FINANCIAL OPENNESS UNDER SCRUTINY: DIMENSIONS AND EFFECTS ON GROWTH ACROSS LEVELS OF DEVELOPMENT°

LA APERTURA FINANCIERA BAJO LA LUPA: DIMENSIONES Y EFECTOS SOBRE EL CRECIMIENTO EN DISTINTOS NIVELES DE DESARROLLO

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Abstract

This paper examines the heterogeneous effects of financial openness on economic growth in 162 countries from 1970 to 2019, distinguishing between de jure and de facto measures and accounting for income levels. Using panel estimations with robust standard errors, the analysis shows that aggregate financial openness does not ensure growth and that its effects are shaped by country characteristics. Financial openness fosters growth in middle-income economies, particularly through foreign direct investment, but has little impact in low-income countries and declining effects in high-income countries. These findings indicate that the growth effects of openness depend on development-related factors, such as institutional quality and absorption capacity, thereby underscoring the need for context-specific financial policies.

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Resumen

Este trabajo examina los efectos heterogéneos de la apertura financiera sobre el crecimiento económico en 162 países entre 1970 y 2019, distinguiendo entre medidas de jure y de facto, y considerando economías de diferentes niveles de ingreso. A partir de estimaciones de panel con errores estándar robustos, el análisis muestra que la apertura financiera no garantiza el crecimiento y que sus efectos dependen de las características de cada país. La apertura financiera impulsa el crecimiento en las economías de ingresos medios, en particular a través de la inversión extranjera directa, pero tiene escaso impacto en los países de ingresos bajos y efectos decrecientes en los de ingresos altos. Estos resultados indican que los efectos de la apertura sobre el crecimiento están condicionados por factores vinculados al desarrollo, como la calidad institucional y la capacidad de absorción, lo que subraya la necesidad de políticas financieras específicas para cada contexto.

INTRODUCTION

Since the early 1990s, international organizations have promoted openness as an effective growth policy. In this global context, financial and commercial flows have followed a steady upward trend despite the 2008 financial crisis and the 2020 pandemic (Lane & Milesi-Ferretti, 2018; WTO, 2023; UNCTAD, 2024). Financial liberalization is expected to accelerate economic growth by expanding financial markets and enabling economies with limited domestic savings to access external funding. This process enhances resource allocation and promotes productive investment (Obstfeld & Rogoff, 1996; Levine & Zervos, 1998; Bekaert et al., 2005; Henry, 2007; Rodrik & Subramanian, 2009). Access to international funding markets also fosters technological innovation, facilitates technology diffusion (Grossman & Helpman, 1990; Moran et al., 2005; Moshirian et al., 2021), and stabilizes intertemporal consumption by absorbing external shocks more effectively (Campante et al., 2021).

Although scholars have widely examined the link between trade openness and economic growth, financial liberalization has received comparatively less scrutiny. The evidence remains inconclusive: some studies report negligible long-term impacts of financial liberalization on growth (Kraay, 1998; Bussière & Fratzscher, 2008), whereas others identify significant positive effects across countries at different stages of development (Levine, 2001; Bekaert et al., 2005). Empirical findings also diverge: some suggest consistent effects for both developed and developing nations (Quinn & Toyoda, 2008), while others highlight marked differences between them (Garita, 2009; Bumann et al., 2013; Bijlsma et al., 2018; Abd Latib & Mohamad, 2023). This study contributes to the literature by re-examining the growth implications of financial openness through a broader and more disaggregated analytical framework.

One reason for non-homogeneous outcomes is the use of alternative indicators as proxies for financial variables (Quinn et al., 2011; Gräbner et al., 2021). The researcher's aim should not be to identify a single optimal indicator of openness but to encourage constructive debate and interpretation of the insights offered by each. These indicators capture different aspects of economic integration, which entail distinct implications for growth. Most of the literature focuses on one or two indicators of openness. This study, however, employs five to test multiple aspects of financial integration.

Investigations on developed and developing countries suggest that divergent outcomes stem from differences in economic circumstances. This study conducts an econometric analysis of 162 economies, grouped into three income levels: low, middle, and high. This classification ensures a substantial number of economies in

each group. The five indicators are tested across the four samples for 1970-2019, enabling a comprehensive evaluation.

The study has two main objectives. First, it explores how different categories of financial openness influence economic growth. Using both de jure and de facto indicators, the analysis combines macroeconomic aggregates (de facto) with institutional measures reflecting legal restrictions on trade and financial transactions (de jure). Second, it evaluates these effects across the full sample and within subsamples of countries at varying stages of development. In doing so, the study investigates whether cross-country economic differences partially explain the divergent impacts of financial openness on growth. This integrated approach, which considers both structural dimensions and economic conditions, enables the formulation of precise policy recommendations tailored to each group of economies.

The paper is structured as follows. After this introduction, Section I reviews the relevant literature. Section II presents the methodology and data, with particular attention to financial measures. Section III reports the results. Finally, the general conclusions of the study are presented.

I. BACKGROUND

As noted, the impact of financial liberalization on economic growth varies depending on the indicators employed and the countries included in the sample, among other factors. For instance, Kraay (1998) found no robust effects of capital account liberalization on economic growth, suggesting that other factors may moderate this relationship. In contrast, Levine (2001) concluded that international financial openness accelerates growth by strengthening the domestic financial system and promoting productivity growth. Moreover, Bekaert et al. (2005) showed that stock market liberalization has, on average, a positive effect of 1% on annual per capita output growth.

Bussière and Fratzscher (2008) analyzed the time-varying relationship between openness and growth in 45 industrialized and developing economies. Both groups benefit in the short term after capital account liberalization but do not experience long-term effects. Quinn and Toyoda (2008), in contrast, found a positive relationship between openness and growth in both developed and developing countries.

