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Growing income inequality, growing legitimacy: A longitudinal approach to perceptions of inequality

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ABSTRACT:

Scholars studying preferences for redistribution are puzzled. How can we explain the stable and relatively low support for redistributive policies while economic inequality has risen to unprecedented levels?
To solve this puzzle, we ask three questions: Do we build our perception of inequalities based on objective inequalities? Do the perceived inequalities influence our willingness to accept larger inequalities? Are these discrepancies rising these last three decades? To do so we exploit the ISSP module on inequality and trace perceptions of inequality and fairness evaluation over time and in cross-national perspective. Our results suggest that there is no clear trend of rising distortions over time. On the contrary, perceptions of inequality rose sharply between 1999 and 2009, an observation which is especially true for top-end inequality. However, we find little evidence that individuals adjust their fairness evaluation in times of rising inequality. Our results indicate that the gap between perceived and fair inequality is a strong predictor for preferences for redistribution, but this its influence tends to decrease over time.

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1. Introduction

Economic inequality has been rising in the last decades and has reached unprecedented level in some industrialized countries, the USA in particular (OECD 2015). While the evidence about the negative consequences of economic inequality is striking (see e.g. Delhey and Dragolov, 2014; Neckerman and Torche, 2007)[2], the public shows little appetite for more redistribution. This is astonishing as the expectations according to canonical political economy theories (Romer, 1975; Meltzer and Richard, 1981) are clear: Rising income inequality should lead to an increased demand for redistribution.

Recently, the literature has started a "perceptional-turn" in the sense that now subjective assessments of inequality are at the core of interest and no longer the objective reality. In essence, the argument is that what informs later preferences and political action is not an objective evaluation of inequality but how economic inequality is perceived and judged by citizens. Citizens' reactions and subsequent behaviour are much more likely to be based on their perceptions that may or may not match objective levels of inequality.

To gain a better grip at the puzzle of growing inequality but little public reaction, we thus need to focus on perceptions of inequality, how closely they link to objective measures and how revelant their are to explain subsequent attitudes and behavior. In this paper, we are especially interested in time trends in both dimensions and tackle the topic from a longitudinal and comparative perspective. Only looking at the phenomenon with a time perspective and focusing on the structure of inequality instead of solely the level allows disentangling two possible patterns that could explain the puzzle. On the one hand, a growing discrepancy between objective and subjective evaluations of inequality could be the reason why the public does not demand more redistribution. On the other hand, growing legitimacy of inequality could be another mechanism as an older literature in sociology (Homans 1978, Emerson et al., 1972) and some more recent works in political science predict (Trump, 2017; Castillo, 2012). Here the general idea is that high inequality becomes the norm and is thus accepted by the public which does no longer demand a correction of this situation.

While both mechanisms potentially solve our puzzle, their normative implications are drastically different. If misperceptions of inequality are on the rise, this would mean that people are losing touch, are less able to judge the political and economic reality and thus less able to get what they want. If on the other hand, a feedback effect makes inequality more acceptable and

[2]For example shorter life expectancy or increased crime (Wilkinson and Pickett, 2009).

legitimate, this can be seen as sign of resilient and active citizens who adjust their preference to changing circumstances.

We harness comparative survey evidence from the International Social Survey Programme (ISSP) that conducted four waves of a module on inequality perceptions so far (1987, 1992, 1999, and 2009). We compare Western countries and focus our empirical analyses on three variables in particular: Perceptions of income inequality, judgments whether these are legitimate or not and objective measures of inequality such as disposable Gini and income decile ratio variables. We proceed in four steps. First, we focus on the question how distorted perceptions are from objective income inequality and whether there are some diverging trends over time. Second, we look at the evolution of fairness perceptions of inequality, and how fairness perceptions adjust to perceived inequalities. Third, we look at how those trends distribute across the population to get a better sense of what is going on. In a final step, we analyze the impact these subjective inequality perceptions have on attitudes towards redistribution over time.

Our results suggest that individuals are well aware of the rising inequalities at the top end of the distribution. Moreover, they do not seem to adjust their level of ideal inequalities, which lead to a growing gap between the legitimate level of inequalities and the perceived inequalities. Finally, our paper highlights the importance of normative judgment in the understanding of income inequalities and on the formation of preferences for redistribution.

2. The multiple dimensions of subjective inequality perceptions

2.1. Perceived income inequality

We posit that perceptions of inequality are key in understanding the politics of inequality as these are the central drivers of political behaviour. Or to say with the words of the seminal Dahl (1973, p.95): "Between a condition of objective inequality and the response of a disadvantaged person, lie the perceptions, evaluations, expectations, in short, the psyche of the individual." (1971, p. 95).

There is a nascent literature that recognizes the mismatch between objective measures of inequality and the perception of income differences. Gimpelson and Treisman (2018), for example, find a much closer link between perceived economic inequality and preferences for redistribution than for objective measures. In general, there has seen an increase in scholarly interest in how citizens perceive inequality (e.g. Boudreau and MacKenzie, 2018; Engelhardt and Wagener, 2017; Fatke, 2018). For the US, Page and Goldstein (2016) as well as Norton and Ariely (2011) or Boudreau and MacKenzie

(2018) note an underestimation of the country's economic inequality regarding wealth and income while others conclude that Americans overestimate the degree of inequality (Chambers et al., 2014; Eriksson and Simpson, 2012). Comparative work also leans towards findings that people underestimate the current state of inequality (e.g. Gimpelson and Treisman, 2018; Fatke, 2018; Niehues, 2014). If the actual level of inequality is difficult to observe, changes in inequality may be even harder to detect. The available evidence suggests that drastic shifts in income inequality are noticed by citizens, for example the massive shifts in income differences after the collapse of the Soviet Union (Gijsberts, 2002; Kolczynska and Merry, 2016). More subtle adjustments such as the rise of top-end inequality might go unnoticed by the public though.

2.2. Perceived fairness of inequality

Before we elaborate on possible mechanisms for a mismatch between perceptions and objective inequality, let us first introduce another crucial dimension in the link between inequality and political behaviour: the individual normative evaluation of inequality. In other words the judgment of perceived inequality as (un-)fair and (il-)legitimate [3].

Rooted in social justice theory, the focus here is on the judgment about the fairness and justice of income differentials (e.g., Osberg and Smeeding, 2006; Alesina and Angeletos, 2005, see also the work of Jasso, 1978, 2015) This literature is relevant as it links perceptions of income inequality to an individual evaluation of its nature and thus focuses on one crucial precondition for political consequences: If citizens perceive economic inequality to be fair and justified, i.e. because of differences in human capital, there is little reason to presume that citizens would demand political action against it. In sum, behavioural implications are more likely if citizens evaluate the level of inequality in a country as unfairly high or low.

Scholars have long recognized that subjective perceptions of inequality and their rating as legitimate are interlinked. However, while already the early classics posit that perceptions and fairness evaluation are related (e.g., Homans 1974 or Emerson et al., 1972), the causal mechanism and the direction of the influence has remained under-theorized until recently. In a seminal contribution Trump (2017) clarifies not only the theoretical basis of the effect but also provides experimental evidence for the so-called "adjustment" thesis. In a nutshell, she defines adjustment as follows: "If existing

[3] In this paper we use the expression "legitimate" interchangeably with "fair" and "recommended" when referring to income inequality judgments.

income differences systematically inform ideas of what constitutes legitimate inequality, then individuals in more unequal situations will think of higher inequality as legitimate and acceptable." (Trump, 2017, p.4).

She identifies two psychological processes that lead to the phenomenon. A first path expects individuals to adjust and update their expectations about fair income differentials because of rational updating and anchoring. The idea is that new facts on high wages for a CEO, for example, will make you revise your opinion of how hard-working and productive such a person is and how this eventually also translates into accepting higher wages for such an individual.

A second path is based on system justification theory. Here the idea is that people – as individuals and as members of groups – legitimize the institutions and status-quo in the society, often coming to see income inequality as not only legitimate but also rational and necessary" (Costa-Lopes et al., 2013). Scholars explain this tendency with the fact that human beings are motivated to avoid the discomfort of (constantly) seeing a system as unfair and illegitimate. The feeling of injustice causes psychological discomfort and stress. Thus individuals solve this dilemma by interpreting information about the social system in a way that legitimizes and "makes sense of" social outcomes – even if they are highly unequal (Jost and Banaji, 1994; Jost and Hunyady, 2003). By positing that people have psychological attachments to the status quo, this theory serves as counter-point to self-interest based explanations and offers an account for "behavioural anomalies", i.e. the fact that growing inequalities does not necessary lead to growing demands for redistribution.

In a series of experiments (Trump, 2017) finds support for the general mechanism and also hints that system justification motivations might be at the core of the link. However, her latest experiments, while confirming an adjustment mechanism does not attribute it to a system justification mechanism (Trump and White, 2018).

2.3. Disentangling inequality: toward the top or toward the bottom?

Importantly, perceptual accuracy and also the effects of perceptions could be different for inequality toward the top and inequality toward the bottom. So far, scholars looked mainly at income differentials in general, but recent research suggests that inequality should be broken down into different dimensions. Especially given the fact that top-share inequality has grown almost exponentially while low-end inequality has remained more stable (Alvaredo et al., 2013). Already Osberg and Smeeding (2006) disaggregated the concept of inequality across the distribution. Their results show distinct attitudes and behavior depending on the "type" of inequality. They observe that, in 1999,

individuals are more concerned to level down inequalities toward the top than inequalities toward the bottom.

Similarly, another literature highlights the role of the "structure of inequality" on preferences for redistributive policies. At the country level, Lupu and Pontusson (2011) argue that the structure of inequality (measured by its skewness) rather than the level of inequalities affects preferences for redistribution. Their results show that countries, where middle-income voters are closer to the bottom half than to the top half, have more distributive policies. In the same way, middle-income voters tend to favor redistributive policies when the distribution is skewed toward the bottom. Pontusson and Weisstanner (2017) suggest that unemployment and poverty risk concentration at the bottom of the income distribution might be one of the drivers of this mechanism. On the other hand, Lupu and Pontusson (2011), propose that, when the income share is concentrated on the top, median income voters identify to the poor and consequently "empathize" with them.

So while this literature suggests that people make a difference whether top or bottom level inequality is concerned, we lack a comprehensive account of how citizens perceive and evaluate different aspects of inequality and especially how this has developed over time. Furthermore, the study of perceived and legitimate inequalities would be incomplete if we would not disaggregate the concept of inequality into its top and bottom components. Just as the objective inequality evolve differently at the top and the bottom of the distribution, we can expect that perceptions of top-end and low-end inequalities follow different trends. Similarly, perceived legitimacy of top-end and low-end inequality most probably differ and evolve distinctively.

3. Towards theoretical expectations

In a first step of our analysis we trace perceptions of inequality over time and compare these subjective accounts to objective measures of economic inequality. This allows us to see whether perceptions and reality are more apart now than in earlier periods or whether they move more or less in parallel.

A first set of hypotheses focuses on growing distortion between objective and subjective realities of inequality. This argument is often used as the main reason to explain the limitations of the MR thesis. In brief, it posits that there is no public reaction to rising income inequalities because citizens have developed a more biased perception of inequality over time, i.e. they underestimate inequalities to a larger extent nowadays than before.

