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RESEARCH ARTICLE

Financial development and income inequality in Latin American countries: An instrumental variables estimation

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Abstract

Latin America has made significant progress in financial development and poverty reduction in recent decades. Nevertheless, its persistent levels of inequality have further potential to be reduced, and financial development could be an effective way to accomplish this. This paper analyzed the causal relationship between income inequality and financial development in 15 Latin American countries between 1990 and 2020 by applying an instrumental variables model that addresses the limitations of some previous studies on the subject. The results showed a significant negative relationship between these two variables, mainly due to the impact of financial institutions, rather than financial markets, on income inequality. However, this negative relationship declines at a higher level of financial development. These results suggest that development must promote a deeper, more accesible, and more efficient financial sector in an inclusive and sustainable manner, at both the institutional and market levels, in order to achieve a greater equalization of financial opportunities and a reduction in income inequality in the Latin American population.

Keywords: financial development, income inequality, instrumental variables estimation, Latin America.
JEL codes: C36, D31, O11

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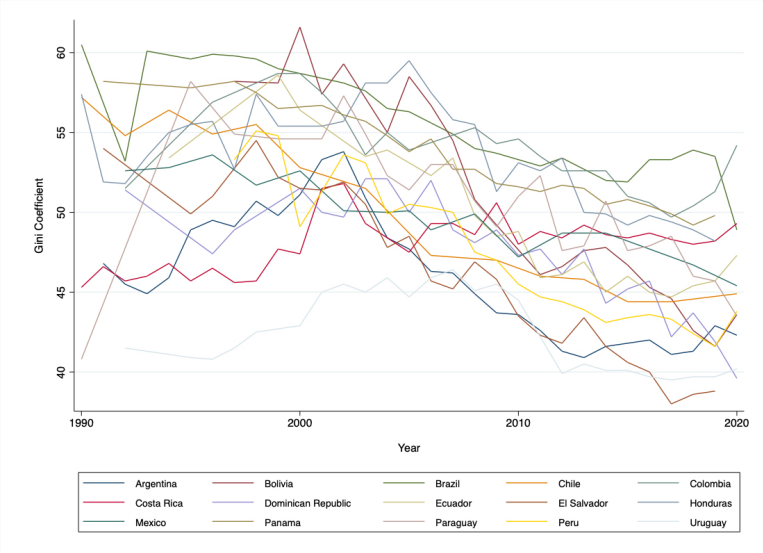
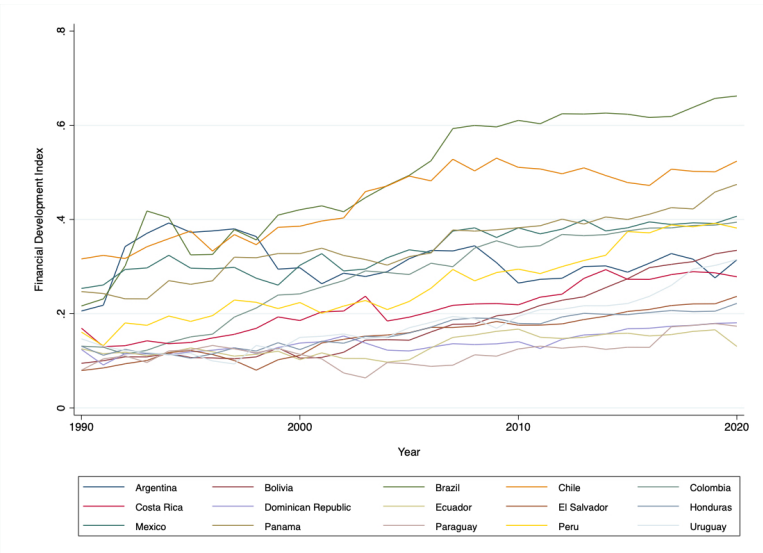
1. Introduction

Latin America has made major progress in reducing inequality in recent decades (Cord et al. 2016; Cornia 2010; Gasparini and Lustig 2011; López-Calva and Lustig 2010; Székely and Mendoza 2017); however, its inequality levels are still 1.5–2 times higher than those of high-income countries (Alvaredo and Gasparini, 2015). In parallel, the region has experienced significant financial progress. The financial sector in Latin America has grown and deepened steadily, becoming more integrated, inclusive, and competitive, and including new participants, instruments, and markets (De La Torre et al., 2012).



Graph 1: *Income inequality in Latin American countries (1990-2020).*

Source: Own elaboration.



Graph 2: *Financial development in Latin American countries (1990-2020).*

Source: Own elaboration.

Nevertheless, there are still significant lags and gaps that have prevented the financial sector from undergoing substantial modification in terms of investments and savings. Further, access to the financial system has not been extended to all populations, and the costs among those who have achieved partial or incomplete access remain high. Hence, questions have arisen regarding the real impact of financial development on reducing income inequality or even whether it contributes to the persistence of wage gaps between the rich and the poor in Latin America.

Furthermore, the debate on the relationship between financial development and income inequality has also been characterized by the possible two-way causality between both variables, that is, it is possible for financial development to affect income inequality but also for income inequality to influence financial development. This issue is particularly relevant when defining the appropriate methodology for analyzing the causal relationship between the two variables.

Focusing on the effect of financial development on income inequality, the theory suggests that financial development can reduce inequality by improving the efficiency and accessibility of financial services, but it can also increase inequality if financial services are accessible only for wealthier people. Hence, the effect of financial development on income inequality would appear amenable to empirical investigation, but with results that seem to depend on the set of countries and the methodologies used in each analysis.

At the Latin American level, some authors have examined the impact of financial development on income inequality without reaching a consensus on the relationship between the two variables. Canavire-Bacarreza and Rioja (2008) estimated that countries with income in the poorest quintile had not been affected by the development of the financial system, which contrasted with the positive results found for countries whose incomes were in the second, third, and fourth quintiles. In contrast, Mikek (2019) and Gómez et al. (2019) found that financial development increased income inequality in Latin America when they analyzed the periods 1990–2017 and 1990–2015, respectively. As an indicator of financial development, these studies used the private credit to GDP variable, which, in terms of increases shown, would suggest greater depth in the financial system.

This paper contributes to the literature in several ways. First, it provides a comprehensive review of the empirical literature on the relationship between financial development and income inequality by considering the data and methodology of more than 30 papers on the subject over the last two decades. Second, it expands the sample period analyzed in previous studies that are focused on Latin America, and it complements the use of private credit to GDP as a proxy for financial development in the region by considering the multidimensional financial development index developed by the International Monetary Fund (IMF), which considers not only depth characteristics but also the access and efficiency of financial institutions and markets. Third, its econometric analysis overcomes some problems faced in many previous studies in which the analysis of the causal relationship between income inequality and financial development was based on time-invariant instrumental variables (IV). The present analysis defines an IV based on the interaction of a time-invariant country-specific variable and a time-specific country-invariant variable, whose product is then time-varying and country-specific and thus consistent with the internal transformation involved in the use of fixed-effects. Different statistical tests are reported in the estimations for readers to validate and evaluate the identifying assumptions of the IV and the corresponding results.

The remainder of the paper is structured as follows. The next section discusses the literature on inequality and financial development in Latin America and the relationship between financial development and income inequality. The third section presents the data and methodology used to measure the relationship and the effect of financial development on income inequality. The results are presented in the fourth section. The last section discusses the main conclusions of the study.

2. Literature review

After an increase in income inequality in Latin America during the 1980s and 1990s–given the debt crises that affected the region and the policies adopted by governments to restore economic stability and growth (Gasparini and Lustig, 2011)–it began to decline significantly in most of the region's countries since the early 2000s. Constructing a database based on per capita household income from household surveys in Latin America, Amarante et al. (2016) found that the latter reduction in inequality, at least from 2002 to 2012, was mainly explained by the reduction of inequality within each country in the region, suggesting that the internal dynamics of the countries–in social, institutional, and political terms–were more relevant than those between them. For Székely and Mendoza (2017), who determined the Gini coefficient from household survey data available between 1980 and 2013, distributional improvements in Latin America were associated with both long-term (demographic changes and education) and short-term (changes in terms of trade) factors. However, for Cord et al. (2016), who also relied on household survey data to determine different measures of inequality in the region (Gini coefficient, Theil index, mean log deviation, 90/10 ratio, and Atkinson index), it was possible to observe a stagnation in the decline of income inequality in Latin America between 2010 and 2013, which can be attributed to the recovery from the global financial crisis. According to ECLAC (2022), considering the Gini coefficient and the Atkinson index based on data from household surveys in the region, the slowdown in the decline of income inequality in Latin America in the 2010s was interrupted in most countries in 2020, considering the adverse effects of the COVID-19 pandemic on the poorest segments of the population.

As is evidenced in the aforementioned studies, and despite the problems of income underestimation and the lack of expenditure-based information in household surveys in the region, they have been the most reliable and appropriate sources for distributional analysis in Latin America (De Ferranti et al., 2004).[1]

On the other hand, Latin America's financial development has experienced significant progress following the previous events of financial instability and crisis that affected the region in the late 1990s and early 2000s. Since then, the size of their banking systems has increased, local bond and derivatives markets have developed significantly, institutional investors have become even more important than banks, and financial inclusion has advanced through the expansion of payments, savings, and credit services (De La Torre et al., 2012). Considering private credit to GDP as a proxy for financial development, Blanco (2013) found that the main determinants of financial development in Latin America have been financial openness–mainly in countries that were relatively closed–and political risk components associated with financial risk related to foreign debt and government stability. These results were consistent with those found in the global literature, which highlight the importance of financial openness, institutions, and stability in financial development (Baltagi et al. 2009; Beck and Levine 2005; Chinn and Ito 2006; Klein and Olivei 2008; Roe and Siegel 2011).

Although the literature has typically used the ratios of private credit to GDP and stock market capitalization to GDP as proxies for financial development, these indicators do not capture all activities and agents that are part of the financial sector, excluding, for example, the non-bank institutions that have grown significantly in Latin America during the last decades (De La Torre et al., 2012). Considering

[1]Other studies have also explored metrics beyond income disparity to analyze inequality in Latin America. Justino and Acharya (2003) argue that the region is characterized not only by high levels of income inequality, but also by inequality in social (access to education, health, and social security) and political (access to political and legal institutions) terms, which are further aggravated when racial, ethnical, and urban/rural variables are considered. In this vein, authors such as Barros et al. (2009) have focused on the concept of inequality of opportunities in Latin America by considering the role of exogenous factors, such as gender, race, and socioeconomic background, in individual outcomes and achievements. Based on data from household surveys, these authors created two metrics to assess inequality of opportunity in Latin America, namely the Human Opportunity Index (which considers the different opportunities among children in terms of education and household conditions) and the Inequality of Economic Opportunity measure (which considers the proportion of income, consumption, and educational achievement inequality that can be explained by circumstances beyond the individuals' control), finding significant heterogeneity in the region.

these limitations, Heng et al. (2016) used the multidimensional financial development framework developed by the IMF to assess financial development in Latin America between 1995 and 2013, finding significant gaps in institutional efficiency and depth and in market efficiency and access in the region–issues that are not fully captured when using traditional financial development proxies. These authors also observed a non-linear relationship between financial development and growth and between financial development and macroeconomic instability in Latin America, given the dynamics between risk management and credit behavior in the financial system at different stages of development; for example, a larger financial system may lead to riskier behavior by economic agents, which could generate macroeconomic instability and hinder growth in the region.

The relationship between financial development and economic growth has been extensively discussed. In theoretical terms, the literature suggests that financial development takes place when financial institutions and markets alleviate the effects of information and transaction costs by modifying the constraints and incentives for economic agents (Beck et al. 2000; Levine et al. 2000; Rousseau and Wachtel 2000). Thus, the financial sector can affect investment decisions, savings rates, technological innovation, and long-term growth rates. In this vein, Levine (2005) describes five general functions that financial systems provide to mitigate information and transaction costs: (i) facilitating the exchange of goods and services; (ii) mobilizing and pooling savings; (iii) producing ex-ante information about potential investments and allocating capital; (iv) facilitating trading, diversification, and risk management; and (v) monitoring investments and exercising corporate governance. Nevertheless, having emerged to alleviate market frictions, financial systems naturally affect the allocation of resources in time and space (Merton and Bodie, 1995).

Given that multiple frictions exist in the market and that policies, regulations, and laws differ notably over time and across economies, improvements in a single dimension may have varying implications for welfare and resource allocation depending on the other frictions at play in the economy. Thus, different theories have been developed to explain the relationship between financial development and income inequality, which have diverged into two main streams: one that predicts a linear relationship and one that proposes an inverted U-shaped relationship between financial development and income inequality.

Researchers such as Aghion and Bolton (1997), Banerjee and Newman (1993), Galor and Moav (2004), and Galor and Zeira (1993) propose a linear relationship between financial development and income inequality. They argue that financial deepening ameliorates credit constraints resulting from imperfect financial institutions and markets, such as information and transaction costs that can lead to income divergence between the poor and the rich in the long term. This outcome benefits low-income groups, who lack the collateral and political connections to access bank credit and the resources to finance their own projects. In this way, financial development benefits low-income individuals by mitigating their credit constraints and improving the efficiency of their capital allocation (reducing income inequality and accelerating economic growth).

In contrast, Greenwood and Jovanovic (1990) suggest a non-linear relationship between financial development and income inequality in which the distribution of wealth depends on the level of economic development of each country. They argue that the interaction of financial and economic development generates a development cycle reminiscent of the Kuznets hypotheses (Kuznets, 1955). Thus, in the initial stages of financial development, only those with higher income have access to projects with a higher rate of return on capital, because of the fixed costs in the financial structures. However, with aggregate economic growth, human capital replaces physical capital as the main engine of growth and more individuals can afford to enter the formal financial system. Therefore, the distributional effect of financial deepening is positive only after a certain turning point in economic development, before which its effect is negative for lower-income individuals.

Beyond the trend relationship between the two variables, the practical impact of financial development on income inequality has also been discussed. For example, financial development could have a positive effect on income equality by making financial services available to more people (Haber et al.