Conversely, Garita (2009) reported different results for developed and developing economies. The author analyzed the channels through which financial open-

ness affects economic performance and showed that, in developing economies, higher foreign direct investment (FDI) inflows encourage domestic investment and growth, while in developed economies only portfolio investments attract capital. Bumann et al. (2013) and Bijlsma et al. (2018) reported similar findings.

Kim et al. (2012) examined the dynamic effects of financial integration and FDI on economic growth and macroeconomic uncertainty. The authors showed that both variables boost growth and reduce macroeconomic uncertainty, especially in countries with strong institutions and developed financial markets. However, these benefits are asymmetric, depending on the level of economic development and the quality of public policies. Similarly, Estrada et al. (2015) concluded that growth depends on the development of the financial system as a whole rather than on particular components, such as banks or stock markets. This positive effect is stronger in developing economies than in developed ones. Overall, the results vary depending on the type of financial openness indicators used.

Abd Latib and Mohamad (2023) conducted a meta-analysis of studies on the relationship between financial openness and growth. They observed that most studies report a positive relationship; however, the effects are not uniform and vary with a country's level of development and the quality of its financial and economic institutions. Countries with more robust financial systems and effective regulations benefit more from financial openness in terms of economic growth.

Moreover, existing research identifies trade openness as a factor that can influence growth, without neglecting the financial aspect (Yucel, 2009; Adeel-Farooq et al., 2017; Aremo & Arambada 2021; Mohamed Sghaier, 2023).

Few studies have examined the relationship between different types of de facto financial flows (FDI, portfolio investment, and debt) and de jure aspects of financial openness across low-, middle-, and high-income countries. Furthermore, the correlation between diverse dimensions of financial openness and economic growth across country groups remains an unresolved gap in the empirical literature. This paper addresses this gap by analyzing the relationship between different aspects of financial openness and growth, distinguishing both between de jure and de facto measures and across groups of countries.

The impact of foreign investment on the local economy depends on the characteristics of the national financial system. A high level of financial development and a well-functioning system reduce transaction costs, mitigate volatility and risk, and ensure that capital is allocated to productive investments that foster economic growth

(Boyd & Prescott, 1986; Alfaro et al., 2004; Rancière et al., 2008). Greater competition from international financial institutions can enhance the efficiency of the domestic banking system (Levine, 2001). High-income countries typically have more developed domestic financial systems (Levine, 1997; Levine et al. 2000). A well-developed domestic financial sector facilitates the acquisition of machinery, equipment, or new businesses, as well as the hiring of skilled labor, all of which are essential to benefit from knowledge spillovers, technological diffusion, and linkages generated by FDI.

Institutional quality is another crucial factor in determining both the level and composition of foreign investment a country can attract. Weak institutional frameworks can generate excessive indebtedness and trigger external crises. In developing countries, sudden external financing may hinder growth by exacerbating investment and savings constraints through the appreciation of real exchange rates and the resulting decline in the profitability of tradable goods sectors (Kose et al., 2006; Rodrik & Subramanian, 2009). Therefore, this paper interprets the differing results from various dimensions of financial openness in relation to countries' levels of development.

II. METHODOLOGY AND DATA

II.1. General aspects

A panel of 162 developed and developing countries was constructed based on data availability for the period 1970-2019. In order to reduce short-term fluctuations and emphasize long-term effects, the data were averaged over non-overlapping five-year periods[1]. The sources include the World Development Indicators (WDI) of the World Bank and the International Monetary Fund (IMF), as well as the database of Gräbner et al. (2021), from which different measures of financial openness were drawn. Descriptive statistics and econometric estimates were performed using STATA17 software.

Regarding the explanatory variables of economic growth employed in this study, except for the measures of financial openness, most were selected following the contributions of Rojas et al. (2019, 2021). The endogenous variable is the

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[1]   This transformation mitigates potential endogeneity issues by reducing short-term temporal collinearity and minimizing measurement errors.

annual growth rate of real GDP per capita (percentage). The control variables (with the exception of the financial openness variables) are as follows:

- *initial GDP:* logarithm of real GDP per capita lagged by one period;
- *investment*: gross fixed capital formation as a percentage of GDP;
- *trade openness*: imports plus exports relative to GDP (percentage);
- *public expenditure*: government final consumption in relation to GDP;
- *population growth*: percentage change in population;
- *human capital:* logarithm of life expectancy at birth[2];
- *corruption*: "control of corruption" variable adjusted by standard error;
- *inflation:* consumer price index;
- *real effective exchange rate (REER)*: index 2010=100.

The sample was divided by gross national income (GNI) in current US dollars, using the Atlas method as a proxy for the level of development of a country. The classification follows World Bank criteria for income levels in fiscal year 2019, consistent with the approach mostly commonly applied in growth studies. Despite the World Bank system includes four categories (low, lower-middle, upper-middle, and high income), this research groups low- and lower-middle-income countries together to increase intra-group variability in both dependent and explanatory variables, which is essential for reliable results. Accordingly, economies are classified into three groups: low income (annual GNI below US\$ 4 045 in 2019), middle income (US\$ 4 046–12 535), and high income (US\$ 12 536 or higher).

II.2. Methodology

Given the objectives of this paper and the data described in the previous section, parametric panel models were estimated. When working with panel data, three alternatives are typically considered: pooled ordinary least squares (Pooled), random-effects, and fixed-effects models.

The empirical strategy followed three steps. First, pooled, fixed-effects, and random-effects models were estimated. Second, the restricted F-test, the Lagrange multiplier test of Breusch and Pagan (1980), and the Hausman (1978) test were applied to compare the models. The evidence suggested the presence of fixed effects.

