

# The Externalities of Inequality: Fear of Crime and Preferences for Redistribution in Western Europe

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## ABSTRACT

Why is the difference in redistribution preferences between the rich and the poor high in some countries and low in others? In this paper we argue that it has a lot to do with the rich and very little to do with the poor. We contend that while there is a general relative income effect on redistribution preferences, the preferences of the rich are highly dependent on the macro-level of inequality. The reason for this effect is not related to immediate tax and transfer considerations but to a negative externality of inequality: crime. We will show that the rich in more unequal regions in Western Europe are more supportive of redistribution than the rich in more equal regions because of their concern with crime. In making these distinctions between the poor and the rich, the arguments in this paper challenge some influential approaches to the politics of inequality.

# 1 Introduction

The relationship between income inequality and redistribution preferences is a hotly contested topic in the literature on the comparative political economy of industrialized democracies. While some authors maintain that the poor have higher redistribution preferences than the rich (Finseraas 2009; Shayo 2009; Page and Jacobs 2009), others argue that there may not be a negative association between income and redistribution (Moene and Wallerstein 2001; Fehr and Schmidt 2006; Alesina and Glaeser 2004: 57-60).

If we were to look at the preferences of rich and poor in different Western European regions, as we do below, we would observe very significant differences in how apart the rich are from the poor regarding their favored levels of redistribution. These important differences in support for redistribution have received little attention in the existing scholarship and yet they are a most significant element in explanations of outcomes as diverse (and as important) as the generosity of the welfare state, political polarization, varieties of capitalism, etc.

In this paper we show that even after accounting for material self-interest, there is still a great degree of variation in redistribution preferences. We argue that this variation has to do with the preferences of the rich (and not those of the poor) and that they can be explained by taking into account the negative externalities of inequality, namely the relationship between macro inequality and crime. Using comparative survey data, we present a set of empirical tests that support our hypotheses (and provide limited evidence in favor of alternative explanations).

The arguments in this paper challenge some influential approaches to the politics of inequality. These range from those contending that second-dimension issues (particularly cultural and social ones) outweigh economic ones to those emphasizing insurance concerns, social affinity or prospects of upward mobility. We will elaborate on our differences from these approaches in the pages that follow.

## 2 The Argument

This paper’s theoretical argument makes three distinct points about the formation of preferences for redistribution. The first one relates to the idea that the level of redistribution preferred by a given individual is fundamentally a function of current income. The second point distinguishes between current tax and transfer considerations and externality-related motivations, and maintains these motivations are long term and low stakes. As such, they matter most to the rich. We will argue that, if we accept that the influence of current tax and transfer considerations is sufficiently captured by the micro-effect of relative income, macro-levels of inequality will matter to the rich – and only to the rich – because of negative externality reasons. Our third point proposes that the macro-effect of inequality can be explained by different micro-factors and contends that the most important of these is concern for crime, as a most visible negative externality of inequality.

### 2.1 Current tax and transfer considerations

Most political economy arguments start from the assumption that an individual’s position in the income distribution determines her preferences for redistribution. The most popular version of this approach is the theoretical model proposed by Romer (1975) and developed by Meltzer and Richard (1981). To recapitulate very briefly, the RMR model assumes that the preferences of the median voter determine government policy and that the median voter seeks to maximize current income. If there are no deadweight costs to redistribution, all voters with incomes below the mean maximize their utility by imposing a 100% tax rate. Conversely, all voters with incomes above the mean prefer a tax rate of zero.

When there are distortionary costs to taxation, the RMR model implies that, by increasing the distance between the median and the mean incomes, more inequality should be associated with more redistribution. The consensus in the comparative literature on this topic, however, seems to be that there is either no association between

market income inequality and redistribution or, contrary to the prediction of the RMR model, less market inequality is associated with more redistribution (Lindert 1996; Moene and Wallerstein 2001; Iversen and Soskice 2009; Alesina and Glaeser 2004; Gouveia and Masia 1998; Rodriguez 1999: 57-60).

These findings must be considered with a degree of caution. This is because most of this literature relies on macro-comparative empirical analyses (with redistribution as the dependent variable) and does not pay much attention to individual preferences.<sup>1</sup> When looking at individual data, in fact, there is some support for the argument that relative income influences preferences. Using comparative data, a relative income effect is found in, among others, Bean and Papadakis (1998), Finseraas (2009), and Shayo (2009). Using American data, Gilens (2005), McCarty et al. (2008), and Page and Jacobs (2009) (again, among others) find similar effects.

It is important to point out that we emphasize that income should affect preferences for redistribution across the entire income distribution. We argue that the intensity of redistribution preferences increases with distance from the mean, i.e., an individual in, say, the 10th percentile of the income distribution benefits more from the RMR redistributive scheme (lump-sum payments financed by a linear income tax) than an individual in the 30th percentile. As a result, we expect the former individual to have stronger preferences for redistribution than the latter. Note, that in this paper we follow most of the current literature and define redistribution as taxes and transfers and income as present-day income.<sup>2</sup>

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<sup>1</sup> Even the macro-comparative conclusion is less unambiguous than the consensus in the literature suggests. Milanovic (2000) and Kenworthy and Pontusson (2005) show that rising inequality tends to be consistently associated with more redistribution within countries.

<sup>2</sup> In other words we exclude arguments based on intertemporal perspectives. In the words of Alesina and Giuliano, “(e)conomists traditionally assume that individuals have preferences defined over their lifetime consumption (income) and maximize their utility under a set of constraints” (2011: 93). Because of the potential to define economic material self-interest inter-temporally (as lifetime consumption/income), this approach opens the door to arguments about social insurance and risk

## 2.2 Externality-related motivations

The possibility that motivations unrelated to current tax and transfer may influence redistribution preferences has received increasing amounts of attention in the recent political economy literature. 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 tax and transfer maximization alone. We will also show that while support for redistribution by the poor is quite constant, support by the rich is shaped by different macro-levels of inequality. In the section below, we will explain in more detail the reasons why crime is a significant externality of inequality but we start now by clarifying the relationship between current tax/transfer considerations and concerns for the negative externalities associated with inequality.

As in the Meltzer-Richard model, our argument implies that a rise in inequality that increases the distance between an individual's income and the mean will change her distribution preferences. More importantly, our argument also implies that the current pocketbook consequences of inequality are fully contained in the individual income distance shifts produced by this inequality rise. In other words, the tax and transfer consequences of inequality are picked up by individual income changes.

Macro levels of inequality, however, can indirectly affect the individual utility function implicit in the previous paragraph. Following Alesina and Giuliano (2011), we can think about this utility function as one in which individuals care not only about their current tax and transfers but also about some macro measure of income distribution.<sup>3</sup> (Moene and Wallerstein 2003; Rehm 2009; Iversen and Soskice 2001; Mares 2003) and about social mobility and life-cycle profiles (Alesina and Giuliano 2011; Benabou and Ok 2001; Haider and Solon 2006). We will explore some of the implications of defining economic self-interest inter-temporally in the empirical analysis below (as robustness checks for our findings), but our theoretical starting point is that current tax and transfer considerations are captured by relative income (the difference between an individual's present income and the mean in her country).

<sup>3</sup> As suggested by Alesina and Giuliano (2011), different individuals may be affected by different

If macro inequality produces economic externalities, we would expect individual preferences to be affected. Of consequence to this paper's argument, this model allows for even the rich to be negatively affected by macro inequality and, therefore, for them to support redistribution for purely self-interested reasons.

We are not the first authors to recognize the externalities of inequality as a specific case of a more general model of support for redistribution with macro inequality concerns as well as individual tax and transfer considerations.<sup>4</sup> Perhaps the clearest example is the literature on externalities of education, which connects average levels of education with aggregate levels of productivity (see, for example, Nelson and Phelps 1966, Romer 1990 and Perotti 1996). This framework proposes that, with imperfect credit markets, more inequality means more people below an income level that would allow them to acquire education. The rich, in this case, would support redistribution because of the benefits of a higher education average. But, to our knowledge, we are the first to emphasize crime as the key explanatory factor behind the affluent's support for redistribution.

