Working Paper 136/13

INEQUALITY AND THE FINANCE YOU KNOW: DOES ECONOMIC LITERACY MATTER?

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Inequality and the finance you know: does economic literacy matter?

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November 2013

Abstract

This paper considers the relationship between financial markets and income distribution from a perspective that emphasizes the role of people's ability to use financial markets and their instruments in helping reduce income inequality. Using cross-section and panel regression techniques, it documents in a sample of advanced and developing countries that income inequality grows less where economic literacy is higher, while the direct association between financial development and inequality usually referred to as the "finance-inequality nexus" is not significant in the medium term nor in long cross-sectional regressions controlling for the level of economic literacy.

Keywords: financial development, income inequality, economic literacy.

JEL Classification: A2, I3, O1.

1. Introduction

Following the recent economic turmoil, the debate over the potential benefits of financial markets grew in intensity. Earlier discussion focused on whether finance was good for the poor, and on whether financial sector development might have helped reduce income inequality by offering more diversification opportunities to a larger group of people (Demirgüç-Kunt and Levine , 2009; Claessens and Perotti, 2007).

The underlying processes whereby inequality depends on finance are complex and as documented in this paper may involve economic literacy considerations. In a world where an increasing number of complicated financial instruments are available, a dimension of access to financial markets that matters to income inequality reduction and that seems not to be captured by quantitative measures of financial market development, is the one related to the ability to use financial instruments and deal with financial market complexity that indicators of economic-specific competences proxy for.

The analysis proposed builds on a rich set of contributions. Theoretical models on the finance-inequality nexus provide different predictions about the effect of financial development on income inequality. Under incomplete and imperfect financial markets people face constraints in investing in human and physical capital, and financial sector frictions such as information and transaction costs, discrimination, and liquidity constraints could contribute to the persistence of inequality. Following Galor and Zeira (1993) and Banerjee and Newman (1993), a set of studies suggests that the degree of income inequality related to initial wealth distribution may decrease if financial market deepening increases economic opportunities of the disadvantaged groups. By the same token, financial development could lead to an increase in inequality if it benefits those who are already active in the market as, for instance, in Greenwood and Jovanovic (1990), who suggest that formal financial sector improvements help the rich at early stage of development and cause a widening of the wealth distribution across income groups (see also Summers et al., 1984, and Paukert, 1973).

At the aggregate level, recent empirical works support the hypothesis that inequality is lower where financial markets are more developed. Beck et al. (2007) show that across countries financial market deepening is negatively associated with the growth rate of income inequality, and positively related to the growth of the low income share in the

long run. Also Clarke et al. (2006) and Li et al. (1998) find a negative association between financial development and income inequality looking at the level of income distribution. Hence, if in theory the effect of finance on inequality is ambiguous, empirical findings are unanimous in suggesting that inequality decreases where financial systems deepen and provide new investment opportunities and access to finance to a larger portion of the society.

Turning to why access to finance may be unequal, limited participation in financial markets may arise because of several reasons. Fixed transaction costs, entry regulations, political channels whereby elites exercise their influence over a country's institutional environment and oppose reforms and financial market deepening (see e.g. Classens and Perotti, 2007; Honohan, 2006; Rajan and Zingales, 2003). Besides these environmental factors, a set of recent studies focusing on the mechanisms linking finance and economic opportunities brought other considerations to light.

People with low economic competence are less likely to access financial markets and invest in stocks. Country studies show that financial literacy is related to portfolio diversification in Italy (Guiso and Jappelli, 2008) and that in the Netherlands financial sophistication is associated to higher wealth and participation in stock markets and in retirement plans (Lusardi and Mitchell, 2007; Van Rooij et al., 2011; Caliendo and Findley, 2013). Also across countries, data indicate that as financial products become more complex, people need specific knowledge of financial instruments to benefit from new investment opportunities (Jappelli, 2010, and references therein).

Although the profession has recently emphasized the potential effect of economic competence as a determinant of the willingness to participate in financial markets, the study of the impact of economic literacy on inequality is a field yet amenable to research. The idea that economic-specific competence may be relevant to income distribution finds theoretical support in Lusardi et al. (2013) who demonstrate in a calibrated model that endogenous accumulation of financial knowledge over the life cycle can generate wealth inequality in a stochastic environment. And preliminary evidence in Lo Prete (2013) shows that economic literacy might have been a relevant omitted variable in Beck et al. (2007) study on the finance-inequality nexus by performing cross-country regressions on their data.

