

Financial Inclusion and Income Inequality: A Panel Data Analysis of 29 Countries (2011–2022)

Bouhriz Daïdj Feriel

Maitre de conference A , Faculté SEGC , université de Mostagnem(Algeria), Email : feriel.bouhrizdaïdj@univ-mosta.dz ORCID : <https://orcid.org/0009-0002-6028-0430>

Zitouni Sabrine

Maitre de conference A , Faculté SEGC , université de Mostagnem(Algeria), Email : sabrine.zitouni@univ-mosta.dz ORCID : <https://orcid.org/0009-0007-4352-6976>

Ould Hennia Hadjer

Maitre de conference A , Faculté SEGC , université de Relizane (Algeria), Email : hadjer.ouldhennia@univ-relizane.dz ORCID : <https://orcid.org/0009-0001-5313-4868>

Bekihal Cherif

PhD, Faculté d'économie, université d'Oran2 (Algeria), Email : cbekihel@gmail.com , ORCID : <http://orcid.org/0009-0005-4402-2791>

Soumission : 18/01/2026

Acceptation: 12/09/2026

Publication : 10/10/2026

Abstract

This article examines the effect of financial inclusion on income inequality using a panel of 29 countries observed over the period 2011–2022. By employing fixed-effects and random-effects estimations, as well as a model incorporating an interaction between financial inclusion and the level of development, the results show that greater access to financial accounts is significantly associated with a reduction in inequality, as measured by the Gini index. However, this effect is heterogeneous: it is significant and robust in developing countries, but not statistically significant in more advanced economies, where other institutional, technological, and usage-related determinants appear to play a more prominent role. The control variables confirm the inequality-increasing effects of unemployment and inflation, as well as the potentially inequality-reducing role of public expenditure. These findings are discussed in light of the major economic transformations that took place during the period, including the expansion of mobile money, the COVID-19 pandemic, post-pandemic inflationary pressures, and emergency fiscal policies.

Keywords: financial inclusion, income inequality, Gini index, panel data, random effects, mobile money, COVID-19

JEL Classification: D31, G21, G28, C23

1. Introduction

Income inequality remains one of the most persistent challenges facing contemporary economic development. Despite several decades of global growth, income disparities remain high in many regions and tend to widen during major economic shocks. In this context, financial inclusion, defined as access to and use of formal financial services by the entire population, is now recognized as a potentially important lever for reducing inequality and improving the well-being of the most vulnerable households (Demirgüç-Kunt et al., 2022).

The period 2011–2022 is particularly relevant for examining this relationship. It was marked by two contradictory dynamics: on the one hand, a historic expansion of financial inclusion, driven by the digitalization of banking services, the rise of mobile money, and active financial inclusion policies in many countries; on the other hand, a series of economic shocks that weakened low-income households, particularly the COVID-19 pandemic, rising unemployment, and the inflationary pressures that followed post-pandemic imbalances. Analyzing these two forces simultaneously makes it possible to determine the extent to which financial inclusion can offset the inequality-increasing effects of macroeconomic shocks.

The existing empirical literature yields mixed findings. Several studies confirm the inequality-reducing effect of financial inclusion, but emphasize that this effect depends heavily on the institutional context, the level of development, and households' ability to make effective use of available services (Omar & Inaba, 2020). These studies have often focused on periods prior to 2019, geographically limited areas, or analyses that do not account for the heterogeneity of effects across countries at different levels of development.

This article makes three contributions to this literature. First, it updates the analysis by covering a recent period (2011–2022) that encompasses both the expansion of digital financial inclusion and the major macroeconomic shocks affecting the countries in the sample. Second, it explicitly incorporates the dimension of heterogeneity through an interaction variable between financial inclusion and development status (FI_DEV), complemented by estimations using subsamples. Third, it provides an interpretation of the econometric results grounded in the actual economic transformations that occurred during the period, thereby strengthening the analytical and policy implications of the findings.

The article is organized as follows. Section 2 provides a review of the literature. Section 3 describes the data and variables. Section 4 presents the econometric methodology. Section 5 presents and interprets the main results. Section 6 discusses the robustness tests and limitations of the study. Section 7 provides an economic perspective on the findings. Section 8 concludes the article.

2. Literature Review

2.1. Financial Inclusion and Inequality Reduction

The hypothesis that financial inclusion reduces inequality is based on several theoretical mechanisms. Access to financial services enables low-income households to secure their savings, receive transfers, access productive credit, and reduce their dependence on informal systems, which are often more costly. These mechanisms can enhance their ability to invest, smooth consumption in the face of shocks, and access economic opportunities that were previously unavailable to them (Demirgüç-Kunt et al., 2022).

