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INCOME INEQUALITY, REDISTRIBUTION, AND POVERTY: CONTRASTING RATIONAL CHOICE AND BEHAVIORAL PERSPECTIVES

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Based on the standard axiom of individual utility maximization, rational choice has postulated that higher income inequality translates into greater redistribution by shaping the median voter's preferences. While numerous papers have tested this proposition, the literature has remained divided over the appropriate measure for redistribution. Revisiting the original contribution by Meltzer and Richard in 1981, the present paper argues that the median voter hypothesis implies that relative redistribution should increase in line with inequality. However, an empirical test based on 110 observations from the Luxembourg Income Study (LIS) finds no support for the hypothesis. By contrast, voters' actual preferences offer a better guide to understanding redistributive outcomes. The findings challenge the narrow concept of human motivation that underpins rational choice, and point to the importance of fairness orientations that have been emphasized in behavioral economics.

JEL Codes: D03, D31, H23, H55

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1. INTRODUCTION

At the danger of over-simplification, income poverty is a function of two factors: the level of average incomes and their distribution between households and persons. Holding income levels constant, poverty will generally be more severe when incomes are distributed more unevenly (see, e.g., Kanbur, 2005). Consequently, countries with comparable income levels can have very different outcomes in terms of poverty incidence and depth. While economic growth increases the level of average incomes, it is generally more effective in alleviating poverty when the initial distribution of incomes is more equitable or when it is accompanied with a reduction in inequality (White, 2001; Dagdeviren *et al.*, 2002). Even as growth has helped to reduce poverty in a large number of countries since the mid-1990s, Fosu (2011, p. ii) concludes in his recent review of poverty trends that "further progress could have occurred under [a] relatively [more] favourable income distribution."

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It is thus not surprising that redistribution, broadly defined as the use of tax and transfer policies to reduce income inequality, has re-entered the mainstream of the poverty debate—much like income inequality itself has been "brought in from the cold" by the economics discipline in the mid-1990s (Atkinson, 1997; see also Kanbur and Lustig, 2000). Whereas redistributive instruments are generally more developed in the advanced countries—where relative poverty has remained a policy concern—developing countries such as Brazil are now using cash-transfer programs (along with other policy tools, such as minimum wage legislation) to reduce poverty and to put a dent into sky-high inequality. By contrast, tax and transfer systems have only a negligible impact on inequality in other Latin American countries such as Guatemala or Columbia. Even among developed economies, the welfare-state literature has found a wide gulf between the redistributive efforts made in Nordic countries and in the liberal market economies of the Anglo-Saxon world (see, e.g., Korpi and Palme, 1998).

What explains these differences in the extent of redistribution? Mainstream rational choice theory has postulated an automatism under which higher initial income inequality will lead to higher redistribution. This would be good news for those concerned with poverty eradication, since redistribution would be in greater supply precisely where it is needed most to redress inequities generated by the market and the social context in which it operates. In an influential paper, Meltzer and Richard (1981) have argued that the median voter's interest in redistribution will be greater in more unequal societies. Since self-interested politicians want to maximize their chance of gaining or retaining power, they will strive to translate the median voter's preferences into policy action. In democratic polities, this mechanism should translate higher initial inequality into higher subsequent redistribution.[1]

The Meltzer–Richard hypothesis, as the proposition has become known, draws on the standard assumptions of rational choice—individuals are rational actors who maximize their own, narrowly defined utility—and relies on methodological individualism to extrapolate from the postulated (rather than observed) individual behavior to predict developments at the macro-level. Behavioral economics has found many of these assumptions wanting, and pointed to the bounds of rationality. By drawing on insights from neighboring disciplines, it has also questioned the narrow definition of utility as material gain. While the simplistic concept of human motivation makes the agents of rational choice theory behave like "rational fools" (see Sen, 1977), the well-established research on social alignments and value orientations offers a more nuanced understanding of individual voting behavior (see Lipset and Rokkan, 1967; Flanagan, 1987; Knutsen, 1995; Dalton, 1996).

