

I Perceive Therefore I Demand

The Formation of Inequality Perceptions and Demand for Redistribution

Maurizio Bussolo
Ada Ferrer-i-Carbonell
Anna Giolbas
Ivan Torre



WORLD BANK GROUP

Europe and Central Asia Region

Office of the Chief Economist

June 2019

Abstract

This paper investigates the link between inequality and demand for redistribution by looking at how individuals form their perceptions of inequality. Most of the literature analyzing demand for redistribution has focused on *objective* inequality, rather than *subjective* perceptions of inequality. However, a model that links demand for redistribution to subjective inequality is needed, given that recent empirical research has shown a growing gap between subjective and objective inequality. Using data from the International Social Survey Programme survey, the paper focuses on explaining individuals' formation of inequality perceptions using objective variables. The paper then

studies the relationship between these perceptions and individuals' demand for redistribution. The analysis finds that objective macro variables are associated with individuals' perceptions of inequality, and that individual circumstances, some of which relate to self-interest, like age, educational attainment, and income, also play an important role. Perceptions of equality, in turn, are significantly correlated to demand for redistribution and seem to substitute for any effect of objective variables. This result suggests that contextual macro variables only affect individuals' demand for redistribution through their perceptions of equality and do not have a direct effect.

This paper is a product of the Office of the Chief Economist, Europe and Central Asia Region. It is part of a larger effort by the World Bank to provide open access to its research and make a contribution to development policy discussions around the world. Policy Research Working Papers are also posted on the Web at <http://www.worldbank.org/prwp>. The authors may be contacted at mbussolo@worldbank.org, ada.ferrer@iae.csic.es, a.giolbas@gmail.com, and itorre@worldbank.org.

The Policy Research Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

I Perceive Therefore I Demand: The Formation of Inequality Perceptions and Demand for Redistribution

Maurizio Bussolo
The World Bank

Ada Ferrer-i-Carbonell
IAE-CSIC, Barcelona
GSE and IZA

Anna Giolbas
The World Bank

Ivan Torre
The World Bank

JEL Classification: D31, D63, D72, D83, H23

Keywords: Perceptions, Inequality, Fairness, Redistribution.

1 Introduction

This paper investigates the link between inequality and demand for redistribution by looking at how individuals form their perceptions of inequality and how these determine demand for redistribution. Most of the literature focused on explaining demand for redistribution – or, more broadly, on political support for redistributive institutions such as the welfare state – identifies inequality as a key determinant. And, more importantly, it assumes that this inequality – usually represented by an inequality index calculated from a distribution of income of a household survey, which one could call *objective* inequality – is common knowledge for all individuals, both in terms of what it exactly represents and its levels (or changes). This literature, in other words, ignores the issue of how subjective perceptions of inequality are formed. This is clearly a problem if there is a gap between subjective perceptions of inequality, which influence actions and choices of individuals, and objective inequality, which is used to explain those same actions by the literature. Some authors dismiss this issue, in part because of a widespread wariness towards subjective data,¹ and tend to characterize subjective assessment of inequality as individuals' *misperceptions* rather than as something we need to understand. Mismeasurement, misconception, or simple mistakes are likely a part of the reason behind the gap between objective and subjective inequality but, in this paper, we show that they are not the whole story.

By presenting a simple model of the formation of perceptions we show its importance for demand for redistribution as well as the fact that perceptions are shaped not only by the objectively defined inequality measure (Gini) or by misperceptions, but they are also systematically correlated with other context (aggregate) and individual variables. We show that individuals' perceptions on inequality encompass a broader definition of inequality that correlates, for example, with poverty or unemployment, as well as with fairness or social mobility, own situation and ideology. In other words, perceptions depend on the objective situation of both, the country and the individual, but they are also influenced by the fairness of the process through which objective inequality is generated and by individuals' own views of what constitute a fair society, i.e., their ideology. We argue that perceptions, a key determinant of demand for redistribution, are formed in a much more complex way than typically assumed. In concrete, we find that inequality perceptions depend on the context: uncertainties in the labor market (unemployment), actual inequality, poverty, and government expenditures on education. Inequality perceptions however depend not

¹ There are some actual issues that justify economists' reluctance: in most surveys, people do not have incentives of revealing their genuine beliefs, and they are confronted by social pressure to say the socially acceptable thing. In his paper where he proposes to use subjective data, Manski (2004) notes that "[...] economists have been deeply skeptical of subjective statements; they often assert that one should believe only what people do, not what they say. As a result, the profession for many years enforced something of a prohibition on the collection of subjective data" (p. 1337).

only on the current context, but also on how current income distribution and employment opportunities were generated (fairness). In addition, perceptions also depend on individual characteristics. For example, a higher social status (measured with education or income) correlates positively with perceiving own country as more equal, which might relate to self-interest motives or to access to information. In addition, we find that political ideology not only has a direct impact on inequality perceptions (individuals who report to be on the left of the political spectrum perceive, everything else equal, their country to be more unequal), but also in the way in which individuals transform information (economic context and own characteristics) into inequality perceptions.

2 Perceptions of inequality and demand for redistribution: A conceptual framework

A key objective of this paper is to assess the role of individuals' perceptions of inequality as a determinant of demand for redistribution. Most of the literature that links inequality and demand for redistribution assumes that individuals call for policy interventions because of self-interest or because of their views of social justice, and that they have a common knowledge of the inequality of the distribution of incomes. However, very few studies consider individuals' subjective perceptions of inequality, or how individuals form their opinion (knowledge) of inequality. We first summarize the available literature and then propose an estimable model in which perceptions of inequality are a determinant of demand for redistribution.

2.1 Demand for redistribution

Meltzer and Richards (1981) is one of the first papers² of the literature linking inequality and redistribution. In their model, redistribution policy consists of a flat income tax rate and an equal lump sum transfer to all individuals, and the policy decision on the tax rate is determined by a majority vote. The main result is that the equilibrium the tax rate depends on the degree of (objective) inequality, measured as the distance between the median income and the average income. This is a rather parsimonious model where preferences of individuals only include consumption. Self-interest, i.e. maximizing consumption, is the only motivation of individuals' choices for the tax rate, and inequality is exogenous. There have been many extensions of this model. Essentially these extensions consist of expanding the arguments of the utility function, thus adding motivations other than self-interest for people's choices.³ In a first set of models, inequality is not (yet) an argument of the utility function, but it matters for choices of individuals because it affects

² Actually Meltzer and Richards (1981) work is related to the earlier paper by Romer (1975).

³ This framework organizing the various contributions of this literature is due to the excellent review of Alesina and Giuliano (2011).

consumption. In these models, more unequal societies may support greater redistribution to reduce, for example, high crime levels which are usually associated with high levels of inequality. In a similar vein, the presence of externalities in education is another way through which inequality affects individuals' utility via consumption: an individual's productivity may benefit from the presence of an equally educated workforce, and thus, in order to achieve individually higher levels of income, citizens support more redistribution in a context of high inequality. In a second set of models, inequality enters as an argument of the utility function and it impacts welfare above and beyond its indirect effect on consumption. In this case, preferences include a view on 'social justice', or the *justifiable* levels of inequality or poverty from a moral or ideological point of view.⁴ When objective inequality deviates from this desired level, individuals will demand corrective redistributive measures. An alternative to adding 'social justice' to individuals' preferences is the social identity approach (Costa-Font and Cowell, 2015; Akerlof and Kranton, 2000), which allows these preferences to be influenced by the social and cultural environment in which individuals live. In other words, preferences are interdependent and individuals care about other people especially when these people belong to a culturally or socially homogeneous group. A social identity approach helps explaining, for example, why support for redistributive institutions may be lower in countries with more heterogeneous population groups (Alesina and Glaeser, 2004 and Luttmer, 2001).⁵

The main idea behind these approaches – that higher inequality, via self-interest or ideology, is associated with greater demand for redistribution of income and, ultimately, with redistributive policy outcomes – is persuasive, but faces two problems. Empirically, especially in the case of the basic models with self-interest as the main determinant, it has received limited support.⁶ Ignoring, or oversimplifying, demand for redistribution (or as the literature often calls it, preference for redistribution) is a shortcoming of these basic models. These models assume that redistributive policy outcomes, such as the tax and transfer systems, are influenced (almost) directly by the level of inequality. The mediating role of individuals'

⁴ One way to establish the justifiable level of inequality can be to use the approach of inequality of opportunity (see Romer and Trannoy, 2016).

⁵ In fact, the literature talks about a Robin Hood paradox (Choi 2019) referring to the empirical finding that democracies with lower levels of inequality redistribute more vis-à-vis than those with higher levels of inequality. See, for example, Espuelas, 2015; Moffitt, 1998; Esping-Andersen and Myles, 2009; Lindert 2004. Gartner and Prado, 2016 build a case in which high inequality actually hampers redistribution. Some of these studies show that a period of equalization of incomes predates, and facilitates, the establishment of the Scandinavian welfare state. A common theme in this literature is that, using Lindert's words, "redistribution from rich to poor is at least present when and where it seems most needed" (Lindert 2004 p.15).

⁶ See Alesina and Giuliano (2011), Costa-Font and Cowell (2015), Milanovic (2010) and reference cited therein. Milanovic (2000) argued that the lack of empirical support for the Meltzer and Richards model comes partly from misspecification, since their model refers to pre-tax, market income inequality – and not post-tax, disposable income inequality, which is usually used to empirically test the model's hypothesis.

preferences is quite limited.⁷ Individuals motivated by self-interest mechanically vote for redistribution if they stand to gain from it, and the policy is thus implemented.

Secondly, demand for redistributive policy, even if it were strongly linked to inequality, it would be linked to *subjective* perceptions of inequality. Individuals base their decisions, such as supporting a more redistributive tax and transfer system, on their perceptions rather than on the objective inequality.⁸ This would not be relevant if subjective and objective inequality were the same or, at least, almost fully aligned. However, recent evidence (Gimpelson and Tresiman 2018; Choi 2019; EBRD 2015-17, Cancho, C., et al. 2015, Cancho, C. et al 2015b) shows that there are gaps both in levels and in trends between these two variables. Highlighting the significance of perceptions, Gimpelson and Tresiman (2018, 27) note that “most theories about political effects of inequality [demand for redistribution, the political participation of citizens, democratization] need to be reframed as theories about effects of perceived inequality”.

Discrepancies between measured economic performance (in general, and not only specifically for inequality) and public perceptions had been highlighted in the past (Blendon et al 1997, Slemrod, 2006). However, the sources of these discrepancies have not been a focus of scholarly research of economists. Clark and D’Ambrosio (2015) suggest that perceptions may deviate from objective measures because the concept of inequality that individuals have in mind includes more than just monetary metrics. At the outset of their extensive survey they concede that: “[...] the term inequality is used perhaps rather loosely in the empirical literature. It is of interest to ask which measures of the distribution of income are the most important (to individuals) in this context: Is it (as is commonly assumed) the Gini coefficient, or rather something else?” In here we argue and show empirical evidence that inequality perceptions depend not only on the monetary metrics (individuals might be more worried about the inequalities generated through the labor market than others), but might be influenced by individuals’ attitudes (e.g., self-interest) or ideology.

In contrast with our paper, a common explanation for these discrepancies is that they originate from mistakes of the individuals. Studies on perceptions of inequality have focused on individuals’ (in)ability to correctly perceive inequality (Niehues 2014; Norton & Ariely 2011; Chambers et al., 2014; Kuhn, 2015; Page and Goldstein 2016) or, correspondingly, their own position within the income distribution (Cruces et al 2013; Fernandez-Albertos & Kuo 2015; Karadja et al.2017). There is, however, an exception to the dismissal of subjective data: expectations. These are clearly subjective and play an important role in

⁷ As noted above, these preferences tend to be more complex than earlier literature assumed. In this paper, we focus on these preferences and their link with perceptions of inequality, and we are not concerned about the link between these preferences and the final policy outcomes. In modern democracies, as a large literature has established (see Page and Shapiro 1983, Burstein 2003), majority preferences do influence policy outcomes. Similarly, Luebker (2014) shows that redistributive preferences translate into redistributive outcomes.

⁸ Gruendler and Koellner (2017) confirm that actual inequality increases redistribution (measured as the difference between market and net Gini coefficient), however, they find an even stronger link between perceived inequality and redistribution.

explaining demand for redistribution. In concrete, expectations of upward mobility are a key element in a few models (Piketty, 1995; Bénabou and Ok, 2001). By adding the subjective views people hold of their future position in the income distribution, these models allow to incorporate the fact that people base their voting on redistribution on their expected permanent income, not just on the current level of income. Expectations of social mobility, or “Prospects of Upward Mobility (POUM)” as Benabou and Ok (2001) call them, are therefore an important determinant of their demand for redistribution. In contrast with the basic Meltzer Richard model, the POUM hypothesis has found quite a bit of empirical support (citations here Cojocaru, 2014, Checchi Filippin 2004, Rainer Siedler 2008). These papers use subjective expectations, as reported by opinion surveys, rather than using the objective mobility in each country.⁹

In this paper we use subjective perceptions of inequality, and by explicitly modeling the mechanism through which people form these perceptions, we go one step further and try to combine the relevance of perceptions for demand for redistribution with the heterogeneous views of inequality at the level of the individuals.¹⁰

2.2 Determinants of demand for redistribution

Political scientists have shown that public opinion has a major influence on many public policy decisions¹¹ and, in particular, public views of the economic situation tend to have a ‘pivotal role’ in determining the outcome of elections.¹² Addressing the issue of the *formation* of public opinion is thus a natural research focus for political scientists. A key contribution in this area is due to Zaller’s 1992 monograph “The Nature and Origins of Mass Opinion”. Challenging what at the time was the consensus, Zaller rejected the idea that survey responses are manifestation of fixed attitudes, and that deviations are simply due to measurement errors. He proposed the RAS model of the response to opinion survey, theorizing that opinion statements result from a process in which people *receive* new information, decide whether to *accept* it and then *sample* from their stock of considerations at the moment of answering questions. In Zaller’s original approach, which was influenced by advances of cognitive psychology, the formation of opinions is a

⁹ An interesting variation of these empirical studies is found in Alesina and La Ferrara (2005) who, in addition to *subjective* expectations of upward and downward mobility, consider also the role of general mobility as *objectively* present in the society (p.899).

¹⁰ To the best of our knowledge Engelhardt & Wagener (2014) is the only study that examines the determinants of perceived inequality and concludes that it correlates with government social expenditures.

¹¹ Two often cited studies are Page and Shapiro (1983) and Monroe (1979). See also Slemrod (2006), Blendon et al (1997) and many of the additional studies referred in these papers.

¹² Blendon et al (1997) document differences between objective (or reported by experts) and perceived views about: (a) the current or past economic performance, in terms of income growth or adequate job creation; and (b) explanations of why the economy is not doing better (the role of trade, technology, or government policies).

dynamic process where some fixed factors, such as ideology, and varying ones, such as exposure to new information, balance each other.¹³

In this paper, we want to model demand for redistribution or, as political scientists put it, public opinion about the need of government redistributive intervention. We also want to assess how this is influenced by subjective perceptions (or knowledge) about inequality and, in turn, how perceptions are formed. We postulate that not only demand for redistribution (as Zaller's work), but also inequality perceptions depend on fixed factors, such as ideology or selfishness, and varying ones, such as the changing country context. As Cruces et al (2013) have clearly shown when new information about the distribution of income is provided, people amend their perceptions and demand for redistribution is adjusted. The causal process we propose is thus from information to perceptions and from perceptions to demand for redistribution.