This paper aims at providing a broad investigation on the relationships between financial development, income inequality growth, and economic competence across countries. To do so, it uses a dataset that allows exploiting both cross-sectional and time series information on inequality data, in this respect differing from earlier studies on the finance-inequality nexus which focused on cross-sectional information mainly, and restricted the use of panel data to annual analyses where business cycle effects were not controlled for, or to robustness checks where it was not possible to exploit the time dimension of the data.

Results on a sample of advanced and developing countries observed over the 1980-2007 period indicate that financial development is not robustly associated to income inequality in specifications that control for economic literacy, nor in panel regressions where time effects control for common trends in the variables of interest. The ability to use financial instruments and deal with financial market complexity as measured by indicators of economic-specific competences, instead, is a robust determinant of the variation in income inequality. Testing in the role of indicators of competence more general measures of human capital, the data show that it's not general schooling but economic literacy and, to a lower extent, the ability to perform mathematical computations that matter for the mechanisms under analysis.

The paper is organized as follows. Section 2 describes the dataset and the empirical strategy. Section 3 examines the long-term properties of the sample. Section 4 presents the main findings from panel regressions and discusses their robustness. Section 5 considers alternative indicators of competence. Section 6 concludes.

2. Data and empirical strategy

Data on income distribution are drawn from the UNU-WIDER World Income Inequality Database (version 2.0c, May 2008), a source of information which updates the World Bank database by Deininger and Squire (1996), and includes new estimates from the Luxembourg Income Study and from the TransMONEE. These data differ in many respects: coverage of the survey, quality of the data, unit of analysis, income definition. The sample analyzed in this paper is restricted according to the following compilation strategy. First, preference is accorded to the most recently updated data and to data of

high quality (i.e. to "reliable" or "most reliable" data). Next, following the recommendations of the Canberra Group, the basic statistical unit of analysis is the household, and to arrive to a set of distributional measures referring to income net of taxes and transfers, preference is given to disposable income data; where these data are not available, to gross income; to consumption welfare measures, otherwise. The resulting sample includes 1087 observations for 119 countries. Table A.1 shows their distribution by income definition and by unit of analysis, a category that indicates whether the household is considered independently of its size or person weights are applied.

Since the focus of the paper is on the effect of financial literacy on the finance-inequality nexus, the analysis is performed on the reduced sample of countries for which information on income inequality, financial development, and economic competences is available. "Financial development" is measured by the ratio of private credit by deposit money banks and other intermediaries to GDP from the World Bank. In the main specifications, economic competence is defined as "economic literacy among the population" using an index compiled by the IMD World Competitiveness (see the data appendix for details on sources and definitions). To account for differences in measurement between various welfare definitions, the adjustment procedure by Dollar and Kraay (2002), that involves regressing the Gini coefficients on a series of area dummy variables and then subtracting the mean difference between groups, is applied (results are in Table 1). The time coverage is good and data are interpolated if missing.

To characterize the variation in the relevant variables that is not related to business cycles effects or temporarily shocks, data are averaged over the 1980-2007 period for the cross-sectional analysis, and over seven non-overlapping sub-periods of 4 years each for the panel analysis. Countries are included in the dataset if there are more than 10 years between the first and last observation for the Gini coefficient, thus excluding countries for which only one country-level observation is available. The resulting panel structure of the dataset includes a total of 154 observations covering 34 countries, and has the advantage of considering equal length non-overlapping sub-periods with respect to previous empirical works on the finance-inequality nexus. Since the seminal paper by Dollar and Kraay (2002), indeed, sparse income observations were included in the sample

if distant at least five years from each other. A choice that resulted in panel datasets where uneven and across countries overlapping sup-periods do not allow studying the effect of common trends in the variables of interest.

Turning to the empirical specification, the relationship between finance, inequality, and literacy, is examined using reduced-form models similar to the ones considered by Beck et al. (2007) to study the nexus between income inequality growth and finance. In regressions that read

$$y_{i,t} = \alpha y_{i,t-1} + \beta FD_{i,t} + \gamma EC_{i,t} + \delta X_{i,t} + \varepsilon_{i,t} \, , \tag{1}$$

the growth rate of the Gini coefficient in country i over the period t, denoted $y_{i,t}$, is regressed on its initial value, the level of financial development, $FD_{i,t}$, the level of economic competence, $EC_{i,t}$, and a set of control variables, $X_{i,t}$.

