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Income inequality and self-reported values

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Abstract What is the relationship between income inequality and the values people endorse? Using survey data from all thirty-four OECD countries over a period of almost thirty years, we investigate the following dimensions of value systems: work ethic, civism, obedience, honesty, altruism, and tolerance. In most cases, no robust relation to income inequality is detected. However, we find some evidence that larger income disparities are associated with a stronger work ethic. This suggests that income inequality might spur hard work not only through pecuniary incentives but also because it makes people attach a symbolic value to being laborious.

Keywords Income inequality · Value systems

JEL Classification D63 · O15 · O57 · Z1

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1 Introduction

A strand of empirical literature has documented the association of income inequality with a number of outcomes, including well-being, health, trust, and crime—often arguing that income inequality causes those outcomes to worsen.[1] Income inequality may affect outcomes through two main channels. First, the distribution of income determines the budget sets faced by households and hence the range of options and outcomes that are available to them. Second, the effect from inequality may be mediated by various forms of cultural change. In particular, income inequality may shape the values and norms endorsed by people, which in turn influence their behavior. This paper explores the link between income inequality and the values people endorse. It shows that that relationship differs according to the specific value one considers: income inequality cannot significantly explain the observed variation in endorsed values in several cases, but there are exceptions where inequality matters.

Being self-reliant, telling the truth, and donating to the needy are examples of behavior that carries a symbolic value: self-respect and social esteem depend on those ways of behaving. But this does not apply to everybody to the same extent because people endorse different values. Psychology, anthropology and sociology have documented the variability of values and norms—both within and across societies. For example, Inglehart and Baker [24] showed that developed countries after World War II experienced a transition from "traditional" to "modern" values.

Values affect people's choices and welfare through an individual and a social channel. The individual channel is the unpleasant feeling of guilt that one has if one's behavior violates one's own moral standards and the symmetric pride if one behaves in line with internalized values. The social channel refers to the esteem received from relevant others—family, colleagues, neighbors, etc.—which in turn depends on those others' value systems: one gains approval by conforming to others' values, while hostility is received if one's behavior contradicts them. As stressed by a burgeoning literature in economics, values can contribute to explain a wide range of economic phenomena, from long-run growth to occupational choice, from the internal organization of firms to labor market institutions.[2] In view of the recent rise of income inequality in many parts of the world, understanding the association of inequality with values may help to better predict those phenomena.[3]

This paper systematically explores multi-country data on self-reported values over a time horizon of almost three decades and relates value change to changes in income inequality. Data availability allows us to scrutinize the following six dimensions of value systems: work ethic, civism, obedience, honesty, altruism, and tolerance. Each of those dimensions is likely to generate incentive effects in important areas of economic, social, and political behavior. For instance, work ethic is bound to affect households' labor supply, while civism is a likely determinant of tax compliance.

[1] Wilkinson and Pickett [43] offer a stimulating overview.

[2] See e.g. Algan and Cahuc [2], Auriol and Renault [4], Corneo and Jeanne [11], Doepke and Zilibotti [13] and Tabellini [42], as well as the discussion by Fehr and Hoff [17].

[3] Recent trends of income inequality are documented in a cross-country perspective in OECD [35, 36]. On global inequality, see Milanovic [31].

In the next section, our data sources and estimation strategy are described. The core of the paper is from Sections 3 to 8, where the above six dimensions of value systems are investigated. Values are related to two measures of income inequality: current inequality and experienced inequality. Section 9 summarizes our results and draws some conclusions. We find that income inequality entertains no robust relationship to civic virtues, obedience, honesty and altruism. There is some evidence that more income inequality comes along with less tolerance, but that evidence is rather weak. The only robust association we find concerns the work ethic: larger income disparities tend to be associated with a stronger work ethic.

2 Data and estimation strategy

We exploit information on the values endorsed by individuals obtained from the *European Values Study* and the *World Values Survey*, together referred to as WVS. The World Values Survey Network provides a harmonized file of European and World Values Surveys, extending over five survey waves carried out around 1981, 1990, 1995, 2000 and 2005.[4] In addition, the European Values Study 2008 provides a sixth round of survey data.[5] In each wave, the survey project was conducted over a period of about three years and for each country the year when the survey was actually conducted is known. That year is used in the regressions, both as a control for time fixed effects and as the year for the income inequality variable and the macroeconomic control variables. We confine our investigation to OECD countries in order to reduce problems of data quality and comparability as well as to minimize unobserved heterogeneity. As a result, our sample covers about 190,000 individuals surveyed during a period of 29 years in 34 countries.

From the WVS we recover individually endorsed values pertaining to the following six domains: work ethic, civism, obedience, honesty, altruism, tolerance. Each dimension of an individual's value system is measured by responses given to one or more survey questions. Average reported values by country and wave are shown in the online Appendix A of this paper.

Income inequality in a given country and year is measured by the corresponding Gini coefficient. That variable is taken from the *Standardized World Income Inequality Database* (SWIID).[6] The SWIID improves upon older collections of international income inequality datasets—like Deininger and Squire [14] and the World Income Inequality Database from UN-WIDER—and aims at minimizing problems associated with secondary data on income inequality, as discussed by Atkinson and Brandolini [3]. The benchmark for standardization is the Luxembourg Income Study which uses household adult-equivalent income. Accordingly, the measure of inequality used throughout this paper is the Gini coefficient of the distribution of household adult-equivalent net income. The Gini coefficients for all OECD countries with corresponding observations in the WVS and the descriptive statistics of the macroeconomic control variables are shown in the online Appendices B and C,

[4]For details see http://www.worldvaluessurvey.org.

[5]For details see http://www.europeanvaluesstudy.eu.

[6]The construction of the SWIID is explained in Solt [40].

respectively.[7] In Appendix D we display scatter plots that illustrate the cross-country correlation of the average intensity of each value during the entire observation period with the country-specific average of the Gini coefficients in the same years.

The relation of income inequality to endorsed values is estimated using a set of stepwise richer models. A set of six models is called a configuration. A basic configuration is progressively augmented in order to examine the robustness of results. For binary dependent variables, we estimate logit models. If dependent variables have an ordinal coding, ordered logit estimations are conducted.[8] The models in our *basic (B) configuration* can be summarized by:

$$V^*_{ict} = \alpha + \beta Gini_{ct} + \gamma_c + \lambda' X_{ict} + \varepsilon_{ict}$$

$$\Pr\left(V_{ict} = 1\right) = \Pr\left(V^*_{ict} > 0\right)$$

The value V endorsed by individual i at time t in country c is explained by the Gini coefficient at time t in country c, a set of individual control variables $\boldsymbol{X}$ and country fixed effects. To control for unobserved heterogeneity across countries and idiosyncrasies due to the way in which survey questions are translated in the various languages, country dummies are included in all estimations. As shown by Moulton [33], the inclusion of macro variables in the estimation of micro data can bias standard errors. Accordingly, all standard errors are corrected for clustering at the country level.

