

Inequality and Finance: The role of Economic Literacy

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Abstract

Empirical research of the link between inequality and finance documents that across countries financial development is associated with lower and decreasing income inequality. This paper uses economic literacy as a measure for the ability to reap the benefits of financial investment opportunities, and documents that such specific competences matter for the relationship of income inequality and financial development. Our methodology involves SGMM estimations in a sample of forty-eight countries over the 1995-2006 period. According to our findings, financial development can substantially reduce income inequality. Economic literacy is an important factor for this outcome, as it complements and reinforces the effect of financial development. Our results are robust between transition and advanced economies and across different world regions. Also, the roles of economic literacy and financial development have remained stable in the period under analysis.

JEL classification: F24, G1, I24, I31, O11, O16

Keywords: inequality; economic literacy; financial development

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1. Introduction

The finance-inequality nexus has been of great interest to economists and policymakers over the last decades. The potential impact of the improvements in the financial sector in mitigating income inequality has been a continuous subject of exploration. Empirical work seems to suggest that financial development alleviates income inequality (Clark et al. 2006; Beck et al. 2007; Claessens and Perotti, 2007; Demirgüç-Kunt and Levine, 2009). Theory, on the other hand, predicts conflicting results on the relationship between income distribution and financial development. Some papers show that advances in the financial sector benefit the poor, and consequently reduce income inequality, by relaxing credit constraints (Galor and Zeira 1993; Galor and Moav 2004). Other models show that financial development primarily helps the rich, and as a result exacerbates income inequality, by disproportionately favoring individuals who are already engaged in economic activities (Greenwood and Jovanovic 1990).

It is also important to acknowledge that access to finance is unequal among individuals. People face constraints when investing on human or physical capital. Limited participation in financial markets might arise due to fixed transaction costs, entry regulations or because of political channels, which the rich tend to take advantage of (Claessens and Perotti, 2007). Therefore, economic (or financial) literacy, which is the ability to use financial instruments and to understand the complicated nature of financial markets, is a potentially important factor to explain income distribution disparities.

Empirical evidence suggests that economic literacy is a key factor of unequal access to finance (Jappelli, 2010) and may help explain people's ability to accumulate and manage wealth and build retirement plans (Lusardi and Mitchell 2007, 2014; Fornero and Monticone, 2011; Van Rooij et al., 2011). Moreover, people's ability to take advantage of new investment opportunities, because of a higher level of economic literacy, may help to reduce the growth of income inequality across countries and over time (Lo Prete, 2013; 2018).

Our paper adds to the large policy-oriented literature on the finance-inequality nexus and focuses on economic literacy, as a factor that can possibly complement financial development and subsequently improve income distribution. To that end, we investigate whether advances in the financial sector affect income inequality, through the channel of economic literacy. Our motivation is based on the notion that economic literate policymakers can design more effective policies and programs encouraging investment and entrepreneurship, or design policies that minimize corruption and increase transparency. These policies may contribute to reducing effects of income inequality at a macro level. As a result, financial development and economic literacy can demonstrate complementarity in the reduction of income inequality.

Our panel dataset consists of forty-eight countries over the period 1995-2006. Instead of measuring only one dimension of the financial sector - particularly the financial depth - as has been done extensively in literature, we use an aggregate index that considers three dimensions: the depth, the access and the efficiency of financial institutions and financial markets. Additionally, a challenge associated with the empirical relationship of inequality, economic literacy and financial development is the potential reverse causality of these variables. Therefore, in our paper we rely on the assumption of weak exogeneity of the variables of interest. We account for it by estimating our model using System Generalized Method of Moments (SGMM). Time dummy variables are added in all regressions to control for common trends in the variables of interest.

According to our findings, financial development significantly contributes to a reduction of income inequality, and economic literacy plays a complementary role on this effect. The effect of financial development on income inequality is robust between transition and advanced economies and across different world regions. Furthermore, the role of economic literacy and the role of financial development have remained stable in the period under analysis.

