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Research Article

DOES FINANCIAL DEVELOPMENT WIDEN OR REDUCE INCOME INEQUALITY? EVIDENCE FROM DEVELOPED AND DEVELOPING COUNTRIES

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ABSTRACT

Background: The financial sector has grown rapidly over the past two decades, yet income inequality remains an unresolved issue. This phenomenon raises important questions about the role of financial sector development in shaping inequality, especially given the mixed findings in existing literature depending on the proxies of financial development used.
Purpose: This study aims to analyze the relationship between financial sector development and income inequality by comparing developed and developing countries, while incorporating different dimensions of financial development.
Design/methodology/approach: The study uses panel data from 44 countries (both developed and developing) over the period 1980–2021. The financial sector is classified into financial institutions and financial markets, and further decomposed into three dimensions: depth, access, and efficiency. The analysis is conducted using a Fixed Effects Model (FEM) regression.
Findings/Result: The results show that in developing countries, the relationship between financial development and inequality follows an inverted U-shaped pattern, where financial development initially increases inequality but eventually reduces it as financial access becomes more inclusive. In contrast, in developed countries, the relationship is positively linear, indicating that financial development tends to increase inequality due to the concentration of financial depth and access among wealthier groups.
Conclusion: Financial sector development affects income inequality differently across levels of economic development. While it has the potential to reduce inequality in developing countries at later stages, it may exacerbate inequality in developed countries if financial benefits are not distributed more equitably.
Originality/value (State of the art): This study contributes to the literature by providing a comparative analysis between developed and developing countries using a multidimensional approach to financial development (depth, access, and efficiency), offering deeper insights into how different aspects of the financial sector influence income inequality.

ARTICLE INFO

Keywords:
income inequality, panel data, financial development, developing countries, financial sector

How to Cite: Nissi, T., Achsani, N. A., Hasanah, H., & Ramadanti, A. (2026). Does financial development widen or reduce income inequality? Evidence from developed and developing countries. *AI, Big Data and Quantitative Methods in Finance,* 1(1), 52.

INTRODUCTION

Income inequality refers to the disproportionate distribution of national income across households (Todaro & Smith, 2015), reflecting persistent disparities in economic opportunities and outcomes. Despite global commitments such as the Sustainable Development Goals adopted by the United Nations in 2015 (Bappenas, 2017), particularly Goal 10 on reducing inequality, income inequality remains a critical global challenge. Wealth concentration is increasingly pronounced, with the top one percent controlling a large share of global assets (Riddell et al. 2024), and global inequality levels approaching those observed in highly unequal economies (World Inequality Database [WID], 2024).

Global income inequality has reached a critical level. One clear indicator is the extreme concentration of wealth, where the top 1% holds a disproportionate share of global assets. According to Riddell et al. (2024) in the Oxfam 2024 report, the richest 1% owns 59% of total global financial assets. This pattern is also evident across regions: in the Middle East, the top 1% controls 72% of national wealth, while in Asia and Europe they hold 58% and 56%, respectively. Data from the World Inequality Database (WID) further show that global income inequality reached 53.5% in 2020 (Figure 1), approaching the level of South Africa (65.4%), a country with one of the highest levels of inequality in the world. This suggests that the global economy is increasingly converging toward highly stratified societies.

Income inequality affects both developed and developing countries, although its magnitude and underlying challenges differ (Organisation for Economic Co-operation and Development [OECD], 2008, 2015). Advanced economies generally benefit from stronger institutions and more comprehensive social protection systems, while developing countries face structural constraints such as limited access to education, weaker labor market regulations, and less inclusive economic policies. The consequences of rising inequality are substantial, including slower economic growth, political and social instability, and unequal access to essential services such as education and healthcare (Dabla-Norris et al. 2015; Ruhana et al. 2024; Zoghi, 2024).