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[2]   Human capital comprises two fundamental dimensions: health and education. Given the controversy surrounding the education dimension (Rojas et al., 2019), this study employs a variable identifying the health dimension.

The Hausman test supported fixed-effects over random-effects estimation, while the restrictive "*F*" test did not provide sufficient evidence in favor of the fixed-effects model. Third, the existence of first-order serial autocorrelation and heteroscedasticity was verified to meet the Gauss-Markov assumptions. For this purpose, the Wooldridge (2002) test and the modified Wald test (Greene, 2002) were implemented.

As both autocorrelation and heteroscedasticity were present, a robust panel-corrected standard errors (PCSE) model was estimated[3]. Additionally, the regression results obtained with instrumental variables through generalized two-stage least squares (G2SLS) were compared with those of the PCSE model using the Hausman test. This procedure showed no significant differences between the models for the full sample, indicating that endogeneity is not a major concern[4]. The model can be defined as:

$$\gamma_{it} = \alpha_i + \beta_1 Financial\ openness + \beta_2 X_{it} + \varepsilon_{it} \tag{1}$$

Where γ_{it} represents the growth rate of GDP per capita; *Financial openness* denotes the degree of financial openness reflected in the different indicators used; and X is a vector of control variables.

The robust PCSE models incorporate the assumption of homogeneity in the slope coefficients across panel units. In other words, the effect of the explanatory variables is assumed to be constant across all countries (or units of analysis), a simplifying condition that facilitates estimation and interpretation on an aggregate basis. However, this assumption may not hold empirically, particularly when units differ in institutional structures, development levels, or historical trajectories. Consequently, it is necessary to verify the validity of slope homogeneity before drawing any inferences about the average behavior of the panel. To this end, the Pesaran and Yamagata (2008) coefficient homogeneity test, known as the $\tilde{\Delta}$ (Delta) test, is employed. This test evaluates whether the coefficients are statistically homogeneous or whether substantial structural heterogeneity is present.

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[3] Panel-corrected standard error (PCSE) estimation models are a statistical method that explicitly corrects for contemporaneous cross-sectional dependence by estimating a robust variance-covariance matrix, which is then used to adjust the standard errors of the coefficients (Beck & Katz, 1995).

[4] G2SLS was implemented using the first lag, the second lag, or a combination of both for the relevant variables in the total sample. In four of the five estimations, the test rejected the null hypothesis of significant differences in the estimated coefficient.

II.3. Financial openness measures

As previously noted, the heterogeneity of results is partly due to the wide variety of indicators used to measure financial openness, each with its advantages and disadvantages (Quinn et al., 2011).

De facto indicators quantitatively reflect the actual degree of tangible financial integration of an economy with the rest of the world, whereas de jure indicators are based on institutional foundations of economic openness, that is, legal restrictions on financial transactions. In other words, de jure indicators evaluate the legal framework of a nation (Gräbner et al., 2021).

In this study, three de facto, one de jure, and one hybrid financial openness variables are used. The financial openness index (LMF OPEN) and the equity-based financial integration index (LMF EQ) are drawn from the Lane and Milesi-Ferretti (LMF) database. The third de facto indicator, from the UNCTAD database, represents the total stock of FDI as a percentage of GDP (UNC FDI). The de jure indicator is the Chinn-Ito index (KAOPEN), which is based on restrictions on cross-border financial transactions reported in the IMF AREAER (Chinn & Ito (2006; 2008)). The hybrid measure is the Financial Globalization dimension of the KOF index (KOF finance) (Gygli et al., 2019), a weighted composite index derived from multiple indicators.

Following Gräbner et al. (2021), all measures are expressed in logarithmic form, except for KOF finance de jure. Further details on the financial variables are provided in Table 1.

Table 1. Financial openness dimensions

Variable	Type	Description
LMF OPEN	*De facto*	Sum of total foreign assets and total foreign liabilities as a percentage of GDP. Total foreign liabilities include FDI liabilities (inflows), portfolio investment equity liabilities, portfolio investment debt liabilities, other investments, and financial derivatives. Total foreign assets include the same categories plus reserve assets.
LMF EQ	*De facto*	Sum of portfolio equity assets and liabilities (stocks) as a percentage of GDP.

UNC FDI	*De facto*	Sum of inward and outward FDI stocks as a percentage of GDP. The inward FDI stock represents the value of foreign investors' equity in, and net loans to, enterprises resident in the reporting economy. The outward FDI stock represents the value of resident investors' equity in, and net loans to, enterprises in foreign economies.
KAOPEN	*De jure*	The Chinn-Ito-Index, measuring a country's degree of capital account openness. It is based on four binary dummy variables reported in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER): multiple exchange rates, restrictions on current account transactions, restrictions on capital account transactions, and the requirement to surrender export proceeds.
KOF finance	*Hybrid*	It measures a country's openness to international financial flows and investments through the openness of a country's capital account. It combines two components: the Chinn-Ito index (Chinn & Ito, 2006; 2008) based on AREAER reports, and investment restrictions from the WEF Global Competitiveness Report. The weights are 21.7% for investment restrictions and 78.3% for capital account openness.

Source: own elaboration.

Table 2 shows the summary statistics for the overall sample. The variables exhibit wide dispersion, which may result from the long period analyzed and variability across countries. Inflation, the real exchange rate, and traditional trade openness display the greatest dispersion, whereas the financial openness indicators show relatively lower standard deviations. The average global growth rate during the period was 1.79%, reflecting a favorable trend. Notably, the KOF finance de jure index presents relatively higher variation compared with the de facto financial measures, as greater stability is expected from indicators based on institutional factors.

