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Models of Other-Regarding Preferences, Inequality, and Redistribution

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Abstract

Despite the increasing popularity of comparative work on other-regarding preferences, the implications of different models of altruism are not always fully understood. This article analyzes different theoretical approaches to altruism and explores what empirical conclusions we should draw from them, paying particular attention to models of redistribution preferences where inequality explicitly triggers other-regarding motives for redistribution. While the main contribution of this article is to clarify the conclusions of these models, we also illustrate the importance of their distinct implications by analyzing Western European data to compare among them. We draw on individual-level data from the European Social Survey fielded between September 2002 and December 2013.

1. INTRODUCTION

The political economy literature has generally been limited to the study of relatively simple material self-interested motivations: An individual's position in the income distribution determines their preferences for redistribution. Most political economy arguments (one could, in fact, say most comparative politics arguments) start from this initial assumption and address other factors (the role of parties, labor market institutions, the nature of government, federalism, international factors, etc.) in more complex causal chains. An increasing amount of convincing evidence indicates, however, that other-regarding concerns are an important motivation for individuals. As argued by Alesina & Giuliano (2011, p. 94), political economy models "can accommodate altruism, i.e., a situation in which one agent cares also about the utility of somebody else. But altruism is not an unpredictable 'social noise' to be randomly sprinkled over individuals." Altruistic concerns need to be systematized into predictable political economy hypotheses.

Several recent and influential contributions to the political economy literature have taken up the challenge of integrating other-regarding concerns into more general redistribution arguments. There is neural evidence that individuals dislike unequal distributions, independent of social image or potential reciprocity motivations (Tricomi et al. 2010). In laboratory experiments, individuals have been shown to have concerns for the welfare of others (see, for example, Charness & Rabin 2002, Fehr & Gächter 2000). Several alternative models have been proposed to analyze different kinds of other-regarding concerns (for reviews, see DellaVigna 2009, Fehr & Schmidt 2006). As we document below, support for redistribution is widespread in Western Europe and extends into income groups whose support for redistribution could not possibly be motivated by short-term income maximization. Altruism constitutes one plausible reason why affluent individuals might support redistribution even though its effect is to reduce their disposable income.

The main thrust of our article, however, is that (despite the increasing popularity of comparative work on other-regarding preferences) the theoretical implications of different models of altruism are not always fully understood. In this review, we present two main arguments that we hope will illuminate a number of questions often overlooked in this literature: (*a*) We should be clear about what we mean by altruism, and (*b*) we should be more explicit about the implications, in particular, of arguments connecting other-regarding motivations to levels of macro inequality. We argue that the main approaches to other-regarding motivations for redistribution imply very distinct testable conclusions. Often, however, these conclusions are not fleshed out in the literature, and many contributions rely on a set of intuitions connecting aggregate social welfare and individual utility that are, at best, ambiguous.[1]

It is important for us to make clear at this early stage that the approach we develop in this article is dependent on a particular conception of altruism. There are two ways of thinking about altruism or other-regarding preferences in the political economy literature. The first analyzes altruism as an individual characteristic: a personality trait,[2] a "taste for giving" (see, for example, Andreoni 1990), or even a genetic and biological characteristic (see Hatemi & McDermott 2016). The second understands other-regarding concerns to be affected by a contextual logic (often connected to macro inequality and welfare). While we accept that the role of altruism as an individual characteristic in determining redistribution preferences may be an important one,

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[1]In this respect, our contribution is meant to complement more generally the literature on preference formation (see, for example, the review in Druckman & Lupia 2000).

[2]In this research, altruism has often taken the form of a self-reported measure (the Self-Report Altruism scale) aggregating different items capturing an individual's engagement in altruistic behaviors (pushing a stranger's car out of the snow, giving money to a charity, etc.). The reader is referred, for example, to the research on altruistic personality by Rushton et al. (1981).

we emphasize a situational approach in this article. We agree that, for many economic outcomes, personality measures may be as predictive as cognitive ones (see, for example, Almlund et al. 2011), but we find this conclusion to be compatible with the main arguments in this review.[3]

The rest of the article proceeds as follows. We mainly focus on exploring different theoretical approaches to altruism and elucidating their implications. We pay particular attention to models of redistribution preferences in which inequality explicitly triggers altruistic (or other-regarding) motives for redistribution. Our main contention is that how one models this relationship is critical because each version has very distinct testable predictions. We begin with a model in which aggregate social welfare captures concern about inequality and affects redistribution preferences. Following that, we look at how inequality can drive altruistically motivated preferences for redistribution when people exhibit difference or inequity aversion—that is, when they care about the relative differences in the payoffs or income between themselves and others. We then consider how inequality can motivate altruistic preferences for redistribution based on some normative standard of what is considered a fair distribution of income. We finally illustrate the importance of the distinct implications of these alternative approaches by analyzing a large-scale cross-national Western European data set. We examine individual-level data from the European Social Survey (ESS) using rounds 1–6, conducted between 2002 and 2013.

2. SELF-INTEREST, INEQUALITY, AND ALTRUISM

In this article, we are primarily interested in the way in which the distribution of income affects preferences for redistribution through other-regarding concerns. This is a more fine-grained relationship than it may at first appear—indeed, it is frequently obscured in the literature. It is therefore important to begin by clarifying some concepts.

2.1. Pure Self-Interest

For our discussion, the most important characteristic of purely self-interested preferences for redistribution is that changes in inequality do not necessarily affect these preferences. To illustrate this, we can point to the solution for purely self-interested preferences for redistribution in a standard model:

$$\tau^* = 1 - \frac{y}{\bar{y}}. \qquad\qquad 1.$$

This equation shows that an individual's preferred tax rate, τ^*, is a decreasing function of income, y. This equation depends on only one other variable, mean income, $\bar{y}$. Since a change in the distribution of income—more specifically, a mean-preserving spread or contraction—does not change mean income, inequality makes no difference to a person with income y. Inequality therefore does not influence a self-interested person's preferences for redistribution (unless accompanied by a change in the ratio between an individual's income and the mean income).

This claim is often forgotten because the well-known Meltzer-Richard model (Meltzer & Richard 1981) is built on purely self-interested preferences but provides predictions in terms of inequality. However, the Meltzer-Richard model is not (or not only) a model of individual-level preferences for redistribution. Rather, it is a macro-level model of redistributive outcomes. It therefore aggregates individual preferences through a highly simplified model of democratic

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[3] It is certainly possible that there are some individuals who have more altruistic personalities than others. However, this would not affect the general implications of most of the arguments we describe in this review unless these personality types were highly correlated with individual income (and we have no reason, theoretical or empirical, to believe this to be the case).

decision making: The median voter (not necessarily the voter with median income) is the decisive voter and, therefore, the person whose preferences have the most important implications for policy. Because the distribution of income influences how much income the median voter has, inequality will affect the policy outcome. However, the inequality has only an indirect effect via its influence on individual income and, then, the voting mechanism.