2003; Morck et al. 2005; Rajan and Zingales 2004). Thus, by easing credit constraints, financial development can encourage the creation of new businesses and economic growth on a more equitable basis. Townsend and Ueda (2006) argue that changes in credit and production distribution due to financial development can boost the demand for low-skilled workers and reduce inequality through the equalization and expansion of economic opportunities. Nevertheless, financial development could exacerbate inequality if better financial services reached only those in a stronger economic position without improving access for the poor. Haber (1991) and Lamoreaux (1994) argue that mainly the better-off and politically connected benefit from improvements in the financial sector, particularly in the early stages of economic development. For these authors, even if financial development can stimulate productivity and growth, whether it would reduce or widen income inequalities is uncertain. Hence, the effect of financial development on income inequality seems to be ultimately an empirical issue, but one on which there is no complete consensus.

In general terms, most empirical studies have used the ratio of private credit to GDP as a proxy of financial development, considering the effects that financial deepening can have by fostering and improving investment possibilities. However, different researchers have begun using alternative measures of financial development, including variables of depth, access, and efficiency of financial institutions and markets. Moreover, a variety of methodologies have been used when analyzing the relationship–and eventual causality–between financial development and income inequality, considering both cross-sectional and panel estimations, and models that control (or not) for possible endogeneity biases. Additionally, while most of the analyses cover a broad range of economies, some studies have also focused on individual countries or groups of countries with similar characteristics.

Most empirical analyses have found a negative relationship between financial development and income inequality,[2] suggesting that income inequality is lower in countries with more developed financial sectors. However, some studies have found that the negative relationship between these two variables occurs only after a certain level of development,[3] meaning that financial development improves income distribution only if countries have reached a certain level of development or institutional quality. Otherwise, financial development hurts the poor more and exacerbates income inequality. Conversely, other studies have found that the negative relationship between financial development and income inequality takes place prior to a certain level of development.[4] That is, up to a certain point, financial development contributes to reducing income inequality, but if financial development progresses further, it widens inequality. Finally, several studies have observed a positive relationship between financial development and income inequality[5] such that further financial development increases income inequality (see Appendix Table A1 for details of previous studies considered).

Thus, no empirical consensus has been reached regarding the relationship between financial development and income inequality because the observed impact seems to depend largely on the set of countries, the period, and the methodologies used in each study.

An important component in the analysis of the relationship between financial development and income inequality is associated with the reverse causality and endogeneity issue. For example, there is a rich literature that analyzes how income inequality influences economic growth through financial development. The classical hypothesis is that poor individuals have a lower average propensity to save

[2] See Altunbaş and Thornton (2019), Bahmani-Oskooee and Zhang (2015), Batuo et al. (2010), Beck et al. (2004), Beck et al. (2007), Bittencourt (2010), Clarke et al. (2006), Ghossoub and Reed (2017), Hamori and Hashiguchi (2012), Kappel (2010), Kunieda et al. (2014), Lo Prete (2013), Meniago and Asongu (2018), Mookerjee and Kalipioni (2010), Naceur and Zhang (2016), Omar and Inaba (2020), Shahbaz and Islam (2011) and Thornton and Di Tommaso (2020)

[3] See Canavire-Bacarreza and Rioja (2008),Chen and Kinkyo (2016), Kavya and Shijin (2020), Kim and Lin (2011), Law et al. (2014), Nasreddine and Mensi (2016), Nguyen et al. (2019), Shahbaz et al. (2015), Younsi and Bechtini (2018), and Zhang and Chen (2015).

[4] See Brei et al. (2018), Jauch and Watzka (2012), Park and Shin (2017).

[5] See Adams and Klobodu (2016), De Haan and Sturm (2017), Denk and Cournède (2015), Gimet and Lagoarde-Segot (2011), Gómez et al. (2019), Jaumotte et al. (2013), Jung and Cha (2020), Mikek (2019), and Sehrawat and Giri (2015).

than rich individuals (Stiglitz, 1969), so a redistribution of resources from rich to poor would have an impact on financial development by reducing the aggregate saving rate in the economy. Galor and Zeira (1993) suggest that income disparities prevent the efficient allocation of resources–thus affecting financial development–mainly in the presence of imperfect financial institutions and markets that would limit access to credit and make the exploitation of investment opportunities dependent on the income level of individuals. Focusing on the effects of income inequality on growth in the OECD, Madsen et al. (2018) found that income inequality impacts not only savings, but also investment, education, and innovative activities, and that such effects are particularly significant in financially underdeveloped economies, given the greater credit constraints for lower-income individuals.[6]

In addition to the analysis focused on the impact of inequality on savings and investments–and through them on growth–authors such as Engerman et al. (2002) argue that early differences in the degrees of inequality that emerged in the New World colonies, not only in terms of income and wealth but also of human capital and political power, influenced the way institutions–including financial institutions–evolved and the access to economic opportunities. Thus, in societies where inequality was higher, political institutions were less representative and public investments more limited, because of which institutions tended to be more elite-biased in providing economic opportunities. Under this approach, economic inequality is the state variable that perpetuates bad institutions and poor economic performance. However, for authors such as Acemoğlu et al. (2005), an additional state variable is political institutions, whose dynamic relationship with the distribution of resources sustains the bias of economic institutions in favor of groups with greater political power. In this way, the relationship between financial development and inequality can also be explained by the influence that elites exercise on the institutional environment of a country (Claessens and Perotti, 2007).

3. Data and methodology

The analysis used unbalanced panel data for 15 Latin American countries with information available for the period 1990–2020. In the Appendix, Table A2 provides details of these countries and their main statistics.

The dataset was drawn from the Financial Development Index (FD) database of the IMF, the political risk components of the International Country Risk Guide (ICRG) of the PRS Group, and the Global Financial Development (GFD) database and the World Development Indicators (WDI) of the World Bank. Table A3 in the Appendix provides summary statistics for the different variables used in the analysis.

The income inequality indicators used as dependent variables were the Gini coefficient and the income share held by the highest and the lowest 10% of population subgroups. The Gini coefficient takes values between zero (perfect equality) and 100 (perfect inequality), depending on how much an economy's income distribution deviates from a perfectly equal distribution. Income shares, on the other hand, express the percentage of consumption or income that corresponds to the indicated population subgroups: in this case, the top and bottom 10%. For all cases, the data consolidated by the World Bank consider household survey information from the corresponding national statistical offices.

The Financial Development Index developed by the IMF was considered the main explanatory variable in the model, aiming to overcome the shortcomings of single indicators as proxies for financial de-

[6]Among other studies, (Perotti, 1996) found that more unequal societies are more likely to be socially and politically unstable, which results in lower investment and growth rates. (Forbes, 2000) results, on the other hand, suggest that, in the short to medium term, greater income inequality has a positive relationship with economic growth. (Barro, 2000) observed that inequality slows growth in poor countries but boosts it in rich countries, which could be due to the more serious credit constraints in the former. Similarly, (Castelló-Climent, 2010) found that income inequality has a negative effect on economic growth in low- and middle-income countries and a rather positive one in higher-income countries.

velopment, which have focused mainly on the depth of the financial system. The Financial Development Index is based on the multidimensional approach developed by Čihák et al. (2012) to capture the degree of development of financial institutions and markets in terms of depth, access, and efficiency. Financial institutions include banks, pension funds, insurance companies, and mutual funds characteristics, while financial markets include bond and stock markets characteristics. Depth is measured in consideration to the size and liquidity of the market, access is measured in terms of the ability of individuals and firms to access financial services, and efficiency is measured in terms of the ability of institutions to provide financial services with sustainable revenue and at low costs and the level of activity of capital markets (Svirydzenka, 2016). The results in terms of this variable were compared with those obtained from the variables most commonly used in the literature: private credit and market capitalization to GDP.

Additionally, different control variables that might affect inequality were considered based on previous literature, namely those associated with political risk components (investment profile, democratic accountability, corruption, law and order, and bureaucracy quality), sociodemographic characteristics (gross secondary school enrollment and age dependency ratio), and macroeconomic characteristics of each country (government final consumption expenditure, trade openness as the sum of exports and imports of goods and services, inflation as measured by the annual growth rate of the GDP implicit deflator, and GDP per capita based on purchasing power parity).

A fixed-effects model was used to estimate the relationship between financial development and income inequality, as it allows controlling for omitted variables in the panel data. The proposed model was as follows:

$$Y_{it} = \alpha + \beta FD_{it} + \delta X_{it} + \epsilon_{it} \tag{1}$$

Where *i* and *t* represent countries and years, respectively, Y_{it} corresponds to the dependent variables (Gini coefficient and income share held by the highest and lowest 10%), FD_{it} is the financial development indicator, X_{it} is a vector of control variables, and ϵ_{it} is a composite term consisting of a_{it} (country fixed-effects: that is, unobserved country characteristics that are constant over time) and u_{it} (error term). In some estimations, the term τ_t (year fixed-effects) is incorporated in ϵ_{it}, considering characteristics that are constant across countries but vary over time.

In addition, to assess the long-term relationship between financial development and income inequality, particularly considering the postulates of Greenwood and Jovanovic (1990), the following model was proposed:

$$Gini_{it} = \alpha + \beta_1 FD_{it} + \beta_2 FD_{it}^2 + \delta X_{it} + \epsilon_{it} \tag{2}$$

Where $Gini_{it}$ denotes income inequality, FD_{it} represents financial development, and X_{it} includes the control variables.

Finally, to control for potential reverse causation and simultaneity bias, the IV method was used. While most of the literature using IV for financial development has focused on the use of instruments associated with legal system origin, latitude, and ethnic and religious fractionalization variables (La Porta et al., 1999), these were not considered appropriate for the present study. First, these variables do not vary greatly across Latin American countries. For example, among the countries in the sample, all have legal systems of French origin; except for Uruguay, all have more than 80% of their population belonging to the Catholic religion; and given the focus on Latin America, the absolute value of the countries' latitude varies only between zero and 0.3. Second, these variables are time invariant, so they are not consistent with the internal transformation involved in the use of fixed-effects. To overcome such problems, this analysis defines an IV based on the interaction of a time-invariant country-specific variable and a time-specific country-invariant variable, whose product is then a time-varying and country-specific variable.

As a time-invariant country-specific variable, the value of the aggregate index of creditors' rights developed by Djankov et al. (2007) was used, which assigns countries a score from zero to four with

respect to different lenders' rights guaranteed in regulations and laws. Although the authors determined the index annually for 129 countries between 1978 and 2003, for the Latin American countries in the sample the value did not vary over time, except in the case of Uruguay, which went from an index of 2 to 3 in 2003. Therefore, this variable represents a historical institutional component in the analysis. The importance of this indicator, according to the authors, lies in the fact that the legal rights of creditors are statistically significant and quantitively important determinants of the development of private credit. Moreover, these rights did not converge between different legal system origins or between rich and poor countries, and the effectiveness of alternative institutions varied systematically between countries at different levels of economic development.

As a time-specific country-invariant variable, the United States (US) federal annual effective interest rate (federal funds rate) was used, given its external and dynamic impact on Latin American financial markets (Canova, 2005) and, through it, on income inequality in the region. Higher dollarization of assets and liabilities, closer financial and commercial links with the US, and dependency on the commodities cycle could account for this sensitive relationship (Borrallo et al., 2016). The federal funds rate is the interest rate at which US depository institutions trade federal funds with each other overnight, and it is used to guide US monetary policy. Researchers such as Cachanosky (2015) suggest that the two biggest economic crises in Latin America that occurred after a period of monetary deviation overseen by the Federal Reserve were not a coincidence but rather evidence showing a correlation between Latin American and US monetary policies. Indeed, changes in international interest rates and the exchange rate have an important impact on financial flows, affecting not only the flow of bank loans but also the availability of financing through the capital market (ECLAC, 2019). Thus, an increase in the federal funds rate, or a depreciation of the exchange rate against the dollar, may restrict the financing of Latin American countries through the banking and capital markets. Likewise, depreciations of national currencies can lead to increases in domestic inflation rates and induce interest rate hikes. Conversely, a fall in the US federal funds rate may improve the creditworthiness of Latin American debtors, encourage capital repatriation from the US, and increase the indebtedness of agents in the US capital market (Calvo et al., 1993). To this transmission mechanism must be added the degree of foreign currency leverage by the non-financial corporate sector and how it affects financial decisions. In terms of trade, the Latin American countries in our sample concentrated an average of 29% of their exports and imports in the US market between 1990 and 2020.

According to Wooldridge (2010), the IV method requires an observable variable, not in Equation (1), that satisfies two main conditions: first, it must be partially correlated with the endogenous regressor once the other exogenous explanatory variables have been netted out; and second, it must not correlate with the error term, thus being exogenous in Equation (1).

Considering the practical approach in French and Popovici (2011), the first condition (called the strength of the instrument or relevance assumption) can be tested through a regression of the endogenous explanatory variable on the IV and all exogenous variables of interest. Table A4 in the Appendix reports the results of the regression of the variables used as proxies for financial development on the IV and the rest of the exogenous variables considered.[7] In aggregate terms, the IV was significantly related to the financial development variables of interest. In the IV's estimations, the Kleibergen-Paap rk Wald F statistics for weak identification are reported, which in this case, according to Stock and Yogo (2005), should be compared with a critical range of values between 5.25 (30% maximal IV relative bias) and 18.37 (5% maximal IV relative bias) to test whether the instrument is strong.

Among the various statistical tests to address the second condition (called the validity condition or exogeneity assumption), the Sargan-Hansen test is used for the null hypothesis that all instruments are

[7] Although Appendix Table A4 estimations also show a significant relationship between the endogenous explanatory variable and other exogenous variables of interest, the correlation matrix shown in Appendix Table A6 indicates a reduced likelihood of any significant impact in this respect on the validity of the model (beyond the expected correlation between financial development and economic activity).

uncorrelated with the error term of the equation of interest by regressing the residuals on all exogenous variables. In the estimations with the IV method, results of the overidentification test (the Hansen J statistic and its null hypothesis that all instruments are uncorrelated with the error term) and the under-identification test (the Kleibergen-Paap rk LM statistic and its null hypothesis that the equation is under identified) are also reported.