Table 1 in the Appendix shows the correlation matrix among the variables. High correlations (above 0.6) appear among the financial openness indicators; however, this does not affect the estimations, as only one indicator is included at a time in the regression models. Similarly, human capital exhibits a high positive correlation with both corruption and initial GDP. It is included only in the initial regression model for the full sample and is excluded from subsequent analyses due to its lack of statistical significance.

Table 2. Summary statistics for the overall sample

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
Growth rate	1,695	1.794	4.248	-43.566	50.758
Initial GDP	1,670	8.420	1.528	4.932	12.051
Investment	1,346	22.435	7.516	0	64.951
Trade openness	1,475	80.511	52.943	4.296	597.458
Corruption	909	-0.189	5.742	-10.974	16.676
REER	663	115.38	84.298	33.011	1507.06
Inflation	1,383	33.607	247.706	-5.531	6424.988
Human capital	1,923	4.177	0.178	3.137	4.438
Public expenditure	1,415	16.599	8.152	0	119.5066
Population growth	1,990	1.715	1.626	-5.952	14.550
LMF OPEN	1,413	4.921	1.050	2.454	12.143
LMF EQ	1,418	1.286	1.655	-0.045	10.032
UNC FDI	1,404	2.947	1.518	-5.356	9.770
KOF finance	1,527	48.796	20.599	1	94.502
KAOPEN	1.396	3.342	1.221	0	4.615

Source: own elaboration.

Figure 1, panel a), shows the evolution of the UNC FDI variable, that is, the inward and outward FDI stocks. Although it has displayed an upward trend since the mid-1990s, this increase has been driven primarily by high-income countries. Panels b) and c) illustrate the evolution of the de facto financial openness indicators developed by Lane and Milesi-Ferretti (2007, 2017), together with UNC FDI, both by income group and for the overall sample.

The LMF OPEN indicator shows a global positive trend over the period, with a marked rise in high-income countries since the mid-1990s. In contrast, in

low-income economies the indicator has remained relatively stable since the late twentieth century. The LMF EQ indicator has expanded rapidly in high-income countries since the late 1980s, while in middle-income economies this growth started in the early 2000s but reversed into a downward trend after 2009. In low-income countries, the indicator has been stable and at much lower levels than in the other groups.

Figure 1. Evolution of financial openness indicators: panel a) displays UNC FDI; panels b) and c) exhibit LMF EQ and LMF OPEN
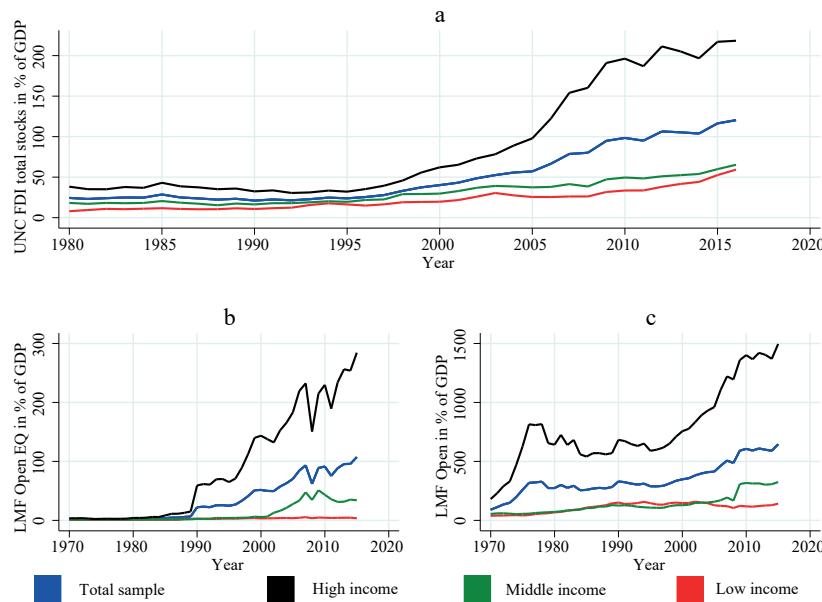
Source: own elaboration.

Similarly, Figure 2 shows the evolution of the KAOPEN and KOF finance indicators over time. Once again, a rising trend is observed, led by developed countries.

Figure 2. Temporal evolution of the KAOPEN and KOF finance hybrid index by country income level
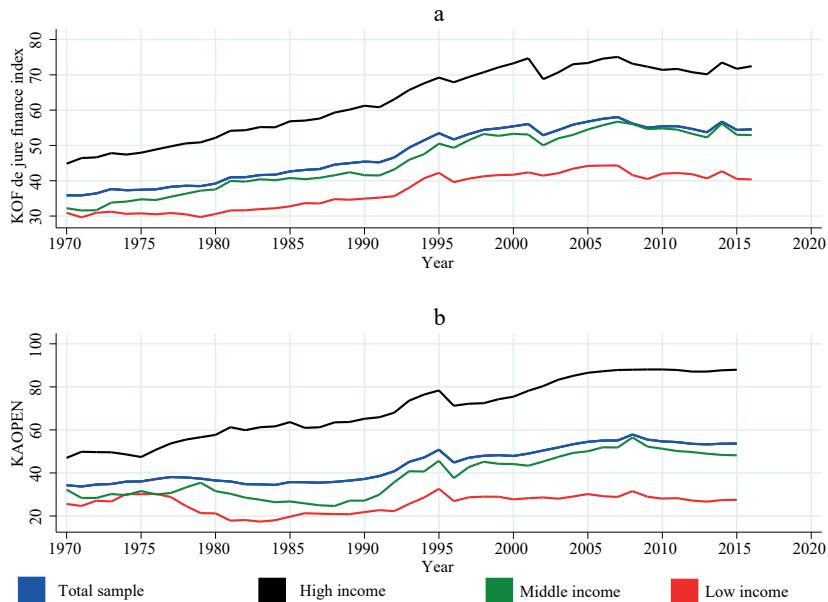
Source: own elaboration.

