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Financialization, governance, and economic growth

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ABSTRACT

We investigate the relationship between financialization and growth in advanced economies (AE) and emerging market and developing economies (EMDE). Our dynamic panel threshold estimation results suggest that the growth-enhancing effect of domestic financialization, proxied by financial development (FD), is much higher in EMDE with lower levels of FD, but FD impedes growth in AE, where FD is already high. International financialization, measured by international financial integration (IFI), can be used as an endogenously estimated threshold, which suggests that FD enhances growth in less financially integrated EMDE but hinders it in more financially integrated AE. Governance is also a threshold in EMDE, where the growth-enhancing effect of FD is significantly stronger when institutional quality is better. Our results imply that, to fully realize the growth benefits of financialization, policy makers should focus on strengthening institutions and implementing policies that attract more stable financial flows.

1. Introduction

In both advanced and emerging market and developing economies, financialization has often been among the main determinants of economic growth (Benhabib & Spiegel, 2000; De Gregorio & Guidotti, 1995; Goldsmith, 1969; Neusser & Kugler, 1998; Schumpeter, 1911; Yang, 2019). As indicated by Levine (1997), financial systems promote growth by managing risk through trading and diversification, allocating resources efficiently, providing corporate governance, mobilizing savings, and facilitating the exchange of goods and services. Prior literature including Arestis and Demetriades (1997), Benhabib and Spiegel (2000) and Nguyen et al. (2022) finds that the effect of financial development on growth depends on either the level of financial development or some structural domestic conditions, including institutional quality and governance, along with openness to international financial flows. This paper comprehensively examines the relationship between financial development and economic growth in advanced and emerging market and developing economies.

Prior literature on financial development and economic growth focuses on the direction of causality between them. For instance, a seminal study by Schumpeter (1911) finds that financial development leads to

innovation and growth, whereas Robinson (1952), Christopoulos and Tsionas (2004) and Ang and McKibbin (2007) claim that economic growth drives demand for financial services. Patrick (1966) states that the direction of causality between financial development and economic growth changes with a country's development level. Accordingly, financial development promotes growth at early stages of development whereas higher income increases demand for financial services at later stages of development. However, Demetriades and Hussein (1996), Arestis and Demetriades (1997) and Calderon and Liu (2003) identify a bi-directional relationship between financial development and economic growth. These findings may imply the potential endogeneity of financial development for economic growth, which needs to be addressed cautiously.

Various arguments have been raised in the literature to explain the effect of financial development on growth. For instance, the growth-enhancing effect of financial development is produced through improvements in investment efficiency (De Gregorio & Guidotti, 1995), productivity (Neusser & Kugler, 1998), capital stocks (Benhabib & Spiegel, 2000; Yang, 2019), and reductions in borrowing costs (Khan, 2001). Valickova et al. (2015) and other studies suggest that the financial development–economic growth relationship can change,

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depending on how financial development is measured. Valickova et al. (2015) report that measuring financial development based on stock markets matters much more for growth. According to Estrada et al. (2015), measurements of financial development based on both stock markets and banks promote growth, but the growth-enhancing effect is much stronger in developing countries than in AE. Demirgüç-Kunt et al. (2013) and Arcand et al. (2015) find that the positive association between growth and development of the securities market strengthens at higher stages of development.

Prior papers have emphasized the importance of the level of financial development in explaining the relationship between financial development and economic growth. Arcand et al. (2015) present empirical evidence that the positive relationship between financial development and economic growth holds up to a certain threshold level of financial development, after which this relationship turns negative. However, Ruiz (2018), reports that the effect of financial development on economic growth is much greater in more financially developed economies. According to Nguyen et al. (2022) and Luintel et al. (2024), the positive effect of financial development on growth does not vary with the level of financial development. Cho et al. (2025) states that “excessive” financial development as defined by Arcand et al. (2015) neither hampers economic growth nor increases the likelihood of banking crises.

Other studies state that the financial development–economic growth relationship might change based on structural domestic conditions, including international financial openness and institutional quality and governance. Chinn and Ito (2002) and Ahmed (2016) find that openness to international financial flows can enhance financial development by facilitating capital allocation, improving liquidity, and strengthening market efficiency, thereby promoting growth. However, the growth effects of financial openness might depend on the absorptive capacity of domestic financial systems and the quality of governance that channels these inflows into productive investment. Binder et al. (2024) claim that the beneficial effects of international financial integration prevail in economies with high levels of governance and financial development. Similarly, Fernandez and Tamayo (2017) argue that well-established property rights, effective contract enforcement, stable macroeconomic frameworks, and social norms drive financial development by mitigating information asymmetry, fostering policy discipline, and shaping trust, risk preferences, and attitudes toward interest-bearing activities. Kutan et al. (2017), Fernandez and Tamayo (2017), and Law et al. (2018) conclude that the growth-enhancing effect of financial development prevails in economies with better institutions. They propose a mutually reinforcing nexus in which international financial integration accelerates financial development, governance ensures the efficiency and stability of this process, and financial development subsequently drives growth, though excessive or poorly regulated financial expansion can dampen growth in AE because of misallocation of credit and increases in systemic risk. In EMDE, good governance can amplify the positive growth effects of financial development by raising the quality of financial intermediation, reducing rent-seeking behavior, and enhancing investor confidence.