The approach that we propose here is closest to that of Blinder and Krueger (2004) which is related to Zaller (1992). As in their paper, our framework has a recursive structure. Starting from demand for redistribution, at the individual level this should be influenced by: self-interest, ideology or views about social justice, and perceptions (or knowledge) of inequality, as well as a set of individual characteristics. A basic equation can be written as follows:

$$\text{DemRed}_i = f(\text{SI}_i, \text{ID}_i, \text{EqPerc}_i, X_i) + e_{1i} \quad (1)$$

Where SI is the degree of self-interest (normally proxied by income or education levels), ID is ideology (as reported by the individuals in the questionnaire), EqPerc represents individuals' perception of inequality, and X is a vector of individual controls, such as age, gender, location of residence and employment situation. Together with income and education, employment situation may serve also as proxy for SI, since income and education levels usually determine whether individuals will be on the "receiving" or on the "giving" side of redistribution.

We take self-interest and ideology (for example, views of social justice) as exogenous. This means that we assume that individuals' ideology, the degree of self-interest, and inequality perceptions can be correlated with each other and with X, but not with e_{1i} . In other words, we assume that we are able to observe and control for all those individual characteristics that might jointly determine ideology, self-interest, and perceptions. This is a strong assumption that we will discuss in more detail later.

¹³ In Zaller's words: "dominant and countervailing messages can have different effects in different segments of the population, depending on citizens' political awareness and ideological orientations and on the relative intensities of the two messages" (p.185).

The second equation in the model is about the formation of perceptions of inequality. We assume that information about inequality is acquired by being exposed to a specific economic context (in concrete, unemployment, poverty, and inequality) and argue thus that the metric or the definition of inequality might differ between the researcher (who typically uses the Gini coefficient) and individuals in the society, who might relate inequalities also to economic uncertainty (unemployment) or to poverty. We also argue that perceptions of inequality might depend on the fairness of the process that has generated them and therefore we include intergenerational mobility in the set of variables describing the economic context. In concrete, we use the intergenerational elasticity of education.¹⁴ Similarly, and to account for future mobility, we also postulate that individuals' perceptions might be influenced by current government expenditures in education. A second key element of our model, as in Zeller's, is the dependence of inequality perceptions on ideology, notably the different views on social values and norms (hard work, meritocracy, circumstances, luck) spanning from left-leaning individuals to right-leaning ones.

Finally, we assume that perceptions of inequality relate also to other personal characteristics, such as employment, age, or gender. We write the equation as:

$$\text{EqPerc}_i = g(\text{EC}, \text{ID}_i, \text{X}_i) + e_{2i} \quad (2)$$

Where EC represents the economic context, ID is ideology, and X is the set of individual characteristics including income and education levels. We will discuss the functional form of this relationship in section 5.

Equation (2) differs from the model of 'knowledge' acquisition of Blinder and Krueger in an important respect. In their model, individuals have individual-specific exposures to information; in fact, for each individual, they have micro data about sources of information, quantity of information, and 'desire' to acquire information. In contrast, we assume that everyone is exposed to the same degree to the relevant economic context, but ideology plays a role in interpreting the elements of such context. That is, faced with a same context – a high unemployment rate, for instance – individuals with different ideologies may form different perceptions of equality. Similarly, given everything else constant, high earnings individuals might also perceive inequality differently.

In sum and starting from the bottom, the model says that people's ideology, exposure to a specific economic context (inequality, poverty, unemployment and government expenditures), and their personal characteristics form their perceptions of inequality. These perceptions, in turn, influence, together again

¹⁴ Data on intergenerational mobility are just beginning to become available for many countries and long time periods. In order to cover all the countries/years of our sample we had to use intergenerational mobility of education. For more details about intergenerational mobility and equality of opportunity see www.equalchances.org.

with ideology, their degree of self-interest, and other personal characteristics, their demand for redistribution.

To the extent that we are unable to completely observe ideology and self-interest, part of the correlation between these variables and demand for redistribution or equality perceptions will be captured by the error term. In other words, e_{1i} and e_{2i} will be correlated. Similarly, we expect that the e_{1i} might be correlated with equality perceptions, generating issues of classical endogeneity.

3 Data description

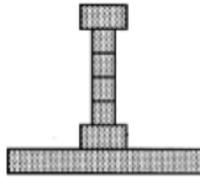
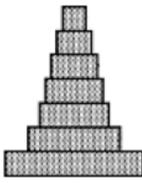
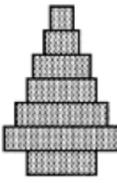
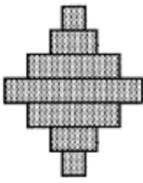
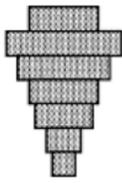
The Social Inequality surveys of the International Social Survey Programme (ISSP) are the main data source for this paper. We use all available waves covering the years 1987, 1992, 1999, and 2009. The initial sample of 9 countries (1987) was expanded in each wave to reach 26 countries in 2009. The samples are representative at the country level, with sample sizes per country and year varying between 1,000 and 2,000. These surveys include almost all the information needed to estimate the model described above. They include the two dependent variables: perceptions of inequality and demand for redistribution, as well as information on voting or political preferences to construct the ideology variable and information on income and education used to account for self-interest. Finally, they record a host of individual socio-economic characteristics – employment, gender, age, location of residence – to act as additional controls. A mix of other data sets, described in detail below, are used as sources for the objective levels of inequality, poverty, unemployment, government expenditures, which together represent the economic context variable.

In 1992, 1999, and 2009, the ISSP surveys asked individuals to choose among five different pictures the one that best described the *type* of society of the country in which they live. More in detail, the specific question and possible multiple-choice answers are shown below in figure 1.

The diagrams and the short descriptions below each of them implies a ranking from the most unequal society, depicted by the ‘Type A’ diagram to the most equal, ‘Type D’, society. Some may argue that the diagrams and captions reflect more directly the polarization of a society rather than its degree of inequality. Society ‘A’ is polarized, while society ‘D’, with its large middle class, is the least polarized. However, the same ranking holds in terms of inequality. As shown by Gimpelson and Treisman (2018), by assuming that the area of the small rectangles composing these ‘pyramids’ represents the size of the population group within a specific income class, it is possible to calculate the actual Gini index for each of the five types of societies represented in Figure 1. Indeed, type A has the highest Gini, with a value of 42, type B has a value of 35, type C of 30 and the most equal is type A with a Gini of 20. Since the ranking in terms of polarization and inequality are the same, it is safe to assume that individuals perceiving high inequality (or high polarization) in their countries would choose Type A, while those believing that their countries are quite equal (or not polarized) would choose Type D. The empirical analysis which we will

carry out excludes individuals who answered Type E, as it is unclear whether type E is more or less equal than type D.¹⁵ Fortunately, very few respondents chose that option.

Figure 1: ISSP question on inequality

Q14. These five diagrams show different types of society. Please read the descriptions and look at the diagrams and decide which you think best describes <country> ..				
				
Type A	Type B	Type C	Type D	Type E
A small elite at the top, very few people in the middle and the great mass of people at the bottom.	A society like a pyramid with a small elite at the top, more people in the middle, and most at the bottom.	A pyramid except that just a few people are at the bottom.	A society with most people in the middle.	Many people near the top, and only a few near the bottom.

Source: International Social Survey Programme

In the empirical analysis, answers to question “Q14” are coded as ‘equality perceptions’. Two alternative measures of equality perception are used: (i) a categorical variable that can take values 1 (most unequal, type A) to 4 (most equal, type D); and (ii) a cardinal variable that takes, for each category, the corresponding value of the Gini estimated by Gimpelson and Treisman (2018).¹⁶

The paper uses individual ISSP data for 21 countries for the years 1987, 1992, 1999, and 2009. These are: Australia, Austria, Bulgaria, Canada*, Chile, Czech Republic*, France, Germany, the United Kingdom, Hungary, Japan, Norway, Poland*, Portugal, the Russian Federation, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, and the United States.¹⁷ In addition, not all 21 countries have information for all the three years. The Appendix section 1 describes the reason countries were excluded and presents some robustness checks of our main results.

Besides perceptions of inequality, the ISSP also provides the second main dependent variable: individuals’ demand for redistribution. This is coded from individuals’ responses from whether they strongly disagree (assigned value 1) to strongly agree (value 5) with the following statement: “It is the responsibility of the government to reduce income differences between people with high incomes and those with low incomes”. The average value for the total sample is 3.7, which means that, on average, individuals

¹⁵ In terms of the calculations, the Gini for type E is of 0.21.

¹⁶ Note that the cardinal order is not the same in both variables. In the categorical version (i) higher values imply more equality, while in the associated Gini index version (ii) higher values imply more inequality.

¹⁷ Countries marked with an asterisk are not included in all specifications.

tend to agree with this statement. A higher value of this variable is interpreted as stronger demand for government redistribution. Information on demand for redistribution is available for more countries and years than equality perceptions. However, we only use those country-years for which equality perceptions is also available.

In order to have some quantitative measure of ideology, we choose two different variables. The first of them, available only for a subset of respondents, corresponds to the political placement in a left-right axis. This variable is obtained from a direct question to interviewees on their position in that axis or inferred from their affiliation or sympathy to a political party. Out of our sample of 46,894 individuals, 30% have missing information on political ideology and 13% express no ideology; thus, we have valid information of the political ideology for 57% of our sample – around 26,800 individuals. To overcome this sample limitation, we also look at an additional variable that we take, as robustness check, to be a proxy for political ideology. This question derives from Question 12 of the Social Inequality module of ISSP which is available for almost all the sample. Question 12 asks respondents to give their opinion on the importance of several factors in determining how much people ought to earn for a job. We focus on one factor: what individuals need to support their family. We argue that this variable correlates with ideology: rewarding individuals taking into account their needs seems related to social justice.

In terms of the economic context, the paper uses data from different sources: (i) Gini indices on per capita household income mainly drawn from the Luxembourg Income Study Database (LIS) and, when not available, from “All the Ginis” data set of Milanovic (2018) (ii) data on unemployment rate and government expenditures are taken either from Eurostat (1999 and 2009), from the Milanovic's Household Expenditure and Income Dataset for Transition Economies (HEIDE) data (1992), or from the World Development Indicators. Finally, (iii), poverty is defined as the percentage of people living below \$10 a day in 2005 PPP. The variable is calculated on income data using PovCalNet and the World Development Indicators data set.

As part of the contextual variables we also include a measure of the intergenerational elasticity of education from Narayan and Van der Weide (2018). This measure is intended to proxy for the level of *fairness* in the society. The higher the elasticity, the larger is the correlation between parent and children's education, implying a lower degree of educational mobility and, thus, a less fair process of income generation. The elasticity is estimated for each 10-year birth cohort from the 1930s to the 1980s in each country. We use three versions of this elasticity. The first one is a country-year variable, which is the population-weighted average of the elasticity of the cohorts which are 20 to 39 years old in each given country and year. The second and third versions are country-cohort specific: the first version varies across countries and birth cohorts but not across years and the second is estimated separately for each gender. These variables are only available for the subset of individuals born in 1930 or after.

Table 1 – Descriptive statistics

	Average	Std.Dev	Min	Max	Obs
<i>Main variables of interest</i>					
Demand for redistribution (categorical)	3.739	1.161	1	5	46,894
Equality perception (categorical)	2.354	1.087	1	4	46,894
Equality perception (Gini index equivalent)	32.694	7.764	20	42	46,894
<i>Self-interest</i>					
<u>Income group defined by country</u>					
Individuals is in the 1st income group (lowest)	0.191	0.396	0	1	46,894
Individuals is in the 2nd income group	0.173	0.378	0	1	46,894
Individuals is in the 3rd income group	0.190	0.392	0	1	46,894
Individuals is in the 4th income group	0.182	0.386	0	1	46,894
Individuals is in the 5th income group (highest)	0.155	0.362	0	1	46,894
Missing information on income	0.102	0.302	0	1	46,894
<u>Education</u>					
Primary or lower secondary education	0.444	0.497	0	1	46,894
Higher secondary education	0.373	0.484	0	1	46,894
University education	0.172	0.377	0	1	46,894
Missing information on education	0.010	0.100	0	1	46,894
<i>Ideology and beliefs</i>					
Political ideology (categorical): far-left (1) to far-right (5)	2.868	0.999	1	5	26,846
Wages must be adequate to support a family (categorical): 1 (essential) to 5 (not very important at all)	2.644	1.078	1	5	45,528
<i>Economic Context</i>					
Unemployment rate (%)	8.697	3.297	3.103	17.857	46,894
Gini index of per capita household income	29.5	5.3	20.5	50.3	46,894
Poverty headcount rate (in %, USD 10-a-day line)	15.687	20.394	0.360	80.262	46,894
Govt. exp. in education (% over GDP)	4.466	0.868	2.724	6.773	46,894
Govt. exp. in social protection (% over GDP)	2.095	1.407	0.58	6.18	46,894
Intergenerational Elasticity in Education (country average)	0.369	0.088	0.194	0.596	46,894
Intergenerational Elasticity in Education (both genders)	0.379	0.102	0.164	0.698	36,989
Intergenerational Elasticity in Education (sons)	0.377	0.112	0.137	0.710	17,421
Intergenerational Elasticity in Education (daughters)	0.381	0.107	0.165	0.684	19,552
<i>Controls</i>					
<u>Age information</u>					
Born after 1970	0.223	0.416	0	1	46,894
Born between 1946-1970	0.486	0.500	0	1	46,894
Born before 1946	0.288	0.453	0	1	46,894
Missing age	0.003	0.058	0	1	46,894
<u>Gender</u>					
Individual is a female	0.523	0.499	0	1	46,894
<u>Residence type</u>					
Rural residence	0.296	0.457	0	1	46,894
Missing residence information	0.048	0.214	0	1	46,894
<u>Employment status</u>					
Individual is employed	0.565	0.496	0	1	46,894
Individual is unemployed	0.056	0.229	0	1	46,894
Missing information on employment	0.007	0.083	0	1	46,894

Table 1 shows the descriptive statistics of all the variables used in the empirical part of the paper. The rest of the variables used in the empirical analysis and summarized in Table 1 refer to individual characteristics. The table shows the percentage of individuals for which we do not observe some characteristics. The percentage of missing information ranges from 0.3% for age to 10% for income.

4 Perceptions and demand for redistribution: Evolution over time and cross-country correlations

As a first step, and before running regressions, the paper describes the long-term evolution of the subjective perceptions of inequality, demand for redistribution, and ‘objective’ inequality, and it also considers their simple correlations. In addition, we also present the correlation of individuals’ perceptions with some of the key economic context variables, such as unemployment, poverty, and government expenditure.

Starting with perceptions of equality, Figure 2 plots the evolution of the ‘net’ share of the population who thinks that their country is very equal (type D). In other words, the share netted of the share of people who think that they live in a very unequal country (type A). So, the bars represent the percentage of people who perceive equality in excess of those who perceive inequality, in their own country. A positive value indicates that there are more individuals who believe their country is very equal rather than unequal, a negative value indicates the opposite.