Regarding this exclusion restriction concerning the IV, the creditor rights variable does not control for a set of country dummies as it is time-invariant and therefore focuses on the historically determinant component of this institutional factor (and not on its variation from year-to-year), thus being exogenous in Equation (1) (see Acemoğlu et al. (2003), and their strategy of instrumenting for institutions using the historically determined component of them). Additionally, a Granger causality test (Granger, 1969) was determined to validate the exogeneity of the US federal funds rate variable, estimating that it does not have a direct effect on the dependent variable of interest (Table A5 in the Appendix).[8]

Although the IV method has been widely used in various economic analyses because of its ability to adjust for control variables or confounding factors in non-randomized studies, violations of the aforementioned assumptions can significantly bias the results obtained. Focusing on the correlation between the IV and the exposure variables, Martens et al. (2006) observed that, when this correlation is insignificant, the IV method could be imprecise due to a larger standard error. Additionally, the authors found biases that could be associated with small sample sizes and with large samples when one of the assumptions is slightly violated. For this reason, the results obtained in the IV estimations should be analyzed with caution, in view of the different assumptions adopted and the performance associated with the different statistical tests used to validate the instruments and estimations. In this method, the presentation of evidence and arguments is essential to enable readers to understand and evaluate statistical conclusions (Sovey and Green, 2011).

4. Results

4.1. Relationship between financial development and income inequality

Table 1 reports the results of the relationship between financial development and income inequality using country fixed-effect estimations and different control variables. In general terms, a significant and robust negative relationship between financial development and income inequality was evident in the 15 Latin American countries analyzed between 1990 and 2020. In these countries, based on estimates (1) to (5), a one percentage point increase in financial development was found to be associated with a reduction of 0.41 to 0.73 percentage points in the Gini coefficient.

[8]The Granger causality test also evidences the bidirectional causal-relationship between financial development and income inequality. In the estimations with the IV method, results of the endogeneity test are also reported to determine whether the endogenous regressor in the model (financial development) is in fact exogenous.

Table 1: *The relationship between financial development and income inequality (Gini coefficient). Country fixed-effect estimations.*

	(1)	(2)	(3)	(4)	(5)	(6)
Financial Development	-0.692***	-0.734***	-0.457***	-0.410***	-0.519***	-0.085
	(0.067)	(0.064)	(0.115)	(0.116)	(0.110)	(0.102)
Investment profile		0.019	0.011	0.006	-0.009	-0.007
		(0.024)	(0.026)	(0.027)	(0.027)	(0.025)
Democratic accountability		0.088***	0.078**	0.067*	0.061	0.091***
		(0.033)	(0.038)	(0.039)	(0.039)	(0.033)
Corruption		0.011	-0.011	-0.002	0.009	0.016
		(0.030)	(0.042)	(0.042)	(0.040)	(0.031)
Law and order		0.069***	0.091***	0.085**	0.051	0.044
		(0.026)	(0.033)	(0.033)	(0.031)	(0.029)
Bureaucracy quality		-0.080**	-0.060	-0.044	-0.039	-0.027
		(0.035)	(0.047)	(0.050)	(0.047)	(0.043)
School enrollment, secondary			0.228***	0.254***	0.245***	0.280***
			(0.047)	(0.049)	(0.046)	(0.041)
Age dependency ratio			0.601***	0.617***	0.592***	0.470***
			(0.087)	(0.089)	(0.081)	(0.084)
Government consumption				-0.053	-0.085***	-0.087***
				(0.033)	(0.027)	(0.033)
Trade openness				-0.003	0.018	-0.009
				(0.023)	(0.021)	(0.021)
Inflation					-0.022***	-0.016***
					(0.004)	(0.004)
GDP per capita						-0.224***
						(0.029)
Observations	358	358	288	283	283	283
Adjusted R-squared	0.636	0.661	0.695	0.674	0.709	0.766
F-statistics (p-value)	0.000	0.000	0.000	0.000	0.000	0.000

Cluster at the country-year, robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
All variables have been transformed by using the log-modulus transformation (John and Draper, 1980) except for financial development.
Constants have been removed for reporting effects.

Source: Own elaboration.

Table 2: *The relationship between financial development, financial institutions, financial markets, private credit and stock market capitalization, and income inequality (Gini coefficient). Country fixed-effect estimations.*

	(2)	(6)	(2)	(6)	(2)	(6)	(2)	(6)	(2)	(6)
Financial Development	-0.734***	-0.085								
	(0.064)	(0.102)								
Financial Institutions			-0.577***	-0.281***						
			(0.040)	(0.068)						
Financial Markets					-0.248***	0.182***				
					(0.061)	(0.067)				
Private Credit to GDP							-0.045***	0.045***		
							(0.012)	(0.016)		
Stock Market Capitalization to GDP									-0.017	0.000
									(0.017)	(0.009)
Investment profile	0.019	-0.007	-0.007	-0.020	-0.001	-0.010	0.000	-0.007	-0.053	-0.024
	(0.024)	(0.025)	(0.020)	(0.022)	(0.031)	(0.024)	(0.030)	(0.025)	(0.057)	(0.036)
Democratic accountability	0.088***	0.091***	0.046*	0.078**	0.011	0.081**	-0.037	0.092***	-0.136***	-0.002
	(0.033)	(0.033)	(0.026)	(0.031)	(0.040)	(0.032)	(0.033)	(0.032)	(0.045)	(0.042)
Corruption	0.011	0.016	0.001	0.022	0.042	0.011	0.029	0.019	-0.032	-0.047**
	(0.030)	(0.031)	(0.030)	(0.029)	(0.031)	(0.030)	(0.033)	(0.034)	(0.032)	(0.022)
Law and order	0.069***	0.044	0.025	0.030	0.124***	0.020	0.117***	0.012	0.154***	0.031
	(0.026)	(0.029)	(0.025)	(0.029)	(0.026)	(0.028)	(0.027)	(0.033)	(0.045)	(0.037)
Bureaucracy quality	-0.080**	-0.027	-0.004	-0.019	-0.094**	-0.014	-0.026	-0.034	0.022	0.025
	(0.035)	(0.043)	(0.033)	(0.040)	(0.039)	(0.040)	(0.036)	(0.045)	(0.072)	(0.053)
School enrollment, secondary		0.280***		0.277***		0.309***		0.267***		0.230***
		(0.041)		(0.039)		(0.042)		(0.044)		(0.038)
Age dependency ratio		0.470***		0.408***		0.570***		0.554***		0.321***
		(0.084)		(0.077)		(0.080)		(0.085)		(0.118)
Government consumption		-0.087***		-0.080***		-0.084***		-0.100***		-0.100**
		(0.033)		(0.029)		(0.031)		(0.037)		(0.049)
Trade openness		-0.009		0.000		-0.013		0.008		-0.037

		(0.021)		(0.020)		(0.020)		(0.023)		(0.025)
Inflation		-0.016***		-0.018***		-0.014***		-0.013***		-0.019***
		(0.004)		(0.004)		(0.004)		(0.004)		(0.005)
GDP per capita		-0.224***		-0.164***		-0.238***		-0.236***		-0.232***
		(0.029)		(0.030)		(0.025)		(0.028)		(0.032)
Observations	358	283	358	283	358	283	355	280	167	153
Adjusted R-squared	0.661	0.766	0.699	0.779	0.531	0.772	0.522	0.770	0.564	0.854
F-statistics (p-value)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Cluster at the country-year, robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
All variables have been transformed by using the log-modulus transformation except for financial development, financial institutions, and financial markets.
Constants have been removed for reporting effects.
Estimations (2) and (6) were selected just for comparative purposes. Robustness extensions are available upon request.

Source: Own elaboration.

These results were consistent when controlling for different variables associated with political risk and sociodemographic and macroeconomic characteristics of each country, but not when considering private credit and stock market capitalization to GDP as proxies for financial development (Table 2).

However, the latter indicators of financial development only capture part of the depth of financial institutions and markets, respectively, and therefore omit the effect of other actors and instruments on the depth of the financial system as well as variables associated with their access and efficiency. These results suggest that the negative relationship between financial development and income inequality in Latin America is only evident when examining the financial system from a multidimensional perspective.

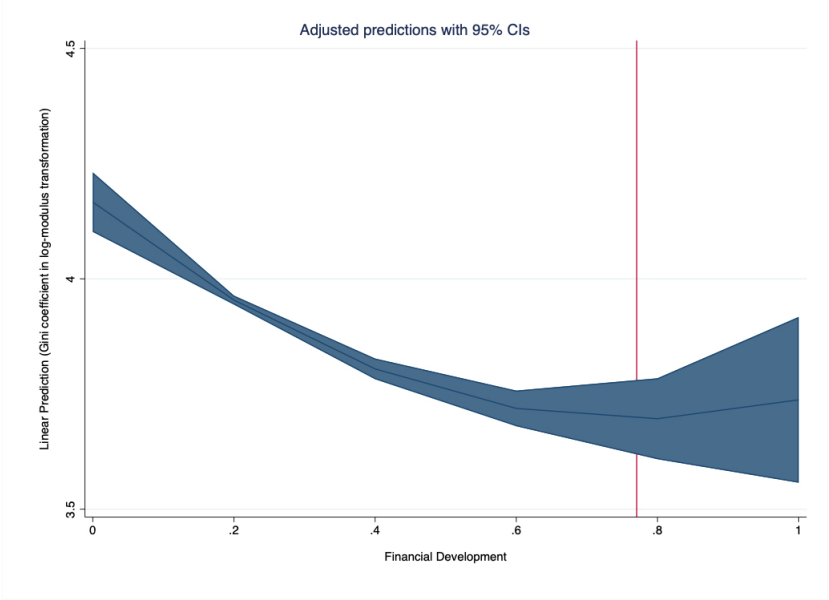
The negative relationship between financial development and income inequality is contrary to the findings of Mikek (2019) and Gómez et al. (2019), who suggest that financial development has increased income inequality in Latin America. However, it is consistent with the partial estimates of Canavire-Bacarreza and Rioja (2008), who argue that financial development has had a positive effect on the second, third, and fourth income quintiles of countries in the region, showing some evidence for the Greenwood and Jovanovic (1990) hypothesis. Beyond the Latin American setting, the results are consistent with those observed in most of the empirical literature. [9]

Through a threshold estimation (Appendix Table A7), it is possible to observe that the negative relationship between financial development and income inequality would occur only after a level of development greater than 0.17 (the mean value of financial development for Latin American countries during the period analyzed is 0.25). However, the results in Appendix Table A8 suggest that the negative relationship between financial development and income inequality in the 15 Latin American countries analyzed may occur only before a certain level of development. In the 6 estimations presented there, the linear term of financial development was negative, while the quadratic term was positive, and this divergence was statistically significant for three of the estimations. This relationship, although contrary to the postulates of Greenwood and Jovanovic (1990), is consistent with what was empirically observed in the basic estimates of Jauch and Watzka (2012) and in the models of Park and Shin (2017) and Brei et al. (2018).

Notwithstanding the above, the vertex of the estimations with significant values for the financial development index and its squared value (estimations (1), (2), and (5) in Appendix Table A8) is located at a level of development greater than 0.70 (at which the Gini coefficient reaches its minimum value). Thus, for values of financial development lower than 0.70, increasing financial development is associated with decreasing income inequality, while for values higher than 0.70, further increases in financial development are associated with increasing income inequality. However, since this point is outside the range of observed values of financial development (between 0.06 and 0.66), it is not possible to confirm a U-shaped relationship between the variables in our sample. Instead, there is indicated a non-linear relationship in which a decrease in the Gini coefficient given an increase in financial development slows down at a higher level of financial development, but without reaching the nadir and turning point.

After decomposing the IMF financial development indicator, the main determinant of its negative association with the level of income inequality in Latin America was observed to be the development of financial institutions, considering their depth, access, and efficiency characteristics (Appendix Table A9). The results suggest that financial institutions, such as banks, insurance companies, mutual funds, and pension funds, have a negative relationship with the Gini coefficient by providing greater depth and access to financial services and by enabling financial management to be performed more efficiently, both at the level of intermediation from savings to investment and at the operational and profitability levels. As for the development of financial markets, the negative relationship with the level of income inequality is observed only partially when considering their depth and access indicators. Indeed, there is even a positive and significant relationship between financial markets and the Gini coefficient when considering their efficiency indicators, suggesting that a higher level of capital market activity (measured through

[9] See footnote 2.



Graph 3: *Marginal effects of the long-term relationship between financial development and income inequality in Latin America (Estimation (1) in Appendix Table A8).*

Source: Own elaboration.

the stock market turnover ratio) is related to a higher level of income inequality (Appendix Table A10). Generally, a one percentage point increase in the development of financial institutions was linked to a reduction of 0.28 to 0.58 percentage points in the Gini coefficient. Conversely, a one percentage point increase in the development of financial markets was associated with changes ranging from -0.25 to 0.20 percentage points in the Gini coefficient, depending on the considered control variables.

The previous findings are consistent with those of Gimet and Lagoarde-Segot (2011) and Naceur and Zhang (2016), who found that banking sector development (financial institutions component) has a stronger positive effect than stock market development (financial markets component) on income distribution. Similarly, Brei et al. (2018) observed that financial development is associated with lower income inequality, but that when it is market-based, this relationship has a threshold, after which financial development is correlated with higher income inequality–such a detrimental pattern was not significant in banking-based financial development. However, these results are contrary to those partially reported by Altunbaş and Thornton (2019) in lower-income countries, where the impact of financial development on income distribution seems to be mainly through financial market development rather than through institutions. For their part, Thornton and Di Tommaso (2020) found a negative effect on income inequality from both subcomponents of financial development: financial institutions and financial markets.

At the level of income concentration in the top and bottom 10%, financial development continued to show a relationship with a distributional effect on income. Financial development had a negative and significant relationship with the income share held by the highest 10% (Appendix Table A11), as well as a positive and significant relationship with the income share held by the lowest 10% (Appendix Table A12). Again, it was mainly the development of financial institutions that seemed to have the strongest equalizing effect on financial development in Latin American countries in this robustness check.

The significance and incidence of the control variables used in the estimations are consistent across the different dependent variables studied. In terms of political risk components, a positive and statistically significant relationship was observed between income inequality and the responsiveness of Latin American governments to their population (government accountability variable). Authors such as Franko et al. (2016) suggest that voters have a significant influence on government ideology and re-

sponsiveness and, thus, on income distribution. However, when political participation in elections is biased towards the economic elite, elections lose their ability to empower people in the processes of representation, government composition, and policymaking, skewing distributional outcomes in favor of the wealthy. Even in the presence of legislation favorable to low-income voters–such as those linked to redistribution–the influence of high-income voters is able to slow down any reformist pace (Erikson, 2015). Therefore, the results suggest that, despite the greater presence of democratic governments in Latin America, their responsiveness may be biased towards the wealthier class, thus affecting the implementation of more redistributive policies. In addition, a positive and significant relationship was also observed between income inequality and the strength, impartiality, and observance of the legal system in Latin American countries (law-and-order variable). This positive relationship could be explained both by the higher transaction costs that improvements in institutional quality impose on the poorer population involved in the informal sector–at least in the early stages of development (Chong and Calderón, 2000)–and by the lower and sometimes deficient redistributive potential of legal rules (Kaplow and Shavell, 1994). Lastly, there is a negative and significant relationship between bureaucracy quality and income inequality, which could be explained by the presence of a more efficient public sector that avoids wasting scarce resources, mainly in middle- and low-income countries, thereby reducing inequality, decreasing fiscal pressures, and improving development performance (Spinesi, 2009).

