	0.0000
	ADF-Fisher Chi-square	262.467	0.0168	829.796	0.0000
	PP-Fisher Chi-square	620.562	0.0000	1543.05	0.0000
LnTRO	Levin, Lin, and Chu test	-7.93643	0.0000	-29.0427	0.0000
	Im, Pesaran, and Shin W-stat	-3.83303	0.0000	-28.6164	0.0000
	ADF-Fisher Chi-square	256.448	0.0309	1092.90	0.0000
	PP-Fisher Chi-square	306.015	0.0001	1822.16	0.0000
Ln$GNIPc$	Levin, Lin & Chu test	-6.49752	0.0000	-8.04344	0.0000
	Im, Pesaran, and Shin W-stat	-2.32563	0.7900	-13.9228	0.0000
	ADF-Fisher Chi-square	148.077	0.8199	587.197	0.0000
	PP-Fisher Chi-square	135.541	0.9310	561.380	0.0000
LnINFL	Levin, Lin, and Chu test	-7.56910	0.0000	-15.5582	0.0000
	Im, Pesaran, and Shin W-stat	-19.0830	0.0000	-36.0618	0.0000
	ADF-Fisher Chi-square	799.218	0.0000	1517.56	0.0000
	PP-Fisher Chi-square	1258.88	0.0000	2839.87	0.0000

Source: Author's calculation

Table 4: Westerlund Cointegration Test Results

Group and Panel Statistics	Constant			Constant and trend		
	Value	z- value	p- value	Value	z- value	p- value
Gt	-2.924	-13.262	0.0000	-3.144	-9.944	0.0000
Ga	-18.985	-22.608	0.0000	-21.382	-14.321	0.0000
Pt	-31.841	-16.895	0.0000	-34.656	-14.525	0.0000
Pa	-19.153	-34.932	0.0000	-21.332	-21.016	0.0000

Source: Author's calculation

Moreover, to test for panel cointegration between the regressor and the dependent variable, the study uses Westerlund's panel cointegration test (2007). The objective of this test is to assess the presence of a long-run relationship among variables in a panel data set. It aims to test the null hypothesis of no cointegration against the alternative. To achieve this, both group means (G) and panel tests (P) are used (Table 4). These tests help determine whether cointegration exists among the variables under investigation. The results from the Westerlund (2007) panel cointegration test provide evidence of cointegration among the variables across all four panel cointegration statistics (Gt, Ga, Pt, Pa).

Furthermore, by employing the Pooled Mean Group (PMG) estimator, the study assesses the robustness of the results and ensures the model's statistical validity. In fact, this is important for the correct interpretation and reliability of the results analysis in the first part of the study.

Table 5: The PMG estimates

	Long Run Equation							
	Low-income countries		Lower Middle Income		Upper middle-income countries		High-income countries	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
LnIFI	.0000484 (3.66e-08)***	.000852 (3.33e-08)***	-.0005261 (.0002009)***	-.0565002 (.0425145)**	8.93e-06 (4.50e-06)**	11. e-13 (2.185463)***	3.41e-07 (5.44e-08)***	1.65e-07 (3.33e-08)***
Interaction term: LnIFI*LnGNIPc	0001148 (3.45e-11)		6.50e-07 (1.65e-07)***		-1.15e-09 (5.61e-10)**		7.00e-10 (1.58e-10)**	
Interaction term: LnIFI*LnTRO		-2.24e-10 (1.60e-10)*		-1.17e-07 (3.09e-07)*		5.19e-07 (2.34e-07)***		3.24e-10 (1.60e-10)**
LnGNIP	.0015734 (.2.29e07)***	5.56e-06 (.0000382)**	-.0001206 (.0000785)	.3132153 (.0912227)***	-.0001391 (.000329)***	.000159 (.0000209***	5.13e-12 (1.01e-12)***	.000082 (.0000382)**
LnTRO	.0178668 (.2.26e06)***	.0079709 (.0008418)***	.0246835 (.0046024)***	.0062831 (0014677)***	.00449 (.0024439)*	.0450476 (.2814085)	.0010497 (.0020383)	.0027607 (.0008418)**
LnINFL	.0090427 (1.39e-06)***	-.0581347 (0104835)***	0007578 (.0034597)	-.0021119 (.0027927)	-.002907 (.001482)*	-.0001646 (.0020856)	-.2167801 (.0338879)***	-.0581347 (.0104835)***
Number of obs	351	351	613	613	539	539	684	684
Log Likelihood	-57.25327	26.91528	652.2745	-203.5902	-313.243	-326.3078	-156.36529	-164.0173
EC	-.89228 (.1000489)**	-.851949 (.037474)***	-.5805504 (.0709808)***	-.682794 (.1603341)***	-1.000489 (.0673664)**	-.9196645 (.072586)***	-.2789923 (.0529656)***	-.2652345 (.0418686)***