Some interesting patterns emerge. In former socialist countries in Europe, individuals widely believe they live in unequal societies during the whole period (1992 to 2009). This perception worsened in 99, but was followed by an improvement in the 2000s (Figure 2.a), somewhat in line with the actual evolution of income inequality in that region (see Figure 4). Nevertheless, the percentage of individuals who believe to be living in an unequal country is larger than those who think they live in a more equal country. In contrast, perceptions of equality worsened in the 2000s in the rest of Europe, except for Scandinavian countries, while actual income inequality was relatively stable during the same period. In the United States, equality perceptions deteriorated from 1999 to 2009, in pace with the actual evolution of the Gini coefficient in that country.

Three messages can be highlighted from these simple descriptive graphs. First, in terms of levels, perceptions differ considerably in transition countries, where a majority of people report inequality being high, vis-à-vis other countries. This is perhaps not surprising as previous studies have drawn attention to the importance of life (past) experiences in shaping opinions. Alesina, A., & Fuchs-Schundeln, N. (2007) specifically mention the role of Communism in influencing people’s attitudes, beliefs and political preferences¹⁸; similarly, Giuliano, P., & Spilimbergo, A. (2013) emphasize the long-term impact of the historical macroeconomic environment on beliefs and policy preferences.

¹⁸ See also Murthi and Tiongson, 2009.

Figure 2.a – Perceptions of equality in Europe

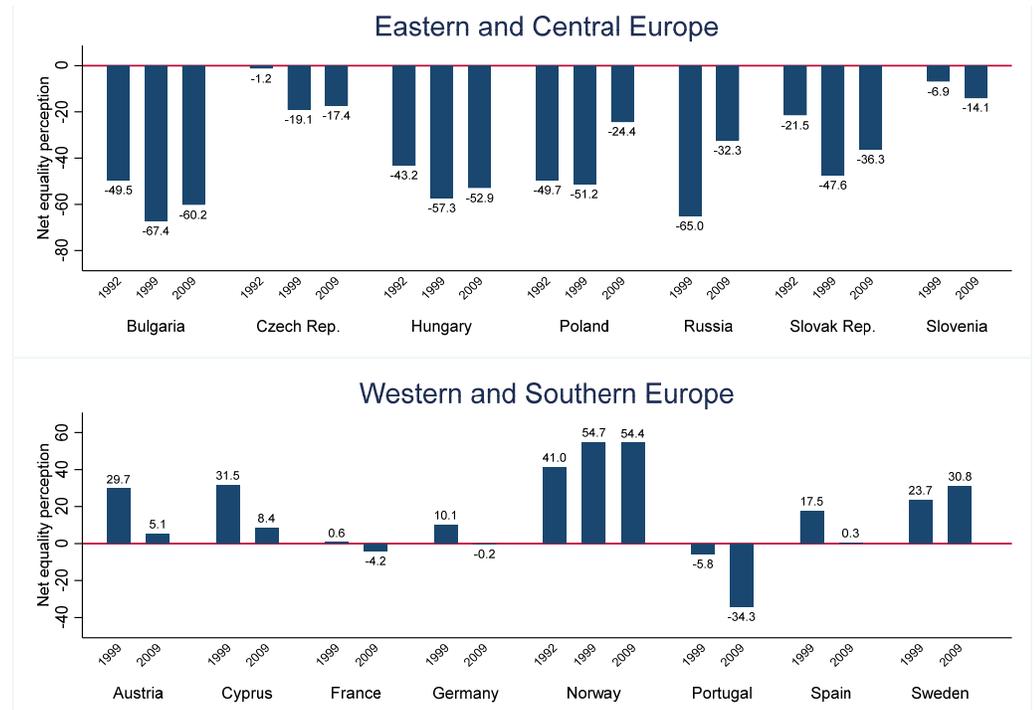
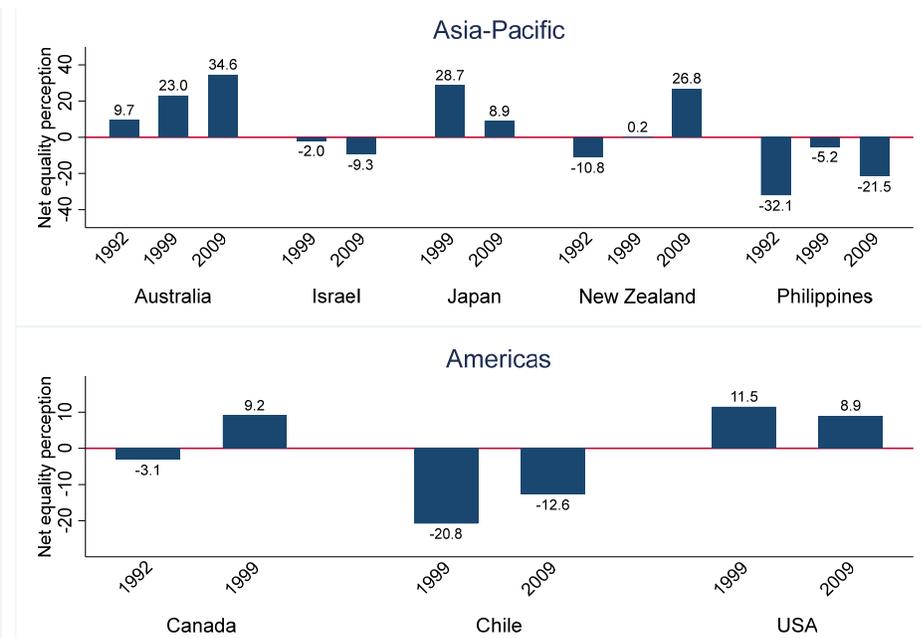


Figure 2.b – Perceptions of equality in other regions



Source: own elaboration based on ISSP Social Inequality data set.

Note: Net equality perception is equal to the percentage of people believing theirs is an equal society (type D) minus the percentage believing theirs is an unequal one (type A), based on the questions displayed in Figure 1 of the paper. National weights used.

Second, perceptions do not seem fixed, confirming the original intuition of Zaller (1992). In fact, for some countries the shifts in perceptions are quite remarkable. For example, Poland and Portugal.¹⁹ Finally, there seems to be some correlation between the evolution of objective inequality and subjective perceptions (more on this below).

The ISSP surveys of 1992, 1999, and 2009 also provide data on the evolution of demand for redistribution. ‘Net’ demand for redistribution is defined as the difference between the share of individuals who strongly agree with the statement: “it is the responsibility of the government to reduce income differences between people with high incomes and those with low incomes” and those who strongly disagree with it. A negative value indicates that more individuals disagree with the statement than agreeing with it, while a positive value indicates the opposite.

Figure 3 plots the evolution of demand for redistribution over time and across countries. As in the case of perceptions, some clear differences between countries are highlighted: European countries, both in the East and the West, have a stronger demand for redistribution than the rest of the world, particularly when compared to the United States, which is the only country in the sample that has a negative net demand for redistribution. This is not surprising given the differences in preferences between European and U.S. citizens well documented in the literature. Within Europe, Eastern European countries show a higher demand than most Western and Southern countries. Over time, demand for redistribution has also moved differently in the various countries, increasing from 1999 to 2009 in some countries (e.g., Hungary, Poland, and France), and decreasing in others (e.g., Bulgaria, Portugal, and Spain).

¹⁹ Note that we do not use panel data, so the shift in share may simply be due to a cohort effect, i.e. people from younger cohorts may have different opinions and that may explain (part) of the shift observed in the figure.

Figure 3.a – Demand for redistribution in Europe

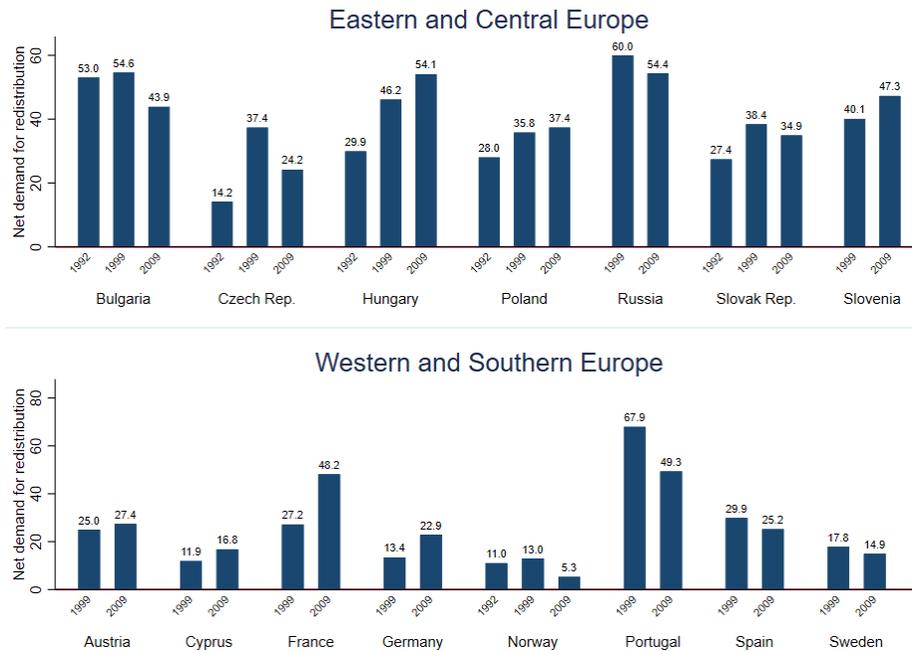
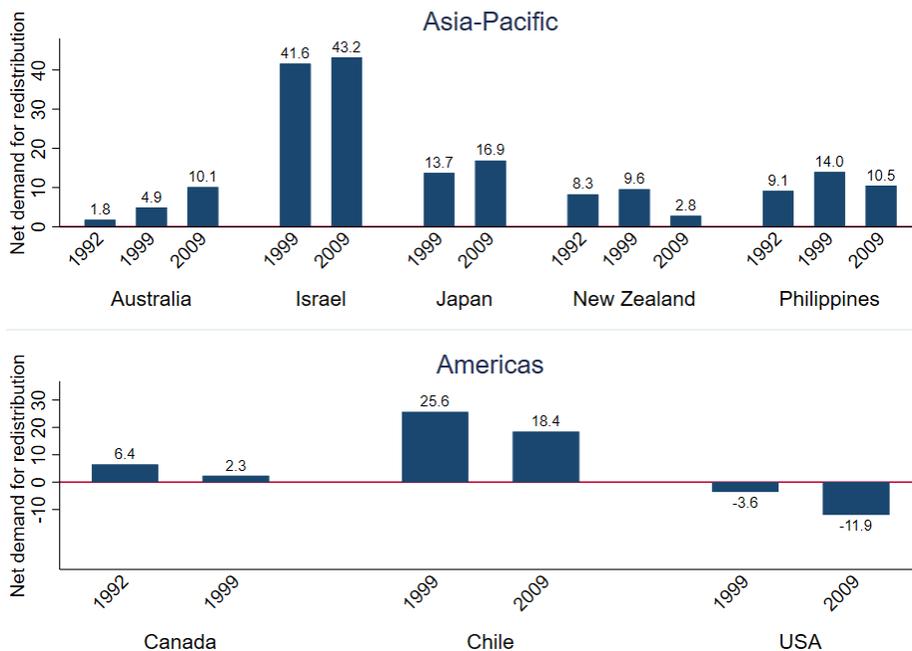


Figure 3.b – Demand for redistribution in other regions



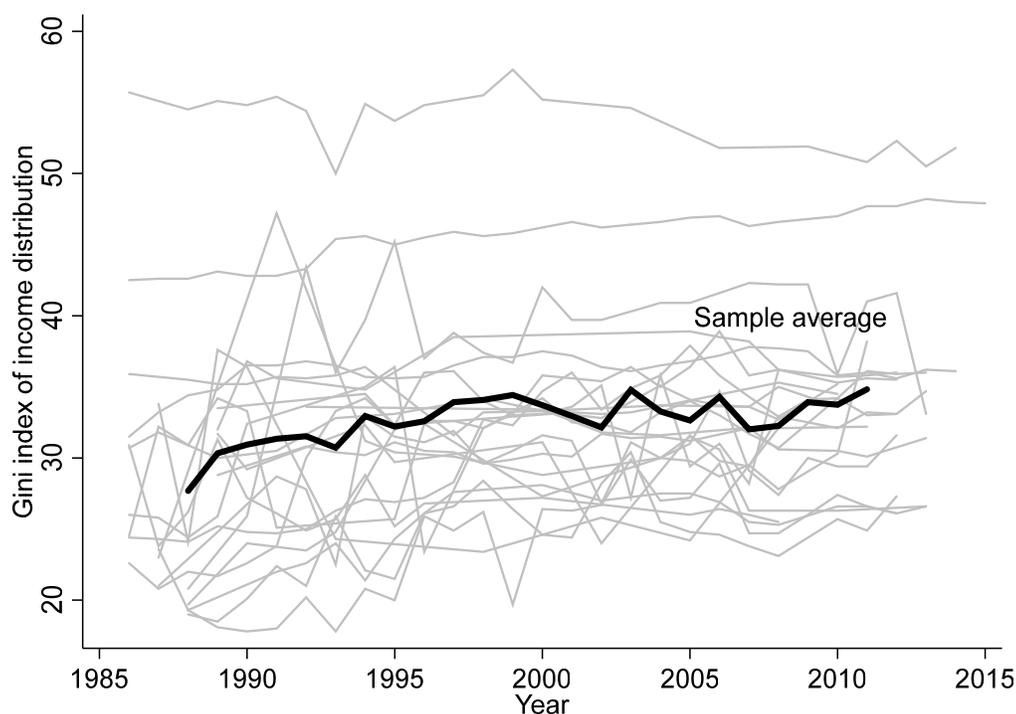
Source: own elaboration based on ISSP Social Inequality data set.

Note: Net demand for redistribution is equal to the percentage of people strongly agreeing with the statement “it is the responsibility of the government to reduce income differences between people with high incomes and those with low incomes” minus the percentage strongly disagreeing with that statement. National weights used.

Using data from other sources, we can also plot the evolution of *objective* inequality during the same period covered by the ISSP surveys. In terms of the most common inequality indicator, the Gini coefficient of

disposable income, inequality has widened in Europe and United States since the end of the 1980s. Figure 4 shows the evolution of the Gini index of per capita household income for the countries included in the ISSP survey and the evidence points to a slow but stable upward trend in income inequality.