This paper investigates the effect of financialization on growth in advanced and emerging market and developing economies over the period 1996–2021. We proxy domestic financialization using the financial development index constructed based on the access, efficiency, and depth of financial institutions and markets developed by Svirydenka (2016). To examine the effect of financial development on economic growth, we also consider the impacts of human capital, global financial conditions proxied by volatility and risk aversion, trade openness, governance, and international financial openness. Prior literature holds that the effect of financial development on economic growth can vary with the level of financial development or structural domestic conditions, including openness to international financial flows and institutional quality and governance. However, most of these studies either introduce interactions or employ ad hoc sample splitting to maintain exogenous thresholds in order to deal with nonlinearity. An alternative

to these methods is the use of data-driven estimation procedures to determine the threshold levels of financial development and structural domestic conditions regarding the effect of financial development on economic growth. As of this writing, the literature lacks a comprehensive examination of whether financial development and structural domestic conditions constitute endogenous thresholds regarding the effect of financial development on economic growth.

Therefore, the paper investigates whether financial development and structural domestic conditions comprise data-driven estimated thresholds regarding the impact of financial development on economic growth in advanced and emerging market and developing economies during the period 1996–2021. To do so, we use the dynamic panel threshold estimation method by Kremer et al. (2013), which not only addresses endogeneity concerns but also enables us to estimate endogenous threshold levels by capturing potential nonlinearity embedded in the relationship between financial development and economic growth.

This paper makes an empirical contribution to the literature by comprehensively examining the domestic dimension of financialization, proxied by financial development, and the international dimension, measured by IFI in relation to economic growth. Unlike prior studies, which typically consider either bank-based or market-based indicators for financial development, we use a broad financial development index (Svirydenka, 2016) that captures the depth, access, and efficiency of both financial markets and institutions. First, we examine whether domestic financialization, proxied by the financial development index, comprises a data-driven estimated threshold regarding the effect of financial development on economic growth after the impacts of conventional growth determinants are controlled for. Second, we explore whether structural domestic conditions, including the international dimension of financialization (proxied by IFI) and institutional quality and governance constitute endogenous thresholds regarding the effect of domestic financialization on economic growth. Third, unlike Arcand et al. (2015), Law et al. (2018) and Brada and Iwasaki (2024), we estimate thresholds through endogenous estimation methods, rather than employing parametric or nonparametric approaches that impose ad hoc exogenous thresholds—this is the empirical novelty of our study. In addition, we contribute to the literature by using financial development (FD), international financial integration (IFI), and governance (GOV) as endogenous thresholds in examining the impact of FD on economic growth based on a dataset that includes 93 countries over the period 1996–2021. We investigate these important issues for advanced and emerging market and developing economies using dynamic panel threshold estimation (Kremer et al., 2013).

Our results show that domestic financialization comprises a data-driven estimated threshold regarding the sensitivity of growth to financial development. Domestic financialization tends to reduce growth in more financially developed AE. However, in EMDE, financial deepening is positively associated with growth, though the positive association diminishes in those with higher financial development. International financialization, measured by IFI, offers an endogenously estimated threshold regarding the effect of financial development on growth in both advanced and emerging market and developing economies. The growth-decelerating effect of financial development prevails in AE with more financial integration. However, financial development drives growth in EMDE with less financial integration. Institutional quality and governance also constitute data-driven estimated thresholds regarding the effect of financial development on growth in EMDE. Financial development is positively associated with growth in both groups, but this impact is much greater in economies with better governance.

The policy implications based on the empirical findings in this study differ across country groups. In EMDE, where institutional structures are still evolving, strengthening governance, improving regulatory frameworks, and enhancing policy credibility are crucially important for reaping the growth-enhancing effects of financial development. At the same time, a gradual approach to IFI may help to reduce exposure to

volatile capital flows and limit the risks of premature globalization. In contrast, financial systems are already deep and globally integrated in advanced economies (AE), so they might receive diminishing or even negative returns from excessive financialization. Therefore, policy efforts should focus on enhancing the resilience of the financial system through macroprudential regulation and ensuring that financial resources are directed to productive economic activities.

Following this introduction, the paper is organized as follows. Section 2 introduces the data. Section 3 gives the empirical methodology and estimation results. Finally, Section 4 concludes the paper, summarizing the empirical results and offering some policy recommendations.

2. Data

This study investigates the effect of domestic financialization on economic growth using a sample of 23 advanced (AE) and 70 emerging market and developing (EMDE) economies during the period 1996–2021. The selection of the sample is determined mainly by data availability.¹

To examine the effect of domestic financialization on growth, we take into account conventional growth determinants including human capital (*HC*), trade openness (*TRADE*), institutional quality and governance (*GOV*), international financialization (*IFI*), and global financial conditions (*VIX*). We measure domestic financialization using an index on financial development (*FD*) based on the depth, access, and efficiency of financial institutions and markets (Svirydzenka, 2016). *FD* varies between zero and one with higher values represent better financial development.

To proxy for economic growth, we use the natural logarithm of real income per capita ($\ln(RGDP_{Ppc})$) based on data from the World Bank's World Development Indicators (WDI-WB). The data for *HC* come from the Penn World Table database (Feenstra et al., 2015), constructed based on the number of years and returns to education. To measure *TRADE*, we use the de facto trade globalization index constructed by Dreher (2006) and Gygli et al. (2019). The index varies between zero and hundred with higher values represent more trade openness. The data for *GOV* come from the Worldwide Governance Indicators database (World Bank, 2024). The main components of institutional quality and governance are voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. We use the first principal component of these indicators as our measurement of *GOV*. Our measurement of international financialization, a de facto measure of financial openness, is proxied by *IFI*. The data for *IFI* come from the External Wealth of Nations database by Lane and Milesi-Ferretti (2018), calculated as the sum of gross stocks of financial assets and liabilities as a percentage of the gross domestic product (GDP). To proxy for global financial conditions, we use the volatility and risk aversion index (*VIX*), with data from the Chicago Board Options Exchange website. A decline in the *VIX* indicates positive global financial conditions and a greater appetite for risk. For our variables of interest, Online Appendix Table A1 lists the main

descriptive statistics, and Online Appendix Table A2 gives a correlation matrix.

