

## University at Buffalo School of Law Digital Commons @ University at Buffalo School of Law

---

Journal Articles

Faculty Scholarship

---

5-1-2018

# Models of Other-Regarding Preferences and Redistribution

Matthew Dimick

*University at Buffalo School of Law*

David Rueda

Daniel Stegmueller

Follow this and additional works at: <https://digitalcommons.law.buffalo.edu/articles>

 Part of the [Inequality and Stratification Commons](#), and the [Law and Economics Commons](#)

---

### Recommended Citation

Matthew Dimick, David Rueda & Daniel Stegmueller, *Models of Other-Regarding Preferences and Redistribution*, 21 *Ann. Rev. Pol. Sci.* 441 (2018).

Available at: <https://digitalcommons.law.buffalo.edu/articles/917>

Posted with permission from the Annual Review of Political Science, Volume 21 © 2018 by Annual Reviews, <https://www.annualreviews.org/doi/full/10.1146/annurev-polisci-091515-030034>

This Article is brought to you for free and open access by the Faculty Scholarship at Digital Commons @ University at Buffalo School of Law. It has been accepted for inclusion in Journal Articles by an authorized administrator of Digital Commons @ University at Buffalo School of Law. For more information, please contact [lawscholar@buffalo.edu](mailto:lawscholar@buffalo.edu).

# MODELS OF OTHER-REGARDING PREFERENCES AND REDISTRIBUTION

Matthew Dimick\*  
David Rueda†  
Daniel Stegmüller‡

## ABSTRACT

In spite of the increasing popularity of comparative work on other-regarding preferences, the theoretical implications of different models of altruism are not always fully understood. This paper explores different theoretical approaches to altruism and elucidates their implications, paying particular attention to models of redistribution preferences where inequality explicitly triggers altruistic other-regarding motives for redistribution. While the main contribution of the paper is to clarify these theoretical models, we also illustrate the importance of having these distinct implications by analyzing some Western European data to compare among them. We draw on individual-level data from the European Social Survey (ESS) fielded between September 2002 and December 2013.

---

\*University at Buffalo School of Law, [mdimick@buffalo.edu](mailto:mdimick@buffalo.edu)

†Department of Politics & IR and Nuffield College, University of Oxford  
[david.rueda@politics.ox.ac.uk](mailto:david.rueda@politics.ox.ac.uk)

‡Department of Political Science, Duke University, [mail@daniel-stegmueller.com](mailto:mail@daniel-stegmueller.com)

# 1. Introduction

The political economy literature has generally been limited to relatively simple material self-interested motivations: an individual's position in the income distribution determines her 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 in more complex causal chains (the role of parties, labor market institutions, the nature of government, federalism, international factors, etc). An increasing amount of convincing evidence indicates, however, that other-regarding concerns are an important motivation for individuals. As argued by Alesina and Giuliano, 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" (2011: 94). Altruistic concerns need to be systematized into predictable political economy hypotheses.

A number of 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 have a dislike for unequal distributions, independent from 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 and Rabin 2002 and Fehr and Gächter 2000). A number of alternative models have been presented to analyze different kinds of other-regarding concerns (for reviews, see Fehr and Schmidt 2006 and DellaVigna 2009). As we will 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 paper, however, is that (in spite of 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 contribution we aim to put forward two main arguments that we hope will illuminate a number

of questions often overlooked in this literature: (1) We should be clear about what we mean by altruism; and (2) we should be more explicit about the implications, in particular, of arguments connecting other-regarding motivations to levels of macro inequality. We argue below that the main approaches to other-regarding motivations for redistribution contain very distinct testable implications. Often, however, these 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.

It is important for us to make clear at this early stage that the approach we develop in this paper 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<sup>4</sup> or “taste for giving”<sup>5</sup>). The second one 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, we emphasize a situational approach in this paper. We agree that, for many economic outcomes, personality measures may be as predictive as cognitive ones (see, for example, Almlund et al. 2011) but find this compatible with the main arguments in the following pages.<sup>6</sup>

The rest of the paper proceeds as follows. We spend most of our time exploring different theoretical approaches to altruism and elucidating their implications. We pay particular attention to models of redistribution preferences where 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 implications and (therefore testable) predictions. We begin with a

---

<sup>4</sup>In this research altruism has often taken the form of a self-reported measure (the Self-Report Altruism, SRA, 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). See, for example, the research on altruistic personality by Rushton et al. (1981).

<sup>5</sup>See, for example, Andreoni (1990).

<sup>6</sup>It is certainly possible that there are some individuals that have more altruistic personalities than others. But this would not affect the general implications of most the arguments we describe below, unless these personality types were highly correlated with individual income (and we have no reason, theoretical or empirical, to believe this is the case).

model of how concern for 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. And finally, we consider how inequality can altruistically motivate 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 in these alternative approaches by analyzing a large-scale cross-national Western European data set. We examine individual-level data from the European Social Survey (we use Rounds 1-6, between 2002 and 2013).

