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# Economic literacy, inequality, and financial development

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## **Abstract**

Empirical studies of the link between finance and inequality document that across countries financial development is associated with lower and decreasing income inequality. This article uses an indicator of economic literacy as a proxy for the ability to reap the benefits of financial investment opportunities, and documents that such specific competences matter for the relationship between changes in inequality and financial development. As financial markets become more sophisticated, the ability to take advantage of new investment opportunities may help reduce inequality, and the empirical association between financial development and lower income inequality indeed appears to be driven by economic literacy.

*Keywords:* inequality, financial market participation, economic competences.

*JEL Classification:* G1, I24, O16.

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## 1. Introduction

The literature reviewed in Demirgüç-Kunt and Levine (2009) and Classens and Perotti (2007) documents that financial development matters for the distribution of incomes and for poverty. In countries where financial markets are more developed, income inequality is lower and grows less, and the income share of the poorest quintile increases more (see Clarke et al., 2006; Beck et al., 2007). These findings suggest that financial development does not only benefit individuals who already access financial markets, but also allows additional investors to exploit new investment opportunities and benefit from improvements in financial instruments.

Recent studies on financial market participation show that financial market deepening is not the only variable to consider when assessing the impact of new investment opportunities. Lack of financial market access may be due to poor economic competences. Over the last few decades, financial development has introduced sophisticated financial instruments that require advanced skills for proper use. In microeconomic data, Van Rooij et al. (2011) find that people with low financial literacy are less likely to access financial markets and invest in stocks. At the macroeconomic level, Jappelli (2010) shows that, for a given distribution of access to financial markets among the population, the ability to reap the benefits of new investment opportunities and participate in financial markets depends crucially on economic literacy.

Merging insights from these two strands of the literature, one may plausibly expect that, as financial products become more complex, financial development is associated to income inequality in a way that depends on whether investors are able to understand financial opportunities and use financial instruments appropriately. This paper explores the empirical relevance of this novel insight for the mechanisms linking finance and inequality. It is organized as follows. Using the indicator of economic literacy compiled by the IMD World Competitiveness Yearbook to proxy the degree by which people are able to understand and use financial instruments, Section 2 illustrates preliminary evidence on the links between economic literacy, financial development, and inequality. Economic literacy shapes the relationship between inequality and finance, and provides information on the ability to participate in financial markets that indicators of general schooling do not capture. The empirical specification presented in Section 3 makes it possible to test whether economic competences matter to the way inequality responds to financial development. The results indicate that across countries inequality growth is lower in countries where economic literacy is higher among the population, and that financial development is negatively associated to income inequality only to the extent it covaries with economic literacy. Section 4 concludes.

## **2. Inequality, financial development, and economic literacy in the data**

The evolution of inequality is measured as the average annual growth rate of the Gini coefficient, computed over the 1980-2005 period. Table 1 reports descriptive statistics and correlations for that variable and indicators of financial development (measured as the volume of private credit as a ratio of GDP), of economic competences (measured by the IMD World Competitiveness Yearbook index of economic literacy in the first year when it is available), and of general human capital (measured by average secondary schooling at the beginning of the period). The sample includes 30 countries for which inequality and economic literacy indicators are available over the 1980-2005 period (see the Data Appendix for detailed definitions and sources of these and all other variables).

Figure 1 illustrates in detail the relationship between inequality, financial development, and economic literacy. The negative bivariate association between finance and inequality growth in the top-left panel of Figure 1 disappears when, in the bottom-left panel, economic literacy is controlled for. Higher economic literacy is negatively related to inequality growth in the top-right panel of Figure 1, as well as in the bottom-right panel, when financial development is controlled for. This preliminary evidence suggests that economic competences, rather than financial development per se, matter for inequality. Of course the ability to understand and use financial instruments might be partly accounted for by general schooling. In Table 1, financial development is positively associated not only to economic literacy but also to schooling, which however does not eliminate the effect of financial development on inequality: when controlling for schooling, the partial association between financial development and inequality growth remains negative and significant (coefficient -0.005, t-statistic -1.69). The next section reports regressions that assess the extent to which economic literacy, rather than general schooling or financial development, shapes the relationship between income inequality and financial development.

## **3. Regression results**

To analyze how economic literacy influences the relationship between inequality and finance, we run reduced-form regressions that, as in Beck et al. (2007), relate the growth rate of the Gini coefficient over the 1980-2005 period to the initial level of income inequality, i.e. the value of the Gini coefficient at the beginning of the period; financial development; measures of international trade openness and inflation that capture the effect of macroeconomic conditions; the level of schooling at the beginning of the period; and GDP per capita growth.