The growth rate of the Gini coefficient in the cross-sectional analysis is computed following Beck et al. (2002) as the log difference between the last and the first observation available in the 1980-2007 sample, divided by the number of years between the two. While turning to the panel analysis, income inequality growth is the log difference between the last and the first observation in each 4 year sub-period for which such information is available. Explanatory variables are in averages over the period that is covered by the dependent variable, except for the initial level of the Gini coefficient that measures the level of inequality at the beginning of the period, and in logarithm when expressed in levels.

Since economic competence is measured by indicators that have little or none time variation, economic literacy and other indicators of competence are time-invariant in the main specifications of the following Sections. Specifically, the main indicator of economic competence in the present analysis, i.e. economic literacy, is averaged between 1995, the first year in which it was compiled, and 2007.[1] Provided that the relative position of countries has not changed much over the period considered, empirical specifications with time-invariant competence indicators capture most of the information in the data. As a robustness check, a time-varying version of this indicator will be introduced in

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[1] Since this indicator was compiled for 45 countries only in 1995, a number that increased to 55 in 2008, the choice of using the country-level 1995-2007 average (as in Jappelli, 2010) is meant to increase the number of observations available for the cross-sectional analysis. Results presented in Sections 3 to 5 are robust to measuring economic literacy as the value in the last year of the sample (i.e. 2007).

Section 4 by considering sub-period averages over the three 4-year sub-periods for which its information is available.

3. Descriptive and cross-sectional analysis

Before showing results from panel regressions, this Section examines the long-term properties of the sample. Over the 1980-2007 period, income inequality has increased more in transition economies and in countries where volumes of private credit were higher on average, such as Japan and some Anglo-Saxon countries, than in developing economies and in many Continental European countries. The downward sloping regression fit line in Figure 1 suggests that there is a negative and significant relationship between financial development and income inequality growth, consistently with what found in previous studies by Beck et al. (2007) and other authors.

Figure 1 also considers information on economic literacy, weighting country markers by the level of economic literacy, a bigger circle indicating a higher value of the indicator. Interestingly, financial development and economic literacy seem to capture different dimensions of the finance side of the nexus under analysis. For instance, advanced countries where economic literacy is high may display low income inequality growth even if they have on average a lower level of financial development with respect to similar economies, as it is the case of Denmark and Finland. And vice versa, it is possible to find examples of economies where high inequality growth is associated with high financial market development but low economic literacy, as it is the case of Portugal and Great Britain, which record levels of economic literacy below the sample average.

The raw descriptive evidence in Figure 1 may be suggestive of more general empirical regularities that go beyond the finance-inequality nexus in what may be considered its "narrower" definition, that is, the mere association between financial market development and the change in income distribution. While in the period before the 2007-08 financial crisis, financial market volumes grew considerably and credit constraints eased within countries (Bertola and Lo Prete, 2009), inequality growth and the level of economic literacy differed quite substantially across both developed and developing countries (Jappelli, 2010). And it is keeping in mind that the relationships under analysis could be driven by several underlying factors, that the analysis which

follows will test whether heterogeneity in the level of economic-specific competences, as a proxy for the heterogeneity in the ability to access and use financial markets, might provide insights on the theoretically ambiguous but empirically well-established finance-inequality nexus, controlling for other potentially relevant conditioning variables.

Results from regressions run on the long 1980-2007 cross-section are in Table 2. The negative and significant association between income inequality growth and financial development found in previous studies holds in regressions controlling for a few conditioning factors like in column 1, but is not robust to other specification changes. In the 34 countries sample under analysis, the coefficient of financial development is not precisely estimated in column 2, where indicators of trade openness, inflation, and GDP per capita growth control for the effect of macroeconomic conditions, and where demographic variables account for the possibility that income inequality is related to the age structure of the population.

Interestingly, while the variation in financial development seems not to suffice in characterizing the variation in income inequality growth across countries, the same is not true for economic literacy. In column 3 of Table 2, the level of the economic-specific competences that this indicator is measuring is negatively and significantly associated to the growth of income inequality. Consistently with the evidence in Lo Prete (2013) and with theoretical insights from Lusardi et al. (2013), these findings suggests that a relevant dimension of the finance-inequality nexus is the one related to the ability to access financial markets and use their instruments: inequality decreases in countries where economic literacy is higher on average and allows people to benefit from more developed financial markets. This result holds in column 4, where regressions are performed over the shorter 1996-2007 period, and is robust to a variety of robustness checks that control for the potential relevance of outliers.[2] As regards other control variables, income inequality growth is lower in countries where the distribution of income is more skewed at the beginning of the period, and once the effect of economic literacy is controlled for in countries where there are more people aged below 15 or

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[2] Economic literacy is a significant determinant of income inequality also when the analysis is performed on a sample modified not to include Romania, or to include a dummy variable for transitions economies that in Figure 1 seem to be outliers, as well as in regressions run on the larger sample that include four countries that have less than 10 observations, namely, Colombia, Lithuania, Russia, and Turkey.

above 65 as a percentage of total population (column 3), and where prices grow more rapidly (column 4).