Something more than simple self-interest is therefore needed for inequality to have a direct effect on redistribution preferences. The political literature has focused on other-regarding preferences as a plausible factor linking inequality and redistribution preferences. That is, we need a model for preferences in which, in addition to self-interest, individuals exhibit concern for the impact of inequality (and of policies that affect inequality) on others. The cause of this concern may be altruism, concern about one's place in the distribution of income, or fundamental normative opinions about the fairness (or not) of income inequality. We explore these possibilities in the following sections.

2.2. Social Welfare

To begin, we examine Dimick et al.'s (2016) model of redistribution preferences where individuals exhibit concern for social welfare. They call this model income-dependent altruism. To make the discussion more precise, we give a slightly formal representation of the models of preferences in this article. However, we emphasize the intuitions behind the formal model in the exposition below. Take the following individual utility function:

$$u_i(c) + \delta \int_i u_i(c). \qquad 2.$$

The first term on the left, $u_i(c)$, is an individual's own utility over consumption, c, which is essentially how much money, following taxes and transfers, a person has to spend on consumption goods. The last term on the right, $\int_i u_i(c)$, is a social welfare function. This function is simply the average of all individuals' utility functions, but it also represents the total level of welfare in the group or society. What the function as a whole reflects, therefore, is that, when individuals choose their ideal tax and transfer policies, they balance the impact of these policies both (*a*) on their own welfare or utility and (*b*) on society's welfare as a whole. In light of this, δ therefore represents how much weight the person puts on society's welfare. If $\delta = 0$, for instance, the person cares only about their own welfare; in contrast, if $\delta \to \infty$, then the person puts almost all of the weight on society's welfare.

The critical feature of the utility function, $u_i(c)$, both for the individual and in the social welfare function, is that it exhibits diminishing marginal utility of consumption (or money). This simply means that every additional dollar of consumption, c, gives a smaller increase in utility, u. For instance, the increase in utility going from zero dollars to one dollar, $u(\$1) - u(\$0)$, will be larger than gaining the thousand and first dollar, $u(\$1,001) - u(\$1,000)$. That is, $u(\$1) - u(\$0) > u(\$1,001) - u(\$1,000)$. This feature has two important implications, as we discuss below.

What are the implications when individuals regard others in this social welfare way? What happens when they care not only about their own utility but also about the utility of others? Dimick et al. (2016) derive three main predictions from their model. First, an individual's preferred level of redistribution is decreasing in their own income. This effect occurs through a person's private utility. For a given level of social welfare, and for a certain weight that an individual puts on social welfare (as distinct from their own), redistributive policies are more individually costly to wealthier than to poorer citizens. In other words, while individuals have mixed motives (they care

about social welfare, but they also care about their own welfare), an individual will prefer less redistribution as they become richer if we hold the effect on social welfare constant.

Second, an individual's preferred level of redistribution is increasing in the level of inequality. The effect of inequality occurs through the social welfare function and is the first of the two implications that diminishing marginal utility of money has for social welfare preferences. Suppose we transfer a dollar from a rich person to a poor person. Because of the diminishing marginal utility of money, total social welfare will increase. Slightly more concretely, suppose we transfer a dollar from a person with a budget of $1,001 to a person with a budget of $0. Then, since $u(\$1) - u(\$0) > u(\$1,001) - u(\$1,000)$, total social welfare will increase. Conversely, but by the same reasoning, an increase in inequality decreases social welfare, and this effect can be counteracted with increased redistribution. Thus, an increase in inequality leads all individuals to support more redistribution.

Third, there is a positive interaction between an individual's income and income inequality. Specifically, the effect of an increase in inequality on a person's preferred level of redistribution is larger for a rich person than for a poor person. This effect can also be explained by the diminishing marginal utility of money. Because a rich person values an additional dollar less than a poor person does, a rich person would rather spend more of that dollar on reducing inequality than a poor person would. Thus, the rich are more responsive to changes in inequality than the poor are, even though the poor prefer more overall redistribution than the rich.

As an important aside, the topic of risk frequently arises in the discussion of preferences for redistribution. In the remainder of this section, we remark on the difference and the fundamental connection between risk aversion and social welfare.

As mentioned above, the social welfare function exhibits inequality aversion: As inequality increases, social welfare decreases. The reason for this is a property of the utility function, namely, the diminishing marginal utility of money. To put this in more mathematical terms, the utility function, $u_i(c)$, is concave (utility increases in consumption, but at a declining rate). Any concave utility function exhibits inequality aversion.

We could similarly describe a utility function exhibiting risk aversion. Risk aversion means that uncertain economic prospects lower a person's expected utility. Consider a person facing unemployment risk and with an income that is higher when employed than when unemployed. Given the diminishing marginal utility of money—a concave utility function—they would be better off if their income were higher when unemployed and lower when employed. Indeed, because a transfer of a dollar from the employed to the unemployed would make them unambiguously better off, they would be willing to pay for such a transfer (through insurance or redistribution).

Thus, whether one is talking about inequality aversion via a social welfare function or risk aversion via a preference lottery, the same underlying principle is at work. In a formal model, these are easy enough distinctions to make. In empirical testing, more care needs to be taken to distinguish risk and inequality aversion. Nevertheless, it is not obvious that the effect of inequality on redistributive preferences would be caused by risk aversion unless one had a strong motivation for expecting a correlation between inequality and some social risk, such as unemployment.[4]

2.3. Difference Aversion

An alternative to modeling altruistic concerns about inequality focuses on what we could call difference aversion. As the name suggests, difference aversion relates other-regarding concerns

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[4]This is essentially the argument of Alt & Iversen (2017).

about inequality to one's place—or position or rank—in the distribution of income rather than to motivations about overall social welfare. According to difference aversion explanations, rank is more important than welfare for wanting to mitigate inequality. The most well-known model of difference aversion is that of Fehr & Schmidt (1999). Fehr-Schmidt preferences can be captured by the following expression:

$$c_i - \alpha \int_{j=i}^{n} (c_j - c_i) - \beta \int_{j=1}^{i} (c_i - c_j). \qquad 3.$$

Just as in the model given by Equation 2, Fehr-Schmidt preferences depend on an individual's own utility, c_i [because the concavity of the utility function is not important for their version of preferences, they assume that $u_i(c) = c_i$]. The other-regarding part of the utility function is captured by the second and third terms. For Fehr & Schmidt, concerns about inequality are determined by the differences in income of those above $(i, i + 1, \ldots, n)$ and below $(1, 2, \ldots, i)$ a given individual, i, in the income distribution. The average of differences in income between a person and individuals who have more is called disadvantageous inequality, or envy. The average of differences in income between a person and individuals who have less is called advantageous inequality, or altruism. Fehr & Schmidt weight these averages, α and β, respectively, and, critically, they assume that greater weight is given to envy than to altruism: $\alpha > \beta > 0$.