The six models in the basic configuration become stepwise richer by including more regressors into $\boldsymbol{X}$. In model (1), vector $\boldsymbol{X}$ only includes gender, age, and age squared, which are all unambiguously exogenous traits. Further models insert additional individual controls for which a mutual influence with the values endorsed by the individual cannot a priori be excluded. By including more regressors, the number of observations used in the regressions is typically reduced because of individually missing items or because some surveys did not collect the corresponding information.[9] In model (2), also the educational achievements of respondents are included. Model (3) adds dummies for quintiles of a respondent's household income. In model (4), dummies for family status and status in the labor market are included. Model (5) adds dummies for the frequency of attendance to religious services, which are substituted in model (6) with dummies for town size. All control variables are described in some detail in the online Appendix C.

The six models of the basic configuration do not control for macroeconomic variables. Augmenting those models with controls for the log of real per capita GDP, the unemployment rate, and the real growth rate of GDP yields the *B + Macro (M) configuration*. Per capita GDP captures the aggregate level of economic prosperity in

[7] Information about country-level macro variables is obtained from the OECD and the World Bank. Since those two sources use slightly different definitions for some variables, estimations were conducted separately with macro data from the OECD and the World Bank. Since the estimation results concerning income inequality are very similar, we only present those obtained using the OECD data.

[8] We also ran OLS regressions, which delivered very similar results. They can be obtained from the authors upon request.

[9] The online Appendices E and F present estimation results that are obtained with samples of fixed size for all models. It turns out that those results are qualitatively very similar to the ones presented here.

the respondent's country; the unemployment rate is a basic indicator of inefficiency in the allocation of human resources; the growth rate of GDP in the year the survey was conducted captures the position of the country in the business cycle.

Neither the basic configuration nor the basic configuration with macro controls includes time dummies. The measured impact of inequality thus refers to the effect of inequality changes over time. The final configuration, which is called the $B + M + Year\ FE\ configuration$, controls also for the year in which the survey was conducted. Since country effects are always included, the source of variation used in this configuration is merely the within-country over-time variation of the Ginis.

We investigate how values relate to two dimensions of income inequality. First, we look at the *contemporaneous Gini coefficient* and explore the relationship between values reported in a given country in a given year and the income inequality observed in the same country in the same year. Second, we replace the contemporaneous Gini coefficient by the *average Gini coefficient when the respondent was young*, i.e. aged 18–25. In this way we evaluate the hypothesis that experiences during youth exert a long-term influence on the values of individuals.[10] Although we regress individual values on the Gini coefficient, which is an aggregate variable, endogeneity problems are not ruled out. Therefore, our estimation results should not be interpreted in terms of a causal effect of income inequality on values and should rather be seen as conditional correlations.

3 Work ethic

An individual's work ethic can be understood as the symbolic value that an individual attaches to being engaged in the production of goods and services for one's employer or the market, independently of the utility derived from its monetary remuneration and the concrete conditions under which the work is performed. Against the background of history, a work ethic seems to be a relatively recent phenomenon. According to the Bible, work was a curse devised by God to punish Adam and Eve for their original sin. Also the slave societies of the Greek polis and ancient Rome regarded work as an inferior activity. Medieval aristocracy used the clergy to try to convince the peasants that work was their duty as decreed by God. The rise of the modern work ethic is usually associated with the development of early capitalism and Protestantism.

At first glance, the implications of a rigid work ethic for economic performance are straightforward. Ceteris paribus, a stronger work ethic will cause individuals to devote a larger share of their time and energy to work, thereby increasing labor supply and output. People looking for a job will do it more intensely if they have a stronger work ethic and they will be less choosy when the available jobs are unpleasant and badly paid; hence, a stronger work ethic will tend to lower the labor costs of firms and reduce the rate of unemployment. On second reflection, the economic impact of the work ethic appears more complex. A too strong work ethic could be harmful for economic growth in advanced knowledge-based economies that

[10] See e.g. Giuliano and Spilimbergo [18] and references therein. We also conducted estimations using the Gini coefficient with a ten-year lag and with a 20-year lag. Results can be obtained from the authors upon request.

Table 1 Coefficients of contemporaneous Gini for *work-first*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.064***	0.086***	0.088***	0.090***	0.088***	0.091***
	(3.79)	(4.29)	(5.08)	(5.15)	(4.84)	(5.08)
B + Macro	0.064*	0.093***	0.099***	0.101***	0.099***	0.107***
	(2.41)	(3.78)	(4.25)	(4.28)	(4.13)	(4.55)
B + M + Year FE	0.045	0.063*	0.075*	0.077*	0.073+	0.054
	(1.28)	(2.07)	(1.96)	(1.97)	(1.85)	(0.93)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

rely on human development and an efficient allocation of talent. Obsessions to have a job may lead individuals to avoid risk taking in the choice of their career, possibly sacrificing their personal talent for an occupation if the risk of personal failure is comparatively large. A strong emphasis on hard work may be harmful for innovation if some "creative idleness" is a fertile soil for the arrival of new ideas. Furthermore, compulsive workers may be more likely to suffer from job-related health problems—from exhaustion to high blood pressure—that eventually undermine their ability to work. For society at large, a heavy stigmatization of the unemployed may prove divisive, politically destabilizing and costly in terms of social policy. Altogether, this suggests that the work ethic might have a non-monotonic effect on economic performance, improving it at low levels of the work ethic and worsening it at high levels.[11]

We use four survey questions from the WVS to proxy for an individual's work ethic. The first proxy is called *work-first*, and is constructed from a survey question where respondents are asked: *Do you agree or disagree with the following statement? Work should always come first, even if it means less spare time.* 5 *'Strongly agree'* 4 *'Agree'* 3 *'Neither agree or disagree'* 2 *'Disagree'* 1 *'Strongly disagree'*.

Arguably, *work-first* is a good proxy for the work ethic because it directly evaluates whether and to what degree respondents prioritize work over other activities.[12] We relate it to income inequality by following the empirical strategy presented above. Since it entails a very large number of regressions, we only report the estimated coefficients for income inequality. We start with results for the contemporaneous Gini coefficient of net incomes. As can be seen from Table 1, income inequality has a positive, strongly significant relation with *work-first* when macroeconomic controls are excluded (basic configuration, first row). When controlling for the level of economic development, unemployment and yearly GDP growth (second row), results remain uniformly positive and highly significant. Adding time fixed effects (third row) yields positive coefficients, most of them statistically significant at levels of 5–10 %. These results indicate that income inequality contributes to explain the work ethic endorsed by individuals.

