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Abstract

We argue that the positive impact of economic development on generalized trust is likely to be undermined by income inequality. Our empirical evidence, based on a panel of up to 89 countries, provides robust support for this assertion.

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1 Introduction

By reducing transaction costs in economic and political exchange, generalized trust can contribute towards economic development and the quality of governance (see Algan and Cahuc, 2014 for a review). Because of this, scholars have attempted to identify the determinants of generalized trust uncovering the role of several variables including the level and distribution of income, ethnic or racial heterogeneity and religion (Nannestad, 2008 reviews related work).

We revisit the role of income. Higher average income should contribute towards generalized trust. Individuals rely on identifiable in-groups to reduce uncertainty in social interaction (Kyriacou, 2005; Efferson et al., 2008). In settings of resource scarcity, uncertainty is greater, thereby increasing in-group bias to the detriment of out-group interactions (Banfield, 1958; Inglehart and Welzel, 2005). From this vantage point, resource scarcity is likely to contribute towards the emergence of particularized or within-group trust. Conversely, higher income reduces the rationality of in-group bias thus facilitating the emergence of generalized trust.

Similarly, income inequality may undermine generalized trust because it increases uncertainty in social interaction. Social heterogeneity, of which income inequality is one dimension, makes it more difficult to predict the behavior of others and so increases the rationality of particularized trust. Indeed, in unequal settings, relatively wealth individuals may expect relatively poorer ones to defect from cooperative agreements that perpetuate the status quo, thus reducing generalized trust (Boix and Posner, 1998).

Previous work has reported the positive association between the level of income and generalized trust and/or the negative relationship between inequality and trust (for example, Knack and Keefer, 1997; Alesina and La Ferrara, 2002; Delhey and Newton, 2005; Rothstein and Uslaner, 2005; Bjørnskov, 2007; Leigh, 2006; Barone and Mocetti, 2016). To date, existing work has not examined how income inequality can mediate the impact of income per capita on generalized trust. We expect the positive impact of income per capita to be reduced in settings of higher income inequality. While rising average incomes should reduce societal uncertainty thus facilitating the emergence of generalized trust, income inequality increases uncertainty in social interaction thus hindering trust. It is to the empirical exploration of this hypothesis that we dedicate the rest of this article. In the next section we describe the data and empirical methodology. We follow this with our empirical findings before concluding.

2 Data and empirical methodology

To measure generalized trust we turn to the World Value Surveys database (WVS) and compute the share of people who think that "most people can be trusted". Real GDP per capita is obtained from the World Development Indicators, while our inequality measure is the disposable income Gini index from the Standardized World Income Inequality database.

Rather than rely on cross-country estimations like most previous work, we turn to panel data techniques. We use five-years averages to estimate an unbalanced panel over the period 1981 to 2014. More specifically, we estimate the following regression:

$$Trust_{it} = \beta_1 \ln(GDP_{pc})_{it} + \beta_2 Gini_{it} + \beta_3 \ln(GDP_{pc})_{it} * Gini_{it} + \beta_4 \mathbf{x_{it}} + \mu_t + \phi_j + \epsilon_{it}, \quad (1)$$

where beyond our variables of interest, $\mathbf{x_{it}}$ is a vector of control variables, μ_t and ϕ_j represent time and region fixed-effects, and ϵ_{it} is a random error term.

Given the limited within-country variation in our key variables, our estimation strategy exploits both the within and the between variation. To reduce omitted variable bias we include time and regional fixed-effects along with a set of standard country-specific controls. To account for reverse causality, we also apply 2SLS. We instrument GDP per capita through (five year) lagged values of this variable and income inequality through the size of mature cohorts (You and Khagram, 2005; Leigh, 2006) and the logarithm of the ratio between the land surface suitable for wheat over that suitable for the prodution of sugar (Easterly, 2007). The interaction term is instrumented by the product of the lagged values of GDP per capita and cohort size.[1]

3 Results

Table 1 presents the results from the estimation of equation (1). Columns [1] and [2] show the impact of GDP and inequality on generalized trust when the variables are considered independent of each other. We confirm the opposite impact of economic development and inequality on trust found in the literature. The latter, however, is not estimated with precision when the full set of controls is included.

