Changes in Perception of Inequality and Demand for Redistribution

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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 (ISSP) survey on social inequality we focus on explaining individuals' formation of perceptions using *objective* variables and we then study the relationship between individuals' perceptions of equality and their demand for redistribution. We find that objective macro variables are associated to individual perceptions, and that individual circumstances like age, educational attainment, and employment status play also a role. Perceptions of equality, in turn, are significatively 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 don't have a direct effect.

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1. Introduction

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, which 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, and tend to characterize subjective assessment of inequality as individuals' *mis*perceptions 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 also systematically correlate with other context as well as individual variables. We show that individual's 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 individual's own views of what constitute a fair society, i.e their ideology. We argue that perceptions, which are key determinants of demand for redistribution, are formed in a much more complex way that 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 in education. 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 motive and political ideology.

2. Perceptions of inequality and demand for redistribution: a conceptual framework

2.1 Demand for redistribution

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 in 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.

Meltzer and Richards (1981) is one of the first papers[1] 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 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.[2] 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 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 variable 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. 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

[1] Actually Meltzer and Richards (1981) work is related to the earlier paper by Romer (1975).
[2] This framework organizing the various contributions of this literature is due to the excellent review of Alesina and Giuliano (2011).

heterogeneous population groups (Alesina and Glaeser, 2004 [fighting poverty in the US and Europe] and Luttmer, 2001 [group loyalty and the taste for redistribution, journal of polit. econ.]).

The main idea behind all these approaches – that higher inequality, via self-interest or ideology, is associated with greater demand for redistribution of income – is persuasive[3], but faces two problems. Empirically, especially in the case of the basic Meltzer and Richards model, it has received limited support.[4] 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 of inequality. This would not be relevant if subjective and objective inequality were the same or, at least, almost fully aligned. However, some recent evidence (Gimpelson and Tresiman 2018, EBRD 2015-17, Cancho, Cesar A., Davalos, Maria Eugenia, Sanchez-Paramo, Carolina, 2015, Cancho, Cesar; Davalos, Maria E.; Demarchi, Giorgia; Meyer, Moritz; Sanchez Paramo, Carolina. 2015) 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 (beyond 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 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.

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[3] It should be noted that there is a strand of the literature that does not subscribe to this idea. Studies in this strand (Gartner and Prado, 2016 [social science history]; Espuelas, 2015; Moffitt, 1998; Esping-Andersen and Myles, 2009; Lindert 2004) 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).

[4] See Alesina and Giuliano (2011) and reference therein as well as Costa-Font and Cowell (2015). Milanovic (2018) has 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.

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) and have argued that this correlated with their own position within the income distribution (Cruces et al 2013; Fernandez-Albertos & Kuo 2015; Karadja et al.2017). In contrast with the dismissal of perceptions to explain preferences for redistribution, expectations have played an important role. 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 are therefore an important determinant of their demand for redistribution. In contrast with the basic Meltzer Richard model, the Prospects of Upward Mobility (POUM) hypothesis has found quite a bit of empirical support (Cojaracu et al., 2008). These papers use subjective expectations, as reported by opinion surveys, rather than using the objective mobility in each country[5].

In this paper we use subjective perceptions of inequality, and by explicitly modelling 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.[6]

2.2 Determinants of demand for redistribution

Political scientists have shown that public opinion has a major influence on many public policy decisions[7] and, in particular, public views of the economic situation tend to have a 'pivotal rote' in determining the outcome of elections.[8] 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

[5] 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).

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

[7] Two often cited studies are Page and Shapiro (1983) and Monroe (1979). See also Slemrod (2006) [national tax journal], Blendon et al (1997) [journal of economic perspectives] and many of the additional studies referred in these papers.

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

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 dynamic process where some fixed factors, such as ideology, and varying ones, such as exposure to new information, balance each other.[9]

In our case we want to model public opinion about the need of government redistributive intervention, 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 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. A basic equation can be written as follows:

$$DemRed_i = f(SI_i, ID_i, EqPerc_i , X_i) + e_{1i} \quad (1)$$

Where SI is the degree of self-interest, 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, employment situation income and education levels. These last two individual variables 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 is, we assume that individuals' ideology, the degree of self-interest and perceptions can be correlated with X but not with e_{1i}. In other words, we assume that we are able to observe and control for all those individual

[9] In Zaller's words: "dominant and countervalent 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)

characteristics that might jointly determine ideology, self-interest and perceptions. This is a strong assumption that we will discuss in more detail later.

In addition, 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 assume that inequality perceptions depend, as in Zaller's model, on ideology, notably concepts of fairness (social mobility) or left to right political views. Finally, we assume that perceptions of inequality relate also to other personal characteristics, such as employment or gender. We write the equation as:

$$EqPerc_i = g(EC, ID_i, X_i) + e_{2i} \quad (2)$$

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

In sum and starting from the bottom, the model above 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 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, e1i and e2i will be correlated. Similarly, we expect that the e_{1i} might be correlated with equality perceptions, generating issues of classical endogeneity.

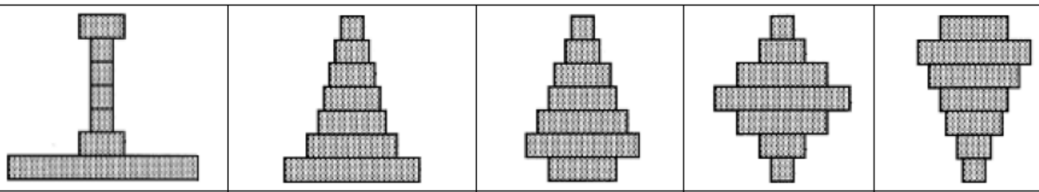
3. Data description

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 1000 and 2000. 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 datasets, 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.

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

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 (2017), 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 chose Type A, while those believing that their countries are quite equal (or not polarized) would chose 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[10]. Fortunately, very few respondents chose that option.

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 (2017).[11]

The paper uses individual ISSP data for 21 countries[12] for the years 1987, 1992, 1999, and 2009. These are: Australia, Austria, Bulgaria, Canada*, Chile, Czech Republic*, France, Germany, Great Britain, Hungary, Japan, Norway, Poland*, Portugal, Russia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, and USA[13]. In addition, not all 21 countries have information for all the three years. The robustness analysis section describes whether excluding from the regression those countries that are only observed once (i.e. only in one of the three available waves) affects the 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 agree (assigned value 1) to strongly disagree (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 2.3, which means that, on average, individuals tend to agree with this statement. A lower 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 three different variables. The first of them, available only for a subset of respondents, corresponds to the political placement in a left-

[10] In terms of the calculations, the Gini for type E is of 0.21.
[11] Note that the cardinal order is not the same in both variables. In the categorical version (i) higher values imply more equality, whilst in the associated Gini index version (ii) higher values imply more inequality.
[12] 5 countries are excluded from the sample. See appendix X for details on this.
[13] Countries marked with an asterisk are not included in all specifications.

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 two additional variables deriving from Question 12 of the Social Inequality module of ISSP which are 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 two factors: what is needed to support a family and how well the individual does the job. The first factor captures the respondent's belief about wages having to be driven by circumstances outside the job itself -a belief more in line with individuals who position themselves in the left of the political spectrum- and the second captures the respondent's meritocratic beliefs -the idea that wages should only be related to job performance, a belief more in line with individuals who position themselves in the right of the political spectrum[14].

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" dataset of Milanovic (2018) (ii) data on unemployment rate and government expenditures is 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 dataset.

Table 1 shows the descriptive statistics of all the variables used in the empirical part of the paper.

[14] The unconditional correlations between the left-right ideology and both beliefs, whilst small in magnitude, have the expected signs: the correlation between the political ideology variable and the importance attached to supporting a family in determining wages is -0.09 (the more to the right, the smaller the importance) and the correlation between political ideology and the importance attached to how well the work is done is 0.06 (the more to the right, the bigger the importance).

Table 1 – Descriptive statistics

	Average	Std.Dev	Min	Max	Obs
Main variables of interest					
Demand for redistribution (categorical)	2.260	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
Self-interest					
Income group defined by country					
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
Education					
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
Ideology and beliefs					
Political ideology (categorical): far-left (1) to far-right (5)	2.868	0.999	1	5	26,846
Wages need to take into account what is needed to support a family (categorical): 1 (not important) to 5 (essential)	3.356	1.078	1	5	45,528
Wages need to take into account how well the job is done (categorical): 1 (not important) to 5 (essential)	3.993	0.803	1	5	46,102
Economic Context					
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 (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
Controls					
Age information					
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
Gender					
Individual is a female	0.523	0.499	0	1	46,894
Residence type					
Rural residence	0.296	0.457	0	1	46,894
Missing residence information	0.048	0.214	0	1	46,894
Employment status					
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

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 3 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 3.a), somewhat in line with the actual evolution of income inequality in that region (see Figure 2). Nevertheless, the percentage of individuals who believe to be livening in an unequal country, is larger than those who think they live in a more equal country. In contrast, perceptions of equality worsen in the 2000s in the rest of Europe, except for Scandinavian countries, whilst actual income inequality was relatively stable during the same period. In the US, equality perceptions deteriorated from 1999 to 2009, in pace with the actual evolution of the Gini coefficient in that country.

Figure 3.a – Perceptions of equality in Europe

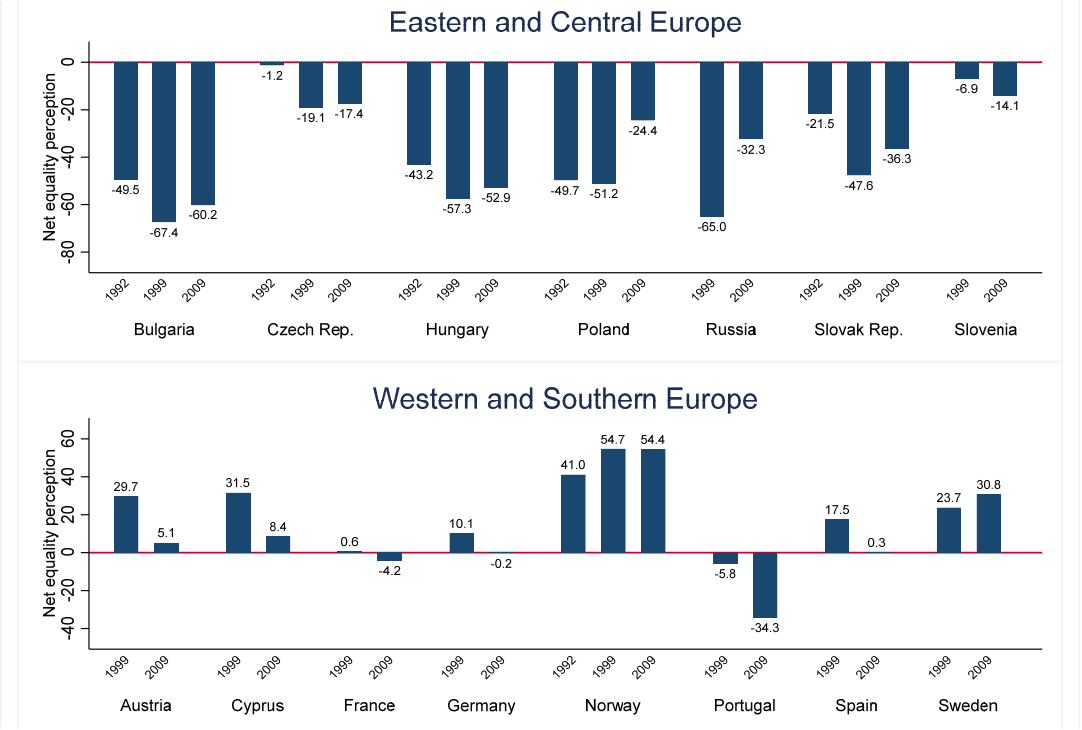
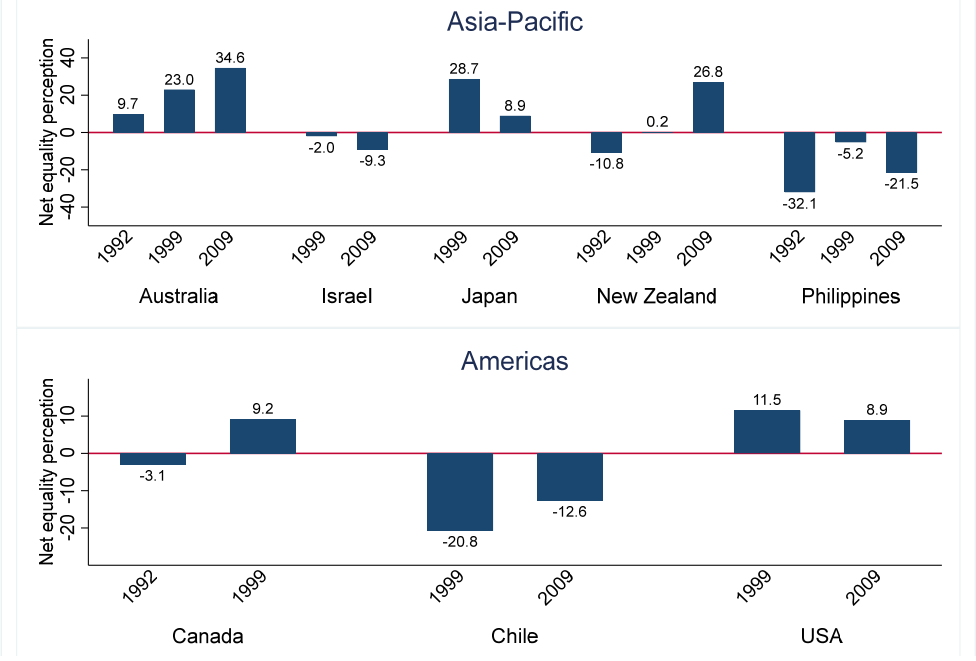


Figure 3.b – Perceptions of equality in other regions



Source: own elaboration based on ISSP Social Inequality dataset.
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.