We now turn to the relationship between income inequality experienced during youth and one's work ethic. As shown in Table 2, the coefficient on that inequality variable is uniformly positive. However, results are not statistically significant at conventional levels.

[11] Corneo [9] offers some empirical evidence supporting this.

[12] Gradstein [20] and Schaltegger and Torgler [38] use this item to proxy for work attitudes.

Table 2 Coefficients of Gini when aged 18–25 for *work-first*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.008	0.005	0.005	0.005	0.006	0.004
	(0.97)	(0.54)	(0.51)	(0.54)	(0.65)	(0.50)
B + Macro	0.012	0.007	0.008	0.007	0.007	0.007
	(1.46)	(0.78)	(0.82)	(0.84)	(0.82)	(0.83)
B + M + Year FE	0.013	0.007	0.008	0.008	0.008	0.007
	(1.52)	(0.79)	(0.86)	(0.88)	(0.86)	(0.78)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 3 Coefficients of contemporaneous Gini for *money-work*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.053*	0.059*	0.058*	0.061*	0.060*	0.065*
	(2.19)	(2.30)	(2.29)	(2.38)	(2.28)	(2.55)
B + Macro	0.056^{+}	0.064*	0.062*	0.065*	0.063*	0.070*
	(1.91)	(2.18)	(2.09)	(2.13)	(2.05)	(2.46)
B + M + Year FE	0.043^{+}	0.049*	0.046^{+}	0.048*	0.045^{+}	0.027
	(1.94)	(2.19)	(1.95)	(1.97)	(1.88)	(0.76)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

The second proxy for the work ethic of respondents is a variable that we label *money-work*. It is based on the following survey question: *Do you agree or disagree with the following statement? It is humiliating to receive money without having to work for it.* 5 *'Strongly agree'*, 4 *'Agree'*, 3 *'Neither agree nor disagree'*, 2 *'Disagree'*, 1 *'Strongly disagree'*.

Respondents who agree with this statement are likely to feel ashamed or guilty when being unemployed and to stigmatize those who live on unemployment benefits or related social transfers. This proxy captures the endorsement of a work norm that dictates self-supportiveness, i.e. persons who are able to work should work so as to support themselves by their own work.[13]

The results from our empirical investigation are shown in Table 3. Accordingly, the contemporaneous Gini coefficient of net income has a positive relation with *money-work*, significant at levels of 5–10 %.

We now turn to the relation to inequality when respondents were aged eighteen to twenty-five. As shown in Table 4, that variable carries a positive coefficient but results fail to be statistically significant.

Taken all together, results obtained using *money-work* are remarkably similar to those obtained using *work-first*. In most specifications more income inequality in a country comes with a higher probability that respondents in that country report a stronger work ethic.

The third proxy constructed to capture a respondent's work ethic asks whether work is a duty towards society: *Do you agree or disagree with the following statement? Work is a duty towards society.* 5 *'Strongly agree'*, 4 *'Agree'*, 3 *'Neither agree or disagree'*, 2 *'Disagree'*, 1 *'Strongly disagree'*.

[13] Minkov and Blagoev [32] use this item in a factor analysis to study the relation between culture and economic growth.

Table 4 Coefficients of Gini when aged 18–25 for *money-work*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.005	0.005	0.004	0.004	0.006	0.004
	(0.80)	(0.83)	(0.54)	(0.63)	(0.91)	(0.62)
B + Macro	0.005	0.004	0.002	0.003	0.003	0.001
	(0.63)	(0.56)	(0.28)	(0.37)	(0.37)	(0.10)
B + M + Year FE	0.004	0.003	0.001	0.002	0.002	0.000
	(0.55)	(0.45)	(0.18)	(0.27)	(0.27)	(0.04)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 5 Coefficients of contemporaneous Gini for *work-duty*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.060**	0.070**	0.068**	0.071*	0.068*	0.071**
	(3.02)	(2.81)	(2.60)	(2.57)	(2.29)	(2.66)
B + Macro	0.071***	0.084***	0.080***	0.082***	0.080***	0.086***
	(4.75)	(4.81)	(4.03)	(3.84)	(3.44)	(3.97)
B + M + Year FE	0.058*	0.065*	0.024	0.025	0.019	−0.005
	(2.24)	(2.39)	(0.98)	(0.97)	(0.72)	(−0.12)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 6 Coefficients of Gini when aged 18–25 for *work-duty*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.008	0.008	0.007	0.007	0.008	0.007
	(1.15)	(1.07)	(0.94)	(0.99)	(1.05)	(0.88)
B + Macro	0.011	0.009	0.009	0.010	0.009	0.009
	(1.40)	(1.19)	(1.14)	(1.22)	(1.14)	(1.12)
B + M + Year FE	0.011	0.009	0.010	0.010	0.010	0.008
	(1.48)	(1.24)	(1.24)	(1.33)	(1.25)	(1.07)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

It is not so clear that this survey question is a good proxy for work ethic as defined above, i.e. the value associated with actively contributing to the production of goods and services for one's employer or the market. An individual may have a strong work ethic in this sense without being convinced that work is a duty towards society. That individual may think that work is a duty towards God or towards his family but not towards society. Conversely, someone with a weak work ethic in the above sense may agree that work is a duty towards society and therefore engage in a lot of volunteering to help the needy or to preserve the natural environment for future generations and reduce market work.[14]

Table 5 reports our estimation results concerning the effect from contemporaneous levels of income inequality. The estimated coefficients are mostly positive and often statistically significant.

The average level of income inequality experienced by respondents when aged eighteen to twenty-five also produces positive coefficients, see Table 6; however they lack statistical significance.

[14]Balan and Knack [5] use *work-duty* as a proxy for morality in an analysis of the determinants of human capital investment.