This growing gap could be due to the unprecedented levels of inequality, which make a correct assessment more and more difficult. Humans are

notoriously bad in judging the risk of highly unlikely events (Johnson and Tversky, 1983), so a high level of income and wealth inequality could pose similar problems, and thus an accurate evaluation becomes less likely.

Our sub hypotheses dig deeper into the structure of inequality and posit that perceptions towards top-end inequality have become more distorted than low-end inequality. We would expect that top-end inequality might be more difficult to grasp due to the high skewness of the distribution. In the same way, top-end inequality has been the main driver of the rising inequalities those last decades (REF). Thus, the drastic evolution of the top 1%'s income could make a correct assessment of top-end inequalities more complicated than the rather stable lower-end inequalities.

On the other hand, media give a great provide a lot of attention to top-end inequalities. Indeed, during the last decades and particularly during the great recession, golden parachutes and the development of high wages for managers and CEO often made the headlines. Therefore, information on top-end inequalities is more accessible than low-end end inequalities, which could lead to an easier assessment of top-end inequalities. We thus put both hypotheses H1a and H1b up for an empirical test.

H1: Perceptions of economic inequality have become more distorted over time.

H1a: Distortion at the top of the distribution has become more widespread.

H1b: Distortion at the bottom of the distribution has become more widespread.

A second perspective suggests that perceptions of legitimate levels of income inequality adjust to the rising level of objective inequality. Trump (2017) has proven the mechanism experimentally and shows that individuals experiencing high economic inequality are also prone to legitimize higher level of inequality – what she calls "adjustment" – and that the relationship runs at least partially via system justification motivations (Trump, 2017). Before that, scholars have already observed a correlation between perception and legitimacy of income differentials in cross-sectional data, single countries or for a limited time frame (see Bartels, 2008; Gijsberts, 2002; Listhaug and Aalberg, 1999; Castillo, 2012) but were not able to shed light on the reasons for this link.

We approach the topic from a different angle and focus on the co-evolution of trends over time in multiple countries. While it is more difficult to prove a causal relation in such a setting, we nevertheless can show how widespread such adjustments are and whether they are equally observable across all

nations. More interestingly, our design allows us to test the adjustment hypothesis on a dynamic aspect. Put differently; we can test whether rising (objective and perceived) inequalities lead to the acceptance of higher levels of inequality and more particularly if that adjustment is driven by a growing legitimacy of top-end inequalities and or a growing legitimacy of lower-end inequalities.

H2: The level of legitimate inequality has become higher over time, i.e. perceptions of inequality and its evaluation as legitimate move in parallel over time.

H2a: Legitimacy is growing especially at the top
H2b: Legitimacy is growing especially at the bottom

4. Empirical approach

In sum, there is a scientific consensus to say that both the structure and perception of inequalities matter and suggesting evidence that individuals in Western countries tend to underestimate income inequalities. However, we found no research tackling the evolution of perceived inequality nor the differences between countries. Similarly, the nascent literature on perceived fairness of inequality suggests that "ideal" level of income inequality is strongly linked to perceived inequalities, but if this relation is clear in experimental settings, there is a lack of evidence on observational data over time.

Our primary data for our analysis are the ISSP's Social Inequality modules. The ISSP is a cross-national collaboration program conducting annual surveys on topics relevant to social sciences. The Social Inequality modules were collected in 1987, 1992, 1999, and 2009. The modules' survey cover items on individual's perception of economic inequality and its fairness, beliefs about the causes of economic success and the role of the state regarding income inequalities.

We restrict our analyses to countries which participated at least twice in these modules, resulting in a sample of twenty-seven European countries and four extra-European countries: the US, Australia, New Zealand, and Israel. As can be seen in table 1, we will use in our analyses two sub samples: a sub-sample of six countries with data in the four waves, and another one of thirteen countries with data in the three last waves. The repeated design and samples of about a thousand respondents by country allows us to conduct longitudinal analysis to test our assumptions.

Table 1: Available Countries[a]

country	1987	1992	1999	2009
Australia	√	√	√	√
Austria	√		√	√
Belgium				√
Bulgaria		√	√	√
Croatia				√
Cyprus			√	√
Czechoslv./Czech Republic		√	√	√
Denmark				√
Estonia				√
Finland				√
France			√	√
Germany	√	√	√	√
Hungary	√	√	√	√
Iceland				√
Israel			√	√
Italy	√	√		√
Latvia			√	√
New Zealand		√	√	√
Norway		√	√	√
Poland	√	√	√	√
Portugal			√	√
Russia		√	√	√
Slovakia			√	√
Slovenia		√	√	√
Spain			√	√
Sweden		√	√	√
Switzerland	√			√
UK	√	√	√	√
USA	√	√	√	√

[a] Countries in all waves in italic, countries in the three last waves (1992 - 2009) in bold.

There are diverse ways to measure perceived inequality and different results are observed according to these measures. Niehues (2014) and Gimpelson and Treisman (2018) studied the perceived stratification of the society and their results converge on the conclusion that individuals tend to overestimate inequalities. Engelhardt and Wagener (2017) and to some extent Evans and Kelley (2004) compared aggregated self-positioning in the distribution with the objective distribution. In sum, we see those measures as having strong limitations. For example, measures of perceived stratification use a question based on a graphic interpretations but it seems to us that assuming that all individuals have a clear understanding of those graphs is a strong assumption. Similarly, an aggregated measure of self-positioning in an income distribution cannot be interpreted as an individual perception of income inequality.

Instead we utilize another common measure for perceptions of inequality that operationalizes the concept based on income evaluation questions and estalishes an overall measure with this material. In detail, in the four waves of the ISSP Social inequality module, respondents have to estimate the income of key occupations, as well as the income they "ought to be paid." Authors used these questions to address questions on subjective income inequality (Evans and Kelley, 2004; Gimpelson and Treisman, 2018; Kuhn, 2016), its perceived fairness (Castillo, 2012; Kiatpongsan and Norton, 2014; Osberg and Smeeding, 2006; Engelhardt and Wagener, 2014) and its effect on redistributive preferences (Engelhardt and Wagener, 2014; Niehues, 2014).[4] Among them, Kuhn (2016) built a perceived Gini index, and Kiatpongsan and Norton (2014) measured the estimated and "ideal" gap between CEOs and unskilled workers.

We deem the "income evaluation" questions as the most consistent way of measuring our concepts of perceived and legitimate inequalities on a 22 years time frame. Importantly, with these variables at hand we disaggregate the concept of inequality, as direct measures tend to be convoluted with political values and left ideology in particular (see, e.g., Osberg and Smeeding, 2006). We distinguish objective, perceived and legitimate inequality as well as inequalities between the top and the bottom, toward the top and toward the bottom of the distribution. We measure perceived inequalities and legitimate inequalities the same way as Castillo (2012) operationalized its "perceived

[4]Recently, Pedersen and Mutz (2018) have shown that the sequence of questions in ISSP implies anchoring effects for the ideal pay question. As our focus here is not on showing what people want in absolute terms but rather how these perceptions have developed over time, we only have to assume that the distortion remains constant over time which we deem rather plausible.

income gap" and "just income gap" indicators. To do so, we consider four professions available in the ISSP survey: Two at the upper tail of the distribution: doctor in general practice and CEO of a large national company and two at the bottom of the distribution: shop assistant and unskilled worker in a factory.

In detail, we identify for each respondent which profession is perceived as the least well off and the most well off, as well as the profession that ought to be paid the most and the least. We define perceived inequalities as the log ratio of the estimated wage of the most well off profession over the estimated wage of the least well off.

$$\textbf{Perceived inequality} = \log\left(\frac{Perceived\ highest\ income}{Perceived\ lowest\ income}\right)$$

In a similar fashion, our indicator for legitimate income inequalities is defined as the log ratio of the "ought to be paid" income of the perceived most well off position over the "ought to be paid" income of the perceived least well off.

$$\textbf{Legitimate inequality} = \log\left(\frac{Should\ earn\ highest\ income}{Should\ earn\ lowest\ income}\right)$$

In order to measure perceived and legitimate inequalities toward the top and the bottom, we generate a perceived median income as following: Perceived median income = Median income (CEO of a large national company, doctor in general practice, shop assistant[5], unskilled worker in a factory). From this we define two measures of perceived inequality: The inequality towards the top compares the highest perceived income (mostly CEO) to this median income while the inequality towards the bottom measure does the same for the lowest income compared to the median.

In a similar fashion, we construct two measures of legitimate inequality by simply replacing the perceptions with the legitimate levels of income. Table 2 provides an overview of all inequality measures utilized in this study.

The just described indicators give us a central tendency of the perceived, and perceived level of legitimate inequalities. However, they do not take into account the differences of preferences between individuals. To get a better grasp of individual heterogeneity, our next indicator therefore replicates the Osberg and Smeeding (2006, p.466) measure. Because each respondent reported his perception of income and "ought to earn" income for at least

[5]the shop assistant income estimation question was not asked in the 1987 wave, nor in Slovenia and Sweden in 1992. Therefore, Slovenia and Sweden were excluded from the analysis using measures of top and bottom inequalities

four professions[6] we can consider the following regression $Yi^* = b_0 + b_1 Y_i^A$ measuring individuals leveling preferences of the perceived income distribution into a legitimate (or acceptable) income distribution. Where Yi^* is the estimate of what a profession should earn, Yi^A is the perceived income for that profession, b_1 the coefficient capturing individual's preferences for the leveling of perceived income and b_0 the constant. If the respondent favor a strict egalitarian income distribution where all incomes are the same, we would observe $b_1 = 0$ and therefore $Yi^* = b_0$. If the respondent favor status quo, *id est* if they think that what people earn is what they should earn $b_1 = 1$ and $Yi^* = Y_i^A$. Finally, if respondents somehow wish to level down income inequalities, we would observe $0 < b_1 < 1$; and respondents who wish to deepen income inequalities we should observe $b_1 > 1$. In the method part, we will describe how a Kernel density plots of the b_1 coefficient will give us snapshots of the *distribution of disagreement* about income distribution leveling.

For our objective indicators, we rely on two datasets: the Standardized World Income Inequality Database (SWIID) and the Luxembourg Income Study Database (LIS). The SWIID incorporates data from several databases including the OECD Income Distribution Database, the World Bank, Eurostat, the World Bank's PovcalNet, and national statistical offices around the world. Standardized on the LIS data, the SWIID provides us a reliable Gini index across all of our studied period and countries. The LIS data is the largest available income database of harmonized microdata collected from about 50 countries in Europe, North America, Latin America, Africa, Asia, and Australasia spanning five decades, it contains variables on market income, public transfers and taxes, household- and person-level characteristics, labour market outcomes, and expenditures. For our analyses, we use three national aggregated income inequality measures: the 9th/1st decile ratio for inequality between the top and the bottom of the distribution, the 9th/5th decile for the inequality toward the top and 5th/1st decile for the inequality toward the bottom of the distribution.