This formulation of preferences gives the following predictions. First, an individual's ideal level of redistribution is decreasing in their income. This occurs for identical reasons to those in the previous framework: because a main component of individual welfare is still an individual's own (selfish) consumption. A richer person will prefer less redistribution than a poorer person, everything else being equal.

Second, an increase in inequality will promote an increase in the demand for more redistribution. This follows straightforwardly from Equation 3: An increase in inequality implies increasing income differences between a person, i, and all other individuals, $-i$. Given the negative weights on these measures in Equation 3, the increase in income differences lowers each person's utility. Conversely, higher redistribution will raise utility by lowering income differentials. Thus, an increase in inequality increases the demand for redistribution.

Finally, the poor, rather than the rich—in contrast to the model of Dimick et al. (2016)—are more responsive to changes in inequality. An increase in inequality will lead to an increase in support for redistribution from all individuals. However, for a rich person, the inequality increase will be concentrated below them (with lower weight β), while, for a poor person, the inequality increase will be concentrated above them (with larger weight α). Thus, since envy is weighted more than altruism, the poor will increase their support for redistribution more than the rich will.

2.4. Normative Models

The other-regarding consequences of inequality can also be modeled not through its effects on social welfare or the ranking of incomes but according to individuals' judgment about what the income distribution should be. Because these models depend on some external standard of fairness or justice, we call them normative models.[5] In these arguments, preferences for redistribution are essentially determined by the difference between the actual distribution of income and the

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[5]For an example, the reader is referred to Monroe's (1998) work on altruism as part of a more general theory of ethical political behavior.

normatively ideal distribution of income. The best known of these models is the fairness model of Alesina & Angeletos (2005).

Alesina & Angeletos (2005) focus on what they argue is one common normative standard: fairness. They specify utility in the following form:

$$c_i - \gamma \int_i (c_i - \hat{c}_i)^2. \qquad 4.$$

Alesina & Angeletos assume that utility is quasilinear. Therefore, as in the model of Fehr & Schmidt (1999), an individual's own utility is their consumption: $u_i(c) = c_i$. The other-regarding term, parameterized by γ, is composed of two parts: c_i denotes the actual level of income, while $\hat{c}_i$ denotes the fair level. Actual, or total, inequality is decomposed into two elements: earned income inequality (the same as $\hat{c}_i$) and unearned income inequality. Earned income is obtained through work and effort; unearned income comes from luck or illicit sources (e.g., theft or bribery).

This form of preference leads to the following results. First, as in the previous two models of preferences, given by Equations 2 and 3, an individual's preferred level of redistribution is decreasing in income. This follows the same reasoning explained above.

Second, an increase in inequality will lead to a decrease in the demand for redistribution. In Alesina & Angeletos's (2005) conception, inequality that is earned is normatively just. Individuals therefore compare actual inequality with earned income inequality and are willing to redistribute only to the extent that these two measures diverge. The problem is that it is difficult to observe how much actual inequality is derived from earned rather than unearned sources. The level of preferred redistribution depends not just on the difference between actual and earned income inequality, but also on the ratio between earned and unearned income inequality. Alesina & Angeletos call this the signal-to-noise ratio: The variance in earned incomes is the signal, and the variance in unearned income is the noise. Accordingly, as the variance in earned income increases relative to that of unearned income, less of the total level of inequality is attributable to luck or illicit factors, and therefore, demand for redistribution decreases. Thus, in contrast to both the model of Dimick et al. (2016) and that of Fehr & Schmidt (1999), an increase in earned income inequality will lead to a fall in the demand for redistribution.[6]

Third, the interaction between income and inequality is negative. That is, the poor are more responsive than the rich to changes in the distribution of income. Without diminishing marginal utility of income, as an individual's own income increases, self-interest instead of other-regarding concerns dominates. Because utility is linear in consumption in the model of Alesina & Angeletos (2005), rather than concave, as in the model of Dimick et al. (2016), differences in earned and unearned income inequality become less relevant the richer a person becomes.

Alesina & Angeletos's (2005) idea of fairness is not the only standard available, and one could adopt other normative models. For instance, as Alesina & Giuliano (2011) discuss, the normatively ideal distribution of income could be libertarian: All market-determined income differences are just. Since this distribution would not differ from the actual (pretax, pretransfer) distribution, no redistribution would be justified. The ideal distribution could also be efficient (or wealth maximizing), communist, or Rawlsian. The efficient distribution could entail some redistribution if transfers were necessary to address market failures. The communist ideal is perfect equality, entailing total redistribution, while the Rawlsian ideal is the maximization of the welfare of the least well off.

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[6]Of course, an increase in unearned income inequality will lead to an increase in demand for redistribution. However, in the model of Alesina & Angeletos (2005), variation in earned income inequality (driven by changes in tax policy and human capital investments) is the primary source of variation in inequality; unearned income inequality is exogenous.

2.5. Inequality or Altruism, But Not Together

We discuss above the main focus of this article: models of redistribution preferences in which inequality is connected to altruistic (or other-regarding) motivations for redistribution. We briefly describe two general approaches related to inequality (on the one hand) and altruism (on the other) that are often linked to the types of arguments that we emphasize. These alternative arguments, however, explicitly propose the absence of a relationship between inequality and altruism. As such, we list them here to justify their exclusion from our theoretical analysis.

2.5.1. Inequality-related preferences not associated with altruism.
As we mention above, in the simplest of self-interested models, macro inequality does not directly influence preferences for redistribution. Nevertheless, there may be several additional channels (not connected to other-regarding motivations) through which inequality may affect self-interested actors. We consider three in this section.