## 2. Self Interest, Inequality and Altruism

In this paper, we are primarily interested in the way that the distribution of income affects preferences for redistribution through other-regarding concerns. This is a more fine-grained distinction than may 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 about purely self-interested preferences for redistribution is that changes in inequality do not necessarily affect them. To illustrate this, we can point to the solution for purely self-interested preferences for redistribution in a standard model:

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

This equation shows that an individual's most preferred tax rate,  $\tau^*$ , is a decreasing function of income,  $y$ . The only other variable that this equation depends on is mean income,  $\bar{y}$ . Since a change in the distribution of income—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.

This claim is often forgotten because the well-known Meltzer-Richard model is built on purely self-interested preferences yet states predictions in terms of inequality. But the Meltzer-Richard model is not (or not only) a model of individual-level preferences for redistribution. Rather, it is a country-level model of redistributive outcomes. It therefore aggregates individual preferences through a highly simplified model of democratic 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. But the effect of inequality works only through its influence on individual income and then the voting mechanism. In order for inequality to have an effect on individual-level preferences for redistribution, we therefore need something more than simple self-interest. Our candidate is some form of *other-regarding* preferences. That is, we need a form of preferences where individuals exhibit concern for the impact of inequality (and for policies that affect inequality) on others. This 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 now explore these possibilities.

## 2.2. Social Welfare

To begin, we examine a social-welfare model of altruistic preferences of redistribution. Dimick et al. (2016) build and test a model of redistribution preferences where individuals exhibit concern for social welfare. They call this model *income-dependent altruism*. To give precision to the discussion, it will help to give a slightly formal representation of these kinds of preferences. Take, for example, the following individual utility function:

$$u_i(c) + \delta \int_i u_i(c) \tag{2}$$

The first term on the left,  $u_i(c)$ , is an individual's *own* utility over consumption, written  $c$ , 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 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 (1) on their own welfare or utility and (2) on society's welfare as a whole. In light of this,  $\delta$  therefore represents how much weight the person puts on society's welfare. If  $\delta = 0$ , for instance, the person cares only about her own welfare; on the other hand, if  $\delta \rightarrow \infty$ , then the person puts almost all of the weight on society's welfare.

Now, 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 to one dollar,  $u(\$1) - u(\$0)$ , will be larger than gaining the thousand and first dollar,  $u(\$1001) - u(\$1000)$ . That is,  $u(\$1) - u(\$0) > u(\$1001) - u(\$1000)$ . This feature has two important implications, as we will see 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 the utility of others? Dimick et al. (2016) derive three main predictions from such a model. First, an individual's preferred level of redistribution is decreasing in her own income. This effect occurs through a person's private utility. For a given level of social welfare, and for a certain weight an individual puts on social welfare (as distinct from her own), redistributive policies are more costly, individually, to wealthier than to poorer citizens. In other words, individuals have mixed motives. They care about social welfare, but they care about their own welfare as well. Holding the effect on social welfare constant, an individual will prefer less redistribution as she becomes richer.

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 \$1001 to a person with a budget of \$0. Then, since  $u(\$1) - u(\$0) >$

$u(\$1001) - u(\$1000)$ , 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. Hence, an increase in inequality leads all individuals to support more redistribution.

Third, there is a positive interaction effect between an individual's income and income inequality. Specifically, the effect of an increase of 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, a rich person would rather spend more of that dollar on reducing inequality than would a poor person. Thus, the rich are more responsive to changes in inequality than are the poor, even though the poor prefer more overall redistribution than the rich.

### 2.2.1. Risk Aversion versus Inequality Aversion

As a important aside, the topic of risk frequently arises in the discussion of preferences for redistribution. Here we pause to remark on the difference, but 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 was 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.

Now, we could describe in a similar way 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 unemployed. Given the diminishing marginal utility of money—a concave utility function—she would be better off if her income were higher when unemployed and lower if employed. Indeed, because a transfer of a dollar from the employed to the unemployed would make her unambiguously better off, she would be willing to pay for such a redistributive system.

Thus, whether 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, like unemployment.<sup>7</sup>

### 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 about inequality to one’s place—or position, or rank—in the distribution of income rather than to a motivations about overall social welfare. In these explanations, rank is more important than welfare as the motivation for mitigating inequality. The most well known model of difference aversion is Fehr and Schmidt (1999). Fehr-Schmidt preferences can be captured by the following equation:

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

As before, Fehr-Schmidt preferences depend on an individuals’ own utility,  $c_i$  (because the concavity of the utility function is not important for their version of preferences, they assume  $u_i(c) = c_i$ ). The other-regarding part of the utility function is captured by the second two negative terms. For Fehr and Schmidt, concerns about inequality are determined by the differences in income of those above ( $i+1, i+2, \dots, n$ ) and below ( $1, 2, \dots, i-1$ ) a given individual,  $i$ , in the income distribution. The average of differences of income between a person and those having more is called “disadvantageous inequality,” or envy. The average of differences of income between a person and those having less is called “advantageous inequality,” or altruism. Fehr and Schmidt weight these averages,  $\alpha$  and  $\beta$  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 predictive results. First, an individual’s ideal level of redistribution is decreasing in her income. This is for identical

---

<sup>7</sup>This is essentially the argument in Alt and Iversen (2013).

reasons to those in the previous framework: because a main component of individual welfare is still their 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), this lowers each person’s utility. Conversely, higher redistribution will raise utility by lowering income differentials. Thus, demand for redistribution increases in inequality.