Fig. 1 shows the evolution in mean financial development, *IFI*, and institutional quality and governance during the period 1996–2021. In Fig. 1a, the mean value of domestic financialization, represented by financial development, increases slightly until the global financial crisis and, then, is stable for the rest of the sample period. It also illustrates that the level of domestic financialization is substantially higher in AE than in EMDE. The persistent gap between these groups indicates structural differences in domestic financial capacity, which can affect how financial development translates into economic growth. Fig. 1b shows the evolution in the mean value of *IFI* over time, demonstrating that the level of international financialization is much higher in advanced countries than in emerging market and developing economies. The sharp rise before the global financial crisis, especially in AE, reflects the wave of global liquidity and capital mobility during that period. The subsequent stabilization indicates a shift to more cautious cross-border financial flows, consistent with regulatory tightening and risk aversion after the crisis. Fig. 1c illustrates that the AE have better institutions than EMDE. The stability in this metric indicates that institutional convergence between AE and EMDE has been slow, reinforcing the view that the quality of governance might be a persistent structural determinant of the domestic and international financialization patterns.

3. Financialization and growth: empirical methodology and results

To investigate the relationship between financialization and economic growth, we construct the following benchmark equation:

$$\ln(RGDP_{Ppc})_{it} = \alpha_0 + \alpha_1 \ln(RGDP_{Ppc})_{i,t-1} + \alpha_2 FD_{it} + \alpha_3 HC_{it} + \alpha_4 \ln(vix)_t + \alpha_5 TRADE_{it} + \alpha_6 GOV_{it} + \alpha_7 IFI_{it} + u_{it} \quad (1)$$

in which *i* represents countries and *t* is the time in years; $\ln(RGDP_{Ppc})$ is the natural logarithm of real income per capita; *FD* is financial development, as a proxy for domestic financialization; *HC* is human capital; $\ln(vix)$ is the natural logarithm of a volatility and risk aversion index, as a proxy for global financial conditions; *TRADE* is a de facto trade globalization index; *GOV* is proxied by the first principal component of the main elements of institutional quality and governance, standardized to take a value of between zero and one, in which a higher value means better governance; and *IFI* is international financial integration, as a proxy for international financialization. We also include lagged real income per capita to confirm conditional income convergence as defined by the pioneering study of Barro and Sala-i-Martin (1992). Equation (1) indicates that differences in real income per capita can be explained by the conventional growth determinants, including human capital, global financial conditions, trade openness, institutional quality and governance, as well as domestic and international financialization. This equation assumes that the effect of domestic financialization on real income is invariant to the levels of domestic and international financialization and governance. However, the sensitivity of income to domestic financialization can change with the levels of financialization, measured by domestic and international indicators as well as governance. These variables might constitute endogenously estimated thresholds regarding the effect of domestic financialization on income. They are constructed by estimating Equation (1) using nonlinear panel data estimation methods, such as the dynamic panel threshold developed by Kremer et al. (2013). To do so, we estimate the following equation:

¹ The EMDE sample comprises Algeria, Argentina, Bangladesh, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Cameroon, Central African R., Chile, China, Colombia, Costa Rica, Croatia, Czechia, Cote d'Ivoire, Dominican R., Ecuador, Egypt, El Salvador, Estonia, Ethiopia, Gambia, Ghana, Guatemala, Haiti, Honduras, Hungary, India, Indonesia, Israel, Jamaica, Jordan, Kazakhstan, Kenya, Latvia, Lithuania, Malawi, Malaysia, Mali, Mauritania, Mexico, Moldova, Morocco, Nepal, Niger, Nigeria, Pakistan, Paraguay, Peru, Philippines, Poland, Romania, Russia, Senegal, Sierra Leone, Slovak R., Slovenia, South Africa, South Korea, Sri Lanka, Tanzania, Thailand, Togo, Tunisia, Turkey, Uganda, Uruguay, and Vietnam.

The AE sample includes Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, United Kingdom, and United States.