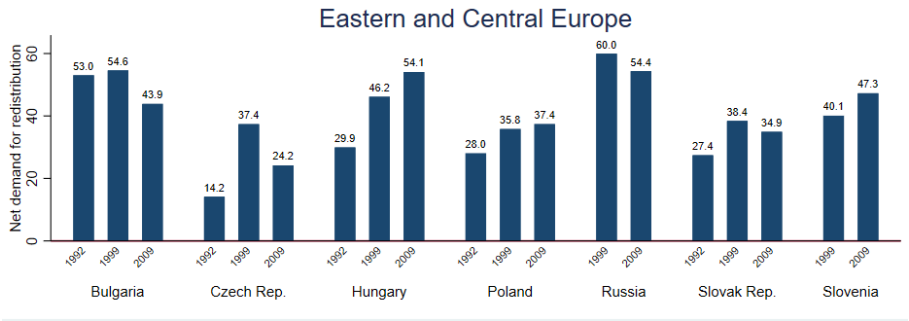
Three messages can be highlighted from these simple descriptive graphs. First, in terms of levels, perceptions differ considerably in transition countries, where a majority of people reports inequality being high, vis-à-vis other countries. This is perhaps not surprising as previous studies have drawn attention to the importance of life (past) experiences in shaping opinions. Alesina, A., & Fuchs-Schundeln, N. (2007) [Good-Bye Lenin (or Not?): The Effect of Communism on People's Preferences. American Economic Review, 97(4), 1507–1528.] specifically mention the role of Communism in influencing people's attitudes, beliefs and political preferences; similarly, Giuliano, P., & Spilimbergo, A. (2013) [Growing up in a recession. Review of Economic Studies, 81(2), 787–817] emphasize the long-term impact of the historical macroeconomic environment on beliefs and policy preferences. 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.[15] 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 4 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 US citizens well documented in the literature. Within Europe, Eastern European countries show a higher demand than most Western and Southern countries. Over time, demand from 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).

[15] Note that we do not use panel data, so the shift in share may simple 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 4.a – Demand for redistribution in Europe



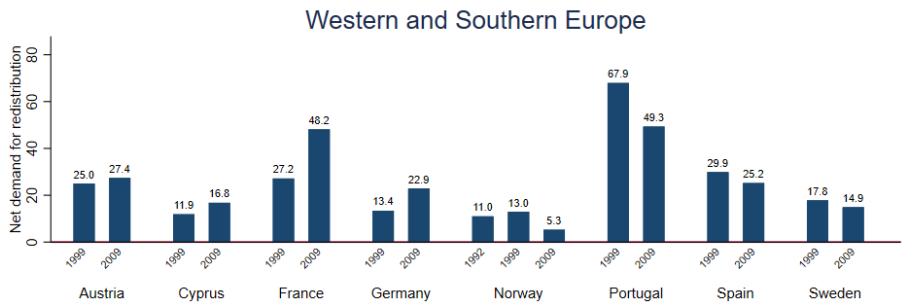
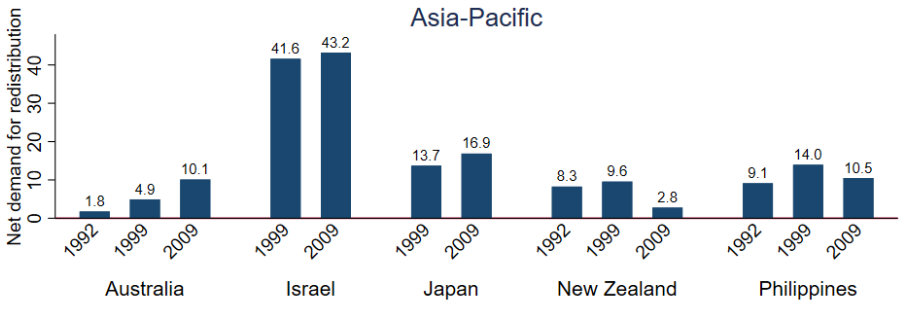
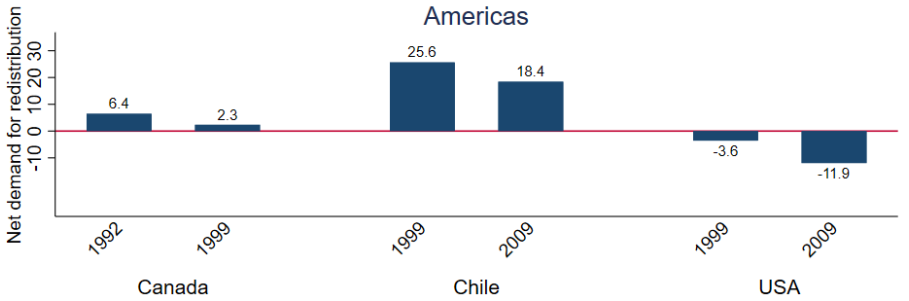


Figure 4.b – Demand for redistribution in other regions



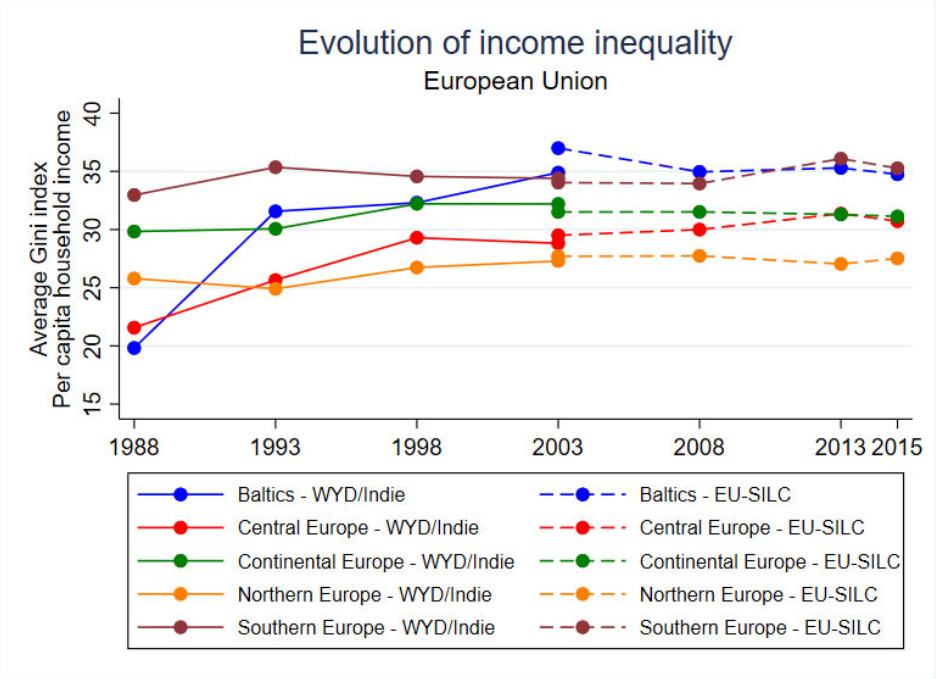


Source: own elaboration based on ISSP Social Inequality dataset.
Note: Net demand for redistribution is equal to the percentage of people strongly agreeing with the statement "it is the responsibility of the government to reduce income differences between people with high incomes and those with low incomes" 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 since the end of the 1980s. Figure 2 shows the evolution of the Gini indicator for different sub-regions of Europe, and it is evident that there has been a strong increase, particularly right after the fall of the Berlin Wall, although in recent years inequality has been more stable.

Figure 2

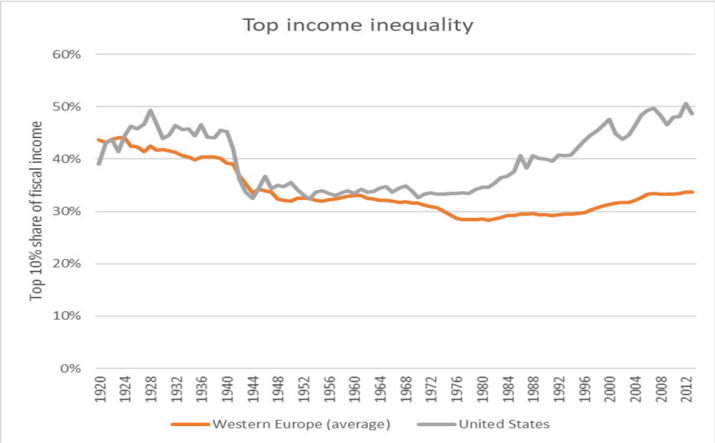


Source: Bussolo et al. (2018)

Note: countries included in Central Europe are BG, CZ, HR, HU, PL, RO, SI, SK; countries included in Northern Europe are DK, FI, GB, IE, NO, SE; countries included in Baltics are EE, LT, LV; countries included in Continental Europe are AT, BE, CH, DE, FR, NL; countries included in Southern Europe are CY, ES, GR, IT, MT, PT. For the period 1988-1998 data coming from a combination of the WYD and Indie databases is used. For this same set of countries in the period 2003-2015 estimates from the EU-SILC survey are used.

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 at the hands of the top 10% decreased considerable from 1930 to 1970, both in Europe and US, but it increased strongly in the US after 1970 and to a less extend in Europe after 1980 (see Figure 1). 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 1

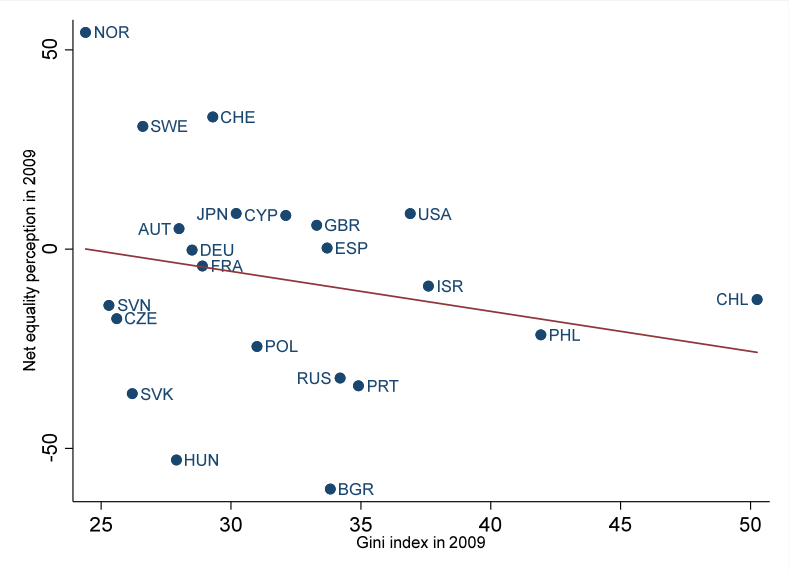


Source: own elaboration based on World Inequality Database (https://wid.world/data/). Note: Depicted is the share of total fiscal (pre-tax) income accruing to the top 10% tax units. Western Europe corresponds to the 3-year moving average values for Denmark, France, Germany, Netherlands, Sweden, Switzerland 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 5 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.