It must be noted that previous literature (Lo Prete 2013, 2018) has identified that financial development is not associated to income inequality when economic literacy is considered. However, these studies differ from our work in several ways. First, they build on the model by Beck et al. (2007) and involve initial Gini in the dependent variables. Our paper involves the Gini of the previous time-period, and therefore a larger sample of countries can be used, given the limitations of data for economic literacy. Second, previous studies have examined the effect of financial depth on income inequality growth. Our model uses a financial development index, which captures three dimensions of financial development (financial depth, access and institutional

efficiency). In theory, financial development should be uniformly reflected across all countries through the indicators of size, access, and efficiency. This facilitates international comparisons and identification of the impact of finance on inequality. There should not be reason to posit that the impact of financial development on these three dimensions would be any different in the United States than in Indonesia, or any other nation. Lastly, to account for reverse causality between financial development and income inequality, our main results and robustness checks involve SGMM estimations.

The rest of the paper is organized as follows: Section 2 discusses the dataset and empirical methodology; Section 3 reports and analyzes main findings and robustness checks. Section 4 concludes.

2. Material and Methods

2.1. Summary Statistics

In this section we provide a detailed description of the data employed in our regression analysis. The dataset constructed for this paper includes data on distribution of income, the level of financial development, and the degree of economic literacy. Additionally, it incorporates information on macroeconomic conditions and demographic characteristics. Our sample consists of forty-eight countries over the 1995-2006 period, reported in Table 1.

Descriptive statistics for all variables can be found in Table 2. In the context of socioeconomic disparities, the quantification of inequality is commonly measured with the Gini coefficient of Income, expressed in natural logs. "Income Gini" (in natural logs) quantifies the degree to which the income distribution among individuals or households within an economy deviates from a perfectly equal distribution. Annual data is drawn the WID World Inequality database (<https://wid.world>). Data is interpolated if missing.

Table 1
List of Countries

Countries (Abbreviations)			
Argentina	ARG	Korea (South)	KOR
Australia	AUS	Lithuania	LTU
Austria	AUT	Luxemburg	LUX
Belgium	BEL	Malaysia	MYS
Brazil	BRA	Mexico	MEX
Bulgaria	BUL	Netherlands	NLD
Canada	CAN	Norway	NOR
Chile	CHL	Peru	PER
China	CHN	Philippines	PHL
Czech Republic	CZE	Poland	POL
Denmark	DEN	Portugal	PRT
Estonia	EST	Romania	ROM
Finland	FIN	Slovakia	SVK
France	FRA	Slovenia	SVN
Germany	GER	South Africa	ZAF
Greece	GRE	Spain	ESP
Hungary	HUN	Sweden	SWE
India	IND	Switzerland	CHE
Indonesia	IDN	Thailand	THA
Ireland	IRL	Turkey	TUR
Israel	ISR	Ukraine	UKR
Italy	ITA	United Kingdom	GBR
Japan	JAP	United States	USA
Jordan	JOR	Venezuela	VEN

Table 2
Summary Statistics (1995-2006)

Variable	Mean	Std. Dev	Min	Max
Income Gini (logs)	3.586	.238	3.142	4.161
Growth of Real GDP per capita (logs)	.015	.013	-.029	.051
Financial Development Index	.497	.221	.092	.985
Economic Literacy Index	5.004	1.382	1.307	7.933
Years of secondary education (logs)	1.225	.419	-.196	1.987
Inflation	10.149	31.287	-1.361	370.717
Trade Openness (logs)	4.208	.551	2.797	5.651
Age Dependency Ratio (logs)	3.94	.145	3.644	4.348

To assess the significance of economic-specific competencies, we employ a measure known as economic literacy. Economic literacy refers to the capacity to understand fundamental economic concepts about individual financial decisions and the function of a modern economy. To conduct macroeconomic analysis, we use the "Economic Literacy Competence Index", conducted from a survey of senior business leaders, representing a cross-section of the business community in the

countries examined. Additionally, data from international organizations is incorporated into the analysis. This summary indicator of economic knowledge measures the level of economic literacy across 55 nations during the 1995-2008 period and it was published from the IMD World Competitiveness Rankings Yearbook (WCY).

The effect of financial development on economic growth, inequality, and stability is estimated in a large body of the growth & development literature. Various empirical studies have employed the utilization of the private credit to GDP ratio or the stock market capitalization to GDP ratio as indicators of financial progress. However, these metrics fail to account for the intricate and multifaceted nature of financial development. Hence, for our paper we utilize a “financial development index” available from the International Financial Statistics (IFS) of International Monetary Fund (IMF). This index provides an overview of the depth (size and liquidity), access (ability of people and businesses to access financial services), and efficiency of financial institutions and financial markets (ability of institutions to provide financial services at low cost and with sustainable revenues and the level of activity of capital markets).