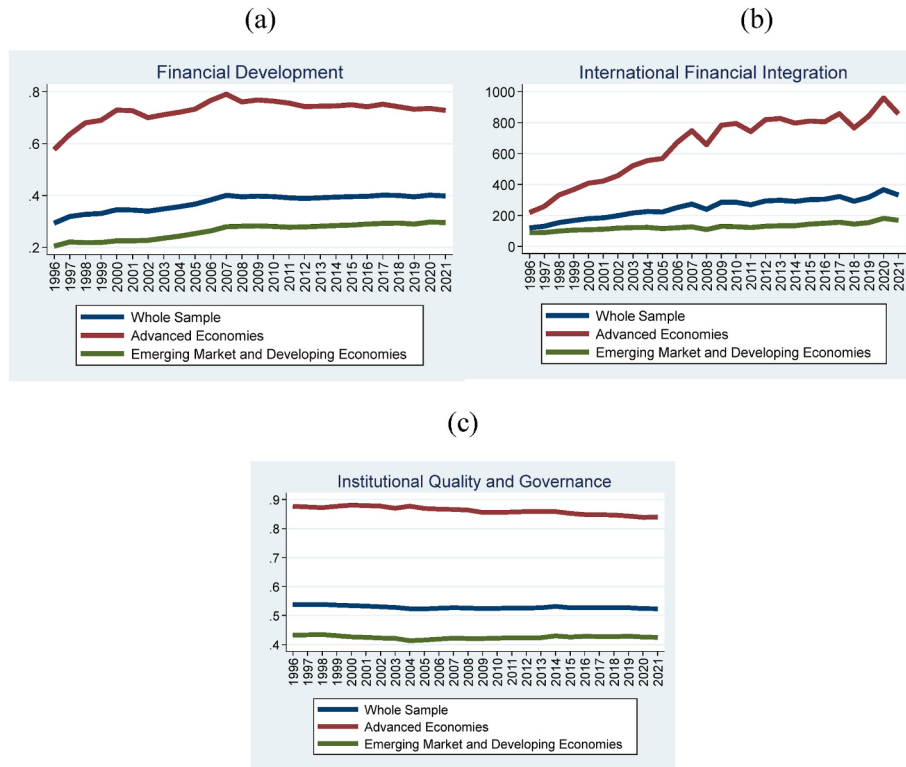


Fig. 1. Financialization and governance.

$$\ln(RGDPpc)_{it} = \alpha_0 + \alpha_1 \ln(RGDPpc)_{it-1} + \alpha_2 FD_{it}(TV_{it} \leq \lambda) + \alpha_3 FD_{it}(TV_{it} > \lambda) + \alpha_4 HC_{it} + \alpha_5 \ln(vix)_t + \alpha_6 TRADE_{it} + \alpha_7 GOV_{it} + \alpha_8 IFI_{it} + u_{it} \quad (2)$$

in which TV is a threshold variable that comprises domestic financialization, international financialization, and governance, and λ is a data-driven estimated threshold that divides the whole sample into groups for low and high financialization, international financialization, and governance, respectively. Observations that are less than or equal to the threshold are in the low groups, and observations higher than the threshold are in the high groups. The low and high groups are also differentiated by having different slope parameters—for instance, in the low groups, the estimated parameter α_2 represents the effect of FD on income, whereas in the high groups, α_3 shows this effect.

3.1. Financialization and growth: threshold effect of domestic financialization

In this section, we investigate whether domestic financialization, proxied by financial development (FD), yields a data-driven estimated threshold regarding the effect of domestic financialization on growth.² To do so, we estimate:

$$\ln(RGDPpc)_{it} = \alpha_0 + \alpha_1 \ln(RGDPpc)_{it-1} + \alpha_2 FD_{it}(FD_{it} \leq \lambda) + \alpha_3 FD_{it}(FD_{it} > \lambda) + \alpha_4 HC_{it} + \alpha_5 \ln(vix)_t + \alpha_6 TRADE_{it} + \alpha_7 GOV_{it} + \alpha_8 IFI_{it} + u_{it} \quad (3)$$

in which λ is the threshold value of FD , that is, a data-driven estimated

Table 1

Dynamic panel threshold results: FD as the threshold.

	(1) Whole sample	(2) AE	(3) EMDE
FD threshold	0.748***	0.692*	0.296**
Threshold test	25.90 [0.00]	1.71 [0.088]	1.99 [0.047]
$FD_{it}(FD_{it} \leq \lambda)$	0.088** (0.042)	-0.049 (0.033)	0.396*** (0.080)
$FD_{it}(FD_{it} > \lambda)$	0.057 (0.036)	-0.059** (0.029)	0.258*** (0.055)
$\ln(RGDPpc)_{it-1}$	0.868*** (0.013)	0.892*** (0.016)	0.859*** (0.015)
HC_{it}	0.071*** (0.016)	0.005 (0.010)	0.094*** (0.021)
$\ln(vix)_t$	-0.024*** (0.002)	-0.029*** (0.003)	-0.022*** (0.003)
$TRADE_{it}$	0.171*** (0.026)	0.033 (0.027)	0.176*** (0.028)
GOV_{it}	0.233*** (0.058)	0.326*** (0.056)	0.187*** (0.061)
IFI_{it}	-0.002 (0.001)	0.001 (0.001)	-0.010** (0.005)
Constant	0.813*** (0.086)	0.967*** (0.149)	0.764*** (0.085)
Sargan test [p-value]	1.00	1.00	1.00
# of observations	2139	529	1610
# of countries	93	23	70
Wald test [p-value]	0.00	0.00	0.00

Notes: The endogenous thresholds are estimated by testing the null hypothesis of no threshold effect. The presence of a statistically significant threshold is assessed using the SupW* statistic proposed by Kremer et al. (2013). A significant SupW* value rejects the null hypothesis of linearity confirming the existence of a threshold effect. Standard errors are in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1 in square brackets.

² Instead of bank- or stock-based measures of financial development that capture only a single component of the financial system, we use a composite financial development index that includes information on the depth, efficiency, and access of both financial institutions and markets.

threshold. Table 1 lists the results of Equation (3), a dynamic panel threshold estimation, following Kremer et al. (2013). The value of FD is 0.748 for the whole sample, 0.692 for AE, and 0.296 for EMDE, and all are statistically significant. The results of Sargan test of overidentifying restrictions strongly support the validity of instruments. According to the Wald test, all the variables in the equations are jointly significant.