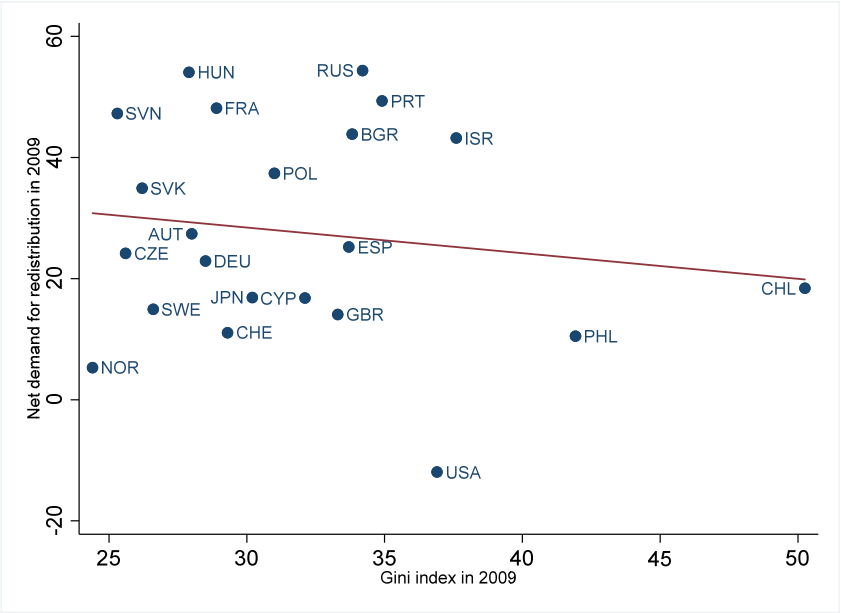
Figure 5 – Perceptions of equality and Gini index, 2009



Source: own elaboration based on ISSP Social Inequality dataset; 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 6). 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 it 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.

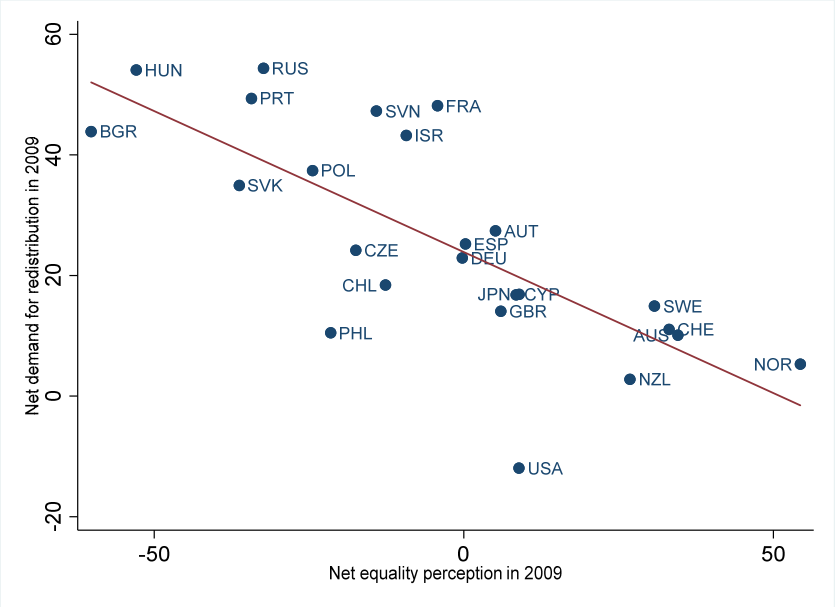
Figure 6 – Demand for redistribution and Gini index, 2009



Source: own elaboration based on ISSP Social Inequality dataset; 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 7, 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.

Figure 7 – Demand for redistribution and perceptions of equality, 2009

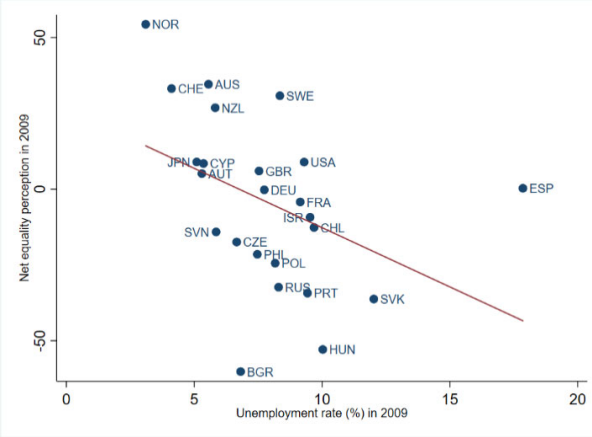


Source: own elaboration based on ISSP Social Inequality dataset.
Note: Net demand for redistribution is equal to the percentage of people strongly agreeing with the statement "it is the responsibility of the government to reduce income differences between people with high incomes and those with low incomes" 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.

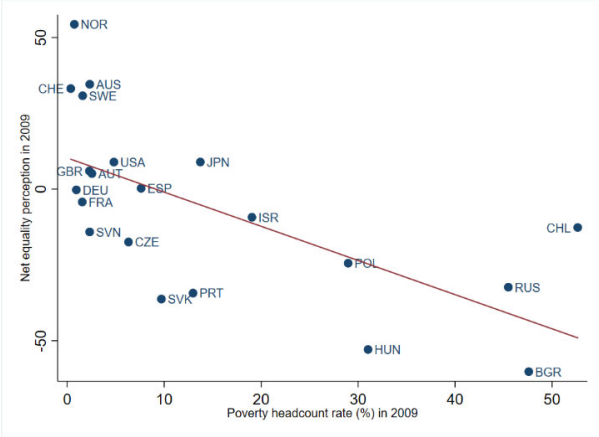
The fact that demand for redistribution -which eventually feeds into each country's political process- appears to be closely associated to perceptions of equality underlines the relevance that a theory on the formation of perceptions has. As a prior, we analyze in the four panels of Figure 8 the correlation 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.

Figure 8 – Correlation between perceptions of equality and other country level variables

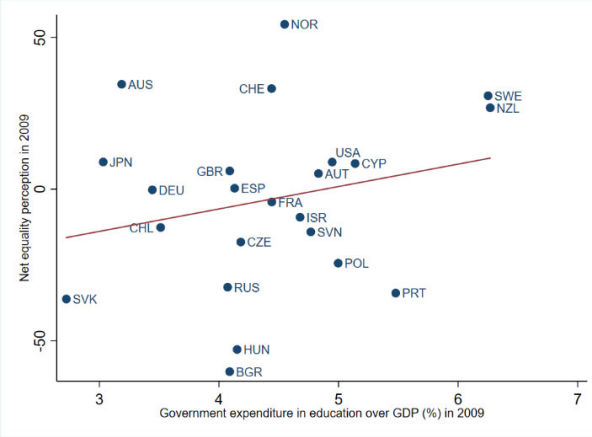
Panel a. – Unemployment rate



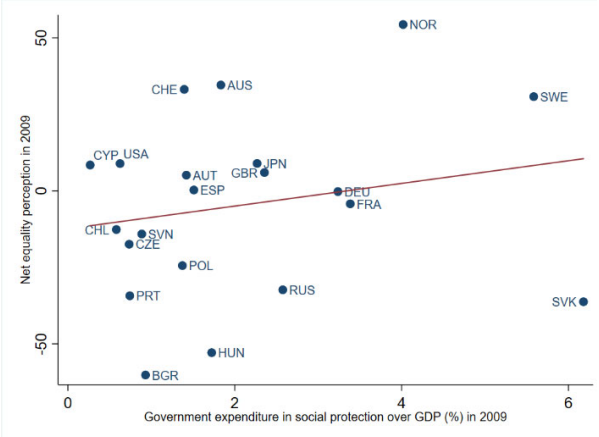
Panel b. – Poverty headcount rate



Panel c. – Government expenditure in education



Panel d. – Government expenditure in social prot.



Source: own elaboration based on ISSP Social Inequality dataset and World Development Indicators (World Bank)
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. Poverty headcount rate is estimated as the percentage of individuals falling below the poverty line of USD 10 at PPP (2005).

Perceptions of equality correlate particularly well with the poverty headcount rate (the R^2 of a linear fit is about 0.42) and somewhat with unemployment rate (linear fit R^2 of 0.17), but not so well with government expenditure in education (linear fit R^2 of 0.05) nor with government expenditure in social protection (linear fit R^2 of 0.04). In any case, it interesting to point out that from a cross-country point of view, poverty and unemployment rates seem to explain more of the variation in perceptions of equality than then Gini index of income inequality.

In the next section of the paper we go beyond these stylized facts into a more detailed empirical analysis in which we include not only country level variables but also individual characteristics. Our

approach 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

Before describing the results, a brief presentation and discussion of the exact empirical specification of the model presented in section 2 is shown here. The formation of perception equation is as follows:

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

[Ideology] [Economic Context] [individual charact.] [FE time country]

where $EqPer_{itr}$ 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. 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 (2017). The regression includes a set of country economy wide 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 amongst 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 poverty (P) and unemployment rate (UR), as well as measures of government expenditures (Exp). In relation to the latter ones, we use two measures that individuals might perceive to correlate with current and future inequalities: education and social protection expenditures. Government expenditure in education might be perceived as investment in equal opportunities that in turn generate future equality in outcomes; expenditures in social protection, which are designed to mitigate inequalities, might relate to perceptions on current inequality.

Besides these economic context variables, specification (2b) includes: and a set of individual characteristics ($X_{i,t,r}$) that can shape their perception of equality. The regression also 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 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.

The other part of the model aims at understanding what drives demand for redistribution. The focus in 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:

$$DemRed_{i,t,r} = \alpha_2 + \gamma_1 EqPerc_{i,t,r} + \gamma_2 ID_{i,t,r} + \gamma_3 Y_{i,t,r} + \gamma_4 Edu_{i,t,r} + \sum_{j=5}^{J} \gamma_j X_{i,t,r} + \delta_t + \mu_r + \omega_{i,t,r} \quad (1b)$$

[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 shape 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 reduces a part of this bias.

5.1 Explaining perceptions of (in)equality

We start with regressing equation (2b) in which we explain equality perceptions for the 21 countries in our sample, years 1987, 1992, 1999, and 2009. Table 2 presents the results of a preliminary analysis which excludes the role of ideology and uses the Gini equivalent of our perceptions variable. The same analysis using the categorical version is presented in Annex Table A.4. Tables 3, 4 and 5 look more in detail at the role of ideology. These regressions show how individuals' perceptions of their country's income distribution depends on country level variables, on their ideology, and on other individual characteristics.

The first 4 columns of Tables 2 present different specifications all of which include three main macroeconomic variables at the country level: the unemployment rate, the poverty headcount rate and the Gini index of income inequality. In specification (2) we include government expenditure in social

protection, and in specifications (3) and (5) we include government expenditures in education. Specifications (1) and (4) exclude these expenditure measures and are the first ones to look at when understanding the correlation of macroeconomic variables with individuals' perceptions. The sign of the correlations is as expected. The higher the unemployment rate, the more unequal society is perceived; similarly for the poverty head count rate and for the actual Gini index. This is not surprising given the cross-country correlations found before. Moreover, poverty and unemployment are often reported by politicians and in the media and are easy to understand. The fact that an abstract measure such as the Gini index is correlated may reflect that such index does capture some degree of inequality which is observed by individuals. Whilst statistical significance is lower in the restricted sample, in the full sample the coefficients are all statistically significant. Government social protection expenditures (specification 2) have the expected sign and its introduction reduces the significance of the other variables as well as the magnitude of its coefficients, and even turns around the sign (although very imprecisely estimated) of the coefficient associated to the unemployment rate. This might imply that in those countries where social expenditures compensate and mitigate market income inequalities, the importance of the economic cycle (poverty, unemployment, and to some extent the Gini index) is less relevant. In addition, social protection expenditures also correlate with the economic cycle, as they increase with poverty, unemployment rate, and inequality. To avoid endogeneity issues, in our preferred specification we will thus exclude social protection expenditures. Government expenditures in education, however, are not necessarily correlated with current inequality, but rather with future income inequalities to the extent that education expenditures might increase equal opportunities. When introduced into the regression (specifications 4 and 5), government expenditures in education have the expected sign -more government expenditure is translated into perceptions of more equality- and is statistically significant.

The results of Table 2 show that specification (5) is thus our preferred specification, which we will refer as the benchmark specification for tables 3-5: we include as country level regressors the unemployment rate, the poverty headcount rate, the Gini index of income inequality and government expenditures in education. The R^2 of all five regressions ranges from 0.23 to 0.26, which means that we are able to explain about 25% of the variance of individuals' equality perceptions by using objective observable variables only. This is a fairly large percentage.