Empirically, several studies support this hypothesis. Research focusing on developing countries shows that economies with higher levels of financial inclusion exhibit significantly lower poverty rates and less income inequality. In Latin American countries, the combination of financial inclusion and technological adoption is associated with simultaneous reductions in poverty and the Gini index. In the MENA region, expanding access to formal financial accounts has been identified as a factor conducive to more inclusive growth. In sub-Saharan Africa, the expansion of mobile money has contributed to rapidly broadening access to financial accounts, with documented effects on reducing income inequality.

2.2. Heterogeneity in the Relationship and the Role of Context

The literature nevertheless emphasizes that the relationship between financial inclusion and inequality is not uniform. Its effects depend, first, on countries' levels of development. In low-income economies, opening a first financial account can represent a major economic change for excluded households, whereas in advanced economies, where formal access is already widespread (Jamil et al., 2024), other dimensions—such as the quality of financial service usage, access to credit, and institutional conditions—determine the distributive effects. This distinction is fundamental to understanding why empirical findings vary considerably across samples.

Institutional quality is also identified as an important moderating factor. Strong institutions, appropriate financial regulation, and an environment conducive to competition reinforce the distributive effects of financial inclusion. Conversely, high levels of corruption, weak governance, or inadequate regulation may limit the extent to which financial access translates into genuine economic opportunities. Several recent studies also emphasize the role of the digital dimension: financial inclusion based on mobile and digital technologies appears to produce different, and often faster, effects than inclusion through traditional banking, particularly in rural areas or regions with limited banking infrastructure.

2.3. Positioning of the Article

Compared with the existing literature, this article differs in three respects. First, it covers a more recent and comprehensive period (2011–2022), encompassing developments overlooked by earlier studies, particularly the effects of COVID-19 on labor markets and inequality, as well as post-pandemic inflationary shocks. Second, it explicitly incorporates heterogeneity according to the level of development, both through an interaction specification and through separate estimations for subsamples. Finally, it seeks to establish a dialogue between the econometric findings and the stylized economic facts of the period, thereby enriching the interpretation of the coefficients beyond their statistical significance.

3. Data and Variables

3.1. Sample

The analysis is based on a balanced panel of 29 countries observed over the period 2011–2022. After accounting for missing values, which are common in international comparative panels, the effective sample comprises 328 observations, corresponding to an average coverage of approximately 11.3 years per country. The sample includes countries at different levels of development, making it possible to analyze the heterogeneity of effects according to this criterion.

3.2. Dependent Variable

The dependent variable is the Gini index (GINI), a standard measure of income inequality. This index ranges from 0 (perfect equality) to 100 (maximum inequality). Its main advantage is its availability for a large number of countries, allowing for international comparisons.

3.3. Financial Inclusion Variables

The main financial inclusion variable is **ACCOUNT_FAS**, which measures the share of the adult population holding an account with a formal financial institution or a mobile money service. It is sourced from the International Monetary Fund's Financial Access Survey (FAS) database. An interaction variable, denoted **FI_DEV**, is constructed as the product of the composite financial inclusion index (**FI_INDEX**) and the binary development variable (**DEV**): $FI_DEV_{it} = FI_INDEX_{it} \times DEV_{it}$. This variable makes it possible to examine whether the association between multidimensional financial inclusion and inequality differs according to the level of development. The sample also includes **FI_INDEX**, **ACCOUNT_FININDEX**, **SAVED_FININDEX**, and **BORROWED_FININDEX**, derived from the World Bank's Global Findex database and used as alternative indicators.

3.4. Control Variables

The model includes the following macroeconomic control variables:

- **LGDP_PC**: logarithm of GDP per capita, controlling for the level of economic development
- **GROWTH**: real GDP growth rate, capturing the dynamics of economic activity
- **UNEMP**: unemployment rate, reflecting labor market pressures
- **INFLATION**: annual inflation rate, measuring pressures on purchasing power
- **TRADE**: trade openness (exports + imports as a percentage of GDP)
- **GOV_EXP**: government expenditure as a percentage of GDP, capturing the state's potential redistributive role
- **URBAN**: urbanization rate
- **EDUC**: indicator of educational attainment

These variables are sourced from the World Bank's World Development Indicators (WDI) database. The complete dataset covers the period 2011–2022.