Finally, the poor, rather than the rich—in contrast to Dimick et al. (2016)—are more responsive to changes in inequality. As we just saw, 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 her (with lower weight  $\beta$ ), while for a poor person the inequality increase will be concentrated above her (with larger weight  $\alpha$ ). Thus, since envy is weighted more than altruism, the poor will increase their support for redistribution more than the rich.

## 2.4. Normative Models

One can also model the other-regarding consequences of inequality not through inequality’s 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. In these arguments, preferences for redistribution are essentially determined by the difference between the actual distribution of income and the normatively ideal distribution of income. The best know of these models is the fairness model of Alesina and Angeletos (2005).

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

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

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

This form of preferences leads to the following results. First, as in the previous two forms, an individual's preferred level of redistribution is decreasing in income. This follows the same reasoning explained previously.

Second, an increase in inequality will lead to a *decrease* in the demand for redistribution. In Alesina and Angeletos's conception, only inequality that is "earned" is normatively just. Individuals therefore compare actual inequality with earned income inequality and are willing to redistribute 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 the ratio between earned and unearned income inequality. Alesina and Angeletos call this the "signal-to-noise ratio": the variance in earned incomes being the signal, the variance in unearned income being the noise. Accordingly, as the variance in earned income increases relative to 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 Dimick et al. (2016) as well as Fehr and Schmidt (1999), an increase in earned income inequality will lead to a fall in the demand for redistribution.<sup>8</sup>

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 rather than other-regarding concerns dominate. Because utility is quasi-

---

<sup>8</sup>Of course, an increase in unearned income inequality will lead to an increase in demand for redistribution. However, in Alesina and Angeletos, 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.

linear in consumption in Alesina and Angeletos (2005), rather than concave as in Dimick et al. (2016), differences in earned and unearned income inequality become less relevant the richer a person becomes.

#### **2.4.1. Alternative Standards**

Alesina and Angeletos's idea of "fairness" is not the only standard available, and one could adopt other normative models. For instance, as Alesina and 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 (pre-tax, pre-transfer) 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 one that maximizes the welfare of the least well off.

### **2.5. Inequality or Altruism, but not Together**

We have discussed above the main focus of this paper: 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) often linked to the types of arguments we have emphasized. These alternative arguments, however, explicitly propose the absence of a relationship between inequality and altruism. As such, we list them here in order to justify their exclusion from our theoretical analysis.

#### **2.5.1. Inequality-related preferences not associated with altruism**

As we mentioned 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 here.

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

Another mechanism through which inequality may influence self-interested actors is the “externalities” of inequality. High inequality may have several negative side effects: an increase in crime, political dysfunction, macroeconomic instability, worsening public health, and lower social mobility (*contra* the POUM hypothesis), to name but a few. Insofar as these inequality-induced public “bads” affect individuals, they will increase support for redistribution. For instance, Rueda and 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 may be unemployment. Alt and Iversen (2013) 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 into insecure, part-time, and low-wage employment. Recognizing that much social spending serves insurance purposes (even though it also has redistributive consequences), they 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—labor market segmentation—will 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. A good example of this is Shayo (2009). Shayo develops a formal model to explain why lower-class individuals may identify with the nation rather than their economic class. Shayo asserts that “peo-

ple do not simply vote their economic self-interest: they also vote their identity” (ibid., p. 148). 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.<sup>9</sup> 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. Or it may lead to greater support, if they identify with other members of the poor or working class.

Related to Shayo’s model of identity is Lupu and 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” (ibid., 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 and poor is small relative to that of the distance between middle and rich. While expressed in terms of class and inequality, however, 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 middle class and poor, with opposite consequences in each case. As Lupu and Pontusson themselves are explicit to point out, their theory of redistributive preferences is not about the level of inequality, but the *structure* of inequality.

A final example of social preferences not related to inequality is the model of “last-place aversion” by Kuziemko et al. (2014). This approach is similar to Fehr and Schmidt (1999) insofar as utility depends on a person’s relative income or wealth within a given reference group. However, last-place aversion gives particular emphasis to those near the bottom of the distribution. Kuziemko et al. “hypothesize

---

<sup>9</sup>Another word to describe this is *parochial* altruism. We discuss this in a different context below.