III. RESULTS

The results of the estimation exercises, based on the five financial openness measures, are presented in Tables 3 to 7. Table 3 reports the findings for the entire sample of countries. Regarding the control variables, the results are consistent with previous literature. The initial GDP coefficient is negative and significant, supporting the conditional convergence hypothesis (Barro & Sala-i-Martin, 1995). Investment exerts a robust positive effect on growth, in line with Levine and Zervos (1998) and Beck et al. (2005). Public expenditure and population growth show detrimental effects, as argued by Kim and Lin (2009) and Abbas (2014), who highlighted the contractionary implications of unproductive expenditure or rapid demographic expansion. Trade openness exerts a substantial positive influence on the overall sample; however, its impact is weaker in middle-income countries and not significant in low- and high-income groups. This heterogeneity has already been noted by Astorga

(2010), Kim (2011), and Romero Stéfani et al. (2024), who reported divergent effects of trade liberalization depending on the level of development. Finally, the real effective exchange rate demonstrates a negative relationship with growth, suggesting that real appreciation may have detrimental effects, particularly in developing countries, as argued by Rodrik (2008) and Levy-Yeyati et al. (2013).

Results for the total sample indicate a negative and statistically significant correlation between financial openness—measured as the ratio of external assets and liabilities to GDP (LMF OPEN)—and economic growth. This finding is consistent with Rodrik and Subramanian (2009), who warned that financial openness can trigger currency appreciation and contractionary effects in less developed economies, and with Bussière and Fratzscher (2008), who found that the benefits of liberalization are short-lived rather than sustained. Conversely, alternative de facto openness measures, including portfolio openness (LMF EQ) and foreign direct investment (UNC FDI), show no substantial impact, in line with the mixed results reported by Quinn and Toyoda (2008), Bijlsma et al. (2018), and Garita (2009). Regarding institutional dimensions, the KAOPEN index is not significant, while the KOF finance hybrid index exhibits a weakly significant positive effect on growth. This finding supports Abd Latib and Mohamad (2023), who argued that the impact of financial openness depends on institutional factors and the sophistication of the financial system.

The statistical evidence suggests that greater financial openness, when assessed in aggregate terms, does not necessarily foster economic growth. The absence of significant effects may indicate that these channels depend critically on local structural and institutional conditions. The weak positive impact of the KOF finance hybrid index further underscores that the quality of the institutional and regulatory environment is essential for financial openness to support growth. When the sample is divided by income levels, the results are reinterpreted in light of different institutional frameworks, since less developed countries generally display weaker institutional performance (Levine et al., 2000; Acemoglu & Robinson, 2012).

Table 3. PCSE estimation results for the entire sample

Variables	*De facto* measures				*De jure* measures	
	(1)	(2)	(3)	(4)	(5)	(6)
Initial GDP	-0.733**	-0.485**	-0.541**	-0.629***	-0.698***	-0.708***
	(0.337)	(0.210)	(0.232)	(0.198)	(0.212)	(0.212)
Investment	0.136***	0.155***	0.160***	0.170***	0.173***	0.168***
	(0.027)	(0.028)	(0.026)	(0.028)	(0.028)	(0.028)
Public expenditure	-0.138***	-0.123***	-0.108***	-0.121***	-0.118***	-0.116***
	(0.030)	(0.028)	(0.027)	(0.029)	(0.029)	(0.0279)
Population growth	-0.927***	-0.805***	-0.797***	-0.843***	-0.806***	-0.815***
	(0.136)	(0.150)	(0.152)	(0.146)	(0.151)	(0.152)
Corruption	0.084**	0.081**	0.054	0.072*	0.072*	0.057
	(0.039)	(0.040)	(0.036)	(0.040)	(0.041)	(0.040)
Trade openness	0.006***	0.006***	0.003**	0.002	0.003	0.003*
	(0.002)	(0.004)	(0.001)	(0.002)	(0.002)	(0.001)
REER	-0.006	-0.018***	-0.018***	-0.018***	-0.018***	-0.011
	(0.005)	(0.004)	(0.006)	(0.006)	(0.006)	(0.008)
Human capital	1.903					
	(2.673)					
Inflation	-0.024***					
	(0.004)					
LMF OPEN		-0.379***				
		(0.027)				
LMF EQ			0.0003			
			(0.136)			
UNC FDI				0.049		
				(0.163)		

KAOPEN				0.192	
				(0.194)	
KOF finance					0.015*
					(0.009)
Constant	2.932	9.078***	7.588***	8.235***	8.165***	7.374***
	(9.740)	(1.983)	(2.129)	(2.052)	(2.112)	(2.069)
Wald statistic	171.73	122.96	121.63	111.79	109.85	97.57
R2	0.3622	0.3080	0.1310	0.2983	0.2980	0.2899
N	80	80	80	80	79	78
Obs.	382	384	383	384	378	374

Note: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Standard errors are in parentheses. Source: own elaboration.

As stated in the methodology section, PCSE estimates assume slope homogeneity across panel units. In order to assess the validity of this assumption, the Pesaran and Yamagata (2008) test was applied to all financial openness variables in the complete sample. The results are displayed in Table 4.

Table 4. Pesaran and Yamagata test results

Total sample	LMF OPEN	LMF EQ	UNC FDI	KAOPEN	KOF finance
statistic	-7.654	-7.661	-7.050	-9.352	-6.417
p-value	0.000***	0.000***	0.000***	0.000***	0.000***

Note: *** denotes statistical significance at 1%.
Source: own elaboration.