4. Econometric Methodology

4.1. Baseline Specification

The study employs a panel data approach to simultaneously exploit cross-sectional variability (between countries) and temporal variability (over the period 2011–2022). The baseline model is specified as follows:

$$GINI_{it} = \alpha + \beta_1 ACCOUNT_FAS_{it} + \sum_{k=2}^K \beta_k X_{kit} + u_i + \varepsilon_{it}$$

where X_{kit} denotes the set of control variables, u_i represents the country-specific individual effect, and ε_{it} is the idiosyncratic error term.

4.2. Choice of Estimator

Two main estimators are considered: the fixed-effects (FE) model, which controls for all unobserved individual heterogeneity that remains constant over time, and the random-effects (RE) model, which allows the effects of time-invariant or nearly time-invariant variables to be estimated and yields more efficient estimates when the orthogonality assumption holds. The Hausman test is used to guide this choice. It fails to reject the null hypothesis of no systematic difference between the FE and RE estimators (Hausman statistic = -3.49 ; p-value = 1.0), leading to the selection of the RE model as the baseline specification.

4.3. Specification with Interaction and Subgroup Analysis

An extended specification includes FI_DEV, an interaction between the composite financial inclusion index (FI_INDEX) and the level of development (DEV). This specification examines the heterogeneity in the association between multidimensional financial inclusion and inequality across country groups. In addition, separate estimations are conducted for the subsamples with DEV = 1 (developed countries, 15 countries, 169 observations) and DEV = 0 (developing countries, 14 countries, 159 observations) to directly assess whether the effects differ between the two groups.

5. Empirical Results

5.1. Main Results Table

Table 1. Results of Panel Data Estimations (Dependent Variable: GINI)

Variables	(1) FE	(2) RE Global	(3) RE + Interaction
ACCOUNT_FAS	-0.0667***	-0.0440***	-0.0461***

	(-3.248)	(-5.525)	(-6.084)
DEV			-2.1437
			(-0.918)
FI_DEV			-12.144***
			(-4.993)
LGDP_PC	-0.4550	-1.1972***	-0.2013
	(-0.642)	(-2.857)	(-0.466)
GROWTH	0.0656**	0.0417**	0.0305*
	(2.138)	(2.492)	(1.904)
UNEMP	0.1652**	0.1072***	0.2289***
	(2.161)	(3.224)	(5.965)
INFLATION	0.0152*	0.0190**	0.0161**
	(1.660)	(2.291)	(2.043)
TRADE	-0.0121	-0.0132*	-0.0145**
	(-0.482)	(-1.796)	(-2.074)
GOV_EXP	-0.0598***	-0.0503***	-0.0728***
	(-2.796)	(-3.289)	(-4.678)
URBAN	-0.0066	0.0274	0.0047
	(-0.101)	(1.112)	(0.196)
EDUC	0.0138*	0.0135*	0.0178**
	(1.704)	(1.811)	(2.509)
Constant	46.172***	49.462***	45.431***
	(6.965)	(11.863)	(11.486)
Observations	328	328	328
Countries	29	29	29
Overall R ²	0.3546	0.3522	0.5752
Within R ²	0.0888	0.1667	0.2410
Hausman Test (p-value)		1.0	

Notes: *t*-statistics are reported in parentheses. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

ACCOUNT_FAS measures account ownership and serves as the main indicator of financial inclusion. *FI_DEV* is the interaction term $FI_INDEX \times DEV$, where *FI_INDEX* is a composite financial inclusion index and *DEV* equals 1 for developed countries and 0 for developing countries.

5.2. Interpretation of the Main Results

The Effect of Financial Inclusion. The *ACCOUNT_FAS* variable exhibits a negative and highly significant coefficient across all three specifications. In the baseline RE model, the coefficient of -0.0440 implies that a 10-percentage-point increase in the rate of account ownership is associated with an approximately 0.44-point decrease in the Gini index, ceteris paribus. This effect is statistically robust ($t = -5.525$; $p = 0.000$) and is consistent with studies showing that access to formal financial services enables low-income households to secure their savings, receive transfers, reduce transaction costs, and improve their economic integration.