Source: The author's calculations. Note: standard deviation is reported in parentheses;
* = p < 10%, **= p < 5%, ***= p < 1%.

The results obtained using the PMG estimator by region confirm most of the findings from all empirical models estimated with the Two-Step S-GMM estimator. More specifically, the results obtained using the PMG estimator reveal that (i) the effects of IFIs on economic growth mediated by the level of trade liberalization within country income groups indicate that countries with higher level of trade liberalization relative to their income group peers show a positive impact of financial integration on economic growth, (ii) the effects of IFIs on economic growth are influenced by the income level of countries within their respective income groups whereas countries with higher income levels relative to their peers in the same income group demonstrate a positive impact of financial integration on economic growth. The significance level and the adjustment speed indicate that the PMG estimates are highly reliable (Table 5).

5. Conclusions

In recent decades, one of the major study questions has been how trade liberalization promotes economic growth. Most empirical research in the literature has examined the direct relationship between financial integration and economic development.

This study incorporates the mediating effects of country income levels and the degree of trade liberalization in the relationship between economic growth and international financial integration, aiming to close the previous knowledge gap in this area. More precisely, the study explores whether IFI has a stronger effect on growth with higher levels of trade openness and higher country income levels.

Comparatively, little empirical research has examined the potential mediating roles of national income levels and trade liberalization in this relationship. The study's primary contribution is to fill a gap in the literature by confirming that trade liberalization and national income are beneficial and serve as mediators in the relationship between international financial integration and economic growth. To the best of our knowledge, this relationship has never been tested.

The findings of this study reveal that (i) the effects of IFIs on economic growth are mediated by the level of trade liberalization within country income groups, indicating that countries with a higher level of trade liberalization relative to their income group peers show a positive impact of financial integration on economic growth; (ii) the effects of IFIs on economic growth are influenced by the income level of countries within their respective income groups, whereas countries with higher income levels relative to their peers in the same income group demonstrate a positive impact of financial integration on economic growth.

Additionally, it was found that the degree of trade liberalization and national income during the chosen period served as mediating factors in these growth effects, which were larger in high-income than in upper-middle-income countries.

The fruits of trade liberalization, in conjunction with financial integration, to enhance economic growth have not been achieved in low- and lower-middle-income countries due to insufficient financial development and limited trade liberalization. It hinders both groups' ability to benefit from financial integration. The analysis highlights that simultaneous improvements in financial systems and trade openness are essential for disadvantaged economies to gain meaningful benefits from international financial integration.