[6]CEO of a large national company, doctor in general practice, unskilled worker in a factory, shop assistant (not available in the 1987 wave, nor in 1992 for Slovenia and Sweden).

Table 2: Objective, perceived and legitimate inequalities indicators

	Objective inequalities	Perceived Inequalities	Legitimate inequalities
Inequalities top/bottom	Disposable Gini (SWIID) Objective ratio 9th/1st decile (LIS)	$\log\left(\frac{Perc\ highest\ income}{Perc\ lowest\ income}\right)$	$\log\left(\frac{Should\ earn\ highest\ income}{Should\ earn\ lowest\ income}\right)$
Inequalities toward the top	Objective ratio 9th/5st decile (LIS)	$\log\left(\frac{Perc\ highest\ income}{Perc\ median\ income}\right)$	$\log\left(\frac{Should\ earn\ highest\ income}{Perc\ median\ income}\right)$
Inequalities toward the bottom	Objective ratio 5th/1st decile (LIS)	$\log\left(\frac{Perc\ median\ income}{Perc\ lowest\ income}\right)$	$\log\left(\frac{Perc\ median\ income}{Should\ earn\ lowest\ income}\right)$

In the second part of the analysis, we shed light on the effects of perception of inequalities on legitimate inequalities. The adjustment hypothesis suggests a direct link between the two concepts of fairness. We add to this model several control variables resulting from the literature on inequality. To test whether the *social position* matters to explain inequality acceptance, we will use both objective and subjective position in the income distribution variables available in the ISSPs. For the objective position, we recoded the income variable, such as each respondent would be ranked by income decile. For the perceived position, we used the social self-positioning variable, in which individuals had to answer the following question: *"In our society there are groups which tend to be towards the top and groups which tend to be toward the bottom. Below is a scale that runs from top to bottom. Where would you put yourself on this scale?"*

To test the role of *beliefs in the procedure* of the distribution we use a set of questions on "opportunities for getting ahead in life," in which they had to define the importance of some elements to "get ahead in life." We use one of them to operationalize the concept of *"effort" and "luck"*. In the selected question, respondents evaluate the importance of "coming from a wealthy family" to get ahead in life. With this indicator, we can tell if beliefs in a distribution driven by luck set the standard for inequality acceptance.

Finally, we use the *party affiliation* variable to define respondent's ideology. We recoded the variables in three dummies: identification with a left-wing, center and right-wing party.[7]

In a final part we analyze the relevance of inequality evaluations on the demand for redistribution. Here, our dependent variable, we use the government responsibility variable, in which respondents had to express their agreement on a five-point Likert scale to the following statement: *" It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes"*. We use the same independent variable than in the preceding models, to which we add a "fairness gap" variable, measuring the difference between individuals perceived inequalities to their legitimate inequalities[8].

[7]Please note that we rely on the pre-coding by the ISSP on which party is considered far-left, left, center, right or far-right.

[8] Fairness gap $= \log\left(\frac{Perceived\ highest\ income}{Perceived\ lowest\ income}\right) - \log\left(\frac{Should\ earn\ highest\ income}{Should\ earn\ lowest\ income}\right)$

5. Method

We divide our empirical analysis in four parts. In the first part, we describe the link between objective inequalities and perceived inequalities from 1987 to 2009; in a second part, we highlight the role of perceived inequalities and other key variables on legitimate inequalities; the third part more closely looks at the distribution of disagreement within the countries and through time while the last looks at the link of inequality evaluations and the demand for redistribution.

In each section, we conduct descriptive analysis at the aggregated level and regression models with robust standard error at the individual level. We preferred to use robust standard error on our regression models as our models are particularly sensitive to outliers and leverage points as both our dependent variables (perceived inequalities, legitimate inequalities, legitimate inequalities toward the top and the bottom) and our main independent variable (perceived inequalities) are highly heterogeneous and present extreme values at the end of their distribution. We add several other predictors of inequality perceptions into the models such as objective and subjective social position, perceived importance of luck for getting ahead in life, party affiliation and socio-demographic variables but only report the theoretically interesting quantities in the paper. The full regression output can be found in the appendix.

In the tests of H1, we highlight the connection and disconnection between the objective inequality and perceived inequality. At the aggregated level, we draw both the evolution through time of objective inequalities (with the disposable Gini index and income ratios) and the perceived inequality (log (highest-estimated income/lowest-estimated income). We then clarify the link between these two variables at the aggregate level with correlations.

In the test of H2, we focus on the correlation between perceived inequalities and fair inequalities. At the country level, we compare the evolution of perceived inequality to the measure of legitimate inequalities.

In both tests, we disaggregate our concepts into perceived and legitimate inequalities towards the top and towards the bottom to test our sub hypotheses that focus on the structure of inequality. By doing so, we attempt to identify the source of the general trend observed in our analyses.

To complete this picture, in the next part, we asses the evolution of the *distribution of disagreement* about the leveling preferences of income inequalities. Our precedent analyses give us different trend evolution at the national, aggregated level but do not picture the eventual disagreement within those states. To complete that goal, we draw kernel density plots of the b_1 coefficient from our leveling preferences equation described earlier $Yi^* = b_0 + b_1 Y_i^A$.

It depicts the *distribution of disagreement* by indicating the percentage of the individuals at each value of the coefficient b_1[9]. The figures obtained allow us to identify the homogeneity or the polarization of the population of their preferences when addressing the question of the leveling of income inequalities.

6. Results

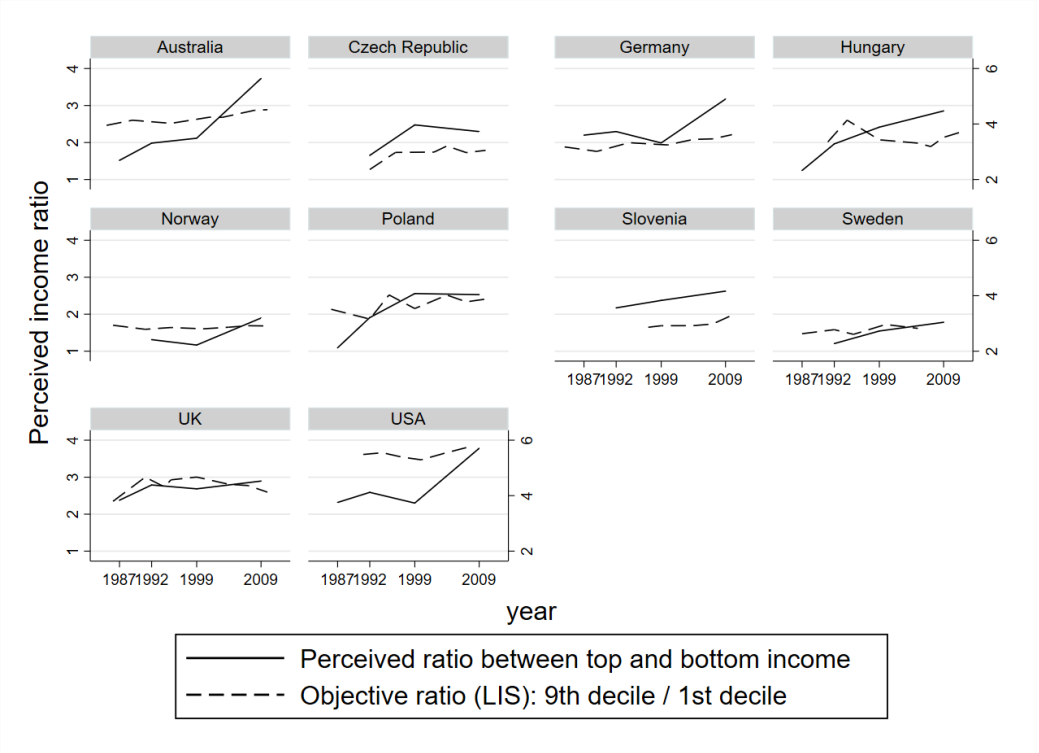
6.1. Link between objective inequalities and perceived inequalities

6.1.1. Objective-Perceived level of inequalities

In a first step we explore the distortion of perceptions of inequality from their actual development over time (H1). Figure 1 provides an overview of the development of the ratio between the 9th decile and 1st decile (as measure for objective inequality) and the perception of income inequality while figure 2 maps the gap between the two variables over time for several countries (for those we have a long timeline). Finally, table 3 is based on a series of multilevel regressions over time and shows the influence of the objective level of inequality (Gini index) on perceptions of inequality. In the first row, we only consider the countries for which we have information on the full timeline (1987-2009) while the second row shows the results for the larger sample.

[9] In our graphics b_1 takes 150 different values

Figure 1: Subjective and objective measures for income inequality over time, separated by countries[10]



The evidence points all to the same overall conclusion: There is no clear trend of rising distortions of perceptions of inequality over time. The regressions (table 3) show no clear pattern of stronger or weaker association over time and also the gap trend lines displayed in figure 2 show no clear increasing and thus widening trend. However, it should be noted as well that there is a gap between objective and subjective inequality, and this gap continues to exist.

Figure 1 finally reveals some interesting patterns. First the general picture of more or less parallel evolving lines is visible as well, for example in the Czech Republic or Poland. However, in a series of countries we see perceptions and actual inequalities to take a different trajectory in 2009. As visible in Australia, Germany or the USA, in 2009 perceptions of inequality are on the rise, indicating that people perceive inequality to be heavily increasing, especially as compared to their assessment ten years earlier.

[10]Country selection is based on the data available in the Luxembourg Income Study on the studied waves, Russia was excluded.

So while subjective evaluations of inequality are moving upward, this upward trend is not countered by the same trend in objective measures such as the Gini. However, one should keep in mind that the development of objective inequality over the last ten years should probably be the baseline for comparison here as we only have subjective evaluations available for 1999 and 2009.

So in sum, our data suggest that perception of inequality grows faster than real-world inequality between 1999 and 2009. However, this development leads rather to a closing of the gap between perceptions and reality as people seem to have underestimated inequality and are now "catching up," a phenomenon especially visible in figure 2. Individuals overestimate the growth of income inequalities (see also (Chambers et al., 2014) with a similar finding but without longitudinal perspective) but still tend to underestimate income inequality as a whole (Osberg and Smeeding, 2006). However, the gap seems to close to a certain extent.