Figure 4 – Evolution of income inequality, ISSP countries



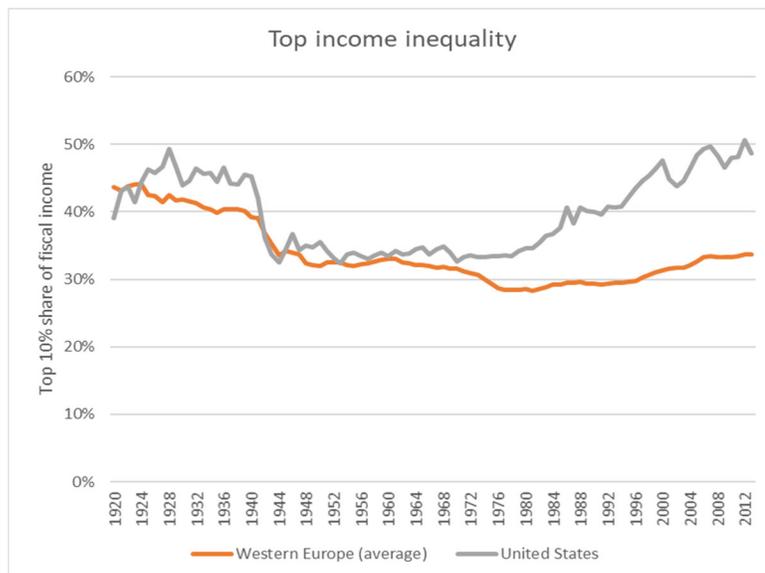
Source: own elaboration based on Branko Milanovic’s “All the Ginis” data set available in <https://www.gc.cuny.edu/Page-Elements/Academics-Research-Centers-Initiatives/Centers-and-Institutes/Stone-Center-on-Socio-Economic-Inequality/Core-Faculty,-Team,-and-Affiliated-LIS-Scholars/Branko-Milanovic/Datasets>

Note: the figure plots the Gini index of the per capita household income distribution of every country. Light gray lines indicate individual countries and the black solid line indicates the simple average for all countries in the sample. The average is plotted for years 1987-2012; remaining years have few data points to estimate a consistent average.

Several authors have emphasized that the increase of inequality measured from household surveys may be an underestimate of the real inequality, as a large part of that increase occurred through a concentration of incomes at the top of the distribution and very rich people are normally not sampled in these surveys. Indeed, using administrative (tax) data, Piketty and Saez (2014) show that income inequality measured as the national income in the hands of the top 10% decreased considerably from 1930 to 1970, both in Europe and the United States, but it increased strongly in the United States after 1970 and to a less extent in Europe after 1980 (see Figure 5). While inequality is similar in both regions, current differences

are large. Dynamics of inequality of the wealth distribution shows similar patterns (for example, Alvaredo et al., 2017; Berman, Ben-Jacob, and Shapira, 2016; Gabaix et al., 2016).

Figure 5

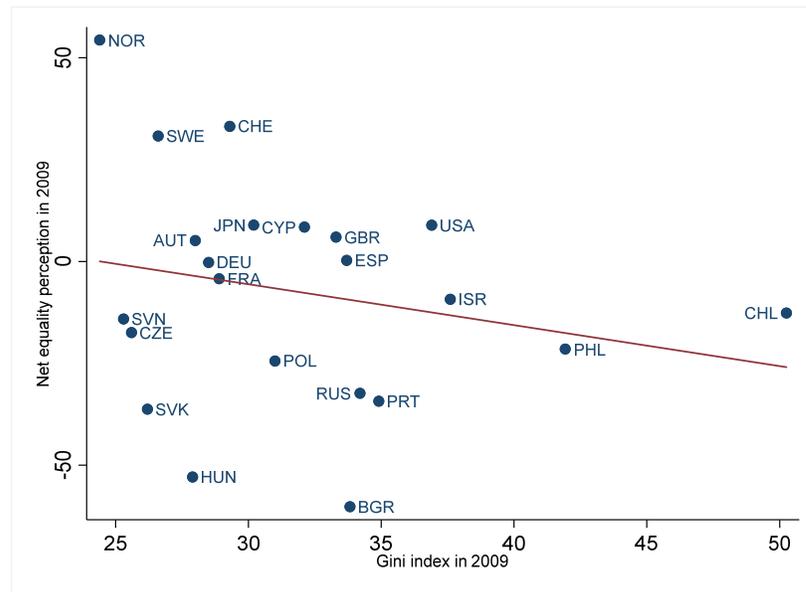


Source: own elaboration based on World Inequality Database (<https://wid.world/data/>). Note: Depicted is the share of total fiscal (pre-tax) income accruing to the top 10% tax units. Western Europe corresponds to the 3-year moving average values for Denmark, France, Germany, Netherlands, Sweden, Switzerland and United Kingdom

So far, we have presented the evolution of the three variables of interest of our study: *perceived* inequality, demand for redistribution and *objective* inequality. We now move on to analyze the correlations between them.

The relationship between perceptions of equality and objective inequality as measured by the Gini index of per capita household income is rather weak as shown in Figure 6 for year 2009. While there is a tenuous negative association – the higher the Gini index, the lower the net perceptions of equality – the variability is very high and the R^2 of a simple regression is about 0.05. Bulgaria and Spain have about the same level of income inequality, but perceptions are wildly different: in Bulgaria the percentage of individuals that think their society is very unequal is 60 percentage points larger than those who think their society is very equal, while in Spain the difference was almost zero. Another polar case is that of Chile and Slovenia: in both countries, individuals’ perceptions about inequality in their society are very similar, but Chile’s Gini index is actually almost twice that of Slovenia.

Figure 6 – Perceptions of equality and Gini index, 2009

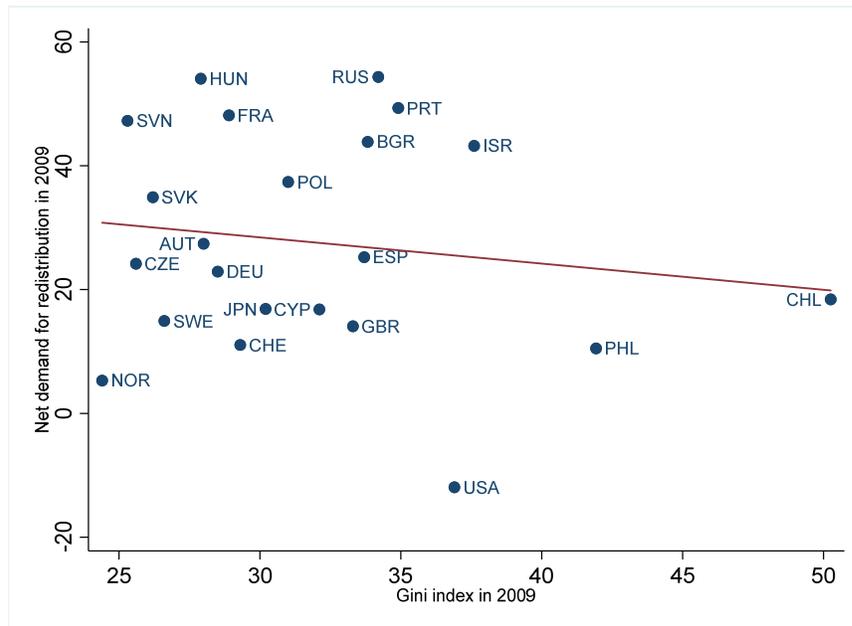


Source: own elaboration based on ISSP Social Inequality data set; Gini indices from Bussolo et al. (2018) and Milanovic (2018)

Note: Net equality perception is equal to the percentage of people believing theirs is an equal society minus the percentage believing theirs is an unequal one. National weights used. Gini index estimated on per capita household income.

A similar weak correlation is also found when comparing demand for redistribution and objective inequality (Figure 7). Individuals in countries with similar levels of income inequality have strongly different levels of demand for redistribution. Portugal and the United Kingdom have roughly similar levels of income inequality, but in the former the percentage of people that agree with redistribution being a government responsibility is 50 percentage points higher than that of those who disagree, while in the United Kingdom that difference is below 20 percentage points. Slovenia and Portugal have a very similar demand for redistribution, but in Slovenia actual income inequality is 10 Gini points lower than Portugal.

Figure 7 – Demand for redistribution and Gini index, 2009

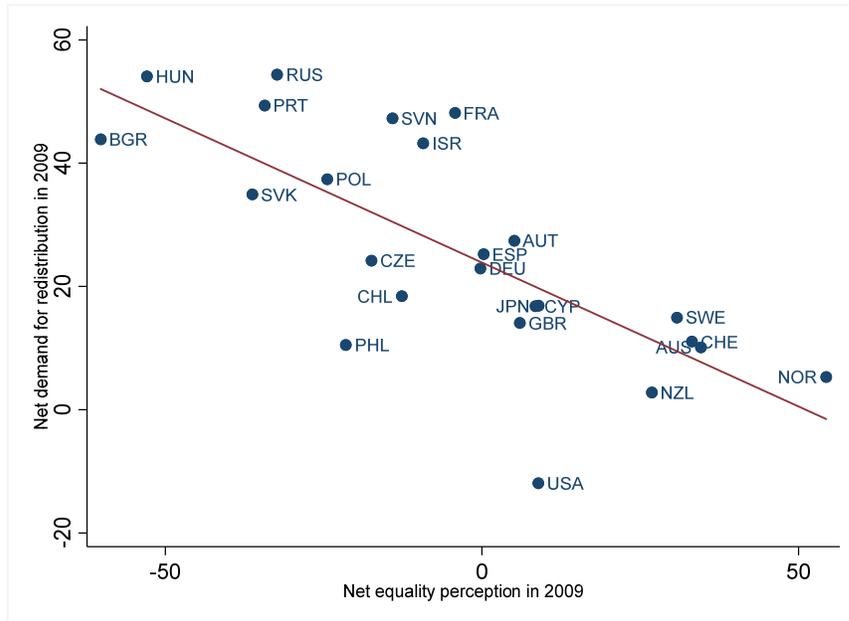


Source: own elaboration based on ISSP Social Inequality data set; Gini indices from Bussolo et al. (2018) and Milanovic (2018)

Note: Net demand for redistribution is equal to the percentage of people strongly agreeing with the statement “it is the responsibility of the government to reduce income differences between people with high incomes and those with low incomes” minus the percentage strongly disagreeing with that statement. National weights used. Gini index estimated on per capita household income.

While demand for redistribution seems to be uncorrelated to objective inequality, when comparing it to perceptions of equality the situation is completely different. As shown in Figure 8, the correlation between demand for redistribution and perceptions of equality is striking. The more individuals perceive their society to be equal, the less they express agreement with redistribution being a government responsibility. This evidence suggests that demand for redistribution is tightly linked to how individuals *perceive* their society to be, rather than what their society actually *is*, at least when using a common, cross-country consistent measure, i.e., the Gini index.

Figure 8 – Demand for redistribution and perceptions of equality, 2009



Source: own elaboration based on ISSP Social Inequality data set.

Note: Net demand for redistribution is equal to the percentage of people strongly agreeing with the statement “it is the responsibility of the government to reduce income differences between people with high incomes and those with low incomes” minus the percentage strongly disagreeing with that statement. Net equality perception is equal to the percentage of people believing theirs is an equal society (type D) minus the percentage believing theirs is an unequal one (type A). National weights used. Gini index estimated on per capita household income.

The fact that demand for redistribution – which eventually feeds into each country’s political process – appears to be closely associated to perceptions of equality underlines the relevance that a theory on the formation of perceptions has. As a prior, we analyze in the four panels of Figure 9 the correlation between perceptions of equality and a set of variables that make up the economic context in which individuals form their opinion about inequality: unemployment rate, poverty headcount rate, and government expenditure on education and social protection. The latter two understood as broad proxies of the equalization of opportunities and mitigation of inequalities through government, respectively.

follows the model described in section 2. Its implementation will be in the reverse order, from ‘causes’ to ‘effects’, namely we first explain the formation of perceptions of equality, and then look at the role of these perceptions on demand for redistribution. The model includes country fixed effects and, in contrast with the stylized facts presented above, it therefore exploits within country variation rather than cross-country variation.

5 Results of the regression analysis

Using the model presented in section 2, and starting from the formation of perceptions, the specific equation estimated here is:

$$EqPerc_{i,k,t,r} = I_k(\alpha_{1,k} + \beta_{1,k}UR_{t,r} + \beta_{2,k}P_{t,r} + \beta_{3,k}Gini_{t,r} + \beta_{4,k}Exp_{t,r} + \sum_{j=5}^J \beta_{j,k}X_{i,t,r} + \delta_{t,k} + \mu_{r,k} + \varepsilon_{i,k,t,r}) \quad (3)$$

[Ideology] [Economic Context] [Individual charact..] [FE time, country]

where $EqPer_{iktr}$ represents equality perceptions of individual i , with ideology type k , in year t , in country r . I_k is an indicator value which takes value of 1 if individual i is of ideology type k and zero otherwise. This specification assumes that for each ideology type k there is a different set of coefficients ($\beta_{j,k}$) for all independent variables. In other words, it assumes that individuals’ ideology shapes the influence that the context and the individual characteristics have on shaping individuals’ perceptions. As mentioned in section 3, we will use two measures of equality perception – one categorical and one cardinal, where a value of the Gini index is associated to each categorical value following Gimpelson and Treisman (2018).²⁰ The regression includes a set of country economywide characteristics that represents the overall economic context influencing individuals’ perceptions of the income distribution in their country. One may argue that the Gini index is not a variable easily observable – people seldom observe absolute inequality, i.e. differences in standard of living among rich and poor citizens, and relative inequality, the variable measured by the Gini index, is even more difficult to observe. Instead, individuals may also form their perceptions about the level of equality in a country using other variables that correlate with the Gini and are easier to observe. To account for this, the regression includes the unemployment rate (UR) and poverty (P). In addition, we argue that inequality perceptions might also depend on how these have been generated, this is about the fairness of the process. To measure this we use a measure of intergenerational elasticity of education of which, as described in section 3, we will use three different versions – one which is specific

²⁰ The cardinal measure will be our main perceptions variable of interest. Results using the categorical measure are included in the Appendix.

to each country and year and reflects the average elasticity for those aged 20 to 39, and two cohort-specific version, one for the individual's whole birth cohort and the other specific of the individual's gender and cohort. Similarly, individuals' perceptions of inequality might be partly shaped by current equal opportunities in education. To this end, the regression also includes yearly government expenditures on education (*Exp*). Government expenditures on education might be seen as investment in equal opportunities that in turn generate future equality in outcomes.

Besides these economic context variables, specification (2b) includes a set of individual characteristics ($X_{i,t,r}$) that we postulate will shape perceptions of equality. This includes not only age, gender and employment status, but also variables related to own opportunities and uncertainties, namely education and income. Finally the regression includes a set of country and year fixed effects (δ_t and μ_r) and the usual error term ($\varepsilon_{i,t,r}$).

In order not to lose observations, the regression analysis includes a dummy variable when there is a missing value and replaces the original variable with the mean over all the country-sample. This allows us to control for possible unobservable characteristics that correlate with our dependent variable as well as with the fact that the information is missing. Nevertheless, we are unable to say much about this correlation.

Finally, and since some of the independent variables are clustered at the country level, errors are bound to be correlated within each cluster. Since the number of clusters is small, we perform a wild cluster bootstrap (following Cameron and Miller, 2010) and present the associated p-values for each estimated coefficient.

Moving to the demand for redistribution, our focus is on the role of individually perceived inequality, but clearly other determinants are included. The exact specification of equation (1) of the model is as follows:

$$DemRed_{i,t,r} = \alpha_2 + \gamma_1 EqPerc_{i,t,r} + \gamma_2 ID_{i,t,r} + \gamma_3 Y_{i,t,r} + \gamma_4 Edu_{i,t,r} + \sum_{j=5}^J \gamma_j X_{i,t,r} + \delta_t + \mu_r + \omega_{i,t,r} \quad (4)$$

[Equality Perceptions] [Ideology] [Self-interest] [other indiv. char.] [FE time country]

Where income (*Y*) and education (*Edu*) are proxies for self-interest motives, and ideology (*ID*) enters additively. The relevance of the ideology variable should not be underrated. Since both demand for redistribution and perceptions of equality are subjective variables, they are bound to depend on some common unobservable individual characteristics, such as political opinions or non-cognitive skills. For example, one's perceptions on equality as well as one's demand for redistribution might be both shaped by the type of media the individual reads. For the case of equation (1b), not controlling for ideology would mean that the independent perceptions variable ($EqPerc_{i,t,r}$) would correlate with the error term ($\omega_{i,t,r}$),

resulting in omitted variable bias. Controlling for ideology and as many controls as possible reduces a part of this bias.