Table 7 Coefficients of contemporaneous Gini for *child-hardwork*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.066^{+}	0.072*	0.064*	0.079**	0.077**	0.098
	(1.90)	(2.21)	(2.48)	(3.10)	(3.00)	(1.56)
B + Macro	0.071*	0.072*	0.067*	0.071^{+}	0.069^{+}	0.089*
	(2.49)	(2.01)	(2.27)	(1.93)	(1.90)	(2.09)
B + M + Year FE	0.057*	0.082*	0.086**	0.082**	0.080**	0.063
	(2.35)	(2.28)	(2.80)	(2.72)	(2.82)	(1.29)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 8 Coefficients of Gini when aged 18–25 for *child-hardwork*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.016	0.003	0.007	0.006	0.004	0.008
	(1.62)	(0.57)	(1.01)	(0.89)	(0.69)	(1.13)
B + Macro	0.019***	0.010^{+}	0.014**	0.012**	0.012**	0.012*
	(3.32)	(1.91)	(3.00)	(2.71)	(2.59)	(2.35)
B + M + Year FE	0.021***	0.009	0.013*	0.012*	0.011*	0.011^{+}
	(3.98)	(1.60)	(2.56)	(2.42)	(2.30)	(1.90)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

The last proxy we employ is the variable *child-hardwork*, a binary variable indicating whether respondents think that teaching children to work hard is important.[15] Hard work is an element in a list of eleven qualities from which respondents can choose up to five. The corresponding survey question reads: *Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five. Hard Work;* 0 *'Not mentioned'* 1 *'Important'*.

A few caveats are in order. While it is likely that respondents with a stronger work ethic mention hard work as an important quality, this is by no mean obvious. Respondents with a strong work ethic may reason that their children should not be encouraged to learn the importance of hard work because children will live in a society where hard work does not pay in monetary terms. Conversely, an individual who personally disvalues hard work may want children to have a strong work ethic because hard work will be necessary in order for them to have economic success—and, possibly, because this raises the probability for the respondent to be helped by his children once they are adults. This survey item might then be seen as a proxy for the work ethic of the respondents' children rather than of the respondents themselves. Another source of ambiguity is the reference to the home as to the place where a particular quality can be learnt. Additionally to the family, children may learn values from their peers, at school, in the church, and so on. Thus, two individuals who want their children to have the same value system may react in different ways to that survey question because their children face different social environments. By way of an example, a parent with a strong work ethic may fail to

[15]This empirical measure of work ethic has also been used by Lindbeck and Nyberg [28], Maystre et al. [30] and Corneo [9].

mention hard work in that survey question if her children are already taught work diligence by their teachers in school.

Estimation results for our two measures of inequality are respectively shown in Tables 7 and 8. We find a positive coefficient for all specifications and most estimates are statistically significant at conventional levels.[16]

The four proxies for the work ethic used above are correlated with each other, as shown in the online Appendix G. There, we also present the results from regressions that employ a composite index of the work ethic, one derived from principal component analysis and another derived from factor analysis. Those results confirm the findings obtained for each single variable, i.e. the presence of a significant positive correlation between inequality and the self-reported work ethic. In the final part of this paper we shall discuss the interpretation and implications of that finding.

4 Civism

Civism refers to that part of an individual's value system that evaluates behavior towards the polity. It shapes attitudes about complying with rules and laws independently of their enforcement through police and tribunals. Civic virtues include paying taxes, rejecting bribes, testifying before courts, and voting on political elections.

As a general presumption, stronger civic virtues are thought to favor macroeconomic performance since more cooperation obtains at lower social costs. In this vein, Guiso et al. [21] propose a concept of civic capital and argue that civic capital can explain persisting differences in economic performance across countries. However, the notion that civic values are good for the economy does not go completely undisputed. Paying bribes to avoid a queue can increase overall efficiency by having those with the highest opportunity cost of time being served first. In Leviathan or predatory states, tax evasion can be necessary for economic initiative to flourish. Moreover, the public institutions that emerge in a country are themselves likely to be the result of the values endorsed by its citizens. In line with this argument, Algan and Cahuc [2] show that countries with stronger civic values tend to have more generous unemployment benefits and less strict regulations for job protection.

From the WVS one can construct four proxies for civic values that emphasize various aspects of those values. Each item refers to the justifiability of a specific behavior towards the polity. Their common part reads: *Please tell me for each of the following statements whether you think it can always be justified* (1)*, never be justified* (10)*, or something in between, using this card.* The single statements are:

Claiming government benefits to which you are not entitled to.
Avoiding a fare on public transport.

[16]The reported results were derived from estimations that exclude Hungary and Poland. As can be seen from the online Appendix A, data from those two countries exhibits a very erratic behavior, depending on whether the European Values Study or the World Values Survey is the data source, as they worded the question differently. Including Hungary and Poland in the regressions reduces the level of statistical significance of the coefficient of interest but does not change its sign.

Table 9 Coefficients of contemporaneous Gini for *justify-govbenefit*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	−0.013	0.031	0.034	0.033	0.032	0.022
	(−0.63)	(1.04)	(1.24)	(1.17)	(1.15)	(0.57)
B + Macro	−0.001	0.007	0.015	0.010	0.009	0.009
	(−0.07)	(0.35)	(0.87)	(0.52)	(0.44)	(0.41)
B + M + Year FE	−0.014	0.031	0.034	0.036	0.034	0.018
	(−0.99)	(1.50)	(1.62)	(1.60)	(1.49)	(0.64)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 10 Coefficients of Gini when aged 18–25 for *justify-govbenefit*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	−0.010^{+}	−0.009*	−0.012**	−0.012**	−0.012**	−0.010*
	(−1.75)	(−2.01)	(−2.75)	(−2.86)	(−2.87)	(−2.02)
B + Macro	−0.009	−0.008	−0.012*	−0.011*	−0.011^{+}	−0.010
	(−1.23)	(−1.33)	(−2.03)	(−1.96)	(−1.96)	(−1.48)
B + M + Year FE	−0.010	−0.010	−0.013*	−0.012*	−0.012*	−0.010
	(−1.33)	(−1.63)	(−2.37)	(−2.08)	(−2.06)	(−1.41)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Cheating on taxes if you have a chance.
Someone accepting a bribe in the course of their duties.[17]

Let civism be measured by the respondent's attitude towards the justifiability of claiming government benefits to which she is not entitled to. Notice that a higher number in the scale from 1 to 10 indicates a stronger civic value. As shown in Table 9, current income inequality entertains no statistically significant relation to benefit morale.

Results differ if one concentrates on the effect from inequality when aged eighteen to twenty-five (Table 10). In that case, more inequality is found to be negatively related to civism and that relation is statistically significant in about one half of the regressions.

In sum, results for *justify-govbenefit* are quite inconclusive. Estimated coefficients display both positive and negative signs and mostly lack statistical significance.

The second proxy for a respondent's civism deals with the illegal use of public transportation. This time, we find that the estimated coefficients for the contemporaneous level of inequality are mostly positive (Table 11). Furthermore, the relation between *justify-nofare* and the Gini of net income is often statistically significant. However, in the one case where the sign of the coefficient is negative, the estimate is strongly significant.