Moving to a medium term perspective, the panel analysis which follows considers if these results hold when accounting for common trends in the variables of interest and other potentially relevant conditioning factors (Section 4), and tests alternative measures of human capital in the role of indicators of competence (Section 5).

4. Panel analysis

Table 3 reports results from panel specifications. Pooled-OLS estimates in column 1 and in column 2 confirm the main insight from the cross-sectional analysis. The effect of financial development on income inequality growth is small and not significant, while economic literacy is robustly and negatively associated to the variation of income inequality. Also the effect of the other control variables is consistent with what found in Table 2.

The third column of Table 2 considers the possibility that financial development responds endogenously to income inequality growth, by reporting results from instrumental variable (IV) estimations. Following Jappelli (2010) and related literature, the instruments' set includes "legal origin" dummies by La Porta et al. (1999) and the "strength of investor protection index" compiled by the Doing Business Project, that measures the strength of regulations meant to shelter minority shareholders against self-dealing and misuse of corporate assets by directors. Test statistics reported at the bottom of Table 3 indicate that the power of the instruments is high, the weak identification test having a value higher than 10, and that they are not correlated with the residuals, the test of over-identifying restriction being above conventional levels. Results from the IV specification in column 3, as well as results from the random effect model in column 4 and from a pooled OLS model run on the shorter 1996-2007 panel in column 5, confirm findings from the pooled-OLS estimation in column 2.[3] In all specifications, economic literacy is a significant determinant of the medium term

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[3] The strength of investor protection might have a direct impact on the dynamics of the income distribution if protection existed only for small groups of well-connected people (see Pagano and Volpin, 2005, and related literature). Results from IV regressions where the set of instruments includes legal origin dummies only confirm the findings in Table 3, as historical differences in legal systems may arguably capture well cross-country differences in legal protection (La Porta et al., 1997).

variation in income inequality, and financial development is not directly associated to the growth of the Gini coefficient.

To corroborate these findings, the model controlling for common trends in the variables of interest of column 2 of Table 3 is extended to include area dummies and other potentially relevant control variables. The first two columns of Table 4 report results from specification that include dummy variables that allow countries belonging to different groups to have different intercepts. Being an advanced country (column 1) or a transition economy (column 2) does not significantly affect income inequality growth over the period under analysis, nor the main results on the effects of economic literacy and financial development. The negative relationship between economic literacy and inequality holds also in regressions including the interaction between financial development and economic literacy (column 3), and when an interaction term between the initial level of income inequality and the growth of GDP per capita over each sub-period accounts for the possibility that the initial distribution of income matters to aggregate income growth (column 4).

The empirical models presented so far account for the relevance of common time trends by including time effects. Fixed effects, instead, could not be controlled for in regressions where the information on economic-specific competence is cross-sectional and time invariant. One may question whether it makes sense to include fixed effects in international macroeconomics analyses, a choice that has been criticized because fixed effects are likely to absorb much of the cross-country-variation of interest in the dependent variable (see the discussion in Quah, 1996, Wacziarg, 2002, and others). Here a concern may admittedly arise because the time invariant economic literacy indicator might absorb any unobserved country level heterogeneity and, hence, because the effect of economic competence may be spurious. To address this issue, the last column of Table 4 presents results from specifications where economic literacy is allowed to vary over time. Since this indicator was computed starting in 1995, regressions are run on the three sub-periods for which full data are available (i.e. 1996-99, 2000-03, 2004-07). Despite the limited and poor information on time variation, in column 5 the level of economic literacy has a negatively and mildly significant (at the 14 percent level) effect on the

growth of income inequality.[4] With such comforting evidence at hand, the last Section of the paper will experiment in the role of competence indicators other time-invariant measures of more or less economic-specific knowledge.