The paragraphs above suggest that both current tax and transfer and externality considerations matter to redistribution preferences. To integrate the arguments about these two distinct dimensions, however, we will argue that a hierarchy of preferences exists. We propose that poor people value redistribution for its immediate tax and transfer consequences. The redistributive preferences of the rich, on the other hand, are less significantly affected by current tax and transfer considerations. For the rich, the negative externalities of inequality can become more relevant.

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kinds of inequality. For simplicity, in this paper we focus on the Gini coefficient, which is the most commonly used measure of inequality in the political economy literature.

<sup>4</sup> The literature in economics and political economy has identified a number of other externalities. If we assume the poor to be less educated, a less effective democracy has been considered a negative externality of inequality by authors like Milton Friedman (1982). There is also some research connecting inequality and environmental degradation (Boyce 1994). And see Beramendi (2012) for an analysis of the externalities of regional inequality.

We conceive of the solution to the negative externalities of inequality as both time-horizon and stakes related. The possibility that the poor have shorter-term motivations than the rich has been explored in the economics and sociology literature before. In economics, the poor have been argued to be more constrained in their investment decisions than the rich (explaining the lower likelihood by the poor to invest in long-term objectives like increasing human capital or saving for retirement).<sup>5</sup> Complementarily, sociological research has illustrated that lower social class (itself closely related to low income) leads to shorter time horizons (see, for example, O’Rand and Ellis 1974). It is also reasonable to argue that the relative importance of receiving benefits is greater for the poor than the relative importance of paying taxes is for the rich. This difference can be illustrated as follows. From 2001 to 2005, the relative size of benefits (including public pensions) for households in the bottom decile of the distribution represented 71.7% of household disposable income in Western European countries.<sup>6</sup> For households in the top decile of the distribution, on the other hand, market income was reduced by just 27.7% after subtracting taxes.<sup>7</sup> We expect that, as the stakes of redistribution decline, longer-term considerations related to inequality and crime will increase. We therefore argue in this paper that longer time horizons and lower stakes (in relation to current tax and transfer considerations) mean that the negative externalities of inequality will be more important to the rich.

– Figure 1 about here –

The implications of this paper’s argument are summarized in Figure 1. We expect the negative externalities of inequality to be associated with less support for

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<sup>5</sup> See, for example, Lawrance (1991) or Dynan et al. (2004).

<sup>6</sup> Even in Greece, where this component is the lowest, it amounted to a 44% of disposable income. Authors’ calculations based on EUROMOD tax simulation data from Paulus et al. 2009, Appendix A, Table 2.

<sup>7</sup> Authors’ calculations based on EUROMOD tax simulation data from Paulus et al. 2009, Appendix A, Table 3.



redistribution. Since we argue that for the poor externality concerns are trumped by current tax and transfer incentives, redistribution preferences converge regardless of the macro-level of inequality as income declines. Thus, the redistribution preferences of an individual with low income  $v_i$  in a low inequality region  $w_j$ , denoted  $R(v_i, w_j)$ , and in a high inequality region  $R(v_i, w'_j)$  do not differ by much. In contrast, we expect more macro inequality to promote concerns for its negative externalities for the rich, so that redistribution preferences of a rich individual in a low inequality region  $R(v'_i, w_j)$  differ starkly from those in high inequality regions  $R(v'_i, w'_j)$ .

### 2.3 Macro inequality and fear of crime

We will show below that the association between macro inequality and redistribution preferences summarized in Figure 1 is supported by the empirical evidence and extraordinarily robust. We argue that the effect of macro inequality is channeled by a number of different factors. The most important of this, as mentioned above, is crime, as a most visible negative externality of inequality.

The canonical model for the political economy of crime and inequality was originally developed by Becker (1968) and first explored empirically by Ehrlich (1973). The basic argument is simple (see also Bourguignon 1999 and Sala-i Martin 1996). Assume that society is divided into three classes (the poor, the middle and the rich) with increasing levels of wealth. Assume further that crime pays a benefit, that there is a probability that crime will result in sanction/punishment and that the proportion of “honest” individuals (people who would not consider crime as an option regardless of its economic benefits) is independent of the level of income (and distributed uniformly across classes). It follows from this straightforward framework that rich people for whom the benefit of crime is small in proportion to their initial wealth will very rarely find crime attractive. It also follows that there will always be a proportion of people among the poor who will engage in crime, and that the benefits from crime are proportional to the wealth of the population. The crime rate implied by this simple model

would be positively correlated to the extent of poverty and inequality and negatively correlated to the probability of being caught, the cost of the sanction/punishment, and the proportion of “honest” individuals.<sup>8</sup>

Following this framework, the intuition that crime is related to inequality is easy to understand. With more inequality, the potential gain for the poor from engaging in crime is higher and the opportunity cost is lower. Some early empirical analyses supported this intuition (Ehrlich 1973; Freeman 1983),<sup>9</sup> but the evidence is not unambiguous. However, while we have described above the relationship between inequality and objective levels of crime, it is fear of crime by the affluent that matters most to our argument. We do understand that, as shown by a well-established sociological literature, fear of crime does not exactly reflect the objective possibility of victimization. As early as 1979, DuBow et al. showed that crime rates reflect victimization of the poor (more than the rich) and that fear levels for particular age-sex groups are inversely related to their victimization (elderly women having the lowest victimization rates but the highest fear of crime, young men having the opposite combination). While we do model explicitly the determinants of fear of crime in the empirical analysis we develop below (and show that macro inequality is a significant one), we are not interested in them *per se*.<sup>10</sup> Our argument simply requires rich individuals to believe that there

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<sup>8</sup> Note that there is an implicit temporal side to this economic approach to crime, it involves the probability of being caught (in the future) for a crime being committed or not (in the present). Arguably, “the core message of the economic model of criminal behavior is that it can be discouraged by raising its expected ‘price’” (Lee and McCrary 2005: 1). This, in turn, makes the importance of the price of crime crucially depend on how much potential offenders discount their future welfare. For an explicit temporal model, see, for example, Davis (1988).

<sup>9</sup> More recently, Fajnzylber et al. (2002b) use panel data for more than 37 industrialized and non-industrialized countries from the early 1970s until the mid-1990s to explore the relationship between inequality and violent crime. They find crime rates and inequality to be positively correlated within countries and, particularly, between countries. See also Mehlum et al. (2005) for cross country evidence.

<sup>10</sup> We consider fear of crime the equivalent of a *subjective* assessment of victimization. The higher

is a connection between macro inequality and crime (following the intuitive logic of the Becker model summarized above). This connection makes sense even if the affluent have concerns for crime that are disproportionately high given their objective probability of victimization.<sup>11</sup>

To anticipate some of our empirical choices below, two additional observations are needed about our argument that macro inequality influences individual concerns about crime as a negative externality. The first one is about the level of macro inequality. Our theoretical argument proposes that the importance of inequality emerges from its relationship to crime as a negative externality. This implies that the relevant level of macro inequality should be one at which a visible connection to crime could be made by individuals. We therefore move away from national data and use regional levels of inequality in the analysis below. Unlike more aggregate levels, regional inequality is both visible and proximate enough to plausibly be related to fear of crime by rich individuals. While it would be good to use even more disaggregated units (like neighborhoods, as in some crime research) the availability of the data at our disposal limits what we can do.

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the fear of crime, the more likely an individual will be to consider himself/herself a potential crime victim. This assessment, we argue, is correlated to macro inequality. The higher the levels of macro inequality, therefore, the more likely the individual considers himself/herself to be a potential crime victim. But this is still a probabilistic assessment which will be less certain/relevant than concerns about current income.