In columns [3]-[10] we consider how inequality mediates the impact of economic development on trust: columns [3]-[6] show OLS results while columns [7]-[10] display 2SLS regressions. In both cases, the analysis goes from the most parsimonious estimation where,

[1] Controlling for the share of the population above 65 years of age as we do below, has the salutary effect of reinforcing the exclusion restriction of the cohort-based instruments since previous work has shown that generalized trust increases with age (for example, Alesina and La Ferrara, 2002).

Table 1: Regression Results

Dependent variable: *Trust*	OLS						2SLS			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
$\ln(\text{GDP}_{pc})_{it}$	4.066	3.678	18.306	10.605	13.184	13.216	8.076	38.311	31.005	28.293
	(1.327)***	(1.830)**	(4.545)***	(4.667)**	(5.111)**	(5.213)**	(2.186)***	(11.794)***	(11.480)***	(15.585)*
Gini_{it}	-0.212	-0.243	3.531	1.302	2.38	2.065	0.864	6.876	4.701	4.241
	(0.124)*	(0.179)	(1.127)***	(1.005)	(1.113)**	(1.212)*	(0.643)	(2.985)**	(2.689)*	(4.261)
$\ln(\text{GDP}_{pc})_{it}$*$\text{Gini}_{it}$			-0.431	-0.177	-0.303	-0.267	-0.202	-0.838	-0.658	-0.576
			(0.126)***	(0.119)	(0.133)**	(0.142)*	(0.116)*	(0.322)**	(0.315)**	(0.460)
$\ln(\text{Population})_{it}$		1.912			2.2	2.209			4.06	5.421
		(0.831)**			(0.683)***	(0.867)**			(1.727)**	(1.792)***
$\text{Retired share}_{it}$		0.695			0.579	0.706			0.178	0.825
		(0.267)**			(0.272)**	(0.272)**			(0.464)	(0.522)
$\text{Years. sec. school}_{it}$		-0.846			0.531	-0.83			-0.502	-0.697
		(1.114)			(1.263)	(1.109)			(2.283)	(2.212)
$\text{ICRG-Government quality}_{it}$		0.071				0.048				0.024
		(0.088)				(0.086)				(0.154)
Trade share_{it}		0.0001				0.006				0.097
		(0.028)				(0.028)				(0.069)
$\text{Ethnic fragmentation}_{i}$		0.022				0.033				0.019
		(0.039)				(0.039)				(0.055)
Urban share_{it}		-0.076				-0.027				-0.024
		(0.092)				(0.084)				(0.270)
Number Id	80	67	89	80	71	67	47	46	40	39
Observations	205	176	218	205	186	176	92	91	83	82
R-squared	0.65	0.73	0.45	0.66	0.7	0.74	0.85	0.64	0.67	0.73
Hansen p-values							0.7001	0.7295	0.5711	0.4885
Region FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Time FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Religion controls	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓
Legal controls	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓

Notes: Robust standard errors in parentheses. *, **, *** indicate coefficients are significant at the 10%, 5%, and 1% level, respectively. 2SLS: Endogenous variables: $\ln(\text{GDP}_{pc})_{it}$, Gini_{it}, $\ln(\text{GDP}_{pc})_{it}$*$\text{Gini}_{it}$. External instruments: $\ln(\text{GDP}_{pc})_{it-1}$, Cohort_{it-1}, $\ln(\text{GDP}_{pc})_{it-1}$*$\text{Cohort}_{it-1}$, Wheat-Sugar_{i}. We employ lagged values of the remaining time variant variables.

beyond our variables of interest, only time and region fixed-effects are included (columns [3] and [7]), to the most saturated regression that further includes a full set of control variables.[2] Our sample goes from a maximum of 89 countries (column [3]) to a minimum of 39 (column [10]).[3]