First, when forming preferences about redistribution, individuals may be thinking not only about the consequences for today, but also those for the future. If an individual expects to be wealthy in the future, they may think it unwise to support highly redistributive policies. This is known as the prospect of upward mobility (POUM) hypothesis (Benabou & Ok 2001). Thus, if high inequality is associated with increased mobility (Alesina & Glaeser 2004), greater inequality will be associated with lower preferences for redistribution.

Second, inequality may also influence self-interested actors through the externalities it creates. High inequality may have several negative side effects: an increase in crime, political dysfunction, macroeconomic instability, worsening public health, and lower social mobility (contradicting the POUM hypothesis), to name but a few. Insofar as these inequality-induced public ills affect individuals, they will increase support for redistribution. For instance, Rueda & Stegmueller (2016) find that fear of crime explains why the rich in more unequal regions in Western Europe are more supportive of redistribution than the rich in more equal regions.

Finally, a third channel through which inequality affects self-interested actors may be unemployment. Alt & Iversen (2017) capture one important element of rising inequality in the form of increasingly segmented labor markets. Technological change, deindustrialization, and the growth of employment protection legislation for skilled insiders has severed the complementarities between skilled and unskilled labor and confined unskilled labor to insecure, part-time, and low-wage employment (Rueda 2007). Recognizing that much social spending serves insurance purposes (even though it also has redistributive consequences), Alt & Iversen argue that increasing labor market segmentation will reduce labor market risk for pivotal middle-class voters (or skilled workers), which, in turn, will lead to reduced support for social spending. Thus, increasing inequality and labor market segmentation would lead to lower support for redistributive policies based on individual self-interest.

2.5.2. Altruism-related preferences not associated with inequality.
Just as inequality may influence a person's self-interest without triggering any altruistic motives in their support for redistribution, individuals may support redistribution for altruistic reasons not associated with inequality. Shayo (2009) provides a good example of this case. He develops a formal model to explain why lower-class individuals may identify with the nation rather than with their economic class. Shayo (2009, p. 148) asserts that "people do not simply vote their economic self-interest: they also vote their identity." That is, individuals' identification with particular groups—racial, economic, or national—may be just as important, if not more so, than their own economic self-interest. This group-motivated behavior is altruistic, especially when people are willing to sacrifice

their own material payoffs to enhance the welfare of the group as a whole. Shayo hastens to add (correctly) that—since it is limited to the group—this is a very particular kind of altruism. Furthermore, this altruism is not motivated by relative inequality, but rather by the identification with that social group. Thus, rising inequality may not have any determinate effect on preferences for redistribution. It may lead to lower support for redistribution if, for example, lower-class groups identify more with the nation. However, it may lead to greater support if lower-class groups identify with other members of the poor or working class.

Related to Shayo's (2009) model of identity is Lupu & Pontusson's (2011) model of parochial altruism. Like Shayo, they "posit that social distance constitutes an important consideration in the choice of alternative coalitions and suppose that income differentials are a reasonably good proxy for social distance, at least in the absence of cross-cutting ethnic or racial cleavages" (Lupu & Pontusson 2011, p. 318). Based on these premises, they expect, for example, that middle-class voters will align with lower-class voters and support pro-poor redistributive policies when the income distance between the middle class and the poor is small relative to the distance between the middle class and the rich. Although it is expressed in terms of class and inequality, an increase in inequality has no determinate effect in their model. For instance, a rise in inequality could either increase or decrease the income distance between the middle class and the poor, with opposite consequences in each case. As Lupu & Pontusson themselves explicitly point out, their theory of redistributive preferences is not about the level of inequality, but rather the structure of inequality.

A final example of social preferences not related to inequality is Kuziemko et al.'s (2014) model of last-place aversion. This approach is similar to that of Fehr & Schmidt (1999) insofar as utility depends on a person's relative income or wealth within a given reference group. However, the model of last-place aversion places particular emphasis on individuals near the bottom of the distribution. Kuziemko et al. (2014, pp. 105–6) "hypothesize that individuals exhibit a particular aversion to being in last place, such that a potential drop in rank creates the greatest disutility for those already near the bottom of the distribution." In terms of preferences for redistribution, last-place aversion implies that "low-income individuals might oppose redistribution because they fear it might differentially help a last-place group to whom they can currently feel superior" (p. 106). Evidently, the fear of falling into last place does not depend abstractly on any particular level of inequality—especially because income ranking is ordinal. Thus, last-place aversion is a model of social preferences that does not depend on the level of inequality.
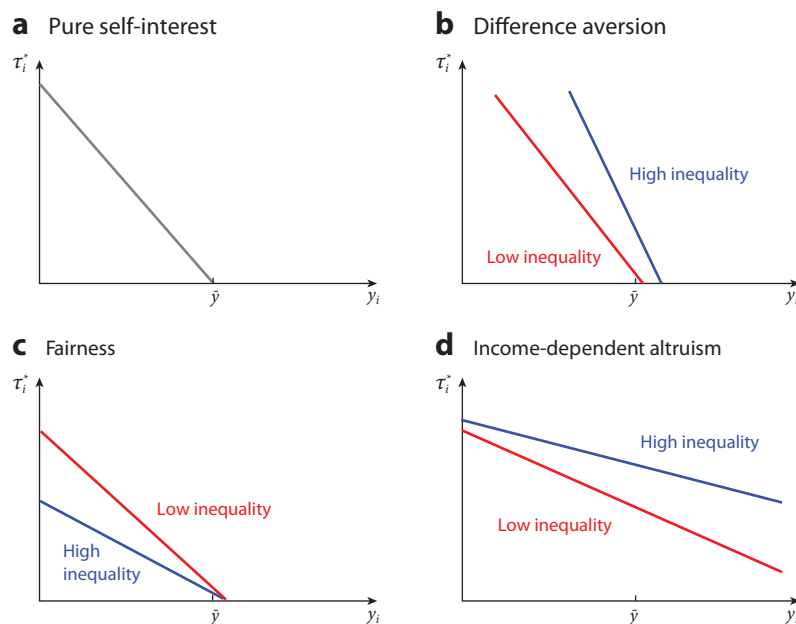
3. DATA ILLUSTRATION

Figure 1 reflects the different models of redistribution preferences emphasized in this article: pure self-interest, difference aversion, fairness, and income-dependent altruism. More importantly, it also summarizes the distinct patterns of income, inequality, and preferences for redistribution that these models imply.[7] While the main contribution of this article is to clarify these theoretical models, in this section we illustrate the importance of these distinct implications by looking at some Western European data to compare among the models.