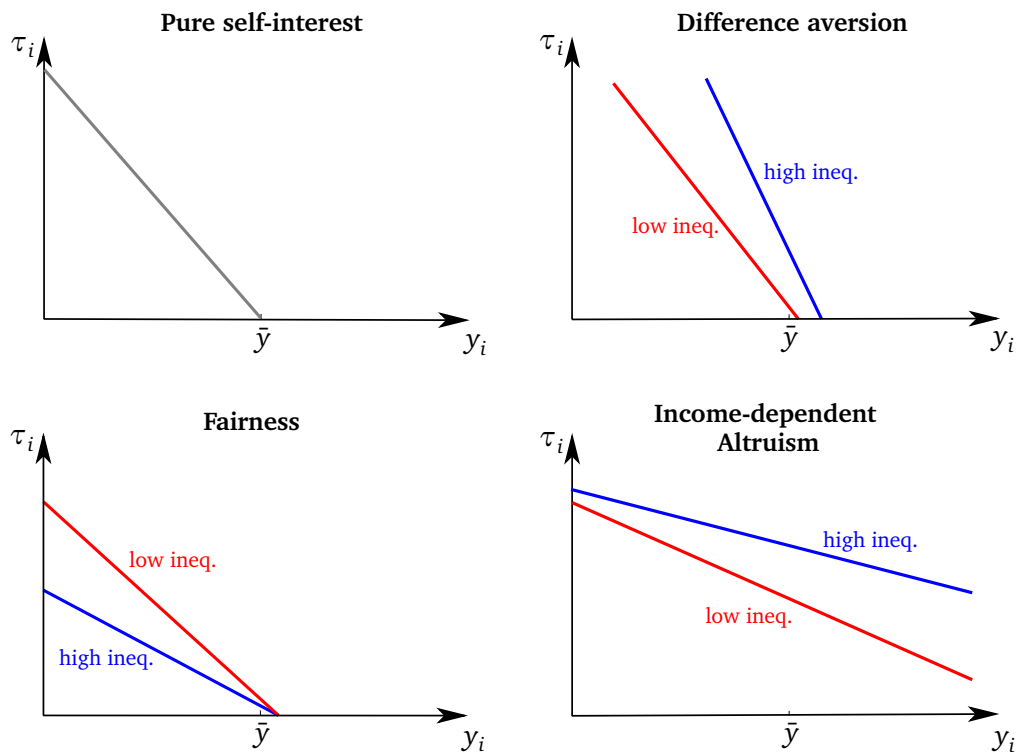


Figure 1: Model illustration

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” (ibid., pp. 105–06). 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.” Evidently, the fear of falling into last place does not depend abstractly on any particular level of inequality—the more so 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 paper: 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 they imply.<sup>10</sup> While the main contribution of the paper is to clarify these theoretical models, we now illustrate the importance of having these distinct implications by looking at some Western European data to compare among them.

We draw on individual-level data from the European Social Survey (ESS) fielded between September 2002 and December 2013.<sup>11</sup> Since it is likely that there are particularities to the post-communist transition experience that are not fully taken into consideration in the theoretical claims above, we restrict our analysis to Western European countries.<sup>12</sup> This provides 79 country-years for 14 countries: Austria, Belgium, Germany, Denmark, Spain, Finland, France, Great Britain, Ireland, the Netherlands, Norway, Portugal, Sweden, and Switzerland. After matching survey responses to our inequality data (more below), we are left with a sample of 70 country-years comprised of 135,704 individuals. Table B.1 in the Appendix lists the survey waves included for each country.<sup>13</sup>

#### 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." Discarding

---

<sup>10</sup>The predictions in Figure 1 are derived from the models. The derivations are in Appendix A.

<sup>11</sup>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 includes the US and other non-European advanced democracies of interest. On the other hand, 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 for many countries between waves. As a reliable measure of income is essential for this paper's purposes, this feature outweighs the aforementioned disadvantages of the ESS relative to the ISSP.

<sup>12</sup>For other authors doing the same, see Reeskens and Van Oorschot 2012 or Stegmüller et al. 2012.

<sup>13</sup>Since the paper 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.