5. Alternative indicators of competence

The indicator of economic literacy used in Tables 2 to 4 as a proxy for economic-specific competences measures the level of competences in economics subjects of the population, as perceived by business experts on the basis of interviews. Of course, this might not be the only dimension of competence relevant while assessing the relationship between inequality and finance.

One possibility is to consider a more specific indicator of competence. The index of "education in finance" compiled by the IMD World Competitiveness Yearbook refers to a somehow more restricted set of abilities, namely those needed to master financial subjects to the degree requested to work in private enterprises. Estimation results in the first column of Table 5 show that education in finance has a negative effect on inequality growth, but attracts a less precisely estimated coefficient than the more general indicator of economic literacy. This might suggest that what matter most to the variation of income inequality at the aggregate level is the ability to understand basic economic concepts of the population in general, rather than the level of skills needed to perform more specific tasks while working in enterprises.

Table 5 reports also results on the effect of more general and less subjective indicators of human capital, such as the level of schooling attainment. Using the data by Barro and Lee (1996) on secondary schooling attainment, the estimates in column 2 suggest that the level of human capital might not be what really matters when it comes to operate on financial markets for consumption smoothing or households' portfolio diversification purposes. Confirming in the context of a panel analysis what found by Lo Prete (2013), general education is not enough: people seem to need economic-specific knowledge to take advantage from the wide range of opportunities that increasingly complex financial markets are offering. Next, the specification in column 3 considers in the role of indicator

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[4] Results are robust to alternative ways of measuring time-varying economic-specific competences, e.g. as the last value of economic literacy in each sub-period, that would allow to run regressions on four sub-periods. Moreover, in regressions with time-varying economic literacy and no fixed effects, the indicator of economic competence attracts a negative and significant coefficient.

of competence the PISA test scores for mathematics, an OECD measure that records 15 years old pupils' educational achievement on mathematics. This variable is significantly and negatively associated to income inequality growth. Thus, in the data, also being able to perform sums, subtractions, and more complex mathematics may help decrease income inequality.

The evidence in Table 5 may be interpreted as supportive of a central role of economic-specific competences as determinants of access to financial markets. Also being able to master mathematics may help increase the awareness needed to make everyday decisions correctly, affecting in turn aggregate income distributions. While when it comes to assess the effect of financial instruments' availability in helping reduce income inequality, it seems that general education, as measured by schooling attainment, does not play a significant role.

6. Conclusions

Understanding whether people are able to reap the benefits of a wide range of investment opportunities and improve their economic situation is an issue of obvious political relevance. This paper questions the relevance of the finance-inequality in what may be considered its narrower definition, by showing that, beyond the mere relationship between financial market development and income inequality, what people know about economics does matter.

Over the last decades, income inequality has decreased in countries where the level of economic-specific competence was higher. The results suggest that finance is relevant to explain the variation in income distribution along a dimension that is difficult to capture by using quantitative measures of financial deepening. Financial development per se seems indeed to have had an ambiguous effect on inequality when common trends in the variables of interests are controlled for by time effects, or over long cross-sections when the effect of economic literacy is controlled for.

While in future work it would be interesting to further qualify these findings and, as more data will become available, assess the effect of economic literacy on a larger sample of countries at different stages of financial development, the macroeconomic analysis of

the determinants of the finance-inequality nexus in this work may already offer food for thought to the recent debate on the relevance of policies meant to improve economic literacy among the population. If aggregate income inequality does not decline in the availability of more complex and sophisticated financial instruments per se, but in the ability to understand and use them, for education policies to help reduce inequality, financial markets deepening should be accompanied by an increase of economic competence among the population.

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Data Appendix

The sample includes: Austria, Belgium, Brazil, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, India, Indonesia, Ireland, Israel, Italy, Japan, Luxembourg, Malaysia, Mexico, Netherlands, New Zealand, Norway, Philippines, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Thailand, United Kingdom, United States.

Inequality. Data on inequality are drawn from the UNU-WIDER World Income Inequality Database (version 2.0c, May 2008).

Finance. Financial development is the "Private Credit by Deposit Money Banks and Other Financial Institutions to GDP" from the World Bank "Financial Development and Structure Database" (Beck and Demirgüç-Kunt, 2009).