5.1 Explaining perceptions of (in)equality

We start with regressing equation (3) in which equality perception is regressed against a set of individual variables that aim at proxying individuals' perception of objective inequality and ideology as well as individual characteristics. The analysis is based on individual data and therefore exploits individual variation within a country, while clustering standard errors at the country level to account for clustered data. Using the perceived Gini index as the dependent variable, Table 2a shows the importance of the economic context, and not only of the objective Gini index, in explaining individuals' perceptions about inequality. The same analysis using the categorical version of the variable representing perceptions is presented in Appendix Table A.3.

The four columns of Table 2a present different specifications all of which include the four main macroeconomic variables at the country level: the unemployment rate, the poverty headcount rate, the Gini index of income inequality, and the government expenditures in education. The sign of the correlations is as expected, and the coefficients are precisely estimated. The higher the unemployment rate, the Gini index, and the poverty rate, the more unequal society is perceived. This is not surprising given the cross-country correlations found before. This might mean that the Gini index is more difficult to 'observe', while poverty and unemployment, also correlated with the actual Gini index, are easier to understand and directly observe or experience. The fact that a fairly abstract measure such as the Gini index is correlated with equality perceptions may reflect that such index does indeed capture income inequality that can be perceived by individuals. We also introduce government expenditures in education, as in contrast with social expenditures these are not mechanically correlated with current inequality, but rather with future income inequalities to the extent that education expenditures might increase equal opportunities. The coefficient for government expenditures in education has the expected sign: more government expenditure is translated into lower perceived Gini index. Finally, specifications 2 to 4 introduce different proxy variables of intergenerational mobility. Intergenerational mobility is measured in three different ways, which represent two fairly different concepts. All our variables are drawn from Narayan and Van der Weide (2018) and represent the intergenerational elasticity of education. The first variable (specification 2) is the average country intergenerational elasticity of education, while the other two variables (specifications 3 and 4) assign to each individual their own cohort (and gender) intergenerational elasticity of education. The coefficients of these variables are very imprecisely estimated so that it is difficult to draw conclusions. The sign of the point estimates suggests a counter-intuitive association, as reducing intergenerational mobility

(or, equivalently, increasing fairness) reduces perceived inequality as well. Its inclusion however does not affect the results of the main economic variables.

We move next to discuss the economic significance of our results, using specification 1, which does not include the imprecise intergenerational mobility estimates and still pools all individuals together irrespective of their ideology or beliefs. As expected, the unemployment rate is negatively correlated with perceptions of equality with a point estimate of 0.248 and an also small standard deviation (0.064). This means that a country with a mean unemployment rate (mean across years and countries) of 8.68% that experiences a one standard deviation increase (new unemployment rate = 12%) sees the perceived Gini index equivalent increase by 0.82 Gini points (3.32×0.248), about a 10% of one standard deviation of equality perceptions. To put this in perspective, the change in the average perceptions (Gini equivalent) in France between 1999 and 2009 was an increase of 0.76 Gini points, while in Sweden it was a decrease of 0.88 Gini points. The poverty headcount rate, although statistically significant in all specifications, has a somewhat smaller impact on equality perceptions: a one standard deviation increase in the poverty headcount, increases the perceived Gini index by 0.53 Gini points. The actual Gini index of household income inequality is also significantly correlated with perceptions of (in)equality. A one standard deviation increase in the Gini index (5.30 points) changes equality perceptions by an equivalent of 0.90 Gini points – not very different from the relative impact of a one standard deviation increase in the unemployment rate.

These results show that, from an individual's point of view, perceptions about the income distribution are affected in a very similar way by either changes in unemployment or in actual income inequality. When looking at government expenditures on education, we observe that, as expected, it correlates negatively with perceptions of inequality: a one standard deviation increase in education expenditures reduces the perceived Gini index by 0.56 Gini points. To sum up, then, this evidence shows that individuals' perceptions are based not only on actual income inequality (as measured by the objective Gini index) but also on other contextual, macro variables.

Table 2a - Inequality perceptions (Gini index equivalent), benchmark table

	Whole sample			
Dep. var.: Inequality perceptions (Gini index equivalent)	(1)	(2)	(3)	(4)
Unemployment rate	0.248*** (0.064) [0.01]***	0.260** (0.094) [0.01]***	0.227*** (0.068) [0.01]***	0.226*** (0.069) [0.01]***
Gini index (per capita household income)	0.170*** (0.044) [0.01]***	0.172*** (0.046) [0.01]***	0.199*** (0.052) [0.01]***	0.199*** (0.052) [0.01]***
Poverty headcount rate	0.026* (0.013) [0.05]**	0.022 (0.025) [0.36]	0.037** (0.014) [0.01]***	0.038** (0.014) [0.01]***
Govt. exp. in education	-0.650**	-0.731	-0.601*	-0.593*

	(0.294) [0.05]**	(0.542) [0.26]	(0.315) [0.09]*	(0.317) [0.11]
Intergenerational Elasticity of Education (country average)		-1.799 (8.456) [0.92]		
Intergenerational Elasticity of Education (own cohort, both genders)			-0.922 (0.839) [0.25]	
Intergenerational Elasticity of Education (own cohort, own gender)				-0.590 (0.576) [0.24]
Age: reference group, born after 1970				
Born between 1946-1970	0.741*** (0.145) [0.01]***	0.741*** (0.145) [0.01]***	0.690*** (0.136) [0.01]***	0.690*** (0.137) [0.01]***
Born before 1946	0.990*** (0.209) [0.01]***	0.989*** (0.210) [0.01]***	1.024*** (0.211) [0.01]***	1.012*** (0.210) [0.01]***
Missing age	1.698*** (0.484) [0.01]***	1.708*** (0.469) [0.01]***		
Gender				
Female	0.202** (0.082) [0.02]**	0.202** (0.082) [0.02]**	0.244** (0.095) [0.01]***	0.247** (0.096) [0.02]**
Residence: reference group, urban residence				
Rural residence	0.001 (0.132) [1.00]	0.005 (0.131) [1.00]	0.028 (0.126) [0.41]	0.029 (0.126) [0.83]
Missing residence	-0.805** (0.360) [0.12]	-0.806** (0.361) [0.12]	-0.702** (0.325) [0.01]***	-0.704** (0.325) [0.02]**
Education: reference group, primary or lower secondary				
Higher secondary	-0.821*** (0.164) [0.01]***	-0.819*** (0.160) [0.01]***	-0.890*** (0.153) [0.01]***	-0.887*** (0.152) [0.01]***
University	-1.882*** (0.218) [0.01]***	-1.879*** (0.215) [0.01]***	-2.027*** (0.193) [0.01]***	-2.024*** (0.192) [0.01]***
Missing education	-0.729** (0.317) [0.06]*	-0.742** (0.329) [0.08]*	-1.195*** (0.304) [0.01]***	-1.195*** (0.304) [0.01]***
Employment status: reference group, out of labor force				
Employed	0.482*** (0.110) [0.01]***	0.483*** (0.110) [0.01]***	0.444*** (0.108) [0.01]***	0.448*** (0.109) [0.01]***
Unemployed	0.388 (0.579) [0.01]***	0.897*** (0.197) [0.01]***	0.866*** (0.200) [0.01]***	0.871*** (0.203) [0.01]***
Missing employment status	-0.071 (0.081) [0.74]	0.393 (0.585) [0.38]	0.274 (0.691) [0.65]	0.280 (0.693) [0.64]
Income group: reference group, lowest income group.				
2nd income group	-0.327*** (0.113) [0.02]**	-0.331*** (0.114) [0.02]**	-0.428*** (0.129) [0.01]***	-0.428*** (0.129) [0.01]***
3rd income group	-0.509*** (0.136) [0.02]**	-0.509*** (0.135) [0.01]***	-0.641*** (0.160) [0.01]***	-0.642*** (0.161) [0.01]***

4th income group	-0.964*** (0.143) [0.01]***	-0.969*** (0.146) [0.01]***	-1.083*** (0.137) [0.01]***	-1.085*** (0.138) [0.01]***
Highest income group	-1.569*** (0.259) [0.01]***	-1.573*** (0.260) [0.01]***	-1.676*** (0.241) [0.01]***	-1.677*** (0.241) [0.01]***
Missing income group	-0.357** (0.164) [0.08]*	-0.360** (0.163) [0.07]*	-0.524*** (0.153) [0.01]***	-0.525*** (0.154) [0.01]***
Observations	46894	46894	36973	36973
R^2	0.234	0.234	0.245	0.245

Notes: OLS regressions where the dependent variable is the perceptions of equality expressed in Gini index equivalent (minimum value 20, maximum value 42). Columns 3 and 4 restricts the sample for those observation with non-missing Intergenerational Elasticity of Education (own cohort – born after 1940). Country and year dummies included in all regressions but not reported. Clustered standard errors at the country level in parentheses. Wild bootstrap country level clustered p-values in brackets. Significance: * p<0.10, ** p<0.05, *** p<0.01.

Many of the individual characteristics included in all specifications in Table 2a show precisely estimated coefficients, indicating the importance that many of these variables have in shaping perceptions. The coefficients are consistent across the two different (with or without controlling for fairness) specifications and are mostly not statistically different across specifications.

Everything else constant, being older correlates positively with the perceived Gini index. For example, the coefficient of being born before 1946 versus being born after 1970 (0.99 Gini points) is 20% larger than the point estimate of one standard deviation change in the unemployment rate (0.82 Gini points). This means that older individuals, everything else equal, perceive their country as more unequal. Being a female also correlates with higher perceptions of inequality, but the effect is about 1/3 of the just described age effect. This lower equality perception of women, everything else constant, could be related to their higher risk aversion as compared to men (e.g., Borghans, Golsteyn, Heckman, and Meijers, 2009). Higher education correlates negatively with inequality perceptions. This is, the higher educated individuals are, the lower the perceived Gini index. The coefficients for the two dummy variables for high school and university education (reference is secondary or lower education) have a large and precisely estimated coefficient. For example, having university education versus secondary or lower has a larger impact on inequality perceptions than many of the other variables. In other words, everything else constant, higher educated individuals perceive their society as being more equal. This might be related to the fact that their reference group is at the top of the income distribution and thus are unable to see all income spread in their country. In all the diagrams showed to the respondent to illustrate the different income distributions (see section 3 on the ISSP question used), the thicker part of the distribution is at the half bottom of the income distribution. This might imply that individuals with a richer reference group will tend to choose diagrams with more people in the middle, i.e., less inequality; while the opposite is true for the others. This argument is also consistent with the negative correlation between income and perceptions of inequality. Income in the sample is defined in five income brackets that are country dependent. The income coefficients show a

linear effect in which the higher the income group the individuals are in, the more equal they believe their country is. Consistently with the above argument, belonging to the highest income group in your country has a similar coefficient (-1.569) as the one of having university education (-1.882). In other words, everything else constant individuals' socio-economic status measured with education and income is correlated with perceiving their country as more equal, which might indicate that individuals derive their information from observing their reference group. While controlling for gender and age, individuals not in the labor force perceive the income distribution to be more equal than those employed and unemployed.

We explore the role of ideology in table 2b. As detailed in the beginning of Section 5, in our empirical specification ideology works as a type of “filter” which modifies the correlation between all the independent variables of our analysis and perceptions of inequality. To this end, we split the sample according to the ideology of individuals: (i) far left and left, (ii) center, and (ii) right and far right. Political ideology, if included additively (specification 2), has a significant association with perceptions of inequality, in which the more to the right individuals are, the more equal they perceive their country. This would say that, all other things equal, individuals to the right of the political spectrum tend to perceive their society to be more egalitarian than those to the left of the political spectrum. Rather than assuming ideology to have a direct association, in columns 3-5 we run the benchmark specification (column 2 of Table 2a), but in different subsamples according to individuals' ideology. Since political ideology is only available for 57% of the sample, column 1 of the table below replicates the benchmark results with observations for which we have information about political ideology available. The results do not change significantly, but we lose precision in the coefficients.

We move next to the last three specifications in Table 2b in which we split the individuals in the sample according to their political ideology. For individuals on the left, we find that higher unemployment and lower government expenditure in education are associated with a greater perceived Gini index, but neither poverty nor the objective Gini index are precisely estimated. The sign of the coefficient associated to the poverty headcount rate for those in the left is surprisingly negative, but its statistical significance is doubtful as the p-value of the bootstrap estimation exceeds 0.10. For individuals in the center, while most of the individual and characteristics are correlated with how they perceived inequality, hardly any of the economic context variables appear to be relevant and precisely estimated. For this group, poverty shows a larger coefficient than for the total sample, but it is not very precisely estimated as, again, the p-value of the bootstrap estimation suggests caution on the statistical significance. For people in the right of the political spectrum, unemployment and the actual Gini index are the two context variables to clearly correlate with perceived inequality: the coefficients are large and precisely estimated. Those to the left seem to put a higher relevance to government expenditure than those to the right, while actual income inequality seems to be more relevant to those on the right. What emerges from this analysis is that the relevance of

country level, contextual variables in the formation of perceptions about the income distribution is different for individuals of different ideologies.