The coefficients on inequality when aged eighteen to twenty-five are exhibited by Table 12. There is a mostly negative, but insignificant relation between the mean

[17] Knack and Keefer [26] used cheating on benefits, on taxes and on fares and other variables to construct a measure of civic cooperation to proxy for social capital. Östling [37] and Cervellati and Vanin [7] use those items to proxy for moral values. Other papers that employed those items are Halla et al. [22], Heinemann [23], Schneider and Torgler [39] and You and Khagram [44].

Table 11 Coefficients of contemporaneous Gini for *justify-nofare*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	−0.054**	0.052+	0.052+	0.047	0.044	0.084*
	(−3.13)	(1.66)	(1.81)	(1.50)	(1.41)	(2.33)
B + Macro	0.003	0.055*	0.067***	0.070***	0.066**	0.069***
	(0.22)	(2.21)	(3.38)	(3.40)	(3.18)	(4.19)
B + M + Year FE	0.024	0.099***	0.100***	0.069**	0.066**	0.030
	(1.38)	(5.21)	(5.18)	(3.26)	(3.22)	(1.00)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 12 Coefficients of Gini when aged 18–25 for *justify-nofare*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	−0.009	−0.005	−0.005	−0.004	−0.004	−0.003
	(−1.26)	(−0.74)	(−0.69)	(−0.61)	(−0.60)	(−0.39)
B + Macro	0.000	−0.003	−0.005	−0.005	−0.005	−0.002
	(0.01)	(−0.49)	(−0.84)	(−0.70)	(−0.72)	(−0.26)
B + M + Year FE	0.000	−0.005	−0.006	−0.006	−0.006	−0.004
	(0.06)	(−0.69)	(−0.93)	(−0.90)	(−0.90)	(−0.48)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 13 Coefficients of contemporaneous Gini for *justify-taxcheat*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	−0.007	0.045	0.042	0.039	0.037	0.050
	(−0.31)	(1.42)	(1.38)	(1.16)	(1.10)	(1.39)
B + Macro	0.026+	0.071**	0.073**	0.062**	0.060**	0.072*
	(1.82)	(3.10)	(3.24)	(2.89)	(2.67)	(2.42)
B + M + Year FE	0.003	0.046*	0.039+	0.033	0.029	0.050
	(0.17)	(2.03)	(1.81)	(1.48)	(1.28)	(1.28)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

level of the Gini coefficient of net income while the respondent was young and *justify-nofare*.

Again, overall results are mixed. There is a mostly positive relationship between contemporary levels of inequality and a civic attitude towards paying for public transport. However, a mostly negative effect of income inequality is found if the inequality experienced when young is employed as a regressor.

The third proxy for civic virtue is constructed from the survey question about cheating on taxes. Results for the effect of income inequality are exhibited in Tables 13 and 14. For contemporary measures of income inequality, a mostly positive coefficient is obtained. All results for the configuration with macroeconomic controls without year fixed effects are statistically significant. Higher income inequality is associated there with stronger tax morals.

Instead, the average inequality level while being aged eighteen to twenty five does not exhibit a clear relation with tax morale. The estimated coefficients are sometimes positive and sometimes negative and fail to be statistically significant in all but one regression.

Table 14 Coefficients of Gini when aged 18–25 for *justify-taxcheat*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.009^{+}	0.004	0.003	0.002	0.003	0.000
	(1.87)	(1.15)	(0.91)	(0.65)	(0.71)	(0.07)
B + Macro	0.006	0.002	0.000	−0.002	−0.002	−0.005
	(1.16)	(0.40)	(0.05)	(−0.37)	(−0.36)	(−1.22)
B + M + Year FE	0.005	−0.001	−0.003	−0.003	−0.003	−0.004
	(0.99)	(−0.24)	(−0.79)	(−0.68)	(−0.67)	(−0.93)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 15 Coefficients of contemporaneous Gini for *justify-bribe*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	−0.002	−0.004	−0.002	−0.010	−0.012	−0.017
	(−0.21)	(−0.15)	(−0.10)	(−0.45)	(−0.53)	(−0.63)
B + Macro	0.007	−0.016	−0.009	−0.018	−0.021	−0.022
	(0.38)	(−0.50)	(−0.33)	(−0.65)	(−0.73)	(−0.73)
B + M + Year FE	−0.017	−0.043	−0.056	−0.064^{+}	−0.068^{+}	−0.049
	(−1.09)	(−1.20)	(−1.60)	(−1.76)	(−1.86)	(−0.74)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 16 Coefficients of Gini when aged 18–25 for *justify-bribe*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	−0.009^{+}	−0.014*	−0.017**	−0.014**	−0.014**	−0.013*
	(−1.95)	(−2.52)	(−3.02)	(−2.70)	(−2.65)	(−2.30)
B + Macro	−0.008	−0.012^{+}	−0.017*	−0.014*	−0.014*	−0.015*
	(−1.51)	(−1.93)	(−2.55)	(−2.17)	(−2.16)	(−2.22)
B + M + Year FE	−0.009^{+}	−0.013*	−0.018**	−0.015*	−0.015*	−0.013*
	(−1.66)	(−2.20)	(−2.75)	(−2.39)	(−2.37)	(2.08)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

The last proxy for civic values is the justifiability of accepting bribes. Results about the effect from contemporaneous inequality in Table 15 show a negative relation with *justify-bribe*, albeit with very little statistical significance. If anything, growing income disparities seem to be associated with less civic virtue in this case.

Inequality experienced when young consistently reveals a negative relation between *justify-bribe* and the Gini coefficient (Table 16). For most estimates, the effect is statistically significant. This is quite in line with the effect from contemporaneous inequality levels.

Clearly, how civism is proxied matters a lot for the estimation results. Using a survey question about free riding on public transport may suggest to some that income inequality fosters civic virtues, whereas using a question about corruption and bribes may suggest to others that more inequality has a negative effect. However, even the results from single proxies are shaky and do not allow to draw firm conclusions.

5 Obedience

Obedience presupposes an authority relation. Obedience is stressed in an individual's value system if the individual attaches importance to executing the orders received from a higher level in the relevant hierarchy, e.g. a child obeying his parents, an employee obeying the employer, a common soldier obeying an officer. When obedience carries a symbolic value, the individual feels guilty if she does not follow his superiors' instructions—independently of the content of the orders.

The implications of a taste for obedience for economic performance are varied. Obedient workers make firms more flexible since the firm can re-direct the activity of its workers as required by transitory changes in production and market conditions. Thus, for given contractual arrangements between the firm and its employees, more obedience is predicted to reduce production costs. At the aggregate level, a higher output level may obtain from a given employment level.