We also incorporate controls for country-specific macroeconomic and demographic characteristics that may help explain the association between income inequality and financial development. The inclusion of variables such as real GDP growth per capita and trade openness helps to account for potential variations in income inequality across economies with higher economic growth and are more open to international trade. Additionally, the inclusion of inflation (growth rate of GDP deflator) helps to address the influence of the macroeconomic environment. Moreover, schooling and the age dependency ratio of people aged between 15 and 64 to the total population account for the relevance of country-specific demographic dynamics and profiles.

The “GDP growth per capita” (in natural logs) is the annual percentage growth rate of GDP per capita. The GDP per capita is the gross domestic product divided by midyear population. It is drawn from the IMF online database.

“Inflation” is measured as the annual percentage change in the GDP deflator. Data is drawn from the World Development Indicators (WDI) of the World Bank database.

“Trade Openness” (in natural logs) is defined as the ratio of Trade (Imports plus Exports) to GDP. Data is available from the Penn World Tables.

“Schooling” (in natural logs) is defined as the average secondary school attainment indicator; it is drawn from the Barro and Lee (2013) database and captures the human capital stock in the

economy. We focus on secondary education attainment for the percentage of the population, aged 25 and older.

“Age dependency ratio” (in natural logs) as a percentage of working-age population (in natural logs) is the ratio of dependents - people younger than 15 or older than 64 - to the working-age population (those ages 15-64). This statistic is available from the Health Nutrition and Population Statistics of the World Bank database.

Table 3 reports correlations of inequality with financial development, schooling, and economic literacy. The panel sample is unbalanced, given the sparsity of income inequality data, as well as the time coverage which is different for different countries.

Table 3
Correlations

	Income Gini	Financial Development	Schooling	Economic Literacy
Income Gini	1.0000			
Financial Development	-0.3841	1.000		
Schooling	-0.5572	0.6208	1.0000	
Economic Literacy	-0.5217	-0.4952	0.6396	1.0000

Figure 1 illustrates comprehensively the interplay of income distribution, financial development, and economic literacy in the long run. Country markers are weighted based on the level of economic literacy. A larger circle indicates higher economic literacy within the population. The regression analysis reveals a negative slope for the fitted line, aligning with the findings of prior research that examine the relationship between inequality and finance (Beck et al. 2007; Lo Prete 2013, 2018). By looking at the size of the country markers, it becomes evident that financial development and economic literacy encompass different aspects of the relationship between inequality and finance. In some advanced countries, such as Great Britain (GBR), we see a positive correlation between income inequality and the level of financial development. It is noteworthy that the level of economic literacy in these countries tends to be lower than the average observed within the sample. In contrast, nations such as Finland (FIN) and Sweden (SWE) exhibit low levels of income inequality despite having a comparatively lower degree of financial development with respect to similar economies. This can be attributed to their high levels of economic literacy.