<sup>11</sup> The individuals who are most likely to consider committing crime, i.e., the poor, are generally thought to have very high discount rates (Wilson and Herrnstein 1985; Katz et al. 2003). Since the likelihood of committing crime is not the focus of our analysis (the determinants of concern for crime are, and particularly the role of inequality), we do not address the price of criminal behavior. But the high discount of future welfare by the poor (who are more likely to consider committing crime in this economic framework), is indeed the basis of our theoretical argument. We adopt the concern for future welfare from this political economy approach to crime but, as suggested above, change the focus to the likelihood that an individual considers himself/herself to be a potential crime victim.

Our argument also implies that rich individuals who are concerned about crime (because they live in unequal areas) are more likely to support redistribution. We assume the affluent's concern for crime to be causally connected to macro inequality, and higher redistribution to be perceived as one of the solutions to the problem. It is clear that other solutions are possible. Most importantly, the affluent may demand protection as a solution to crime (rather than redistribution as a solution to its cause). Recall that objective crime rates in Becker's model is negatively correlated to the probability of being caught and the cost of the sanction/punishment.<sup>12</sup> While we recognize this as an important issue, we do not consider demands for protection to be incompatible with preferences for redistribution. A number of issues make the comparative costs and benefits of these policies difficult to quantify. They include the implications of these policies in terms of investment in human capital, the encouragement of individual behaviors with positive externalities, the discouragement of behaviors with negative externalities, the spillover from one domain to another (such as education and health investments that affect human capital and work effort), the benefits of avoided crime (e.g., early childhood interventions that produce the primary intended impact,

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<sup>12</sup> As argued by Alesina and Giuliano (2011), the implicit assumption in the kind of argument made in this paper is that it should cost less to the rich to redistribute than to increase spending on security (i.e., policing, incarceration, etc). This is not an unreasonable assumption. Perhaps the topic of incarceration in the US, since it is the focus of a large literature, is the best illustration. The cost of incarceration is high. In his widely cited 1996 paper, Freeman calculated that crime control activities cost 2 percent of GDP. Also, incarceration costs often crowd out spending on social policy (for a state comparison within the US, see Ellwood and Guetzkow 2009). And, while in the short run incarceration reduces unemployment (and the costs of unemployment benefits or active labor market policy), in the long run the costs increase substantially as ex-inmates find themselves in need of public assistance and are often confined to casual or illegitimate employment (e.g., Western 2006). More explicitly, Donohue and Siegleman (1998) find that diverting resources from incarceration and directing the savings to successful social policy (like preschool interventions) would reduce crime without increasing spending in the US.

better cognitive development, but also later gains in schooling and employment that reduce criminal behavior), the effects of parental incarceration on children's prospects, etc.<sup>13</sup> For many rich individuals, uncertainty influences the assessment of the costs and effectiveness of redistribution and security as solutions to crime.<sup>14</sup> Considering this uncertainty, demands for protection should not be incompatible with preferences for redistribution. In Western Europe, where the empirical analysis below focuses on, we argue that the rich think of redistribution and protection as complementary policies to mitigate regional crime.<sup>15</sup>

### 3 Data

To explore the theoretical claims explained above, we will first consider the effects of income distance at the individual level and of the macro level of inequality. Income distance is meant to capture the effects of individual current tax and transfer considerations and macro inequality those of externality-related factors. The first expectation is that income distance will be a significant determinant of redistribution preferences. We also expect, however, that increasing levels of regional inequality will make the rich more likely to support redistribution. We will then show that the very robust effects of macro inequality are in fact the product of fear of crime among the affluent.

**Source and coverage of survey data** We use data from the European Social Survey, which includes consistent regional level identifiers allowing us to match individual

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<sup>13</sup> For a review of these assessment issues, see Vining and Weimer (2010).

<sup>14</sup> Moreover, if the poor as potential offenders value their future significantly less than their present welfare, as argued in this paper, the effectiveness of deterrence and punishment is put in question (see Lee and McCrary 2005).

<sup>15</sup> It is also reasonable to expect the level of privately financed security available in Western Europe to be lower than, for example, in the USA (where gated communities and private protection are more common). We will return to the American case in the Conclusion.

and regional information while working with adequate sample sizes.<sup>16</sup> It also provides a consistent high quality measure of income. We limit our analyses to four surveys collected between September 2002 and January 2009, which was still a time of relative economic calm.<sup>17</sup> Our data set covers 129 regions in 14 countries: Austria, Belgium, Germany, Denmark, Spain, Finland, France, Great Britain, Ireland, Netherlands, Norway, Portugal, Sweden, and Switzerland surveyed between 2002 and early 2009. We treat missing data using multiple imputation (King et al. 2001) to obtain conservative standard errors (more details are given in online supplement S.1).

**Redistribution preferences** Our dependent variable, preferences for redistribution, is an item commonly used in individual-level research on preferences (e.g., Rehm 2009). It elicits a respondent’s support for the statement “the government should take measures to reduce differences in income levels” measured on a 5 point agree-disagree scale. To ease interpretation we reverse this scale for the following analyses. Table 1 shows Western Europe to be characterized by a rather high level of popular support for redistribution. While almost 69% of respondents either agree or strongly agree with the statement that the government should take measures to reduce income differences, only 16% explicitly express opposition to redistribution. However, despite this apparent consensus, there exists substantial regional variation in redistribution preferences as well as between rich and poor, as we will show below.

– Table 1 about here –

**The measure of relative income** Our central measure of material self-interest is the distance between the income of respondents and the mean income in their coun-

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<sup>16</sup> Regional level identifiers are provided by the NUTS system of territorial classification (Eurostat 2007). We selected countries who participated in at least two rounds (to obtain usable regional sample sizes) and which provided consistent regional identifiers over time.

<sup>17</sup> We also eliminated surveys after 2007 as a robustness check with no difference in results.

try (at the time of the survey). In other words, we calculate income distance as a respondent's income minus the country-year income mean.<sup>18</sup>

The ESS captures income by asking respondents to place their total net household income into a number of income bands (12 in 2002-06, 10 in 2008) giving yearly, monthly, or weekly figures. To create a measure of income that closely represents our theoretical concept, income distance, we follow the American Politics literature and transform income bands into their midpoints (e.g., Hout 2004).<sup>19</sup> We impute the top-coded income category by assuming that the upper tail of the income distribution follows a Pareto distribution (e.g., Kopczuk et al. 2010). 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 Eur 10,000 below the mean is different in Sweden than in the United Kingdom.<sup>20</sup> Thus, for each country and each year we convert a country's currency into PPP-adjusted constant 2005 US dollars. Finally, for each respondent we calculate the distance between her income and the mean income of her country-year survey.<sup>21</sup>

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<sup>18</sup> This represents a simple centering, which leaves the *distribution* of incomes unchanged. However, it takes into account that mean incomes differ over countries. For example, in 2004, the mean income (after PPP adjustment) in Sweden is 32,721, while in Austria it is 36,122. Note that using untransformed income yields the same pattern of substantive results.

<sup>19</sup> For example, this means that category band J (Less than Eur 1,800) becomes mid-point Eur 900 and category R (Eur 1,800 to under Eur 3,600) becomes Eur 2,700. We conducted a robustness test to show that alternative mid-points do not lead to substantively different results (see online supplement S.6).

<sup>20</sup> And more importantly, it could be argued that the bulk of rich or poor people would be concentrated in the wealthiest (or most unequal) countries, therefore distorting our results.