In sociodemographic terms, there is a positive and significant relationship between schooling (gross secondary school enrollment variable) and income inequality, which may be explained by distributional biases in the expansion of educational needs (De Gregorio and Lee, 2002) as well as by a higher increase in schooling-related income for individuals located at the top of the distribution due to unobservable characteristics, such as the acceptance of more qualified jobs, individual abilities, and differences in educational quality (Martins and Pereira, 2004). Additionally, having a higher proportion of the population below the age of 15 and above the age of 65 (age dependency ratio variable) was positively and significantly related to income inequality, which is consistent with the perception of age as a principle of stratification, considering not only the life-cycle theory of savings and its impact on inequality (Deaton and Paxson, 1997) but also the greater allocation of differentiated public resources associated with a higher proportion of young and old people in society (O'rand and Henretta, 1999).

Finally, with respect to the macroeconomic variables analyzed, there is a negative and significant relationship between government consumption and income inequality, which could be associated with a greater redistributive effect of the fiscal and transfer systems (Clarke et al., 2006) in Latin America. In addition, inflation is negatively and significantly related to income inequality, which may be explained by the reduction in the real burden of debtors with nominal contracts in the event of an unexpected rise in inflation (Jauch and Watzka, 2016). Further, authors such as Galli and Van der Hoever (2001) have suggested a U-shaped relationship between inequality and inflation–which depends on the initial inflation level considered–so that restrictive monetary policy may be beneficial for equality in high-inflation countries, as may be the case in some Latin American countries. Lastly, higher economic activity (GDP per capita variable) was negatively and significantly associated with income inequality, suggesting that a sustainable economic growth is associated with a lower level of inequality in the region (Tsounta and Osueke, 2014).

No consistently significant relationship was observed between income inequality or the concentration of income in the highest and lowest income shares and the remaining control variables.

When considering estimations determined using country and year fixed-effect models, the results followed a similar trend but were less robust (Appendix Table A13). While there was still a negative relationship between financial development and income inequality, as well as between financial development and the income share of the top 10%, it was statistically significant in only one of the six respective estimations. This relationship was still mainly driven by the development of financial institutions, whose results were significant in five of the six estimations. The relationship between the development of financial markets and the stock market capitalization variable with income inequality was not significant,

while the relationship between the private credit variable with income inequality was significant in all estimations, but with a positive sign, suggesting an unequal increase in opportunities due to an increased flow of resources to the private sector. However, by including year fixed effects, the study considered annual shocks to outcome variables that should not be treated as noise but should be explicitly estimated. Since financial development was not constant and varied within the years under consideration, the explanatory variance was reallocated, and the annual shocks may have been absorbing most of the effect of financial development on income inequality. For this reason, country fixed-effect estimations were deemed to have provided more consistent results regarding the relationship between financial development and income inequality in the sample analyzed.

4.2. The causal relationship between financial development and income inequality

While the above analysis suggests a negative relationship between financial development and income inequality, it does not prove a causal relationship between these factors in Latin America. To determine whether a causal relationship exists, the IV method was introduced as it controls for possible reverse causality and simultaneity bias, considering as instruments the interaction between creditor rights developed by Djankov et al. (2007) and the US federal annual effective interest rate. In this way, an IV that is time-varying and country-specific is used to overcome the limitations of some previous studies and to be consistent with the internal transformations of the fixed-effects model.

Table 3 reports the estimation results with IV and country fixed-effects, which support the significant and robust negative relationship previously found between financial development and income inequality. Therefore, the findings suggest that financial development plays a role in decreasing income inequality. A one percentage point increase in financial development is estimated to result in a reduction of the Gini coefficient by approximately 1.14 to 2.74 percentage points in the countries included in the sample. This reduction in the Gini coefficient, attributed to an increase in the IMF financial development indicator, surpasses the reductions observed by Brei et al. (2018) (1.66 percentage points reduction), Altunbaş and Thornton (2019) (0.07 percentage points reduction in upper middle-income countries), and Thornton and Di Tommaso (2020) (between 0.40 and 1.45 percentage points reduction, depending on the income group of countries) concerning the same variables of interest. This finding remained consistent when including different control variables, but not when considering private credit and stock market capitalization to GDP as proxies for financial development (Table 4).

Table 3: *The impact of financial development on income inequality (Gini coefficient). IV. Country fixed-effect estimations.*

	(1)	(2)	(3)	(4)	(5)	(6)
Financial Development	-1.148***	-1.288***	-2.106***	-2.384***	-2.330***	-2.777**
	(0.194)	(0.207)	(0.781)	(0.772)	(0.595)	(1.173)
Investment profile		0.050	-0.019	-0.017	-0.038	-0.042
		(0.032)	(0.040)	(0.043)	(0.040)	(0.045)
Democratic accountability		0.181***	0.127*	0.132*	0.115*	0.101
		(0.063)	(0.071)	(0.078)	(0.069)	(0.075)
Corruption		-0.016	0.073	0.061	0.073*	0.075
		(0.046)	(0.052)	(0.049)	(0.041)	(0.049)
Law and order		0.032	0.191**	0.205***	0.136**	0.148**
		(0.050)	(0.076)	(0.076)	(0.060)	(0.072)
Bureaucracy quality		-0.098*	-0.085	-0.081	-0.070	-0.080
		(0.053)	(0.080)	(0.089)	(0.078)	(0.089)
School enrollment, secondary			0.127	0.097	0.101	0.065
			(0.110)	(0.127)	(0.109)	(0.141)
Age dependency ratio			-0.413	-0.583	-0.484	-0.504
			(0.543)	(0.531)	(0.435)	(0.493)
Government consumption				-0.022	-0.078	-0.076
				(0.070)	(0.056)	(0.058)
Trade openness				0.014	0.045	0.065
				(0.045)	(0.042)	(0.053)
Inflation					-0.035***	-0.041***
					(0.006)	(0.011)
GDP per capita						0.144
						(0.173)
Observations	358	358	288	283	283	283
F statistics (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
Endogeneity test (p-value)	0.000	0.000	0.004	0.002	0.015	0.021
Hansen J statistics (p-value)	0.505	0.136	0.236	0.313	0.115	0.250
Kleibergen-Paap rk LM statistic (p-value)	0.000	0.000	0.042	0.039	0.026	0.171
Kleibergen-Paap rk Wald F statistic	21.15	11.69	3.179	3.209	3.864	2.001

Cluster at the country-year, robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
All variables have been transformed by using the log-modulus transformation except for financial development.
Constants have been removed for reporting effects.

Source: Own elaboration.

Table 4: *The impact of financial development, financial institutions, financial markets, private credit, and stock market capitalization on income inequality (Gini coefficient). IV. Country fixed-effect estimations.*

	(2)	(6)	(2)	(6)	(2)	(6)	(2)	(6)	(2)	(6)
Financial Development	-1.288***	-2.777**								
	(0.207)	(1.173)								
Financial Institutions			-0.822***	-1.315***						
			(0.115)	(0.415)						
Financial Markets					-0.901**	0.393				
					(0.459)	(0.396)				
Private Credit to GDP							-0.140**	0.206***		
							(0.064)	(0.070)		
Stock Market Capitalization to GDP									-0.056	-0.080*
									(0.045)	(0.048)
Investment profile	0.050	-0.042	-0.001	-0.070*	0.054	-0.015	0.044	-0.016	-0.056	0.011
	(0.032)	(0.045)	(0.026)	(0.038)	(0.057)	(0.027)	(0.056)	(0.030)	(0.081)	(0.051)
Democratic accountability	0.181***	0.101	0.081**	0.031	0.134	0.070	-0.033	0.101**	-0.105*	0.029
	(0.063)	(0.075)	(0.032)	(0.042)	(0.137)	(0.043)	(0.051)	(0.048)	(0.060)	(0.046)
Corruption	-0.016	0.075	-0.019	0.052	0.032	0.008	-0.005	0.035	-0.031	-0.023
	(0.046)	(0.049)	(0.050)	(0.034)	(0.044)	(0.039)	(0.062)	(0.051)	(0.038)	(0.030)
Law and order	0.032	0.148**	-0.014	-0.008	0.144**	-0.004	0.130***	-0.081	0.168***	0.075
	(0.050)	(0.072)	(0.037)	(0.043)	(0.058)	(0.061)	(0.049)	(0.055)	(0.051)	(0.050)
Bureaucracy quality	-0.098*	-0.080	0.018	0.008	-0.195*	-0.001	0.032	-0.068	0.026	-0.021
	(0.053)	(0.089)	(0.039)	(0.052)	(0.104)	(0.046)	(0.056)	(0.060)	(0.109)	(0.069)
School enrollment, secondary		0.065		0.243***		0.335***		0.200***		0.220***
		(0.141)		(0.074)		(0.070)		(0.075)		(0.050)
Age dependency ratio		-0.504		0.067		0.651***		0.757***		0.254*
		(0.493)		(0.214)		(0.155)		(0.154)		(0.134)
Government consumption		-0.076		-0.054*		-0.080***		-0.155***		-0.133**
		(0.058)		(0.032)		(0.029)		(0.049)		(0.059)
Trade openness		0.065		0.042		-0.016		0.079		0.037

		(0.053)		(0.035)		(0.025)		(0.052)		(0.057)
Inflation		-0.041***		-0.029***		-0.012**		-0.008*		-0.020***
		(0.011)		(0.006)		(0.005)		(0.005)		(0.006)
GDP per capita		0.144		0.100		-0.241***		-0.234***		-0.230***
		(0.173)		(0.106)		(0.033)		(0.059)		(0.042)
Observations	358	283	358	283	358	283	355	280	167	153
F statistics (p-value)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Endogeneity test (p-value)	0.000	0.021	0.003	0.036	0.043	0.626	0.064	0.204	0.706	0.567
Hansen J statistics (p-value)	0.136	0.250	0.079	0.125	0.000	0.001	0.000	0.012	0.004	0.209
Kleibergen-Paap rk LM statistic (p-value)	0.000	0.171	0.000	0.012	0.040	0.284	0.001	0.018	0.077	0.153
Kleibergen-Paap rk Wald F statistic	11.69	2.001	16.57	3.454	2.496	1.405	7.331	3.234	79.17	47.33

Cluster at the country-year, robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
All variables have been transformed by using the log-modulus transformation except for financial development, financial institutions, and financial markets.
Constants have been removed for reporting effects.
Estimations (2) and (6) were selected just for comparative purposes. Robustness extensions are available upon request.

Source: Own elaboration.

Financial development also had an equalizing effect on the highest and lowest income shares in Latin America. Indeed, financial development had a negative and significant effect on reducing the income share held by the highest 10% (Appendix Table A14) and a positive and significant effect on increasing the income share held by the lowest 10% (Appendix Table A15).

Regarding the control variables included, the study continued to observe that higher government accountability, strength and impartiality of the legal system, schooling, and age dependency were associated with higher income inequality in Latin America, while higher bureaucracy quality, government consumption, inflation, and GDP per capita were associated with lower income inequality in the region.

To validate the results obtained in the IV estimations and mitigate the biases that could arise from violations of the assumptions inherent of the IV method, different statistical tests were considered. For example, regarding the estimation results in Table 3, the F-statistics showed that the independent variables reliably explained a significant percentage of the variance of the dependent variable of income inequality. The endogeneity test allowed us to reject that the specified endogenous regressor (financial development variable) can actually be treated as exogenous. The Hansen J statistic allowed us to significantly accept the hypothesis that all the instruments were uncorrelated with the error term (validity of the overidentifying restrictions). The Kleibergen-Paap rk LM statistic also allowed us to reject the hypothesis that the estimates were under-identified in five of six estimations, meaning that the instruments were relevant in those estimations. Lastly, the Kleibergen-Paap rk Wald F statistic significantly confirmed the strength of the instruments, although only in the estimations with a smaller number of control variables. While these results were rather consistent and not necessarily contradictory, they should be considered when weighing and evaluating the corresponding relevance and exogeneity requirements.

As further robustness checks, the following two methods were considered.

First was a variation of the proposed IV method by incorporating a third interaction variable to measure the tightness of the economic relationship between Latin American countries and the US. For this purpose, it was considered the average trade share (exports plus imports) of each country with the US during the sample period, based on data from the World Integrated Trade Solution (WITS). The results presented in Appendix Table A16 confirm the negative and significant relationship between financial development and income inequality in Latin America, reporting consistent statistical tests.

Additionally, the system generalized-methods-of-moments (GMM) estimator[10] was used to control for different sources of endogeneity though instrumental variables based on previous observations of the explanatory variable. As this method was designed for samples with many individuals and few time periods, five-year averaged data for six nonoverlapping periods between 1991 and 2020 were considered. Based on the analysis in Beck et al. (2007), a system in differences and levels was estimated considering the lagged (levels and differences) values of all explanatory variables as instruments (for the difference and level version of the regression, respectively). Table A17 in the Appendix reports the results of this method, supporting the negative and significant relationship between financial development and income inequality in four of the six estimations. These results were consistent when looking at the statistics associated with the Sargan test (instruments are not correlated with the error terms) and the autocorrelation test (there is no second-order serial correlation).

5. Conclusions

Latin America has made significant progress in financial development and poverty reduction in recent decades. Nevertheless, its persistent levels of inequality still leave room for further reduction, and the development of financial institutions and markets could be an effective way to achieve this.

[10] Developed for dynamic models by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998).

This study contributes to the rich literature by focusing on Latin American countries, considering a multidimensional variable of financial development, and applying an IV method based on creditor rights as a historical institutional component and US monetary policy as a dynamic external component affecting the increasingly open Latin American markets.