The determinants of inequality can be broadly classified into structural factors, including globalization and technological change (Polacko, 2021), and institutional factors, such as public debt, financial liberalization, and governance quality (Konstantinou et al. 2023; Nguyen, 2024; Saci, 2024). Financial sector development has been widely recognized as a potential mechanism to promote inclusive growth. By enhancing access to financial services, improving resource allocation, and facilitating investment, financial development may contribute to reducing inequality (Kulinich, 2024; Levine, 2021). It is commonly assessed through several dimensions, namely depth, access, and efficiency, across financial institutions and financial markets (Ito & Kawai, 2018).

However, the relationship between financial development and income inequality remains theoretically and empirically ambiguous. On the one hand, improved financial access can enable lower income groups to invest in human capital and productive activities, thereby reducing inequality (Demirgüç-Kunt & Levine, 2009; Galor & Moav, 2004; Weychert, 2020). On the other hand, unequal access to financial systems may allow wealthier individuals to capture disproportionate benefits, which can exacerbate inequality (Greenwood & Jovanovic, 1990; Rajan & Zingales, 2003). Empirical findings vary depending on the proxies and methodologies used (Beck et al. 2007; De Haan & Sturm, 2017; Zhang & Naceur, 2019).

Figure 1. Global Income Inequality, 2000–2021

Moreover, the relationship may be nonlinear. Some studies suggest that financial development initially increases inequality before reducing it as access becomes more widespread (Greenwood & Jovanovic, 1990). Other studies propose a U-shaped relationship, where inequality declines at early stages but rises again beyond a certain threshold (Brei et al. 2023; Park & Shin, 2017; Tan & Law, 2012). These mixed findings indicate that the impact of financial development is context specific and influenced by country characteristics.

Therefore, this study aims to examine the effects of financial sector development across its key dimensions and categories on income inequality in both developed and developing countries, providing a more comprehensive understanding of this complex relationship.

METHODS

This study uses secondary data obtained from the International Monetary Fund and the World Inequality Database. The dataset is a panel combining time series data from 1980 to 2021 and cross-sectional data for 48 countries. Countries are classified into developed and developing groups (Table 1) based on the World Bank income classification (World Bank, 2025).

Income inequality is measured using the post tax Gini index, which captures inequality after taxes and transfers and is widely used to reflect redistributive effects. Financial development is measured across multiple dimensions, including financial institutions and financial markets, as well as their depth, access, and efficiency. Control variables include gross domestic product, trade openness, and government expenditure, obtained from the World Development Indicators. Data processing and analysis are conducted using STATA 15, with Microsoft Excel used for preliminary processing and visualization.

The analysis employs static panel data regression to estimate the impact of financial development on income inequality. The general panel model incorporates individual and time effects. Model estimation considers pooled least squares, fixed effects, and random effects approaches. Model selection is conducted using the Chow test, Hausman test, and Lagrange multiplier test. Classical assumption tests are applied when required to ensure unbiased and efficient estimates (Gujarati, 2003; Greene, 2003; Juanda, 2009).

In line with Kuznets (1955), this study considers both linear and nonlinear relationships between financial sector development and income inequality. The nonlinear relationship is captured by including the squared term of financial sector development. The study classifies 48 countries based on their economic status into developed and developing groups, using a dummy variable (D) interacted with financial sector development. The model adopts and modifies approaches from Nguyen et al. (2019), Mbona (2022), and Huynh and Tran (2023) to fit the context of this research. The model specification can be formulated as follows:

$$Gini_{it} = \alpha_0 + \beta_1 FD_{it} + \beta_2 FD_{it}D_{it} + \beta_3 FD^2_{it} + \beta_4 FD^2_{it}D_{it} + \beta_5 LGDP_{it} + \beta_6 LTR_{it} + \beta_7 LGOV_{it} + \varepsilon_{it}$$

In this equation, financial development is proxied by several indicators, including the aggregate financial development index and its components, namely financial institutions, financial markets, financial institutions depth, financial markets depth, financial institutions efficiency, financial markets efficiency, financial institutions access, and financial markets access. All variables are defined operationally to reflect financial development across institutions and markets, including indicators of depth, access, and efficiency, along with macroeconomic controls such as income, trade, and government expenditure. The Table 2 presents the component of financial development.