<sup>21</sup> The distribution of income distances used in our analysis is summarized in Figure S.1 in online supplement S.2. To illustrate the nature of the measure, we aggregate data over all available waves within countries in this figure. The range of income distances reflects interesting national differences (for example, a more disperse distribution in Switzerland than in Spain) but the analysis to be developed below will emphasize the general effect of individual income distance on redistribution

**Crime** We measure individuals’ crime concerns via a survey item that has become “the de facto standard for measuring fear of crime” (Warr 2000: 457). It prompts a respondent if he or she is afraid of walking alone in the dark with 4 category responses ranging from “very safe” to “very unsafe”. As we discussed above, this captures subjective crime concerns instead of actual crime.<sup>22</sup>

**Inequality** A wide number of indices are available to measure inequality, of which the Gini index is the most popular one (e.g., Jenkins 1991). We perform a subgroup-decomposition of the Gini into its regional components (on the sub-group decomposition preferences. Note that we also carry out a number of income robustness tests, including one where we express the distance in percentages of the country-year average income (see appendix S.6). We also validated the distribution of income in the ESS against a high quality external reference source, the EU statistics on income and living conditions (see appendix S.9).

<sup>22</sup> It could be argued that being afraid of walking alone in the dark is more related to fear of violent crime than to fear of property crime. To the extent that the connection between macro inequality and crime is considered to apply only to property crime, this would be an issue. There are, however, firm grounds to argue that violent crime would have similar effects to property crime in our model. Focusing on actual crime (rather than fear of crime as we do in our paper) in developing countries, Bourguignon argues that the relationship between inequality/poverty and crime in Becker’s canonical model is mostly unaffected by the consideration that much of violent crime involves “conflicts that relate to the control of illicit activities like drug dealing, drug trafficking, gambling, and prostitution” rather than “more conventional property crimes like burglary or robbery” (2001: 180). This framework adds a new determinant of the general level of crime (namely the way the illegal sector is organized and the size of the sector), but it “remains true that an increase in urban poverty should, other things being equal, result in an increase in violence” (Bourguignon 2001: 181). Empirically, there is evidence in the criminology and sociology literatures supporting the existence of this link. For analyses of this relationship across countries and over time, see, for example, Fajnzylber et al. (2002a), which shows that income inequality leads to both higher robbery and higher homicide rates, and Fajnzylber et al. (2002b), showing the Gini index to be an important factor driving violent crime rates across countries and over time.



ability of inequality indices see Shorrocks 1980, 1984; Silber 1989; Cowell 1989).<sup>23</sup> We calculate our regional Gini measure from our full sample of imputed individual level data.<sup>24</sup> Following current ‘best practice’ in economics, we correct for non-random sampling and small-sample bias. Sample selection effects are taken into account by using an estimator that weights according to a household’s sample inclusion probability (e.g., Cowell 2000). Since it is well known that Gini estimates are downward biased when calculated from small sample sizes, we employ the small-sample correction proposed by Deltas (2003). Gini values, so constructed, are estimated with error. In fact every measure of inequality is fraught with error – a fact that is often ignored in current research and which leads to classical errors-in-variables bias. In our analyses, we account for measurement error in our Gini estimates.

First, we use a jackknifing variance estimator to generate regional Gini standard errors (Karagiannis and Kovacevic 2000). Thus, for each Gini value, we have a point estimate  $\hat{w}_j$  and a standard error  $\sqrt{\text{Var}(\hat{w}_j)}$ . Then, in all analyses described below, we account for measurement error following the methodology outlined by Blackwell et al. (2012), who propose to treat measurement error in the framework of multiple imputation by creating several “multiply overimputed” data sets, in which the variable measured with error is drawn from a suitably specified distribution representing the variable’s measurement error.<sup>25</sup> To implement this idea, we generate 5 overimputed

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<sup>23</sup> Decomposability means that an index can be decomposed into three group-components:  $B + W + k$ , where  $W$  and  $B$  represent within and between group variance, respectively, while  $k$  is a residual component. An index is perfectly decomposable if  $k = 0$ . This is true, for example, for members of the family of Generalized Entropy measures; but it is not necessarily true for the Gini. We decided to use Gini in our main text since it is the most common measure. However, we replicated our results using the Theil index (obtained from a generalized entropy measure with parameter 1), which is perfectly decomposable. The correlation between it and our (small-N corrected) Gini measure is 0.98.

<sup>24</sup> We use the relative income measure explained above with an imputed top-coded income, which insures that our measure is not censored (and thus missing top-end inequality).

<sup>25</sup> In essence, the idea of multiple overimputation is to treat measurement error as a form of partly

data sets with Gini values for each data set drawn from  $w_j \sim N(\hat{w}_j, \text{Var}(\hat{w}_j))$ . To illustrate the ‘penalty’ incurred by this measurement error technique, we plot, in Figure 2, three regions with similar Gini estimates, but different standard errors. Région lémanique (in Switzerland), Niedersachsen (in Germany), and Noord-Friesland (in the Netherlands) share an estimated regional Gini between around 0.31 and 0.32. For each region we show the Gini estimate as black dot and five random multiple-overimputation draws as gray diamonds. Figure 2 clearly shows how larger Gini standard errors lead to a considerable increase in the variance of overimputed values. We use these overimputed values to estimate all our models five times; average our estimates and penalize standard errors as a function of the variance between overimputations, as suggested in Blackwell et al. (2012) or Rubin (1987). In essence, we account for the errors-in-variables problem caused by the uncertainty of our Gini estimates.<sup>26</sup>

– Figure 2 about here –

**Individual- and regional-level controls** We control for a range of standard individual characteristics, namely a respondent’s gender, age in years, years of schooling, currently being unemployed, not in the labor force, and the size of the household. We include a measure of social class. While social class is theoretically somewhat ambiguous, it allows us to capture a broad range of socio-economic outcomes which might be confounded with our income and inequality measures. Furthermore, we include a measure of specific skills, differentiating between high and low general skills, and specific skills. As controls for existing regional differences we include the harmonized regional unemployment rate, gross domestic product, the percentage of foreigners (see, missing data). Since we already use multiple imputation to deal with missing individual level data, the multiple overimputation strategy can piggyback on these. For more details see Blackwell et al. (2012).

<sup>26</sup> Note that this is a quite *conservative* strategy. Our main results are stronger when ignoring measurement error.

e.g., Alesina and Glaeser 2004, Finseraas 2008) and a summary measure of a region’s high-tech specialization.<sup>27</sup> Descriptive statistics for all variables can be found in online supplement S.3.

## 4 Methodology

**Models** In the first stage of our analysis we study the link between inequality, relative income, and redistribution preferences  $R_i^*$ . Our model specification is

$$R_i^* = \alpha (v_i - \bar{v}) + \beta w_j + \gamma w_j (v_i - \bar{v}) + \boldsymbol{\delta}' \mathbf{x}_{ij} + \epsilon_{iR}. \quad (1)$$

This is an ordered probit regression of (latent) redistribution preferences  $R_i^*$  on our covariates of interest and controls.<sup>28</sup> Here  $\alpha$  captures the effect of relative income, the difference between an individual’s income  $v_i$  and country-year average income  $\bar{v}$ . The remaining (non-tax and transfer) effect of macro inequality  $w_j$  is captured by  $\beta$ . Since we argue that inequality effects are more relevant among the rich than among the poor, our model includes an interaction between inequality and individual income with associated effect coefficient  $\gamma$ . Finally, we include a wide range of individual and regional level controls  $\mathbf{x}_{ij}$  whose effects are represented by  $\boldsymbol{\delta}$ .

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<sup>27</sup> We used a factor model to generate a summary measure for regional high-tech specialization. We collected Eurostat data on regional information on the share of a region’s total workforce employed in science and technology sectors, the share of the economically active population that hold higher degrees, a head count of personnel employed in R&D, and regional total R&D expenditure.

<sup>28</sup> Redistribution preferences  $R_i^*$  are a latent construct obtained from observed categorical survey responses  $R$  (with  $K_r$  categories) via a set of thresholds (e.g. McKelvey and Zavoina 1975; Greene and Hensher 2010) such that  $R = r$  if  $\tau_{r-1} < R^* < \tau_r$  ( $r = 1, \dots, K_r$ ). Thresholds  $\boldsymbol{\tau}$  are strictly monotonically ordered and the variance of the stochastic disturbances is fixed at  $\epsilon_{iR} \sim N(0, 1)$  yielding an ordered probit specification. For a more detailed discussed of this model setup see online supplement S.4.