The results in Column (1) indicate a positive and statistically significant relationship between FD and real income in the low groups: The estimated coefficient shows that an increase in FD of one standard deviation enhances growth by 2.2 percent in less financially developed economies. However, the positive relationship between FD and growth disappears in the high groups. In AE, FD is negatively associated with real income in the high groups. An increase in FD of one standard deviation reduces growth by 0.8 percent in more financially developed AE. Consistent with the argument made by Arcand et al. (2015), this finding indicates that “too much” financial development tends to dampen growth in AE. The results in Column (3) show a positive relationship between FD and real income in both groups for the sample EMDE. However, the positive effect of FD on real income is slightly lower in the high groups. This indicates that the growth-enhancing effect of a one-standard-deviation increase in FD is 2.3 percent lower in more financially developed EMDE. Our results are mainly consistent with the findings by Hassan et al. (2011), which demonstrate that financial development hinders growth in AE whereas it promotes growth in EMDE. In general, compared to AE, EMDE have not attained a mature level of development. The results in Table 1 are also consistent with those by Fung (2009), showing that the relationship between FD and economic growth is much stronger in economies at early stages of development. Our results might also align with those by Demirgüç-Kunt et al. (2013) and Arcand et al. (2015), indicating that the positive association between economic growth and financial development weakens as the level of development increases, whereas the association between growth and securities market development strengthens at higher stages of development.

The lagged income per capita is positive and significant. In line with the concept of conditional income convergence, this indicates that differences in income per capita are temporary and diminish in the long run. Human capital is positively associated with income in EMDE and the whole sample. In all the estimated equations, a negative and significant relationship is found between the VIX and real income. This result indicates that positive global financial conditions, proxied by a decline in the VIX , tend to drive higher income not only in AE but also in EMDE. Baldwin and Lopez-Gonzalez (2015) state that trade openness increases productivity and enhances efficient capital allocation and growth. Consistent with Baldwin and Lopez-Gonzalez (2015), we find that an improvement in trade openness ($TRADE$) drives growth in EMDEs and the whole sample. The World Trade Organization (2004) and Acemoğlu et al. (2005) indicate that better governance promotes efficient allocation of resources, mitigates information asymmetry, and stimulates innovation. In accordance with all these remarks, we find that better governance drives growth not only in AE but also in EMDE. IFI appears to reduce income in EMDE. The negative effect of IFI on growth might reflect the high volatility of capital flows, weak macroprudential frameworks, or other structural vulnerabilities.

3.2. Financialization and growth: threshold effect of international financialization

The conventional literature including Kose et al. (2010), Obstfeld (1998) and Schmukler (2004) maintains that the direct and indirect effects of financial openness tend to foster growth by providing efficient capital allocation, encouraging risk sharing, and promoting financial development and better macroeconomic policies. Schmukler (2004), Mishkin (2009), and Kose et al. (2010) argue that openness to international capital flows can enhance financial development by mitigating problems related to information asymmetry, moral hazard, and adverse

selection. In line with these theoretical and empirical insights, Chinn and Ito (2002), Ahmed (2016), and Brada and Iwasaki (2024) find that financial openness has a positive effect on financial development. These arguments suggest that the effect of financial development on economic growth may vary, depending on the degree of a country's financial integration. Openness to international financial flows, proxied by IFI , might yield a data-based estimated threshold regarding the effect of financial development on growth.

To investigate whether international financialization, proxied by IFI , constitutes endogenously estimated threshold regarding the effect of financial development on real income, we estimate the following equation:

$$\ln(RGDPpc)_{it} = \alpha_0 + \alpha_1 \ln(RGDPpc)_{i,t-1} + \alpha_2 FD_{it}(IFI_{it} \leq \lambda) + \alpha_3 FD_{it}(IFI_{it} > \lambda) + \alpha_4 HC_{it} + \alpha_5 \ln(vix)_t + \alpha_6 TRADE_{it} + \alpha_7 GOV_{it} + \alpha_8 IFI_{it} + u_{it} \quad (4)$$

in which λ is the threshold value of IFI . Table 2 reports the dynamic panel threshold estimation results, showing that IFI yields an endogenously estimated threshold regarding the effect of domestic financialization (FD) on real income.³ The data-based estimated thresholds are nearly 137 for the whole sample, 334 for AE, and 107 for EMDE, and they are statistically significant. The Sargan test results confirm that the instruments are valid.

Table 2

Dynamic panel threshold estimation results: IFI as the threshold.

	(1) Whole sample	(2) AE	(3) EMDE
IFI threshold	136.56***	334.08***	107.19**
Threshold test	6.18 [0.00]	7.58 [0.00]	2.06 [0.04]
$FD_{it}(IFI_{it} \leq \lambda)$	0.088** (0.042)	-0.046 (0.029)	0.176** (0.081)
$FD_{it}(IFI_{it} > \lambda)$	0.058 (0.036)	-0.067** (0.026)	0.155 (0.179)
$\ln(RGDPpc)_{i,t-1}$	0.866*** (0.013)	0.893*** (0.016)	0.853*** (0.028)
HC_{it}	0.079*** (0.016)	0.004 (0.009)	0.118*** (0.034)
$\ln(vix)_t$	-0.024*** (0.002)	-0.031*** (0.003)	-0.021*** (0.003)
$TRADE_{it}$	0.163*** (0.026)	0.047* (0.028)	0.175*** (0.064)
GOV_{it}	0.249*** (0.056)	0.286*** (0.058)	0.191** (0.087)
IFI_{it}	-0.001 (0.001)	0.001 (0.001)	-0.007 (0.012)
Constant	0.810*** (0.085)	0.992*** (0.149)	0.789*** (0.145)
Sargan test [p-value]	1.00	1.00	1.00
# of observations	2139	529	1610
# of countries	93	23	70
Wald test [p-value]	0.00	0.00	0.00

Notes: The endogenous thresholds are estimated by testing the null hypothesis of no threshold effect. The presence of a statistically significant threshold is assessed using the SupW* statistic proposed by Kremer et al. (2013). A significant SupW* value rejects the null hypothesis of linearity, confirming the existence of a threshold effect. Standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ in square brackets.