The hypotheses tested include inequality widening,

Table 1. Classification of Countries

Category	GNI percapita (US$)	Group
Low income	≤ $1145	Developing countries
Lower middle income	$1146 - $4515	
Upper middle income	$4516-$14005	
High income	>$14005	Developed countries

Table 2. Financial development indicators

Variables	Operational Definition	Components
Financial Institution depth	A measure of the capacity of financial institutions to provide funding to the real sector.	Private-sector credit (% of GDP)
		Pension fund assets (% of GDP)
		Mutual fund assets (% of GDP)
		Insurance premiums, life and non-life (% of GDP)
Financial markets depth	A measure of the size and liquidity of financial markets	Stock market capitalization to GDP
		Stocks traded to GDP
		International debt securities government
		Total debt securities of nonfinancial corporations
Financial institution efficiency	A measure of the effectiveness of financial institutions in performing their intermediation function	Net interest margin
		Lending-deposit spread
		Non-interest income to total income
		Overhead costs to total assets
		Return on assets
		Return on equity
Financial markets efficiency	A measure of the efficiency of capital markets in allocating funds	Stock market turnover ratio (stocks traded/ capitalization)
Financial institutions access	A measure of the accessibility of financial institution services to the public	Branches (commercial banks per 100.000 adults ATMs per 100.000 adults
Financial markets access	A measure of accessibility to and participation in financial markets	Total debt securities of financial corporations
		Percent of market capitalization outside of top 10 largest companies
		Total number of issuers of debt (domestic and external, nonfinancial corporations, and financial corporations)

inequality narrowing, and inverted U-shaped relationships. The inequality-widening hypothesis of financial development is supported when $\beta_1 + \beta_2$ and $\beta_3 + \beta_4 > 0$, while the inequality-narrowing hypothesis is supported when $\beta_1 + \beta_2$ and $\beta_3 + \beta_4 < 0$, and the inverted U-shaped hypothesis is supported when $\beta_1 + \beta_2 > 0$ and $\beta_3 + \beta_4 < 0$, indicating that financial development initially increases inequality but reduces it after passing a turning point. This turning point is derived analytically from the first derivative of the quadratic function with respect to financial development. The calculation follows Moosa (2016) and is specified as follows:

$$\text{Turning point} = -(\beta_1 / 2\beta_2)$$

RESULTS

Overall financial sector development, as shown in Figure 2, indicates that developing countries tend to dominate quadrant II, where financial development is low and income inequality is high. This suggests that developing countries face a dual challenge of high inequality and an underdeveloped financial sector (UNDP, 2013; Alvaredo & Gasparini, 2015; Le Fort, 1989). These weaknesses stem from poor governance in financial institutions and markets, including high corruption, weak accountability, and limited transparency, which undermine the effectiveness of financial services and hinder investment (Batten et al. 2015). In addition, inadequate infrastructure such as unreliable telecommunications and transport networks further constrains the delivery of financial services, particularly in rural areas (Dinh et al. 2010).

In contrast, developed countries tend to dominate quadrant IV, which represents a more ideal condition with more advanced financial sector development and relatively low income inequality. Quadrant I reflects advanced financial sectors but persistent inequality, as seen in Singapore, Israel, Thailand, and Malaysia. Meanwhile, quadrant III represents a less favorable condition where financial development remains relatively low and inequality is high, as observed in Malta and Cyprus.

When financial sector development is disaggregated into financial institutions and financial markets aspect as shown in Figure 3, the pattern reveals a clear contrast between developed and developing countries in terms of financial development and income inequality. For financial institutions, most developed countries are located in quadrant IV, reflecting well developed institutions with relatively low income inequality. This is driven by strong regulatory frameworks and effective governance that promote stability and trust in the financial sector (Lisbinski and Burnquist, 2024). Countries such as Sweden, Denmark, Norway, and Finland exemplify this condition.