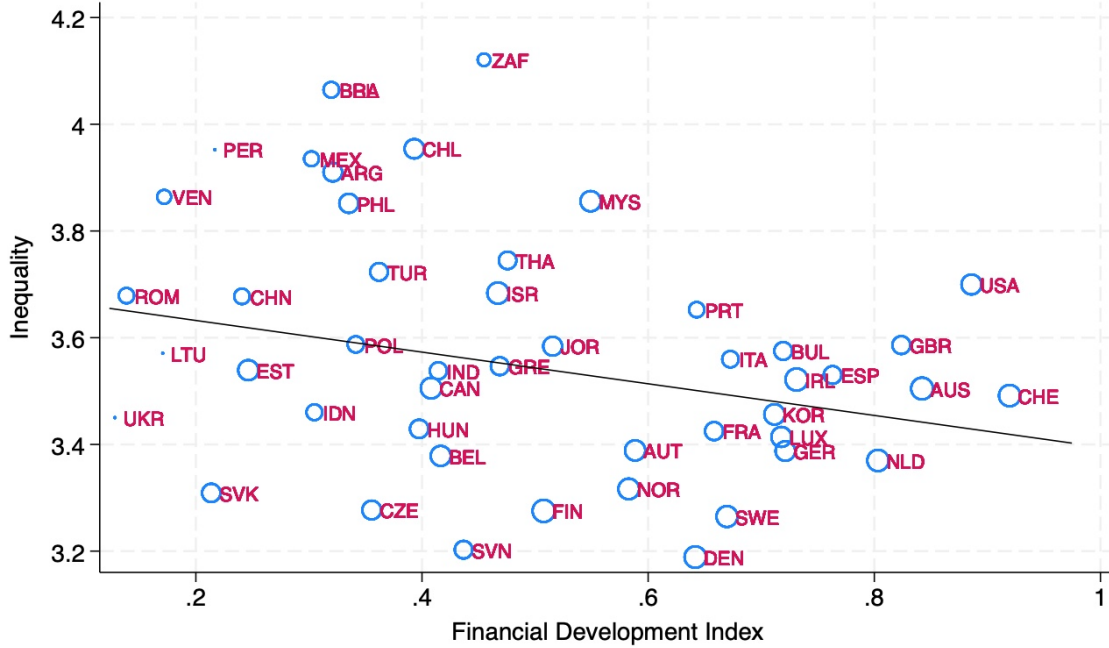


Fig. 1: Financial development and inequality. Linear regression fit: Coefficient = - 0.079, standard error = 0.047, t statistic = - 1.66. Country markers are weighted by the level of economic literacy, a bigger circle indicating a higher level of economic literacy.

2.2. Estimation methodology

In this section we proceed with our empirical estimations that investigate whether the variation in economic literacy, which serves as an indicator of individuals' capacity to access and utilize financial markets, can shed light on the finance-inequality relationship that is theoretically ambiguous, but empirically established. To address potential confounding factors related to business cycle variations, we split the sample period from 1995 to 2006 into four distinct non-overlapping intervals of three years each. The estimation equation is defined as follows:

$$Y_{i,t} = a + \gamma Y_{i,t-1} + \beta_1 FINDEV_{i,t} + \beta_2 LIT_{i,t} + \beta_3 FINDEV * LIT_{i,t} + \beta_4 X_{i,t} + \varphi_i + \psi_t + \varepsilon_{i,t} \quad (1)$$

where the $Y_{i,t}$ corresponds to the 3-year average of the Income Gini coefficient; LIT is the economic literacy competence index, $FINDEV$ is the financial development index; vector X includes trade openness, inflation and the real GDP per capita growth that capture macroeconomic conditions, as well as age dependency ratio and the average years of secondary school attainment that capture demographic characteristics.

We also include an interaction term, $FINDEV * LIT$ to test whether the level of economic literacy affects the impact of financial development on income inequality. Including this interaction term allows for a non-linear impact of financial development on inequality, depending on the level of economic literacy. A positive coefficient would indicate that financial development is more effective in reducing income inequality in countries with higher levels of economic literacy. In other words, a positive interaction supports complementarity of economic literacy with the use of financial instruments.

The ψ_t refers to time specific effects. The φ_i refers to unobserved country fixed effects. Lastly the error term $\varepsilon_{i,t}$ contains all other unobserved time-varying sources of variation in income inequality.

Utilizing panel data analysis, as opposed to cross-sectional analysis, effectively addresses potential specification biases. We start by examining the impact of financial development on income inequality using the pooled ordinary least squares (Pooled OLS) method. However, in theory it is possible that financial development and changes in income distribution might be driven by reverse causation. As Beck et al. (2007) have argued in their seminal paper, a reduction in income inequality could potentially lead to creation of a more efficient financial sector through political pressures. Subsequently, this would lead to a biased effect of financial development - and its interaction term - on inequality. In this scenario, Pooled OLS regressions may not be optimal for mitigating potential endogeneity concerns.

Several studies (Japelli, 2010; Lo Prete 2018) addressing the finance-inequality nexus have employed instruments for financial development, not susceptible to reverse causality. These instruments include the origins of a country's legal system and creditor rights (La Porta et al., 1999), as well as the “strength of investor protection index” from the Doing Business Project, a metric used to assess the effectiveness of rules aimed at protecting minority shareholders against self-dealing and improper use of corporate assets by directors. However, these instruments do not vary over time, and they would be problematic in a panel framework. In our paper instead, we employ the Stochastic Generalized Method of Moments (SGMM) method (Arellano and Bover, 1995, Blundell and Bond, 1998), which effectively addresses concerns related to reverse causality and serial correlation.