³ Online Appendix Table A3 lists dynamic panel threshold estimation results from disaggregating IFI as asset (capital outflows) and liability flows (capital inflows) to explain the driving mechanism. Accordingly, the threshold effect of IFI is driven by both asset and liability flows.

The results in Column (1) show that the effect of *FD* on real income is positive in the low groups, including countries with less financial integration. The positive relationship becomes statistically insignificant in the high groups comprising countries with more financial integration. This might imply that *FD* promotes growth in less financially integrated countries. The results in Column (2) show that *FD* tends to be negatively associated with real income in both groups, though it is statistically insignificant in the low groups. This might imply that financial development reduces income in AE with more financial integration. In EMDE, the relationship between *FD* and real income is positive and significant in the low groups, but it becomes insignificant in the high groups. However, in more financially integrated AE, excessive financial deepening and international financialization (Arcand et al., 2015; Taşdemir, 2023) might lead to financial fragility and diminish the growth-enhancing effect of financial development. Overall, these results also show that an increase in *FD* of one standard deviation boosts growth by 2.3 percent and 2.9 percent, respectively, in the low groups of the whole sample and EMDE, but slows growth by 0.9 percent in more financially integrated AE.⁴ The rest of the estimated parameters are essentially the same as those in Table 1.

3.3. Financialization and growth: threshold effect of governance

Institutional quality and governance might play a crucial role in explaining the effect of financial development on economic growth. As emphasized by Fernandez and Tamayo (2017), sound institutions, such as well-defined property rights, reliable contract enforcement, and stable macroeconomic frameworks, not only reduce information asymmetry but also impact trust, risk preferences, and financial behavior. Empirical findings by Kutan et al. (2017), Fernandez and Tamayo (2017), Law et al. (2018), and Bayraktar et al. (2023) indicate that the growth-enhancing effect of financial development is more likely to be found in economies with better institutional environments that support transparency, policy credibility, and accountability. Consistent with these insights, the WTO (2004) and Acemoglu et al. (2005) state that better governance fosters more efficient resource allocation and encourages innovation. These arguments stress the importance of investigating whether governance offers an endogenous threshold in explaining the relationship between financial development and economic growth.

To examine whether the sensitivity of real income to domestic financialization varies with the threshold effect of institutional quality and governance (*GOV*), we estimate:

$$\ln(RGDPpc)_{it} = \alpha_0 + \alpha_1 \ln(RGDPpc)_{it-1} + \alpha_2 FD_{it}(GOV_{it} \leq \lambda) + \alpha_3 FD_{it}(GOV_{it} > \lambda) + \alpha_4 HC_{it} + \alpha_5 \ln(vix)_t + \alpha_6 TRADE_{it} + \alpha_7 GOV_{it} + \alpha_8 IFI_{it} + u_{it} \quad (5)$$

in which λ is the endogenously estimated threshold value of *GOV*. Accordingly, *GOV* constitutes a statistically significant threshold for the effect of *FD* on income in the whole sample and EMDEs.⁵ Table 3 lists the dynamic panel threshold estimation results, showing no significant threshold effect of *GOV* in AE. This might not be surprising because the

⁴ We are grateful to an anonymous referee for pointing out that not all forms of international financial integration (IFI) are detrimental. In contrast to short-term speculative capital inflows, such as portfolios, long-term inflows comprising foreign direct investment have several benefits for host countries, such as technological upgrading and productivity growth.

⁵ Online Appendix Table A4 lists the dynamic panel threshold estimation results using all the standardized components of institutional quality and governance for the full sample: voice and accountability (VAA), regulatory quality (RQ), rule of law (ROL), government effectiveness (GE), control of corruption (COC) and political stability and no violence (PSNV).

Table 3

Dynamic panel threshold estimation results: Governance as the threshold.

	(1) Whole sample	(2) AE	(3) EMDE
GOV threshold	0.401***	0.857	0.678***
Threshold test	10.39 [0.00]	1.08 [0.280]	6.01 [0.00]
$FD_{it}(GOV_{it} \leq \lambda)$	0.019 (0.042)	−0.065** (0.027)	0.139*** (0.049)
$FD_{it}(GOV_{it} > \lambda)$	0.059* (0.036)	−0.084*** (0.026)	0.204*** (0.052)
$\ln(RGDPpc_{it-1})$	0.867*** (0.013)	0.886*** (0.017)	0.852*** (0.015)
HC_{it}	0.077*** (0.016)	0.007 (0.010)	0.118*** (0.019)
$\ln(vix_t)$	−0.024*** (0.002)	−0.030*** (0.003)	−0.021*** (0.003)
$TRADE_{it}$	0.169*** (0.026)	0.037 (0.027)	0.189*** (0.028)
GOV_{it}	0.218*** (0.061)	0.353*** (0.059)	0.204*** (0.061)
IFI_{it}	−0.002 (0.001)	0.001 (0.001)	−0.010** (0.005)
Constant	0.826*** (0.086)	1.004*** (0.152)	0.790*** (0.084)
Sargan test [p-value]	1.00	1.00	1.00
# of observations	2139	529	1610
# of countries	93	23	70
Wald test [p-value]	0.00	0.00	0.00

Notes: The endogenous thresholds are estimated by testing the null hypothesis of no threshold effect. The presence of a statistically significant threshold is assessed using the SupW* statistic proposed by Kremer et al. (2013). A significant SupW* value rejects the null hypothesis of linearity, confirming the existence of a threshold effect. Standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ in square brackets.

descriptive statistics in Online Appendix Table A1 indicate that mean *GOV* is around 0.9 in AE, which might indicate that they have a high level of institutional saturation.⁶ This might limit the potential threshold effect of *GOV* in AE. The data-based estimated threshold values of *GOV* are almost 0.4 for the full sample and 0.6 for EMDEs. The Sargan test results strongly confirm the validity of the instruments.