In the second stage of our analysis we jointly model preferences for redistribution  $R_i^*$  and fear of crime  $C_i^*$ .<sup>29</sup> A strict test for our argument that fear of crime is an important externality-related determinant of preferences is to estimate its direct effect in our redistribution equation.

$$C_i^* = \alpha_1(v_i - \bar{v}) + \beta_1 w_j + \boldsymbol{\delta}'_1 \mathbf{x}_{1ij} + \epsilon_{iC} \quad (2)$$

$$R_i^* = \lambda_1 C_i + \lambda_2 C_i(v_i - \bar{v}) + \alpha_2(v_i - \bar{v}) + \beta_2 w_j + \gamma w_j(v_i - \bar{v}) + \boldsymbol{\delta}'_2 \mathbf{x}_{2ij} + \epsilon_{iR}. \quad (3)$$

The direct effect of fear of crime on redistribution preferences is captured by  $\lambda_1$  and  $\lambda_2$  in our extended redistribution equation (3). It still includes the main effect of income distance  $\alpha_2$  as well as the remaining effect of inequality  $\beta_2$  and its interaction with income distance, captured by  $\gamma$ . Estimates of individual and regional level controls  $\mathbf{x}_{ij}$  are given by  $\boldsymbol{\delta}$ . Our fear of crime equation (2) contains relative income (captured by  $\alpha_1$ ), inequality ( $\beta_1$ ), as well as further controls ( $\boldsymbol{\delta}_1$ ).

In this second stage, our main interest lies on  $\lambda_1$  and  $\lambda_2$  which capture the effect of fear of crime (and its interaction with income) on redistribution preferences net of all other covariate effects. Ideally, if fear of crime plays a significant role in explaining redistribution preferences, we expect to see (i) a significant effect of inequality on fear of crime:  $\beta_1 \neq 0$ ; (ii) a significant effect of fear on preferences:  $\lambda_1 \neq 0$ ; and (iii) a reduction of the (remaining) effect of inequality on the rich  $\gamma$  vis-a-vis equation (1).

This is a simultaneous (recursive) ordered probit setup, sometimes called an endogenous treatment model (Greene and Hensher 2010: ch.10).<sup>30</sup> Errors from the redistribution and crime equations are correlated and thus specified as distributed bivariate normal (Greene 2002: 711f.):  $[\epsilon_{iC}, \epsilon_{iR}] \sim BVN(0, 0, 1, 1, \rho)$ . Here  $\rho$  captures the cor-

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<sup>29</sup> Our fear of crime variable  $C$  is also ordered categorical and we use the same ordered probit specification as for our redistribution measure, i.e.,  $C = c$  if  $\tau_{c-1} < C^* < \tau_c$  ( $c = 1, \dots, K_c$ ) with strictly ordered thresholds and errors  $\epsilon_{iC} \sim N(0, 1)$  for identification.

<sup>30</sup> The system is recursive because  $C_i$  is allowed to influence  $R_i$  but not vice versa. The model employs the standard assumption that  $E(\epsilon_{iC} | \mathbf{x}_{1ij}, \mathbf{x}_{2ij}) = E(\epsilon_{iR} | \mathbf{x}_{1ij}, \mathbf{x}_{2ij}) = 0$ .

relation of unobservables between both equations that are not due to the direct effect of fear. The model can be seen as a straightforward extension of the familiar bivariate probit model to ordered data (Butler and Chatterjee 1997).

The effect of fear of crime is identified from the functional form assumption on the correlation structure between residuals (Wilde 2000; Heckman 1978).<sup>31</sup> However, to add one more level of robustness to the model (against distributional misspecification), we also use an exclusion restriction in our preference equation, i.e.,  $\mathbf{x}_{1ij}$  contains at least one covariate not in  $\mathbf{x}_{2ij}$ . We use actual victimization, i.e., if the respondent reports that he, or a member of his household, has been a victim of crime. Having been a victim of crime in the past is a strong determinant of fear of crime. We argue that it can plausibly be excluded from an equation describing preferences, in other words, that previous victimization affects preferences for redistribution via raising crime fears, and not via other channels. We have no knowledge of any literature that suggests a link between victimization and redistribution preferences, that is not channeled via increased fear of crime in the future.<sup>32</sup>

**Estimation** We estimate these two equations jointly by maximum likelihood (Butler and Chatterjee 1997).<sup>33</sup> In this setup, individuals within the same region and country will share unobserved characteristics, rendering the standard assumption of

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<sup>31</sup> More technically, a full rank condition of the covariate matrix is enough, as discussed earlier by Heckman (1978). This is achieved by the existence of at least one continuous, varying, exogenous regressor in each equation, “an assumption which is rather weak in economic applications” (Wilde 2000: 312).

<sup>32</sup> Nonetheless, one should keep in mind that even if this exclusion restriction should be violated, the model is still identified via the bivariate normal distribution.

<sup>33</sup> See Yatchew and Griliches (1985) for a discussion of the disadvantages of two-step estimation. We use CMP version 6.8.0 (Roodman 2011). Freedman and Sekhon (2010) caution against convergence to local maxima, which we check by (i) running our model several times from dispersed initial values, (ii) bootstrapping individual observations. In each case we get essentially the same results.

independent errors implausible (e.g., Moulton 1990; Pepper 2002). Thus, to account for arbitrary within region and country error correlations we estimate standard errors using nonparametric bootstrapping, resampling regions and countries, in order to yield conservative standard errors (e.g., Wooldridge 2003).<sup>34</sup>

## 5 Regional variation in inequality and preferences

We have argued above that rich individuals who are concerned about crime because they live in unequal areas will be more likely to support redistribution. Panel (A) of Figure 3 represents a first illustration of the two things this paper’s argument is about: the existence of regional variation in support for redistribution among the rich and the poor. It captures the average level of support (i.e., the mean of the 5-point scale) for redistribution in each of the regions in the sample. First among the rich (those with household incomes 30,000 PPP-adjusted 2005 US dollars above the mean, the 90th percentile in the sample’s income distribution) and then among the poor (with household incomes 25,000 PPP-adjusted 2005 US dollars below the country-year mean, the 10th percentile).

Figure 3 (A) strongly suggest the existence of a general relative-income effect. By looking at the two panels side by side, we can see that the support for redistribution of the poor is almost always higher than that of the rich (there are some exceptions, but these are limited to very few regions where support for redistribution is generally very

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<sup>34</sup> Alternatively, one might employ heteroscedasticity-consistent standard errors, which are asymptotically equivalent to bootstrapped standard errors, or multilevel models. However, to correctly capture the correlation structure between units, their ‘clustering’ should be specified at the highest level. In our case this implies robust standard errors or random effects based on only 14 (country) units. Both methods can be severely biased with a small number of clusters (see, e.g., Angrist and Pischke 2008 and Stegmueller 2013a). Thus we opt for the nonparametric bootstrap, which is not adversely affected by sample size. Note that the decision to employ bootstrapping simply leads to conservative standard errors but does not in any way drive our results.

high for both groups). While the poor’s average regional support for redistribution is close to 4 in the 5-point scale (the “Agree” choice), the average for the rich is closer to 3 (the “Neither agree nor Disagree” choice). The figure also shows a remarkable amount of regional variation. The lowest support for redistribution among the rich (2.2 on the 5-point scale, close to the “Disagree” choice) can be found in a Danish region (Vestsjællands Amt), while the highest support among the rich (4.6) is in a Spanish one (La Rioja). For the poor, the highest support for redistribution (4.5) is in France (Champagne-Ardenne, Picardie and Bourgogne) while the lowest support (2.6) is again to be found in Vestsjællands Amt.