3. Estimation Results

3.1. Main Results

In this section we present results for our model with Pooled OLS (Table 4) and SGMM (Table 5) estimations. Annual data are averaged over 4 non-overlapping sub-periods of 3-years each, to mitigate the potential effect of business cycle fluctuations and temporary shocks. All specifications include the lag of Income Gini. Specification (1) includes the financial development index as explanatory variable of inequality; Specification (2) includes the financial development index and control variables; Specification (3) includes additionally the economic competence index; Specification (4) includes the interaction term of financial development with economic literacy and is our main specification; Specification (5) excludes the schooling variable.

Table 4 reports results from estimating Model (1) by Pooled OLS. All specifications include time effects. The positive association of the lagged Gini with the dependent variable indicates that inequality is higher in countries that record a higher level of inequality in the previous sub-period. According to results from Columns (1) and (2), it seems that the impact of financial development on income inequality is negative but insignificant when financial development is simply added as an additional explanatory variable. These results contrast with previous literature (Beck et al. 2007; Lo Prete 2013, 2018), which has identified a significant effect of financial development on inequality. However, these papers have utilized one dimension of the financial sector (financial depth), as potential factor of the reduction of inequality.

Table 4
Pooled OLS Results

	(1)	(2)	(3)	(4)	(5)
L.GINI (log)	.9504***	.9072***	.9159***	.9162***	.9235***

	(.0191)	(.021)	(.0209)	(.0208)	(.0188)
LITERACY			.0017	-.0178	-.0235**
			(.0042)	(.0111)	(.0107)
SCHOOLING (log)		-.0308***	-.0262*	-.0174	
		(.0113)	(.0142)	(.014)	
FINDEV	-.0004	-.0261	-.0423*	-.2084**	-.2526***
	(.025)	(.0213)	(.024)	(.0834)	(.0815)
FINDEV*LIT				.0308**	.0371**
				(.0151)	(.0153)
INFLATION		-.0043***	-.0042***	-.0047***	-.0044***
		(.0009)	(.0011)	(.0011)	(.0011)
TRADE (log)		-.0169***	-.0172***	-.0129*	-.0105*
		(.0058)	(.0064)	(.0068)	(.006)
GDPGAPGR (log)		-.4399	-.4202	-.5899	-.6439
		(.4088)	(.4335)	(.427)	(.4333)
AGEDEP (log)		.0394	.04	.0395	.0307
		(.0286)	(.0324)	(.0317)	(.0304)
Observations	103	100	93	93	93
R-squared	.972	.9795	.9795	.9803	.98

Note: Pooled-OLS Regression estimates. Robust Standard Errors. Dependent variable is the natural log of Income Gini. ***1%, **5% and *10% significance, respectively. All specifications include time effects and a constant, not reported. *Abbreviations:* GINI, income Gini, in natural logs; FINDEV, financial development index; INFLATION, Consumer Price Index; TRADE, sum of exports and imports to GDP, in natural logs; GDPGAPGR, growth of real GDP per capita in natural logs; SCHOOLING, average years of secondary schooling, in natural logs; ECONLIT, economic literacy index.

Questions are raised on whether the impact of financial development is homogeneous across countries or whether it varies along a dimension, which has not adequately accounted for the estimated specification. We explore this avenue by investigating whether economic literacy influences financial development and its effect on income inequality. To this end we estimate our model by allowing the impact of the financial development index on income inequality to differ depending on the level of economic literacy. The sign of the interacted coefficient provides information regarding the nature of financial development. A positive interaction term implies that financial development and economic literacy are complementary and that a higher level of economic literacy enhances the impact of the financial sector on income inequality. On the other hand, a negative sign would indicate that economic literacy and financial development have a substitutability role for the reduction of income inequality.

Continuing with our results, with the inclusion of economic literacy in Column (3), financial development becomes statistically significant, and the negative sign of its coefficient indicates that inequality is lower in countries with a higher level of financial development. This result comes into contrast with the studies by Lo Prete (2013, 2018), that show that, by including economic literacy, financial development becomes statistically insignificant. There might be a few reasons for this deviation of results. For instance, our study uses a financial development index that captures three dimensions of the financial sector, instead of the Private Credit to GDP ratio, to measure the development of the financial sector. We need to note that we have estimated our model using Private Credit to GDP ratio (not reported) as proxy for financial development, and we have reached to the same qualitative results as in the studies by Lo Prete (2013, 2018). Also, our sample consists of 48 countries, over the period 1995-2006. Lo Prete's (2013, 2018) studies look at a sample of 33 countries over the period 1980-2005, as it builds on Beck et al. 2007 study and considers the initial Gini as independent variable.