We draw on individual-level data from the ESS fielded between September 2002 and December 2013.[8] Since it is likely that there are particularities to the postcommunist transition experience

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[7]The predictions in **Figure 1** are derived from the models. The derivations are in Section 5.1.

[8]Relative to similar survey data from the International Social Survey Programme (ISSP), there are two noteworthy drawbacks to using the ESS: The ISSP covers a longer time period than the ESS, and the ISSP includes the United States and other non-European advanced democracies of interest. However, the advantage of the ESS is that the surveys use consistent measures of income. By contrast, income measures reported by the ISSP vary not only between countries within each wave but also,

a Pure self-interest

b Difference aversion

c Fairness

d Income-dependent altruism

Figure 1

Model illustration of the different models of redistribution preferences discussed in this review. τ_i^* represents an individual's preferred tax rate, y_i represents an individual's income, and $\bar{y}$ represents the mean income.

that are not fully taken into consideration in the theoretical claims above, we restrict our analysis to Western European countries.[9] This provides 79 country-years for 14 countries: Austria, Belgium, Germany, Denmark, Spain, Finland, France, the United Kingdom, Ireland, the Netherlands, Norway, Portugal, Sweden, and Switzerland. After matching survey responses to our inequality data (as discussed below), we are left with a sample of 70 country-years composed of 135,704 individuals.[10]

3.1. Redistribution Preferences

Our measure of redistribution preferences is a widely used item (see, for example, Rehm 2009) eliciting respondents' reactions to the following statement: "The government should take measures to reduce differences in income levels." If we discard "don't know" responses and nonresponses, 25% strongly agree, 44% agree, 15% neither agree nor disagree, 13% disagree, and 3% strongly disagree.[11] Clearly, overall support for redistribution is rather high among West Europeans: While almost 70% either agree or strongly agree with the statement that the government should take measures to reduce income differences, only about 16% explicitly express

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for many countries, between waves. Because a reliable measure of income is essential for this article's purposes, this feature outweighs the aforementioned disadvantages of the ESS relative to the ISSP.

[9]Reeskens & Van Oorschot (2012) and Stegmueller et al. (2012) do the same.

[10]Since the article aims to address within-country temporal changes in inequality (as well as cross-sectional ones), we only include in the analysis countries with at least three ESS waves available.

[11]All presented descriptive statistics are adjusted for population sizes and sample inclusion probability.
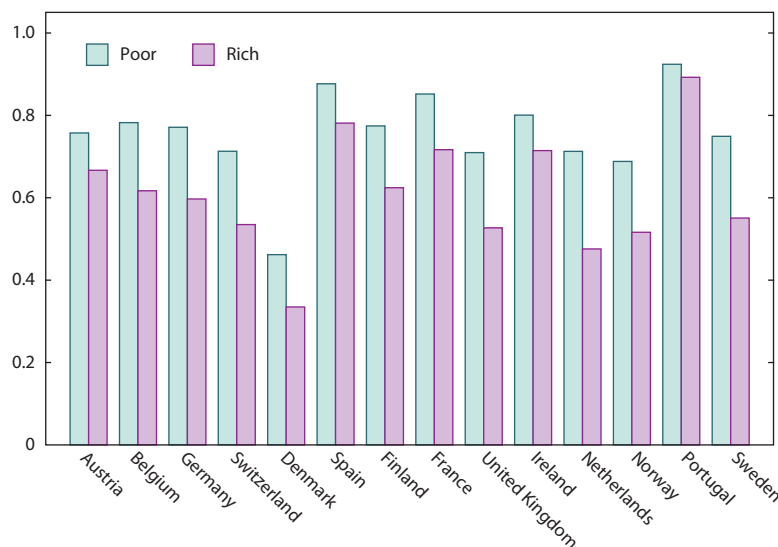
Figure 2

Support for redistribution among poor and among rich inhabitants of 14 countries: proportion of individuals who agree or strongly agree with the statement that the government should take measures to reduce income differences (for definition and soure, see text).

opposition to redistribution. However, the aggregate distribution of responses does not illustrate two of this article's focuses: the existence of national variation in support for redistribution and the differences between rich and poor. **Figure 2** shows support for redistribution (i.e., the proportion of individuals who agree or strongly agree) in each of the countries in the sample and the level of support for redistribution among the poor [defined as those individuals below the 20th percentile, with household incomes at most $20,210 (in purchasing-power-parity-adjusted 2010 US dollars) below the country-year mean] and among the rich (those above the 80th percentile, with household incomes at least $15,141 above the mean in PPP-adjusted 2010 US dollars).

Figure 2 reflects a remarkable amount of cross-national variation. Support for redistribution is generally high in countries like Spain, France, Greece, Ireland, and Portugal. It is generally low in countries like Denmark, the United Kingdom, the Netherlands, and Norway. The support for redistribution among the rich and the poor mirrors these general trends, but the differences between the poor and the rich are quite interesting. For example, in Sweden and Finland, where the general support for redistribution is relatively high, the difference between rich and poor is large. In Austria and Ireland, where the general support for redistribution is, again, relatively high, the difference between rich and poor is low (in Portugal the difference is even smaller).

3.2. Relative Income and Inequality

To capture material self-interest, we calculate the distance between the income of respondents and the mean income in their country (at the time of the survey). Income is captured in the ESS using self-reported net income from all sources. To ease the cognitive load on respondents, they are asked to report weekly, monthly, or annual figures in a limited number of income bands, such as from 1,800 euros to 3,600 euros. To alleviate respondents' privacy concerns, the income bands

are encoded with letters, so that respondents do not have to disclose their actual income to the interviewer.[12]

We transform this discretized measure of income into a continuous one using a nonparametric midpoint Pareto estimator (Henson 1967) that replaces each bin with its midpoint (e.g., the category from 1,800 euros to 3,600 euros is assigned 2,700 euros), while the value for the final, open-ended bin is imputed from a Pareto distribution (e.g., Kopczuk et al. 2010). Using midpoints has been recognized for some time as an appropriate way to create scores for income categories. Midpoints have been used extensively, for example, in the US politics literature analyzing General Social Survey data (Hout 2004).

This still leaves us with one remaining problem, namely that the purchasing power of a certain amount of income varies across the countries included in our analysis. Simply put, it could be argued that the meaning of being 10,000 euros below the mean is different in Switzerland than in Greece. We address this by converting euros or national currencies into PPP-adjusted 2010 US dollars.

Finally, for each respondent, we calculate the distance between their household income and the mean income of their country-year survey.[13] Rueda & Stegmueller (2016) provide a more detailed discussion of this income measure and also provide a number of robustness tests showing that the use of different income imputation schemes makes no difference to the substantive effect of income on preferences.