The hypothesis developed by Meltzer and Richard is readily testable: Do more unequal societies redistribute more? Unsurprisingly, many papers have sought to address this question (e.g., Milanovic, 2000; Kenworthy and Pontusson, 2005; de Mello and Tiongson, 2006; Lupu and Pontusson, 2011). Overall, the literature has arrived at the unsatisfactory conclusion that the answer partly

[1]Romer (1975) and Roberts (1977) had made similar arguments earlier, and all modern median voter theories of course find their intellectual heritage in Schumpeter (1942) and Downs (1957).

depends on how "redistribution" is defined. By and large, papers that look into "absolute redistribution" (the absolute reduction in the Gini coefficient) concluded that more unequal societies, indeed, redistribute more (see, e.g., Kenworthy and Pontusson, 2005). By contrast, papers that have measured "relative redistribution" (the reduction of the Gini coefficient relative to its initial level) have not found any correlation between market inequality and subsequent redistribution (see, e.g., de Mello and Tiongson, 2006; Lupu and Pontusson, 2011). Mixed findings have also emerged from a related body of literature on welfare spending (see, e.g., Bassett *et al.*, 1999).

In this context, the present paper aims to the make the following contributions: (1) As a contribution to theory, it revisits the original paper by Meltzer and Richard to deduct a valid test with the appropriate measure for redistribution. (2) As a contribution to econometric analysis, it uses an expanded dataset from the Luxembourg Income Study (LIS, 2011) to test the hypothesis. (3) Lastly, the paper explores behavioral approaches to understanding support for redistribution, namely the observed preferences of voters for equity and redistribution, and submits this alternative explanation to an empirical test. The paper concludes by reviewing the utility of the two different approaches and discusses their commonalities and limitations. There are a number of related issues this paper will not address, namely asset redistribution, trade-offs between different transfer schemes, and policy options to reduce inequality in pre-tax, pre-transfer inequality (such as minimum wages and collective bargaining rights).

2. Revisiting the Meltzer–Richard Hypothesis

While several studies have sought to establish a relationship between pre-government inequality and the extent of redistribution, most of them have suffered from the lack of reliable data for market inequality and/or used proxy variables for redistribution, such as the size of social expenditures or public transfers.[2] Mahler and Jesuit (2006) were among the first to provide reliable cross-country time-series data for both concepts on the basis of LIS. They report the Gini index for the inequality of private sector incomes,[3] which presents the desired measure of the initial distribution of incomes (i.e., before taxes and transfers), as well as for the distribution of disposable incomes (i.e., after taxes and transfers). Based on this, researchers have a choice between measuring fiscal redistribution as the *absolute* difference between the two Gini coefficients, or as the change in the Gini coefficient due to taxes and transfers *relative* to its initial level. Both the absolute and relative measures are frequently used in the literature on inequality and redistribution, and the justification for using either concept crucially depends on the research context.[4]

[2]See, e.g., Perotti (1996), Moene and Wallerstein (2003), and de Mello and Tiongson (2006); notable exceptions are Milanovic (2000), Bradley *et al.* (2003), and Kenworthy and Pontusson (2005).

[3]This paper uses the terms "market incomes" and "private sector incomes" interchangeably to describe all pre-tax, pre-transfer incomes received by private households. See footnote 8 for a definition in terms of LIS variables.

[4]See, for example, the arguments in favor of the absolute measure in Kenworthy and Pontusson (2005); examples for studies based on the relative measure of inequality include Bradley *et al.* (2003) or Mahler (2004).

To determine which of the two measures is theoretically more appropriate for the narrow purpose at hand, it is necessary to revisit some of the details of the original contribution by Meltzer and Richard (1981). In their seminal paper "A Rational Theory of the Size of Government," they use "the share of income redistributed by government . . . as [their] measure of the relative size of government and develop a theory in which the government's share is set by the rational choices of utility-maximizing individuals" (p. 915). Their model can explain how the extension of franchise (that allowed poorer voters to participate in elections) leads to increased redistribution, and hence a greater size of government. However, the most intriguing part of their argument predicts how greater inequality in the primary distribution of incomes shifts voters' preferences and produces more redistribution.