Our results showed that financial development, mainly through financial institutions, contributed to the reduction of income inequality in Latin American countries whose data were analyzed from 1990 to 2020, by reducing the Gini coefficient and the income share held by the highest 10% and by increasing the income share held by the lowest 10%. These results were robust when controlling for different variables associated with political risk and sociodemographic and macroeconomics characteristics of the countries in the sample, as well as for potential reverse causation and simultaneity bias.

Nevertheless, the results also suggest that the contribution of financial development to the reduction of income inequality in the region may slow down at higher levels of development and may even be reversed. It is therefore important to develop a financial system that is inclusive not only in the short term but also in the long term.

A well-functioning and smoothly evolving financial system appears to be critical not only for economic growth but also for more equitable income distribution. The results of this analysis support the importance of promoting an adequate framework of financial institutions, but also show important margins for improvement, mainly at the financial market level. A sustainable and inclusive financial system at all stages of development can clearly contribute to a greater equalization of financial opportunities and a reduction in income inequality in the Latin American population.

To address this study's limitations, future analyses could use other sources of information to determine and compare income inequality in Latin American countries, such as national accounts balances, as household surveys often have limitations in correctly capturing information on income at the upper end of distribution (Altimir, 1987), which is particularly relevant when assessing inequality trends (Atkinson et al. (2011); Piketty (2003)). In addition, indicators other than the distribution ratios could also be considered to address the several limitations of the widely used Gini coefficient. Further, the sociodemographic control variables considered here were mainly related to the supply side of the market. Subsequent analyses could be strengthened by focusing on variables that also consider the demand side of the market, such as technological changes (Tinbergen, 1975). Finally, the causal relationship analysis between income inequality and financial development is clearly debatable as it is based on assumptions that, if violated, could create a significant bias in the results obtained. Therefore, it is important to continue developing new methodologies and approaches to further enrich this discussion.

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A. Appendix

Table A1: *Previous studies on the relationship between financial development and income inequality.*

Study	Income inequality proxy	Financial development proxy	Data and methodology	Conclusions
Beck et al. (2004)	Annual growth of the Gini coefficient	Financial intermediaries' private credit to the private sector over GDP	Cross-country regressions for a sample of 52 developing and developed countries from 1960/1980–1999, controlling for possible reverse causality and simultaneity bias using instrumental variable regressions with legal origin and latitude as instrumental variables	Financial development reduced income inequality by increasing the incomes of the poor, which was consistent when controlling for other explanatory variables and when using instrumental variables
Clarke et al. (2006)	Gini coefficient compiled by Deininger and Squire (1996) and extended by Lundberg and Squire (2003)	Credit to the private sector by financial intermediaries to GDP and claims on the nonfinancial domestic sector by deposit money banks to GDP	Panel data analysis using a random-effects instrumental variable model with legal origin variables as instruments, and cross-sectional analysis using the two-stage least squares (2SLS) estimator with legal origin variables as instruments	After controlling for endogeneity, inequality was lower in countries with more developed financial sectors in both panel and cross-sectional analyses
Beck et al. (2007)	Annual growth of the Gini coefficient	Private credit channeled through financial intermediaries	Cross-country regressions for a sample of 65 developing and developed countries for the period of 1960–2005, and the generalized-methods-of-moments (GMM) panel estimator in differences and levels to control for unobserved country-specific effects and the endogeneity of other explanatory variables	Countries with higher levels of financial intermediary development experienced faster declines in the Gini coefficient during the period under analysis
Canavire-Bacarreza and Rioja (2008)	Average income of every quintile (UNWIDER) and the Gini coefficient	Private credit to GDP	GMM dynamic panel estimators (with lagged levels as instruments) to deal with country-specific effects, endogeneity, and reverse causality in 21 Latin American countries between 1960 and 2005	The income of the poorest quintile had not been affected by the expansion of the financial system, but the financial system had had a positive effect on the income of the second, third, and fourth quintiles

Batuo et al. (2010)	Gini coefficient from the UNU-Wider-WIID database	Liquid liabilities, broad money supply (M2), and domestic private credit to bank sector to GDP	Dynamic panel estimation technique (GMM) to address possible endogeneity biases for a sample of 22 African countries between 1980 and 2004	Income inequality decreased as economies developed their financial sector
Bittencourt (2010)	Gini coefficient of the earnings distribution nationally and by regions (IBGE)	Liquid liabilities (M2 and M3) and credit provided by financial institutions to the private sector and individuals to GDP	Pooled ordinary least squares (POLS), fixed effects, first differences with instrumental variables (using the second lag of financial development as the identifying instrument), and fixed effects with instrumental variables models for data from Brazil between 1985 and 1994	Financial development had a significant and robust impact on inequality reduction in Brazil in the 1980s and the first half of the 1990s
Kappel (2010)	Gini coefficient in levels of its rate of change	Private credit to GDP and market capitalization and total traded value to GDP	Cross-sectional and panel regressions for a sample of 78 developing and developed countries for the period of 1960–2006, controlling for endogeneity using legal origin and latitude variables individually as instruments of financial development	Income inequality was reduced not only through improved loan markets, but also through more developed securities markets. However, when controlling for endogeneity, the estimators of the financial variables turn out to be insignificant or only significant at the 10% level
Mookerjee and Kalipioni (2010)	Gini coefficient data from the UNU-Wider dataset	Access to financial services as measured by the number of bank branches per 100,000 populations	Cross-sectional regressions for a sample of 70 developing and developed countries between 2000 and 2005	Greater access to financial services reduced income inequality across countries
Gimet and Lagoarde-Segot (2011)	Gini coefficient from the EHII	Annual indicators of banking and capital market size, robustness, efficiency, and international integration	SVAR model including time and country fixed effects, as well as lagged values of income inequality, to control for unobserved factors for a set of 49 countries between 1994 and 2002	An increase in bank credit tended to increase income inequality, whereas an increase in market size and liquidity had a rather negative impact on inequality levels; however, the aggregate relationship depended mainly on the characteristics of the financial sector rather than its size, with the banking sector having a larger impact on inequality

Kim and Lin (2011)	Annual growth of the Gini coefficient	Private credit, liquid liabilities, and bank assets to GDP and market capitalization, turnover ratio, and traded value	Instrumental variable threshold regressions approach of Caner and Hansen (2004) and instrumental variables associated with initial financial development value, creditor rights, religious composition, legal origins, and ethnic fractionalization for a sample of 65/53 countries from 1960–2005	Financial deepening can be a feasible instrument to improve income distribution only if countries have reached a certain level of development. Below that threshold, financial development hurts the poor more and exacerbates income inequality
Shahbaz and Islam (2011)	Gini coefficient from Jamal (2006)	Domestic credit to the private sector as a share of GDP	Autoregressive distributed lag (ARDL) model applied to data from Pakistan between 1971 and 2005	Financial development reduced income inequality whereas financial instability (absolute value of the residuals obtained by regressing the financial development variable on its lagged and a time trend) exacerbated it
Hamori and Hashiguchi (2012)	Household income inequality (EHII) data from the UTIP	M2 ratios to GDP and domestic credit to the private sector to GDP	Panel data and a fixed-effects model for a sample of 126 countries for the period of 1962–2002	Financial deepening reduced inequality, although inequality increased with trade openness
Jauch and Watzka (2012, 2016)	Gini coefficient from the Solt (2009) SWIID	Private credit to GDP	Fixed-effect and 2SLS fixed-effect models, using as instrumental variables the legal origin and the lag of the instrumented variable itself, for a panel of 138 countries between 1960 and 2008	Financial development had a positive effect on income inequality
Jaumotte et al. (2013)	Gini coefficient from the World Bank	Private credit to GDP	Country fixed effects and time dummy variable specifications over a sample of 51 countries for the period of 1981–2013	An increase in financial development increased income inequality
Lo Prete (2013)	Average annual growth rate of the Gini coefficient	Private credit by deposit money banks and other intermediaries to GDP	Reduced-form regressions (OLS estimations) that relate the growth of the Gini coefficient over the 1980–2005 period to the initial levels of income inequality in 30 countries	Financial development was negatively and significantly related to inequality growth, with economic literacy and the ability of investors to understand financial opportunities and use financial instruments appropriately being the main drivers of that relationship

Kunieda et al. (2014)	Net Gini coefficient from the data developed by Solt (2009)	Ratio of private credit to GDP	Cross-country and panel data analysis for 119/120 countries for the period of 1985–2009 using legal origin variables as instrumental variables	In the panel data analysis, the partial effect of financial openness was estimated to depend on private credit, as financial integration widened inequality in countries with developed financial markets but reduced it in countries with poorly developed financial markets
Law et al. (2014)	Gini coefficient from the SWIID (Solt, 2009)	Private sector credit, bank credit, and commercial bank branches	Instrumental variable threshold regression technique suggested by Caner and Hansen (2004) considering instrumental variables associated with legal origin, creditor rights, and initial values of financial development for 81 countries between 1985 and 2010	Financial development tended to reduce income inequality only when a certain level of institutional quality was reached, before which the effect was non-existent
Bahmani-Oskooee and Zhang (2015)	Gini coefficient from the EHII dataset	Private credit and ratio of bank asset to GDP, liquid liabilities and financial system deposits to GDP, and bank credit to bank deposits	Long-run model for a sample of 17 countries between 1962 and 2003, including a short-run dynamic adjustment mechanism	In 10 countries, the short-term effects of financial development on income distribution were equalizing, although these effects were long-lasting in only three countries
Denk and Cournède (2015)	Gini disposable income adjusted for household size	Value added of finance, intermediated credit, and stock market capitalization to GDP	Country and year fixed-effects model for a sample of 33 OECD countries for the period of 1970-2011	Financial expansion drove higher income inequality in OECD countries
Sehrawat and Giri (2015)	Gini coefficient from World Bank and Jha (2000)	Domestic credit to private sector and market capitalization to GDP	ARDL approaches to data for India between 1981 and 2012	Financial development, economic growth, and inflation aggravated income inequality, while trade openness reduced the gap between the rich and the poor in the country
Shahbaz et al. (2015)	Gini coefficient from the WDI	Real domestic credit to the private sector on GDP	ARDL model in Iran's economy between 1965 and 2011	Income inequality increased with financial development, but started to decline once the financial sector matured

Zhang and Chen (2015)	Income ratio of rural-urban residents (GAP)	Gross amount of financial asset to GDP and the ratio of savings, deposits, and loans of financial institutions	Structural vector autoregression (SVAR) model to analyze the Chine economy between 1978 and 2013	Income inequality increased in the initial stages of financial development and only in the second or third stage of development did it decrease
Adams and Klobodu (2016)	Gini coefficient from the SWIID by Solt (2016)	Domestic credit to private sector to GDP and deposit money to Central bank assets	PMG estimator for a group of 21 sub-Saharan African countries for the period of 1985–2011	Measures of financial development had a positive impact on the Gini coefficient, increasing income inequality
Chen and Kinkyo (2016)	Gini coefficient from the SWIID	Private domestic credit to GDP	Pooled mean group (PMG) estimator to examine the long- and short-run relationship between financial development and income inequality for 88 countries with annual data between 1961 and 2012	Financial development reduced inequality in the long run, but it could increase inequality in the short run mainly due to countries' vulnerabilities in terms of their susceptibility to shocks and poor governance quality
Naceur and Zhang (2016)	Gini coefficient from the World Bank's inequality and poverty database	Variables from the Global Financial Development database to capture the access, depth, efficiency, stability, and liberalization of the financial sector	Instrumental variable regressions to control the endogeneity and reverse causality, using lagged values of endogenous variables and literature-based instruments such as fractionalization, linguistics, religious composition, and legal origin	A higher dimension of financial development can contribute to reducing income inequality and poverty, with banking sector development having a stronger positive effect than stock market development on income distribution
Nasreddine and Mensi (2016)	Gini coefficient from the SWIID or the EHII	Banking and stock market indicators	General least squares, random-effects, and fixed-effect models for a sample of 138 countries between 1980 and 2012	Financial development had a negative and significant effect on income inequality, with an inverted U-shaped relationship between the two variables, although only for low- and middle-income countries
De Haan and Sturm (2017)	Gini coefficient from Solt (2009) SWIID	Private credit to GDP	Dynamic panel models for 121 countries between 1975 and 2005, with a sensitive analysis using random-effects models with legal origin dummies as instruments for financial development	Financial development, financial liberalization, and banking crises increased income inequality

Ghossoub and Reed (2017)	Gini coefficient from the World Bank and the UNU-WIDER	Bank deposit assets, stock market capitalization, and government debt at the national level relative to GDP	Fixed-effect models (regional, country, and year fixed effects) to compare 99 countries	Countries at the highest stages of financial development – where money, bonds, and capital credits are traded – experienced the highest amount of capital formation and social welfare if inflation was low
Park and Shin (2017)	Gini coefficient based on market income and disposable income, and the share of national income earned by the richest (SWIID)	Liquid liabilities, private credit by deposit money bank, and stock market capitalization to GDP	Panel regression with fixed-effect and instrumental variables using ICRG public order data as instrumental variable	Financial development contributed to lower inequality to some extent, but if financial development progressed further, it contributed to higher inequality
Brei et al. (2018)	Gini coefficient on disposable income, including cash transfers	Overall index of financial development provided by Svirydzenka (2016), bank credit, equity, and bond market capitalization	GMM regressions, considering instrumental variables (initial values of economic and financial development, legal origin, ethnic and religious fractionalization, and absolute value of latitude) and country fixed effects for a sample of 97 economies from 1989–2012	Up to a certain point, higher finance reduced income inequality; however, beyond that point, inequality increased if finance expanded through market finance – but not otherwise when finance grew through bank lending
Meniago and Asongu (2018)	Gini coefficient, Atkinson index and Palma ratio from the GCIP	Money supply and liquid liabilities to GDP, bank credit on bank deposits and financial system credit on financial system deposit, and Bank Z-score	GMM technique for a panel of 48 African countries during the period 1996-2014	Except for financial stability, access to credit and intermediation efficiency have favorable income redistributive effects
Younsi and Bechtini (2018)	Gini coefficient from the WDI	Components of domestic credit to private sector, M2, and stock market capitalization to GDP	POLS and GMM estimators for data from Brazil, Russia, India, China, and South Africa between 1995 and 2015	Financial development had a positive and statistically significant effect on income inequality, whereas its squared term had a negative and statistically significant effect on income inequality