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

	Restricted sample			Full sample	
Dep. var.: Equality perceptions (Gini index equivalent)	(1)	(2)	(3)	(4)	(5)
Unemployment rate	0.027	-0.087	0.101	0.185**	0.248***
	(0.066)	(0.083)	(0.073)	(0.068)	(0.064)
	[0.64]	*[0.35]*	*[0.22]*	*[0.04]***	*[0.00]****
Gini index (per capita household income)	0.235	0.125	0.217	0.182***	0.170***
	(0.143)	(0.172)	(0.141)	(0.062)	(0.044)
	[0.24]	*[0.69]*	*[0.28]*	*[0.00]****	*[0.00]****
Poverty headcount rate	0.105***	0.152***	0.083**	0.051***	0.026*
	(0.033)	(0.029)	(0.035)	(0.007)	(0.013)
	*[0.05]***	*[0.00]****	*[0.18]*	*[0.00]****	*[0.05]***
Govt. exp. in social protection		-1.181***			
		(0.243)			
		*[0.01]****			
Govt. exp. in education			-0.877*		-0.650**
			(0.444)		(0.294)
			[0.24]		*[0.05]***
Age: reference group, born after 1970					
Born between 1946-1970	0.704***	0.714***	0.702***	0.744***	0.741***
	(0.150)	(0.148)	(0.148)	(0.146)	(0.145)
	*[0.00]****	*[0.00]****	*[0.00]****	*[0.00]****	*[0.00]****
Born before 1946	0.858***	0.893***	0.859***	0.989***	0.990***
	(0.216)	(0.221)	(0.216)	(0.209)	(0.209)
	*[0.00]****	*[0.00]****	*[0.00]****	*[0.00]****	*[0.00]****
Missing age	0.933	0.945	0.910	1.667***	1.698***
	(0.751)	(0.746)	(0.755)	(0.474)	(0.484)
	[0.30]	*[0.30]*	*[0.31]*	*[0.01]****	*[0.01]****
Gender					
Female	0.154*	0.158*	0.152*	0.203**	0.202**
	(0.077)	(0.076)	(0.077)	(0.081)	(0.082)
	*[0.10]**	*[0.09]**	*[0.10]**	*[0.02]***	*[0.02]***
Residence: reference group, urban residence					
Rural residence	-0.099	-0.109	-0.106	-0.006	0.001
	(0.153)	(0.150)	(0.155)	(0.131)	(0.132)
	[0.53]	*[0.48]*	*[0.54]*	*[0.870]*	*[1.00]*
Missing residence	-0.460	-0.236	-0.508	-0.755**	-0.805**
	(0.342)	(0.284)	(0.335)	(0.345)	(0.360)
	[0.23]	*[0.47]*	*[0.23]*	*[0.10]**	*[0.12]*
Education: reference group, primary or lower secondary					
Higher secondary	-0.865***	-0.878***	-0.865***	-0.824***	-0.821***
	(0.192)	(0.186)	(0.190)	(0.165)	(0.164)
	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****
University	-1.953***	-1.920***	-1.922***	-1.905***	-1.882***
	(0.215)	(0.216)	(0.219)	(0.216)	(0.218)
	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****
Missing education	-0.930***	-0.837***	-0.829**	-0.790**	-0.729**
	(0.309)	(0.281)	(0.303)	(0.327)	(0.317)
	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****	*[0.06]**
Employment status: reference group, out of labor force					
Employed	0.500***	0.524***	0.505***	0.480***	0.482***
	(0.124)	(0.124)	(0.125)	(0.109)	(0.110)
	*[0.00]****	*[0.00]****	*[0.00]****	*[0.00]****	*[0.00]****
Unemployed	1.017***	1.020***	1.023***	0.892***	0.899***
	(0.211)	(0.208)	(0.211)	(0.200)	(0.199)
	*[0.00]****	*[0.00]****	*[0.00]****	*[0.00]****	*[0.00]****
Missing employment status	0.382	0.384	0.410	0.368	0.388
	(0.619)	(0.615)	(0.595)	(0.594)	(0.579)

	[0.71]	*[0.72]*	*[0.70]*	*[0.75]*	*[0.74]*
Income group: reference group, lowest income group.					
2nd income group	-0.340***	-0.340***	-0.369***	-0.308**	-0.327***
	(0.098)	(0.104)	(0.099)	(0.116)	(0.113)
	*[0.01]****	*[0.01]****	*[0.01]****	*[0.04]***	*[0.02]***
3rd income group	-0.526***	-0.530***	-0.535***	-0.507***	-0.509***
	(0.145)	(0.146)	(0.144)	(0.135)	(0.136)
	*[0.03]***	*[0.03]***	*[0.03]***	*[0.02]***	*[0.02]***
4th income group	-0.947***	-0.935***	-0.974***	-0.947***	-0.964***
	(0.155)	(0.163)	(0.148)	(0.146)	(0.143)
	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****
Highest income group	-1.651***	-1.667***	-1.677***	-1.554***	-1.569***
	(0.246)	(0.245)	(0.238)	(0.259)	(0.259)
	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****
Missing income group	-0.368*	-0.408**	-0.390**	-0.340*	-0.357**
	(0.177)	(0.175)	(0.171)	(0.167)	(0.164)
	[0.12]	*[0.08]**	*[0.10]**	*[0.10]**	*[0.08]**
Observations	41182	41182	41182	46894	46894
R^2	0.236	0.237	0.236	0.234	0.234

Notes: OLS regressions where the dependent variable is the perceptions of equality expressed in Gini index equivalent (minimum value 20, maximum value 42). 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.

We now move to discuss the economic significance of our results, using specification (5), which pools all individuals together irrespective of their ideology or beliefs. As expected, 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, whilst in Sweden it was a decrease in 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 in the unemployment rate. In this sense, 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 in 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 objectively by the Gini index) but also on other contextual, macro variables.

Many of the individual characteristics included in the regressions in Tables 2 and 3 show precisely estimated coefficients, indicating the importance of many of these variables have in shaping perceptions. The coefficients are consistent across the two different dependent variables (Table 2 and 3), although they show different magnitude. Everything else constant, being older correlates negatively with equality perceptions. For example, the coefficient of being born before 1946 versus being born after 1970 (0.990 Gini points) is 20% larger that the point estimate of one standard deviation change in the unemployment rate (0.82 Gini points), but larger than the one standard deviation change associated to an increase in the poverty headcount rate or the objective Gini index. This means that older individuals, everything else equal, perceive their country as more unequal. Being a female also correlates with lower perceptions of equality, but the effect is about 1/3 to 1/4 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). Having university education instead has a larger impact on perceptions than age or gender; the effect is smaller for those individuals with higher secondary education. Individuals with up to secondary education (the reference group and the lower education category) report, everything else equal, a higher inequality perception than the rest. 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 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 as the one of having university education. 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 tables 3, 4 and 5. 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.

The most direct measure of political ideology -the position of the respondent in a left-right ideological axis- is used in table 3. For comparison, column 1 presents the benchmark specification excluding ideology and in column 2 political ideology is included additively in the regression. In this last specification, As mentioned before, this variable is available only for a subset of individuals – 57% of the original sample – and number of observations is one of the main differences between columns 1 and 2. Political ideology, if included additively, has a significative association with perceptions of inequality. In particular, the more to the right, the lower the perceived Gini index. 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 to 5 we run the same specification as in column 1 but in different subsamples according to individuals' ideology. Column 3 pools all individuals on the left of the political spectrum, column 4 pools all those in the center and column 5 pools all those in the right. For individuals on the left, we find that higher unemployment and lower government expenditure in education associated with a greater perceived Gini index, but strikingly we find that higher poverty rate is associated with *lower* perceived Gini index, i.e. a more equal society. This correlation is not found for the two other ideological groups. Those in the center (column 4) seem to associate higher poverty rates and higher actual inequality with higher perceived inequality -with no role for unemployment rates or government expenditure in education-, whilst for those to the right there is only a statistically significant correlation of unemployment rates and actual income inequality with perceived inequality. 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. Those to the left seem to put a higher relevance to government expenditure than those to the right, whilst actual income inequality seems to be more relevant to those on the right.

With respect to individual characteristics, the main differences across ideological groups are found when looking at age -there is no correlation between age and perceptions for those on the right-, gender -the positive correlation between being female and perceiving higher inequality seems to be driven mostly by women in the center of the political spectrum- and employment -employment status plays no role in the formation of perceptions of those on the right.

Table 3 - Equality perceptions (Gini index equivalent) and political ideology

Dep. var.: Equality 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	0.248***	0.312***	0.286**	0.128	0.313**
	(0.064)	(0.090)	(0.115)	(0.088)	(0.125)
	*[0.01]***	*[0.01]***	*[0.18]*	*[0.31]*	*[0.14]*
Gini index (per capita household income)	0.170***	0.092	-0.103	0.205*	0.224**
	(0.044)	(0.067)	(0.062)	(0.115)	(0.106)
	*[0.01]***	*[0.14]*	*[0.13]*	*[0.45]*	*[0.22]*
Poverty headcount rate	0.026*	-0.015	-0.046**	0.064***	-0.002
	(0.013)	(0.018)	(0.022)	(0.017)	(0.035)
	*[0.05]***	*[0.05]***	*[0.14]*	*[0.13]*	*[0.94]*
Govt. exp. in education	-0.650**	-1.496**	-2.334***	-0.060	-0.959
	(0.294)	(0.543)	(0.534)	(0.526)	(1.134)
	*[0.05]***	*[0.01]***	*[0.01]***	*[0.90]*	*[0.46]*
Political ideology: position in left-right axis; far left (1) to far right (5)		-0.554***			
		(0.110)			
		*[0.01]***			
Age: reference group, born after 1970					
Born between 1946-1970	0.741***	0.657***	0.814***	0.790**	0.437
	(0.145)	(0.180)	(0.221)	(0.309)	(0.267)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.05]***	*[0.13]*
Born before 1946	0.990***	0.827***	1.003***	1.215***	0.526*
	(0.209)	(0.206)	(0.265)	(0.409)	(0.252)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.03]***	*[0.02]***
Missing age	1.698***	0.869	2.236*	-0.441	0.225
	(0.484)	(0.661)	(1.074)	(1.819)	(1.328)
	*[0.01]***	*[0.19]*	*[0.01]***	*[0.52]*	*[0.85]*
Gender					
Female	0.202**	0.204**	0.131	0.419**	0.193
	(0.082)	(0.079)	(0.091)	(0.191)	(0.171)
	*[0.02]***	*[0.01]***	*[0.13]*	*[0.03]***	*[0.29]*
Residence: reference group, urban residence					
Rural residence	0.001	0.100	0.131	0.279	-0.034
	(0.132)	(0.148)	(0.189)	(0.196)	(0.202)
	[1.00]	*[0.49]*	*[0.52]*	*[0.20]*	*[0.90]*
Missing residence	-0.805**	-0.775***	-0.731**	-1.159***	-0.617*
	(0.360)	(0.235)	(0.266)	(0.294)	(0.319)
	[0.12]	*[0.03]***	*[0.02]***	*[0.01]***	*[0.04]***
Education: reference group, primary or lower secondary					
Higher secondary	-0.821***	-0.961***	-0.927***	-0.744***	-1.157***
	(0.164)	(0.144)	(0.176)	(0.218)	(0.255)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***
University	-1.882***	-2.059***	-1.802***	-1.758***	-2.603***
	(0.218)	(0.197)	(0.246)	(0.235)	(0.263)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***
Missing education	-0.729**	-0.942**	-2.082***	-0.454	-0.190
	(0.317)	(0.389)	(0.582)	(1.267)	(0.579)
	*[0.06]**	*[0.04]***	*[0.01]***	*[0.83]*	*[0.80]*
Employment status: reference group, out of labor force					
Employed	0.482***	0.411***	0.333**	0.633**	0.299
	(0.110)	(0.136)	(0.158)	(0.254)	(0.260)
	*[0.01]***	*[0.01]***	*[0.04]***	*[0.05]***	*[0.28]*
Unemployed	0.388	1.054***	1.209***	0.902**	0.730

	(0.579)	(0.244)	(0.395)	(0.400)	(0.531)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.04]***	*[0.27]*
Missing employment status	-0.071	0.661	2.197***	3.514***	-1.432*
	(0.081)	(0.683)	(0.683)	(0.920)	(0.704)
	[0.74]	*[0.40]*	*[0.09]**	*[0.01]***	*[0.34]*
Income group: reference group, lowest income group.					
2nd income group	-0.327***	-0.453***	-0.515*	-0.096	-0.645**
	(0.113)	(0.140)	(0.266)	(0.307)	(0.306)
	*[0.02]***	*[0.01]***	*[0.12]*	*[0.87]*	*[0.04]***
3rd income group	-0.509***	-0.665***	-0.868***	-0.246	-0.730*
	(0.136)	(0.194)	(0.236)	(0.341)	(0.349)
	*[0.02]***	*[0.03]***	*[0.01]***	*[0.50]*	*[0.03]***
4th income group	-0.964***	-1.188***	-1.207***	-0.673**	-1.495***
	(0.143)	(0.125)	(0.212)	(0.245)	(0.307)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.02]***	*[0.01]***
Highest income group	-1.569***	-1.808***	-1.915***	-1.299**	-1.968***
	(0.259)	(0.205)	(0.336)	(0.504)	(0.374)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.06]**	*[0.01]***
Missing income group	-0.357**	-0.456**	-0.301	-0.471	-0.633
	(0.164)	(0.217)	(0.289)	(0.285)	(0.441)
	*[0.08]**	*[0.13]*	*[0.36]*	*[0.12]*	*[0.18]*
Observations	46894	26825	11603	6430	8792
R^2	0.234	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 nonmissing 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.