Meltzer and Richard conceptualize redistribution as a "Robin Hood"-type process where the rich pay more taxes than they receive from the state in the form of transfers, whereas the poor gain from redistribution. They assume that taxes are levied against all private sector incomes using a linear tax rate, and that all tax receipts are spent on distributing equal lump sums among citizens.[5] These simplifying model assumptions make it possible to calculate by how much a given Gini coefficient would be reduced as a result of a given tax rate. A full proof is supplied in Appendix 1, but one can intuitively understand the process as a shift of the Lorenz curve from its original position toward the 45-degree line (that would imply perfect equality). The magnitude of this shift, and hence the extent of redistribution, depends on the share of the lump-sum receipts and of private sector incomes in total disposable income. Fortunately, the distribution of incomes from both sources is known: the Gini for the remaining private sector incomes is equal to the initial distribution of private sector incomes, G_p, and the Gini for incomes from lump-sum redistribution, G_l, is zero (since all individuals receive equal lump sums).

Further, Meltzer and Richard assume that all proceeds from taxation are redistributed, so the total sum of incomes does not change. The share of the lump sum receipts in total incomes is thus equal to the tax rate t, and the share of the remaining private sector incomes in total income is equal to $1 - t$. We therefore know the distribution of both income components and their relative weight in the overall post-tax, post-transfer distribution. Since Gini coefficients cannot be easily decomposed, this information would be insufficient to calculate the Gini coefficient for total disposable incomes in any real-world application. This is due to the fact that the relative position of individuals usually differs between any two income distributions (see, e.g., Shorrocks, 1982). However, in the model world of Meltzer and Richard, each individual's income grows by the same amount so that their relative position does not change when transfer receipts are added.[6] The Gini

[5]Hence, taxation itself has no impact on inequality, and redistribution is solely achieved through the transfer system. This is of course a gross oversimplification, but it corresponds to the real world in so far as Mahler and Jesuit (2006) find that about three-quarters of fiscal redistribution can be attributed to the transfer system.

[6]This condition is crucial; unless it is satisfied (i.e., virtually in all real-world applications), it is not possible to average Gini coefficients.

coefficient of disposable incomes, G_d, can thus be calculated as a weighted average of the two income components G_p and G_l, where the weights are given by $1 - t$ and the tax rate t:

$$G_d = (1-t)\cdot G_p + t\cdot G_l. \tag{1}$$

Since all persons receive the same lump-sum transfers, the Gini coefficient G_l takes the value of zero and equation (1) can be simplified into:

$$G_d = (1-t)\cdot G_p. \tag{1′}$$

It is easy to see that at a tax rate of zero, post- and pre-government inequality are identical (and hence no redistribution takes place), but that as the tax rate rises, the Gini for disposable income decreases until it eventually reaches zero (when all income is taxed and redistributed).

For Meltzer and Richard, political conflict is therefore about determining the tax rate t. They start from the premise that the median voter casts the decisive vote in systems with majority rule, and chooses the tax rate that maximizes his utility (Meltzer and Richard, 1981, p. 920). The median voter's utility is given by the cost that taxation imposes on her or him and the benefit from lump-sum redistribution. Even after taking into account potentially adverse effects of taxation on incentives, Meltzer and Richard show that "the tax rate rises as mean income rises relative to the income of the decisive voter" (which corresponds to median income; see Meltzer and Richard, 1981, p. 923). The ratio of mean over median income is a common metric for inequality, and is monotonically related to the Gini coefficient when the distribution of incomes follows a lognormal pattern (see Lopez and Servén, 2006).

Returning to the two measures for redistribution, absolute redistribution, ΔG^{abs}, can be defined as the absolute difference between the two Gini coefficients,

$$\Delta G^{abs} = G_p - G_d \tag{2}$$

and relative redistribution, ΔG^{rel}, as the absolute difference between the two Gini coefficients divided by the initial level of the Gini coefficient:

$$\Delta G^{rel} = \frac{G_p - G_d}{G_p}. \tag{3}$$

Substituting (1′) into equations (2) and (3) leads to:

$$\Delta G^{abs} = t\cdot G_p \tag{2′}$$

$$\Delta G^{rel} = t. \tag{3′}$$

The identity in equation (3′) implies that *relative* redistribution is the best proxy for the tax rate t, which Meltzer and Richard expect to rise as a result of greater

market inequality. It is therefore appropriate to investigate how initial market inequality, G_p, influences relative redistribution, ΔG^{rel}. Note that equation (2′) shows that *absolute* redistribution is, by definition, a function of the Gini coefficient for market incomes (even if the tax rate remains constant). Since political conflict is about changes in the tax rate, a positive association between market inequality and absolute redistribution would not offer any support to the Meltzer–Richard hypothesis.