Altunbaş and Thornton (2019)	Gini coefficient based on households' income before taxes from Solt (2009)	Financial development index by the IMF	Quantile estimates regressions reporting country and time fixed-effects panel regressions for a sample of 121 countries between 1980 and 2015	Financial development promoted equality between inequality quantiles in upper-middle-income countries and promoted inequality between inequality quantiles in low- and high-income countries
Gómez et al. (2019)	Gini coefficient from SWIID (Solt, 2016)	Private credit to GDP	Panel data models (OLS with fixed-effects, EGLS model with cross-section SUR, and GMM) for a sample of 13 Latin American countries between 1990 and 2015	Financial development was found to produce greater income inequality
Mikek (2019)	Gini coefficient	Private credit to GDP	Country fixed effects panel for a sample of 16 Latin American countries between 1990 and 2017	Financial development deepened income inequality in Latin America
Nguyen et al. (2019)	Gini coefficient using post-tax, post-transfer income, and pre-tax, pre-transfer income (SWIID)	Domestic credit to private sector, credit to private sector, stock market capitalization, and the index of financial development developed by the IMF	Dynamic OLS (DOLS) and the fully modified OLS (FM-OLS) regressions to address endogeneity issues in 21 emerging countries between 1961 and 2017	The existence of an inverted U-shaped relationship between financial development and income inequality was confirmed
Jung and Cha (2020)	Gini coefficient from UHIES of China's National Bureau of Statistics	Ratio of financial intermediation, deposits, and total loans of financial institutions to GDP	GMM estimator in level and differences for 29 administrative units in China from 1998–2014	Financial deepening worsened inequality
Kavya and Shijin (2020)	Gini coefficient for both the net income and the market income Solt (2016)	Financial development index from the IMF	GMM estimator, considering the interaction between legal origin and the per capita income growth rate of each country as an instrumental variable, for a sample of 85 countries between 1984 and 2014	Only for high-income countries was the Greenwood and Jovanovic (1990) hypothesis found to be validated, whereas, in the case of middle- and low-income countries, financial development did not have a significant impact on income inequality

Omar and Inaba (2020)	Gini coefficient after deducting taxes and transfers (SWIID)	Financial inclusion determined based on Sarma's (2012) methodology	Dynamic panel regression method and fixed-effect estimations for a panel of 116 developing countries between 2004 and 2016, using latitude and ethnic fractionalization variables as instrumental variables of financial inclusion	Robust evidence of the impact of financial inclusion on poverty and income inequality reduction in the sample countries
Thornton and Di Tommaso (2020)	Gini coefficient based on households' income before taxes from Solt (2009)	Financial development index by the IMF	Heterogeneous panel cointegration techniques to examine the long-run effects of financial development on income inequality, considering country-specific fixed effects and country-specific time trend for 119 countries with data between 1980 and 2015	Financial development reduced income inequality in the long run, with results robust in different measures of finance and across different income groups within countries

Source: Own elaboration.

Table A2: *Descriptive statistics by country and variables (mean).*

Country	Gini coefficient	Income share held by highest 10%	Income share held by lowest 10%	Financial development	Financial institutions	Financial markets	Private credit to GDP	Stock market capitalization to GDP
ARG	3.849	3.548	0.869	0.310	0.291	0.318	2.784	2.657
BOL	3.945	3.666	0.605	0.179	0.342	0.009	3.846	.
BRA	4.035	3.804	0.666	0.492	0.571	0.396	3.881	3.877
CHL	3.932	3.727	0.979	0.439	0.551	0.312	4.161	4.543
COL	4.003	3.776	0.684	0.278	0.310	0.236	3.517	3.799
CRI	3.892	3.619	0.833	0.211	0.372	0.042	3.455	1.858
DOM	3.881	3.644	0.993	0.138	0.259	0.013	3.157	.
ECU	3.919	3.666	0.831	0.132	0.229	0.030	3.161	1.923
HND	4.000	3.737	0.671	0.161	0.286	0.030	3.644	.
MEX	3.927	3.700	0.913	0.337	0.337	0.324	3.021	3.385
PAN	3.999	3.729	0.565	0.344	0.422	0.254	4.259	3.179
PER	3.882	3.612	0.860	0.262	0.279	0.234	3.189	3.591
PRY	3.939	3.703	0.858	0.119	0.196	0.037	3.216	1.594
SLV	3.849	3.589	0.903	0.154	0.287	0.016	3.753	.
URY	3.771	3.492	1.100	0.178	0.319	0.032	3.386	1.457

Table A2 (cont.): *Descriptive statistics by country and variables (mean).*

Country	Investment profile	Democratic accountability	Corruption	Law and order	Bureaucracy quality	School enrollment, secondary	Age dependency ratio	Government consumption
ARG	1.993	1.690	1.262	1.369	1.316	4.553	4.096	2.602
BOL	2.005	1.575	1.167	1.263	0.962	4.455	4.263	2.760
BRA	2.063	1.664	1.303	1.212	1.178	4.626	3.953	3.005
CHL	2.377	1.698	1.582	1.733	1.326	4.529	3.924	2.565
COL	2.103	1.604	1.274	0.954	1.164	4.423	4.011	2.777
CRI	2.201	1.841	1.439	1.511	1.099	4.389	3.997	2.754
DOM	2.223	1.723	1.235	1.346	0.793	4.273	4.136	2.189
ECU	1.851	1.557	1.310	1.385	1.099	4.322	4.155	2.565
HND	2.074	1.573	1.116	1.071	1.000	3.981	4.334	2.586
MEX	2.257	1.776	1.168	1.183	1.289	4.372	4.121	2.435
PAN	2.219	1.781	1.099	1.356	0.933	4.227	4.085	2.654
PER	2.128	1.558	1.292	1.329	1.006	4.446	4.149	2.475
PRY	2.215	1.188	0.925	1.248	0.759	4.002	4.235	2.342
SLV	2.076	1.644	1.281	1.132	0.893	4.141	4.220	2.675
URY	2.309	1.747	1.475	1.311	1.020	4.607	4.080	2.578

All variables have been transformed by using the log-modulus transformation except for financial development, financial institutions, and financial markets.

Source: Own elaboration.

Table A3: *Summary statistics.*

Variables	N	Mean	Median	Min	Max	Std. Dev.	Source
Gini	358	3.92	3.928	3.664	4.137	0.103	WDI
Income share held by highest 10%	358	3.663	3.666	3.405	3.902	0.120	WDI
Income share held by lowest 10%	358	0.817	0.833	0.095	1.253	0.216	WDI
Financial development	465	0.249	0.217	0.064	0.662	0.129	FDI
Financial institutions	465	0.337	0.306	0.085	0.683	0.136	FDI
Financial markets	465	0.152	0.054	0.004	0.660	0.155	FDI
Private credit to GDP	462	3.500	3.464	2.088	4.898	0.527	GFD
Stock market capitalization to GDP	215	3.265	3.379	0.869	5.059	0.908	GFD
Investment profile	465	2.140	2.197	1.386	2.526	0.229	ICRG
Democratic accountability	465	1.641	1.705	0.693	1.946	0.229	ICRG
Corruption	465	1.262	1.253	0.000	1.792	0.227	ICRG
Law and order	465	1.294	1.322	0.693	1.792	0.250	ICRG
Bureaucracy quality	465	1.056	1.099	0.000	1.386	0.276	ICRG
School enrollment, secondary (% gross)	367	4.381	4.418	3.465	4.963	0.265	WDI
Age dependency ratio (% of working-age population)	465	4.117	4.102	3.787	4.594	0.163	WDI
Government consumption (as a share of GDP)	460	2.598	2.621	1.368	3.142	0.273	WDI
Trade openness (sum of exports and imports as a share of GDP)	465	4.038	4.055	2.691	5.122	0.486	WDI
Inflation (GDP deflator, annual %)	465	2.002	1.970	-3.307	8.742	1.266	WDI
GDP per capita (PPP, constant 2017 international $)	465	9.328	9.360	8.230	10.356	0.480	WDI
Creditor rights	465	1.467	1.000	0.000	4.000	1.205	Djankov et al. (2007)
Federal Funds Effective Rate (annual %)	465	2.823	2.158	0.089	8.099	2.335	FRED

All variables have been transformed by using the log-modulus transformation except for financial development, financial institutions, financial markets, creditor rights, and federal funds effective rate.

Source: Own elaboration.

Table A4: *OLS estimations testing the strength of the instruments.*

	Financial Development	Financial Institutions	Financial Markets	Private Credit to GDP	Stock Market Capitalization to GDP
Creditor rights # Federal funds rate	0.002**	0.001	0.003*	0.026***	0.011
	(0.001)	(0.001)	(0.001)	(0.004)	(0.014)
Investment profile	0.015	0.003	0.026	0.412***	1.762***
	(0.018)	(0.018)	(0.025)	(0.093)	(0.385)
Democratic accountability	-0.035	-0.023	-0.046	-0.159	-1.222***
	(0.025)	(0.025)	(0.037)	(0.099)	(0.383)
Corruption	-0.071***	-0.015	-0.125***	-0.058	-0.314
	(0.024)	(0.022)	(0.034)	(0.098)	(0.377)
Law and order	0.016	0.045**	-0.013	0.276***	-0.176
	(0.023)	(0.019)	(0.034)	(0.076)	(0.282)
Bureaucracy quality	0.134***	0.071***	0.193***	0.211***	1.423***
	(0.026)	(0.021)	(0.039)	(0.080)	(0.448)
School enrollment, secondary	-0.160***	-0.030	-0.284***	-0.086	-1.271**
	(0.032)	(0.031)	(0.042)	(0.130)	(0.604)
Age dependency ratio	-0.621***	-0.642***	-0.578***	-2.126***	-4.647***
	(0.059)	(0.053)	(0.079)	(0.233)	(0.862)
Government consumption	0.059**	0.125***	-0.008	0.630***	-1.043**
	(0.023)	(0.024)	(0.035)	(0.147)	(0.494)
Trade openness	-0.049***	0.048***	-0.145***	0.315***	-0.332**
	(0.014)	(0.013)	(0.019)	(0.050)	(0.151)
Inflation	-0.003	-0.002	-0.004	-0.061***	-0.078
	(0.005)	(0.004)	(0.007)	(0.017)	(0.075)
GDP per capita	0.046***	-0.000	0.091***	-0.417***	-0.399*
	(0.015)	(0.013)	(0.023)	(0.078)	(0.204)
Constant	3.059***	2.499***	3.510***	12.444***	32.848***
	(0.443)	(0.399)	(0.620)	(1.776)	(7.485)
Observations	362	362	362	359	193
Adjusted R-squared	0.601	0.671	0.479	0.602	0.416

Robust standard errors in parentheses. *** $p < 0.01$, **$p < 0.05$, * $p < 0.1$

All variables have been transformed by using the log-modulus transformation except for financial development, financial institutions, financial markets, creditor rights, and federal funds effective rate.

Source: Own elaboration.

Table A5: *Granger causality analysis.*

Null hypothesis	Z-bar statistics	p-value	95% critical value
Financial development does not Granger-cause Gini	13.26	0.023	10.55
Gini does not Granger-cause Financial development	10.13	0.046	9.903
Financial development does not Granger-cause Federal funds rate	12.23	0.148	17.26
Federal funds rate does not Granger-cause Financial development	12.55	0.055	13.21
Gini does not Granger-cause Federal funds rate	9.753	0.147	13.35
Federal funds rate does not Granger-cause Gini	4.747	0.306	12.78

Number of lags based on the Akaike information criteria.
P-values were computed using a bootstrap procedure as proposed in Dumitrescu and Hurlin (2012)

Source: Own elaboration.

Table A6: *Pairwise correlations.*

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Gini	1.000									
(2) Income share held by highest 10%	0.974***	1.000								
(3) Income share held by lowest 10%	-0.841***	-0.726***	1.000							
(4) Financial development	0.068	0.090*	0.003	1.000						
(5) Financial institutions	-0.095*	-0.070	0.135**	0.854***	1.000					
(6) Financial markets	0.184***	0.199***	-0.106**	0.890***	0.523***	1.000				
(7) Private credit to GDP	0.148***	0.142***	-0.159***	0.424***	0.630***	0.142***	1.000			
(8) Stock market capitalization to GDP	0.215***	0.320***	0.028	0.704***	0.549***	0.647***	0.371***	1.000		
(9) Investment profile	-0.148***	-0.093*	0.281***	0.272***	0.292***	0.190***	0.299***	0.452***	1.000	
(10) Democratic accountability	-0.160***	-0.178***	0.124**	0.399***	0.422***	0.284***	0.234***	0.083	0.386***	1.000
(11) Corruption	-0.124**	-0.126**	0.067	0.117**	0.134***	0.074	0.037	0.188***	0.103**	0.258***
(12) Law and order	-0.035	-0.052	-0.015	0.123***	0.125***	0.092**	0.128***	0.065	0.179***	0.219***
(13) Bureaucracy quality	-0.057	-0.095*	-0.014	0.469***	0.411***	0.409***	0.167***	0.339***	0.240***	0.511***
(14) School enrollment, secondary	-0.355***	-0.333***	0.407***	0.517***	0.594***	0.321***	0.294***	0.240***	0.238***	0.394***
(15) Age dependency ratio	0.284***	0.225***	-0.381***	-0.709***	-0.739***	-0.515***	-0.397***	-0.400***	-0.369***	-0.439***
(16) Government consumption	0.019	-0.037	-0.162***	0.395***	0.517***	0.199***	0.484***	0.054	0.034	0.216***
(17) Trade openness	0.057	0.032	-0.112**	-0.269***	-0.052	-0.394***	0.251***	-0.057	0.177***	0.072
(18) Inflation	0.050	0.058	0.026	-0.132***	-0.185***	-0.055	-0.313***	-0.082	-0.215***	-0.195***
(19) GDP per capita	-0.370***	-0.342***	0.395***	0.608***	0.521***	0.539***	0.109**	0.089	0.397***	0.450***

Table A6 (cont.): *Pairwise correlations.*

Variables	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(1) Gini									
(2) Income share held by highest 10%									
(3) Income share held by lowest 10%									
(4) Financial development									
(5) Financial institutions									
(6) Financial markets									
(7) Private credit to GDP									
(8) Stock market capitalization to GDP									
(9) Investment profile									
(10) Democratic accountability									
(11) Corruption	1.000								
(12) Law and order	0.450***	1.000							
(13) Bureaucracy quality	0.305***	0.225***	1.000						
(14) School enrollment, secondary	0.059	-0.080	0.425***	1.000					
(15) Age dependency ratio	-0.117**	-0.060	-0.408***	-0.777***	1.000				
(16) Government consumption	-0.001	-0.192***	0.288***	0.502***	-0.450***	1.000			
(17) Trade openness	-0.271***	0.035	-0.208***	-0.359***	0.214***	-0.171***	1.000		
(18) Inflation	0.151***	-0.079*	-0.049	-0.153***	0.207***	-0.224***	-0.262***	1.000	
(19) GDP per capita	0.152***	0.275***	0.406***	0.537***	-0.720***	0.157***	-0.183***	-0.079*	1.000

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

All variables have been transformed by using the log-modulus transformation except for financial development, financial institutions, and financial markets.