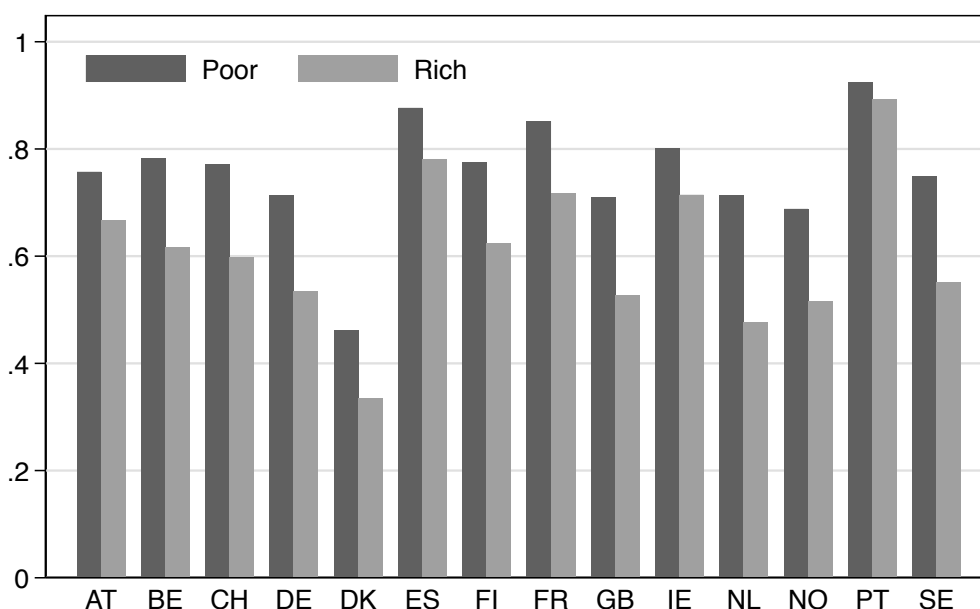


Figure 2: Support for Redistribution among Poor and among Rich

don't-knows and non-responses, 25% strongly agree, 44% agree, while 15% neither agree nor disagree, 13% disagree and 3% strongly disagree.<sup>14</sup> 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 measure to reduce income differences, only about 16% explicitly express opposition to redistribution. However, the aggregate distribution of responses does not illustrate two of the things this paper's arguments are about: 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 agrees and strong agrees) in each of the countries in the sample, and the level of support for redistribution among the poor (here defined as those individuals below the 20th percentile, with household incomes at most 20,210 PPP-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 PPP-adjusted 2010 US dollars above the mean).

<sup>14</sup>All presented descriptive statistics are adjusted for population sizes and sample inclusion probability.

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, Great Britain, the Netherlands and Norway. The support of redistribution among the rich and the poor mirrors these general trends, but the differences between poor and 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). The analysis below will help explain these patterns.

### **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 either weekly, monthly or annual figures in a limited number of (10 or 12) income bands, such as € 1,800 to € 3,600. 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.<sup>15</sup>

We transform this discretized measure of income into a continuous one using a non-parametric midpoint Pareto estimator (Henson 1967). It replaces each bin with its midpoint (e.g., category € 1,800 to under € 3,600 gets assigned € 2,700), while the value for the final, open-ended, bin is imputed from a Pareto distribution (Kopczuk et al. 2010). Using midpoints has been recognized for some time as an appropriate way to create scores for income categories. They have been used extensively, for

---

<sup>15</sup>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 between 2008 and 2012 is a bit different, 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.

example, in the American politics literature analyzing General Social Survey (GSS) 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 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 her household income and the mean income of her country-year survey.<sup>16</sup> Rueda and Stegmueller (2016) provide a more detailed discussion of this income measure and also provide a number of robustness tests showing that different income imputation schemes make 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 UNU-WIDER 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 Table B.2 in the appendix for more details). This provides us with inequality measures for 70 country-years.<sup>17</sup>

### 3.3. Other variables

The analysis in the following pages includes a number of additional variables. In Appendix C, we present the results of estimating several different probit models of support for redistribution. The first one contains no control variables and includes only relative income, inequality and their interaction. The second one 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 redistri-

---

<sup>16</sup>This represents a simple centering, which leaves the *distribution* of incomes unchanged. However, it takes into account that mean incomes differ over countries.

<sup>17</sup>In appendix C we also present an analysis based on imputed data which retains these 9 country-years and produces qualitatively similar results.

bution preferences.<sup>18</sup> This model introduces age (in years), gender (an indicator for female), years of schooling, and (current and past) unemployment.<sup>19</sup> An extended model also 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). 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 (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 to 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 all 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 a high inequality country (the blue line in Figure 3). The more interesting finding in the figure, however, is that the difference between preferences with high and low in-

---

<sup>18</sup>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, see Rueda (Forthcoming). All country-level data are from the OECD.

<sup>19</sup>Previous analyses of individual preferences using more or less the same controls include Iversen and Soskice (2001) or Rehm (2009).