References

1. ABUBAKER, R. (2015). The asymmetric impact of trade openness on output volatility. *Empirical Economics*, 49(3), 881–887. https://doi.org/10.1007/s00181-014-0899-2-
2. AGÉNOR, P.-R. (2003), Benefits and Costs of International Financial Integration: Theory and Facts. *World Economy*, 26: 1089-1118. https://doi.org/10.1111/1467-9701.00564
3. ARELLANO, M. & BOVER, O. (1995). Another look at the instrumental variable estimation of error-component models", *Journal of Econometrics*, 68(1), 29-51. https://doi.org/10.1016/0304-4076(94)01642-D.
4. AHMED, A. D. (2016). Integration of financial markets, financial development, and growth: Is Africa different? *Journal of International Financial Markets, Institutions and Money*, 42 1, 43–59. http://dx.doi.org/10.1016/j.intfin.2016.01.003.
5. ARELLANO, M., & BOND, S. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *Review of Economic Studies*, 58, 277-297. https://doi.org/10.2307/2297968
6. ARESTIS, P., CHORTAREAS, G., & MAGKONIS, G. (2014). The financial development and growth nexus: A meta-analysis. *Journal of Economic Surveys* 29: 549–65. https://doi.org/10.1111/joes.12086
7. BAILLIU, J. (2000). Private capital flows, financial development, and economic growth in developing countries. Bank of Canada Working Paper No. 2000. Ontario, Canada: Bank of Canada-
8. BARRO, R. J., (1991), Economic Growth in a Cross-Section of Countries, *Quarterly Journal of Economics*, May, 407-444. https://doi.org/10.2307/2937943
9. BECK, T., LEVINE, R. & LOAYZA, N. (2000). Financial Intermediation and Growth: Causality and Causes. *Journal of Monetary Economics*, 46, 31-77. https://doi.org/10.1016/S0304-3932(00)00017-9
10. BENCIVENGA, V.R. & SMITH, B.D., (1991), Financial Intermediation and Endogenous Growth, *Review of Economic Studies*, 58, 195-209. https://doi.org/10.2307/2297964•
11. BLACKBURN, K. & HUNG, V.T.Y., (1998), "A Theory of Growth, Financial Development and Trade", *Economica*, 65, 107-124. https://doi.org/10.1111/1468-0335.00116.
12. BLUNDELL, R., & BOND, S., (1998). Initial conditions and moment restrictions in dynamic panel data models, *Journal of Econometrics*, 87, 115-143. https://doi.org/10.1016/S0304-4076(98)00009-8.

13. BOYD, J. H., & SMITH, B. D. (1992). Intermediation and the equilibrium allocation of investment capital: Implications for economic development. *Journal of Monetary Economics* 30, no. 3, pp. 409-432. https://doi.org/10.1016/0304-3932(92)90004-L
14. BORENSZTEIN, E., GREGORIO, J. DE & LEE, J.-W. (1998), How Does Foreign Direct Investment Affect Economic Growth, *Journal of International Economics*, Vol. 45 (June), pp. 115-35. https://ideas.repec.org/a/eee/inecon/v45y1998i1p115-135.html
15. BREZIGAR-MASTEN, A., CORICELLI, F., & MASTEN, I. (2010). Financial integration and financial development in transition economies: What happens during financial crises? Documents de Travail du Centre d'Economie de la Sorbonn HAL No. halshs-00469499. https://hal.science/halshs-00469499.
16. CHANG, ROBERTO, KALTANI, L., & LOAYAZA, N. (2009). Openness can be good for growth: The role of policy complementarities. *Journal of Development Economics*, 2009, vol. 90, issue 1, 33-49. https://doi.org/10.1016/j.jdeveco.2008.06.01
17. CHAKRABORTY, I. (2010). Financial Development and Economic Growth in India: An Analysis of the Post-Reform Period. *South Asia Economic Journal*, 11, 287-308. http://dx.doi.org/10.1177/139156141001100206.https://doi.org/10.1177/139156141001100206
18. CHEN, J. & QUANG,T. (2022). The Impact of International Financial Integration on Economic Growth: New Evidence on Threshold Effects. *Economic Modelling*, 2014, ff10.1016/j.econmod.2014.06.011ff. ffhal-03737730.
19. CHEN, C., & KIM, Y. (2023). Financial integration and economic growth: directional heterogeneity and threshold effect. Digital Economy and Sustainable Development (DESD)1, 21. https://doi.org/10.1007/s44265-023-00017-y
20. DOLLAR, D., & KRAAY, A. (2003). Institutions, trade and growth. *Journal of Monetary Economics*, 50(1), 133–162. https://doi.org/10.1016/S0304-3932(02)00206-4
21. DO, Q. T., & LEVCHENKO, A. A. (2004). Trade and Financial Development. Working Paper, No. 3347. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=610391
22. EASTERLY, W., ISLAM, R., & STIGLITZ, J. E. (2001). Shaken and stirred: Explaining growth volatility. In B. Pleskovic & N. Stern (Eds.), Annual World Bank conference on development economics. Washington, DC: World Bank