To overcome the sample size limitations of the political ideology variable, in tables 4 and 5 we look at two alternative variables about beliefs. Table 4 uses the importance survey respondents attach to what is needed to support a family when deciding how much people ought to earn. When included additively, the more individuals consider important for pay to be enough to support a family, the more unequal they perceive their societies to be (higher perceived Gini index). The fact that the correlation of country level, contextual variables is barely affected by the inclusion of this additional regressor already previews the results shown in columns 3 to 5 which split the sample according to individuals' beliefs. In fact, the correlations of macro variables with perception don't differ substantially across such subgroups. The only noticeable differences are that higher poverty rates are associated with higher perceived Gini index only for those who attach relatively less importance to family support in determining pay, and that government expenditure in education is particularly relevant for those who consider it essential.

In table 5 we use the importance survey respondents attach to how well the job is done when deciding how much people ought to earn – a proxy of meritocratic beliefs. Again, as in the case of the previous variable on beliefs, additive inclusion doesn't alter substantially the correlation of the country level variables with perceptions of inequality. Splitting the sample by pooling individuals according to their

beliefs doesn't show any differences in those correlations. Higher unemployment rates, higher actual income inequality, higher poverty rates and lower government expenditures in education are associated with a higher perceived Gini index for all subgroups.

Table 4 - Equality perceptions (Gini index equivalent) and beliefs about pay (supporting a family)

Dep. var.: Equality 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	0.248***	0.246***	0.313***	0.172**	0.266***
	(0.064)	(0.065)	(0.089)	(0.074)	(0.040)
	*[0.01]***	*[0.01]***	*[0.03]***	*[0.01]***	*[0.01]***
Gini index (per capita household income)	0.170***	0.186***	0.193***	0.142**	0.174***
	(0.044)	(0.044)	(0.059)	(0.052)	(0.037)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***
Poverty headcount rate	0.026*	0.027*	0.003	0.050***	0.040**
	(0.013)	(0.013)	(0.014)	(0.017)	(0.014)
	*[0.05]***	*[0.01]***	*[0.75]*	*[0.01]***	*[0.07]**
Govt. exp. in education	-0.650**	-0.623*	-1.019***	-0.041	-0.770*
	(0.294)	(0.302)	(0.345)	(0.370)	(0.414)
	*[0.05]***	*[0.11]*	*[0.01]***	*[0.86]*	*[0.13]*
In deciding how much people ought to earn, how important should be what is needed to support a family? (1: not important at all – 5: essential)		0.371***			
		(0.109)			
		*[0.01]***			
Age: reference group, born after 1970					
Born between 1946-1970	0.741***	0.780***	0.744***	0.723***	0.907***
	(0.145)	(0.143)	(0.137)	(0.230)	(0.202)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***
Born before 1946	0.990***	1.005***	0.717***	1.091***	1.463***
	(0.209)	(0.200)	(0.222)	(0.289)	(0.229)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***
Missing age	1.698***	1.659***	1.870***	-0.077	2.783*
	(0.484)	(0.462)	(0.307)	(1.118)	(1.338)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.89]*	*[0.20]*
Gender					
Female	0.202**	0.177**	0.122	0.321***	0.081
	(0.082)	(0.077)	(0.108)	(0.107)	(0.172)
	*[0.02]***	*[0.01]***	*[0.25]*	*[0.01]***	*[0.73]*
Residence: reference group, urban residence					
Rural residence	0.001	-0.008	0.050	-0.072	0.130
	(0.132)	(0.137)	(0.141)	(0.246)	(0.242)
	[1.00]	*[0.94]*	*[0.69]*	*[0.77]*	*[0.65]*
Missing residence	-0.805**	-0.743*	-1.048***	-0.041	-0.913**
	(0.360)	(0.358)	(0.318)	(0.499)	(0.420)
	[0.12]	*[0.12]*	*[0.02]***	*[0.96]*	*[0.01]***
Education: reference group, primary or lower secondary					
Higher secondary	-0.821***	-0.727***	-0.820***	-0.719***	-0.810***
	(0.164)	(0.155)	(0.178)	(0.177)	(0.174)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***
University	-1.882***	-1.729***	-1.731***	-1.672***	-1.884***
	(0.218)	(0.199)	(0.249)	(0.259)	(0.213)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***
Missing education	-0.729**	-0.769**	-0.478	-2.063***	-0.028
	(0.317)	(0.327)	(0.599)	(0.361)	(0.678)
	*[0.06]**	*[0.04]***	*[0.56]*	*[0.01]***	*[1.00]*
Employment status: reference group, out of labor					

force					
Employed	0.482***	0.484***	0.449***	0.605***	0.384
	(0.110)	(0.107)	(0.153)	(0.142)	(0.226)
	*[0.01]***	*[0.01]***	*[0.02]***	*[0.01]***	*[0.10]*
Unemployed	0.388	0.292	0.382	0.002	0.674
	(0.579)	(0.572)	(0.689)	(0.805)	(0.695)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***	*[0.12]*
Missing employment status	-0.071	-0.070	-0.073	-0.068	-0.071
	(0.081)	(0.086)	(0.083)	(0.083)	(0.081)
	[0.74]	*[0.67]*	*[0.49]*	*[0.98]*	*[0.38]*
Income group: reference group, lowest income group.					
2nd income group	-0.327***	-0.273**	-0.234	-0.490*	-0.171
	(0.113)	(0.108)	(0.143)	(0.280)	(0.188)
	*[0.02]***	*[0.03]***	*[0.08]**	*[0.12]*	*[0.33]*
3rd income group	-0.509***	-0.446***	-0.353**	-0.411*	-0.762**
	(0.136)	(0.134)	(0.158)	(0.218)	(0.273)
	*[0.02]***	*[0.01]***	*[0.03]***	*[0.08]**	*[0.05]***
4th income group	-0.964***	-0.901***	-0.888***	-0.887***	-0.880***
	(0.143)	(0.123)	(0.137)	(0.279)	(0.291)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.02]***	*[0.01]***
Highest income group	-1.569***	-1.460***	-1.201***	-1.556***	-1.566***
	(0.259)	(0.212)	(0.212)	(0.289)	(0.344)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***
Missing income group	-0.357**	-0.300*	-0.332**	-0.399	-0.240
	(0.164)	(0.154)	(0.152)	(0.271)	(0.322)
	*[0.08]**	*[0.11]*	*[0.03]***	*[0.22]*	*[0.47]*
Observations	46894	45497	21372	14981	10541
R^2	0.234	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). Column 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.

Table 5 - Equality perceptions (Gini index equivalent) and beliefs about pay (job well done)

Dep. var.: Equality perceptions (Gini index equivalent)	Whole sample		Only those answering…		
	Benchmark	Nonmissing answer	Essential	Very important	Fairly important, Not very or not at all
	(1)	(2)	(3)	(4)	(5)
Unemployment rate	0.248***	0.247***	0.242***	0.276***	0.249***
	(0.064)	(0.063)	(0.061)	(0.077)	(0.087)
	*[0.01]****	*[0.01]****	*[0.03]***	*[0.01]****	*[0.01]****
Gini index (per capita household income)	0.170***	0.169***	0.201***	0.160***	0.087
	(0.044)	(0.044)	(0.061)	(0.054)	(0.066)
	*[0.01]****	*[0.01]****	*[0.01]****	*[0.02]***	*[0.29]*
Poverty headcount rate	0.026*	0.026*	0.033**	0.016	0.032*
	(0.013)	(0.013)	(0.015)	(0.015)	(0.017)
	*[0.05]***	*[0.01]****	*[0.03]***	*[0.35]*	*[0.05]***
Govt. exp. in education	-0.650**	-0.642**	-0.612*	-0.707**	-0.519
	(0.294)	(0.303)	(0.349)	(0.306)	(0.389)
	*[0.05]***	*[0.03]***	*[0.12]*	*[0.07]**	*[0.19]*
In deciding how much people ought to earn, how important should be how well he or she does the job? (1: not important at all – 5: essential)		0.272***			
		(0.060)			
		*[0.01]****			
Age: reference group, born after 1970					
Born between 1946-1970	0.741***	0.756***	0.660***	0.766***	0.851***
	(0.145)	(0.142)	(0.225)	(0.141)	(0.188)
	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****
Born before 1946	0.990***	1.002***	0.822***	1.112***	0.998***
	(0.209)	(0.208)	(0.279)	(0.200)	(0.276)
	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****
Missing age	1.698***	1.761***	3.714***	0.706	1.715**
	(0.484)	(0.555)	(0.663)	(0.515)	(0.718)
	*[0.01]****	*[0.01]****	*[0.01]****	*[0.12]*	*[0.10]**
Gender					
Female	0.202**	0.195**	0.052	0.260**	0.222**
	(0.082)	(0.082)	(0.138)	(0.106)	(0.103)
	*[0.02]***	*[0.01]****	*[0.61]*	*[0.03]***	*[0.03]***
Residence: reference group, urban residence					
Rural residence	0.001	-0.013	-0.118	-0.054	0.215
	(0.132)	(0.133)	(0.241)	(0.109)	(0.209)
	[1.00]	*[0.91]*	*[0.69]*	*[0.56]*	*[0.35]*
Missing residence	-0.805**	-0.836**	-1.187*	-1.096***	-0.312
	(0.360)	(0.362)	(0.651)	(0.357)	(0.433)
	[0.12]	*[0.07]**	*[0.21]*	*[0.01]****	*[0.61]*
Education: reference group, primary or lower secondary					
Higher secondary	-0.821***	-0.833***	-0.711***	-0.696***	-1.189***
	(0.164)	(0.164)	(0.235)	(0.166)	(0.200)
	*[0.01]****	*[0.01]****	*[0.02]***	*[0.01]****	*[0.01]****
University	-1.882***	-1.854***	-1.699***	-1.861***	-2.047***
	(0.218)	(0.216)	(0.301)	(0.200)	(0.257)
	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****
Missing education	-0.729**	-0.744**	-1.902**	-0.038	-1.217
	(0.317)	(0.319)	(0.894)	(0.495)	(0.854)
	*[0.06]**	*[0.03]***	*[0.06]**	*[0.95]*	*[0.29]*
Employment status: reference group, out of labor force					
Employed	0.482***	0.479***	0.383**	0.427**	0.690***
	(0.110)	(0.110)	(0.156)	(0.158)	(0.169)
	*[0.01]****	*[0.01]****	*[0.02]***	*[0.02]***	*[0.01]****

Unemployed	0.388	0.896***	0.859***	0.884***	1.014***
	(0.579)	(0.200)	(0.282)	(0.221)	(0.315)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***
Missing employment status	-0.071	0.261	0.428	0.612	-0.097
	(0.081)	(0.573)	(0.824)	(0.549)	(0.866)
	[0.74]	*[0.75]*	*[0.78]*	*[0.37]*	*[0.79]*
Income group: reference group, lowest income group.					
2nd income group	-0.327***	-0.287**	-0.334*	-0.163	-0.602**
	(0.113)	(0.121)	(0.187)	(0.172)	(0.242)
	*[0.02]**	*[0.02]**	*[0.11]*	*[0.33]*	*[0.02]**
3rd income group	-0.509***	-0.484***	-0.354	-0.503***	-0.655**
	(0.136)	(0.139)	(0.304)	(0.144)	(0.240)
	*[0.02]**	*[0.03]**	*[0.30]*	*[0.02]**	*[0.01]***
4th income group	-0.964***	-0.941***	-0.974***	-0.880***	-1.088***
	(0.143)	(0.144)	(0.243)	(0.214)	(0.244)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.03]**	*[0.01]***
Highest income group	-1.569***	-1.541***	-1.443***	-1.518***	-1.779***
	(0.259)	(0.256)	(0.330)	(0.298)	(0.318)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***
Missing income group	-0.357**	-0.366**	-0.275	-0.318	-0.496
	(0.164)	(0.164)	(0.265)	(0.213)	(0.324)
	*[0.08]**	*[0.08]**	*[0.31]*	*[0.22]*	*[0.11]*
Observations	46894	46069	12809	21796	12289
R^2	0.234	0.236	0.234	0.236	0.221

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 valid information on the answer to the question "In deciding how much people ought to earn, how important should it be how well does he or she do the job?". Column 3 restricts the sample to those who answered "Essential". Column 4 restricts the sample to those who answered "Very important". Column 5 restricts the sample to those who answered "Fairly important", "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.