Our measure of inequality is the Gini coefficient of disposable, equivalized household income, based on the United Nations University World Institute for Development Economics Research World Income Inequality Database (revision 3.4). We construct the Gini index from this database by restricting the sample to sources classified as "high quality" [see Appendix (Section 5) for more details]. This provides us with inequality measures for 70 country-years.

3.3. Other Variables

The analysis in the following sections includes a number of additional variables. The Appendix (Section 5) includes the results of estimating several different probit models of support for redistribution. The first contains no control variables and includes only relative income, inequality, and their interaction. The second includes social spending (social expenditures per capita, PPP adjusted and in constant 2010 US dollars), national unemployment rates (percent unemployed in civilian labor force), and the most commonly used individual-level control variables in analyses of redistribution preferences.[14] This model introduces age (in years), gender (an indicator for female), years of schooling, and (current and past) unemployment.[15] An extended model also

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[12]The exact question wording is, "Using this card, if you add up the income from all sources, which letter describes your household's total net income? If you don't know the exact figure, please give an estimate. Use the part of the card that you know best: weekly, monthly or annual income." The wording of this question was a bit different between 2008 and 2012, but the meaning remains the same. In these surveys, "after tax and compulsory deductions" replaces "net." From 2002 to 2006, the ESS used 12 income bands common to all countries, while, starting in 2008, it used 10 based on each country's income deciles.

[13]This represents a simple centering, which leaves the distribution of incomes unchanged. However, it takes into account the fact that mean incomes differ across countries.

[14]Previous research indicates that average support for redistribution tends to fall when the existing levels of redistribution are high. For a more detailed explanation of why controlling for existing redistribution is important, the reader is referred to Rueda (2017). All country-level data are from the Organisation for Economic Co-operation and Development (OECD).

[15]Previous analyses of individual preferences using more or less the same controls include those of Iversen & Soskice (2001) and Rehm (2009).
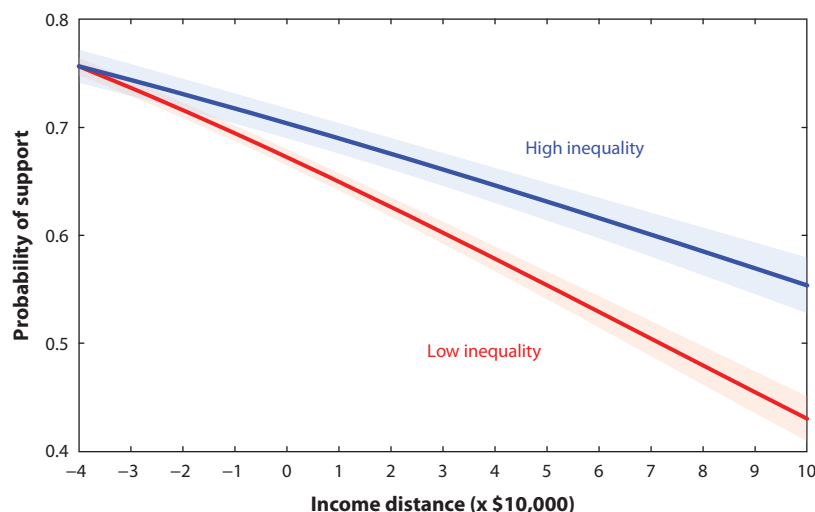
Figure 3

Predicted probability of support for redistribution as a function of income distance in low- and
high-inequality contexts. Lines show predicted probabilities; shaded areas represent 95% confidence
intervals.

includes labor market status and a detailed measure of social class. All models include both country
and year fixed effects.

3.4. Results

Figure 3 shows average predicted probabilities of support for redistribution (and 95% confidence
intervals) at different levels of individual income in low- and high-inequality countries (defined
as the 10th and 90th inequality percentile, respectively).[16] Income distances range from $40,000
(in 2010 PPP-corrected dollars) below the country-year mean to $100,000 above the mean.
The estimates for both levels of macro inequality make clear that support for redistribution is
at its highest when an individual is poor. The predicted probability to agree or strongly agree
that governments should reduce income differences for those at the lowest level of income is
about 75%. As income goes up, support for redistribution is dramatically reduced. These results
therefore show that the first implication of all models of altruism (that the main component of
individual welfare is still selfish consumption) is very much confirmed.

  The arguments about altruism detailed above concern the interaction between individual
levels of income and macro levels of inequality. To address these alternative claims, **Figure 3**
presents the average predicted probabilities associated with different income levels conditional
on whether the macro level of inequality is high or low. In other words, we vary both the
individual income distance and the macro level of inequality (while holding the rest of the
variables at their observed values). The results show that increasing levels of inequality increase
the support for redistribution. Both the poor and the affluent have a higher likelihood of agreeing
or strongly agreeing that the government should reduce income differentials when they are in

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[16]The Appendix (Section 5) provides more details on the estimates underlying the results presented here.

a high-inequality country (**Figure 3**). The more interesting finding in the figure, however, is that the difference between preferences with high and low inequality levels gets much larger as income grows. The affluent and rich are much less likely to support redistribution when there is a low level of inequality (**Figure 3**). The results in **Figure 3**, therefore, reflect the relationship in the income-dependent altruism hypothesis in **Figure 1**.[17]

4. CONCLUSION

We argue in this article that, despite the increasing popularity of comparative work on other-regarding preferences, the theoretical implications of different models of altruism are not always fully understood. In the sections above, we have examined in detail alternative theoretical approaches to altruism (focusing particularly on models of redistribution preferences where macro inequality is explicitly connected to other-regarding motives for redistribution). Our analysis has shown that the observable implications in these models are, indeed, distinct in important ways. In our preliminary empirical exploration of support for redistribution in Western Europe, we show that the income-dependent altruism hypothesis receives some support.

We conclude by noting that our empirical findings [like those in the analysis of US data conducted by Dimick et al. (2016)] run counter to the conventional wisdom in the comparative political economy literature. Given the general increases in levels of inequality in most OECD countries in the past 30 years, a critical reader may observe that we ought to see a similar increase in support for redistribution and, perhaps more importantly, that this increase in support for redistribution among the wealthy should result in a policy response that is hard to elucidate. As McCarty & Pontusson (2009) note, however, models of the political economy of redistribution involve two separate propositions: There is a demand side, concerning the redistribution preferences of voters, and a supply side, concerning the aggregation of these preferences and the provision of policy. In this article, we focus on the first proposition and ignore the second. We do this with full knowledge that a number of political and economic institutional variables (having to do with the nature of parties, labor markets, electoral rules, the nature of government, etc.) may impede the translation of the demand for redistribution that we have documented into supply.[18] We would argue that, by theoretically clarifying the relationship between self-interest and altruism, we can first test the alternative hypotheses more accurately and then extend our insights about the demand for redistribution into a better understanding of its supply.