In the first two columns of Table 2, only these variables are included, and financial development is negatively and significantly related to inequality growth, consistently with the results for a larger sample of Beck et al. (2007, Table 2, page 37).

Economic literacy is included as a regressor in column 3. Its coefficient is significantly negative, indicating that inequality grows less in countries where financial literacy is higher; financial development becomes statistically insignificant, indicating that it is related to income inequality only to the extent that it covaries with economic literacy. General schooling does not capture this effect: following Beck et al. (2007), it is included but insignificant in the regressions reported in columns 2 and 3. Dropping it in column 4 does not affect the coefficient of economic literacy which is also stable in column 5, where the interaction term between economic literacy and financial development controls for the possibility that financial development might have a different effect on inequality in countries with a higher initial level of economic literacy; and in column 6, where the set of regressors includes the growth of GDP per capita: this, like the results (not reported) of regressions that add other variables considered by Beck et al.'s (2007) robustness checks, confirms that economic literacy is robustly associated with the evolution of inequality.

#### **4. Conclusions**

This article reports novel preliminary results on the relevance of economic literacy to the finance-inequality nexus. It finds that income inequality grows less in countries where economic literacy is higher, and that financial development is negatively correlated to inequality growth only to the extent that it covaries with economic literacy. The ability to benefit from investment opportunities depends on economic literacy, not on financial development per se, and the relevance of economic knowledge is not captured by more generic measures of school attainment.

#### **Data Appendix**

Growth of Gini is the annual growth rate of the Gini coefficient computed over the 1960-2005 period (documented and made available by Beck et al., 2007). Financial Development is the "private credit by deposit money banks and other intermediaries ratio over GDP" from the World Bank. The index of "economic literacy among the population" is computed by the IMD World Competitiveness Yearbook, which provides summary indicators based on interviews with senior business leaders available from 1995 to 2008. Trade Openness, the sum of exports plus imports over GDP, and Inflation, measured as the growth rate of the GDP deflator, are drawn from the World Bank's World Development Indicators. Schooling is the indicator of secondary school attainment by Barro and Lee (1996). GDP per capita growth is the average growth of real GDP per capita from the Penn World Tables.

All variables are in logarithm and averaged over the 1980-2005 sample period, except for initial inequality, schooling, and economic literacy. The sample for our analysis includes 30 countries, namely: Australia, Austria, Belgium, Brazil, Canada, Chile, Colombia, Denmark, Finland, France,

Greece, Hungary, India, Indonesia, Ireland, Italy, Japan, Malaysia, Mexico, Netherlands, Norway, Philippines, Portugal, Spain, Sweden, Switzerland, Thailand, United Kingdom, United States, and Venezuela.