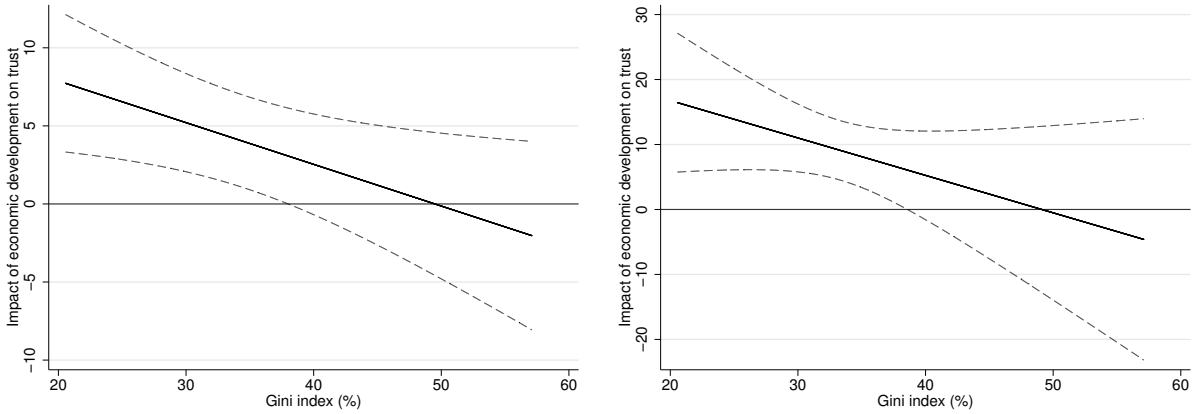
Despite the changes in the number of countries, we observe a robust pattern in our variables of interest. We always find that GDP per capita is positively associated with generalized trust while the interaction term is always negative. To consider the impact of economic development on trust for different values of inequality we compute the marginal effect of the former on trust (along with associated standard errors) for a relevant range of values of the Gini index. Figure 1 presents the estimated marginal effects. Figures 1.a and 1.b show the marginal effects computed, respectively, from columns [6] and [10] in Table 1.[4]

[2]The Hansen p-values indicate that the instruments are valid, i.e. we do not reject the joint null hypothesis that they are uncorrelated with the error term, and excluded instruments are correctly excluded from the estimated equation.

[3]All regressions included a balanced number of developed and developing countries, sample information is available upon request.

[4]The marginal effects are robust along the different specifications. We show the results from the most saturated regression. Marginal effects from the other specifications are available upon request. The fact that the interaction term or any of its individual components are not statistically significant in the

Figure 1: Marginal Effects



(a) OLS (b) 2SLS

Notes: OLS and 2SLS marginal effects are computed, respectively, from columns [6] and [10] in Table 1. 90% Confidence intervals.

Both figures show the same pattern. Economic development has a positive impact on trust, but this depends on the level of inequality. Income inequality mitigates the positive impact of GDP per capita on generalized trust. Our results show that for values of the Gini index larger than 40, a greater GDP per capita does not have a statistically significant impact on generalized trust.

4 Conclusion

Economic development has a positive impact on generalized trust because it relaxes scarcity constraints that otherwise drive individuals into the arms of identified in-groups to the detriment of out-group interactions. We hypothesize that the positive effect of development on generalized trust will be mitigated by income inequality since the latter - by increasing social heterogeneity and thus uncertainty in social interaction - increases the rationality of in-group bias. Our empirical evidence, based on a panel of up to 89 countries over the period 1981-2014 and after accounting for a range of confounding variables and the possibility of reverse causality, supports this hypothesis.

regression does not mean that the marginal effect is not significant for substantively relevant values of the mediating variable, as this depends on the sign of the covariance between our variables of interest (Brambor et al., 2006). The relevant range of Gini values is given by the sample distribution.

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