Competence indicators. The World Competitiveness Yearbook compiles indexes of economic competence on the basis of interviews with senior business leaders. The "economic literacy among the population" index ranges from 0 to 10, lower values indicating that the level of competence in economics subjects is low. It is available for 55 countries over the 1995-2008 period. The "education in finance" index ranges from 0 to 10, lower values indicating that the level of competence in financial subjects does not meet the needs of the enterprises. It is available for 55 countries over the 1999-2008 period. "Schooling" is the measure of secondary school attainment by Barro and Lee (1996). "PISA scores "refer to the average value of the indicator that assesses 15-year-olds' competencies in mathematics, compiled by the OECD every three years since 2000.

Control variables. "Trade openness" is the ratio of export plus imports to GDP by the Penn World Tables (issue: June 3, 2011). "Inflation" is the annual percentage growth of the GDP deflator from the World Bank's World Development Indicators online (issue: April 17, 2012). "GDP per capita growth" is the annual growth rate of GDP per capita from the IMF online database. "Population growth" is the annual growth of population, computed using data from the Penn World Tables, Version 6.3 (Heston et al., 2009)."Dependency ratio" measures the number of people aged below 15 and above 65 as a percentage of the total population, and is drawn from the World Bank's World Development Indicators.

Instrumental variables. Investor protection is measured by the "strength of investor protection index" compiled by the Doing Business Project. It includes information on the extent of disclosure, the extent of director liability, and ease of shareholder suits indices, and ranges from 0 to 10, a higher value indicating stronger investor protection. Dummy variables for "legal origin" define five legal-origin groups as in La Porta et al. (1999): English Common Law; French Commercial Code; German Commercial Code; Scandinavian Commercial Code; Social/Communist Laws.

Table A.1
Descriptive statistics on sources of income inequality data

	Unit of analysis		
Income definition	Person	Household	Total
Disposable income	474	168	642
Gross income	104	120	224
Consumption	210	11	221
Total	788	299	1087

Table A.2
Summary statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
Growth of Gini	154	0.01	0.07	-0.26	0.23
Financial development	154	68.69	39.64	8.03	178.37
Economic literacy	154	5.10	1.22	2.93	7.11
Trade openness	154	79.78	46.68	12.26	297.39
Inflation	154	20.44	110.42	0.30	1328.69
GDP per capita growth	154	2.56	2.20	-7.34	9.65
Population growth	154	53.07	8.85	39.58	84.22
Dependency ratio	154	0.01	0.16	-1.04	1.07
Education in finance	154	6.01	1.23	3.87	8.15
School enrollment	116	7.30	2.10	3.11	11.57
PISA scores	144	491.58	39.49	385.11	550.10
Investor protection index	154	6.15	1.45	3.30	9.70

Notes: This table shows descriptive statistics for the variables used in the analysis. They refer to the underlying 4-year average of the data (not to the transformations that are used in the regressions, namely the log of financial development, trade openness, and other indicators of competence).

Table A.3
Correlations between indicators of competence

	Economic literacy	Education in finance	Schooling
Education in finance	0.79***		
Schooling	0.69***	0.51***	
PISA scores	0.64***	0.38***	0.74**

Notes: (*) (**) (***) denote significance at the (10) (5) and (1) percent level.

Table 1

Adjustments to Gini coefficients

Dependent variable: Gini coefficient		
	Coefficient	Standard error
Gross income dummy	5.870	(1.242)***
Consumption dummy	-0.861	(1.118)
East Asia	10.915	(1.269)***
East Europe and Central Asia	2.514	(0.816)***
Middle East and Nord Africa	7.631	(1.616)***
Latin America and Caribbean	23.508	(0.821)***
South Asia	4.730	(1.614)***
Sub-Saharan Africa	15.657	(2.661)***
Constant	29.381	(0.251)***

Notes: Robust standard errors from pooled OLS regressions in parenthesis, (*) (**) (***) denote significance at the (10) (5) and (1) percent level.

Table 2

Cross-sectional analysis

	Dependent variable: Growth of Gini			
	(1)	(2)	(3)	(4)
Cross-section:	1980-2007	1980-2007	1980-2007	1996-2007
Financial development	-0.005	-0.004	-0.001	-0.000
	(0.002)**	(0.002)	(0.003)	(0.003)
Economic literacy			-0.010	-0.009
			(0.005)*	(0.004)**
Initial Gini level	-0.013	-0.022	-0.027	-0.028
	(0.004)***	(0.007)***	(0.007)***	(0.006)***
Trade openness		-0.003	-0.003	-0.001
		(0.002)	(0.003)	(0.003)
Inflation		0.000	0.000	0.000
		(0.000)	(0.000)	(0.000)*
Dependency ratio		0.000	0.000	0.000
		(0.000)	(0.000)*	(0.000)*
Population growth		-0.018	-0.023	0.012
		(0.021)	(0.020)	(0.018)
GDP per capita growth		0.000	0.000	0.000
		(0.001)	(0.001)	(0.001)
R-squared	0.353	0.449	0.490	0.486
Observations	34	34	34	34

Notes: OLS regressions, robust standard errors in parenthesis, (*) (**) (***) denote significance at the (10) (5) and (1) percent level.