23. EDISON, H. J., KLEIN, M. W., SLØK, T., & RICCI, L. (2002a). Capital Account Liberalization and Economic Performance: Survey and Synthesis. IMF Working papers No. 02/120. https://www.elibrary.imf.org/view/journals/024/2004/002/article-A002-en.xml
24. EDISON, H. J., LEVINE, R., RICCI, L., & SLØK, T. (2002b). International Financial Integration and Economic Growth. IMF, NBER Working Paper Series: Working Paper 9164. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=331007
25. EDWARDS, S. (1984).The Order of Liberalization of the External Sector in *Developing Countries, Princeton Essays in International Finance* No. 156. Princeton University.
26. EICHENGREEN, B. (2001). Capital Account Liberalization: What Do Cross-Country Studies Tell Us? *The World Bank Economic Review*, Volume 15, Issue 3, October, Pages 341–365, https://doi.org/10.1093/wber/15.3.341
27. FRANKEL, J., & ROMER, D. (1999). Does trade cause growth? *The American Economic Review*, 89(3), 379–399. https:doi.org/10.1257/aer.89.3.379.
28. GANIĆ, M. (2020). Are Determinants of International Financial Integration in the European Transition Countries Different from Post-Transition Countries? - *Studies in Business and Economics*. Volume: 15, Issue 1, 2020. https://doi.org/10.2478/sbe-2020-0005
29. GANIĆ, M. & HRNJIĆ, M. (2021). How Does International Financial Integration Affect Post-Transition Countries' Growth? Empirical evidence from the CEE-10 countries. *Journal of Central Banking Theory and Practice*, 10(3), 117-136. https://doi.org/10.1504/ijepee.2021.111950.
30. GANIĆ, M., & NOVALIĆ, A. (2023). Does regional trade integration strengthen or weaken capital mobility? New evidence from four free trade areas. *Economics and Business Review*, 9(3), 239–264. https://doi.org/10.18559/ebr.2023.3.795.
31. GOLDSMITH, R. (1969), Financial Structure and Development. (New Haven, Connecticut: Yale University Press).
32. GREENWOOD, J. & JOVANOVIC, B., (1990), *Financial Development, Growth, and the Distribution of Income, Journal of Political Economy*, 98(5), 1076-1107. http://www.jstor.org/stable/2937625
33. GROSSMAN, G.M., & HELPMAN, E. (1991). Innovation and Growth in the Global Economy. MIT Press, Cambridge
34. HENRY, B. P. (2006). Capital account liberalisation: Theory, evidence, and speculation'. NBER Working Paper 12698. Cambridge, MA: NBER.
35. HE, Y. & YOO, T. H. (2024). Financial development impact on domestic investment: does income level matter? *Cogent Economics & Finance*, 12(1). https://doi.org/10.1080/23322039.2024.2321811