However, being very obedient entails the risk of being exploited. If an employment contract is very incomplete, i.e. it only loosely specifies the employee's tasks and assigns authority to the employer, the latter has an incentive to use his authority to extract as much labor as possible from the employee. Anticipating this, a very obedient worker has an interest to sign an employment contract where his tasks are rigidly defined so as to avoid being exploited ex post. In situations where—because of market conditions or institutions—the bargaining power of workers is low, this will not materialize and the firms will profit from a docile workforce. If instead workers have enough bargaining power, more respect for authority will come along with contractual arrangements that protect them from ex-post exploitation. The ensuing rigidity will tend to reduce firms' productivity. So, more obedient individuals need not be good for the macroeconomy.

There are two survey questions in the WVS that can be used to proxy an individual's taste for obedience.[18] The first proxy for obedience is an element in a list of eleven child qualities, from which respondents can choose up to five. The survey question reads: *Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five. Obedience;* 0 *'Not mentioned'* 1 *'Important'*.

Estimation results are exhibited in Tables 17 and 18. For the current Gini coefficients of net income there is a mostly positive association with obedience. In contrast, inequality levels when young mostly exhibit a negative relationship with obedience. Overall, the obtained results are rather inconclusive as the estimated coefficients are never statistically significant at conventional levels.

The second proxy is based on the following survey question: *People have different ideas about following instructions at work. Some say that one should follow one's superior's instructions even when one does not fully agree with them. Others say that one should follow one's superior's instructions only when one is convinced that they are right. With which of these two opinions do you agree?* 1 *'Must be convinced first',* 2 *'Depends',* 3 *'Follow instructions'*.

[18] Inglehart and Welzel [25] use similar data and interpret a taste for obedience as an element of traditional value systems as opposed to modern ones. See also Maystre et al. [30], Berry et al. [6], and Di Tella and Dubra [15] for papers that employ similar items.

Table 17 Coefficients of contemporaneous Gini for *child-obedience*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	−0.000	0.027	0.026	0.029	0.026	0.021
	(−0.01)	(0.98)	(1.14)	(1.28)	(1.14)	(0.79)
B + Macro	−0.022	0.035	0.035	0.011	0.010	0.011
	(−1.04)	(1.11)	(1.24)	(0.49)	(0.46)	(0.49)
B + M + Year FE	−0.009	0.042	0.026	0.010	0.010	0.065
	(−0.41)	(1.10)	(0.74)	(0.33)	(0.32)	(1.61)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 18 Coefficients of Gini when aged 18–25 for *child-obedience*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.001	−0.003	−0.003	−0.002	−0.002	0.000
	(0.26)	(−0.59)	(−0.51)	(−0.53)	(−0.48)	(0.04)
B + Macro	0.001	−0.003	−0.003	−0.001	−0.002	−0.004
	(0.23)	(−0.65)	(−0.59)	(−0.39)	(−0.38)	(−0.80)
B + M + Year FE	0.002	−0.004	−0.003	−0.002	−0.002	−0.003
	(0.75)	(−0.99)	(−0.80)	(−0.53)	(−0.57)	(−0.67)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 19 Coefficients of contemporaneous Gini for *instructions-follow*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.004	−0.001	−0.008	0.004	0.003	0.023
	(0.33)	(−0.04)	(−0.23)	(0.10)	(0.07)	(0.64)
B + Macro	−0.008	0.018	0.015	0.032	0.030	0.041
	(−0.45)	(0.57)	(0.42)	(0.80)	(0.75)	(1.12)
B + M + Year FE	−0.008	0.045*	0.043	0.048^{+}	0.045^{+}	0.024^{+}
	(−0.43)	(2.01)	(1.63)	(1.85)	(1.75)	(1.79)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Accordingly, an ordinal variable has been constructed that is called *instructions-follow*. That variable takes value three if the respondent answers "Fellow instructions", two if respondent answers "Depends", and one if the respondent answers "Must be convinced first".[19] A higher value of the variable *instructions-follow* is therefore interpreted as a higher symbolic value attached to being obedient.

Results about the effect from current inequality indicate that the Gini coefficient of net income has in very few cases a statistically significant positive relation with *instructions-follow*, see Table 19.

For inequality levels when young, there is also a positive association between the level of Gini coefficients and *instructions-follow* (Table 20). Estimated coefficients are always positive but they are statistically significant only for the basic configuration.

Taking our two proxies together, the degree of obedience in a society seems to have at best a weak correlation with income inequality. Higher levels of income

[19]Estimations were also performed for two binary variables derived from *instructions-follow*. Since results do not vary, they are not reported here for the sake of brevity.

Table 20 Coefficients of Gini when aged 18–25 for *instructions-follow*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.010**	0.007^{+}	0.008*	0.009*	0.010*	0.007
	(3.02)	(1.84)	(2.10)	(2.45)	(2.56)	(1.45)
B + Macro	0.005	0.002	0.004	0.004	0.006	0.006
	(1.19)	(0.37)	(0.76)	(0.96)	(1.21)	(0.89)
B + M + Year FE	0.004	0.001	0.003	0.003	0.004	0.005
	(1.17)	(0.25)	(0.75)	(0.79)	(1.03)	(0.79)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

inequality might make respondents less critical against the instructions of their superiors. However, there is no evidence of such an association with respect to the importance to teach obedience to children. Overall, the evidence is mixed, and the correlation between inequality and the value of obedience is not robust.

6 Honesty

The symbolic value of honesty refers to the intrinsic importance attached to truth telling. Some people feel guilty if lying whereas others do not care. These latter individuals will lie more often if it is in their material interest to do so. In some instances, honesty and civism generate the same normative judgments. Thus, both valuing honesty and valuing civic virtues makes one refrain from declaring less than one's true income for tax purposes. However, civism also refers to civic duties like voting, the violation of which does not entail that one behaves dishonestly. Moreover, honesty goes beyond the behavior of the individual towards the polity as it also speaks of how individuals relate to each other. Thus, some persons may both misbehave as citizens and be honest in their private sphere.

Honesty may substantially increase the propensity to conduct market transactions as it reduces the incidence of breach of contracts. The trustworthiness of a society of honest individuals enlarges the scope for labor division and exchange and thereby enhances the whole economy. Honesty also benefits collective decision making since it makes it possible to credibly transmit information that is useful for evaluating alternative policy options. As a result, one may presume that macroeconomic performance increases with the strength of the symbolic value associated to honesty.

To measure the weight attached to honesty, we employ the following survey question: *Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between, using this card. Lying in your own interest;* 1 *'Never justifiable'* 10 *'Always justifiable'*.[20]

Table 21 reports the estimated coefficients for the contemporaneous level of inequality. It shows that the Gini coefficient of net income has a mostly positive and in a few cases significant relation with the item measuring honesty.

All estimated coefficients become negative if inequality is measured by the Gini coefficient experienced when young; however, those coefficients never reach statistical significance, see Table 22.