Table 2b - Inequality perceptions (Gini index equivalent), benchmark table

Dep. var.: Inequality perceptions (Gini index equivalent)	Whole sample			Political ideology	
	Benchmark	Nonmissing political ideology	Far-left and left	Center	Far-right and right
	(1)	(2)	(3)	(4)	(5)
Unemployment rate	0.311*** (0.094) [0.01]***	0.312*** (0.090) [0.01]***	0.286** (0.115) [0.18]	0.128 (0.088) [0.31]	0.313** (0.125) [0.14]
Gini index (per capita household income)	0.125 (0.072) [0.11]	0.092 (0.067) [0.14]	-0.103 (0.062) [0.13]	0.205* (0.115) [0.45]	0.224** (0.106) [0.22]
Poverty headcount rate	-0.015 (0.018) [0.46]	-0.015 (0.018) [0.05]**	-0.046** (0.022) [0.14]	0.064*** (0.017) [0.13]	-0.002 (0.035) [0.94]
Govt. exp. in education	-1.364** (0.531) [0.01]***	-1.496** (0.543) [0.01]***	-2.334*** (0.534) [0.01]***	-0.060 (0.526) [0.90]	-0.959 (1.134) [0.46]
Political ideology: position in left-right axis; far left (1) to far right (5)		-0.554*** (0.110) [0.01]***			
<u>Age: reference group, born after 1970</u>					
Born between 1946-1970	0.713*** (0.187) [0.01]***	0.657*** (0.180) [0.01]***	0.814*** (0.221) [0.01]***	0.790** (0.309) [0.05]**	0.437 (0.267) [0.13]
Born before 1946	0.834*** (0.200) [0.01]***	0.827*** (0.206) [0.01]***	1.003*** (0.265) [0.01]***	1.215*** (0.409) [0.03]**	0.526* (0.252) [0.02]**
Missing age	0.917 (0.651) [0.15]	0.869 (0.661) [0.19]	2.236* (1.074) [0.01]***	-0.441 (1.819) [0.52]	0.225 (1.328) [0.85]
<u>Gender</u>					
Female	0.233*** (0.076) [0.01]***	0.204** (0.079) [0.01]***	0.131 (0.091) [0.13]	0.419** (0.191) [0.03]**	0.193 (0.171) [0.29]
<u>Residence: reference group, urban residence</u>					
Rural residence	0.056 (0.156) [0.70]	0.100 (0.148) [0.49]	0.131 (0.189) [0.52]	0.279 (0.196) [0.20]	-0.034 (0.202) [0.90]
Missing residence	-0.832*** (0.251) [0.03]**	-0.775*** (0.235) [0.03]**	-0.731** (0.266) [0.02]**	-1.159*** (0.294) [0.01]***	-0.617* (0.319) [0.04]**
<u>Education: reference group, primary or lower secondary</u>					
Higher secondary	-0.966*** (0.156) [0.01]***	-0.961*** (0.144) [0.01]***	-0.927*** (0.176) [0.01]***	-0.744*** (0.218) [0.01]***	-1.157*** (0.255) [0.01]***
University	-2.018*** (0.201) [0.01]***	-2.059*** (0.197) [0.01]***	-1.802*** (0.246) [0.01]***	-1.758*** (0.235) [0.01]***	-2.603*** (0.263) [0.01]***
Missing education	-0.954** (0.401) [0.05]**	-0.942** (0.389) [0.04]**	-2.082*** (0.582) [0.01]***	-0.454 (1.267) [0.83]	-0.190 (0.579) [0.80]
<u>Employment status: reference group, out of labor force</u>					
Employed	0.412***	0.411***	0.333**	0.633**	0.299

	(0.139) [0.01]***	(0.136) [0.01]***	(0.158) [0.04]**	(0.254) [0.05]**	(0.260) [0.28]
Unemployed	1.122*** (0.253) [0.01]***	1.054*** (0.244) [0.01]***	1.209*** (0.395) [0.01]***	0.902** (0.400) [0.04]**	0.730 (0.531) [0.27]
Missing employment status	0.587 (0.731) [0.45]	0.661 (0.683) [0.40]	2.197*** (0.683) [0.09]*	3.514*** (0.920) [0.01]***	-1.432* (0.704) [0.34]
Income group: reference group, lowest income group.					
2nd income group	-0.440*** (0.142) [0.01]***	-0.453*** (0.140) [0.01]***	-0.515* (0.266) [0.12]	-0.096 (0.307) [0.87]	-0.645** (0.306) [0.04]**
3rd income group	-0.683*** (0.201) [0.03]**	-0.665*** (0.194) [0.03]**	-0.868*** (0.236) [0.01]***	-0.246 (0.341) [0.50]	-0.730* (0.349) [0.03]**
4th income group	-1.249*** (0.123) [0.01]***	-1.188*** (0.125) [0.01]***	-1.207*** (0.212) [0.01]***	-0.673** (0.245) [0.02]**	-1.495*** (0.307) [0.01]***
Highest income group	-1.957*** (0.219) [0.01]***	-1.808*** (0.205) [0.01]***	-1.915*** (0.336) [0.01]***	-1.299** (0.504) [0.06]*	-1.968*** (0.374) [0.01]***
Missing income group	-0.530** (0.213) [0.03]**	-0.456** (0.217) [0.13]	-0.301 (0.289) [0.36]	-0.471 (0.285) [0.12]	-0.633 (0.441) [0.18]
Observations	26825	26825	11603	6430	8792
R ²	0.219	0.223	0.238	0.173	0.233

Notes: OLS regressions where the dependent variable is the perceptions of equality expressed in Gini index equivalent (minimum value 20, maximum value 42). Column 2 restricts the sample for those observation with non-missing data on the political ideology variable (individuals that answer “no political preference” or counted as missing). Column 3 restricts the sample to those who have a value of 1 (far-left) or 2 (left) in the political ideology variable. Column 4 restricts the sample to those who have a value of 3 (center) in the political ideology variable. Column 5 restricts the sample to those who have a value of 4 (right) or 5 (far right) in the political ideology variable. Country and year dummies included in all regressions but not reported. Clustered standard errors at the country level in parentheses. Wild bootstrap country level clustered p-values in brackets. Significance: * p<0.10, ** p<0.05, *** p<0.01.

With respect to individual characteristics, we also find some important differences. The age and employment differences are more notable for the left and center individuals than for right wing individuals; and gender appears to be relevant only for those in the center. This means that individual characteristics, that seem to matter for most of the population, are not so relevant for right-leaning individuals. There is an exception: individuals` self-interest variables are relevant in shaping inequality perceptions for all groups. In other words, it seems as if individuals leaning to the right of the ideology spectrum shape their perceptions differently than the rest.

A main limitation of the above regression is that the sample size gets significantly reduced because the political ideology variable is missing for many individuals. To overcome this limitation Table 2c uses an alternative variable to proxy for political ideology. This proxy is derived from the answer to question 12 in the ISSP questionnaire which asks about the importance of “what is needed to support a family” in determining how much people ought to earn. Five possible answers range from essential to not important at all. As in the earlier case, we divide the sample into three groups depending on the degree to which individuals assign importance to this factor. When we include this variable in the regression as a control

(see specification 2 in Table 2c) we find that individuals who agree with taking family needs into account to define individuals' earnings (which we proxy as a left-leaning attitude) show a positive and precisely estimated coefficient with perceived inequality. This result is consistent with the political ideology variable. Table 2c shows the results for the three sub-samples for which the number of observations is larger. Although the relative size of the coefficients across groups is similar in qualitative terms of those coefficients in Table 2b, the precision of the estimates increases substantially. The unemployment rate and the objective Gini index is precisely estimated for all the sub-groups and the differences across groups are not very large. Poverty headcount, however, has a sizeable and precisely estimated coefficient only for the groups with less support of family needs as a factor in determining earnings. Consistently with Table 2b, poverty seems insignificant on explaining how left-leaning people shape their inequality perceptions. All in all, our results in Tables 2b and 2c are consistent in terms of relative importance of the economic context variables depending on the respondents' ideology.

Table 2c - Inequality perceptions (Gini index equivalent) and proxy for ideology

Dep. var.: Inequality perceptions (Gini index equivalent)	Whole sample		Only those answering...		
	Benchmark	Nonmissing answer	Essential or very important	Fairly important	Not very important or not at all
	(1)	(2)	(3)	(4)	(5)
Unemployment rate	0.252*** (0.065) [0.01]***	0.246*** (0.065) [0.01]***	0.313*** (0.089) [0.03]***	0.172** (0.074) [0.01]***	0.266*** (0.040) [0.01]***
Gini index (per capita household income)	0.180*** (0.045) [0.01]***	0.186*** (0.044) [0.01]***	0.193*** (0.059) [0.01]***	0.142** (0.052) [0.01]***	0.174*** (0.037) [0.01]***
Poverty headcount rate	0.023* (0.014) [0.01]***	0.027* (0.013) [0.01]***	0.003 (0.014) [0.75]	0.050*** (0.017) [0.01]***	0.040** (0.014) [0.07]*
Govt. exp. in education	-0.687*** (0.294) [0.07]*	-0.623* (0.302) [0.11]	-1.019*** (0.345) [0.01]***	-0.041 (0.370) [0.86]	-0.770* (0.414) [0.13]
In deciding how much people ought to earn, how important should be what is needed to support a family? (1: essential – 5: not important at all)		-0.371*** (0.109) [0.01]***			
<u>Age: reference group, born after 1970</u>					
Born between 1946-1970	0.748*** (0.144) [0.01]***	0.780*** (0.143) [0.01]***	0.744*** (0.137) [0.01]***	0.723*** (0.230) [0.01]***	0.907*** (0.202) [0.01]***
Born before 1946	0.980*** (0.201) [0.01]***	1.005*** (0.200) [0.01]***	0.717*** (0.222) [0.01]***	1.091*** (0.289) [0.01]***	1.463*** (0.229) [0.01]***
Missing age	1.692*** (0.486) [0.01]***	1.659*** (0.462) [0.01]***	1.870*** (0.307) [0.01]***	-0.077 (1.118) [0.89]	2.783* (1.338) [0.20]
<u>Gender</u>					
Female	0.193** (0.002) [0.02]**	0.177** (0.077) [0.01]***	0.122 (0.108) [0.25]	0.321*** (0.107) [0.01]***	0.081 (0.172) [0.73]
<u>Residence: reference group, urban residence</u>					
Rural residence	-0.003	-0.008	0.050	-0.072	0.130

	(0.137) [0.96]	(0.137) [0.94]	(0.141) [0.69]	(0.246) [0.77]	(0.242) [0.65]
Missing residence	-0.820** (0.372) [0.09]*	-0.743* (0.358) [0.12]	-1.048*** (0.318) [0.02]**	-0.041 (0.499) [0.96]	-0.913** (0.420) [0.01]***
Education: reference group, primary or lower secondary					
Higher secondary	-0.803*** (0.165) [0.01]***	-0.727*** (0.155) [0.01]***	-0.820*** (0.178) [0.01]***	-0.719*** (0.177) [0.01]***	-0.810*** (0.174) [0.01]***
University	-1.867*** (0.219) [0.01]***	-1.729*** (0.199) [0.01]***	-1.731*** (0.249) [0.01]***	-1.672*** (0.259) [0.01]***	-1.884*** (0.213) [0.01]***
Missing education	-0.756** (0.332) [0.05]**	-0.769** (0.327) [0.04]**	-0.478 (0.599) [0.56]	-2.063*** (0.361) [0.01]***	-0.028 (0.678) [1.00]
Employment status: reference group, out of labor force					
Employed	0.475*** (0.108) [0.01]***	0.484*** (0.107) [0.01]***	0.449*** (0.153) [0.02]**	0.605*** (0.142) [0.01]***	0.384 (0.226) [0.10]
Unemployed	0.897*** (0.202) [0.01]***	0.292 (0.572) [0.01]***	0.382 (0.689) [0.01]***	0.002 (0.805) [0.01]***	0.674 (0.695) [0.12]
Missing employment status	0.308 (0.604) [0.67]	-0.070 (0.086) [0.67]	-0.073 (0.083) [0.49]	-0.068 (0.083) [0.98]	-0.071 (0.081) [0.38]
Income group: reference group, lowest income group.					
2nd income group	-0.297*** (0.114) [0.02]**	-0.273** (0.108) [0.03]**	-0.234 (0.143) [0.08]*	-0.490* (0.280) [0.12]	-0.171 (0.188) [0.33]
3rd income group	-0.482*** (0.142) [0.02]**	-0.446*** (0.134) [0.01]***	-0.353** (0.158) [0.03]**	-0.411* (0.218) [0.08]*	-0.762** (0.273) [0.05]**
4th income group	-0.962*** (0.144) [0.01]***	-0.901*** (0.123) [0.01]***	-0.888*** (0.137) [0.01]***	-0.887*** (0.279) [0.02]**	-0.880*** (0.291) [0.01]***
Highest income group	-1.574*** (0.250) [0.01]***	-1.460*** (0.212) [0.01]***	-1.201*** (0.212) [0.01]***	-1.556*** (0.289) [0.01]***	-1.566*** (0.344) [0.01]***
Missing income group	-0.344** (0.160) [0.08]*	-0.300* (0.154) [0.11]	-0.332** (0.152) [0.03]**	-0.399 (0.271) [0.22]	-0.240 (0.322) [0.47]
Observations	45497	45497	21372	14981	10541
R ²	0.235	0.237	0.190	0.236	0.319

Notes: OLS regressions where the dependent variable is the perceptions of equality expressed in Gini index equivalent (minimum value 20, maximum value 42). Columns 1 and 2 restricts the sample for those observation with valid information on the answer to the question “In deciding how much people ought to earn, how important should it be what is needed to support a family in your opinion?”. Column 3 restricts the sample to those who answered “Essential” or “Very important”. Column 4 restricts the sample to those who answered “Fairly important”. Column 5 restricts the sample to those who answered “Not very important” or “Not important at all”. Country and year dummies included in all regressions but not reported. Clustered standard errors at the country level in parentheses. Wild bootstrap country level clustered p-values in brackets. Significance: * p<0.10, ** p<0.05, *** p<0.01.

With respect to individual characteristics, Table 2c shows fewer differences than Table 2b and these are not always consistent. While employment differences are also more notable for the left and center individuals than for right-leaning individuals and gender appears to be relevant only for those in the center; age shows no large differences across groups and, if anything, is more important for individuals proxied as

being more right leaning. Individuals' self-interest variables (education and income) are relevant and have a similar influence in shaping inequality perceptions of all groups.

5.2 Explaining demand for redistribution

The results of estimating demand for redistribution are described in two steps. In the first step, as shown in table 3a, in addition to ideology, self-interest, and other individual characteristics, we assess whether the contextual variables – unemployment, poverty, fairness (intergenerational mobility) and objective inequality – are correlated with demand for redistribution. Government expenditures on education are not included among the contextual variables because they are one of the redistributive tools in the hands of the government, so it is not appropriate to include it as an explanatory variable of redistributive demand. Note also that inequality perceptions are not yet included. This specification is not yet the one reflected in equation (4), but it is still useful to consider its results.

Table 3a – Demand for redistribution and contextual variables

	(1) Demand for redistribution (categorical: 1, low demand, 5, high demand)
Unemployment rate	-0.004 (0.021) [0.83]
Gini index (per capita household income)	-0.010 (0.020) [0.54]
Poverty headcount rate	0.000 (0.002) [0.91]
Intergenerational Elasticity of Education (country average)	1.430 (0.863) [0.11]
<u>Age: reference group, born after 1970</u>	
Born between 1946-1970	0.036* (0.019) [0.07]*
Born before 1946	0.036 (0.038) [0.34]
Missing age	0.209** (0.101) [0.15]
<u>Gender</u>	
Female	0.141*** (0.021) [0.01]***
<u>Residence: reference group, urban residence</u>	
Rural residence	0.082*** (0.016) [0.01]***
Missing residence	-0.123** (0.058)

	[0.13]
<u>Education: reference group, primary or lower secondary</u>	
Higher secondary	-0.218*** (0.031) [0.01]***
University	-0.377*** (0.065) [0.01]***
Missing education	-0.046 (0.056) [0.34]
<u>Employment status: reference group, out of labor force</u>	
Employed	0.003 (0.017) [0.84]
Unemployed	0.098*** (0.033) [0.01]***
Missing employment status	-0.112 (0.107) [0.37]
<u>Income group: reference group, lowest income group.</u>	
2nd income group	-0.001 (0.025) [1.00]
3rd income group	-0.098** (0.039) [0.02]*
4th income group	-0.196*** (0.046) [0.01]***
Highest income group	-0.453*** (0.061) [0.01]***
Missing	-0.230*** (0.031) [0.01]***
Observations	45583
R ²	0.177

Notes: OLS regressions. Country and year dummies included in all regressions but not reported. Dependent variable in column 1 (Demand for redistribution) takes values 1 (strongly disagree that government should reduce income differences), 2 (disagree), 3 (agree) and 4 (strongly agree). Clustered standard errors at the country level in parentheses. Wild clustered bootstrap p-value estimations in brackets. Significance: * p<0.10, ** p<0.05, *** p<0.01.