A much stronger effect of financial development on inequality can be seen in Columns (3) and (4) which include the interaction term of financial development with literacy. The positive and statistically significant interaction term provides evidence of complementarity, i.e. the reducing effect of the financial sector on income inequality is substantially magnified in countries with a higher level of economic literacy. By removing the schooling variable from our model in Column (5), we observe that the effect of economic literacy and the effect of financial development on inequality remain relatively stable, suggesting that our results are robust and economic literacy is not affected by the level of schooling.

As has been mentioned in the previous section, using Pooled OLS to estimate our model can potentially lead to biased results. That is because financial development might respond endogenously to income inequality, or if some unobservable country characteristic is correlated with the independent variables also influences inequality. The analysis that follows will test if the Pooled OLS results, reported in Table 4, hold when accounting for reverse causation and for serial correlations in the errors. Given the dynamic structure of the model and a "short T, large N" specification of the panel data, we employ System Generalized Method of Moments (SGMM) estimations in our model, as shown in Table 5. This approach takes into account the endogeneity of the lagged dependent variable and simultaneously allows for weakly exogenous regressors. We treat coefficients obtained from this method as the main results.

Table 5
SGMM Main Results

	(1)	(2)	(3)	(4)	(5)
L.GINI (log)	.9671** (.3947)	.6426*** (.1657)	.7976*** (.1935)	.8512*** (.3109)	.9252*** (.1693)
LITERACY			.0109 (.0222)	-.0813** (.0364)	-.0723** (.0329)
SCHOOLING (log)		-.1011 (.1033)	-.0835 (.1314)	.0183 (.0745)	
FINDEV	-.0351 (.3002)	-.0623 (.1168)	-.0333 (.1423)	-.6695** (.2907)	-.5571** (.2073)
FINDEV*LIT				.1149* (.0621)	.1017** (.0389)
INFLATION		-.0026 (.0036)	-.0031 (.0056)	-.0037 (.0047)	-.0039 (.0043)
TRADE (log)		-.0552 (.0665)	-.0256 (.0503)	.0018 (.0493)	.0309 (.0379)
GDPCAPGR (log)		-1.2859 (1.2045)	-1.1882 (2.0397)	-.8982 (.937)	-2.1247 (1.383)
AGEDEP (log)		.1623 (.1264)	.144 (.1173)	.1027 (.1347)	.0205 (.1125)
Observations	103	100	93	93	93
Number of Instruments	8	21	24	27	24
p-value Hansen test	0.901	0.097	0.254	0.781	0.801
AR(1) test	0.869	0.512	0.398	0.358	0.941

Note: SGMM Regression estimates. Robust Standard Errors. Dependent variable is the natural log of Income Gini. ***1%, **5% and *10% significance, respectively. All specifications include time effects and a constant, not reported. *Abbreviations:* GINI, income Gini, in natural logs; FINDEV, financial development index; INFLATION, Consumer Price Index; TRADE, sum of exports and imports to GDP, in natural logs; GDPCAPGR, growth of real GDP per capita in natural logs; SCHOOLING, average years of secondary schooling, in natural logs; ECONLIT, economic literacy index.

Following the growth & development literature, lagged values of the dependent variable and of the regressors which are assumed to be weakly exogenous are used as “GMM style” instruments. We use the second to third lag of the dependent variable, GDP per capita growth, trade openness, inflation, schooling, economic literacy, financial development index and their interaction term. Exogenous variables (time effects and age dependency ratio) serve as instruments

for themselves (“IV style”). In accordance with the rule-of-thumb that the number of instruments should be fewer than the number of panel data units), we employ the “collapse” option to ensure that the total number of instruments remains within a suitable range. The estimation table also includes Hansen's test statistics for overidentifying restrictions, which helps to assess the validity of the instruments.