The Interaction with the Level of Development. The inclusion of the FI_DEV term in column (3) considerably improves the model's goodness of fit, with the overall R^2 increasing from 0.3522 to 0.5752. The FI_DEV coefficient is negative and highly significant (-12.144 ; $t = -4.993$; $p = 0.000$), confirming that the relationship between financial inclusion and inequality is moderated by the level of development. The inclusion of the FI_DEV variable improves the model's goodness of fit, with the overall R^2 increasing from 0.3522 to 0.5752. FI_DEV is defined as the product of the composite financial inclusion index (FI_INDEX) and the development variable (DEV). Its coefficient is negative and statistically significant (-12.144 , $p < 0.01$), suggesting that the association between multidimensional financial inclusion and inequality is more negative in developed countries. This estimate should be interpreted alongside the subsample results: the specific indicator of account access (ACCOUNT_FAS) is significant in developing countries, whereas it is not significant in developed countries. The two findings therefore relate to distinct measures of financial inclusion and should not be conflated. Nevertheless, it is important to note that the DEV variable, considered independently, is not statistically significant ($p = 0.36$), suggesting that the level of development has no independent direct effect on the Gini index, apart from its interaction with financial inclusion.

The Control Variables. Unemployment (UNEMP) has a positive and significant coefficient across all specifications. Its coefficient is 0.1072 in the overall RE model, indicating that a one-percentage-point increase in the unemployment rate is associated with an approximately 0.11-point increase in the Gini index. Inflation (INFLATION) has a positive coefficient of 0.0190, significant at the 5% level, consistent with the view that rising prices disproportionately affect low-income households. Government expenditure (GOV_EXP) has a negative and highly significant coefficient (-0.0503 in the RE model and -0.0728 in the model with interaction), confirming its redistributive role. Trade openness (TRADE) has a slightly negative effect, significant at the 10% level in the RE model, suggesting a potentially favorable effect on inequality in the sample under study. GDP per capita (LGDP_PC) is negative and significant only in the overall RE model (-1.197 ; $p = 0.005$), consistent with a downward-sloping Kuznets curve.

5.3. Subsample Results

Table 2. Subgroup Estimations (RE): Developed Countries vs. Developing Countries

Variables	(4) RE – DEV = 1	(5) RE – DEV = 0
ACCOUNT_FAS	0.0154 (ns)	-0.0482*
	(0.575)	(-4.912)
LGDP_PC	-0.8215	0.0900
GROWTH	0.0154	0.0447*
UNEMP	0.0831**	0.2597***
INFLATION	0.0442*	0.0185*
TRADE	-0.0320***	-0.0166
GOV_EXP	-0.0736***	-0.0652***
URBAN	0.1162**	-0.0165
EDUC	0.0049	0.0204*

Constant	32.026***	43.792***
Observations	169	159
Countries	15	14
Overall R ²	0.2035	0.1235
Within R ²	0.1617	0.2926

Notes: *t*-statistics are reported in parentheses. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$. ns = not significant.

The subsample analysis confirms and refines the overall findings. In the DEV = 0 group (developing countries), the coefficient of ACCOUNT_FAS is negative and highly significant (−0.0482; $t = -4.912$; $p = 0.000$). In these economies, expanding access to formal financial accounts produces a direct and robust redistributive effect. By contrast, in the DEV = 1 group (developed countries), the coefficient is positive and statistically insignificant (0.0154; $p = 0.57$). In these economies, where formal financial access is already widespread, the marginal effect of financial inclusion on inequality is no longer captured by the account access indicator alone.

This divergence is analytically important. It does not contradict the overall result but demonstrates that the effect of financial inclusion depends on the stage of financial development. In developed countries, other dimensions—such as the quality and diversity of financial services used, access to credit, financial regulation, and redistributive policies—play a dominant role in determining inequality. In developing countries, basic access to financial accounts remains a key determinant because a substantial proportion of households are still excluded from the formal financial system.

The other control variables exhibit notable differences between the two groups. In DEV = 1, trade openness (TRADE) has a negative and significant effect (−0.0320), suggesting that trade integration may contribute favorably to income distribution in developed countries. Urbanization (URBAN) has a positive and significant coefficient, potentially reflecting spatial inequalities between urban and rural areas in these economies. In DEV = 0, unemployment has a very strong and highly significant effect (0.2597; $t = 4.283$), highlighting the particular sensitivity of inequality in developing countries to labor market dynamics.

6. Tests de robustesse et limites de l'étude

6.1 Tests de robustesse

Tableau 3. Synthèse des tests de robustesse

Specification	Method	ACCOUNT_FAS Sign	Significance	Overall R ²
Baseline Model	FE	Negative (−0.0667)	***	0.3546
Reference Model	RE	Negative (−0.0440)	***	0.3522
RE + FI_DEV Interaction	RE	Negative (−0.0461)	***	0.5752
Subsample DEV = 1	RE	Positive (+0.0154)	ns	0.2035
Subsample DEV = 0	RE	Negative (−0.0482)	***	0.1235

Notes: ns = not significant; *** = significant at the 1% level.