Table 3
Panel analysis, specifications with time effects

	Dependent variable: Growth of Gini				
	(1)	(2)	(3)	(4)	(5)
	P-OLS	P-OLS	IV	RE	P-OLS 1996-2007
Financial development	0.001	0.017	0.030	0.017	-0.006
	(0.010)	(0.012)	(0.020)	(0.012)	(0.014)
Economic literacy		-0.078	-0.102	-0.078	-0.130
		(0.038)**	(0.048)**	(0.038)**	(0.062)**
Initial Gini level	-0.137	-0.182	-0.199	-0.182	-0.292
	(0.034)***	(0.039)***	(0.046)***	(0.039)***	(0.082)***
Trade openness	-0.014	-0.007	-0.005	-0.007	-0.011
	(0.010)	(0.011)	(0.011)	(0.011)	(0.022)
Inflation	0.000	0.000	0.000	0.000	-0.000
	(0.000)	(0.000)*	(0.000)**	(0.000)*	(0.000)
Dependency ratio	0.002	0.003	0.003	0.003	0.002
	(0.001)***	(0.001)***	(0.001)***	(0.001)***	(0.002)
Population growth	0.013	-0.003	-0.009	-0.003	4.051
	(0.029)	(0.028)	(0.026)	(0.028)	(1.951)**
GDP per capita growth	0.004	0.005	0.005	0.005	0.005
	(0.003)	(0.003)*	(0.003)*	(0.003)*	(0.005)
R-squared	0.123	0.151		0.294	0.253
Over-identifying restrictions			2.193 [0.70]		
Weak identification test			20.87		
Observations	154	154	154	154	75

Notes: All specifications include time effects. Robust standard errors in parenthesis, (*) (**) (***) denote significance at the (10) (5) and (1) percent level. Statistics (p-values in square brackets) computed by the ivreg2 (Baum et al. 2007) Stata module: test of over-identifying restrictions, under the null that all instrumental variables are orthogonal to the second-stage error term; the weak identification test refers to the Kleibergen–Paap Wald rk F statistic, robust to non-i.i.d. errors. For the random effects regression, within partial R^2 reported.

Table 4

Robustness checks

	Dependent variable: Growth of Gini				
	(1)	(2)	(3)	(4)	(5)
	P-OLS	P-OLS	P-OLS	P-OLS	FE
Financial development	0.020	0.019	-0.048	-0.044	-0.189
	(0.013)	(0.016)	0.048	(0.047)	(0.219)
Economic literacy	-0.073	-0.076	-0.264	-0.267	-0.658
	(0.039)*	(0.037)**	(0.155)*	(0.155)*	(0.525)
Initial Gini level	-0.192	-0.181	-0.190	-0.139	-0.959
	(0.041)***	(0.042)***	(0.040)***	(0.042)***	(0.209)***
Trade openness	-0.007	-0.008	-0.005	-0.003	0.115
	(0.011)	(0.011)	(0.011)	(0.011)	(0.173)
Inflation	0.000	0.000	0.000	0.000	-0.008
	(0.000)*	(0.000)*	(0.000)*	(0.000)*	(0.006)
Dependency ratio	0.003	0.003	0.003	0.003	0.004
	(0.001)***	(0.001)***	(0.001)***	(0.001)***	(0.008)
Population growth	-0.005	-0.003	-0.006	-0.006	0.014
	(0.029)	(0.028)	(0.028)	(0.027)	(3.277)
GDP per capita growth	0.004	0.005	0.005	0.094	0.065
	(0.003)	(0.003)*	(0.003)*	(0.037)**	(0.146)
Advanced	-0.017				
	(0.021)				
Transition		0.004			
		(0.026)			
Fin.dev*Econ.literacy			0.045	0.044	0.162
			(0.034)	(0.034)	(0.117)
Initial Gini*GDP p.c. growth				-0.026	-0.019
				(0.011)**	(0.042)
R-squared	0.154	0.151	0.161	0.187	0.637
Observations	154	154	154	154	71

Notes: All specifications include time effects. Robust standard errors in parenthesis. (*) (**) (***) denote significance at the (10) (5) and (1) percent level. For the fixed effects regression, within partial R2 reported.