Figure 2: The gap between objective and subjective measures of income inequality over time

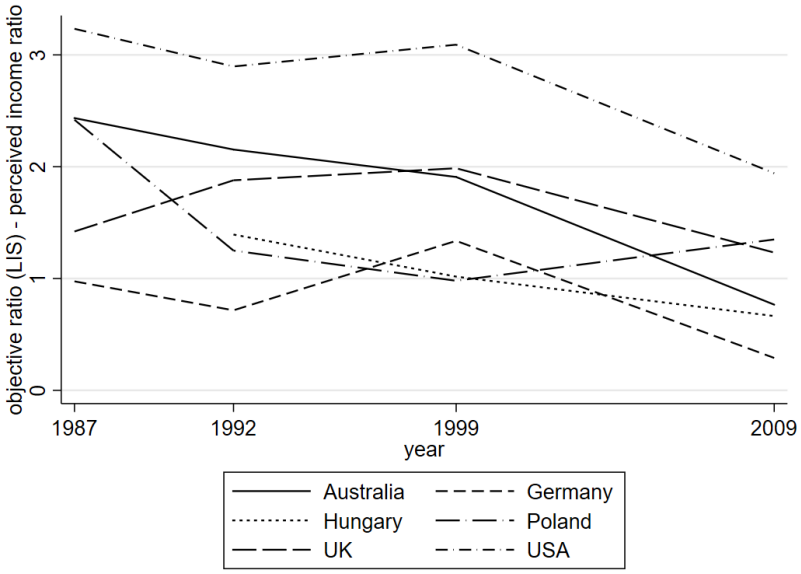


Table 3: Regression coefficient of Gini on perceived income inequalities[1]

	1987	1992	1999	2009
All waves sample[2], N=5	0.08	0.06	0.04	0.06
	(0.06)	(0.04)	(0.03)	(0.05)
1992-2009 sample[3], N=12		0.05*	0.06*	0.07
		(0.02)	(0.03)	(0.04)

t statistics in parentheses
* p<0.05, **p<0.01, ***p<0.001

[1] See complete regressions in appendix. Table 6 and table 7.
[2] Australia, Germany, Hungary, UK, USA.
[3] Australia, Bulgaria, Czech Republic, Germany, Hungary, New-Zealand, Norway, Poland, Russia, Slovenia, UK, USA.

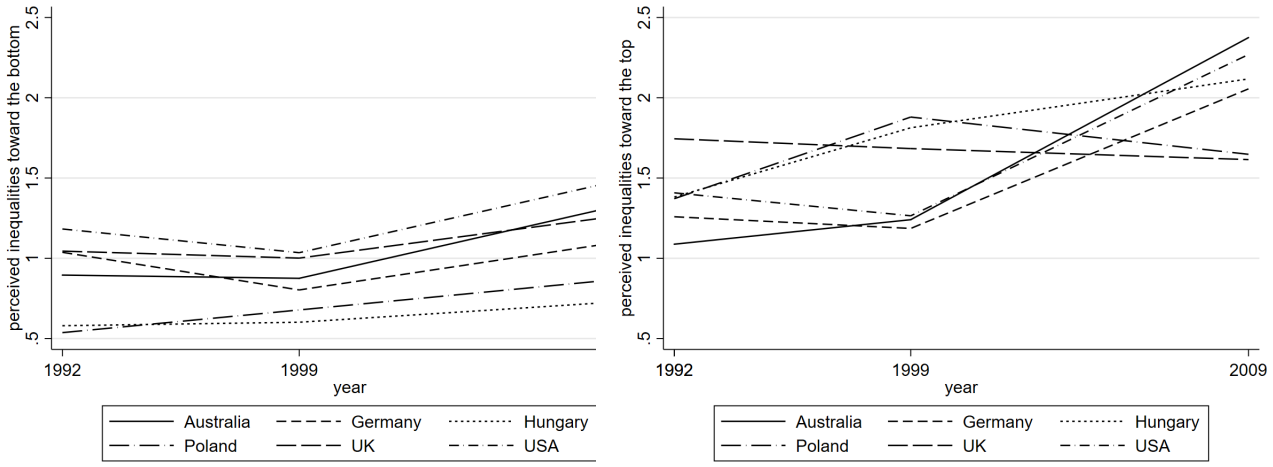
6.1.2. Objective-Perceived top and bottom inequalities

Looking at top end and low end inequalities informs on the motor of the previous dynamics. This is what figure 3 focuses on. We see that over time people tend to perceive stable inequality towards the bottom (left-hand panel), with a rather stable trend between 1992 and 1999 and a slight increase from 1999 to 2009. On the other hand, we observe a constant and sharp rise of perceived inequality at the top (right-hand panel) which mainly occur between 1999 and 2009.

Obviously, these perceptions are not entirely unrelated to the real situation where low-end inequality has remained relatively stable in Western democracies while top-end inequality has continuously risen in the last decades (see figure 10 in the appendix). Even though our measure of perceived top-end inequalities is particularly sensitive as it measures the perceived highest income (mostly CEO's income) over the perceived median income, it also reflects the objective growing income of the top 1% of the income distribution (see World Inequality Database).

Overall, we observe a diminution of the gap between perceived and objective inequalities and that this closing gap is mainly driven by a more accurate perception of top-end inequalities which goes against our hypothesis H1a. Indeed, while perceived inequalities toward the bottom follow the same trend than objective inequalities toward the bottom, perceived inequalities of top-end inequalities are growing much faster than objective inequalities at the top of the distribution. Our results suggest that while individuals are overestimating the growth of top-end inequalities, they also tend to make a more accurate estimation of this aspect of inequality.

Figure 3: Perception of inequality split by top and bottom income[11]



(a) perception of bottom inequalities

(b) perception of top inequalities

6.2. Link between perceived inequality and legitimate inequality

6.2.1. Perceived-Fair level of income inequalities

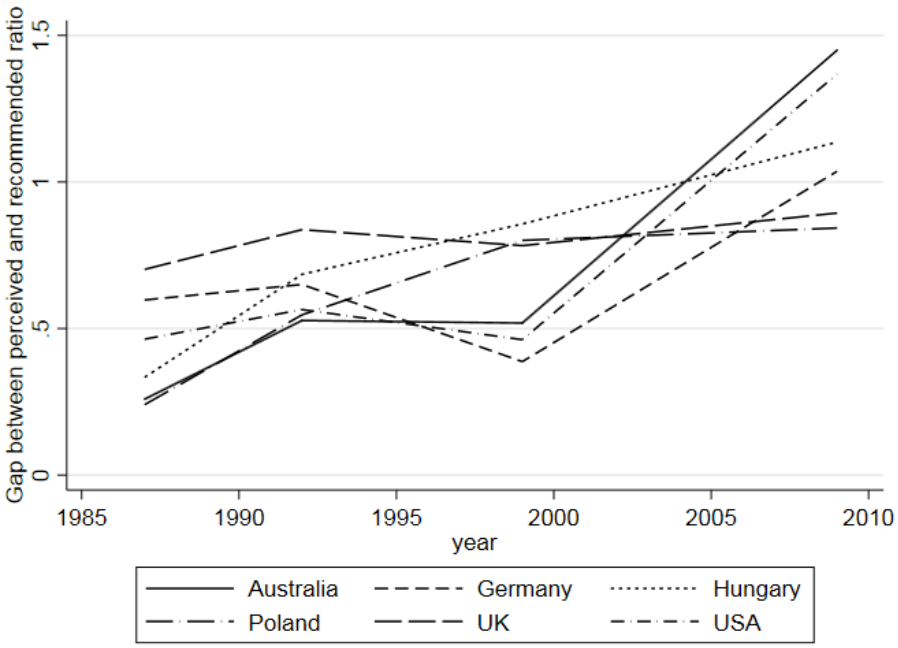
In a second step we add fairness perceptions of inequality to the picture and study, especially how they co-evolve with income inequality perceptions (H2). Figure 4 shows the gap between perceived and fair income ratios over time for a series of countries while table 4 displays the results of regressions to explain fairness judgments of inequality.[12]

In figure 4 it becomes visible that two periods can be separated from each other. First, there is a period of stability, of co-evolution of perceptions and fairness judgments over time visible across nearly all countries in the sample. However, the situation changes drastically between 1999 and 2009 where the gaps largely widen (figure 4) and correspondingly the lines to take different directions if we plot them separately (see figure 9 in the appendix). This gap particularly grows in Australia or the USA but is also visible in European countries such as Italy or Germany. If trends are diverging, it should be noted that fairness evaluations remain rather stable (see also figure 9 in the appendix) while the perceptions of inequality have been different for 2009.

[11]The 1987 wave was excluded as it does not include the perceived income of a shop assistant.

[12]Which by the way also provides valuable insights regarding the link between perceptions and legitimacy as it includes income perceptions as independent variable.

Figure 4: Gap between perceived and legitimate inequalities over time, separated by countries



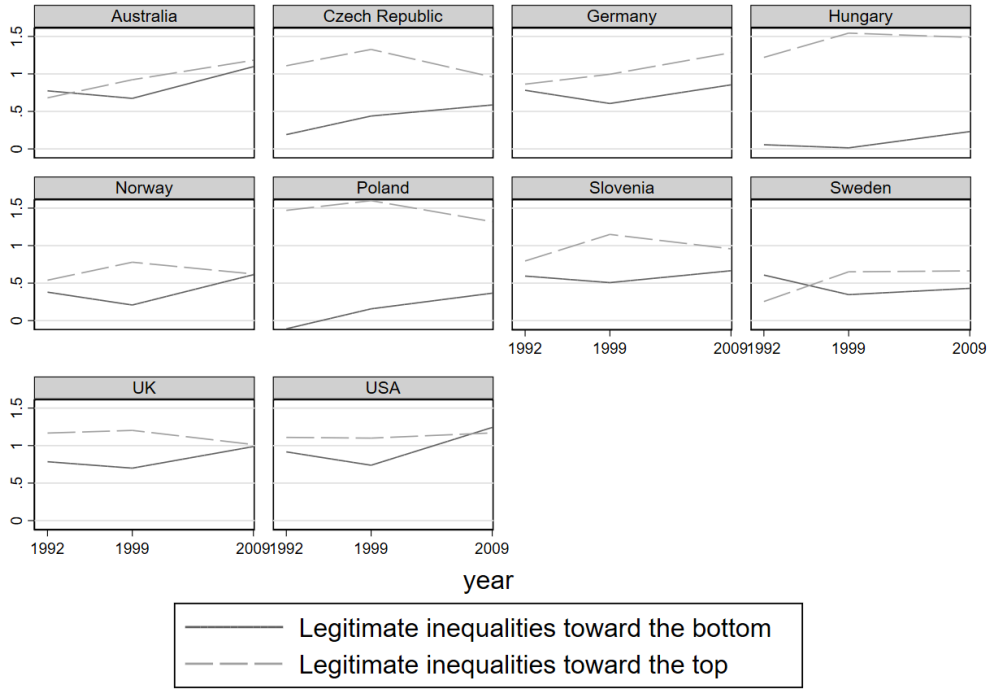
In sum, it seems that there is a perceptions of higher inequality over time, while, in the same time, the level of legitimate inequalities keep a rather stable trend. The correlation between the two quantities remains significant though as visible in table 6. The stability of the level of legitimate inequalities through time could be due to the fact that legitimacy beliefs are structured by social position, education, income groups as well as by political beliefs, and partisan identification in particular. These factors are all rather stable features, and thus it comes as no surprise that citizens are not fast in adapting their judgment of what are legitimate income inequalities. To conclude, our analyses do not lend much credit to the thesis of an adjustment of legitimate levels of inequality.

6.2.2. Legitimate top and bottom inequalities

To understand the underlying dynamics, we look at how income inequality legitimacy differ if they concern top or bottom income inequality. To this end, we first compare the legitimate level of inequality at the top of the income

distribution [13] and the legitimate level at the bottom of the distribution [14] and observe how they evolve over time (figure 5).