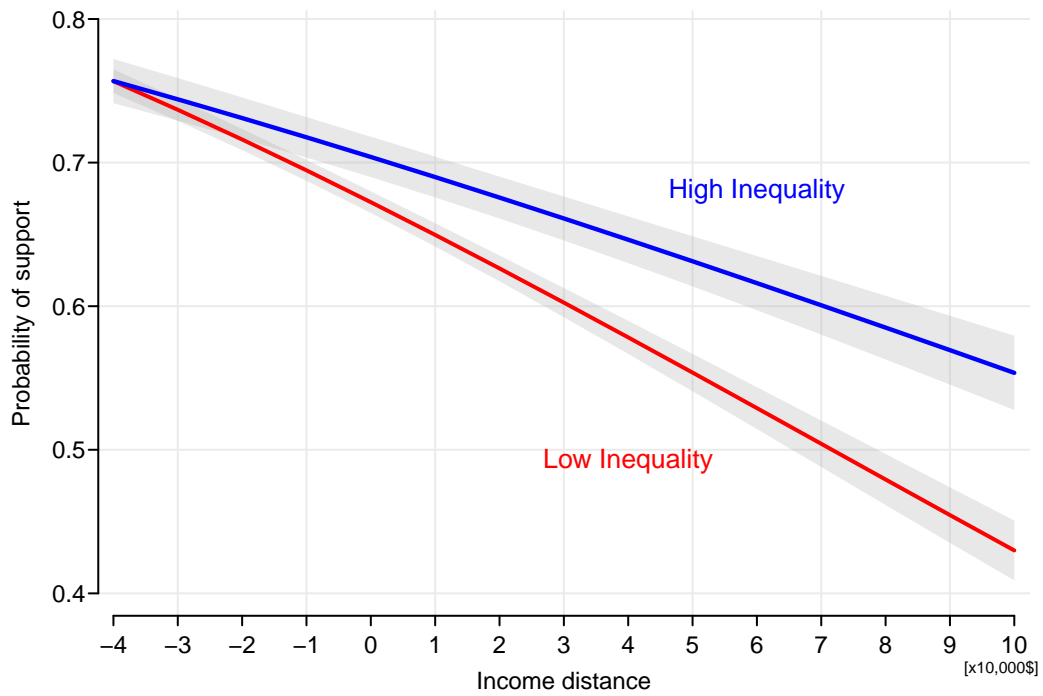


Figure 3: Predicted probability of support for redistribution as function of income distance in low and high inequality contexts

equality 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 (the red line). The results in Figure 3, therefore, reflect the relationship in the income-dependent altruism hypothesis in Figure 1.<sup>20</sup>

## 4. Conclusion

We have argued in this paper that, in spite of 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 previous pages 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 importantly distinct. In our preliminary empirical exploration of support for redistribution in Western Europe, we have shown that the income-dependent altruism hypothesis receives some support.

We will conclude by noting that our empirical findings (as those in the analysis of American data in 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 last 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 which is hard to elucidate. As McCarty and Pontusson (2009) note, however, models of the political economy of redistribution involve two separate propositions: there is a demand side, concerning the redistribution pref-

---

<sup>20</sup>We are aware that Rueda and 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 here is only meant to be illustrative of the alternative altruism models explained above, but it is important to mention that Rueda and Stegmueller's argument is explicitly about more local levels of inequality. Decomposing the macro inequality effect into altruism and negative inequality components is beyond the goals of our empirical analysis here.

erences of voters, and a supply side, concerning the aggregation of these preferences and the provision of policy. In this paper we have focused on the first proposition and ignored the second. We have done this with full knowledge that a number of political and economic institutional variables (having to do with the nature of parties, electoral rules, the nature of government, etc.) may impede the translation of the demand for redistribution we have documented into supply. We would argue that by clarifying theoretically 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.

## References

- Alesina, A. and G.-M. Angeletos (2005). Fairness and redistribution. *American Economic Review* 95(4), 960–980.
- Alesina, A. and P. Giuliano (2011). Preferences for redistribution. In J. Benhabib, A. Bisin, and M. O. Jackson (Eds.), *Handbook of Social Economics*, pp. 93–131. San Diego: North-Holland.
- Alesina, A. and E. L. Glaeser (2004). *Fighting Poverty in the US and Europe. A world of Difference*. Oxford: Oxford University Press.
- Almlund, M., A. L. Duckworth, J. J. Heckman, and T. Kautz (2011). Personality psychology and economics. In E. A. Hanushek, S. Machin, and L. Woessmann (Eds.), *Handbook of the Economics of Education*, pp. 1–181. Elsevier.
- Alt, J. and T. Iversen (2013). Inequality, labor market segmentation, and preferences for redistribution. Working paper.
- Andreoni, J. (1990). Impure altruism and donations to public goods: A theory of warm-glow giving. *The Economic Journal* 100(401), 464–477.
- Atkinson, A. B. (1970). On the measurement of inequality. *Journal of Economic Theory* 2, 244–263.
- Benabou, R. and E. A. Ok (2001). Social Mobility and the Demand for Redistribution: The Poup Hypothesis. *The Quarterly Journal of Economics* 116(2), 447–487.
- Charness, G. and M. Rabin (2002). Understanding social preferences with simple tests. *The Quarterly Journal of Economics* 117(3), 817–869.
- DellaVigna, S. (2009). Psychology and Economics: Evidence from the Field. *Journal of Economic Literature* 47(2), 315–372.
- Dimick, M., D. Rueda, and D. Stegmueller (2016). The altruistic rich? inequality and other-regarding preferences for redistribution. *Quarterly Journal of Political Science* 11(4), 385–439.
- Fehr, E. and S. Gächter (2000). Fairness and retaliation: The economics of reciprocity. *Journal of Economic Perspectives* 14(3), 159–181.
- Fehr, E. and K. M. Schmidt (1999). A theory of fairness, competition, and cooperation. *Quarterly Journal of Economics* 114(3), 817–868.