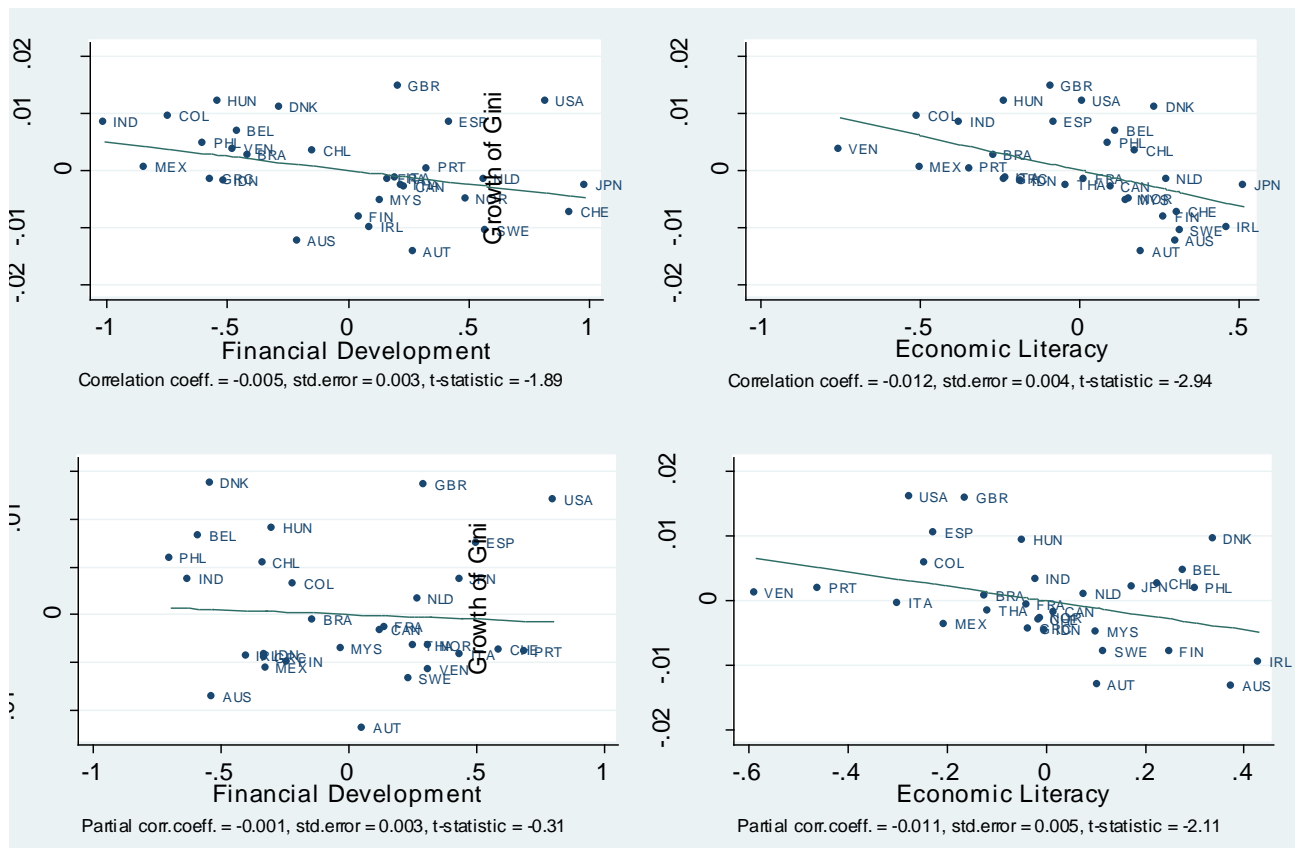
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**Figure 1**  
 Inequality, financial development, and economic literacy



Notes: Bivariate correlations in the top panels; partial correlations in the bottom panels.



**Table 1**  
Descriptive statistics and correlations

Panel A. Descriptive statistics				
Variable	Mean	Std. Dev.	Min	Max
Growth of Gini	0.000	0.008	-0.014	0.015
Financial development	-0.702	0.533	-1.712	0.287
Economic literacy	1.552	0.307	0.802	2.074
Schooling	1.905	0.358	1.133	2.448

Panel B. Correlations				
	Growth of Gini	Financial development	Economic literacy	Schooling
Growth of Gini	1			
Financial development	-0.34	1		
Economic literacy	-0.49	0.61	1	
Schooling	-0.14	0.50	0.64	1

**Table 2**  
Inequality, financial development, and economic literacy

Dependent variable: Growth of Gini						
	(1)	(2)	(3)	(4)	(5)	(6)
Financial development	-0.006	-0.005	-0.003	-0.002	0.011	0.011
	<i>-2.45</i>	<i>-2.13</i>	<i>-0.80</i>	<i>-0.71</i>	<i>0.86</i>	<i>0.82</i>
Initial Gini	-0.007	-0.010	-0.008	-0.010	-0.009	-0.009
	<i>-1.54</i>	<i>-1.49</i>	<i>-1.35</i>	<i>-1.78</i>	<i>-1.65</i>	<i>-1.57</i>
Trade openness		-0.004	-0.003	-0.003	-0.004	-0.004
		<i>-1.52</i>	<i>-1.22</i>	<i>-1.21</i>	<i>-1.26</i>	<i>-1.23</i>
Inflation		0.000	0.000	0.000	-0.000	-0.000
		<i>0.11</i>	<i>0.80</i>	<i>0.18</i>	<i>-0.12</i>	<i>-0.15</i>
Schooling		-0.001	0.005			
		<i>-0.13</i>	<i>0.97</i>			
Economic literacy			-0.013	-0.010	-0.017	-0.017
			<i>-2.14</i>	<i>-1.83</i>	<i>-2.37</i>	<i>-2.34</i>
Economic literacy * Financial development					-0.008	-0.009
					<i>-1.02</i>	<i>-0.95</i>
GDP per capita growth						-0.016
						<i>-0.15</i>
R-squared	0.166	0.255	0.365	0.346	0.371	0.372

Notes: Ordinary least squares estimates; t-statistics, in italics, are computed on the basis of robust standard errors. Number of observations: 30.