The coefficients associated to the four country level variables are small and very imprecisely estimated. While most of these variables were shown to be important determinants of inequality perceptions (Table 2a-2c), they appear to have no impact on demand for redistribution. Some individual characteristics however do correlate with demand for redistribution. The population-weighted intergenerational elasticity in education is also not statistically significant, as in Table 2a, but it has the expected sign: larger elasticity (i.e. less mobility and thus less fairness) correlates with more demand for redistribution. Nevertheless, the coefficient is imprecisely estimated.

In the second step, we use equation (4) as the regression specification and replace the economic context variables (unemployment rate, the objective Gini index, the poverty headcount rate, and the intergenerational elasticity of education) with individuals' reported inequality perceptions. As expected, and in line with Gimpelson and Treisman (2018), the correlation between perceptions of inequality and demand for redistribution shown in Table 3b is positive and precisely estimated. An increase from a perceived Gini index equal to 20 (country Type D) to 42 (country Type A) is equal to a change in the demand for redistribution of 0.44 (0.02*22) on a 1 to 5 scale (or 38% of a one standard deviation). This coefficient is robust to including political ideology as an additional control (column 2) which also shows that the more to the right, the less strong is demand for redistribution. Interacting inequality perceptions with ideology reduces the coefficient to 0.004 for those on the farthest left, but it increases it twice (0.04) for those on the far right, although the coefficient of perceived Gini index loses all precision when we introduce its interaction with political ideology. This suggests that inequality perceptions exert an indirect effect on demand for redistribution through ideology. In fact, those on the left of the ideology spectrum seem more insensitive to their inequality perceptions when forming their demand for redistribution. It seems as if individuals on the left have a strong demand for redistribution irrespective of the actual level of inequality they perceive, and that only individuals on the right vary their demand for redistribution as their perceptions of inequality change.

The results in the last specification (column 4) use the proxy variable for political ideology that allows us to include many more observations. The results are consistent and the demand for redistribution of those individuals more to the left (in this case, those that consider that the need to support a family is essential to determine people's wages) is in fact very little sensitive to inequality perceptions.

Table 3b – Demand for redistribution, perceptions of equality and ideology

Dep. Var: Demand for redistribution	(1)	(2)	(3)	(4)
Equality perceptions (Gini index equivalent)	0.020*** (0.002) [0.01]***	0.022*** (0.002) [0.01]***	-0.005 (0.004)	0.005* (0.003)
Left-right ideology (1 = far left, 5=far right)		-0.245*** (0.033) [0.01]***	-0.519*** (0.042) [0.01]***	
Left-right ideology X Equality perceptions (Gini index equivalent)			0.009*** (0.001) [0.01]***	
In deciding how much people ought to earn, how important should be what is needed to support a family? (1: essential – 5: not important at all)				-0.359*** (0.023) [0.01]***
Importance of family support X Equality perceptions (Gini index equivalent)				0.005*** (0.001) [0.01]***
<u>Age: reference group, born after 1970</u>				
Born between 1946-1970	0.020 (0.018)	0.008 (0.017)	-0.006 (0.016)	0.041** (0.018)

	[0.31]	[0.62]	[0.71]	[0.05]**
Born before 1946	0.013	-0.013	-0.010	0.024
	(0.038)	(0.036)	(0.028)	(0.039)
	[0.64]	[0.70]	[0.68]	[0.54]
Missing	0.176*	0.018	0.067	0.139
	(0.099)	(0.179)	(0.162)	(0.119)
	[0.18]	[0.87]	[0.70]	[0.39]
<u>Gender</u>				
Female	0.136***	0.135***	0.124***	0.128***
	(0.021)	(0.031)	(0.021)	(0.021)
	[0.01]***	[0.01]***	[0.01]***	[0.01]***
<u>Residence: reference group, urban residence</u>				
Rural residence	0.084***	0.099***	0.100***	0.080***
	(0.017)	(0.032)	(0.025)	(0.018)
	[0.01]***	[0.01]***	[0.01]***	[0.01]***
Missing	-0.095**	-0.152	-0.012	-0.056
	(0.043)	(0.098)	(0.078)	(0.046)
	[0.09]*	[0.25]	[0.84]	[0.24]
<u>Education: reference group, primary or lower secondary</u>				
Higher secondary	-0.199***	-0.206***	-0.193***	-0.160***
	(0.030)	(0.043)	(0.036)	(0.028)
	[0.01]***	[0.01]***	[0.01]***	[0.01]***
University	-0.338***	-0.306***	-0.315***	-0.268***
	(0.068)	(0.087)	(0.067)	(0.063)
	[0.01]***	[0.01]***	[0.01]***	[0.01]***
Missing	-0.031	-0.076	-0.079	-0.022
	(0.049)	(0.064)	(0.065)	(0.051)
	[0.53]	[0.34]	[0.35]	[0.73]
<u>Employment status: reference group, out of labor force</u>				
Employed	-0.007	-0.005	-0.018	-0.003
	(0.016)	(0.031)	(0.024)	(0.016)
	[0.74]	[0.86]	[0.55]	[0.92]
Unemployed	0.076**	0.129**	0.056	0.064*
	(0.032)	(0.051)	(0.054)	(0.035)
	[0.03]**	[0.07]*	[0.33]	[0.16]
Missing	-0.117	-0.060	-0.131	-0.124
	(0.101)	(0.115)	(0.113)	(0.093)
	[0.37]	[0.71]	[0.33]	[0.23]
<u>Income group: reference group, lowest income group.</u>				
2nd income group	0.005	-0.033	-0.004	0.017
	(0.022)	(0.025)	(0.022)	(0.021)
	[0.67]	[0.24]	[0.84]	[0.45]
3rd income group	-0.087**	-0.137**	-0.125***	-0.066*
	(0.038)	(0.049)	(0.036)	(0.034)
	[0.06]*	[0.03]**	[0.01]***	[0.06]*
4th income group	-0.177***	-0.242***	-0.190***	-0.151***
	(0.041)	(0.050)	(0.040)	(0.036)
	[0.01]***	[0.01]***	[0.01]***	[0.01]***
Highest income group	-0.423***	-0.453***	-0.398***	-0.366***
	(0.053)	(0.058)	(0.047)	(0.043)
	[0.01]***	[0.01]***	[0.01]***	[0.01]***
Missing	-0.225***	-0.262***	-0.233***	-0.203***
	(0.029)	(0.050)	(0.030)	(0.027)
	[0.01]***	[0.01]***	[0.01]***	[0.01]***
Observations	45583	17999	26157	44372
R ²	0.191	0.228	0.233	0.221

Notes: OLS regressions. Country and year dummies included in all regressions but not reported. Dependent variable (Demand for redistribution) takes values 1 (strongly disagree that government should reduce income differences), 2 (disagree), 3 (neither agree nor disagree), 4 (agree) and 5 (strongly agree). Clustered standard errors at the country level in parentheses. Wild clustered bootstrap p-value estimations in brackets. Significance: * p<0.10, ** p<0.05, *** p<0.01.

While age does not appear as a relevant variable, women demand, consistent with our results in Tables 2a-2c, more redistribution. The unemployed and those living in rural areas also demand, on average, more redistribution. The self-interest variables show the expected sign: the higher the education as well as the income of the respondent, the less demand for redistribution. These results are robust to adding political ideology as control.

6 Conclusions

Views on to what extent government should raise taxes to redistribute income to poorer citizens or address other kinds of distributional tensions are driven by several concerns. People may favor income redistribution because they view themselves as poor and thus anticipate a rise in their own income if more redistribution takes place (even after taking higher taxes into account), or because they anticipate benefiting from a general decline in inequality (e.g. due to lower levels of crime), or because they hold strong views on equity and social justice.

Choices regarding redistributive policies will depend on individuals' *perceptions* of the overall level of inequality, and often on where they place themselves in the distribution of income. Indeed, perceptions of inequality are more closely associated with preferences for redistribution than are objective indicators of inequality. This is important, because even if they are often not in line with objective measures of inequality, perceptions are used by individuals when they take decisions, including voting choices.

This paper shows that perceptions of inequality depend on objective measures either of inequality (like the Gini index) or other macro-economic variables that are correlated with inequality and are more widely reported than the Gini index (unemployment and poverty rates), or of variables that are correlated with equal opportunities and thus future inequalities (government expenditures on education). These four macroeconomic variables, along with variables that account for influences specific to an individual country or year, explain a large share of the variance of individuals' inequality perceptions. Similarly, self-interest proxied by income and education level show a positive correlation with both, perception of the income distribution as well as demand for redistribution. While the paper does not develop a full model of the formation of perceptions, it moves towards this direction and provides useful insights.

7 References

- Alesina, A., & Fuchs-Schundeln, N. (2007) Good-Bye Lenin (or Not?): The Effect of Communism on People's Preferences. *American Economic Review*, 97(4), 1507–1528.
- Alesina, A., and E. La Ferrara (2005). Preferences for Redistribution in the Land of Opportunities. *Journal of Public Economics*, 89 (5): 897-931.
- Alesina, A., and E. Glaeser (2004). *Fighting Poverty in the US and Europe: A World of Difference*. Oxford and New York: Oxford University Press.
- Alesina, A. and P. Giuliano (2011). Preferences for Redistribution. In J. Benhabib et al. (eds.), *Handbook of Social Economics*, Volume 1A. Elsevier.
- Alvaredo, F., L. Chancel, T. Piketty, E. Saez, and G. Zucman, 2017. *Global Inequality Dynamics: New Findings from WID*. NBER Working Paper 23119.
- Benabou, R., and E. A. Ok (2001). Social Mobility and the Demand for Redistribution: the POUM Hypothesis. *The Quarterly Journal of Economics*, 116 (2): 447-487.
- Berman Y, E. Ben-Jacob, and Y. Shapira, 2016. The dynamics of wealth inequality and the effect of income distribution. *PLoS ONE*. 11: e0154196.
- Blendon, R., Benson, J., Brodie, M., Morin, R., Altman, D., Gitterman, D., ... James, M. (1997). Bridging the Gap Between the Public's and the Economists' Views of the Economy. *Journal of Economic Perspectives*, 11(3), 105–118.
- Borghans, L., B.H.H. Golsteyn, J.J. Heckman, and H. Meijers, 2009. Gender Differences in Risk Aversion and Ambiguity Aversion. *Journal of the European Economic Association*, 7: 649-658
- Burstein, Paul, 2003. The impact of public opinion on public policy: a review and an agenda. *Polit. Res. Q.* 56 (1), 29–40.
- Cancho, Cesar A., Davalos, Maria Eugenia, Sanchez-Paramo, Carolina, 2015, *Economic mobility in Europe and Central Asia: exploring patterns and uncovering puzzles*. Policy Research Working Paper 7173; World Bank, Washington DC.
- Cancho, Cesar; Davalos, Maria E.; Demarchi, Giorgia; Meyer, Moritz; Sanchez Paramo, Carolina. 2015b. *Why so gloomy? perceptions of economic mobility in Europe and Central Asia*. Policy Research Working Paper 7519; World Bank, Washington DC.
- Chambers, J.R., L.K. Swan, and M. Heesacker (2014). Better Off Than We Know: Distorted Perceptions of Incomes and Income Inequality in America. *Psychological Science*, 25 (2): 613-618.
- Checchi, D., and A. Filippin (2004). An Experimental Study of the POUM Hypothesis. In F. Cowell (ed.), *Inequality, Welfare and Income Distribution: Experimental Approaches*. Emerald Group Publishing Limited.
- Choi, G. (2019). Revisiting the redistribution hypothesis with perceived inequality and redistributive preferences. *European Journal of Political Economy*, 58, 220–244.
- Cojocaru, A. (2014). Prospects of Upward Mobility and Preferences for Redistribution: Evidence from the Life in Transition Survey. *European Journal of Political Economy*, 34: 300-314.
- Cruces, G., R. Perez-Truglia, and M. Tetaz (2013). Biased Perceptions of Income Distribution and Preferences for Redistribution: Evidence from a Survey Experiment. *Journal of Public Economics*, 98: 100-112.
- Diermeier M, H. Goecke, J. Niehues J, and T. Thomas, 2017. Impact of inequality-related media coverage on the concerns of the citizens, DICE Discussion Paper 258.

- Engelhardt, C. and A. Wagener (2014). Biased Perceptions of Income Inequality and Redistribution. CESifo Working Paper Series No. 4838.
- Esping-Andersen, G., and J. Myles (2009) “Economic inequality and the welfare state,” in W. Salverda, B. Nolan, and T. M. Smeeding (eds.) *The Oxford Handbook of Inequality*. Oxford: Oxford University Press: 639–64.
- Espuelas, S. (2015) The inequality trap: A comparative analysis of social spending between 1880 and 1933. *Economic History Review* 68 (2): 683–706.
- Fernandez-Albertos, J., and A. Kuo (2015). Income Perception, Information, and Progressive Taxation: Evidence from a Survey Experiment. *Political Science Research and Methods*: 1-28.
- Fong, C. (2001). Social Preferences, Self-Interest, and the Demand for Redistribution. *Journal of Public Economics*, 82: 225-246.
- Gabaix, X., J-M. Lasry, P-L. Lions, and B. Moll, 2016. The dynamics of inequality. *Econometrica*, 84: 2071-2111.
- Gärtner, S., & Prado, S. (2014). Unlocking the Social Trap: Inequality, Trust and the Scandinavian Welfare State. *Wage, Inequality and Consequences for the Economy (Thesis)*, 40(1), 33–62.
- Gimpelson, V., and D. Treisman (2018). Misperceiving Inequality. *Economics & Politics*, 30(1): 27-54.
- Giuliano, P., & Spilimbergo, A. (2013) Growing up in a recession. *Review of Economic Studies*, 81(2), 787–817.
- Gruendler, K., and S. Koellner (2017). Determinants of governmental redistribution: Income distribution, development levels, and the role of perceptions. *Journal of Comparative Economics*, 45: 930-962.
- Karadja, M., J. Mollerstrom, and D. Seim (2017). Richer (and Holier) Than Thou? The Effect of Relative Income Improvements on Demand for Redistribution. *Review of Economics and Statistics*, 99 (2): 201-212.
- Kuhn, A., 2015. The Subversive Nature of Inequality: Subjective Inequality Perceptions and Attitudes to Social Inequality. IZA DP 9406.
- Lindert, P. (2004) *Growing Public: Social Spending and Economic Growth since the Eighteenth Century*. Vol. 1. Cambridge: Cambridge University Press.
- Luebker, M. (2014), Income Inequality, Redistribution, and Poverty. *Review of Income and Wealth*, 60: 133-154.
- Luttmer E. F. P. 2001. Group Loyalty and the Taste for Redistribution. *Journal of Political Economy*. 109:3, 500-528.
- Marx (2014). Labour Market Risks and Political Preferences: The Case of Temporary Employment. *European Journal of Political Research*, 53 (1): 136-159.
- Meltzer, A., and S. Richard (1981). A Rational Theory of the Size of Government. *The Journal of Political Economy*, 89 (5): 914–27.
- Milanovic, B., 2000. The median voter hypothesis, income inequality and income redistribution: an empirical test with the required data. *European Journal of Political Economy* 16, 367–410.
- Milanovic, B. (2010). Four critiques of the redistribution hypothesis: An assessment. *European Journal of Political Economy*, 26(1), 147–154.
- Moffitt, R., D. Ribar, and M. Wilhelm (1998) “The decline of welfare benefits in the U.S.: The role of wage inequality.” *Journal of Public Economics* 68 (3): 421–52.
- Murthi M. and E.R. Tiongson, 2009. Attitudes to Equality: The Socialist Legacy Revisited. *Comparative Economic Studies*, 51: 344-366.
- Narayan, A. and R. Van der Weide (eds.) (2018) *Fair Progress? Economic Mobility across Generations around the World*, World Bank, Washington, DC