Our empirical analysis shows the relevance that country-level, contextual variables and individual characteristics -notably political ideology- have on the formation of perceptions about the income distribution. Beliefs other than political ones, although correlated, seem not to make a substantial difference in the process of perceptions formations. As an additional robust test, in appendix Table A.4 we present the results of our benchmark specticiation, excluding those countries that are only one year in our data. The results show that there are no statistical differences across both samples. In Table A.5 we also analyze the heterogeneity in the correlation of macro variables with perceptions of equality (categorical variable) by looking at sub samples of individuals with a given set of characteristics.

5.2. Explaining demand for redistribution

With regression analysis we have been able to explain around 25% of the variance of individuals' perceptions about the inequality level in their country using objective variables, both at the country and individual level. This is socially and politically relevant to the extent that perceptions, rather than actual inequality, play an important role in determining individuals demand for redistribution and thus electoral behavior. In table 6 column 1 we first show the results of estimating equation (2) – that is, regressing the

demand for redistribution against the same co-variates as explaining perceptions of equality, with the exception of government expenditure in education which, as explained in the previous section, is in itself a tool of redistribution. This will allow us to compare our results with the earlier literature as well as with the result for perceptions about the income distribution, which for easiness we include in column 2 and 3.

Table 6 – Demand for redistribution and macro variables

	(1)	(2)	(3)
	Dependent variable		
	Demand for redistribution (categorical: 1, low demand, 5, high demand)	Perceptions about income distribution Categorical (1, very unequal, to 4, very equal)	Perceived Gini equivalent (higher value, higher perceived inequality)
Unemployment rate	-0.001	-0.034***	0.248***
	(0.021)	(0.009)	(0.064)
	[0.99]	*[0.01]* ***	*[0.01]* ***
Gini	-0.788	-2.111***	17.028***
	(1.988)	(0.616)	(4.351)
	[0.58]	*[0.01]* ***	*[0.01]* ***
Poverty headcount rate	-0.001	-0.004**	0.026*
	(0.002)	(0.002)	(0.013)
	[0.87]	*[0.05]***	*[0.05]***
Govt. exp. in education		0.094**	-0.650**
		(0.041)	(0.294)
		*[0.03]***	*[0.05]***
Age: reference group, born after 1970			
Born between 1946-1970	0.036*	-0.107***	0.741***
	(0.019)	(0.021)	(0.145)
	*[0.07]**	*[0.01]* ***	*[0.01]* ***
Born before 1946	0.035	-0.142***	0.990***
	(0.038)	(0.030)	(0.209)
	[0.34]	*[0.01]* ***	*[0.01]* ***
Missing age	0.215**	-0.227***	1.698***
	(0.098)	(0.071)	(0.484)
	*[0.10]**	*[0.02]***	*[0.01]* ***
Gender			
Female	0.141***	-0.034**	0.202**
	(0.021)	(0.012)	(0.082)
	[0.00] ***	*[0.02]***	*[0.02]***
Residence: reference group, urban residence			
Rural residence	0.083***	0.002	0.001
	(0.016)	(0.020)	(0.132)
	[0.00] ***	*[0.79]*	*[0.99]*
Missing residence	-0.119**	0.120**	-0.805**
	(0.056)	(0.051)	(0.360)
	[0.12]	*[0.10]**	*[0.12]*
Education: reference group, primary or lower secondary			
Higher secondary	-0.217***	0.120***	-0.821***
	(0.030)	(0.023)	(0.164)
	[0.01] ***	*[0.01]* ***	*[0.01]* ***
University	-0.377***	0.278***	-1.882***
	(0.065)	(0.030)	(0.218)
	[0.01] ***	*[0.01]* ***	*[0.01]* ***
Missing education	-0.064	0.092*	-0.729**
	(0.055)	(0.047)	(0.317)
	[0.27]	*[0.11]*	*[0.06]***

Employment status: reference group, out of labor force			
Employed	0.004	-0.065***	0.482***
	(0.017)	(0.016)	(0.110)
	[0.81]	*[0.01]* ***	*[0.01]* ***
Unemployed	0.096***	-0.130***	0.899***
	(0.033)	(0.029)	(0.199)
	[0.01] ***	*[0.01]* ***	*[0.01]* ***
Missing employment status	-0.110	-0.071	0.388
	(0.110)	(0.081)	(0.579)
	[0.39]	*[0.66]*	*[0.74]*
Income group: reference group, lowest income group.			
2nd income group	-0.002	0.047***	-0.327***
	(0.025)	(0.016)	(0.113)
	[1.00]	*[0.01]* ***	*[0.02]***
3rd income group	-0.097**	0.071***	-0.509***
	(0.039)	(0.020)	(0.136)
	*[0.03]**	*[0.01]* ***	*[0.02]***
4th income group	-0.197***	0.136***	-0.964***
	(0.046)	(0.020)	(0.143)
	[0.01] ***	*[0.01]* ***	*[0.01]* ***
Highest income group	-0.454***	0.223***	-1.569***
	(0.061)	(0.037)	(0.259)
	[0.01] ***	*[0.01]* ***	*[0.01]* ***
Missing	-0.231***	0.050*	-0.357**
	(0.032)	(0.025)	(0.164)
	[0.01] ***	*[0.09]**	*[0.08]**
Observations	45583	46894	46894
R^2	0.177	0.244	0.234

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.

In contrast with equality perceptions, the coefficients associated to the three country level variables -the unemployment rate, the poverty headcount rate and the actual Gini index- are small and not significant. While these variables are important determinants of income distribution perceptions, they appear not to directly impact demand for redistribution. Individual characteristics do correlate with demand for redistribution and consistently have the opposite sign as the regression for equality perceptions. This means that those individual characteristics that make the respondent more bound to think that income in their country is unequally distributed, are the same ones that make the respondent more likely to agree with that the government should reduce income difference

Next we estimate equation (1b) of our two-step model, in which we use perceptions of equality as a regressor for demand for redistribution, rather than the macro, country level variables that explain those perceptions (Table 7). In columns 2 we include political ideology as and additional regressor, and in column 3 we augment the model by including an interaction term between political ideology and perceptions. Columns 4 and 5 include beliefs instead of political ideology. In all these specifications, self-interest motives are proxied by individual education and income levels.

First of all, the results show that perceptions of higher inequality are associated to higher demand for redistribution, as already documented by Gimpelson and Treisman (2017). Combining these results with those of table 6, this implies that country level macro variables that explain perceptions of inequality have no effect on demand for redistribution except through the perceptions themselves. In addition to that, political ideology has also a strong association: the more to the left, the higher the demand for redistribution for the same level of perceived inequality (column 2). When allowing both effects to be compounded (column 3), it emerges that the more to the left, the more sensitive are individuals to changes in perceived inequality when asking for more redistribution. That is, for a given increase in perceived inequality, individuals on the left increase their demand for redistribution by a much larger amount than those on the right. A similar pattern is found when using beliefs about the importance of family support in wage setting (column 4): individuals who consider essential that the amount needed to support family is to be taken into account demand more redistribution *per se* and are also more sensitive to changes in perceived inequality when demanding that. For the case of meritocratic beliefs (column 5) there is no relevant correlation.

Lastly, when analyzing self-interest motives, from the results shown across all columns it emerges that, after controlling for political ideology or beliefs, more educated individuals (those with a University degree) and those higher up in the income ladder demand less redistribution other things being equal. Since these individuals are broadly on the "giving" side of any progressive redistribution scheme, these correlations lend some credibility to the hypothesis that self-interest motives do play a role in driving demand for redistribution.

Table 7 – Demand for redistribution, perceptions of equality and ideology

Dep. Var: Demand for redistribution	(1)	(2)	(3)	(4)	(5)
Equality perceptions (Gini index equivalent)	0.020***	0.022***	-0.005	0.005*	0.022***
	(0.002)	(0.002)	(0.004)	(0.003)	(0.004)
	*[0.01]***	*[0.01]***			
Left-right ideology (1 = far left, 5=far right)		-0.245***	-0.519***		
		(0.033)	(0.042)		
		*[0.01]***	*[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: not important at all – 5: essential)				0.359***	
				(0.023)	
				*[0.01]***	
Importance of family support X Equality perceptions (Gini index equivalent)				-0.005***	
				(0.001)	
				*[0.01]***	
In deciding how much people ought to earn, how important should be how well he or she does the job? (1: not important at all – 5: essential)					0.008
					(0.074)
					[1.00]
Importance of job well done X Equality perceptions (Gini index equivalent)					0.001
					(0.002)
					[0.64]
Age: reference group, born after 1970					
Born between 1946-1970	0.020	0.008	-0.006	0.041**	0.023
	(0.018)	(0.017)	(0.016)	(0.018)	(0.018)
	[0.31]	*[0.62]*	*[0.71]*	*[0.05]***	*[0.23]*
Born before 1946	0.013	-0.013	-0.010	0.024	0.011
	(0.038)	(0.036)	(0.028)	(0.039)	(0.038)
	[0.64]	*[0.70]*	*[0.68]*	*[0.54]*	*[0.78]*
Missing	0.176*	0.018	0.067	0.139	0.185*
	(0.099)	(0.179)	(0.162)	(0.119)	(0.093)
	[0.18]	*[0.87]*	*[0.70]*	*[0.39]*	*[0.19]*
Gender					
Female	0.136***	0.135***	0.124***	0.128***	0.136***
	(0.021)	(0.031)	(0.021)	(0.021)	(0.021)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***
Residence: reference group, urban residence					
Rural residence	0.084***	0.099***	0.100***	0.080***	0.083***
	(0.017)	(0.032)	(0.025)	(0.018)	(0.017)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***
Missing	-0.095**	-0.152	-0.012	-0.056	-0.089*
	(0.043)	(0.098)	(0.078)	(0.046)	(0.050)
	*[0.09]**	*[0.25]*	*[0.84]*	*[0.24]*	*[0.11]*
Education: reference group, primary or lower secondary					
Higher secondary	-0.199***	-0.206***	-0.193***	-0.160***	-0.200***
	(0.030)	(0.043)	(0.036)	(0.028)	(0.030)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***
University	-0.338***	-0.306***	-0.315***	-0.268***	-0.335***
	(0.068)	(0.087)	(0.067)	(0.063)	(0.067)
	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***	*[0.01]***
Missing	-0.031	-0.076	-0.079	-0.022	-0.032
	(0.049)	(0.064)	(0.065)	(0.051)	(0.051)
	[0.53]	*[0.34]*	*[0.35]*	*[0.73]*	*[0.46]*
Employment status: reference group, out of labor force					
Employed	-0.007	-0.005	-0.018	-0.003	-0.006
	(0.016)	(0.031)	(0.024)	(0.016)	(0.016)

	[0.74]	*[0.86]*	*[0.55]*	*[0.92]*	*[0.73]*
Unemployed	0.076**	0.129**	0.056	0.064*	0.078**
	(0.032)	(0.051)	(0.054)	(0.035)	(0.032)
	[0.03] **	*[0.07]* *	*[0.33]*	*[0.16]*	*[0.03]* **
Missing	-0.117	-0.060	-0.131	-0.124	-0.135
	(0.101)	(0.115)	(0.113)	(0.093)	(0.101)
	[0.37]	*[0.71]*	*[0.33]*	*[0.23]*	*[0.20]*
Income group: reference group, lowest income group.					
2nd income group	0.005	-0.033	-0.004	0.017	0.006
	(0.022)	(0.025)	(0.022)	(0.021)	(0.022)
	[0.67]	*[0.24]*	*[0.84]*	*[0.45]*	*[0.85]*
3rd income group	-0.087**	-0.137**	-0.125***	-0.066*	-0.086**
	(0.038)	(0.049)	(0.036)	(0.034)	(0.038)
	[0.06] *	*[0.03]* **	*[0.01]* ***	*[0.06]* *	*[0.05]* **
4th income group	-0.177***	-0.242***	-0.190***	-0.151***	-0.178***
	(0.041)	(0.050)	(0.040)	(0.036)	(0.042)
	[0.01] ***	*[0.01]* ***	*[0.01]* ***	*[0.01]* ***	*[0.01]* ***
Highest income group	-0.423***	-0.453***	-0.398***	-0.366***	-0.422***
	(0.053)	(0.058)	(0.047)	(0.043)	(0.053)
	[0.01] ***	*[0.01]* ***	*[0.01]* ***	*[0.01]* ***	*[0.01]* ***
Missing	-0.225***	-0.262***	-0.233***	-0.203***	-0.226***
	(0.029)	(0.050)	(0.030)	(0.027)	(0.030)
	[0.01] ***	*[0.01]* ***	*[0.01]* ***	*[0.01]* ***	*[0.01]* ***
Observations	45583	17999	26157	44372	44878
R^2	0.191	0.228	0.233	0.221	0.192

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.