The test results provide robust evidence of structural heterogeneity within the sample, indicating that the impact of the explanatory variables differs significantly across countries. This finding justifies the use of heterogeneity-robust estimators, such as PCSE, which account for unobservable common factors. It also supports the decision to divide the sample by level of development. This approach allows identifying more consistent patterns within each group, preventing distor-

tions from averaging heterogeneous effects, and enables a more precise and context-sensitive interpretation of the results.

In the case of low-income countries (Table 5), none of the financial openness indicators—neither the aggregate measure (external assets and liabilities as a percentage of GDP) nor its components such as FDI, portfolio flows, or other investments—exhibits a statistically significant relationship with economic growth. Although some coefficients are positive, the absence of statistical significance suggests that financial openness, in its various dimensions, does not exert a robust impact on growth in these economies. This outcome may reflect structural and institutional limitations that hinder the effective absorption of international financial flows and reduce the ability to translate external financial integration into sustained economic performance.

With regard to control variables, investment maintains a positive and significant effect. By contrast, public spending exhibits a negative coefficient, although the relationship is not statistically significant. The real effective exchange rate (REER) demonstrates a negative and significant relationship in several specifications, confirming the hypothesis that real appreciation can erode external competitiveness and hinder growth—a result previously documented for developing economies (Edwards, 1989; Rodrik, 2008). Overall, these findings underscore the need to account for institutional and absorptive capacities when analyzing the effects of financial openness in lower-income countries, as emphasized in the literature (Rodrik, 1998; Acemoglu & Robinson, 2012).

Table 5. PCSE estimation results for low-income countries

Variables				*De facto* measures		*De jure* measures	
	(1)	(2)	(3)	(4)	(5)	(6)
Initial GDP	-0.216	-0.068	-0.057	-0.028	-0.006	-0.048
	(0.658)	(0.607)	(0.577)	(0.572)	(0.609)	(0.603)
Investment	0.157**	0.180**	0.182***	0.185***	0.180**	0.173**
	(0.062)	(0.073)	(0.069)	(0.068)	(0.070)	(0.012)
Public expenditure	-0.146***	-0.096**	-0.093*	-0.091*	-0.103**	-0.095
	(0.474)	(0.049)	(0.049)	(0.048)	(0.051)	(0.063)

Population growth	-0.241	0.096	0.087	0.076	0.104	0.179
	(0.474)	(0.493)	(0.858)	(0.486)	(0.492)	(0.506)
Corruption	0.033	0.053	0.052	0.055	0.051	-0.0009
	(0.110)	(0.124)	(0.116)	(0.119)	(0.115)	(0.129)
Trade openness	0.022	0.012	0.009	0.003	0.012	0.016
	(0.014)	(0.019)	(0.015)	(0.018)	(0.016)	(0.018)
REER	0.019	-0.015*	-0.014*	-0.012	-0.014*	0.006
	(0.012)	(0.008)	(0.008)	(0.008)	(0.008)	(0.014)
Human capital	0.045					
	(3.106)					
Inflation	-0.033***					
	(0.008)					
LMF OPEN		-0.121				
		(0.902)				
LMF EQ			0.068			
			(0.350)			
UNC FDI				0.404		
				(0.419)		
KAOPEN					-0.136	
					(0.294)	
KOF finance						0.013
						(0.024)
Constant	-0.568	-18.229	0.627	-0.618	0.708	-2.827
	(11.633)	(15.660)	(5.250)	(5.352)	(0.294)	(5.215)
Wald statistic	63.04	35.31	34.89	35.79	35.49	23.18
R2	0.3375	0.2353	0.2357	0.2452	0.2415	0.2025
N	19	19	19	19	19	18
Number of observations	81	83	83	83	82	78

Note: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Standard errors are in parentheses. Source: own elaboration.

In middle-income countries, the sum of inward and outward FDI stocks shows a positive and statistically significant association with economic growth. In particular, an increase in external financial assets relative to GDP is linked to faster growth (Prasad et al., 2007). This suggests that these countries are able to channel capital flows into productive investment opportunities.

Table 6. PCSE estimation results for middle-income countries

Variables	De facto measures				De jure measures	
	(1)	(2)	(3)	(4)	(5)	(6)
Initial GDP	-0.943*	-0.943	-1.254**	-1.550**	-0.731	-0.605
	(0.544)	(0.583)	(0.601)	(0.604)	(0.616)	(0.658)
Investment	0.195***	0.209***	0.196***	0.211***	0.206***	0.208***
	(0.039)	(0.038)	(0.037)	(0.037)	(0.038)	(0.038)
Public expenditure	-0.319***	-0.316***	-0.292***	-0.335***	-0.339***	-0.355***
	(0.063)	(0.060)	(0.056)	(0.059)	(0.073)	(0.079)
Population growth	-1.444***	-1.371***	-1.271***	-1.224***	-1.495***	-1.516***
	(0.230)	(0.270)	(0.259)	(0.276)	(0.311)	(0.290)
Corruption	0.278***	0.274***	0.206**	0.255***	0.272***	0.287***
	(0.075)	(0.083)	(0.080)	(0.082)	(0.082)	(0.084)
Trade openness	-0.007**	-0.008	-0.005	-0.013***	-0.005	-0.005
	(0.003)	(0.006)	(0.004)	(0.004)	(0.005)	(0.004)
REER	-0.033**	-0.011	-0.004	-0.014	-0.012	-0.0168
	(0.016)	(0.018)	(0.019)	(0.017)	(0.018)	(0.019)
Human capital	-0.256					
	(3.107)					
Inflation	-0.027***					
	(3.107)					
LMF OPEN		0.139				
		(0.623)				
LMF EQ			0.271			
			(0.196)			

UNC FDI				0.890**		
				(0.400)		
KAOPEN					-0.294	
					(0.400)	
KOF finance						-0.020
						(0.019)
Constant	18.264	13.714***	15.516***	17.107***	14.076***	13.654***
	(12.127)	(5.116)	(5.061)	(4.764)	(4.930)	(4.943)
Wald statistic	134.59	106.96	119.95	127.79	103.96	104.48
R2	0.6795	0.6229	0.5533	0.6549	0.6185	0.3210
N	20	20	20	20	20	20
Number of observations	96	96	95	96	96	96

Note: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Standard errors are in parentheses. Source: own elaboration.