Source: Own elaboration.

Table A7: *Threshold estimation.*

	(1)	(2)	(3)	(4)	(5)	(6)
Threshold	0.1721	0.1702	0.1721	0.1721	0.1721	0.1721
Lower	0.1663	0.1658	0.1680	0.1680	0.1680	0.1680
Upper	0.1735	0.1721	0.1736	0.1736	0.1736	0.1735
Financial Development (0)	-0.369	-0.280	0.052	0.081	0.068	0.286
	(0.222)	(0.200)	(0.208)	(0.224)	(0.220)	(0.171)
Financial Development (1)	-0.838***	-0.826***	-0.310	-0.287	-0.293	-0.038
	(0.154)	(0.145)	(0.177)	(0.189)	(0.186)	(0.163)
Investment profile		-0.018	0.031	0.044	0.045	0.033
		(0.050)	(0.036)	(0.033)	(0.033)	(0.034)
Democratic accountability		0.249*	0.295***	0.285***	0.272***	0.227***
		(0.126)	(0.082)	(0.072)	(0.067)	(0.066)
Corruption		0.082	0.033	0.040	0.043	0.058
		(0.049)	(0.040)	(0.037)	(0.036)	(0.037)
Law and order		-0.002	0.007	0.004	0.005	0.023
		(0.052)	(0.063)	(0.060)	(0.059)	(0.062)
Bureaucracy quality		0.134**	0.086	0.068	0.051	0.008
		(0.044)	(0.057)	(0.055)	(0.062)	(0.056)
Age dependency ratio			0.474***	0.454***	0.465***	0.395***
			(0.073)	(0.067)	(0.074)	(0.082)
Trade openness				0.035	0.043	0.020
				(0.035)	(0.036)	(0.029)
Inflation					-0.005	-0.004
					(0.006)	(0.005)
GDP per capita						-0.120**
						(0.049)
Observations	156	156	156	156	156	156
R-squared	0.578	0.642	0.772	0.777	0.779	0.801
F-statistics (p-value)	0.000	0.000	0.000	0.000	0.000	0.000

Cluster at the country, robust standard errors in parentheses. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.
All variables have been transformed by using the log-modulus transformation except for financial development.
School enrollment, government consumption, and GDP per capita were removed because of missing values.
Constants have been removed for reporting effects.

Source: Own elaboration.

Table A8: *Testing Greenwood and Jovanovic's hypothesis. Country fixed-effect estimations.*

	(1)	(2)	(3)	(4)	(5)	(6)
Financial Development	-1.222***	-1.109***	-0.755***	-0.671***	-0.984***	-0.358
	(0.197)	(0.204)	(0.252)	(0.253)	(0.265)	(0.252)
Financial Development squared	0.793***	0.566**	0.470	0.400	0.700**	0.390
	(0.241)	(0.254)	(0.309)	(0.308)	(0.318)	(0.283)
Investment profile		0.013	0.007	0.003	-0.015	-0.011
		(0.023)	(0.026)	(0.028)	(0.027)	(0.024)
Democratic accountability		0.080**	0.076**	0.066*	0.059	0.088***
		(0.032)	(0.038)	(0.039)	(0.039)	(0.033)
Corruption		0.010	-0.009	-0.002	0.012	0.017
		(0.030)	(0.041)	(0.042)	(0.038)	(0.030)
Law and order		0.063**	0.090***	0.086**	0.049	0.043
		(0.028)	(0.033)	(0.034)	(0.032)	(0.029)
Bureaucracy quality		-0.059	-0.057	-0.042	-0.036	-0.026
		(0.036)	(0.048)	(0.050)	(0.047)	(0.043)
School enrollment, secondary			0.249***	0.269***	0.272***	0.294***
			(0.049)	(0.051)	(0.047)	(0.042)
Age dependency ratio			0.616***	0.627***	0.606***	0.482***
			(0.088)	(0.090)	(0.080)	(0.085)
Government consumption				-0.052	-0.085***	-0.087***
				(0.032)	(0.026)	(0.032)
Trade openness				-0.000	0.024	-0.004
				(0.022)	(0.020)	(0.021)
Inflation					-0.024***	-0.017***
					(0.004)	(0.004)
GDP per capita						-0.217***
						(0.031)
Observations	358	358	288	283	283	283
Adjusted R-squared	0.649	0.667	0.697	0.675	0.714	0.767
F-statistics (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
Extreme point (vertex)	0.771	0.980	0.803	0.838	0.703	0.459

Cluster at the country, robust standard errors in parentheses. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.
All variables have been transformed by using the log-modulus transformation except for financial development.
Constants have been removed for reporting effects.

Source: Own elaboration.

Table A9: *The relationship between financial institutions and income inequality (Gini coefficient). Country fixed-effect estimations.*

	(2)	(6)	(2)	(6)	(2)	(6)	(2)	(6)
Financial Institutions	-0.577***	-0.281***						
	(0.040)	(0.068)						
Financial Institutions (Depth)			-0.687***	-0.212**				
			(0.090)	(0.092)				
Financial Institutions (Access)					-0.389***	-0.123***		
					(0.024)	(0.036)		
Financial Institutions (Efficiency)							-0.223***	-0.079**
							(0.043)	(0.039)
Investment profile	-0.007	-0.020	0.009	-0.006	-0.014	-0.017	-0.024	-0.009
	(0.020)	(0.022)	(0.025)	(0.024)	(0.022)	(0.024)	(0.026)	(0.023)
Democratic accountability	0.046*	0.078**	0.024	0.092***	0.025	0.078**	-0.004	0.088***
	(0.026)	(0.031)	(0.033)	(0.032)	(0.026)	(0.033)	(0.032)	(0.032)
Corruption	0.001	0.022	0.002	0.019	0.002	0.015	0.043	0.017
	(0.030)	(0.029)	(0.028)	(0.028)	(0.030)	(0.030)	(0.031)	(0.031)
Law and order	0.025	0.030	0.065**	0.039	0.018	0.028	0.101***	0.045
	(0.025)	(0.029)	(0.028)	(0.029)	(0.025)	(0.029)	(0.027)	(0.029)
Bureaucracy quality	-0.004	-0.019	0.012	-0.020	0.005	-0.012	-0.074**	-0.036
	(0.033)	(0.040)	(0.034)	(0.041)	(0.032)	(0.042)	(0.036)	(0.043)
School enrollment, secondary		0.277***		0.272***		0.280***		0.292***
		(0.039)		(0.039)		(0.039)		(0.041)
Age dependency ratio		0.408***		0.407***		0.457***		0.506***
		(0.077)		(0.084)		(0.076)		(0.077)
Government consumption		-0.080***		-0.076**		-0.086***		-0.087***
		(0.029)		(0.031)		(0.032)		(0.031)
Trade openness		0.000		-0.009		-0.012		0.001
		(0.020)		(0.020)		(0.021)		(0.021)
Inflation		-0.018***		-0.017***		-0.016***		-0.016***
		(0.004)		(0.004)		(0.004)		(0.003)
GDP per capita		-0.164***		-0.223***		-0.184***		-0.220***
		(0.030)		(0.025)		(0.030)		(0.027)

Observations	358	283	358	283	358	283	358	283
Adjusted R-squared	0.699	0.779	0.643	0.771	0.690	0.772	0.550	0.769
F-statistics (p-value)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Cluster at the country-year, robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
All variables have been transformed by using the log-modulus transformation except for financial institutions (depth, access, and efficiency).
Constants have been removed for reporting effects.
Estimations (2) and (6) were selected just for comparative purposes. Robustness extensions are available upon request.

Source: Own elaboration.

Table A10: *The relationship between financial markets and income inequality (Gini coefficient). Country fixed-effect estimations.*

	(2)	(6)	(2)	(6)	(2)	(6)	(2)	(6)
Financial Markets	-0.248***	0.182***						
	(0.061)	(0.067)						
Financial Markets (Depth)			-0.376***	0.091				
			(0.064)	(0.065)				
Financial Markets (Access)					-0.210***	0.071		
					(0.058)	(0.047)		
Financial Markets (Efficiency)							0.012	0.053**
							(0.029)	(0.025)
Investment profile	-0.001	-0.010	-0.002	-0.007	-0.004	-0.013	-0.082***	-0.056**
	(0.031)	(0.024)	(0.031)	(0.024)	(0.029)	(0.025)	(0.030)	(0.026)
Democratic accountability	0.011	0.081**	0.038	0.084**	0.002	0.085**	-0.065	0.050
	(0.040)	(0.032)	(0.037)	(0.033)	(0.036)	(0.033)	(0.040)	(0.044)
Corruption	0.042	0.011	0.031	0.013	0.041	0.010	-0.021	-0.004
	(0.031)	(0.030)	(0.030)	(0.031)	(0.030)	(0.031)	(0.033)	(0.031)
Law and order	0.124***	0.020	0.103***	0.034	0.113***	0.038	0.120***	0.020
	(0.026)	(0.028)	(0.026)	(0.028)	(0.025)	(0.028)	(0.031)	(0.030)
Bureaucracy quality	-0.094**	-0.014	-0.079**	-0.022	-0.068*	-0.019	0.042	0.072
	(0.039)	(0.040)	(0.037)	(0.041)	(0.036)	(0.040)	(0.054)	(0.045)
School enrollment, secondary		0.309***		0.293***		0.292***		0.218***
		(0.042)		(0.041)		(0.041)		(0.047)
Age dependency ratio		0.570***		0.528***		0.522***		0.310***
		(0.080)		(0.080)		(0.079)		(0.083)
Government consumption		-0.084***		-0.088***		-0.084***		-0.107***
		(0.031)		(0.033)		(0.032)		(0.032)
Trade openness		-0.013		-0.015		-0.019		0.001
		(0.020)		(0.021)		(0.020)		(0.022)
Inflation		-0.014***		-0.015***		-0.015***		-0.020***
		(0.004)		(0.004)		(0.004)		(0.004)
GDP per capita		-0.238***		-0.238***		-0.241***		-0.230***
		(0.025)		(0.026)		(0.025)		(0.029)

Observations	358	283	358	283	358	283	259	219
Adjusted R-squared	0.531	0.772	0.548	0.767	0.530	0.767	0.590	0.785
F-statistics (p-value)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Cluster at the country-year, robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
All variables have been transformed by using the log-modulus transformation except for financial markets (depth, access, and efficiency).
Constants have been removed for reporting effects.
Estimations (2) and (6) were selected just for comparative purposes. Robustness extensions are available upon request.

Source: Own elaboration.

Table A11: *The relationship between financial development and income share held by the highest 10%. Country fixed-effect estimations.*

	(1)	(2)	(3)	(4)	(5)	(6)
Financial Development	-0.746***	-0.805***	-0.520***	-0.471***	-0.594***	-0.100
	(0.079)	(0.074)	(0.136)	(0.134)	(0.127)	(0.116)
Investment profile		0.030	0.030	0.017	0.000	0.002
		(0.029)	(0.033)	(0.035)	(0.034)	(0.031)
Democratic accountability		0.100**	0.101**	0.090*	0.084*	0.118***
		(0.041)	(0.049)	(0.049)	(0.050)	(0.042)
Corruption		-0.004	-0.033	-0.028	-0.014	-0.007
		(0.037)	(0.052)	(0.052)	(0.050)	(0.039)
Law and order		0.078***	0.091**	0.077**	0.039	0.031
		(0.029)	(0.037)	(0.037)	(0.035)	(0.032)
Bureaucracy quality		-0.104**	-0.078	-0.041	-0.036	-0.023
		(0.041)	(0.055)	(0.058)	(0.056)	(0.051)
School enrollment, secondary			0.231***	0.262***	0.252***	0.292***
			(0.057)	(0.060)	(0.056)	(0.051)
Age dependency ratio			0.629***	0.633***	0.604***	0.465***
			(0.100)	(0.100)	(0.092)	(0.095)
Government consumption				-0.094***	-0.131***	-0.132***
				(0.034)	(0.029)	(0.035)
Trade openness				-0.021	0.002	-0.028
				(0.026)	(0.025)	(0.024)
Inflation					-0.025***	-0.018***
					(0.005)	(0.005)
GDP per capita						-0.255***
						(0.035)
Observations	358	358	288	283	283	283
Adjusted R-squared	0.637	0.663	0.694	0.681	0.712	0.765
F-statistics (p-value)	0.000	0.000	0.000	0.000	0.000	0.000

Cluster at the country-year, robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
All variables have been transformed by using the log-modulus transformation except for financial development.
Constants have been removed for reporting effects.

Source: Own elaboration

Table A12: *The relationship between financial development and income share held by the lowest 10%. Country fixed-effect estimations.*

	(1)	(2)	(3)	(4)	(5)	(6)
Financial Development	1.460***	1.312***	0.720***	0.723***	0.918***	0.358
	(0.150)	(0.146)	(0.233)	(0.229)	(0.223)	(0.256)
Investment profile		0.069	0.156**	0.132*	0.159**	0.156**
		(0.070)	(0.070)	(0.073)	(0.074)	(0.073)
Democratic accountability		-0.066	0.039	0.026	0.037	-0.001
		(0.064)	(0.065)	(0.066)	(0.065)	(0.065)
Corruption		-0.124**	-0.101	-0.112	-0.133**	-0.141**
		(0.049)	(0.070)	(0.070)	(0.067)	(0.057)
Law and order		-0.165***	-0.263***	-0.284***	-0.223***	-0.214***
		(0.060)	(0.070)	(0.074)	(0.071)	(0.070)
Bureaucracy quality		0.094	-0.009	0.063	0.055	0.040
		(0.088)	(0.119)	(0.115)	(0.106)	(0.104)
School enrollment, secondary			-0.377***	-0.348***	-0.332***	-0.377***
			(0.081)	(0.085)	(0.081)	(0.075)
Age dependency ratio			-1.136***	-1.185***	-1.139***	-0.982***
			(0.207)	(0.197)	(0.189)	(0.188)
Government consumption				-0.171***	-0.114**	-0.111**
				(0.052)	(0.046)	(0.047)
Trade openness				-0.045	-0.082*	-0.047
				(0.045)	(0.043)	(0.043)
Inflation					0.039***	0.031***
					(0.007)	(0.007)
GDP per capita						0.289***
						(0.061)
Observations	358	358	288	283	283	283
Adjusted R-squared	0.626	0.655	0.737	0.733	0.756	0.776
F-statistics (p-value)	0.000	0.000	0.000	0.000	0.000	0.000

Cluster at the country-year, robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
All variables have been transformed by using the log-modulus transformation except for financial development.
Constants have been removed for reporting effects.