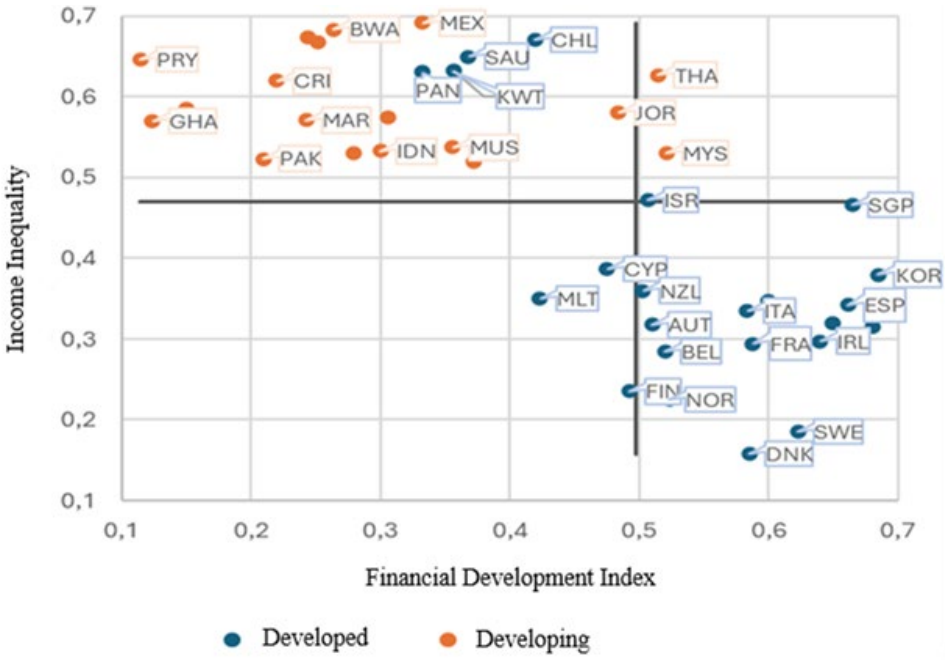

Figure 2. Scatter plot of aggregate financial sector development and income inequality

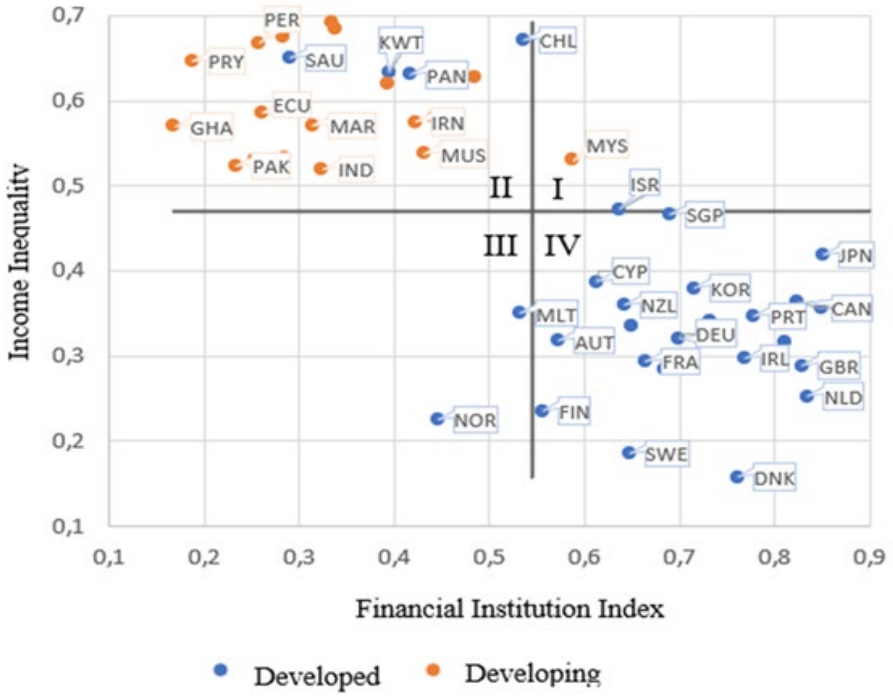

Figure 3. Scatter plot of financial institution index and income inequality

In contrast, most developing countries are concentrated in quadrant II, indicating weak financial institution development alongside high income inequality. This is largely due to poor regulatory quality, weak corruption control, and fragile institutions that fail to provide a stable environment for financial inclusion (Perugini and Tekin, 2022; Kumar and Jie, 2023; Nessa and Khan, 2020).