Figure 5: Legitimate income inequalities toward the top and bottom across countries[15]



The first striking result is the general aversion toward "skewness" across countries. In all countries, except the post-soviet states, individuals tend to constantly recommend the similar level of income dispersion at the bottom and at the top of the distribution. These results are in line with the work of Lupu and Pontusson (2011) which suggests that the structure of inequalities rather than the level of inequality in a country are more predictive of re-distributive policies. Moreover, it turns out that both judgments are rather stable during the studied period. In this sense, figure 5 reiterates what we have already seen in figure 4, namely that fairness perceptions are rather stable over time. Again, we observe some cross-national variation concerning the

[13] log ratio of the highest profession in the survey, mostly CEO wage over the perceived median income

[14] log ratio of the lowest profession in the survey, mostly shop assistant or unskilled worker over the perceived median income

[15] Sample of all countries participating in at least two waves

evolution of the levels of acceptable inequalities. Some former Eastern bloc countries, such as Latvia or Poland, seem to accept less income dispersion at the top-end of the distribution.

In a final step, we explore whether the link between perceptions and legitimate inequalities has changed if we look at aversion towards the top and bottom separately. Table 4 shows the corresponding results as it lists regressions with legitimate inequalities towards the top/bottom as dependent variable and perceptions as independent ones. The table reveals that while the link between perceptions and legitimate inequalities towards the bottom has remained reasonably stable ,except in 2009, the link has weakened for top-income shares. Here, perceptions are less associated with legitimate income differentials in 2009 than ever before. This weakening coefficient is the result of moving perceptions of inequality combined with stable fairness judgments.

In sum, it seems there is more going on at the top of the income strata than at the bottom. People have especially changed their perception of what these wages look like while not so much their mental judgment of whether these wages are fair or not. It indicates that adjustment does not work or only to a certain degree or with a time lag that we cannot capture with the data at hand.

Table 4: Regression coefficient of perceived inequalites (top/bottom) on legitimate inequalities (top/bottom)

	Legitimate inequalities toward the bottom			
	1987	1992	1999	2009
All waves sample[a]	0.87^{***}	0.89^{***}	0.85^{***}	0.75^{***}
	(0.01)	(0.01)	(0.01)	(0.01)
1992-2009 sample[b]		0.83^{***}	0.79^{***}	0.77^{***}
		(0.01)	(0.01)	(0.01)
	Legitimate inequalities toward the top			
All waves sample[c]	0.63^{***}	0.58^{***}	0.53^{***}	0.42^{***}
	(0.01)	(0.01)	(0.01)	(0.01)
1992-2009 sample[d]		0.53^{***}	0.42^{***}	0.43^{***}
		(0.01)	(0.01)	(0.01)

See complete results in appendix:
[a] table 8; [b] table 9 (Slovenia and Sweden were excluded due to missing data); [c] table 10;
[d] table 11 (Slovenia and Sweden were excluded due to missing data).

6.3. Distribution of disagreement

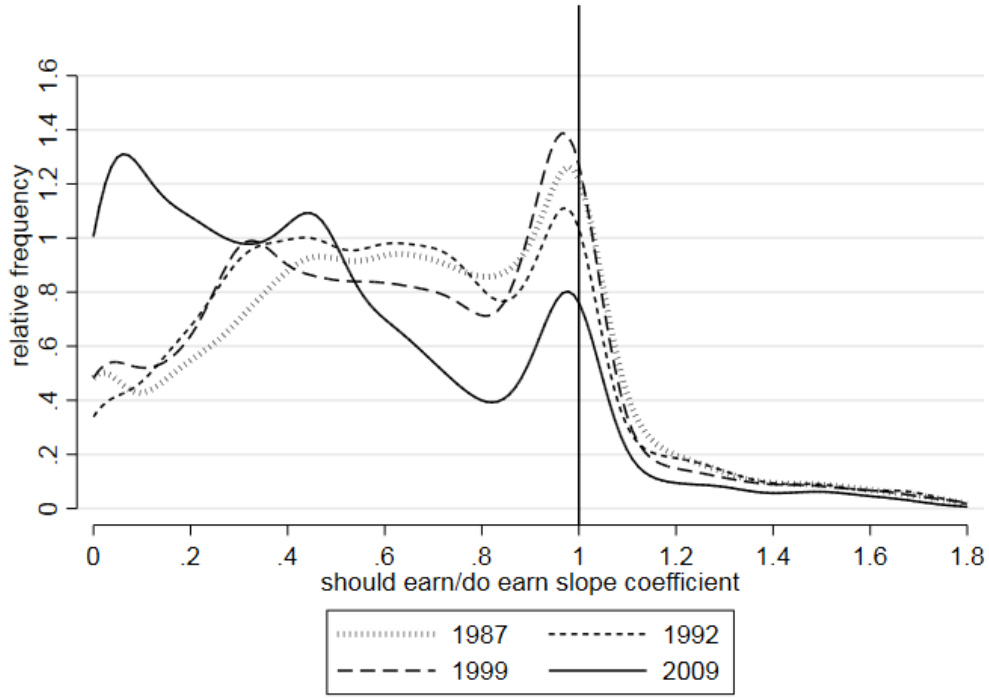
Next, to observe the *distribution of disagreement*, we turn to the results of the individual regressions. In figure 6, we plotted a Kernel density distribution based on a Gaussian kernel function (150 points) on the sub-sample of countries that we have in all waves (N=6).[16]

The *distribution of disagreement* about income leveling is strikingly different in 2009 compared to the other waves. While in 1987, 1992 and 1999 we observe two groups in the society: a large group favoring the status quo ($b_1 = 1$ and a more diffuse group favoring a leveling down of the income inequalities ($0.3 < b_1 < 0.8$). We observe three different groups in 2009: the group favoring the status quo is still there but is substantially smaller than it used to be in the earlier waves, the group preferring a leveling down of income distribution is now centered around the value of $b_1 = 0.5$ and finally a third egalitarian group ($0 < b_1 < 0.1$) rose. According to this first Kernel distribution, it seems that 2009 is a particular year, where the degree of acceptance of inequalities dropped down, and demand for leveling down of income inequalities rose in two groups: one close to egalitarian ideal and another one centered around the value of $b_1 = 0.5$.

To investigate this drastic change of public preferences, we provide a closer look on six different countries (USA, Norway, UK, Germany, France, and Spain) in 1999 and 2009 (Figure 7). The pictures seem to confirm the trend previously observed. In all countries observed, the proportion of respondents thinking that the income distribution should stay the same, dropped down. Moreover, a larger share of individuals have preferences for leveling down income inequality drastically. The US case might be the more emblematic, with two clear groups in 1999, a large and dominant one centered around the status quo and a more diffuse one preferring a leveling down of the income inequalities centered around the value 0.5. In 2009, the pro-status quo group drastically reduced while the group preferring a leveling down of the inequalities is centered around the almost egalitarian value of $b_1 = 0.1$.

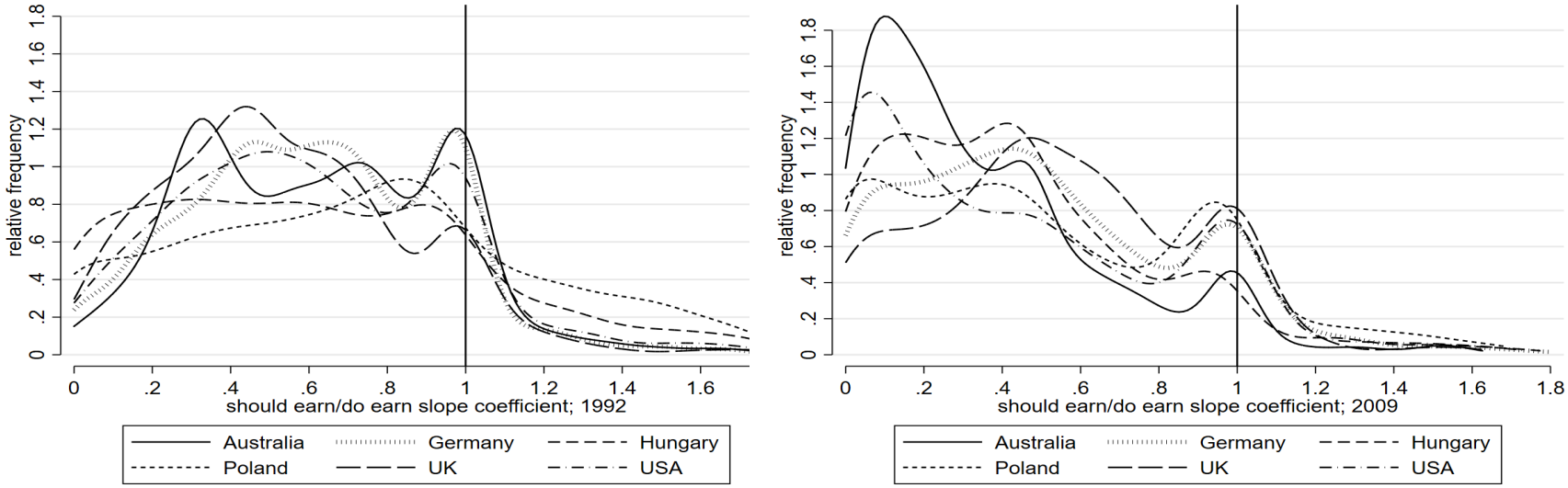
[16]Missing values in income estimation and "should earn" income were respectively replaced by the mean of the estimated other incomes and the mean of the other recommended income.

Figure 6: Leveling preferences over time



Plot based on a Gaussian kernel function (150 points), Sample: countries in all waves N=6

Figure 7: Leveling preferences by country from 1992 to 2009



(a) 1992

(b) 2009

So in sum, this is mixed news for the adjustment hypothesis (H2) which states that fairness evaluations adjust to the actual situation of inequality with higher levels of inequality rendering them also more acceptable. It seems that we observe such an adjustment between 1987 and 1999, but from 1999 to 2009, the gap between perceptions and fairness evaluations widen steadily. Importantly, the discrepancy arises because people perceive more inequality at the top without adjusting their normative evaluation of it.