Source: Own elaboration

Table A13: *The relationship between financial development, financial institutions, financial markets, private credit and stock market capitalization, and income inequality (Gini coefficient). Country-year fixed-effect estimations.*

	(2)	(6)	(2)	(6)	(2)	(6)	(2)	(6)	(2)	(6)
Financial Development	-0.169**	-0.060								
	(0.081)	(0.105)								
Financial Institutions			-0.115*	-0.160**						
			(0.070)	(0.069)						
Financial Markets					-0.071	0.081				
					(0.049)	(0.065)				
Private Credit to GDP							0.054***	0.057***		
							(0.010)	(0.018)		
Stock Market Capitalization to GDP									-0.007	0.002
									(0.014)	(0.010)
Investment profile	-0.019	-0.035	-0.024	-0.041*	-0.015	-0.035	-0.032	-0.043*	-0.032	-0.057
	(0.021)	(0.024)	(0.021)	(0.023)	(0.021)	(0.024)	(0.020)	(0.023)	(0.045)	(0.040)
Democratic accountability	0.018	0.064*	0.007	0.058*	0.014	0.060*	0.009	0.053*	0.033	-0.005
	(0.028)	(0.033)	(0.027)	(0.032)	(0.029)	(0.032)	(0.026)	(0.029)	(0.045)	(0.044)
Corruption	0.013	0.027	0.012	0.032	0.013	0.024	0.026	0.034	-0.115***	-0.005
	(0.030)	(0.029)	(0.030)	(0.028)	(0.030)	(0.028)	(0.030)	(0.028)	(0.028)	(0.020)
Law and order	0.028	0.030	0.021	0.024	0.024	0.017	-0.004	0.014	-0.036	-0.012
	(0.024)	(0.027)	(0.024)	(0.027)	(0.024)	(0.027)	(0.023)	(0.027)	(0.035)	(0.031)
Bureaucracy quality	-0.056*	-0.086*	-0.038	-0.073	-0.055	-0.078	-0.059*	-0.094**	-0.153**	0.039
	(0.033)	(0.049)	(0.033)	(0.048)	(0.034)	(0.049)	(0.031)	(0.047)	(0.064)	(0.059)
School enrollment, secondary		0.194***		0.202***		0.210***		0.163***		0.182***
		(0.043)		(0.043)		(0.044)		(0.043)		(0.042)
Age dependency ratio		0.333***		0.296***		0.374***		0.502***		-0.356***
		(0.108)		(0.100)		(0.107)		(0.110)		(0.132)
Government consumption		-0.068***		-0.065***		-0.065***		-0.083***		-0.152***
		(0.025)		(0.025)		(0.025)		(0.026)		(0.036)
Trade openness		-0.042*		-0.031		-0.043*		-0.038		-0.102***
		(0.025)		(0.025)		(0.024)		(0.024)		(0.020)
Inflation		-0.012***		-0.014***		-0.011***		-0.012***		-0.006

		(0.004)		(0.004)		(0.004)		(0.003)		(0.005)
GDP per capita		-0.162***		-0.126**		-0.166***		-0.201***		-0.145***
		(0.048)		(0.050)		(0.047)		(0.049)		(0.046)
Observations	358	283	358	283	358	283	355	280	166	151
Adjusted R-squared	0.785	0.797	0.784	0.800	0.783	0.798	0.796	0.804	0.812	0.905
F-statistics (p-value)	0.222	0.000	0.325	0.000	0.439	0.000	0.000	0.000	0.000	0.000

Cluster at the country-year, robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
All variables have been transformed by using the log-modulus transformation except for financial development, financial institutions, and financial markets.
Constants have been removed for reporting effects.
Estimations (2) and (6) were selected just for comparative purposes. Robustness extensions are available upon request.

Source: Own elaboration.

Table A14: *The impact of financial development on income share held by the highest 10%. IV. Country fixed-effect estimations.*

	(1)	(2)	(3)	(4)	(5)	(6)
Financial Development	-1.259***	-1.442***	-2.272**	-2.600***	-2.529***	-3.245**
	(0.225)	(0.240)	(0.891)	(0.882)	(0.685)	(1.361)
Investment profile		0.065*	-0.001	-0.007	-0.031	-0.039
		(0.037)	(0.046)	(0.049)	(0.046)	(0.054)
Democratic accountability		0.208***	0.154*	0.161*	0.141*	0.129
		(0.074)	(0.086)	(0.092)	(0.082)	(0.091)
Corruption		-0.034	0.057	0.041	0.054	0.062
		(0.056)	(0.061)	(0.056)	(0.048)	(0.060)
Law and order		0.037	0.197**	0.206**	0.129*	0.152*
		(0.054)	(0.084)	(0.085)	(0.067)	(0.084)
Bureaucracy quality		-0.125**	-0.104	-0.082	-0.069	-0.084
		(0.061)	(0.088)	(0.097)	(0.088)	(0.104)
School enrollment, secondary			0.123	0.092	0.098	0.041
			(0.125)	(0.142)	(0.122)	(0.165)
Age dependency ratio			-0.449	-0.661	-0.545	-0.673
			(0.616)	(0.605)	(0.493)	(0.580)
Government consumption				-0.061	-0.122**	-0.119*
				(0.074)	(0.060)	(0.065)
Trade openness				-0.003	0.031	0.057
				(0.050)	(0.046)	(0.062)
Inflation					-0.039***	-0.047***
					(0.008)	(0.013)
GDP per capita						0.175
						(0.199)
Observations	358	358	288	283	283	283
F statistics (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
Endogeneity test (p-value)	0.000	0.000	0.030	0.011	0.147	0.033
Hansen J statistics (p-value)	0.092	0.124	0.107	0.197	0.048	0.143
Kleibergen-Paap rk LM statistic (p-value)	0.000	0.000	0.042	0.039	0.026	0.171
Kleibergen-Paap rk Wald F statistic	21.15	11.69	3.179	3.209	3.864	2.001

Cluster at the country-year, robust standard errors in parentheses. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.
All variables have been transformed by using the log-modulus transformation except for financial development.
Constants have been removed for reporting effects.

Source: Own elaboration.

Table A15: *The impact of financial development on income share held by the lowest 10%. IV. Country fixed-effect estimations.*

	(1)	(2)	(3)	(4)	(5)	(6)
Financial Development	2.677***	2.612***	3.832***	4.306***	4.415***	3.704**
	(0.420)	(0.442)	(1.403)	(1.431)	(1.120)	(1.695)
Investment profile		-0.003	0.213**	0.173*	0.215**	0.200**
		(0.085)	(0.096)	(0.095)	(0.099)	(0.095)
Democratic accountability		-0.286**	-0.056	-0.092	-0.067	-0.014
		(0.134)	(0.110)	(0.124)	(0.107)	(0.095)
Corruption		-0.062	-0.261***	-0.227***	-0.255***	-0.214***
		(0.077)	(0.096)	(0.086)	(0.075)	(0.072)
Law and order		-0.080	-0.450***	-0.501***	-0.386***	-0.343***
		(0.117)	(0.141)	(0.140)	(0.119)	(0.114)
Bureaucracy quality		0.135	0.037	0.132	0.114	0.105
		(0.131)	(0.165)	(0.169)	(0.150)	(0.138)
School enrollment, secondary			-0.187	-0.063	-0.054	-0.110
			(0.193)	(0.230)	(0.207)	(0.205)
Age dependency ratio			0.777	0.993	0.938	0.230
			(0.962)	(0.974)	(0.819)	(0.706)
Government consumption				-0.227**	-0.129	-0.125*
				(0.106)	(0.090)	(0.072)
Trade openness				-0.075	-0.135*	-0.139*
				(0.078)	(0.074)	(0.073)
Inflation					0.065***	0.062***
					(0.012)	(0.015)
GDP per capita						-0.169
						(0.260)
Observations	358	358	288	283	283	283
F statistics (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
Endogeneity test (p-value)	0.000	0.010	0.008	0.005	0.001	0.062
Hansen J statistics (p-value)	0.409	0.101	0.170	0.369	0.672	0.189
Kleibergen-Paap rk LM statistic (p-value)	0.000	0.000	0.042	0.039	0.026	0.171
Kleibergen-Paap rk Wald F statistic	21.15	11.69	3.179	3.209	3.864	2.001

Cluster at the country-year, robust standard errors in parentheses. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.
All variables have been transformed by using the log-modulus transformation except for financial development.
Constants have been removed for reporting effects.

Source: Own elaboration.

Table A16: *The impact of financial development on income inequality (Gini coefficient). IV (*). Country fixed-effect estimations.*

	(1)	(2)	(3)	(4)	(5)	(6)
Financial Development	-1.070***	-1.189***	-2.754***	-3.042***	-2.481***	-3.314**
	(0.195)	(0.214)	(1.060)	(0.988)	(0.665)	(1.334)
Investment profile		0.044	-0.031	-0.024	-0.041	-0.049
		(0.031)	(0.050)	(0.052)	(0.042)	(0.050)
Democratic accountability		0.164***	0.147*	0.154*	0.120*	0.103
		(0.063)	(0.083)	(0.092)	(0.071)	(0.084)
Corruption		-0.011	0.107	0.082	0.078*	0.086
		(0.044)	(0.067)	(0.059)	(0.043)	(0.055)
Law and order		0.039	0.230**	0.245***	0.143**	0.169**
		(0.048)	(0.096)	(0.093)	(0.064)	(0.082)
Bureaucracy quality		-0.094*	-0.094	-0.094	-0.072	-0.091
		(0.051)	(0.096)	(0.106)	(0.081)	(0.100)
School enrollment, secondary			0.088	0.044	0.089	0.022
			(0.135)	(0.150)	(0.113)	(0.153)
Age dependency ratio			-0.811	-0.982	-0.573	-0.699
			(0.720)	(0.661)	(0.468)	(0.539)
Government consumption				-0.012	-0.077	-0.074
				(0.084)	(0.059)	(0.065)
Trade openness				0.020	0.047	0.079
				(0.055)	(0.044)	(0.061)
Inflation					-0.036***	-0.046***
					(0.007)	(0.013)
GDP per capita						0.218
						(0.198)
Observations	358	358	288	283	283	283
F statistics (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
Endogeneity test (p-value)	0.000	0.001	0.006	0.003	0.085	0.059
Hansen J statistics (p-value)	0.272	0.064	0.435	0.528	0.107	0.372
Kleibergen-Paap rk LM statistic (p-value)	0.000	0.000	0.077	0.099	0.062	0.181
Kleibergen-Paap rk Wald F statistic	19.39	10.74	2.393	2.354	3.054	1.870

(*) Instrumental variables based on the interaction of creditor rights, federal funds rate, and US trade flow.
Cluster at the country-year, robust standard errors in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.
All variables have been transformed by using the log-modulus transformation except for financial development.
Constants have been removed for reporting effects.

Source: Own elaboration.

Table A17: *The impact of financial development on income inequality (Gini coefficient). GMM estimations.*

	(1)	(2)	(3)	(4)	(5)	(6)
Gini coefficient (-1)	0.416***	0.067	-0.513	-0.278	0.168	0.498**
	(0.152)	(0.262)	(0.563)	(0.537)	(0.466)	(0.212)
Financial Development	-0.940***	-1.286***	-1.420*	-1.208*	-0.406	0.220
	(0.166)	(0.371)	(0.846)	(0.702)	(0.532)	(0.547)
Investment profile		0.017	0.253	0.072	0.128	0.025
		(0.105)	(0.245)	(0.102)	(0.113)	(0.078)
Democratic accountability		0.302	0.455	0.414**	0.360*	0.262*
		(0.199)	(0.293)	(0.191)	(0.206)	(0.144)
Corruption		-0.147	-0.145	-0.080	-0.162	-0.098
		(0.168)	(0.199)	(0.133)	(0.105)	(0.110)
Law and order		0.105	-0.099	-0.078	-0.075	0.024
		(0.124)	(0.193)	(0.142)	(0.160)	(0.111)
Bureaucracy quality		-0.111	-0.128	0.421	-0.134	-0.170
		(0.302)	(0.530)	(0.407)	(0.372)	(0.332)
School enrollment, secondary			-0.228	0.143	-0.168	0.095
			(0.477)	(0.325)	(0.235)	(0.153)
Age dependency ratio			0.158	0.395	0.377	0.516**
			(0.510)	(0.426)	(0.373)	(0.246)
Government consumption				-0.298	-0.026	0.053
				(0.204)	(0.143)	(0.099)
Trade openness				-0.154	-0.015	-0.069
				(0.095)	(0.134)	(0.087)
Inflation					-0.030	-0.018
					(0.026)	(0.018)
GDP per capita						-0.153
						(0.146)
Observations	58	58	50	49	49	49
Sargen test (p-value)	0.249	0.391	0.891	0.993	0.900	0.731
AR (1) Arellano-Bond test (p-value)	0.693	0.936	0.492	0.630	0.543	0.298
AR (2) Arellano-Bond test (p-value)	0.980	0.394	0.759	0.780	0.720	0.307

Standard errors in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.
All variables have been transformed by using the log-modulus transformation except for financial development.
Constants have been removed for reporting effects.
Due to the relatively small number of clusters in our model, the estimates of the optimal weighting matrix are rather imprecise, so it was not possible to apply a two-step estimator, robust standard errors, and the Hansen's overidentification test.

Source: Own elaboration.