As we observe from the SGMM estimations, financial development is insignificant in Col. (1) and (2) and continues to be insignificant in Col. (3), even when we include the economic literacy variable. However, when we add the interaction term in Col. (4) and (5), it becomes statistically significant to explain the reduction of income inequality. This difference of the SGMM results implies possible underestimation of the Pooled OLS estimations. However, qualitatively the conclusion that financial development reduces income inequality, when economic literacy is considered, continues to hold, as in our Pooled OLS estimations, suggesting strong evidence of the finance-inequality nexus in this case. The omission of schooling in Col. (5) does not make significant difference for the relationship of inequality, financial development and economic literacy.

3.2. Robustness Checks

In this section, we perform two types of robustness checks using SGMM estimations, to reaffirm the validity of our results. First, we test whether income inequality differs between advanced and transition economies, by including a dummy variable allowing countries in different groups to have different intercepts. The countries of our sample are categorized as follows: Transition countries include Argentina, Brazil, Bulgaria, Chile, China, Czech Republic, Estonia, Hungary, India, Indonesia, Israel, Jordan, Lithuania, Malaysia, Mexico, Peru, Philippines, Poland, Romania, Slovakia, Slovenia, Ukraine, Thailand, Turkey, Venezuela. Advanced countries include Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Korea (South), Netherlands, Norway, Portugal, South Africa, Spain, Sweden, Switzerland, United Kingdom, United States.

We also test whether the relationship between financial development, economic literacy and income inequality is different across different regions. To that end, we categorize the countries of our sample into five world regions (Americas, Europe, Asia Pacific and Middle East/Africa). The

Americas include Argentina, Brazil, Canada, Chile, Mexico, Peru, Venezuela, United States. Asia Pacific includes Australia, China, India, Indonesia, Japan, Korea (South), Malaysia, Philippines, Thailand. Europe includes Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Luxemburg, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom. Middle East / Africa includes Israel, Jordan and South Africa.

The results for the first set of robustness checks are presented in Table 6A. Col. (2) and (3) tests potential variation in income inequality from financial development and economic literacy between transition and advanced countries. As is shown, the empirical results from the main specification (Col. 4 from Table 5) continue to hold; the negative relationship between financial development and income inequality is robust.

In Col. (3) to (6) of Table 6A we explore whether the finance-inequality nexus differs across world regions, by including different region dummy variables (Americas, Asia Pacific, Africa and Europe). The results remain staggeringly robust. The effect of literacy continues to be negative and quantitatively unchanged. Also, financial development continues to be statistically significant to explain the reduction of income inequality, while there is a complementary role of economic literacy on financial development (as implied by the positive sign of the interaction term).

For the second set of robustness checks (Table 6B) we examine (i) if the importance of economic literacy (ii) and financial development had changed over the analyzed period. To do that, we include interaction terms between economic literacy and the sub-period time effects, reported in Col. (1), as well as interaction terms between financial development and the sub-period time effects, reported in Col. (2). The findings are presented in Table 6B. As is shown, there is no evidence of an evolution of the importance of neither economic literacy nor financial development as explanatory variables for the variation in income inequality. The results imply that the financial development-inequality nexus has been quite stable over time and that economic literacy plays an important complementary role to the financial sector for the reduction of income inequality.

Table 6A
SGMM Robustness Checks

	(1)	(2)	(3)	(4)	(5)	(6)
L.GINI (log)	.826** (.3395)	.8249*** (.3023)	.8812*** (.2183)	.8088*** (.2702)	.8865*** (.1691)	.9232*** (.2052)
LITERACY	-.0692* (.0383)	-.0678* (.0369)	-.0865* (.0444)	-.0794** (.0373)	-.0821** (.0359)	-.0663** (.031)
SCHOOLING (log)	.0198 (.1056)	.0215 (.0994)	.0125 (.0766)	.0076 (.0614)	.007 (.0535)	.0066 (.0648)
FINDEV	-.6351* (.3269)	-.6127* (.3172)	-.6761** (.3034)	-.6708* (.3416)	-.6646** (.2898)	-.5921** (.2546)
FINDEV*LIT	.1028 (.0624)	.1002* (.0585)	.1195* (.0626)	.1088* (.059)	.1171** (.053)	.1041** (.0508)
TRANSITION	-.0001 (.0675)					
ADVANCED		-.0069 (.0736)				
AMERICAS			.0075 (.0712)			
EUROPE				.0168 (.062)		
ASIA PACIFIC					-.0441 (.0629)	
MIDDLE EAST / AFRICA						.0416 (.0676)
INFLATION	-.0027 (.004)	-.0029 (.004)	-.0029 (.004)	-.0036 (.005)	-.0048 (.004)	-.0043 (.0039)
TRADE (log)	-.0048 (.0392)	-.0049 (.0399)	-.0049 (.0399)	-.0116 (.0409)	.0149 (.0372)	.0075 (.0413)
GDPCAPGR (log)	-.9368 (.7816)	-.9758 (.7278)	-.9758 (.7278)	-.9564 (.8974)	-.888 (.8997)	-1.2733* (.7363)
AGEDEP (log)	.0948 (.1967)	.0918 (.1825)	.0918 (.1825)	.1336 (.1001)	.082 (.0776)	.0179 (.11)
Observations	93	93	93	93	93	93
Number of Instruments	29	29	29	29	29	29
p-value Hansen test	0.669	0.657	0.657	0.762	0.548	0.788
AR(1) test	0.537	0.468	0.468	0.118	0.126	0.273