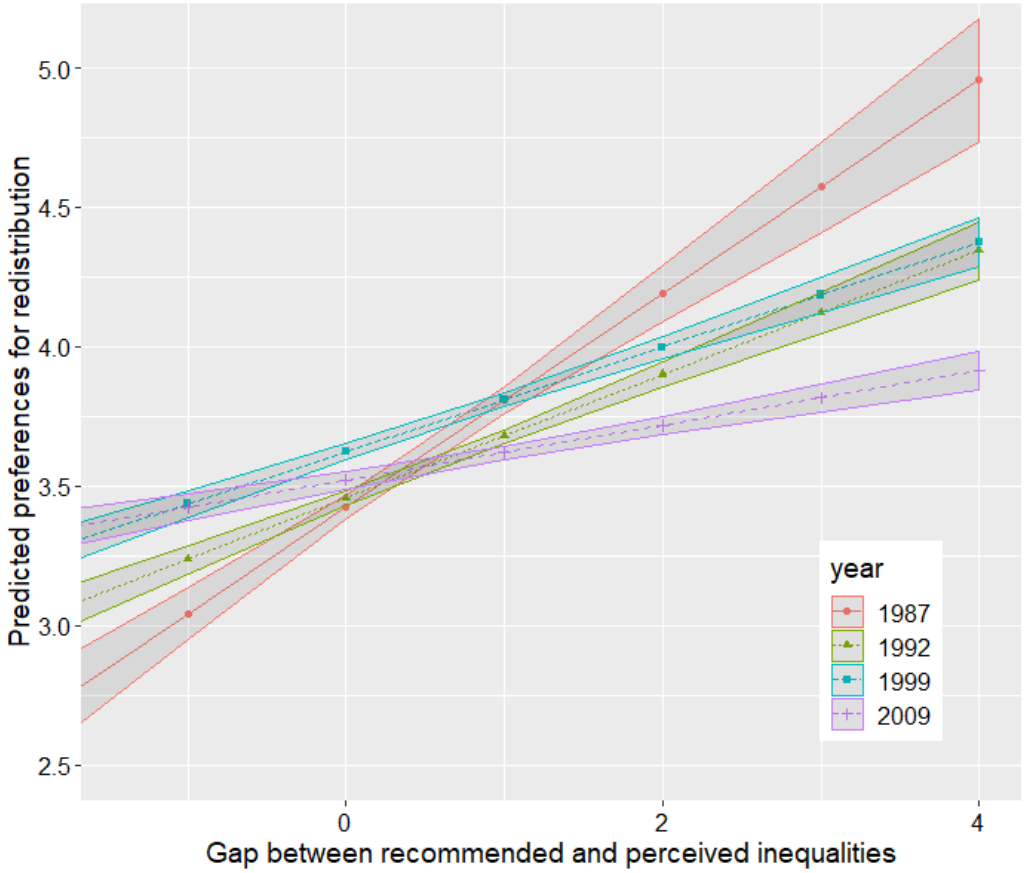
6.4. Increasing fairness gap, so what?

Our previous results converge to one broad conclusion: there is a growing gap between the perceived level of inequality and the level of legitimate inequality, but does it matter in the end? This last empirical section shows that fairness evaluations have consequences for political attitudes and that this effect varies over time.

To recall, from a theoretical perspective, we argued that the normative judgment of income inequality is a critical precondition to political reaction. In this respect, we disagree with the MR model, suggesting that growing inequalities should lead to more demands for redistribution in a direct fashion. Indeed, we posit that those inequalities first need to be perceived (as it seems to be the case in our results) but also perceived as unfair to trigger political reactions. Importantly, if citizens perceive economic inequality to be fair and justified, there is little reason to presume that citizens would demand political action against it. As a consequence, we would expect that in particular a large gap between perceived and legitimate inequalities, a "fairness gap", should trigger individuals' demand for redistribution.

Our results confirm our theoretical expectations. As we can see in table 5 and figure 8, the fairness gap has a significant effect on preferences for redistribution and this effect is decreasing over-time. Robustness test are all confirming these observations. Whether we use the beta to measure the gap between perceptions and legitimate inequalities (see table 13 in appendix) or the use of more specific redistributive policies as dependant variable, or when running multilevel ordered logistic regression (see table 14 and figure 11) all the results show a strong but declining effect of the fairness gap on redistributive preferences.

Figure 8: Government responsibility to reduce income inequality predictive margins (95% confidence interval)



Graph based on table 5.

7. Conclusion

In this paper, we adopt a longitudinal, comparative perspective on how citizens perceive income inequality, how legitimate they see these income differentials, and how close their perceptions map with reality. While our results are largely descriptive, they nevertheless document some crucial insights into the relationship between these three variables over time.

Our results reveal that perceptions of inequality have not become more distorted over time in general but that the underestimation of inequality is

[17]all waves sample (Australia, Germany, Hungary, UK); 1992-2009 sample (Australia, Bulgaria, Czech Republic; Germany, Hungary, New-Zealand, Norway, Poland, Russia, Slovenia, UK, USA)

Table 5: Linear regression on preferences for redistribution[17]

Government should reduce income inequality	1987	1992	1999	2009
Gini	-0.05^{***}	-0.03^{***}	-0.02^{***}	-0.02^{***}
	(0.01)	(0.00)	(0.00)	(0.00)
Fairness gap	0.38^{***}	0.22^{***}	0.19^{***}	0.10^{***}
	(0.03)	(0.01)	(0.01)	(0.01)
Perceived social position	-0.09^{***}	-0.12^{***}	-0.16^{***}	-0.15^{***}
	(0.01)	(0.01)	(0.01)	(0.01)
Wealthy family	0.10^{***}	0.10^{***}	0.15^{***}	0.14^{***}
	(0.02)	(0.01)	(0.01)	(0.01)
Left affiliation	-0.02	0.07^{*}	0.07^{*}	-0.11^{***}
	(0.05)	(0.03)	(0.03)	(0.03)
Right affiliation	-0.65^{***}	-0.54^{***}	-0.38^{***}	-0.66^{***}
	(0.06)	(0.03)	(0.03)	(0.03)
Income decile	-0.04^{***}	-0.05^{***}	-0.04^{***}	-0.04^{***}
	(0.01)	(0.00)	(0.00)	(0.00)
Age	0.00	0.00^{***}	0.00^{***}	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Sex (Woman)	-0.01	0.09^{***}	0.07^{**}	0.06^{*}
	(0.04)	(0.02)	(0.02)	(0.02)
Education (year)	-0.01^{**}	-0.02^{***}	-0.01^{***}	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Intercept	5.62^{***}	5.07^{***}	5.14^{***}	5.24^{***}
	(0.24)	(0.09)	(0.11)	(0.11)
R^2	0.21	0.17	0.19	0.18
Adj. R^2	0.21	0.16	0.19	0.18
Country Sample	All waves	1992-2009	1992-2009	1992-2009
RMSE	1.00	1.11	1.08	1.05

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

rather persistent. However, we note that 2009 could be the turning point as for this year, citizens perceive income differentials to be rapidly on the rise - which can also be interpreted as a catching-up trend. Looking at perceptions more in detail, it turns out that especially perceptions of top-end inequality have changed while perceptions of low-end inequality have remained stable.

This trend has consequences also for the link between perceptions and fairness statements about inequality. Here our findings suggest a rather close link, but this is particularly true for periods of stability and less so if perceptions are moving. In this case, the gap between the two becomes larger because judgments about the legitimacy and fairness of income inequality remain unchanged.

Moreover, the fairness gap has some impact on political attitudes. Our results indicate that the normative perception of income inequality has a direct effect on preferences for redistribution. Our analyses also reveal that this fairness perception effect declined significantly in 2009.

A common finding in all analyses is that 2009 is somewhat different from the period before. This is especially true for citizens' perception of income inequality. Perceptions of what top-income professionals earn have dramatically risen compared to the last wave of the survey in 1999. While this change in perception is not detached from reality where we indeed observe a sharp rise of top-income wage, it seems still interesting to speculate about the reasons for this change in perceptions. One interpretation could be that the public discourse has shifted after 2000 with inequality being a much more prominent topic nowadays than in the last century. One could cite the "Occupy Wall Street" movement which stressed that they, "the 99%" of the income distribution should not be left behind. Also, the topic of economic inequality in terms of income and wealth has featured more prominently in the political and public discourse with, for example, Barack Obama calling it the "defining challenge of our time." In sum, the heightened attention of the topic – with a tilt towards high-income earner inequality – could have shifted public opinion, obviously something we can only speculate about with the data at hand.

2009 might also be a deviant case because it was during the climax of the Great Recession, which started in 2009. During this crisis, high-income CEOs and their golden parachutes were highly advertised while at the same time, median and bottom income workers seemed to be the most impacted by the crisis. This media exposition might explain this drastic change in public opinion, most notably because our indicators rely on the perception of CEOs' in large national company.

Our findings also have some relevance for the "adjustment" thesis debate. In general, we confirm earlier findings that perceptions of inequality are es-

sential for how legitimate somebody rates inequality. This is in line with the reasoning of the adjustment thesis. However, the recent diverging trends for the 2009 period where perceptions are moving to a larger degree than fairness evaluations sheds doubts on how universal the phenomenon is. The adjustment might work to explain differences across countries rather than across time, or, as our analyses suggest, individuals might adjust their political reaction to the perceived unfairness. In any case, more theoretical reasoning about potential time-lags in the adaptation process seems warranted.

In addition, another form of adjustment is suggested by our findings. Figure 8 suggests that the effect of the fairness gap (difference between perceived and fair inequality) lost a bit in relevance over time. This could be explained by another type of adjustment where individuals do not adjust their level of legitimate inequalities, but they adjust their "fairness expectations" instead. In other words, the higher the level of unfairness, the lower their expectation of living in a fair world and consequently the less political impact these evaluations have.

In general, our findings carry a mixed message for theorists of the democratic process. On the positive side should be cited that there is little sign that citizens are increasingly unable to judge how inequality is evolving, at least for a period in our data. The 2009 trend and the further development about which we can only speculate might be more worrisome as perceptions of inequality are rising faster than actual inequality. Alternatively, we can be more optimistic and state that individuals have developed more accurate perceptions of inequality. It remains to be seen whether the 2009 survey is documenting a reaction to a long-term trend or remains an exception. Also, the fact that fairness perceptions seem to be rooted in relatively stable socio-economic norms and political beliefs can be seen as positive sign as it indicates that people are not just randomly assigning legitimation to a specific phenomenon.