36. IBRAHIM, M., & VO, X. V. (2020). Effect of economic integration on sectorial value added in Sub–Saharan Africa: Does financial development matter? *The Journal of International Trade & Economic Development*, 29(8), 934–951. https://doi.org/10.1080/09638199.2020.1767682.
37. KING, R.G. & LEVINE, R., (1993), Finance and Growth: Schumpeter Might Be Right?, *Quarterly Journal of Economics*, 108(3), 717-737. https://doi.org/10.2307/2118406
38. KLEIN, M. W., & OLIVEI, G. P. (1999). Capital account liberalization, financial depth, and economic growth. Working Papers 99-6, Federal Reserve Bank of Boston.
39. KOSE, A. M., PRASAD, E. S., & TERRONES, M. E. (2003). How does globalization affect the synchronization of business cycles? *The American Economic Review*, 93(2), 57–62. https://www.aeaweb.org/articles?id=10.1257/000282803321946804
40. KOSE, A. M., PRASAD, E. S., ROGOFF K., WEI S.J. (2009). Financial globalization: A reappraisal *IMF Staff Papers*, 56 (1), pp. 8 - 62. https:doi.org/ 10.1057/imfsp.2008.36
41. KOSE, M.A., PRASAD, E.S., & TAYLOR, A.D. (2011).Thresholds in the process of international financial integration. *Journal of International Money and Finance*, 30(1), 147–179. https://doi.org/10.1016/j.jimonfin.2010.08.005
42. KRAAY, A. (1998). In Search of the Macroeconomic Effects of Capital Account Liberalization. T World Bank, Development Economics Research Group, Washington, D.C.
43. LANE, P. R., & MILESI-FERRETTI, G. M. (2007). The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970–2004. *Journal of International Economics*, 73(2), 223-250. https://www.sciencedirect.com/science/article/abs/pii/S0022199607000591
44. LEVINE, R., & RENELT, D. (1992).A sensitivity analysis of cross-country growth regressions. *American Economic Review*, 82(4), 942–963.. https://ideas.repec.org/a/aea/aecrev/v82y1992i4p942-63.html
45. LEVINE, R., & ZERVOS, S. (1998). Stock Markets, Banks, and Economic Growth. *The American Economic Review*,88(3), 537–558. http://www.jstor.org/stable/116848.
46. LEVINE, R., LOAYZA, N. & BECK, T, (2000). Financial intermediation and growth: Causality and causes, *Journal of Monetary Economics, Elsevier*, vol. 46(1), pages 31-77, August. https://doi.org/10.1016/S0304-3932(00)00017-9
47. MCKINNON, R., (1973), Money and Capital in Economic Development (Washington: Brookings Institution). https://www.sciencedirect.com/science/article/abs/pii/0305750X74900989

48. MCKINNON, R. (1991). Financial Control in the Transition from Classical Socialism to a Market Economy. *Journal of Economic Perspectives*, 5 (4): 107-122. https://www.aeaweb.org/articles?id=10.1257/jep.5.4.107
49. MENDOZA, E. G., QUADRINI, V., & RIOS-RULL, J.-V. (2007). Financial Integration, Financial Deepness and Global Imbalances. NBER Working Paper No. 12909. DOI 10.3386/w12909. http://www.nber.org/papers/w12909.pdf
50. MILESI-FERRETTI, G. M., & GRILLI, V. (1995). Economic Effects and Structural Determinants of Capital Controls, Staff papers, International Monetary Fund Working papers 42. https://www.elibrary.imf.org/view/journals/024/1995/003/article-A003-en.xml
51. MMOLAINYANE, K. K., & AHMED, A. D. (2015). The impact of financial integration in Botswana. *Journal of Policy Modeling* 37, no. 5, pp.852-874. https://doi.org/10.1016/j.jpolmod.2015.03.015
52. NWODO, O. S, & UKWUEZE, E.R. (2019). Trade Openness, Financial Openness, and Growth in Emerging Market Economies: A Dynamic Panel Approach, Bhattacharyya, R. (Ed.) The Gains and Pains of Financial Integration and Trade Liberalization, Emerald Publishing Limited, Bingley, pp. 63-75. https://doi.org/10.1108/978-1-78973-999-220191012.
53. OBSTFELD, M. & TAYLOR, A. M. (2004). Global capital markets: Integration, crises, and growth. Cambridge: Cambridge University Press.
54. OSADA, M., & SAITO, M. (2010). Financial Integration and Economic Growth: An Empirical Analysis Using International Panel Data from 1974-2007. Bank of Japan, Working Paper No 10-E-5. https://ideas.repec.org/p/boj/bojwps/10-e-5.html
55. PESARAN, M.H., SHIN, Y. & SMITH, R.P. (1999) Pooled Mean Group Estimation of Dynamic Heterogeneous Panels. *Journal of the American Statistical Association*, 94, 621-634. https://doi.org/10.1080/01621459.1999.10474156
56. PRASAD, E.; ROGOFF, K.; WEI, S. J.; & KOSE~ AYHAN M. (2003). Effects of Financial Globalization on Developing Countries: Some Empirical Evidence,IMF Occasional paper No. 220, September 2003. https://www.imf.org/external/pubs/nft/op/220/index.htm
57. REDDING, S., (1997). Dynamic Comparative Advantage and the Welfare Effects of Trade, Nuffield College Economics Discussion Paper, no. 140. https://ideas.repec.org/p/nuf/econwp/140.html
58. ROUBINI, N. & SALA-I-MARTIN, X., (1991). Financial Development, Trade Regimes and Economic Growth, NBER Working Paper no: 3876 October. https://elischolar.library.yale.edu/egcenter-discussion-paper-series/654/