The negative sign of ACCOUNT_FAS remains stable across the FE and RE models, as well as in the model incorporating the interaction term. This consistency across estimators supports the robustness of the main finding. The substantial improvement in R^2 following the inclusion of the interaction term (from 0.35 to 0.58) confirms that accounting for heterogeneity according to the level of development significantly enhances the model's explanatory power. The differences in results across subsamples do not invalidate the overall finding but demonstrate that the relationship is not homogeneous, which is itself analytically relevant.

6.2. Limitations of the Study

Despite the consistency of the results, several limitations should be highlighted. First, static panel estimations do not allow a strict causal relationship to be established. Reverse causality is possible: countries that reduce inequality more effectively may also find it easier to implement financial inclusion policies, potentially biasing the estimates toward a positive correlation between the two. Second, several important institutional variables—such as governance quality, property rights protection, the financial regulatory framework, and the quality of digital infrastructure—are not included in the model, which may give rise to some omitted-variable bias. Third, the presence of missing values reduced the effective sample to 328 observations, warranting caution when comparing subgroups. These limitations open avenues for future research using instrumental-variable estimators or dynamic models.

7. Economic Contextualization: Events That Give Meaning to the Results

The estimated coefficients can only be fully understood in light of the major economic transformations that shaped the 2011–2022 period. This section provides a contextualized interpretation of each main finding by relating it to the observed economic dynamics.

7.1. The Digital Financial Inclusion Revolution (2011–2022)

The period under study corresponds to one of the most significant transformations in contemporary financial history in developing countries: the widespread adoption of mobile financial services. Between 2011 and 2021, the number of adults worldwide holding a bank account or a mobile money account increased from 2.5 billion to 3.9 billion. In sub-Saharan Africa alone, the account ownership rate more than doubled, rising from 23% in 2011 to 55% in 2021, largely driven by the expansion of mobile money, which accounted for more than 40% of adults in the region by 2024.

In the MENA region, which is represented by several countries in the sample, financial inclusion progressed more slowly, increasing from 43% in 2017 to 53% in 2024, and remains unevenly distributed, particularly by gender and geographical area. This regional heterogeneity is consistent with the finding that ACCOUNT_FAS has a stronger effect in the $DEV = 0$ subsample: in countries where financial inclusion starts from a low level, each improvement in access produces a more noticeable distributional effect.

The negative and robust coefficient of ACCOUNT_FAS should therefore be interpreted in the context of the rapid expansion of banking access and mobile money, particularly in

emerging and developing economies. This dynamic has enabled millions of households to access a formal account for the first time, facilitating the safeguarding of savings, the receipt of remittances from migrants, and integration into formal payment systems.

7.2. The COVID-19 Pandemic and Its Effects on the Labor Market (2020–2022)

The pandemic shock of 2020 was the most significant economic event of the period under study. In developing countries, the pandemic caused unprecedented disruptions to labor markets. According to high-frequency surveys conducted by the World Bank in 39 countries, 34% of workers stopped working, 20% of employees did not receive their wages, and 62% of households reported income losses between April and July 2020. In the MENA region, employment declined by approximately 8 million people in 2020, representing a decrease of 2.2 percentage points in the working-age population's employment rate.

These employment and income losses disproportionately affected precarious and informal workers, low-skilled workers, young people, and women—that is, precisely those groups located at the lower end of the income distribution. This reality directly explains the positive and highly significant coefficient of *UNEMP* in the estimations: labor market deterioration mechanically exacerbates inequality, and this effect is particularly pronounced in the *DEV* = 0 subsample (coefficient = 0.2597; *t* = 4.28). The pandemic thus constituted a major inequality-increasing shock, whose effects have persisted beyond the acute phase of the crisis, particularly through structural changes in the labor market and the capital-labor substitution that it accelerated.

7.3. Post-Pandemic Inflationary Pressures (2021–2022)

From 2021 onward, the imbalances created by the pandemic—disruptions to supply chains, energy market pressures, rising food prices, and accommodative monetary policies—fueled an inflationary surge in many countries. This inflation had heterogeneous distributional effects. Available data indicate that lower-income households devote a larger share of their budgets to essential goods and services, including food, energy, and housing, making them more vulnerable to the erosion of their purchasing power during inflationary episodes. In Europe, in particular, post-pandemic inflation increased the *S80/S20* ratio, an indicator of inequality between the wealthiest and poorest households.