[20]This survey question has been used by Guiso et al. [21] to construct a measure for civic capital.

Table 21 Coefficients of contemporaneous Gini for *justify-lying*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	−0.018	0.020	0.025	0.028	0.028	0.017
	(−1.34)	(0.75)	(0.82)	(0.86)	(0.81)	(0.58)
B + Macro	0.018	0.048**	0.056**	0.061*	0.061*	0.048*
	(1.05)	(2.84)	(2.62)	(2.44)	(2.25)	(2.29)
B + M + Year FE	0.019	0.031	0.015	0.011	0.005	0.005
	(1.20)	(1.05)	(0.41)	(0.29)	(0.13)	(0.14)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 22 Coefficients of Gini when aged 18–25 for *justify-lying*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	−0.004	−0.004	−0.003	−0.005	−0.004	−0.003
	(−0.69)	(−0.75)	(−0.56)	(−0.84)	(−0.78)	(−0.58)
B + Macro	−0.002	−0.005	−0.005	−0.007	−0.007	−0.006
	(−0.36)	(−0.78)	(−0.87)	(−1.28)	(−1.22)	(−1.10)
B + M + Year FE	−0.003	−0.005	−0.005	−0.007	−0.007	−0.005
	(−0.43)	(−0.85)	(−0.88)	(−1.20)	(−1.14)	(−1.05)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

In sum, the taste for truth-telling exhibits a very weak and unstable correlation with income inequality. The data does not support the hypothesis that honesty entertains a significant relationship with income inequality.

7 Altruism

An individual's value system may stress the importance of helping others at personal cost when they are in need. We refer to this attitude as altruism. People who are intrinsically altruistic feel bad if they refrain from helping others. Conversely, selfish people do not experience any feeling of guilt in such cases. Altruism is differently explained depending on whether it refers to intra-family ties or to relationships between unrelated individuals. While there is substantial agreement that altruism towards own children and other relatives has a strong basis in natural selection and may somehow be hardwired in the human brain, altruism towards strangers is hard to explain on the basis of natural selection and may mainly be apprehended as a cultural phenomenon.

The economic implications of altruism are complex. In a direct way, altruism entails transfers from the well-to-do to the needy and therefore tends to raise social welfare. This does not mean that economic performance as measured by GDP has to increase. If highly productive individuals reduce their working hours in order to volunteer assisting people with social problems, GDP may go down. Furthermore, altruism may engender the Samaritan's dilemma: the presence of altruists may encourage opportunistic behavior by those who expect to be helped by the altruists. Similarly to extensive welfare arrangements, in an altruistic society some subgroups might remain in a poverty trap because they face no incentive to invest if they get rescued anyway by the altruists. Thus, while altruism may make social interactions

Table 23 Coefficients of contemporaneous Gini for *child-unselfish*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.047^{+}	0.014	0.007	0.014	0.013	0.033
	(1.93)	(0.67)	(0.34)	(0.58)	(0.53)	(0.99)
B + Macro	0.004	0.017	0.007	0.005	0.003	0.037
	(0.23)	(0.73)	(0.33)	(0.20)	(0.12)	(0.84)
B + M + Year FE	−0.031	0.018	0.008	0.003	0.003	0.038
	(−1.61)	(0.50)	(0.25)	(0.10)	(0.10)	(0.83)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Table 24 Coefficients of Gini when aged 18–25 for *child-unselfish*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.000	−0.005	−0.003	−0.004	−0.004	−0.005
	(0.03)	(−1.43)	(−0.81)	(−0.88)	(−0.89)	(−0.93)
B + Macro	−0.007	−0.006	−0.003	−0.004	−0.004	−0.006
	(−1.64)	(−1.31)	(−0.72)	(−0.72)	(−0.70)	(−1.15)
B + M + Year FE	−0.005	−0.004	−0.002	−0.002	−0.002	−0.005
	(−1.18)	(−0.81)	(−0.39)	(−0.38)	(−0.37)	(−0.87)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

more pleasant and be useful as an insurance mechanism, it could possibly worsen macroeconomic performance as usually measured.

In the WVS unselfishness is an element in a list of eleven qualities from which respondents can choose up to five. The survey question reads: *Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five. Unselfishness;* 0 *'Not mentioned'* 1 *'Important'*.[21]

As can be observed in Table 23, results from contemporaneous inequality exhibit mostly positive coefficients. However, those coefficients are almost never statistically significant at conventional levels.

The average level of the Gini coefficient during youth shows a consistent negative relation with the current measure of altruism (Table 24). However, the estimated coefficients are not significantly different from zero.

Overall, our estimation results do not support the hypothesis that income inequality relates to altruism in a significant way.

8 Tolerance

Tolerance implies respect for diversity. Tolerant people who belong to a majority group feel a duty of treating minority members (e.g. immigrants and homosexuals) in a fair way, i.e. as if they were treating other majority individuals. As pointed out by Corneo and Jeanne [10], tolerance can be usefully interpreted as a characteristic of

[21] Aghion et al. [1] employ this question to construct an index of civic education. Gorodnichenko and Roland [19] employ it to build an index of the propensity to contribute to the provision of public goods. See also Maystre et al. [30].

Table 25 Coefficients of contemporaneous Gini for *child-tolerance*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.060*	−0.029	−0.028	−0.032	−0.030	−0.077*
	(2.08)	(−0.82)	(−0.72)	(−0.78)	(−0.74)	(−2.47)
B + Macro	0.023	−0.007	−0.003	−0.018	−0.016	−0.073^{+}
	(0.72)	(−0.18)	(−0.08)	(−40.41)	(−0.37)	(−1.79)
B + M + Year FE	−0.022	−0.058**	−0.078***	−0.067**	−0.067**	−0.023
	(−1.30)	(−2.65)	(−3.57)	(−3.15)	(−3.08)	(−0.79)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

an individual's value system, rather than the evaluation of a special class of actions. A person can be seen as tolerant if she attaches symbolic value not only to her own characteristics but also to those that others have. Conversely, an intolerant person is complacent and disrespectful of traits and lifestyles that are not like hers. Thus, tolerance can be defined both for persons who are in the majority group and for persons who belong to a minority group.

Tolerance is likely to promote peaceful coexistence between diverse groups and to favor the manifestation of individual proclivities. Both effects are likely to be beneficial for macroeconomic performance since tolerance towards, say, different ethnicities, facilitates cooperation in firms and markets, and acceptance of individuality favors the development of talents and therefore the generation of innovations that may eventually fuel economic growth. However, tolerance may also contribute to the erosion of social norms that are good for the economy. Increased tolerance may imply that there is less stigmatization of uncooperative or even criminal behavior, e.g. pretending of being sick so as to keep receiving one's wage without having to work for it. In such cases, more tolerant values may encourage the violation of norms of cooperation and harm the economy. Thus, the overall effect of tolerance on macroeconomic performance is a priori ambiguous.