Meanwhile, the relationship between inequality and financial markets as shown in Figure 4 displays a more dispersed pattern. While some developed countries remain in the ideal position in quadrant IV such as Sweden and Denmark, several developing countries including Thailand, Saudi Arabia, and Jordan exhibit relatively developed financial markets but still face high income inequality in quadrant I.

In Thailand, the bond market was underdeveloped prior to the 1997 Asian financial crisis due to the absence of a risk-free benchmark from government bonds, which hindered corporate bond pricing (Chabchitrchaidol and Permpoon, 2002). Although the market has developed since the crisis, challenges such as limited financial intermediation and the dominance of commercial banks persist (Vichyanond, 2002). In Jordan, financial markets remain relatively underdeveloped with limited access to credit for small firms and households. Weak intermediation and the prevalence of informal financial practices continue to constrain economic growth and exacerbate inequality (Syadullah et al. 2019).

Following the descriptive analysis, this study proceeds to panel data estimation to identify the most appropriate model and examine the relationship between financial development and income inequality. All necessary tests, including panel data stationarity, classical assumptions, and cross sectional dependence, have been performed, and the results confirm that the model meets the requirements. After conducting tests to determine the best panel model, the Chow and Hausman test results indicate that the Fixed Effects Model is the most appropriate. Error terms are corrected using Panel Corrected Standard Errors (PCSE) to account for heteroskedasticity and cross sectional dependence.

The estimation results in Table 3 (row 1) show that aggregate financial development has a significant nonlinear effect on income inequality in developing countries. The positive linear coefficient of 0.12 indicates that at the early stage a 1 percent increase in financial development raises inequality, while the negative quadratic coefficient of −0.19 implies that at later stages it reduces inequality. This confirms an inverted U-shaped relationship with a turning point around 0.32, after which financial development becomes inequality reducing.