Table 5

Alternative measures of competence

	Dependent variable: Growth of Gini		
	(1)	(2)	(3)
	P-OLS	P-OLS	P-OLS
	Education in finance	Schooling	PISA scores
Financial development	0.010	0.005	0.010
	(0.012)	(0.015)	(0.010)
Competence indicator	-0.063	-0.009	-0.210
	(0.043)	(0.026)	(0.112)*
Initial Gini level	-0.173	-0.130	-0.205
	(0.040)***	(0.041)***	(0.047)***
Trade openness	-0.011	-0.013	-0.029
	(0.010)	(0.011)	(0.013)**
Inflation	0.000	0.000	0.000
	(0.000)*	(0.000)***	(0.000)
Dependency ratio	0.003	0.002	0.002
	(0.001)***	(0.001)**	(0.001)**
Population	0.008	0.012	0.023
	(0.026)	(0.028)	(0.035)
GDP per capita growth	0.004	0.000	0.005
	(0.003)	(0.004)	(0.003)
R-squared	0.141	0.106	0.157
Observations	154	116	144

Notes: All specifications include time effects. Robust standard errors in parenthesis, (*) (**) (***) denote significance at the (10) (5) and (1) percent level.

Figure 1
Financial development and inequality growth
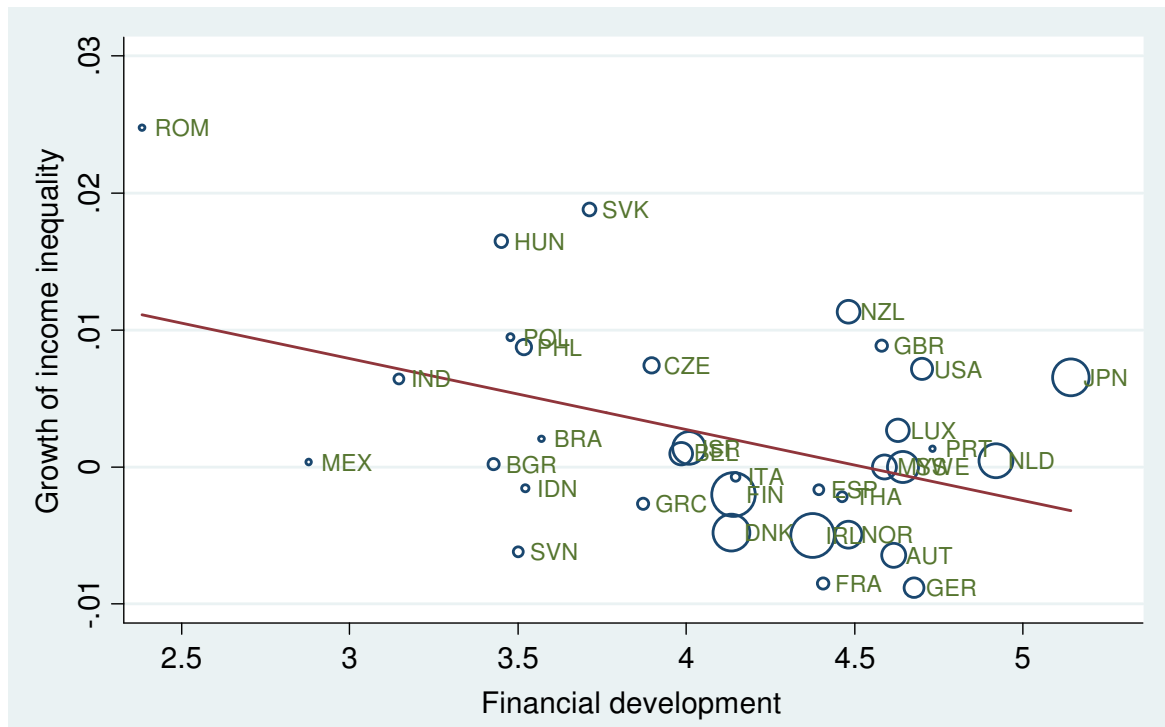
Notes: Linear regression fit: partial correlation coefficient = -0.005, std. error = 0.003, t-statistic = -2.04. Country markers are weighted by the level of economic literacy, a bigger circle indicating a higher value of this indicator.

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