In our dataset, tolerance is an element in a list of eleven qualities from which respondents can choose up to five. The survey question is the one already used above and it reads: *Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five. Tolerance;* 0 *'Not mentioned'* 1 *'Important'*.[22]

As shown in Table 25, if one controls for more individual characteristics than gender and age, there is always a negative relation between the current Gini coefficient of the income distribution and the probability that a respondent finds it important to teach their children the value of tolerance. In a few regressions, the effect from inequality is statistically significant at conventional levels.

Table 26 our results on the effect produced by the experience of inequality during youth. In this case, income inequality systematically entertains a negative relation with *child-tolerance*. The estimated coefficients are sometimes significant.

All in all, higher levels of income inequality seem to come along with less tolerance. Comparing tolerance with the dimensions of value systems investigated

[22]This survey question has been used by Aghion et al. [1] to construct a measure of civic education and by Tabellini [41] to construct a measure of morality. See also Balan and Knack [5], Dobler [16], Gorodnichenko and Roland [19], and Maystre et al. [30].

Table 26 Coefficients of Gini when aged 18–25 for *child-tolerance*

	(1)	(2)	(3)	(4)	(5)	(6)
Basic	−0.003	−0.009^{+}	−0.010^{+}	−0.009^{+}	−0.008	−0.008
	(−0.32)	(−1.91)	(−1.94)	(−1.73)	(−1.52)	(−1.19)
B + Macro	−0.012**	−0.009^{+}	−0.010^{+}	−0.009^{+}	−0.008	−0.009
	(−2.59)	(−1.75)	(−1.85)	(−1.72)	(−1.44)	(−1.01)
B + M + Year FE	−0.010*	−0.007	−0.009	−0.008	−0.007	−0.005
	(−2.27)	(−1.46)	(−1.64)	(−1.60)	(−1.36)	(−0.65)

t statistics in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

in the previous sections shows that its association with income equality is stronger than in the cases of civism, obedience, honesty, and altruism. However, it is not as strong as the association that the work ethic has with income inequality.

9 Concluding discussion

We have used attitudinal data from the WVS in order to explore how income inequality relates to self-reported values. Six dimensions of value systems have been investigated: work ethic, civism, obedience, honesty, altruism, and tolerance. Results from a large number of regressions have shown that in most cases changes in income inequality do not significantly contribute to explain value change. Therefore, income inequality seems to matter primarily because of its direct effect on the budget constraints faced by households rather than because of its alleged cultural effects. However, we have also found that the evolution of income inequality can contribute to explain value change in an important case. Specifically, estimation results about *civism* substantially vary with the proxy that one uses to measure civism. No systematic regularity could be detected in the relationship between *altruism* and inequality. The same applies to *honesty*. There is some weak evidence that the taste for *obedience* tends to increase with increasing inequality, but this only applies to one of the two employed proxies. Income inequality tends to exhibit a negative correlation with the *tolerance* of the population, but that correlation often lacks statistical significance.

Our only robust finding of a correlation with income inequality concerns the *work ethic*. We have found that an increase of income disparities tends to be associated with a stronger work ethic, and this holds true for all four proxies employed in this investigation as well as for composite indexes. The strongest association pertains to the within-country variation in income inequality and the work ethic reported by individuals in the same country and year. Inequality experienced during youth also exhibits a positive relation to self-reported work ethic, but that relation is weaker. Our finding seems to suggest that income inequality generates work incentives not only through pay differentials—the material reward for hard working—but also through esteem differentials—the symbolic reward for hard working. However, as mentioned earlier, it is unclear whether a stronger emphasis on hard work is conducive to better outcomes. Some evidence suggests that a stronger work ethic may improve economic performance if the work ethic is weak and may worsen economic performance if the work ethic is already strong.

A few qualifications are in order. The measures of values employed in this paper capture only some aspects of the values we are interested in and suffer from the usual limitations of attitudinal survey-based data. Furthermore, caution is needed because of well-known problems of comparability of inequality measures over time and across countries. These caveats notwithstanding, our finding that a growing income inequality contributes to explain the work values endorsed by individuals has survived a number of robustness checks. Therefore, it may merit an in-depth theoretical and empirical analysis so as to identify the precise mechanisms behind it. While such an analysis is beyond the scope of the current paper, we close with some remarks about the interpretation of our main finding and a possible implication.

Firstly, one may wonder whether our finding is due to the effect of governmental redistribution rather than income inequality independently of its origin. Following Lindbeck [27], one might argue that a larger welfare state not only reduces income inequality but also weakens the work ethic of the population. The proposition that generous social insurance has a negative impact on the evolution of work norms has been scrutinized by Lindbeck and Nyborg [28] and Corneo [9] using attitudinal data from the WVS. While the first paper finds some negative impact of social insurance, the second one finds that that effect is not robust. We have extended that type of analysis to the measures of work ethic considered in this paper and found no stable effects.[23] This suggests that income inequality matters for the work ethic independently of the underlying amount of redistribution.

Secondly, one may try to offer reasons why larger income disparities would bring about value systems that put more emphasis on hard work. In the discussion-paper version of this article [12] we have developed a model in which value systems are chosen by parents so as to maximize their children's expected utility, which in turn depends on self-respect. That framework suggests the following interpretation of our main finding. Suppose that larger income disparities come along with more income uncertainty ex ante for the individuals. Then, in an economy with growing income disparities it is increasingly difficult to predict one's success in terms of income, but one can be quite sure that one will be a hard working person if a strong work ethic was instilled. In analogy with portfolio theory, the increased uncertainty about individual income may make parents shift symbolic value from being economically successful to being laborious, so as to secure to their children at least some minimal level of self-respect. This might explain why larger income disparities are associated with a stronger emphasis on the value of hard work.

Thirdly, our finding suggests that increases in income inequality may be self-reinforcing in some circumstances. An exogenous inequality increase may entail a stronger emphasis on hard work, which in turn raises individual and aggregate labor supply, thereby reducing the price of labor relative to the price of capital. Since capital income generates a larger share of the income of households in the top fractiles of the income distribution than in the remaining quantiles, that change in factor prices may further increase income inequality. Then, inequality may keep growing and, since value change is a slow-moving process, the inequality increase may be long-lived.

[23] The results can be obtained from the authors upon request. Following a different approach, Ljunge [29] offers an empirical analysis of the take-up of sick-leave benefits in Sweden and finds evidence in support of Lindbeck's hypothesis.

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