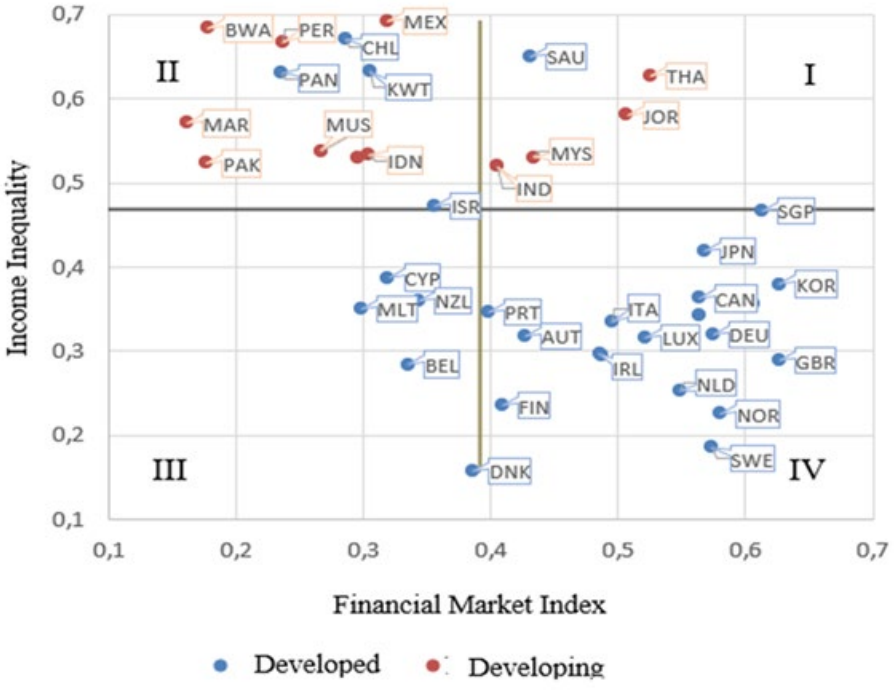

Figure 4. Scatter plot of financial market index and income inequality

Table 3. Estimation results

Financial Development Indicator	Dependent variable: Gini Ratio					
	β_1	β_2	β_3	β_4	R_2	Prob>chi
Financial Development Index (Aggregate)	0.12[c]	-0.12[c]	-0.19[c]	0.25[c]	0.97	0.00
Financial Institution	0.12[c]	-0.10[c]	-0.18[c]	0.19[c]	0.97	0.00
Financial Markets	0.06[c]	-0.04[c]	-0.10[c]	0.14[c]	0.97	0.00
Financial Institution Depth	0.02	-0.06[c]	-0.07[c]	0.15[c]	0.97	0.00
Financial Institution Efficiency	-0.13[c]	-0.03[b]	0.13[c]	0.08[c]	0.97	0.00
Financial Institutions Access	-0.04	-0.01	-0.35	0.55[a]	0.97	0.00
Financial Market Depth	0.04[b]	-0.01	-0.05[b]	0.07[c]	0.97	0.00
Financial Market Efficiency	0.02	0.02	-0.03[a]	0.02	0.97	0.00
Financial Markets Access.	0.08[c]	-0.02	-0.11[c]	0.09[c]	0.97	0.00

Note: a, b, c are significant at the 10%, 5%, and 1% significance levels, respectively.

This pattern reflects structural constraints in developing countries, where incomplete financial systems and limited access hinder inclusive intermediation (Mertzanis, 2019; Aleke, 2024). Early benefits of financial development tend to accrue to higher income groups, while financial markets face infrastructure and regulatory limitations. As systems mature, broader access and more diversified investment improve productivity and allow benefits to be more evenly distributed, reducing inequality, consistent with Greenwood and Jovanovic (1990) and related empirical studies (Sharma & Dahiya, 2020; Linh, 2021; Abbas et al. 2022; Vo et al. 2023).

In contrast, the effects differ in developed countries. The linear impact becomes negligible, but the positive quadratic effect indicates that at advanced stages financial development increases inequality. This reflects highly developed and market driven financial systems that disproportionately benefit capital owners, consistent with the inequality widening hypothesis (Rajan & Zingales, 2003). Without sufficient competition and inclusiveness, financial development tends to concentrate economic power (Rajan & Zingales, 1990), highlighting the need for policies that promote broader access and a more equitable distribution of financial benefits.

The results in Table 3 (row 2) for developing countries show that financial institutions exhibit a nonlinear inverted U-shaped relationship with income inequality. The linear coefficient is positive and significant at 0.12, while the quadratic term is negative and significant at −0.18, indicating that financial development initially increases inequality but reduces it after a turning point at an index level of 0.33. This pattern reflects the interaction of efficiency, depth, and access. Improvements in efficiency reduce costs and enhance profitability, but limited depth and unequal access constrain inclusive benefits, so early gains are captured mainly by higher income groups. As financial systems deepen over time, credit allocation expands toward more productive and underserved sectors, allowing broader distributional benefits and reducing inequality.

In developed countries, the interaction terms indicate a different pattern. The combined linear and quadratic effects remain positive, implying that financial institution development increases inequality, although at a smaller magnitude. At early stages, strong social protection systems and established financial services can mitigate inequality through productive credit and basic financial access. However, as financial systems become more advanced, their benefits are increasingly concentrated among wealthier groups who possess greater assets, information, and financial literacy, consistent with the inequality widening hypothesis (Rajan and Zingales 2003).

At more advanced stages, deeper and more efficient financial systems in developed countries tend to intensify inequality through commercialization and specialization. Complex financial products and high value services are primarily accessible to higher income groups, while lower income groups rely on limited and often less productive financial services. Despite overall improvements in efficiency and access, the distribution of benefits remains uneven. These findings suggest that without inclusive policies, financial institution development in developed countries reinforces inequality, highlighting the need for stronger regulation, broader access, and more equitable financial inclusion strategies.