Although this "model world" might seem removed from reality, the two equations are helpful to think about redistribution in the real world. As can be seen in equation (2′), we would expect absolute redistribution to increase with market inequality even if the characteristics of the tax and transfer system remain largely unchanged. Incidentally, this process of "automatic stabilization" is what seems to have been at work over the 1980s and 1990s in rich countries where the welfare state partially compensated for the surge in market inequality (see Kenworthy and Pontusson, 2005). Equation (3′) implies that only the characteristics of the tax and transfer system (for which t is the short-hand) will influence relative redistribution (regardless of the initial level of inequality). Note, however, that the tax and transfer system in the Meltzer and Richard model is very crude and that different effects might be observed in the real world.

3. Do More Unequal Societies Redistribute More?

The discussion above leads to a readily testable hypothesis, namely that relative redistribution ΔG^{rel} is a direct function of the initial level of inequality for private sector incomes, G_p:

$$\mathrm{H}_1: \Delta G^{rel} = f(G_p). \tag{4}$$

This relationship should hold true both *within* countries over time and *between* countries, at least as far as electoral democracies are concerned. It is thus appropriate to test the hypothesis on a dataset that contains repeated observations across countries. The LIS provides such a source and is generally recognized as the best compilation of standardized household income datasets that allow for such an analysis (Atkinson, 2004). In their initial publication, Mahler and Jesuit (2006) provided a total 59 data points from 13 countries for inequality of private sector incomes and of disposable incomes, and hence for redistribution (see also Bradley *et al.*, 2003). In February 2008, they released an updated dataset with 68 observations from 14 industrialized countries (Mahler and Jesuit, 2008). Since then, the LIS has significantly expanded its coverage and now includes observations from Latin American countries (Colombia, Brazil, and Guatemala) as well as Asia (Republic of Korea and Taiwan, Province of China). In total, the relevant income concepts can be retrieved for 110 surveys from 26 countries and territories.[7]

[7]The LIS database contains further datasets that record only net income, so that no comparison between incomes before and after taxes and transfers can be made. The definition of private sector income follows Mahler and Jesuit and refers to the sum of LIS variables "Market income" (MI),

The resulting dataset (which is reproduced in Luebker, 2012) contains the desired cross-sectional and inter-temporal variation. The oldest observation dates back to 1967 (Sweden) and the newest are from 2006 (Brazil, Guatemala, and Republic of Korea). The panel is unbalanced, and the number of observations ranges from ten observations in Canada to only one data-point in seven countries (Austria, Brazil, Colombia, Estonia, Guatemala, Republic of Korea, and Slovakia; see Appendix 3). This still leaves 19 countries that have at least two data points to study variation across time. Among these, some 15 countries showed a rise in the Gini coefficient for private sector incomes, while only one displayed stability and three a decline.

When the relationship between market inequality and relative redistribution is examined in a scatter plot (see Appendix 4), no systematic relationship emerges. There are, however, two clusters with outliers: observations from East Asia combine low market inequality with low redistribution; and the three Latin American countries combine high market inequality and low redistribution. Both findings correspond to the literature on redistribution in these two regions (see Hwang, 2004; Huber *et al*., 2006; Goñi *et al*., 2008). These outliers, however, do not allow dismissing the Meltzer–Richard hypothesis that redistribution rises with inequality since they might well reflect institutional variations. While the Latin American countries and the Republic of Korea were all electoral democracies when the data were collected (2004 and 2006), some of the observations from Taiwan, Province of China, date back to the early 1980s and hence to the period of authoritarian single-party rule.