Note: SGMM Robustness Tests. Robust Standard Errors. Dependent variable is the natural log of Income Gini. ***1%, **5% and *10% significance, respectively. All specifications include time effects and a constant, not reported. *Abbreviations:* GINI, income Gini, in natural logs; FINDEV, financial development index;

INFLATION, Consumer Price Index; TRADE, sum of exports and imports to GDP, in natural logs; GDPCAPGR, growth of real GDP per capita in natural logs; SCHOOLING, average years of secondary schooling, in natural logs; ECONLIT, economic literacy index.

Table 6B
SGMM Robustness Checks

	(1)	(2)
L.GINI (log)	.8039*** (.1207)	.7364*** (.1095)
LITERACY	-.0781** (.034)	-.0526* (.0274)
SCHOOLING (log)	.0104 (.0436)	-.0248 (.0434)
FINDEV	-.6043** (.2308)	-.4630** (.2027)
FINDEV*LIT	.1011** (.0428)	.0712** (.0341)
FINDEV*PERIOD 98-00	.0535 (.0525)	
FINDEV*PERIOD 01-03	-.0276 (.0372)	
FINDEV*PERIOD 04-06	.0088 (.0426)	
LIT*PERIOD 98-00		.0052 (.0108)
LIT*PERIOD 01-03		-.0033 (.0065)
LIT*PERIOD 04-06		.0003 (.0149)
INFLATION	-.0029 (.004)	-.002 (.0035)
TRADE (log)	-.0172 (.0247)	-.0119 (.028)
GDPCAPGR (log)	-1.4262 (1.2573)	-1.6546 (1.2421)
AGEDEP (log)	.1142 (.0762)	.1156 (.0752)
Observations	93	93
Number of Instruments	30	30
p-value Hansen test	0.794	0.784
AR(1) test	0.825	0.954

Note: SGMM Robustness Tests. Robust Standard Errors. Dependent variable is the natural log of Income Gini. *** 1%, ** 5%

and *10% significance, respectively. All specifications include time effects and a constant, not reported. *Abbreviations:* GINI, income Gini, in natural logs; FINDEV, financial development index; INFLATION, Consumer Price Index; TRADE, sum of exports and imports to GDP, in natural logs; GDPCAPGR, growth of real GDP per capita in natural logs; SCHOOLING, average years of secondary schooling, in natural logs; ECONLIT, economic literacy index.

4. Conclusion

This paper documents a robust and negative relationship between financial development and income inequality, through the channel of economic literacy. Specifically, the ability to understand complicated financial markets and being able to use financial instruments, as measured through an economic competency index, is a relevant dimension of access to financial markets and plays a complementary role to the financial sector. Consequently, the finance-inequality nexus is robustly established through the economic literacy channel.

In our study, we consider three dimensions of the financial sector (depth, access, efficiency), and in that sense, our findings differ from previous literature that have examined one dimension of financial development (depth). Our results are also robust between transition and advanced economies and across different world regions. Furthermore, the importance of financial development and economic literacy for the reduction of income inequality have remained stable over time.

Our analysis can have strong policy implications. A more developed financial sector will reduce aggregate income inequality substantially when a higher level of economic literacy is present. Policymakers can encourage programs that improve economic competences among the population, so that individuals will be better equipped to manage their finances and make more educated decisions. This can indirectly benefit the financial sector and would lead to a larger reduction of income inequality.

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