According to the results in Column (1), the effect of *FD* on real income is positive but statistically insignificant in the low groups of countries with weak governance. However, this effect becomes statistically significant in the high groups of countries with better governance. This empirical finding may suggest that a one-standard-deviation increase in *FD* stimulates growth of 1.47 percent in economies with better institutions. The results in Column (3) show that *FD* is positively associated with real income in both groups, but the sensitivity of real income to *FD* is much higher in the high groups of countries with better governance. These results align with the findings by Fernandez and Tamayo (2017) and Law et al. (2018), which find that better governance strengthens the effectiveness of financial development on growth. The estimated coefficients for the rest of the variables are essentially the same as those in Tables 1 and 2.

3.4. Financialization and growth: dynamic panel quantile regression results

To check the robustness of dynamic panel threshold estimation results, we employ a dynamic panel quantile estimation method.⁷

⁶ We are grateful to an anonymous referee for pointing out this important aspect.

⁷ We are grateful to an anonymous referee for pointing out this important issue.

Dynamic panel quantile regression (QR) is employed to model heterogeneous dynamics across the entire conditional distribution of the dependent variable, which differentiates it from conventional mean-regression methods. The inclusion of a lagged dependent variable as well as fixed effects introduces dynamic bias to standard QR estimators which is analogous to the Nickell bias. To mitigate the bias, the dynamic panel QR incorporates instruments for the potentially endogenous variables. To do so, we use the first lag of the regressors as instruments and the *VIX* as an exogenous variable to estimate the following equation:

$$\ln(RGDPpc)_{it} = \alpha_i + \alpha_1 \ln(RGDPpc)_{i,t-1} + \alpha_2 FD_{it} + \alpha_3 HC_{it} + \alpha_4 \ln(vix)_t + \alpha_5 TRADE_{it} + \alpha_6 GOV_{it} + \alpha_7 IFI_{it} + u_{it} \quad (6)$$

Dynamic panel QR addresses the heterogeneity and explains the relationship between variables of interest conditional on the quantile of the dependent variable. [Koenker and Bassett Jr \(1978\)](#) estimate a QR by assigning asymmetric penalties to the quantiles and optimizing the equation based on the least absolute deviation. Consistent with conventional empirical studies, we estimate Equation (6) using the 25th, 50th, and 75th percentiles. These percentiles correspond to low-, middle-, and high-income countries, respectively.

[Table 4](#) presents the dynamic panel QR results of Equation (6), showing that the effect of financial development on growth varies with income levels. Financial development tends to reduce growth in high-income advanced countries (75th quantile). However, an increase in financial development leads to higher growth in low- and middle-income (25th and 50th quantiles, respectively) EMDE. *IFI* tends to reduce real income in the full sample and EMDE, but the estimated coefficients are almost the same in low-, middle- and high-income countries. The growth-enhancing effect of human capital is much higher in middle- and high-income EMDE. However, human capital tends to have a diminishing effect on income in middle- and high-income AE. Considering the descriptive statistics in [Online Appendix Table A1](#), this result might not be surprising, as these economies already have a highly educated labor force, and the additional contribution of human capital tends to decline with income because of diminishing returns. Trade openness tends to enhance real income in the full sample and EMDE. As in our earlier results, better governance and positive global financial conditions, proxied by a decline in the *VIX*, lead to higher income not only in AE but also in EMDE.

4. Concluding remarks and some policy implications

This study comprehensively investigates the relationship between financialization and economic growth in advanced (AE) and emerging market and developing economies (EMDE) during the period 1996-2021. Prior literature holds that the effect of domestic financialization on economic growth depends on the level of financial development ([Arcand et al., 2015](#); [Ruiz, 2018](#)) or the threshold effects of structural domestic conditions, such as international financial integration (IFI) ([Ahmed, 2016](#); [Chinn & Ito, 2002](#)) and governance ([Law et al., 2018](#)). Prior papers often introduce nonlinearity to the investigated relationship, by using interactions or ad hoc sample splitting, however, we address it using a dynamic panel threshold estimation method ([Kremer et al., 2013](#)), which enables the estimation of thresholds based on a data-driven procedure.

Most of the literature often focuses on the domestic side of financialization to explain its effect on growth and ignores the international side of financialization, proxied by IFI. [Epstein 2005](#), p. 3) defines financialization as “the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies.” [The World Bank \(2025\)](#) and the International Monetary Fund ([IMF 2025](#)) emphasize the importance of institutional quality, political stability, financial openness, and financial development in fostering innovation and stimulating private investment and growth. This paper employs a dynamic panel threshold procedure to estimate the endogenous threshold levels of domestic financialization, proxied by financial development (FD), international financialization, proxied by IFI, and institutional quality and governance (GOV), which affect the relationship between FD and growth in AE and EMDE.

Our empirical results show that financial development promotes economic growth, but the growth-enhancing effect of financial development diminishes in more financially developed EMDE economies. This is consistent with the findings by [Fung \(2009\)](#), which indicate that the relationship between financial development and economic growth is much stronger in economies in the early stages of economic development. In contrast to EMDE, in AE, whose financial development is more mature, excessive financial development appears to hinder growth, which evinces the effects of excessive financial development. This finding lends empirical support to [Hassan et al. \(2011\)](#), indicating that financial development impedes growth in high-income countries.