More importantly for the arguments in this paper, the degree of regional variation within countries in Figure 3 (A) is remarkable. Looking at the redistribution preferences of the rich, this variation can be illustrated by comparing two regions in the United Kingdom. In the South East of England, the rich exhibit a low support for redistribution (2.8) while in Northern Ireland they are much more supportive (3.8, a whole point higher). The preferences of the poor can also be used as an illustration. In Denmark, the poor in Storstrøms Amt are much more supportive of redistribution (3.7) than in Vestsjællands Amt (2.6).

– Figure 3 about here –

The more systematic analysis to be developed below will help explain the redistribution patterns shown in panel (A) of Figure 3, but an initial illustration of our main explanatory variables is offered in panels (B) and (C). Panel (B) captures regional inequality (the Gini index calculated from the individual-level surveys as explained in the previous section) and panel (C) fear of crime (measured as the regional average of the 4-category responses to the survey question about respondents being afraid of walking alone in the dark). The figures show a general correlation between inequality and fear of crime and again a remarkable amount of regional variation. The lowest levels of inequality and fear of crime can be found in regions of Denmark and Switzerland (and also in Cantabria, Spain). The highest levels of both variables are in some regions in

the UK (like London, the North West or the East Midlands), in Ireland’s Mid-East and in Portugal (Lisbon).

It is also the case that there is a significant degree of regional variation within countries. Looking at inequality in panel (B), there are stark differences between the South of England and Scotland or between Andalucia and Cantabria in Spain. Looking at fear of crime in panel (C), the regional differences in Spain are again significant (but so are they in Sweden).

## 6 Model Results

In order to save space, we do not present tables with coefficient estimates (full tables are available in online supplement S.5). Instead we focus on quantities of interest and calculate both predicted probabilities and marginal effects for the rich and poor conditional on different levels of macro inequality. Suffice it to say at this stage that parameter estimates for income, inequality, and their interaction are statistically significant. As expected, we find that income distance has a negative effect on redistribution preferences: the further above someone is from the mean income, the more she opposes income redistribution. We also find that increasing macro inequality goes hand in hand with higher preferences for redistribution, and that this relationship increases with an individual’s income distance.

To gain a more intuitive understanding of the role of inequality, we calculate average predicted probabilities for supporting redistribution among rich and poor individuals living in high or low inequality regions, respectively.<sup>35</sup> In Figure 4, the only factors

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<sup>35</sup> In this section, we define support for redistribution as a response of “strongly agree” on our redistribution measure. Average predicted probabilities are calculated by setting the variables in question to the chosen values while holding all other variables at all their observed values. The final estimates are the average of these predictions. We do the same below when calculating average marginal effects. See Hanmer and Kalkan (2013) for a recent discussion of the advantages of this strategy (*vis-à-vis* simple predicted probabilities calculated at sample averages).



that change in the comparison of predicted probabilities, therefore, are income distance to the mean (in the x-axis) and the two levels of macro inequality (in the solid and dashed lines). High inequality refers to Gini values at the 90th percentile of the regional distribution (as in the East Midlands in the UK), while low inequality refers to the 10th (as in Oberösterreich in Austria). The results provide a clear picture of the correspondence between our theoretical argument (in Figure 1) and the empirical findings.

Since, statistically, it is not strictly correct to infer the significance of the difference from our (non-)overlapping confidence intervals (see Afshartous and Preston 2010 for a detailed argument), we look at the differences between the poor and the rich more systematically in Table 2. As before, we define rich and poor as the 90th and 10th percentiles of the income distribution.<sup>36</sup> The results in panel (A) provide strong confirmation of our theoretical expectations. Among the poor the probability of strongly supporting redistribution remains at similar levels regardless of the level of inequality, changing only from 26 to 28 percent when moving from low to high inequality. In contrast, the effect of macro inequality is more pronounced among the rich: explicit support for redistribution rises from 17 percent in low inequality regions to over 22 percent in high inequality areas. In other words, the difference in predicted support for redistribution due to increased inequality is more than twice as large among the rich (and it is a statistically significant difference).

– Figure 4 about here –

To put this conclusion to a stricter test we calculate the average marginal effects of macro inequality for rich and poor individuals, shown in panel (B) of Table 2 together with their respective standard errors and 95 percent confidence bounds. The results further support our argument. The marginal effect of inequality among rich individuals

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<sup>36</sup> Using the 90th percentile defines “the rich” as being 30,000 (constant, ppp-adjusted) Euros above the national mean. Note that the same substantive pattern of results is obtained when we define rich as those only 20,000 Euros above the mean.

is large and statistically different from zero. In contrast we find a considerably smaller marginal effect among the poor, with a 95 percent confidence interval that includes zero. Higher levels of macro inequality increase the probability of support for redistribution among the rich, but make little difference to the poor.

– Table 2 about here –

It is important to point out that the estimates in Table 2 represent a significant amount of support for the relationship hypothesized in Figure 1. As we expected, redistribution preferences converge for the poor regardless of the macro-level of inequality. We also find the redistribution preferences of the rich to diverge as macro inequality grows. While we need to keep in mind that our results emphasize the effects of regional (and not national) inequality, some influential alternative hypotheses are contradicted by our evidence.

An prominent literature posits that, in high inequality contexts, the poor are diverted from the pursuit of their material self-interest. This effect would imply that, in contradiction to Figure 1, redistribution preferences would diverge for the poor and converge for the affluent. Perhaps the most well-known example of these arguments is its application to the high inequality example of the US and the contention that second-dimension issues (particularly cultural and social) outweigh economic ones for the American working class.<sup>37</sup> More comparatively, Shayo’s (2009) important contribution to the political economy of identity formation follows a similar logic.<sup>38</sup> If these arguments were correct, we would expect the poor in unequal countries to be distracted

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<sup>37</sup> See Frank (2004), the critique in Bartels (2006), and the comparative analyses by De La O and Rodden (2008), Huber and Stanig (2011), and Stegmueller (2013b).

<sup>38</sup> Shayo’s theoretical model emphasizes two identity dimensions: economic class and nationality. As a result of status differences, the poor are more likely than the rich to identify with the nation rather than their class in high inequality countries. Because they take group interests into account, moreover, the poor who identify with the nation are less supportive of redistribution than the poor who identify with their class.

from their material self-interested redistribution preferences, to the extent that these second-dimension concerns are correlated with macro-level inequality.<sup>39</sup> The results presented above suggest that the poor are not distracted from the pursuit of their present material self-interest in regions with higher levels of macro inequality, whether because of second-dimension concerns or prospects of upward mobility.

In another theoretical alternative, Lupu and Pontusson (2011) propose that macro-levels of equality are related to empathy. They argue that, because of social affinity, individuals will be inclined to have more similar redistribution preferences to those who are closer to them in terms of income distance. While Lupu and Pontusson emphasize skew (rather than Gini) and the position of the middle class, their argument implies that social affinity would make the rich have higher levels of support for redistribution as inequality decreases and their social distance with the middle class and the poor is reduced (the opposite of the predictions in Figure 1). A similar relationship would be expected by the approach that relates beliefs in a just world to redistribution preferences. To the extent that macro-levels of inequality are related to these beliefs (for example that inequality rewards the hard-working and punishes the lazy), we would observe lower levels of support for redistribution from the rich in countries with higher inequality and a higher normative tolerance for it (Benabou and Tirole 2006; Alesina and Glaeser 2004). Our evidence fails to support these arguments.

As we mentioned above, an influential literature in comparative political economy has argued that, if macro inequality means that the rich are more likely to become poor, current generosity may not reflect externality concerns but the demand for insurance against an uncertain future (Moene and Wallerstein 2001; Iversen and Soskice

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<sup>39</sup> A similar expectation emerges from the “prospect of upward mobility” (POUM) hypothesis. Benabou and Ok (2001) argue that the poor do not support high levels of redistribution because of the hope that they, or their offspring, may make it up the income ladder. To the extent that mobility is correlated with macro-level inequality (something often argued in relation to the US but that is empirically not clear), we would expect a different relationship between income and preferences from that depicted in Figure 1.