59. ROODMAN, D. (2006). How to Do xtabond2: An introduction to ”Diference” and ”System” GMM in Stata’, Working Paper 103, Center for Global Development, Washington.
60. SAMIMI, P. & JENATABADI HS (2014). Globalization and Economic Growth: Empirical Evidence on the Role of Complementarities. *PLoS ONE* 9(4): e87824. https://doi.org/10.1371/journal.pone.0087824.
61. SCHUMPETER, J.A. (1911).The Theory of Economic Development. Harvard University Press, Cambridge.
62. SCHULARICK, M. & STEGER, T. (2010). Financial integration, investment, and economic growth: evidence from two eras of financial globalization. : *The Review of Economics and Statistics*, NOVEMBER, Vol. 92, No. 4. https://ideas.repec.org/a/tpr/restat/v92y2010i4p756-768.html
63. TAYLOR, M.S. (1994). Once-off and Continuing Gains From Trade, *Review of Economic Studies*, 61, 589-601. https://doi.org/10.2307/2297905
64. ULLAH, S. NOBANEE, H. & IFTIKHAR, H. (2023). Global financial integration, governance-by-technology, and green growth. *International Review of Financial Analysis*. Volume 90, November 2023, https://doi.org/10.1016/j.irfa.2023.102838.
65. YOUNG, A., (1991). Learning by Doing and the Dynamic Effects of International Trade, *Quarterly Journal of Economics*, 106, 369-406. https://doi.org/10.2307/2937942
66. VO, D.H. & HO, C.M. (2023). The growth effects of financial integration in the ASEAN countries, *International Journal of Emerging Markets,* Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/IJOEM-02-2022-0224.

Appendix 1

Low-income countries	Lower Middle-income countries
Burkina Faso	Angola
Burundi	Algeria
Central African Republic	Bangladesh
Chad	Benin
Congo, Dem. Rep.	Bolivia
Ethiopia	Cameroon
The Gambia	Congo, Rep.
Guinea	Côte d'Ivoire
Guinea-Bissau	Egypt, Arab Rep
Madagascar	Ghana
Mali	Honduras
Mozambique	India
Niger	Indonesia
Rwanda	Kenya
Sierra Leone	Lebanon
Sudan	Mongolia
Togo	Morocco
Uganda	Nepal
Zambia	Nigeria
	Nicaragua
	Pakistan
	Senegal
	Sri Lanka
	Tanzania
	Tunisia
	Ukraine
	Uzbekistan
	Vietnam
	Zimbabwe

Upper Middle-Income countries	High-Income countries
Albania	Australia
Argentina	Austria
Armenia	Bahrain
Azerbaijan	Belgium
Belarus	Chile
Belize	Cyprus
Botswana	Czech Republic
Brazil	Denmark
Bulgaria	Finland
China	France
Colombia	Germany
Costa Rica	Hong Kong SAR, China
Ecuador	Hungary
Gabon	Ireland
Georgia	Italy
Iraq	Japan
Jordan	Korea, Rep.
Kazakhstan	Luxembourg
Malaysia	Malta
Mexico	The Netherlands
Namibia	New Zealand
Peru	Norway
The Russian Federation	Oman
South Africa	Panama
Thailand	Poland
Tonga	Portugal
Türkiye	Romania
	Saudi Arabia
	Singapore
	Spain
	Sweden
	The United Kingdom
	The United States of America