The results in row 3 (Table 3) shows that financial market development has a significant nonlinear effect on income inequality, forming an inverted U-shaped relationship. The linear coefficient of 0.06 indicates that at the early stage a 1 percent increase in financial market development raises inequality by 0.06 percent, while the quadratic term of −0.10 implies that at a later stage it reduces inequality, with a turning point at 0.30. This pattern reflects the roles of market depth, efficiency, and access. In developing countries, early stage expansion of depth and access tends to benefit large firms and economic elites, while efficiency remains limited, resulting in higher inequality. As market infrastructure and regulation improve, broader participation and more inclusive financing begin to reduce inequality.

In developed countries, the interaction terms indicate a different pattern where the overall effect of financial market development remains positive, meaning it increases inequality. Market depth consistently raises inequality as gains from dividends and capital income are concentrated among wealthier groups. While efficiency and access can help reduce inequality at later stages by lowering transaction costs and expanding participation, their effects are not strong enough to offset the concentration effects of market depth. As a result, financial market development in advanced economies tends to reinforce inequality despite improvements in efficiency and access.

The results show that the impact of financial sector development on inequality is determined by the dimensions of efficiency, depth, and access (see row 4 – 6 in Table 3). In developing countries, efficiency improves, leading to lower costs and higher profitability, which has the potential to reduce inequality, but the effect is not yet optimal because depth and access remain limited. Increasing depth has not been redistributive, as credit flows more to the formal sector, while access remains narrow and has not reached vulnerable groups, so in the early stage inequality tends to increase. At a more advanced stage, depth begins to act as a balancing factor by expanding financing to productive sectors and previously underserved groups, thereby reducing inequality, although efficiency that is not accompanied by inclusion still has the potential to be exclusive. In developed countries, although efficiency and depth are high and access is generally widespread, the benefits are more concentrated among high income groups because depth and efficiency drive the emergence of complex and relatively exclusive financial products, while existing access is not fully inclusive in quality, so these three dimensions ultimately contribute to widening inequality, especially at more advanced stages when the financial sector becomes increasingly commercialized and segmented.

The findings also indicate that the impact of financial market development on inequality is strongly determined by the dimensions of depth, efficiency, and access, with different patterns between the early and advanced stages (see row 7 – 9 in Table 3). In developing countries, depth and access in the early stage tend to increase inequality because market activity and financing remain concentrated among large firms and elite groups, while efficiency does not yet play a significant role. However, as infrastructure and more inclusive regulations develop, depth begins to channel financing toward productive sectors, efficiency reduces costs and improves transparency, and access becomes broader, leading to a decline in inequality at the advanced stage. In contrast, in developed countries, depth consistently increases inequality because asset ownership and market gains are concentrated among high income groups, while efficiency and access at later stages do help reduce inequality through lower costs and wider participation, but their effects are not strong enough to offset the impact of depth, so overall inequality continues to rise.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

First, income inequality and financial sector development differ significantly between developed and developing countries. Financial development, including financial institutions, financial markets, and their dimensions, is higher in developed countries, which also exhibit lower levels of inequality. Second, the impact of financial development varies across country groups. In developing countries, financial institutions and markets initially increase inequality due to non-inclusive depth, efficiency, and access, but at later stages these dimensions become more inclusive and help reduce inequality. In contrast, in developed countries, financial development tends to increase inequality as depth and access remain concentrated among higher income groups.

Recommendations

In terms of policy implications, developing countries need to adopt more inclusive financial development strategies, particularly in early stages. This requires not only improving efficiency but also strengthening depth and expanding access through greater credit allocation to productive sectors, broader financial services both physically and digitally, lower transaction costs, improved transparency, and enhanced financial literacy.

For developed countries, corrective policies are needed to ensure a more equitable distribution of financial sector benefits. This includes governance reforms, stronger incentives for financial inclusion, and measures to limit the dominance of wealthy groups in accessing financial institutions and markets. Future research should expand the analysis by considering regional differences and financial system types, and apply more advanced approaches such as nonlinear panel threshold models or causal methods to better identify the turning points in the relationship between financial development and inequality.

FUNDING STATEMENT: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

CONFLICTS OF INTEREST: The authors declare no conflict of interest.

DECLARATION OF GENERATIVE AI STATEMENT: During the preparation of this work the authors used ChatGPT in order to check grammar and polish text. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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