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Appendix

Figure 9: Perceived and legitimate inequality over time, by country

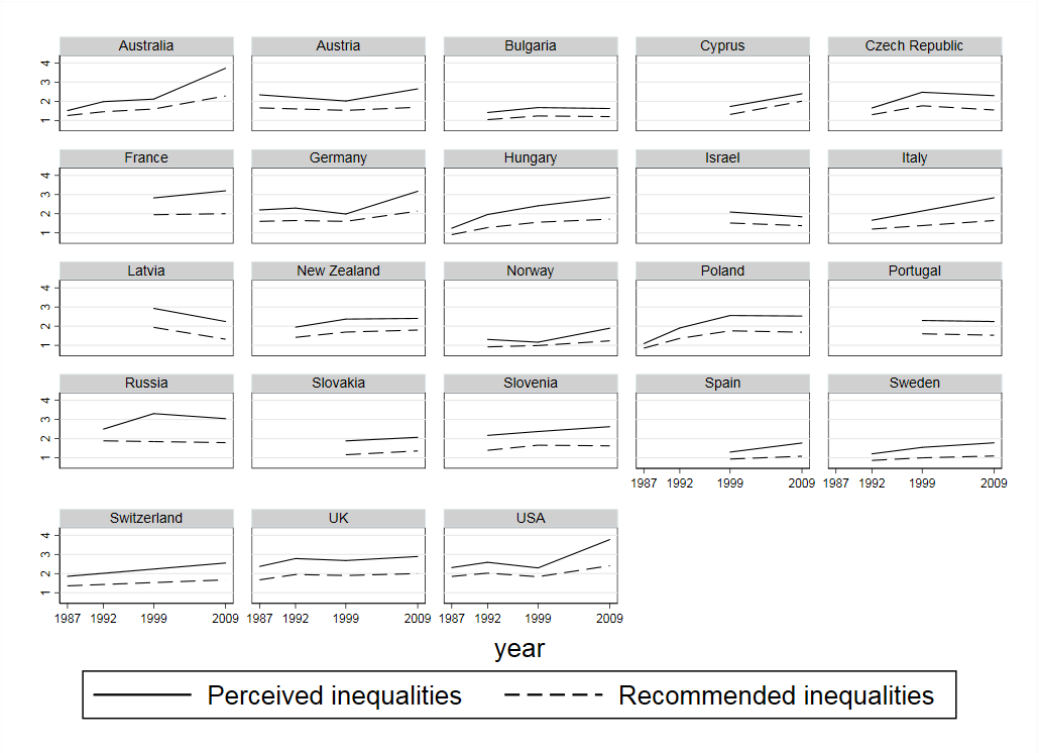


Table 6: Multilevel regressions, perceived inequalities, full-sample 1987-2009, no income decile

Perceived inequalities	1987	1992	1999	2009
Gini	0.08	0.06	0.04	0.06
	(0.06)	(0.04)	(0.03)	(0.05)
Perceived social position	0.01^{**}	0.02^{**}	0.02^{**}	0.04^{**}
	(0.00)	(0.01)	(0.01)	(0.01)
Wealthy family	0.02^{*}	0.05^{***}	0.05^{**}	0.07^{**}
	(0.01)	(0.01)	(0.02)	(0.02)
Left affiliation	0.02	0.01	0.05	0.06
	(0.03)	(0.03)	(0.03)	(0.05)
Right affiliation	0.05	0.02	−0.00	0.19^{***}
	(0.03)	(0.03)	(0.03)	(0.06)
Age	0.01^{***}	0.01^{***}	0.00^{**}	0.02^{***}
	(0.00)	(0.00)	(0.00)	(0.00)
Sex (Woman)	-0.15^{***}	-0.15^{***}	−0.04	-0.32^{***}
	(0.02)	(0.02)	(0.03)	(0.04)
Education (year)	0.00^{***}	0.02^{***}	0.00^{***}	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
(Intercept)	−0.45	0.04	0.77	0.59
	(1.62)	(1.25)	(1.10)	(1.48)
AIC	13734.10	17769.82	12555.11	19375.67
BIC	13809.38	17845.83	12626.44	19448.25
Log Likelihood	-6856.05	-8873.91	-6266.56	-9676.84
Num. obs.	6932	7409	4838	5421
Num. groups: cntry	5	5	5	5
Var: cntry (Intercept)	0.21	0.09	0.07	0.12
Var: Residual	0.42	0.64	0.77	2.05

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

Table 7: Multilevel regressions, perceived inequalities, sample 1992-2009 (including individual income decile)

Perceived inequalities	1992	1999	2009
Gini	0.05*	0.06*	0.07
	(0.02)	(0.03)	(0.04)
Perceived social position	−0.01**	−0.01	−0.02
	(0.00)	(0.01)	(0.01)
Wealthy family	0.03***	0.01	0.05**
	(0.01)	(0.01)	(0.02)
Left affiliation	0.03	0.09***	0.05
	(0.02)	(0.02)	(0.03)
Right affiliation	0.03	−0.01	0.11**
	(0.02)	(0.02)	(0.04)
Income decile	0.02***	0.02***	0.03***
	(0.00)	(0.00)	(0.00)
Age	0.00***	0.00***	0.01***
	(0.00)	(0.00)	(0.00)
Sex (Woman)	−0.07***	−0.02	−0.14***
	(0.01)	(0.02)	(0.03)
Education (year)	0.01***	0.00*	0.00
	(0.00)	(0.00)	(0.00)
(Intercept)	0.27	0.03	0.29
	(0.63)	(0.82)	(1.13)
AIC	27348.05	24223.51	28102.33
BIC	27436.76	24308.73	28187.41
Log Likelihood	-13662.03	-12099.75	-14039.17
Num. obs.	11998	8974	8863
Num. groups: cntry	12	12	12
Var: cntry (Intercept)	0.15	0.23	0.37
Var: Residual	0.56	0.86	1.37

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

Table 8: Multilevel regressions: legitimate inequalities toward the bottom (all waves sample)

Legitimate inequalities toward the bottom	1987	1992	1999	2009
Perceived inequalities toward the bottom	0.87^{***}	0.89^{***}	0.85^{***}	0.75^{***}
	(0.01)	(0.01)	(0.01)	(0.01)
Gini	0.00	0.01	0.01	0.03^{*}
	(0.01)	(0.02)	(0.02)	(0.02)
Perceived social position	0.01^{***}	0.01^{***}	0.02^{***}	0.02^{***}
	(0.00)	(0.00)	(0.00)	(0.00)
Wealthy family	-0.01^{*}	-0.01^{*}	-0.01	-0.00
	(0.00)	(0.00)	(0.01)	(0.01)
Left affiliation	-0.01	-0.01	-0.01	-0.02
	(0.01)	(0.01)	(0.01)	(0.02)
Right affiliation	0.04^{***}	0.04^{***}	0.04^{**}	0.03
	(0.01)	(0.01)	(0.01)	(0.02)
Age	0.00^{***}	0.00^{***}	-0.00	0.00^{**}
	(0.00)	(0.00)	(0.00)	(0.00)
Sex (woman)	-0.01	-0.02^{**}	-0.00	-0.03^{*}
	(0.01)	(0.01)	(0.01)	(0.01)
Education (year)	0.00	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
(Intercept)	-0.11	-0.72	-0.51	-1.13^{*}
	(0.24)	(0.65)	(0.75)	(0.51)
AIC	3191.90	3076.54	2945.10	7720.54
BIC	3274.02	3159.47	3022.92	7799.71
Log Likelihood	-1583.95	-1526.27	-1460.55	-3848.27
Num. obs.	6932	7409	4838	5421
Num. groups: cntry	5	5	5	5
Var: cntry (Intercept)	0.00	0.03	0.03	0.01
Var: Residual	0.09	0.09	0.10	0.24

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

Table 9: Multilevel regressions: legitimate inequalities toward the bottom, 1992-2009 sample without Slovenia and Sweden (including individual income decile)

Legitimate inequalities toward the bottom	1992	1999	2009
Perceived inequalities toward the bottom	0.83***	0.79***	0.77***
	(0.01)	(0.01)	(0.01)
Gini	−0.00	−0.03	−0.01
	(0.01)	(0.02)	(0.01)
Perceived social position	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0.00)
Wealthy family	−0.01	−0.00	0.00
	(0.00)	(0.01)	(0.01)
Left affiliation	−0.02	−0.02	−0.02*
	(0.01)	(0.01)	(0.01)
Right affiliation	0.03**	0.02*	0.03*
	(0.01)	(0.01)	(0.01)
Income decile	0.00	0.00	0.01***
	(0.00)	(0.00)	(0.00)
Age	0.00***	−0.00	0.00**
	(0.00)	(0.00)	(0.00)
Sex (woman)	0.00	0.00	−0.02*
	(0.01)	(0.01)	(0.01)
Education (year)	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
(Intercept)	−0.22	0.61	0.02
	(0.40)	(0.48)	(0.37)
AIC	9493.37	7662.47	8424.46
BIC	9588.68	7753.78	8515.75
Log Likelihood	-4733.68	-3818.24	-4199.23
Num. obs.	11288	8297	8285
Num. groups: cntry	11	11	11
Var: cntry (Intercept)	0.05	0.06	0.03
Var: Residual	0.13	0.14	0.16

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

Table 10: Multilevel regressions: legitimate inequalities toward the top, (all waves sample)

Legitimate inequalities toward the top	1987	1992	1999	2009
Perceived inequalities toward the top	0.63^{***}	0.58^{***}	0.53^{***}	0.42^{***}
	(0.01)	(0.01)	(0.01)	(0.01)
Gini	0.00	-0.01	-0.01	-0.04^{*}
	(0.01)	(0.03)	(0.02)	(0.02)
Perceived social position	0.02^{***}	0.02^{***}	0.02^{***}	0.04^{***}
	(0.00)	(0.00)	(0.01)	(0.01)
Wealthy Family	-0.01	-0.01	-0.03^{*}	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)
Left affiliation	-0.03	-0.02	-0.04	-0.03
	(0.02)	(0.02)	(0.02)	(0.03)
Right affiliation	0.08^{***}	0.09^{***}	0.01	0.11^{***}
	(0.02)	(0.02)	(0.02)	(0.03)
Age	0.00^{**}	0.00^{***}	0.00^{***}	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Sex (Woman)	0.00	-0.03^{*}	-0.12^{***}	-0.17^{***}
	(0.01)	(0.01)	(0.02)	(0.02)
Education (year)	-0.00	0.00^{**}	0.00^{*}	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
(Intercept)	-0.31	0.21	0.55	1.71^{**}
	(0.44)	(0.80)	(0.64)	(0.58)
AIC	9457.16	12320.90	9606.53	13722.38
BIC	9539.29	12403.82	9684.35	13801.56
Log Likelihood	-4716.58	-6148.45	-4791.27	-6849.19
Num. obs.	6932	7409	4838	5421
Num. groups: cntry	5	5	5	5
Var: cntry (Intercept)	0.01	0.04	0.02	0.02
Var: Residual	0.23	0.30	0.42	0.72

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

Table 11: Multilevel regressions: legitimate inequalities toward the top, 1992-2009 sample without Slovenia and Sweden (including individual income decile)

Legitimate inequalities toward the top	1992	1999	2009
Perceived inequalities toward the top	0.53^{***}	0.42^{***}	0.43^{***}
	(0.01)	(0.01)	(0.01)
Gini	0.01	0.02	0.01
	(0.02)	(0.02)	(0.01)
Perceived social position	0.02^{***}	0.02^{***}	0.02^{***}
	(0.00)	(0.00)	(0.01)
Wealthy family	-0.01	-0.01	-0.03^{**}
	(0.01)	(0.01)	(0.01)
Left affiliation	-0.04^{*}	-0.04^{*}	-0.07^{**}
	(0.02)	(0.02)	(0.02)
Right affiliation	0.08^{***}	0.02	0.06^{**}
	(0.02)	(0.02)	(0.02)
Income decile	0.01^{***}	0.01^{***}	0.01^{***}
	(0.00)	(0.00)	(0.00)
Age	0.00^{***}	0.00^{***}	0.00^{*}
	(0.00)	(0.00)	(0.00)
Sex (woman)	-0.02	-0.08^{***}	-0.08^{***}
	(0.01)	(0.01)	(0.02)
Education (year)	0.01^{***}	0.00^{*}	0.00
	(0.00)	(0.00)	(0.00)
(Intercept)	-0.22	-0.29	-0.11
	(0.56)	(0.49)	(0.46)
AIC	18256.27	15704.38	18472.22
BIC	18351.58	15795.69	18563.51
Log Likelihood	-9115.14	-7839.19	-9223.11
Num. obs.	11288	8297	8285
Num. groups: cntry	11	11	11
Var: cntry (Intercept)	0.10	0.06	0.05
Var: Residual	0.29	0.38	0.53