5. APPENDIX

5.1. Proofs

In this section, we provide proofs of the statements regarding predictions about preferences for redistribution for the three different models of other-regarding preferences: income-dependent

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[17]We are aware that Rueda & Stegmueller (2016) show similar results involving macro inequality at the regional level and support for redistribution. They argue that the macro effect of inequality is entirely dependent on the individual-level concern for a local negative externality of inequality (fear of crime). Our analysis in this review is only meant to be illustrative of the alternative altruism models explained above, but it is important to mention that Rueda & Stegmueller's argument relates explicitly to more local levels of inequality. Decomposing the macro inequality effect into altruism and negative inequality components is beyond the goals of our empirical analysis in this review.

[18]These institutions may also promote the translation of solidaristic demands into redistributive supply. Ahlquist & Levy (2013) provide an illustration of how labor market organizations can develop strategies that do not benefit their members directly.

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altruism, inequity aversion, and fairness. We do this in a rather intuitive way. A more complete statement of these proofs is provided by Dimick et al. (2016).

We consider a continuum of individuals distinguished by the wage they receive, $w \in W = \mathbf{R}_+$. The wage rate has cumulative distribution $F(w)$, (positive) probability density $f(w)$, and a finite expectation. An individual supplies labor $x \geq 0$ and thus earns income according to their wage rate: $y = wx$. The cost of supplying labor is $V(x)$, where $V(\cdot)$ is continuous, increasing, and strictly convex, with $V(0) = V'(0) = 0$ and $\lim_{x \to \infty} V'(x) = \infty$.

The government operates a linear tax, τ, $\tau \in [0, 1]$, and distributes the proceeds to all citizens in equal lump-sum transfers, T. The size of the transfers is determined by average government revenues, and, as is standard, a balanced budget is assumed. Therefore, we obtain

$$T = \tau \bar{y}, \qquad\qquad 5.$$

where average income is

$$\bar{y} \equiv \int_0^\infty y(w) \mathrm{d}F(w).$$

With taxes and transfers, each agent's budget constraint (and their consumption or disposable income) is then given by

$$c(w) = (1 - \tau)y(w) + T - V(x). \qquad\qquad 6.$$

Finally, individuals have a utility function over final consumption, $u(c)$. Also, as is standard, we assume that this function is increasing and concave, with $u'(c) > 0$ and $u''(c) \leq 0$.

From this, it is straightforward to solve for each individual's choice of labor supply. If we take τ and T as given and substitute Equation 6 into $u(c)$, this choice is given by the following equation:

$$x^*(w) = V_x^{-1}[(1 - \tau)w]. \qquad\qquad 7.$$

Since V is a convex function, the above equation implies that an agent's most preferred choice of labor supply is increasing in their wage rate and decreasing in the tax rate. Furthermore, as long as $V_x^{-1}(\cdot)$ is weakly concave, which we henceforth assume, this will ensure convenient conditions for the effect of taxes on average income: $\bar{y}_{\tau\tau} \leq 0$.

Finally, we conceive of changes in inequality in terms of strict Lorenz dominance: An increase in inequality occurs when the first Lorenz curve strictly dominates the second. This provides us with a definition of changes in inequality that is general enough to be applicable to each of the three models of preferences.

> **Proposition 1.** Given income-dependent altruism preferences in Equation 2, (*a*) an individual's preferred level of redistribution is decreasing in income, (*b*) an individual's preferred level of redistribution is increasing in inequality, and (*c*) the effect of inequality is increasing in income.

Following Atkinson (1970), we can rewrite the other-regarding term, the social-welfare function, in Equation 3 in terms of equally distributed equivalent income, y_e, in the following way: $\int_i u_i(c) = u(c_e)$. This is the amount of income that, if given to everyone in equal amounts, would be equivalent to social welfare under unequal incomes. Thus, y_e decreases as inequality increases.

The first-order condition for an individual's preferred level of redistribution, τ_i^*, is $u'(c_i)(\bar{y} - y_i + \tau \bar{y}_\tau) + \delta u'(c_e)(\bar{y} - y_e + \tau \bar{y}_\tau) = 0$. Noting that the second-order condition will be negative, we

can differentiate this first-order condition with respect to income, y_i. This gives $u''(c_i)(\bar{y} - y_i + \tau\bar{y}_\tau)(1-\tau) - u'(c_i)$, which is guaranteed to always be negative for an appropriately small coefficient of risk aversion $u''(c_i)/u'(c_i) < \epsilon$. Along with the second-order condition and the implicit function theorem, this tells us that an individual's preferred level of redistribution is decreasing in income.

Similarly, we can differentiate the first-order condition with respect to y_e. Since we are interested in the effect of an increase in inequality, we multiply the result by -1. The result is $-u''(c_e)(\bar{y} - y_e + \tau\bar{y}_\tau)(1-\tau) + \delta u'(c_e) > 0$. This, along with the second-order condition and the implicit function theorem, tells us that an individual's preferred level of redistribution is increasing in inequality.

The proof that the effect of inequality is increasing in income is longer and more involved. A version is provided by Dimick et al. (2016), to which we refer the reader.

Proposition 2. Given inequity-aversion preferences in Equation 3, (*a*) an individual's preferred level of redistribution is decreasing in income, (*b*) an individual's preferred level of redistribution is increasing in inequality, and (*c*) the effect of inequality is decreasing in income.

The first-order condition for an individual's preferred level of redistribution, τ_i^*, is $-y_i + \bar{y} + \tau\bar{y}_\tau + \alpha \int_{y_j \geq y_i}(y_j - y_i) + \beta \int_{y_j \leq y_i}(y_i - y_j) = 0$. Solving with respect to τ, assuming for simplicity that $\bar{y}_\tau$ is constant in τ, and then taking differences between any two individuals with different incomes, $y_k < y_l$, demonstrate that a person's preferred level of redistribution is decreasing in income.

The fact that τ_i^* is increasing in inequality is most simply seen through inspection of the first-order condition. Any increase in inequality will increase the two other-regarding terms, $\alpha \int_{y_j \geq y_i}(y_j - y_i)$ and $\beta \int_{y_j \leq y_i}(y_i - y_j)$. According to the implicit function theorem, the effect of an increase in inequality on redistribution preferences is therefore positive.