- Fehr, E. and K. M. Schmidt (2006). The Economics of Fairness, Reciprocity, and Altruism: Experimental Evidence and New Theories. In S.-C. Kolm and J. M. Ythier (Eds.), *Handbook of the Economics of Giving, Reciprocity, and Altruism*, pp. 615–691. Elsevier.
- Henson, M. F. (1967). *Trends in the Income of Families and Persons in the United States, 1947-1964*. Washington, D.C.: US Department of Commerce, Bureau of the Census.
- Hout, M. (2004). Getting the most out of the gss income measures. GSS Methodological Report 101.
- Iversen, T. and D. Soskice (2001). An Asset Theory of Social Policy Preferences. *American Political Science Review* 95(4), 875–893.
- Jenkins, S. P. (2015). World income inequality databases: an assessment of wiid and swiid. *The Journal of Economic Inequality* 13(4), 629–671.
- Kopczuk, W., E. Saez, and J. Song (2010). Earnings Inequality and Mobility in the United States: Evidence from Social Security Data since 1937. *Quarterly Journal of Economics* 125(1), 91–128.
- Kuziemko, I., R. W. Buell, T. Reich, and M. I. Norton (2014). Last-place aversion: Evidence and redistributive implications. *The Quarterly Journal of Economics* 129(1), 105–149.
- Lupu, N. and J. Pontusson (2011). The Structure of Inequality and the Politics of Redistribution. *American Political Science Review* 105(2), 316–336.
- McCarty, N. and J. Pontusson (2009). The Political Economy of Inequality and Redistribution. In W. Salverda, B. Nolan, and T. M. Smeeding (Eds.), *The Oxford Handbook of Economic Inequality*, pp. 665–692. Oxford: Oxford University Press.
- Reeskens, T. and W. Van Oorschot (2012). Disentangling the ‘new liberal dilemma’: On the relation between general welfare redistribution preferences and welfare chauvinism. *International Journal of Comparative Sociology* 53(2), 120–139.
- Rehm, P. (2009). Risks and redistribution: An individual-level analysis. *Comparative Political Studies* 42(7), 855–881.
- Rueda, D. (Forthcoming). Food comes first, then morals: Redistribution preferences, parochial altruism and immigration in western europe. *The Journal of Politics*.

- Rueda, D. and D. Stegmueller (2016). The externalities of inequality: Fear of crime and preferences for redistribution in western europe. *American Journal of Political Science* 60(2), 472–489.
- Rushton, P. J., R. D. Chrisjohn, and G. Cynthia Fekken (1981). The altruistic personality and the self-report altruism scale. *Personality and individual differences* 2(4), 293–302.
- Shayo, M. (2009). A Model of Social Identity with an Application to Political Economy: Nation, Class, and Redistribution. *American Political Science Review* 103(2), 147–174.
- Stegmueller, D., P. Scheepers, S. Roßteutscher, and E. de Jong (2012). Support for redistribution in western europe: Assessing the role of religion. *European Sociological Review* 28(4), 482–497.
- Tricomi, E., A. Rangel, C. F. Camerer, and J. P. O’Doherty (2010). Neural evidence for inequality-averse social preferences. *Nature* 463(7284), 1089–1091.

## A. Mathematical Appendix

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 altruism, inequity aversion, and fairness. We do this in a rather intuitive form. A more complete statement of these proofs can be found in 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 her 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  $\lim_{x \rightarrow \infty} V'(x) = \infty$ .

The government operates a linear tax,  $\tau$ ,  $\tau \in [0, 1]$ , 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:

$$T = \tau \bar{y} \tag{A.1}$$

where average income is

$$\bar{y} \equiv \int_0^{\infty} y(w) dF(w)$$

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

$$c(w) = (1 - \tau)y(w) + T - V(x) \tag{A.2}$$

Finally, individuals have a utility function over final consumption,  $u(c)$ . Also as is standard, we assume 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. Taking  $\tau$  and  $T$  as given and substituting equation (A.2) into  $u(c)$ , this choice is given

by the following equation:

$$x^*(w) = V_x^{-1}[(1 - \tau)w] \quad (\text{A.3})$$

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

Finally, we will 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 will provide us with a general enough definition of changes in inequality to be applicable to each of the three models of preferences.

**Proposition 1.** *Given income-dependent altruism preferences in equation (2), an individual's preferred level of redistribution is (1) decreasing in income, (2) increasing in inequality, and (3) 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," denoted  $y_e$ , 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 amount would be equivalent to social welfare under unequal incomes. Hence,  $y_e$  decreases as inequality increases.

The first-order condition for an individual's preferred level of redistribution,  $\tau_i^*$  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, 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, differentiate the first-order condition with respect to  $y_e$ . Since we are interested in the effect of an *increase* in inequality, 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 can be found in Dimick et al. (2016), to which we refer the reader.

□

**Proposition 2.** *Given inequity-aversion preferences in equation (3), an individual's preferred level of redistribution is (1) decreasing in income, (2) increasing in inequality, and (3) the effect of inequality is decreasing in income.*

The first-order condition for an individual's preferred level of redistribution,  $\tau_i^*$  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  $\tau$ , assuming for simplicity that  $\bar{y}_\tau$  is constant in  $\tau$ , and then taking differences between any two individuals with different incomes,  $y_k < y_l$ , demonstrates that a person's preferred level of redistribution is decreasing in income.