2009; Rehm 2009). To address this, we introduced an explicit measure of risk into the analysis. An important component of the demand for insurance and redistribution has to do with the risk of becoming unemployed. We operationalize risk as specific skills. Iversen and Soskice (2001) argue that individuals who have made risky investments in specific skills will demand insurance against the possible future loss of income from those investments. Our measure of skills (taken from Fleckenstein et al. 2011) distinguishes among specific, high and low general skills and it is meant to capture this individual risk directly. The effects of risk are not an issue of primary importance to our analysis, we are only interested in showing that our findings are robust to the inclusion of these explicit measures of risk. And this is indeed the case in Figure 4 and Table 2.<sup>40</sup>

In the previous sections, we went on to argue that the main mechanism linking inequality and redistribution preferences is fear of crime. In the second stage of our analysis, we thus estimate our simultaneous ordered probit model linking inequality to fear of crime, which then is expected to shape preferences for redistribution (all estimates for both equations are available in Table S.4, online appendix S.5). In our fear of crime equation, we include a number of factors identified in the literature (e.g., Hale 1996). We find, not surprisingly, that having previously been a victim of crime increases a person’s fear of crime and that other variables affect fear of crime in the expected directions. More importantly, our results show that, in agreement with our argument, in regions with higher levels of inequality, respondents – whether rich or poor – are more afraid of crime. We also find clear evidence that fear of crime matters for redistribution preferences. Individuals who are more afraid of crime show higher levels of support for redistribution, a relationship that is slightly stronger among those with higher incomes. A test for independence of fear of crime and redistribution equations

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<sup>40</sup> For the estimates of the skills variables, see online appendix S.5. Furthermore, using Iversen and Soskice’s (2001) alternative measure of skill specificity leads to the same results, as shown in online appendix S.6.

is rejected ( $F=16.7$  at 2df.). We also find that the direct effect of macro inequality becomes statistically insignificant once we explicitly estimate the effect of fear of crime.

Again, a stricter test of our hypotheses can be obtained by calculating average marginal effects. We expect to find (i) a significant (both in the statistical and substantive sense) marginal effect of fear of crime on redistribution preferences, and (ii) the size of the remaining effect of macro inequality (operating through other channels) to be reduced. Table 3 shows average marginal effects of fear of crime and inequality among the rich. As already indicated by our coefficient estimates, the marginal effect of fear of crime is strong and clearly different from zero. More importantly, we find the remaining marginal effect of inequality to be greatly limited. In fact, it is reduced to such an extent that its confidence interval includes zero. This result does of course not negate the existence of other relevant channels linking inequality and preferences, but it at least signifies that externalities go a long way in explaining the effect of inequality on redistribution preferences.

– Table 3 about here –

**Robustness tests** We conducted a large number of robustness tests studying alternative model specifications (too many to include here). They are described in detail in supplement S.6. To capture alternative macro explanations, we included existing levels of redistribution, regional transfers, measures of urbanization and population density. To capture alternative individual-level explanations, we included religion, ideology, an alternative measure of skill specificity, and a measure of altruism. We also carried out a number of tests for our measurements of income and inequality. Our estimates (in Table S.5, appendix S.6) show that our core conclusions remain valid under these alternatives. Furthermore, appendix S.7 includes specifications using country and year fixed effects, again, confirming our main results.

## 7 Conclusion

It is appropriate to conclude this paper by re-emphasizing the importance of our main results and exploring some of their implications for further research. The evidence demonstrates that for the poor externality concerns are trumped by immediate disposable income incentives and that redistribution preferences converge regardless of the macro-level of inequality as income declines. By contrast, macro inequality promotes concerns about negative externalities for the rich. We showed that the redistribution preferences of a rich individual in a low-inequality region differ starkly from those of a similarly rich individual in a high-inequality region and, more importantly, that this difference is motivated by fear of crime.

In some ways, this is a profoundly unintuitive result (the rich are more supportive of redistribution in those regions where inequality is highest). We do provide an intuitive solution for this puzzle (the concern for crime by the rich) but it is germane to ask whether our results emerge from the idiosyncrasies of our particular sample. We have mentioned before that the rich, if concerned about the externalities of inequality, could do (at least) two things: reduce inequality through redistribution, or reduce its potential consequences by demanding more protection. We have argued that demands for redistribution and security can be complementary, but it is tempting to think that the rich in Western Europe may be more likely than the rich in other regions to think of redistribution as an attractive option. In related (but preliminary) work reproducing the analysis presented in this paper, however, the effect of macro inequality in the US is remarkably similar to what we find in Western Europe. The American data allow us to directly address the possibility of a security versus redistribution trade-off. Looking at inequality at the state level in the US, the evidence we find supports the idea that these preferences are complementary, as individuals more likely to support redistribution are also more likely to support increasing the resources dedicated to public security provision. While this is a topic we hope to do further research on, we will mention that our findings connect with a significant literature of the consequences of inequality in

the US. Using American data and focusing on voting behavior, Gelman et al. (2008) find, like us, that the poor (whether in Connecticut or Mississippi) are quite similar. It seems to be the case that it is the rich who are responsible for some of the political differences we see (in Western Europe as well as the US). And this is perhaps the most important take-home message in our paper.

Our research, moreover, runs counter to a set of findings in the psychology literature about the influence of income on charitable giving and pro-social behavior. Using surveys conducted in the US, some authors find that lower income individuals give proportionally more to charitable causes than higher income ones (see for example, James and Sharpe 2007).<sup>41</sup> Other authors using experimental data find that subjective perceptions of one's social class promote generosity and charitable donations (see Piff et al. 2010). This paper does not address the role of altruism in determining voluntary donations. But our results do indicate that, irrespective of charity and controlling for altruism,<sup>42</sup> the rich in Western Europe are more likely to support government-based redistribution when regional inequality makes them more concerned about crime.

Going back to the unintuitive nature of our findings, one might finally ask why we do find less redistributive systems in precisely the places where the rich are more supportive of redistribution. We think this is an important question in need of a significant amount of further research. As McCarty and Pontusson (2009) note, 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 paper we have focused on the first proposition and ignored the second. We hope that the arguments in this paper clarify the role of preferences as an essential first step for an accurate understanding of the supply of redistribution.

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<sup>41</sup> This research has found wide resonance in the popular press. See Greve (2009) or Johnston (2005).

<sup>42</sup> See the altruism analysis in Appendix S.6.

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# Tables

Table 1: Redistribution preferences. Percentages.

Strongly disagree	Disagree	Neither	Agree	Strongly agree
2.7	13.7	15.3	44.7	23.7

Note: Based on five multiply imputed data sets.

Table 2: Support for redistribution. Panel (A) shows predicted probabilities by income and inequality, panel (B) shows marginal effect of inequality among rich and poor

(a) Predicted probabilities				(b) Marginal effect of inequality			
		Gini		Marginal effect of Gini			
		low	high	est		s.e.	95 % CI
Income	Poor	25.8	28.0	Poor	0.246	0.202	−0.150 0.643
	Rich	17.4	22.5	Rich	0.568	0.253	0.069 1.067

Note: Calculated from equation (1). All estimates available in Table S.3, online appendix S.5. Region-county bootstrapped, multiple overimputation standard errors.

Table 3: Effects of fear of crime and inequality among the rich. Average marginal effects for predicted strong support of redistribution.

	Marginal effect among rich			
	est	se	95% CI	
Fear of crime	0.099	0.033	0.035	0.163
Gini	0.317	0.261	−0.198	0.833

*Note:* Calculated from eqs. (2) and (3). All estimates available in Table S.4, online appendix S.5. Region-county bootstrapped, multiple overimputation standard errors.