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

Table 12: Multilevel regressions on preferences for redistribution

Government should reduce income inequality	1987	1992	1999	2009
Gini	−0.05	−0.03	−0.02	−0.02
	(0.04)	(0.02)	(0.02)	(0.03)
Fairness gap	0.35***	0.22***	0.13***	0.11***
	(0.03)	(0.01)	(0.01)	(0.01)
Perceived social position	−0.08***	−0.07***	−0.09***	−0.08***
	(0.01)	(0.01)	(0.01)	(0.01)
Wealthy family	0.09***	0.08***	0.11***	0.09***
	(0.02)	(0.01)	(0.01)	(0.01)
Left affiliation	0.18**	0.16***	0.17***	0.19***
	(0.06)	(0.03)	(0.03)	(0.03)
Right affiliation	−0.48***	−0.41***	−0.32***	−0.38***
	(0.06)	(0.03)	(0.03)	(0.03)
Income decile	−0.04***	−0.06***	−0.05***	−0.06***
	(0.01)	(0.00)	(0.00)	(0.00)
Age	0.00	0.00***	0.00*	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Sex (Woman)	−0.02	0.07**	0.05*	0.02
	(0.04)	(0.02)	(0.02)	(0.02)
Education (year)	−0.01**	−0.02***	−0.01***	−0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Intercept	5.57***	4.91***	4.78***	4.89***
	(1.03)	(0.47)	(0.65)	(0.91)
AIC	10639.44	34794.40	25592.89	25334.38
BIC	10720.40	34889.99	25684.88	25426.33
Log Likelihood	-5306.72	-17384.20	-12783.45	-12654.19
Num. obs.	3744	11540	8742	8716
Num. groups: cntry	4	12	12	12
Var: cntry (Intercept)	0.04	0.08	0.14	0.24
Var: Residual	0.98	1.18	1.08	1.05

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

Table 13: Preferences for redistribution, beta leveling

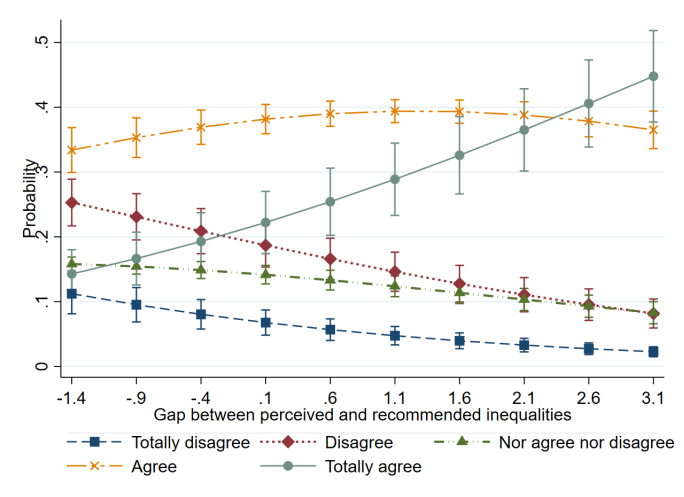
Government should reduce income inequality	1987	1992	1999	2009
Gini	-0.0798	-0.0226	0.0169	0.0553
	(-1.57)	(-0.71)	(0.42)	(1.40)
Beta (leveling)	-0.678***	-0.0675***	-0.0317*	-0.000411
	(-8.71)	(-4.53)	(-2.20)	(-0.13)
Perceived social position	-0.161***	-0.140***	-0.191***	-0.183***
	(-7.35)	(-11.96)	(-13.55)	(-11.81)
Income decile	-0.0658***	-0.0996***	-0.0832***	-0.109***
	(-5.48)	(-14.24)	(-10.31)	(-12.81)
Wealthy family	0.193***	0.147***	0.224***	0.147***
	(5.04)	(6.43)	(8.10)	(5.14)
Left affiliation	0.289*	0.267***	0.314***	0.298***
	(2.50)	(4.83)	(6.26)	(5.15)
Right affiliation	-0.899***	-0.666***	-0.555***	-0.613***
	(-7.60)	(-11.64)	(-10.54)	(-9.92)
Age	0.00401	0.00640***	0.00389**	0.00348*
	(1.75)	(5.20)	(2.72)	(2.39)
Sex (Woman)	-0.0774	0.0906*	0.117**	0.00625
	(-1.13)	(2.39)	(2.68)	(0.14)
Education (year)	-0.0108*	-0.0385***	-0.0144***	-0.00445*
	(-2.04)	(-8.08)	(-5.85)	(-2.27)
Estimated cutpoints				
cut 1	-7.565***	-4.994***	-3.843**	-3.167*
	(-5.25)	(-5.19)	(-2.99)	(-2.53)
cut 2	-5.476***	-3.326***	-2.311	-1.437
	(-3.81)	(-3.46)	(-1.80)	(-1.15)
cut 3	-4.526**	-2.588**	-1.390	-0.427
	(-3.15)	(-2.69)	(-1.08)	(-0.34)
cut 4	-2.389	-0.724	0.372	1.370
	(-1.66)	(-0.75)	(0.29)	(1.09)
Country random effect	0.0808	0.287*	0.441*	0.326*
	(1.32)	(2.30)	(2.31)	(2.18)
N	3744	10848	8075	7300
t statistics in parentheses				
* p<0.5, ** p<0.01, *** p<0.001				

Table 14: Preferences for redistribution, fairness gap

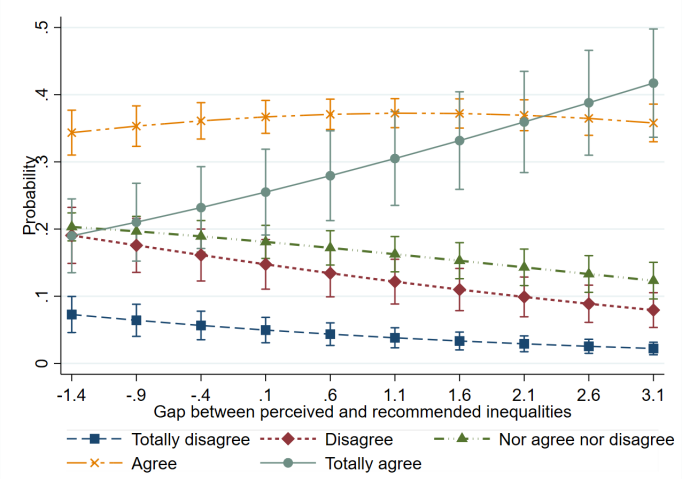
Government should reduce income inequality	1987	1992	1999	2009
Gini	-0.0995*	-0.0339	-0.0129	0.0199
	(-2.12)	(-1.16)	(-0.40)	(0.50)
Fairness gap	0.727***	0.395***	0.298***	0.289***
	(11.22)	(14.87)	(12.00)	(12.87)
Perceived social position	-0.151***	-0.125***	-0.191***	-0.176***
	(-6.87)	(-10.99)	(-14.55)	(-12.20)
Income decile	-0.0701***	-0.0987***	-0.0929***	-0.113***
	(-5.84)	(-14.54)	(-12.47)	(-14.44)
Wealthy family	0.173***	0.137***	0.204***	0.139***
	(4.51)	(6.16)	(8.00)	(5.27)
Left affiliation	0.286*	0.263***	0.297***	0.328***
	(2.45)	(4.87)	(6.02)	(6.23)
Right affiliation	-0.855***	-0.609***	-0.489***	-0.553***
	(-7.19)	(-10.91)	(-9.67)	(-9.87)
Age	0.00330	0.00724***	0.00350**	0.00201
	(1.44)	(6.03)	(2.67)	(1.50)
Sex (Woman)	-0.0810	0.0849*	0.0966*	0.0544
	(-1.18)	(2.31)	(2.39)	(1.32)
Education (year)	-0.0124*	-0.0404***	-0.0151***	-0.00646***
	(-2.38)	(-8.55)	(-6.71)	(-3.86)
Estimated cutpoints				
cut 1	-7.351***	-5.015***	-4.747***	-4.125***
	(-5.54)	(-5.74)	(-4.71)	(-3.36)
cut 2	-5.264***	-3.325***	-3.213**	-2.430*
	(-3.98)	(-3.81)	(-3.19)	(-1.98)
cut 3	-4.311**	-2.580**	-2.269*	-1.372
	(-3.26)	(-2.96)	(-2.25)	(-1.12)
cut 4	-2.155	-0.667	-0.464	0.485
	(-1.63)	(-0.76)	(-0.46)	(0.40)
Country random effect	0.0670	0.280*	0.394*	0.442*
	(1.29)	(2.40)	(2.50)	(2.41)
N	3744	11540	9509	8727

t statistics in parentheses
* p<0.5, ** p<0.01, *** p<0.001

Figure 11: Government responsibility to reduce income inequality predictive margins (95% confidence interval)

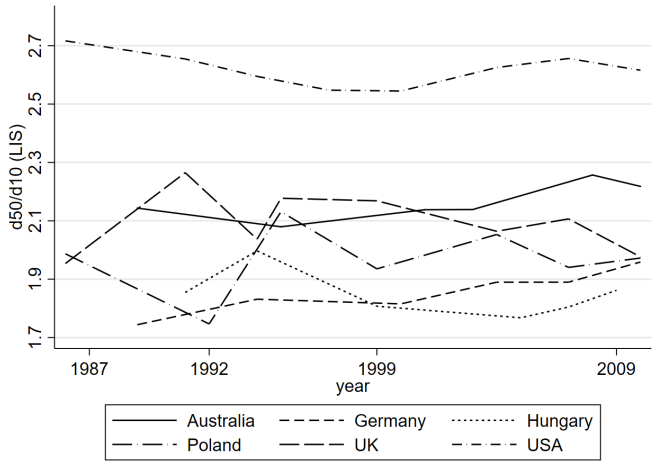


(a) 1992

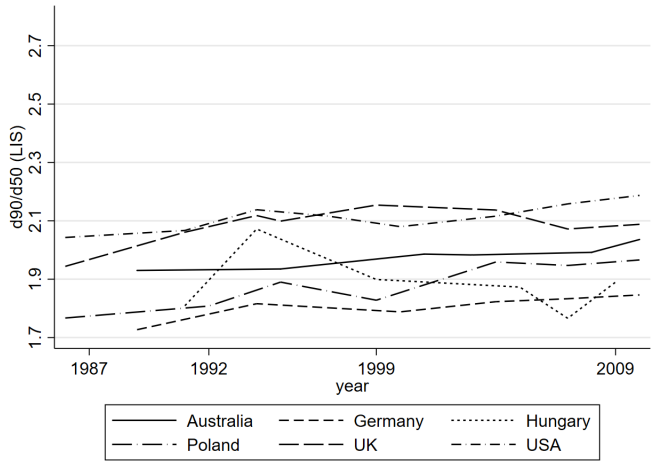


(b) 2009

Figure 10: Objective inequality split by top and bottom income (LIS)



(a) Objective inequalities toward the bottom



(b) Objective inequalities toward the top