That  $\tau_i^*$  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  $\beta \int_{y_j \leq y_i} (y_i - y_j)$ . By 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  $\alpha$ . Compare this with the richest person in the distribution, who experiences only altruism, weighted by  $\beta$ . Since  $\alpha > \beta$ , an increase in inequality has a larger effect for the poorest person than 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 a rich person.

□

**Proposition 3.** *Given fairness preferences in equation (4), an individual's preferred level of redistribution is (1) decreasing in income, (2) decreasing in inequality, and (3) the effect of inequality is decreasing in income.*

Define earned income as  $\hat{y}_i$ . Define unearned income as  $\eta_i$  and assume that  $\eta_i$  has zero mean and is independent of  $y_i$ . Total gross income is then  $y_i = \hat{y}_i + \eta_i$  and 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:  $-2\gamma\tau(\partial \text{Var}(\hat{y}_i)/\partial Q) < 0$ , 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  $\tau$  which, as we have seen, is decreasing in income. Therefore, the effect of inequality is likewise decreasing (in absolute value) in income.

□

## B. Data details

Table B.1: Survey-years included in analysis

|               | 2002           | 2004 | 2006           | 2008 | 2010 | 2012 |
|---------------|----------------|------|----------------|------|------|------|
| Austria       | ✓ <sup>†</sup> | ✓    | ✓              |      |      |      |
| Belgium       | ✓ <sup>†</sup> | ✓    | ✓              | ✓    | ✓    | ✓    |
| Denmark       | ✓ <sup>†</sup> | ✓    | ✓              | ✓    | ✓    | ✓    |
| Finland       | ✓              | ✓    | ✓              | ✓    | ✓    | ✓    |
| France        | ✓ <sup>†</sup> | ✓    | ✓              | ✓    | ✓    | ✓    |
| Germany       | ✓ <sup>†</sup> | ✓    | ✓              | ✓    | ✓    | ✓    |
| Great Britain | ✓              | ✓    | ✓              | ✓    | ✓    | ✓    |
| Ireland       | ✓ <sup>†</sup> | ✓    | ✓              |      | ✓    | ✓    |
| Netherlands   | ✓              | ✓    | ✓              | ✓    | ✓    | ✓    |
| Norway        | ✓              | ✓    | ✓              | ✓    | ✓    | ✓    |
| Portugal      | ✓ <sup>†</sup> | ✓    | ✓              | ✓    |      | ✓    |
| Spain         | ✓ <sup>†</sup> | ✓    | ✓              | ✓    | ✓    | ✓    |
| Sweden        | ✓              | ✓    | ✓              | ✓    | ✓    | ✓    |
| Switzerland   | ✓              | ✓    | ✓ <sup>†</sup> | ✓    | ✓    | ✓    |

<sup>†</sup> Not included in WIID sample (main analysis), but included in WIID imputed analysis (see specification 5 in Table C.3 below).

Table B.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     |

Note: We include only sources classified as “High quality” and based on net equivalized household income. See Jenkins (2015) for a detailed discussion of (an earlier version of) this database.

## C. Models

Table C.3: Effect of country-level inequality conditional on individual income distance. Shown are average marginal effects of inequality evaluated at 10th and 90th percentile of the distribution of income distance.

|                 | No controls<br>(1) | Basic<br>controls<br>(2) | Extended<br>controls<br>(3) | LPM<br>(4)     | Imputed<br>WIID<br>(5) |
|-----------------|--------------------|--------------------------|-----------------------------|----------------|------------------------|
| Poor (10th)     | 0.13<br>(0.11)     | 0.11<br>(0.11)           | 0.13<br>(0.11)              | 0.11<br>(0.11) | 0.13<br>(0.11)         |
| Rich (90th)     | 0.68<br>(0.13)     | 0.64<br>(0.11)           | 0.63<br>(0.13)              | 0.71<br>(0.12) | 0.62<br>(0.12)         |
| Country FE      | ✓                  | ✓                        | ✓                           | ✓              | ✓                      |
| Year FE         | ✓                  | ✓                        | ✓                           | ✓              | ✓                      |
| N respondents   | 110,843            | 110,077                  | 109,627                     | 110,077        | 122,377                |
| N country-years | 70                 | 70                       | 70                          | 70             | 79                     |

Note: Canonical model form: Preferences = Income + Inequality + Income×Inequality + Controls + Fixed effects. Standard errors based on nonparametric bootstrap with 100 replications. Specification (1) is a probit model with country and year fixed effects. Specification (2) adds age, gender, years of education, national unemployment rate and social expenditure per head in constant 2010 US Dollars. A 9-category measure of social class (the European Socio-Economic Classification) and labor market status (retired/disabled, not in labor force) is added in (3). Specification (4) is a linear probability model with controls as in (2). Specification (5) is based on (2) but imputes 9 missing country-year observations in WIID using country-specific predictive mean matching based on two nearest neighbors.