# Figures

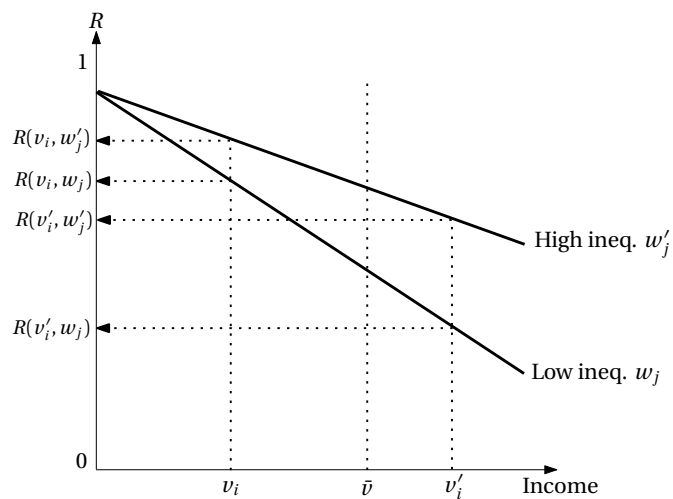


Figure 1: Macro Inequality and Support for Redistribution

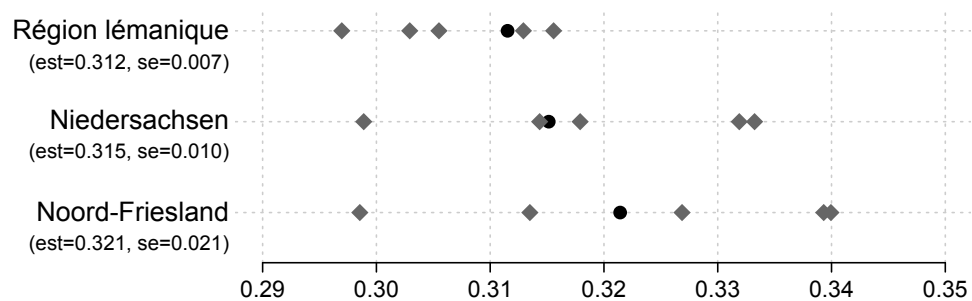


Figure 2: Illustration of multiple overimputation of Gini measurement error

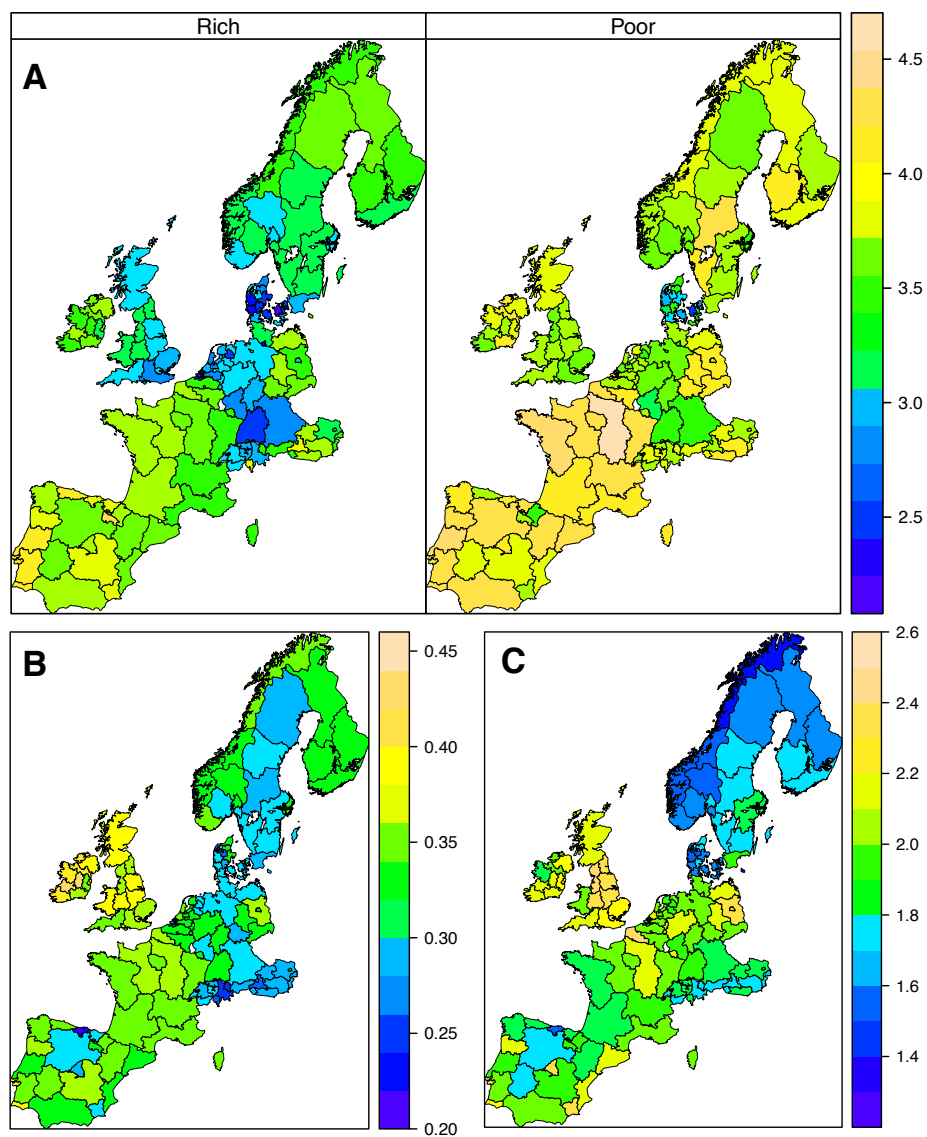


Figure 3: Support for redistribution among rich and poor (A), inequality (B), and fear of crime (C), by region

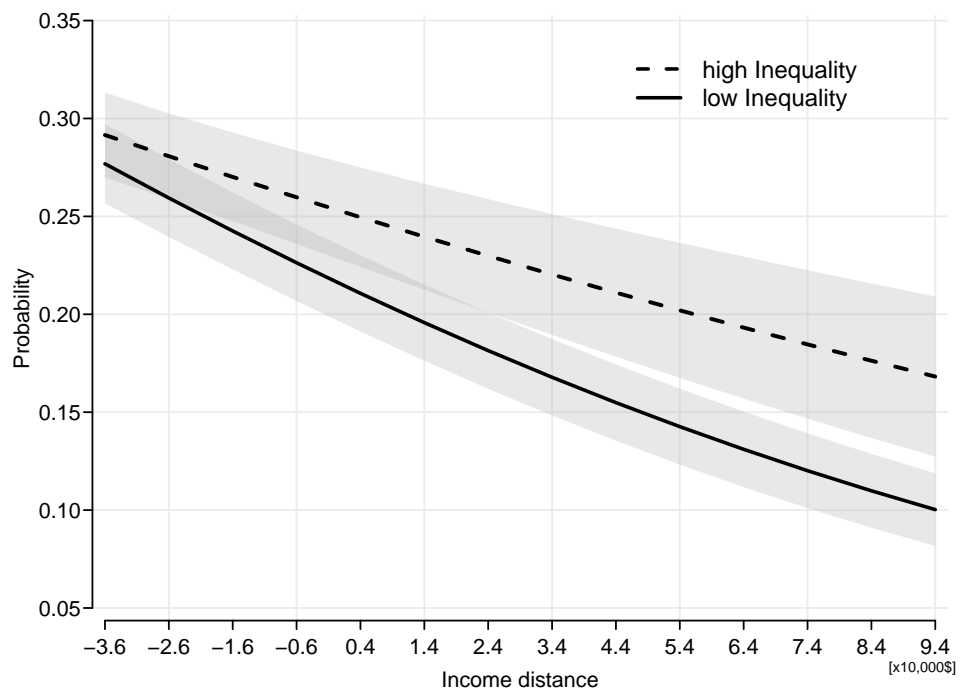


Figure 4: Support for redistribution. Predicted probability by income and inequality with 90% confidence intervals.