Finally, the effect of inequality is decreasing in income. Consider the poorest person in the distribution. This person experiences only envy, weighted by α. Compare this with the richest person in the distribution, who experiences only altruism, weighted by β. Since $\alpha > \beta$, an increase in inequality has a larger effect for the poorest person than for the richest person. For any person with income between the richest and poorest, the effect of inequality lies between these two extremes and, again given $\alpha > \beta$, is decreasing in income. Thus, the effect of an increase in inequality is larger for a poor person than for a rich person.

Proposition 3. Given fairness preferences in Equation 4, (*a*) an individual's preferred level of redistribution is decreasing in income, (*b*) an individual's preferred level of redistribution is decreasing in inequality, and (*c*) the effect of inequality is decreasing in income.

Define earned income as $\hat{y}_i$, define unearned income as η_i, and assume that η_i has zero mean and is independent of y_i. Total gross income is then $y_i = \hat{y}_i + \eta_i$ (note that $\eta_i = y_i - \hat{y}_i$).

Given this, the other-regarding term in Equation 4 can be written as

$$\tau^2 \text{Var}(\hat{y}_i) + (1 - \tau)^2 \text{Var}(y_i - \hat{y}_i).$$

For simplicity, and without loss of generality, we can assume that taxes have no distortionary effect on other-regarding preferences. The first-order condition is then $-y_i + \bar{y} + \tau\bar{y}_\tau - 2\gamma[\tau\text{Var}(\hat{y}_i) - (1-\tau)\text{Var}(y_i - \hat{y}_i)] = 0$.

Since the other-regarding term does not depend on individual income, the effect of individual income on redistribution preferences is identical to the model of self-interested preferences in Equation 1. An individual's preferred level of redistribution is therefore decreasing in income. Meanwhile, an increase in inequality increases the variance of earned incomes. Differentiating the first-order condition with respect to this term, the effect is clearly negative: $-2\gamma\tau(\partial\mathrm{Var}(\hat{y}_i)/\partial Q) < 0$, where Q is our measure of inequality. Combined with the sign of the second-order condition and the implicit function theorem, the effect of inequality therefore lowers everyone's preferred level of redistribution.

Finally, note that individual income does not appear anywhere within the effect of inequality. However, the inequality effect does depend on τ, which, as discussed above, is decreasing in income. Therefore, the effect of inequality is likewise decreasing (in absolute value) in income.

5.2. Data Details

This appendix provides details on the data set used in our analysis. Since the article aims to address within-country temporal changes in inequality (as well as cross-sectional ones), we only include in the analysis countries with at least 3 ESS waves available. On average we include 5 survey years for each country. **Table 1** lists the survey waves for each country used in our analysis. It also identifies the country-years that are excluded from our main analysis because they are not present in the World Income Inequality Database (WIID). We impute these as a robustness check (described in the next section).

The lack of inequality measures for some country-years is based on the selection criteria we apply. The WIID often includes several sources for each country-year. We include only sources classified as "High quality" and only Gini values calculated based on net equivalized household income. **Table 2** shows the WIID sources included in our measure of inequality. Where we have

Table 1   Survey years included in analysis

	2002	2004	2006	2008	2010	2012
Austria	✓[a]	✓	✓			
Belgium	✓[a]	✓	✓	✓	✓	✓
Denmark	✓[a]	✓	✓	✓	✓	✓
Finland	✓	✓	✓	✓	✓	✓
France	✓[a]	✓	✓	✓	✓	✓
Germany	✓[a]	✓	✓	✓	✓	✓
United Kingdom	✓	✓	✓	✓	✓	✓
Ireland	✓[a]	✓	✓		✓	✓
Netherlands	✓	✓	✓	✓	✓	✓
Norway	✓	✓	✓	✓	✓	✓
Portugal	✓[a]	✓	✓	✓		✓
Spain	✓[a]	✓	✓	✓	✓	✓
Sweden	✓	✓	✓	✓	✓	✓
Switzerland	✓	✓	✓[†]	✓	✓	✓

[a]Not included in World Income Inequality Database (WIID) sample (main analysis) but included in WIID imputed analysis (see specification 5 in **Table 3**).

Table 2   Sources of inequality measures included in our WIID sample

Source	Percent
Eurostat	76.8
Luxembourg Income Study	18.3
National statistical offices	3.1
Institute for Fiscal Studies	1.2
European Commission	0.6

more than one data source, we calculate the arithmetic mean. See Jenkins (2015) for a detailed discussion of (an earlier version of) this database and the importance of applying appropriate quality restrictions.

5.3. Model Details

This section provides numerical details on the model underlying **Figure 3** in the main text. We also show that our results are robust under a number alternative empirical specifications. **Table 3** shows estimates (with standard errors in parentheses) for 5 model specifications. The first specification is a probit model with only country and year fixed effects and no additional covariates. Specification (2), on which the predicted probabilities used in the main text are based, adds adds age, gender, years of education, the national unemployment rate, and social expenditure per head in constant 2010 US Dollars as controls. Specification (3) adds a 9-category measure of social class (the European Socio-Economic Classification) and respondents' labor market status (retired/disabled, not in labor force). In specification (4) we change the form of the model and calculate a linear probability model (LPM) using the same controls as in specification (2). Finally, in specification (5) we impute 9 missing country-year observations in the WIID using country-specific predictive mean matching based on two nearest neighbors. All 5 specifications closely reproduce our central argument of the income-conditional impact of changes in country-level inequality.

Table 3   Effect of country-level inequality conditional on individual income distance

Marginal effect	(1) No controls	(2) Basic controls	(3) Extended controls	(4) LPM	(5) Imputed WIID
Poor (10th percentile)	0.13	0.11	0.13	0.11	0.13
	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Rich (90th percentile)	0.68	0.64	0.63	0.71	0.62
	(0.13)	(0.11)	(0.13)	(0.12)	(0.12)
Country fixed effects	✓	✓	✓	✓	✓
Year fixed effects	✓	✓	✓	✓	✓
Number of respondents	110,843	110,077	109,627	110,077	122,377
Number of country-years	70	70	70	70	79

Canonical model form: Preferences = Controls + Income + Inequality + Income×Inequality + Fixed effects. Probit models estimated using Maximum Likelihood, except (4), which is a linear probability model estimated using Ordinary Least Squares. Standard errors based on nonparametric bootstrap with 100 replications.

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