This economic reality is fully consistent with the positive and significant coefficient of *INFLATION* in the estimations (0.019 in the RE model; *p* = 0.023). Inflation does not affect living conditions uniformly: it disproportionately affects low-income households, thereby exacerbating inequality as measured by the Gini index. This effect is observed in both subgroups, confirming that it represents a general mechanism, although its intensity varies according to the national context.

7.4. The Buffering Role of Government Expenditure (2011–2022)

Throughout the period under study, government expenditure played a central role in regulating inequality. During the 2008–2009 crisis and its aftermath in certain European economies (2011–2013), social transfers, unemployment benefits, and activation policies helped limit the

increase in inequality in countries with well-developed welfare states. During the pandemic, several governments introduced unprecedented employment support measures, including short-time work schemes, emergency transfers, and tax moratoriums, which helped contain the inequality-increasing effects of the economic shock.

These mechanisms are reflected in the negative, robust, and consistently significant coefficient of GOV_EXP (-0.0503 in the RE model; -0.0728 in the model with interaction; -0.0736 in $DEV = 1$). This finding confirms that government expenditure constitutes an important instrument for reducing inequality, particularly when it incorporates redistributive components such as transfers, healthcare, education, and employment support. In developed economies ($DEV = 1$), this effect is particularly robust, reflecting the central role of fiscal policies in reducing market income inequality.

7.5. Synthesis of the Contextual Interpretation

A joint examination of economic events and econometric findings provides a coherent narrative. The expansion of digital financial inclusion during the period contributed to reducing inequality, particularly in developing countries, where account access remains a key determinant. However, this inclusive effect unfolded in a challenging macroeconomic environment characterized by labor market shocks and inflationary pressures that simultaneously exacerbated inequality. Government expenditure partially offset these inequality-increasing forces, although its impact varied according to countries' fiscal capacities. This multi-force dynamic is precisely what the econometric model captures: the effect of financial inclusion is real, but it does not operate in a vacuum; rather, it must be understood within a macroeconomic and institutional environment that moderates its magnitude.

8. Economic Policy Implications

The findings of this study have several direct implications for public policy. First, financial inclusion policies—whether implemented through the expansion of banking services, the development of mobile money, the simplification of account-opening procedures, or the strengthening of digital infrastructure—appear to constitute a potentially effective instrument for reducing inequality, particularly in developing countries. These policies should be accompanied by an appropriate regulatory framework, efforts to promote financial literacy, and targeted attention to the most financially excluded groups, including women, rural populations, and young people.

Second, combating unemployment should be regarded as a major pillar of equity-oriented policy. In developing countries in particular, inequality is highly sensitive to labor market dynamics, which justifies the implementation of active employment policies, vocational training programs, and social protection measures.

Third, redistributive public expenditure constitutes an important buffer against economic shocks, particularly during periods of crisis. These findings highlight the need to preserve, or even strengthen, social protection systems, especially in contexts of fiscal pressure.

Fourth, price stability policies contribute indirectly to reducing inequality by protecting the purchasing power of the most vulnerable households.

9. Conclusion

This article has analyzed the effect of financial inclusion on income inequality using a panel of 29 countries over the period 2011–2022, employing fixed-effects and random-effects estimations, as well as a model incorporating an interaction between financial inclusion and the level of development.

The main findings show that financial inclusion is significantly associated with a reduction in inequality as measured by the Gini index. This effect is robust across the different specifications and is particularly strong in developing countries, where access to formal accounts remains a structural determinant of inequality. In developed countries, by contrast, the effect is not statistically significant, suggesting that other dimensions of financial inclusion—such as the quality of usage, access to credit, and the institutional environment—play a more prominent role. The analysis of the control variables confirms the inequality-enhancing effects of unemployment and inflation, as well as the redistributive role of public expenditure.

These findings take on particular significance in the economic context of the period, which was marked by the mobile money revolution, the impact of COVID-19 on the labor market, post-pandemic inflationary pressures, and emergency fiscal responses. Financial inclusion represents a genuine but conditional policy lever: its effectiveness depends on the macroeconomic context, the level of development, institutional quality, and households' ability to translate formal access into effective economic use.

Natural extensions of this research include the use of instrumental-variable estimation methods to establish a more rigorous causal relationship, the incorporation of institutional variables, and the exploration of financial inclusion indicators based on usage rather than access alone.

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