Table 4
Dynamic panel quantile regression.

	Whole sample			AE			EMDE		
	25th	50th	75th	25th	50th	75th	25th	50th	75th
<i>IFI_{it}</i>	−0.001* (0.000)	−0.001*** (0.000)	−0.001** (0.000)	0.031 (0.027)	0.021 (0.026)	0.103 (0.112)	−0.010*** (0.002)	−0.010*** (0.002)	−0.008*** (0.002)
<i>HC_{it}</i>	0.008*** (0.002)	0.012*** (0.002)	0.013*** (0.002)	−0.004 (0.004)	−0.009*** (0.003)	−0.014*** (0.005)	0.009*** (0.003)	0.016*** (0.002)	0.019*** (0.003)
<i>TRADE_{it}</i>	0.018*** (0.005)	0.022*** (0.004)	0.024*** (0.005)	−0.021 (0.014)	−0.013 (0.009)	−0.014 (0.025)	0.031*** (0.007)	0.022*** (0.006)	0.013* (0.008)
<i>FD_{it}</i>	0.006 (0.006)	−0.005 (0.004)	−0.015** (0.006)	−0.016 (0.012)	−0.015 (0.010)	−0.024*** (0.002)	0.012* (0.007)	0.013* (0.007)	0.009 (0.009)
<i>GOV_{it}</i>	0.0230*** (0.007)	0.0144** (0.006)	−0.003 (0.009)	0.059*** (0.021)	0.053*** (0.013)	0.061*** (0.014)	0.033*** (0.009)	0.028*** (0.008)	0.017* (0.009)
$\ln(vix_t)$	−0.017*** (0.002)	−0.008*** (0.002)	−0.003 (0.002)	−0.017*** (0.006)	−0.009*** (0.003)	−0.001 (0.003)	−0.019*** (0.003)	−0.012*** (0.002)	−0.007*** (0.003)
$\ln(RGDPpc_{i,t-1})$	0.991*** (0.002)	0.991*** (0.001)	0.993*** (0.002)	0.993*** (0.005)	0.992*** (0.004)	0.992*** (0.006)	0.992*** (0.002)	0.990*** (0.002)	0.991*** (0.002)
Constant	0.092*** (0.011)	0.078*** (0.009)	0.068*** (0.014)	0.115*** (0.039)	0.127*** (0.034)	0.128*** (0.043)	0.086*** (0.013)	0.093*** (0.011)	0.086*** (0.014)
# of observations	2139	2139	2139	529	529	529	1610	1610	1610
# of countries	93	93	93	23	23	23	70	70	70
Wald test [p-value]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Robust standard errors are in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1.

Overall, these findings demonstrate the nonlinear and context-dependent nature of the finance-growth nexus, which shows that the benefits of financial development are more likely to materialize at earlier stages of economic development, whereas excessive financial deepening in more advanced economies can distort resource allocation and hinder sustainable growth.

However, the threshold effect of IFI suggests that a different mechanism is at play. Domestic financialization promotes growth in less financially integrated EMDE but hinders growth in more financially integrated AE. Furthermore, our results also show that EMDE experience the threshold effect of governance. Accordingly, the growth-enhancing effect of FD is much stronger in EMDE with better institutions. This result is consistent with the findings by Law et al. (2018), which indicate that the growth-enhancing effect of financial development prevails in economies with higher institutional quality. Claessens and Laeven (2003) explain the main driving mechanism of this result by maintaining that a low level of financial development and weak property rights mitigate firms' access to external finance and suboptimal allocation of resources.

These empirical results indicate that the beneficial effect of financial development might depend on the levels of domestic and international financialization as well as governance. In EMDE, where institutions are still evolving, strengthening governance, improving regulatory quality, and enhancing policy credibility are crucial for reaping the growth benefits of financial development. In addition, managing exposure to volatile international capital flows through gradual and well-sequenced integration policies may help to avoid the destabilizing effects of premature financial globalization. In AE, where financial development is already at a higher level and more financially integrated, policies should address the negative effects on growth from excessive financialization. This could involve focusing on enhancing the resilience of financial system through macroprudential policies and measures that promote the allocation of financial resources to productive activities.

Our findings indicate that financial development is a powerful tool for promoting growth, but its impact is conditional on a country's structural domestic conditions and stage of domestic financialization. Instead of bank or stock-based measures of financial development that capture only a single component of the financial system, we use a composite financial development index that includes information on the depth, efficiency, and access of both financial institutions and markets. Examining whether the threshold effect of financial development remains robust to the use of bank or market-based indicators, however, represents a promising avenue for future research. Furthermore, examining whether the threshold effect of IFI regarding the sensitivity of economic growth to financial development differs across the main components of IFI is a promising avenue for future studies. A one-size-fits-all approach to financial sector reform is unlikely to yield optimal outcomes. Instead, tailored strategies that strengthen institutions and govern financial openness appropriately are crucially important for maximizing the growth benefits of domestic financialization. In this context, managed capital controls, encouraging long-term capital inflows, such as foreign direct investment, while discouraging short-term speculative capital inflows (i.e., hot money), could enhance resilience to capital-flow volatility. Complementary measures, including the development of domestic capital markets, the use of countercyclical macroprudential tools, and coordination between monetary and fiscal policies, can further strengthen financial stability. This kind of balanced policy mix enables economies to benefit from financial openness while mitigating the destabilizing effects of abrupt reversals in global liquidity conditions.

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Appendix A. Supplementary data

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