The findings indicate that, in high-income countries (Table 7), initial GDP per capita exhibits a negative and statistically significant coefficient. This observation supports the convergence hypothesis among high-income countries and aligns with the predictions of the neoclassical growth model (Barro & Sala-i-Martin, 1995). The investment rate continues to exert a positive and significant effect on economic growth, consistent with the empirical literature, which identifies capital accumulation as a key driver of growth in contexts with high installed capacity and stable macroeconomic conditions (Levine & Renelt, 1992). In contrast, public spending does not demonstrate significant associations with growth in this group. This may reflect lower relative variability in these indicators among developed countries or greater efficiency in their use, which reduces their marginal impact on output.

Regarding financial openness, only the ratio of total foreign assets and liabilities to GDP show a statistically significant negative association with economic growth. The absence of positive effects for the other financial variables aligns with literature suggesting diminishing returns to openness in economies with high prior financial integration and developed markets (Kose et al., 2006). In such contexts, characterized by unrestricted capital movement and deep integration of financial systems on the global stage, marginal fluctuations in flows or regulations are likely to have minimal influence on aggregate growth.

Furthermore, some studies suggest that in advanced economies, the transmission channel between financial openness and growth may operate through other variables, such as technological innovation, net external savings, or intersectoral capital reallocation, rather than through direct effects on GDP (Obstfeld, 2009). This potential partial disconnection reinforces the notion that the benefits of financial globalization may have already been realized or shifted to alternative channels within developed countries.

Table 7. PCSE estimation results for high-income countries

Variables	De facto measures				De jure measures	
	(1)	(2)	(3)	(4)	(5)	(6)
Initial GDP	-1.088***	-0.623*	-0.873**	-0.957***	-1.297***	-1.213***
	(0.321)	(0.322)	(0.367)	(0.323)	(0.354)	(0.316)
Investment	0.088**	0.079*	0.098**	0.090**	0.108***	0.099**
	(0.037)	(0.051)	(0.040)	(0.042)	(0.040)	(0.040)
Public expenditure	-0.040	-0.048	-0.034	-0.029	-0.036	-0.043***
	(0.034)	(0.031)	(0.033)	(0.033)	(0.033)	(0.034)
Population growth	-0.510***	-0.465***	-0.502***	-0.541***	-0.504***	-0.489***
	(0.123)	(0.134)	(0.138)	(0.132)	(0.132)	(0.134)
Corruption	0.073*	0.024	0.045	0.053	0.055	0.039
	(0.038)	(0.038)	(0.039)	(0.040)	(0.042)	(0.039)
Trade openness	0.005***	0.009***	0.006***	0.008***	0.005***	0.005***
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)
REER	-0.012	-0.009	-0.009	-0.009	-0.007	-0.011
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Human capital	-9.4888*					
	(4.676)					
Inflation	-0.058*					
	(0.029)					
LMF OPEN		-0.492***				
		(0.159)				

LMF EQ			-0.160			
			(0.171)			
UNC FDI				-0.267		
				(0.1811)		
KAOPEN					0.203	
					(0.177)	
KOF finance						0.010
						(0.011)
Constant	53.950***	10.617***	10.204***	11.597***	12.808***	12.874***
	(19.560)	(3.268)	(3.512)	(3.376)	(3.636)	(3.482)
Wald statistic	95.71	84.51	76.11	77.20	75.49	76.32
R2	0.3219	0.3222	0.2951	0.3000	0.2964	0.2943
N	41	41	41	41	40	40
Number of observations	205	205	205	205	200	200

Note: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Standard errors are in parentheses. Source: own elaboration.

A comprehensive summary of the estimated effects for each sample is presented in Table 8.

Table 8. Summary of estimated effects of financial openness and control variables on growth

Financial Openness variables					
Country Group	KAOPEN	LMF open	LMF EQ	UNC FDI	KOF
Full Sample	n.s.	(-)***	n.s.	n.s.	(+)*
Low Income	n.s.	n.s.	n.s.	n.s.	n.s.
Middle Income	n.s.	n.s.	n.s.	(+)**	n.s.
High Income	n.s.	(-)***	n.s.	n.s.	n.s.

Notes: n.s. indicates not statistically significant. The symbols (+) or (–) indicate the sign of statistically significant coefficients. Significance levels are:*** 0.01, ** 0.05, and * 0.10. In each row, the bolded financial variable represents the one with the largest significant coefficient in absolute value (among financial openness variables). Source: own elaboration.