- Niehues, J. 2014. Subjective Perceptions of Inequality and Redistributive Preferences: An International Comparison. IW-TRENDS discussion papers.
- Norton, M.I., and D. Ariely (2011). Building a Better America – One Wealth Quintile at a Time. *Perspectives on Psychological Science*, 6 (1): 9-12.
- Page, L. and D. G. Goldstein (2016). Subjective Beliefs about the Income Distribution and Preferences for Redistribution. *Social Choice and Welfare*, 45: 25-61.
- Page, Benjamin I., Shapiro, Robert Y., 1983. Effects of public opinion on policy. *Am. Pol. Sci. Rev.* 77 (1), 175–190.
- Piketty, T. and W. Saez, 2014. Inequality in the long run. *Science* 344: 838-843.
- Rainer, H. and T. Siedler (2008). Subjective Income and Employment Expectations and Preferences for Redistribution. *Economics Letters*, 99 (3): 449-453.
- Ravallion, M. and M. Lokshin (2000). Who Wants to Redistribute? The Tunnel Effect in 1990s Russia. *Journal of Public Economics*, 76: 87-104.
- Roemer, J. E., & Trannoy, A. (2016). Equality of Opportunity. *Journal of Economic Literature*, 54(4), 1288–1332.
- Reyes, G. and L. Gasparini (2017). Perceptions of Distributive Justice in Latin America during a Period of Falling Inequality. World Bank Policy Research Working Paper 8072.
- Slemrod, J. (2006). The Role of Misconceptions in Support for Regressive Tax Reform. *National Tax Journal*, 59(1), 57–75.
- World Bank. 2016. Polarization and Populism. ECA Economic Update (November), World Bank, Washington, DC. Doi: 10.1596/978-1-4648-1009-1.
- Zaller, John R. 1992. *The Nature and Origins of Mass Opinion*. New York: Cambridge University Press
- Zilinsky, J., 2014. Learning about Income Inequality: What is the Impact of Information on Perceptions of Fairness and Preferences for Redistribution?

Appendix

A.1 – Country selection and robustness checks

Although the ISSP data include a larger set of countries (26), three of them (Cyprus, the Philippines, and New Zealand) cannot be used in our analysis because information on some of key macroeconomic variables for some years is not available. Before pooling all countries together, the correlation between the Gini coefficients and perceived equality is estimated for each country separately. This allows to identify if the correlation between the two main variables is consistent across all countries. The results show that the correlation between the Gini coefficient and equality perceptions is negative for all countries, except for Italy and Latvia. For the rest of the countries, the correlation coefficients ranged from 0.337 in Norway to 2.241 in Japan, although for most of the countries but five the coefficients were between 0.5 and 1. Given the unexpected positive correlation between perceived equality and the Gini coefficient for these two countries, we decided to exclude from our main study Italy and Latvia. These two countries are of course very interesting cases on their own, but they would require a separate analysis. Italy is the country with the largest increase of inequality perceptions while, at the same time, the Gini index and the unemployment rate have been declining over the period. In Latvia perceptions barely move while the Gini index is strongly increasing together with the unemployment rate. For the sake of completeness, in table A.1 we reproduce the specifications of table 2.a for equality perceptions in the extended sample including Italy and Latvia. The results are qualitatively very similar, except for the fact that the coefficients associated to the objective Gini index and the poverty headcount rate are no longer statistically significant.

Table A.1 - Equality perceptions, benchmark table including Italy and Latvia

Dep. var.: Equality perceptions (Gini index equivalent)	Whole sample including Italy and Latvia			
	(1)	(2)	(3)	(4)
Unemployment rate	0.279** (0.102) [0.06]*	0.371*** (0.093) [0.01]***	0.258** (0.111) [0.08]*	0.257** (0.112) [0.07]*
Gini index (per capita household income)	0.038 (0.113) [0.91]	0.132* (0.069) [0.08]*	0.051 (0.124) [0.83]	0.050 (0.125) [0.84]
Poverty headcount rate	0.008 (0.027) [0.70]	-0.020 (0.023) [0.45]	0.017 (0.032) [0.67]	0.018 (0.032) [0.67]
Govt. exp. in education	-1.007* (0.550) [0.11]	-1.567*** (0.529) [0.05]**	-1.013 (0.639) [0.28]	-1.000 (0.641) [0.28]
Intergenerational Elasticity of Education (country average)		-16.736** (7.071) [0.22]		
Intergenerational Elasticity of Education (own cohort, both genders)			-1.700 (1.008) [0.11]	
Intergenerational Elasticity of Education				-1.077

(own cohort, own gender)				(0.689)
				[0.17]
<u>Age: reference group, born after 1970</u>				
Born between 1946-1970	0.728*** (0.136) [0.01]***	0.715*** (0.138) [0.01]***	0.683*** (0.124) [0.01]***	0.681*** (0.126) [0.01]***
Born before 1946	0.921*** (0.206) [0.01]***	0.900*** (0.215) [0.01]***	0.908*** (0.218) [0.01]***	0.882*** (0.224) [0.01]***
Missing age	1.470** (0.571) [0.07]*	1.445** (0.672) [0.13]		
<u>Gender</u>				
Female	0.199** (0.077) [0.01]***	0.198** (0.080) [0.01]***	0.249** (0.090) [0.01]***	0.258** (0.092) [0.01]***
<u>Residence: reference group, urban residence</u>				
Rural residence	0.079 (0.129) [0.45]	0.067 (0.138) [0.57]	0.129 (0.129) [0.32]	0.130 (0.129) [0.31]
Missing residence	-0.690* (0.385) [0.10]*	-0.739* (0.400) [0.10]*	-0.580 (0.344) [0.01]***	-0.585 (0.345) [0.02]**
<u>Education: reference group, primary or lower secondary</u>				
Higher secondary	-0.779*** (0.154) [0.01]***	-0.777*** (0.157) [0.01]***	-0.842*** (0.146) [0.01]***	-0.836*** (0.145) [0.01]***
University	-1.768*** (0.225) [0.01]***	-1.764*** (0.215) [0.01]***	-1.905*** (0.202) [0.01]***	-1.898*** (0.204) [0.01]***
Missing education	-0.690* (0.385) [0.11]	-0.739* (0.400) [0.13]	-0.580 (0.344) [0.01]***	-0.585 (0.345) [0.01]***
<u>Employment status: reference group, out of labor force</u>				
Employed	0.452*** (0.103) [0.01]***	0.456*** (0.103) [0.01]***	0.412*** (0.104) [0.01]***	0.419*** (0.105) [0.01]***
Unemployed	0.843*** (0.198) [0.01]***	0.832*** (0.196) [0.01]***	0.822*** (0.196) [0.01]***	0.831*** (0.197) [0.02]**
Missing employment status	0.502 (0.586) [0.66]	0.489 (0.593) [0.64]	0.356 (0.693) [0.63]	0.368 (0.696) [0.63]
<u>Income group: reference group, lowest income group.</u>				
2nd income group	-0.393*** (0.117) [0.02]**	-0.395*** (0.106) [0.02]**	-0.496*** (0.133) [0.01]***	-0.495*** (0.133) [0.01]***
3rd income group	-0.512*** (0.127) [0.02]**	-0.500*** (0.128) [0.01]***	-0.623*** (0.153) [0.01]***	-0.625*** (0.153) [0.01]***
4th income group	-0.971*** (0.140) [0.01]***	-0.990*** (0.133) [0.01]***	-1.076*** (0.136) [0.01]***	-1.079*** (0.136) [0.01]***
Highest income group	-1.635*** (0.254) [0.01]***	-1.642*** (0.250) [0.01]***	-1.718*** (0.236) [0.01]***	-1.721*** (0.237) [0.01]***
Missing income group	-0.418** (0.160) [0.09]*	-0.415** (0.153) [0.08]*	-0.571*** (0.148) [0.01]***	-0.574*** (0.149) [0.01]***

Observations	49832	49832	39351	39351
R^2	0.236	0.237	0.247	0.247

Notes: OLS regressions where the dependent variable is a categorical variable that ranges from 1-4; it equals 1 for answering the society is type A (very unequal) to 4 for type D (country is very equal). Restricted sample corresponds to all country-year observations with information on government social protection expenditures. Country and year dummies included in all regressions but not reported. Clustered standard errors at the country level in parentheses. Wild bootstrap country level clustered p-values in brackets. Significance: * p<0.10, ** p<0.05, *** p<0.01.

Another possible source of bias is the presence of countries with limited variation driven by the fact that they are present in the sample only in one year. In Table A.2 we present the results of the same benchmark regression (Table 2a in the main text) but this time excluding countries with only one year observations. Because their time variation is not used to identify the correlations when these countries are included in the sample, the results are thus very similar.

Table A.2: Equality perception, benchmark specification, excluding countries with one year only.

	(1)	(2)
Dep. var.: Equality perception (categorical variable)	Excluding countries with one year obs	Benchmark specification
Unemployment rate	0.248*** (0.064) [0.01]***	0.248*** (0.064) [0.01]***
Gini index	0.171*** (0.044) [0.01]***	0.170*** (0.044) [0.01]***
Poverty headcount rate	0.026* (0.013) [0.02]**	0.026* (0.013) [0.05]**
Govt. exp. in education	-0.639** (0.295) [0.03]***	-0.650** (0.294) [0.03]**
Observations	39143	46894
R^2	0.254	0.244

Notes: same dependent variable and estimation method as in Table 2. Clustered standard errors at the country level in parentheses. Wild bootstrap country level clustered p-values in brackets. Significance: * p<0.10, ** p<0.05, *** p<0.01.

Table A.3 - Equality perceptions (Categorical variable), benchmark table

Dep. var.: Equality perceptions (Categorical variable)	Whole sample			
	(1)	(2)	(3)	(4)
Unemployment rate	-0.034*** (0.009) [0.01]***	-0.036** (0.013) [0.01]***	-0.031*** (0.009) [0.01]***	-0.030*** (0.009) [0.01]***
Gini index (per capita household income)	-0.021*** (0.006) [0.01]***	-0.022*** (0.006) [0.01]***	-0.025*** (0.007) [0.01]***	-0.025*** (0.007) [0.01]***
Poverty headcount rate	-0.004** (0.002) [0.05]**	-0.003 (0.004) [0.45]	-0.005** (0.002) [0.01]***	-0.005** (0.002) [0.01]***
Govt. exp. in education	0.094** (0.041) [0.03]**	0.112 (0.079) [0.25]	0.088* (0.045) [0.08]*	0.087* (0.045) [0.09]*
Intergenerational Elasticity of Education (country average)		0.398 (1.236) [0.81]		
Intergenerational Elasticity of Education (own cohort, both genders)			0.130 (0.120) [0.26]	
Intergenerational Elasticity of Education (own cohort, own gender)				0.068 (0.082) [0.37]
Age: reference group, born after 1970				
Born between 1946-1970	-0.107*** (0.021) [0.01]***	-0.107*** (0.021) [0.01]***	-0.101*** (0.020) [0.01]***	-0.101*** (0.020) [0.01]***
Born before 1946	-0.142*** (0.030) [0.01]***	-0.142*** (0.030) [0.01]***	-0.148*** (0.031) [0.01]***	-0.146*** (0.031) [0.01]***
Missing age	-0.227*** (0.071) [0.02]**	-0.229*** (0.070) [0.02]**		
Gender				
Female	-0.034** (0.012) [0.02]**	-0.034** (0.012) [0.03]**	-0.041*** (0.014) [0.02]**	-0.042*** (0.014) [0.01]***
Residence: reference group, urban residence				
Rural residence	0.002 (0.020) [0.79]	0.001 (0.019) [0.80]	-0.002 (0.018) [0.92]	-0.002 (0.018) [0.92]
Missing residence	0.120** (0.051) [0.10]*	0.120** (0.052) [0.10]*	0.099** (0.046) [0.01]***	0.100** (0.046) [0.02]**
Education: reference group, primary or lower secondary				
Higher secondary	0.120*** (0.023) [0.01]***	0.119*** (0.023) [0.01]***	0.131*** (0.022) [0.01]***	0.131*** (0.021) [0.01]***
University	0.278*** (0.030) [0.01]***	0.278*** (0.030) [0.01]***	0.299*** (0.027) [0.01]***	0.299*** (0.027) [0.01]***
Missing education	0.092* (0.047) [0.11]	0.095* (0.049) [0.13]	0.157*** (0.041) [0.01]***	0.157*** (0.041) [0.01]***
Employment status: reference group, out of labor force				
Employed	-0.065***	-0.065***	-0.060***	-0.061***

	(0.016)	(0.016)	(0.016)	(0.016)
	[0.01]***	[0.01]***	[0.01]***	[0.01]***
Unemployed	-0.130***	-0.130***	-0.126***	-0.127***
	(0.029)	(0.029)	(0.030)	(0.031)
	[0.01]***	[0.01]***	[0.01]***	[0.02]**
Missing employment status	-0.071	-0.072	-0.061	-0.062
	(0.081)	(0.082)	(0.099)	(0.099)
	[0.66]	[0.64]	[0.63]	[0.63]
Income group: reference group, lowest income group.				
2nd income group	0.047***	0.048**	0.061***	0.061***
	(0.016)	(0.016)	(0.018)	(0.018)
	[0.02]**	[0.02]**	[0.01]***	[0.01]***
3rd income group	0.071***	0.070***	0.087***	0.087***
	(0.020)	(0.020)	(0.023)	(0.023)
	[0.02]**	[0.01]***	[0.01]***	[0.01]***
4th income group	0.136***	0.137***	0.152***	0.152***
	(0.020)	(0.021)	(0.018)	(0.019)
	[0.01]***	[0.01]***	[0.01]***	[0.01]***
Highest income group	0.223***	0.224***	0.236***	0.236***
	(0.037)	(0.037)	(0.034)	(0.034)
	[0.01]***	[0.01]***	[0.01]***	[0.01]***
Missing income group	0.050*	0.050*	0.073***	0.074***
	(0.025)	(0.024)	(0.023)	(0.023)
	[0.09]*	[0.08]*	[0.01]***	[0.01]***
Observations	46894	46894	36973	36973
R ²	0.244	0.244	0.255	0.255

Notes: OLS regressions where the dependent variable is a categorical variable that ranges from 1-4; it equals 1 for answering the society is type A (very unequal) to 4 for type D (country is very equal). Restricted sample corresponds to all country-year observations with information on government social protection expenditures. Country and year dummies included in all regressions but not reported. Clustered standard errors at the country level in parentheses. Wild bootstrap country level clustered p-values in brackets. Significance: * p<0.10, ** p<0.05, *** p<0.01.