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 (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 these perceptions help to determine voting behavior, while perceptions of overall inequality are frequently inconsistent with the objective measures.

This paper shows that perceptions of inequality depend on objective measures either of inequality (the Gini coefficient), of other macro-economic variables that are correlated with inequality and are more widely reported than the Gini (unemployment and poverty rate), 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. While the paper does not develop a full model of the formation of perceptions, it moves towards this direction and provides useful insights.

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Appendix

A.1 – Country selection

Although the ISSP data includes a larger set of countries (26), three of them (Cyprus, Philippines, and New Zeeland) 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 whilst the Gini index is strongly increasing together with the unemployment rate.

Exclusion of Italy and Latvia

In Table A.1 we run equation (1) using the categorical version of the equality perceptions variable. The first column shows the estimated coefficient of the Gini index in that regression when excluding one country at the time. It can be seen that coefficient is always positive except when Italy and Latvia are excluded, suggesting that these countries' observations are the one driving the positive correlation between perceptions of equality and the Gini index. In the second column we repeat the same exercise but exclude Italy and Latvia from the beginning. The coefficient is always negative except when Japan is excluded, when the coefficient becomes positive albeit close to zero.

Table A.1

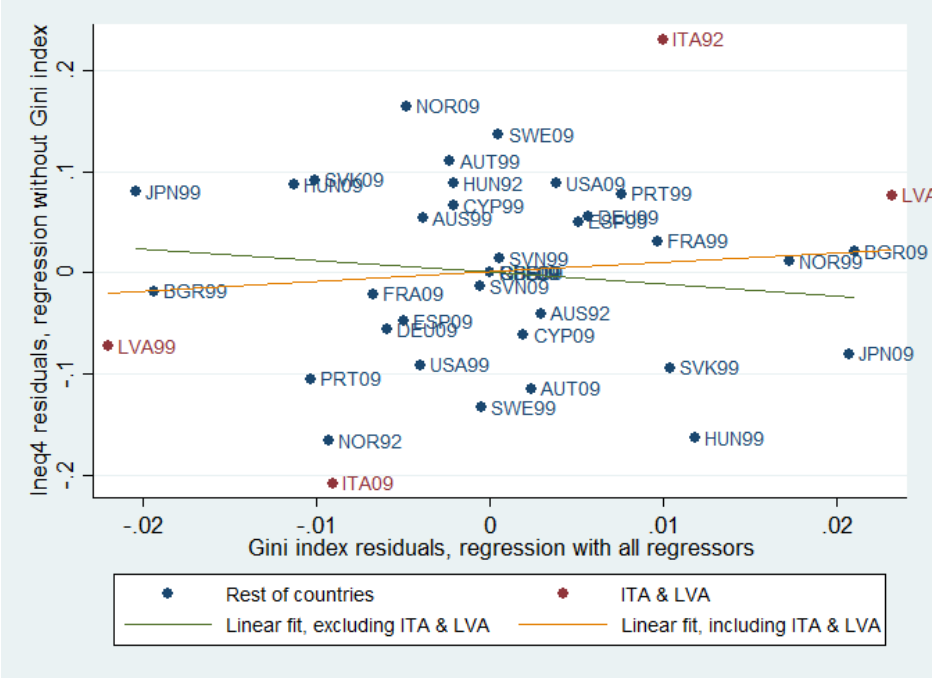
	Coefficient of Gini when excluding…	Coefficient of Gini when excluding ITA, LVA and…
AUS	0.973	-1.288
AUT	0.880	-1.070

BGR	0.749	-2.103
CHE	0.767	-1.324
CHL	0.790	-1.290
CYP	0.880	-1.129
DEU	0.633	-1.564
ESP	0.645	-1.439
FRA	0.652	-1.891
GBR	0.763	-1.327
HUN	1.499	-0.751
ITA	-0.223	
JPN	2.241	0.171
LVA	-0.084	
NOR	0.337	-1.657
PRT	0.394	-1.724
RUS	0.809	-1.283
SVK	1.309	-0.710
SVN	0.769	-1.356
SWE	0.779	-1.422
USA	0.613	-1.940

In order to understand why Italy and Latvia are driving the positive correlation, we carry out an algebraic decomposition of the regression estimations following the Frisch-Waugh-Lowell theorem. First of all, we run a regression of the equality perception variable on all the regressors of the specification in column 3 excluding the Gini index and we keep the residuals. These residuals are shown in the Y axis of both Figures A.1 and A.2. In the X axis of Figure A.1 we show the Gini index – there, it can be seen the outlier nature of Italy (less so for Latvia). In Figure A.2 we present in the X axis the residuals of a regression of the Gini index as dependent variable and the remainder regressors of equation (1) as right hand side variable. The FWT theorem shows that the regression between these two set of residuals is the actual correlation coefficient for the Gini index (note that if the Gini index is completely uncorrelated with the other regressors, then Figures A.1 and A.2 should be the same) This is a graphical representation of why Italy and Latvia are "tilting" the correlation to the positive side (note the difference between the green linear fit and the orange linear fit).

Figure A.1

Figure A.2



The tables below show the evolution of equality perceptions, the Gini index and the unemployment rate in the country-year observations included in the previous regression analysis. Italy comes out as a

striking outlier: it is the country with the largest decline in equality perceptions (-0.53 points) when, at the same time, the Gini index is declining as well as the unemployment rate. In Latvia equality perceptions barely move whilst the Gini index is strongly increasing together with the unemployment rate. Japan, on the other hand, contributes to a negative coefficient between equality perceptions and Gini index: this country sees the second largest increase in the Gini index in the sample together with a strong decrease in equality perceptions.

Table A.2 – time variation of macro variables

Panel a. Equality perceptions – categorical variable

Country	1992	1999	2009	Δ99-92	Δ09-99	Δ09-92
Australia	2.628	2.817		0.189		
Austria		2.959	2.602		-0.357	
Bulgaria		1.386	1.483		0.097	
Chile			2.125			
Cyprus		3.088	2.797		-0.291	
France		2.374	2.246		-0.128	
Germany		2.644	2.432		-0.212	
Great Britain		2.474				
Hungary	1.697	1.519	1.562	-0.179	0.043	-0.135
Italy	2.583		2.044			-0.539
Japan		2.894	2.577		-0.317	
Latvia		1.463	1.395		-0.068	
Norway	3.174	3.436	3.447	0.262	0.011	0.273
Portugal		2.261	1.841		-0.420	
Russia			1.881			
Slovak Rep.	1.639	1.793		0.154		
Slovenia		2.352	2.260		-0.091	
Spain		2.717	2.402		-0.315	
Sweden		2.880	3.004		0.124	
Switzerland		3.018				
USA		2.608	2.515		-0.093	
Total	2.565	2.444	2.311	-0.121	-0.134	-0.255

Panel b. Gini index

Country	1992	1999	2009	Δ99-92	Δ09-99	Δ09-92
Australia	0.345	0.329		-0.016		
Austria		0.258	0.280		0.022	
Bulgaria		0.258	0.338		0.080	
Chile			0.503			
Cyprus		0.297	0.321		0.024	
France		0.278	0.289		0.011	
Germany		0.266	0.285		0.019	

Great Britain			0.333			
Hungary	0.289	0.292	0.279	0.003	-0.013	-0.010
Italy	0.341		0.323			-0.018
Japan		0.234	0.302		0.068	
Latvia		0.308	0.362		0.054	
Norway	0.232	0.247	0.244	0.015	-0.003	0.012
Portugal		0.372	0.349		-0.022	
Russia			0.342			
Slovak Rep.		0.253	0.262		0.009	
Slovenia		0.232	0.253		0.021	
Spain		0.335	0.337		0.002	
Sweden		0.250	0.266		0.016	
Switzerland			0.293			
USA		0.356	0.369		0.013	
Total	0.304	0.286	0.317	-0.018	0.031	0.013

Panel c. Unemployment rate

Country	1992	1999	2009	Δ99-92	Δ09-99	Δ09-92
Australia	10.729	6.872		-3.857		
Austria		4.698	5.301		0.603	
Bulgaria		14.1	6.817		-7.283	
Chile			9.689			
Cyprus		5.7	5.364		-0.336	
France		12.514	9.147		-3.367	
Germany		8.855	7.742		-1.113	
Great Britain			7.537			
Hungary	9.942	6.929	10.03	-3.013	3.101	0.088
Italy	9.328		7.749			-1.579
Japan		4.7	5.1		0.400	
Latvia		13.79	17.515		3.725	
Norway	5.91	3.247	3.103	-2.663	-0.144	-2.807
Portugal		4.595	9.432		4.837	
Russia			8.301			
Slovak Rep.		15.947	12.025		-3.922	
Slovenia		7.324	5.857		-1.467	
Spain		15.476	17.857		2.381	
Sweden		7.607	8.351		0.744	
Switzerland			4.116			
USA		4.2	9.3		5.100	
Total	9.107	8.654	8.536	-0.453	-0.118	-0.571

In Table A.3 we present the results of the baseline regression with the public expenditure variables, for the whole sample and excluding Italy and Latvia. Across samples, the coefficient of most of the variables -except the Gini index- are fairly stable. Government expenditure in education and social protection are

positively correlated with perceptions of equality. In the overall, the picture that emerges is that Gini index doesn't have a robust correlation with perceptions of equality, whilst other contextual circumstances - unemployment rate and government expenditure in different sectors- appear to have a more stable relationship with perceptions.

Table A.3

Equality perception (categorical variable), whole ISSP dataset

	(1) Restricted sample	(2) Restricted sample excl. ITA & LVA	(3) Restricted sample	(4) Restricted sample excl. ITA & LVA	(5) Restricted sample	(6) Restricted sample excl. ITA & LVA
Unemployment rate	0.000	-0.000	-0.018**	-0.016**	0.030***	0.024***
	(0.005)	(0.005)	(0.007)	(0.007)	(0.005)	(0.005)
Gini index	2.001	-2.765**	1.045	-3.477**	5.285***	0.628
	(2.019)	(1.410)	(2.014)	(1.574)	(1.905)	(1.513)
Poverty headcount rate, under $10 at 2005 PPP	-0.005	-0.014***	-0.002	-0.012***	-0.014***	-0.020***
	(0.005)	(0.003)	(0.005)	(0.003)	(0.003)	(0.003)
Govt. exp. in Education, % of GDP			0.163***	0.144***		
			(0.039)	(0.035)		
Govt. exp. in Social Protection, % Of GDP					0.257***	0.209***
					(0.028)	(0.023)
Born between 1946 and 1970	-0.131***	-0.124***	-0.137***	-0.130***	-0.149***	-0.142***
	(0.027)	(0.030)	(0.027)	(0.029)	(0.027)	(0.030)
Female	-0.024**	-0.024**	-0.024**	-0.024**	-0.025**	-0.024**
	(0.011)	(0.012)	(0.011)	(0.012)	(0.011)	(0.012)
Rural residence	0.006	0.014	0.008	0.016	0.002	0.010
	(0.014)	(0.012)	(0.013)	(0.012)	(0.013)	(0.012)
Up to secondary education	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Higher secondary	0.125***	0.132***	0.125***	0.132***	0.128***	0.135***
	(0.017)	(0.020)	(0.018)	(0.020)	(0.018)	(0.020)
University	0.273***	0.291***	0.268***	0.286***	0.265***	0.283***
	(0.017)	(0.019)	(0.017)	(0.020)	(0.017)	(0.019)
missing	0.153***	0.132***	0.129***	0.112***	0.134***	0.121***
	(0.037)	(0.040)	(0.037)	(0.039)	(0.038)	(0.042)
Not in labor force	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Employed	-0.050***	-0.051***	-0.050***	-0.051***	-0.053***	-0.053***
	(0.014)	(0.014)	(0.015)	(0.014)	(0.015)	(0.014)
Unemployed	-0.120***	-0.125***	-0.120***	-0.126***	-0.119***	-0.125***
	(0.030)	(0.028)	(0.030)	(0.028)	(0.030)	(0.028)
missing	-0.077	-0.061	-0.080*	-0.064	-0.077	-0.063
	(0.047)	(0.047)	(0.047)	(0.046)	(0.048)	(0.047)
1st income quintile	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
2nd quintile	0.063***	0.053***	0.067***	0.057***	0.064***	0.055***
	(0.013)	(0.011)	(0.013)	(0.011)	(0.013)	(0.011)
3rd quintile	0.084***	0.083***	0.085***	0.084***	0.084***	0.084***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
4th quintile	0.144***	0.144***	0.146***	0.146***	0.143***	0.144***
	(0.018)	(0.016)	(0.019)	(0.016)	(0.018)	(0.016)
5th quintile	0.249***	0.243***	0.253***	0.246***	0.252***	0.246***
	(0.018)	(0.017)	(0.018)	(0.017)	(0.018)	(0.016)
missing	0.072**	0.063*	0.076**	0.067*	0.078**	0.070**
	(0.034)	(0.035)	(0.035)	(0.035)	(0.034)	(0.035)
Constant	1.556**	3.355***	1.264	3.049***	-0.038	1.785***
	(0.767)	(0.541)	(0.847)	(0.615)	(0.754)	(0.593)