Empirical evidence specifies that the impact of financial openness on economic growth varies considerably among countries, depending on their income level. In the total sample, the hybrid measure of openness (KOF finance) and the de facto measure (total external assets and liabilities) exhibited positive and negative significant relationships with growth, respectively. In middle-income countries, financial openness—particularly the total stock of inward and outward FDI—appears to facilitate investment and boost output. This finding aligns with the literature emphasizing the benefits of financial integration for economies with developing institutions that still require capital (Prasad et al., 2007; Kose et al., 2006). Conversely, in low-income countries, financial openness has no statistically significant effects, likely reflecting structural constraints that hinder the absorption and efficient allocation of international financial flows. In high-income countries, only the de facto financial integration indicator (LMF OPEN) shows a negative and statistically significant correlation with economic growth, suggesting diminishing returns in contexts of high prior integration and mature financial markets (Obstfeld, 2009; Kose et al., 2006). Overall, these results reinforce the notion that the effects of financial openness are heterogeneous and dependent on a country's stage of development, institutional quality, and local absorption capacity.

CONCLUSIONS

This research examined the relationship between financial openness and economic growth in a sample of 162 countries over the period 1970-2019. The analysis distinguished between de jure and de facto measures and disaggregated the results by income level. Its primary contribution lies in the double disaggregation approach, which sets this work apart from much of the existing literature. Most prior studies rely on aggregate indices or focus on samples concentrated in developing countries. By contrast, this investigation demonstrates that the impact of financial openness is highly heterogeneous and depends on both the dimension of openness considered and the stage of development of each economy. This perspective addresses a significant gap in the literature, which has historically drawn general conclusions without sufficiently differentiating the mechanisms and contexts through which openness may or may not foster growth (Quinn et al., 2011; Kose et al., 2006).

The findings indicate that, in general, certain indicators—particularly the KOF hybrid index and external financial assets—are associated with growth. However, when income levels are considered, substantial disparities emerge:

- Low-income countries. The implementation of financial openness measures has not yielded significant results. This outcome suggests that external capital flows do not systematically translate into productive investment due to structural constraints, such as weak institutions, underdeveloped financial markets, and limited absorptive capacity.
- Middle-income countries. Openness, particularly through the accumulation of external assets and the adoption of more transparent regulatory frameworks, exerts a positive and significant influence on economic growth. In this group, external capital appears to be directed toward productive uses, supporting the idea that once minimum thresholds of institutional and financial development are reached, international integration becomes beneficial.
- High-income countries. No statistically significant positive effects are detected. This pattern may reflect diminishing returns to openness in economies that are already deeply integrated into global financial markets, consistent with the literature that documents a "saturation effect".

These findings have important implications for economic policy. Financial liberalization should not be pursued as an end in itself, but rather assessed in relation to domestic conditions. In low-income countries, priority should be given to strengthening institutional frameworks, expanding domestic financial systems, and improving capital absorption capacity before embarking on comprehensive liberalization. Otherwise, the unregulated opening of trade and investment may generate external vulnerabilities without corresponding benefits for economic growth. In middle-income countries, where positive impacts are observed, policy should emphasize reinforcing the productive channels of liberalization and implementing macroprudential tools to contain flow volatility. In high-income countries, where marginal benefits are limited, attention should shift to the quality and composition of capital flows rather than their volume.

From an academic perspective, these results contribute to the ongoing debate on the role of financial liberalization by demonstrating that its effect on growth is neither linear nor universal, but rather contingent on structural, institutional, and developmental factors. They also underscore the importance of analyzing different dimensions of openness separately, since de jure and de facto indicators capture distinct channels of financial integration.

In methodological terms, the study employed PCSE estimates that are robust to heteroskedasticity and autocorrelation. Tests for slope heterogeneity and cross-sectional dependence were conducted, and alternative measures of openness were

incorporated. However, the findings are not without limitations, which suggest avenues for future research. A deeper examination of causal mechanisms would be advisable, employing dynamic panel techniques to address endogeneity more precisely. It would also be valuable to explore long-term relationships using estimators such as Pooled Mean Group (PMG) or Common Correlated Effects (CCE-MG). An additional dimension deserving attention is the interaction between financial openness and structural factors, including institutional quality, financial development, and external vulnerability.

In conclusion, the study shows that financial openness can foster growth, but only under specific conditions. Strengthening institutional capacities and deepening domestic financial systems emerge as critical prerequisites for external flows to support development. Consequently, openness should not be conceived as a rigid formula, but as a flexible instrument whose effectiveness depends on contextual circumstances.

APPENDIX

Table 1A. Correlation matrix

	Growth rate	Initial GDP	Public expenditure	Population growth	Corruption	Trade openness	REER	Human capital	Inflation	LMF open	LMF EQ	UNC FDI	KAOPEN	KOF finance
KOF finance dj														1.00
KAOPEN													1.00	0.84
UNC FDI												1.00	0.38	0.48
LMF EQ											1.00	0.68	0.37	0.59
LMF open										1.00	0.74	0.78	0.23	0.40
Inflation									1.00	-0.19	-0.23	-0.26	-0.16	-0.14
Human capital								1.00	-0.13	0.43	0.62	0.43	0.54	0.63
REER							1.00	-0.03	-0.18	0.04	0.01	-0.04	-0.03	-0.06
Trade openness						1.00	0.01	0.21	-0.07	0.56	0.35	0.62	0.18	0.23
Corruption					1.00	0.26	0.05	0.65	-0.19	0.58	0.75	0.55	0.51	0.67
Population growth				1.00	-0.22	-0.01	0.21	-0.38	-0.11	-0.05	-0.06	-0.11	-0.28	-0.29
Public expenditure			1.00	-0.29	0.33	-0.02	-0.06	0.20	-0.05	0.13	0.20	0.18	0.15	0.11
Initial GDP		1.00	0.30	-0.26	0.83	0.24	0.01	0.84	-0.21	0.59	0.78	0.52	0.55	0.67
Growth rate	1.00	-0.04	-0.15	-0.34	-0.05	0.12	-0.14	0.10	-0.10	-0.12	-0.09	0.00	0.08	0.09

Source: own elaboration

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