Observations	40099	37161	40099	37161	40099	37161
R^2	0.262	0.258	0.262	0.259	0.264	0.260

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). Country and year dummies included in all regressions but not reported. Bootstrapped and clustered standard errors at the regional level in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.4 - Equality perceptions (categorical), benchmark table

	Restricted sample			Full sample	
Dep. var.: Equality perception (categorical: 1, very unequal, to 4, very equal)	(1)	(2)	(3)	(4)	(5)
Unemployment rate	-0.003	0.013	-0.013	-0.024**	-0.034***
	(0.008)	(0.011)	(0.009)	(0.009)	(0.009)
	[0.66]	*[0.27]*	*[0.15]*	*[0.07]**	*[0.01]****
Gini index (per capita household income)	-0.320*	-0.171	-0.294	-0.228**	-0.211***
	(0.180)	(0.226)	(0.180)	(0.087)	(0.062)
	[0.22]	*[0.69]*	*[0.27]*	*[0.04]**	*[0.01]****
Poverty headcount rate	-0.015***	-0.021***	-0.012**	-0.007***	-0.004**
	(0.004)	(0.004)	(0.005)	(0.001)	(0.002)
	*[0.04]**	*[0.01]****	*[0.19]*	*[0.01]****	*[0.05]**
Govt. exp. in social protection		0.161***			
		(0.034)			
		*[0.01]****			
Govt. exp. in education			0.126**		0.094**
			(0.057)		(0.041)
			[0.17]		*[0.03]**
Age: reference group, born after 1970					
Born between 1946-1970	-0.102***	-0.103***	-0.102***	-0.108***	-0.107***
	(0.022)	(0.021)	(0.021)	(0.021)	(0.021)
	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****
Born before 1946	-0.122***	-0.127***	-0.122***	-0.142***	-0.142***
	(0.030)	(0.031)	(0.030)	(0.030)	(0.030)
	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****
Missing age	-0.116	-0.117	-0.112	-0.223***	-0.227***
	(0.115)	(0.114)	(0.115)	(0.070)	(0.071)
	[0.37]	*[0.36]*	*[0.38]*	*[0.02]**	*[0.02]**
Gender					
Female	-0.028**	-0.028**	-0.027**	-0.034***	-0.034**
	(0.011)	(0.011)	(0.011)	(0.012)	(0.012)
	*[0.08]**	*[0.07]**	*[0.09]**	*[0.02]**	*[0.02]**
Residence: reference group, urban residence					
Rural residence	0.017	0.018	0.018	0.003	0.002
	(0.022)	(0.022)	(0.023)	(0.019)	(0.020)
	[0.47]	*[0.43]*	*[0.46]*	*[0.74]*	*[0.79]*
Missing residence	0.071	0.041	0.078*	0.113**	0.120**
	(0.046)	(0.038)	(0.043)	(0.049)	(0.051)
	[0.15]	*[0.29]*	*[0.11]*	*[0.08]**	*[0.10]**
Education: reference group, primary or lower secondary					
Higher secondary	0.126***	0.128***	0.126***	0.120***	0.120***
	(0.027)	(0.026)	(0.027)	(0.023)	(0.023)
	*[0.00]****	*[0.00]****	*[0.00]****	*[0.00]****	*[0.00]****
University	0.287***	0.283***	0.283***	0.282***	0.278***
	(0.030)	(0.030)	(0.031)	(0.030)	(0.030)
	*[0.00]****	*[0.00]****	*[0.00]****	*[0.00]****	*[0.00]****
Missing education	0.122**	0.109**	0.107**	0.101*	0.092*
	(0.046)	(0.042)	(0.045)	(0.049)	(0.047)
	*[0.01]****	*[0.03]**	*[0.04]**	*[0.04]**	*[0.11]*
Employment status: reference group, out of labor force					
Employed	-0.067***	-0.070***	-0.067***	-0.065***	-0.065***
	(0.018)	(0.017)	(0.018)	(0.016)	(0.016)
	*[0.02]**	*[0.01]****	*[0.02]**	*[0.01]****	*[0.01]****
Unemployed	-0.147***	-0.148***	-0.148***	-0.129***	-0.130***
	(0.031)	(0.031)	(0.031)	(0.029)	(0.029)
	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****	*[0.01]****
Missing employment status	-0.069	-0.070	-0.073	-0.068	-0.071
	(0.087)	(0.086)	(0.083)	(0.083)	(0.081)
	[0.61]	*[0.59]*	*[0.57]*	*[0.66]*	*[0.66]*
Income group: reference group, lowest income group.					

2nd income group	0.048***	0.048***	0.052***	0.044**	0.047***
	(0.014)	(0.015)	(0.014)	(0.017)	(0.016)
	*[0.00]***	*[0.00]***	*[0.00]***	*[0.02]**	*[0.01]***
3rd income group	0.072***	0.073***	0.074***	0.070***	0.071***
	(0.021)	(0.021)	(0.021)	(0.020)	(0.020)
	*[0.02]**	*[0.02]**	*[0.01]***	*[0.00]***	*[0.00]***
4th income group	0.134***	0.132***	0.137***	0.134***	0.136***
	(0.022)	(0.023)	(0.021)	(0.020)	(0.020)
	*[0.00]***	*[0.00]***	*[0.00]***	*[0.00]***	*[0.00]***
Highest income group	0.235***	0.237***	0.238***	0.221***	0.223***
	(0.036)	(0.036)	(0.035)	(0.037)	(0.037)
	*[0.00]***	*[0.00]***	*[0.00]***	*[0.00]***	*[0.00]***
Missing income group	0.051*	0.056**	0.054*	0.047*	0.050*
	(0.027)	(0.026)	(0.026)	(0.025)	(0.025)
	[0.14]	*[0.08]**	*[0.08]**	*[0.10]**	*[0.09]**
Observations	41182	41182	41182	46894	46894
R^2	0.245	0.246	0.245	0.244	0.244

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.

Table A.4: 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	-0.034***	-0.034***
	(0.009)	(0.009)
	*[0.01]***	*[0.01]***
Gini index	-2.117***	-2.111***
	(0.617)	(0.616)
	*[0.01]***	*[0.01]***
Poverty headcount rate	-0.004*	-0.004**
	(0.002)	(0.002)
	*[0.04]**	*[0.05]**
Govt. exp. in education	0.092**	0.094**
	(0.041)	(0.041)
	*[0.01]***	*[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.5: Equality perception (categorical variable), heterogeneous effects

Educational attainment	Up to secondary	Higher secondary	University	
Unemployment rate	-0.035***	-0.029**	-0.029*	
	(0.009)	(0.010)	(0.016)	
	[0.01] ***	*[0.03]* **	*[0.16]*	
Gini	-2.718***	-2.078*	0.076	
	(0.783)	(1.000)	(1.337)	
	[0.01] ***	*[0.10]* *	*[0.91]*	
Poverty headcount rate	-0.002	-0.006***	-0.005	
	(0.003)	(0.002)	(0.004)	
	[0.62]	*[0.01]* ***	*[0.30]*	
Govt. exp. in education	0.079*	0.061	0.186**	
	(0.045)	(0.050)	(0.084)	
	[0.13]	*[0.24]*	*[0.02]* **	
Age	25-34 years	35-44 years	45-54 years	55-64 years
Unemployment rate	-0.033***	-0.024**	-0.038***	-0.038***
	(0.010)	(0.011)	(0.013)	(0.013)
	[0.01] ***	*[0.10]* *	*[0.04]* **	*[0.01]* ***
Gini	-2.959***	-1.886*	-1.337	-2.891***
	(0.926)	(1.040)	(1.119)	(1.014)
	[0.01] ***	*[0.23]*	*[0.34]*	*[0.02]* **
Poverty headcount rate	-0.011***	-0.005*	-0.003	0.004
	(0.002)	(0.002)	(0.003)	(0.003)
	[0.02] **	*[0.13]*	*[0.56]*	*[0.13]*
Govt. exp. in education	0.026	0.032	0.159**	0.203***
	(0.064)	(0.062)	(0.062)	(0.063)
	[0.73]	*[0.68]*	*[0.01]* ***	*[0.01]* ***
Employment status	Inactive	Employed	Unemployed	
Unemployment rate	-0.033***	-0.033***	-0.050**	
	(0.009)	(0.009)	(0.021)	
	[0.01] ***	*[0.02]* **	*[0.02]* **	
Gini	-1.570**	-2.465***	-3.314**	
	(0.585)	(0.814)	(1.447)	
	[0.01] ***	*[0.01]* ***	*[0.01]* ***	
Poverty headcount rate	-0.003	-0.005**	-0.002	
	(0.002)	(0.002)	(0.003)	
	[0.08] *	*[0.04]* **	*[0.57]*	
Govt. exp. in education	0.086*	0.110**	-0.003	
	(0.042)	(0.049)	(0.068)	
	[0.06] *	*[0.03]* **	*[0.95]*	
Perceived mobility	Lower	Same	Higher	
Unemployment rate	-0.032***	-0.032***	-0.035***	
	(0.011)	(0.006)	(0.011)	
	[0.01] ***	*[0.01]* ***	*[0.01]* ***	
Gini	-4.300***	-1.550**	-1.648**	
	(1.094)	(0.552)	(0.754)	
	[0.01] ***	*[0.01]* ***	*[0.02]* **	
Poverty headcount rate	-0.007**	-0.001	-0.003	
	(0.003)	(0.001)	(0.002)	
	[0.01] ***	*[0.39]*	*[0.10]* *	
Govt. exp. in education	0.096	0.103**	0.095*	
	(0.063)	(0.036)	(0.053)	
	[0.25]	*[0.02]* **	*[0.06]**	

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). Country and year dummies

included in all regressions but not reported. Clustered standard errors at the country level in parentheses. P-value of wild clustered bootstrap estimations in brackets. Significance: * p<0.10, ** p<0.05, *** p<0.01.

Table A.6: Demand for redistribution, heterogeneous effects

	(1)	(2)	(3)	
By educational attainment	Up to secondary	Higher secondary	University	
Equality perception (categorical)	-0.118***	-0.159***	-0.196***	
	(0.017)	(0.020)	(0.023)	
	[0.01] ***	*[0.01]* ***	*[0.01]* ***	
By age	25-34 years	35-44 years	45-54 years	55-64 years
Equality perception (categorical)	-0.140***	-0.161***	-0.151***	-0.162***
	(0.018)	(0.022)	(0.017)	(0.020)
	[0.01] ***	*[0.01]* ***	*[0.01]* ***	*[0.01]* ***
By employment status	Inactive	Employed	Unemployed	
Equality perception (categorical)	-0.130***	-0.159***	-0.097***	
	(0.019)	(0.018)	(0.020)	
	[0.01] ***	*[0.01]* ***	*[0.01]* ***	
By perceived mobility	Lower	Same	Higher	
Equality perception (categorical)	-0.159***	-0.154***	-0.143***	
	(0.023)	(0.018)	(0.019)	
	[0.01] ***	*[0.01]* ***	*[0.01]* ***	

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). Country and year dummies included in all regressions but not reported. Clustered standard errors at the country level in parentheses. P-value of wild clustered bootstrap estimations in brackets. Significance: * p<0.10, ** p<0.05, *** p<0.01.