For the developed economies, where the institutional preconditions of majority rule and political freedom were in place for the entire period under observation, no clear pattern emerges. However, on closer inspection, it appears that repeated observations from the same country—for example, from Canada or France—roughly correspond to the pattern predicted by Meltzer and Richard.

The scatter-plot has two implications for the empirical strategy:

(a) The presence of outliers suggests that the applicability of the Meltzer and Richard model might be confined to the developed countries, which can be expected to have stronger and more mature democratic institutions and a greater degree of political freedom. Proponents of the Meltzer–Richard model could (with some justification) argue that the empirical test is unfair by including countries such as Colombia or Guatemala. All regression models will therefore be estimated first on the full sample and then on a smaller sample that contains only observations from the developed countries (i.e., excluding observations from East Asia and Latin

"Private transfers" (PRIVATI), and "Other cash income" (V36). Disposable income is derived by adding "Transfer income" (TRANSI) and subtracting "Mandatory payroll taxes" (PAYROLL) and "Income taxes" (V11). Standard LIS procedures are used to top- and bottom-code and to obtain equivalized per capita income. The results are consistent with Jesuit and Mahler's 2008 dataset and the LIS key figures as of mid-2011. Note that all data were extracted before the launch of the new LIS template on October 31, 2011 that brought some changes to the definition of income concepts (in particular the inclusion of non-monetary income to disposable household income).

America).[8] This also removes the influence of outliers and produces a more homogenous group of countries where the median-voter mechanism should apply.

(b) While there is no apparent cross-country relationship, the expected relationship might still hold within countries. It is therefore useful to distinguish between-country from within-country effects, and to run separate models for these.

The scatter-plot also calls into question the utility of a pooled cross-section, time-series analysis. Such models imply that the same relationship can be observed between and within countries. Of course, the underlying assumption of the median voter theory is that the same mechanism is at work within countries over time and when comparing between countries. Table 1 therefore presents a standard OLS regression model (1) with robust standard errors for the pooled dataset largely on *a priori* theoretical grounds, and with caveats about its analytical utility and statistical validity (see also Kenworthy, 2007). Model (1a) with the full dataset yields no support for the hypothesis: the regression coefficient on the Gini for private sector incomes remains insignificant (even if one applies a generous 0.10 threshold). This does not change when the observations from East Asia and Latin America are excluded, as is done in model (1b), which again produces an insignificant regression coefficient. Note that no control variables are added to the model; the median voter theorem postulates a universal relationship that is not conditional on the presence of specific conditions (other than majority rule).

The failure to establish a relationship between initial inequality and subsequent redistribution is in line with previous studies based on pooled datasets cited above. But can the median voter hypothesis possibly explain variation in redistribution between countries? Models (2a) and (2b) present a test of the between-country effect, essentially a regression on the mean of all observations from the same country. This removes the within-country variation, while using all available observations—an approach that is preferable to arbitrarily selecting a single observation from each country. As in the pooled model, the regression coefficients on the Gini for private sector incomes are insignificant, regardless of whether the full or the reduced sample is used (p-values: 0.959 and 0.867, respectively).[9]

The results have so far been disappointing for the Meltzer and Richard hypothesis. One possible explanation could be that unobserved institutional variations between countries obscure the relationship. An approach to control for institutional differences is to focus on changes over time within countries (thus

[8]The alternative would have been to introduce control variables for institutional differences. However, this would unnecessarily complicate the model specification and it is not clear whether this would achieve the objective of capturing the effect of non-democratic governance. Therefore, the more radical approach of excluding observations was taken.

[9]Again, the coefficient on the Gini for private sector incomes remains insignificant when the unemployment rate and the share of the population aged 65 years and above are added as control variables. The p-values are 0.999 (sic!) (full sample) and 0.433 (sample excluding observations from East Asia and Latin America); the coefficient also carries the wrong sign in the latter case.

TABLE 1

Regression Results for Models with Private Sector Inequality as an Explanatory Variable (dependent variable: relative redistribution)

	(1) OLS Regression, Robust Cluster SE		(2) Between-Country Effects		(3) Within-Country Effects		(4) Within-Country Effects, with Controls	
Variable/Model	(1a) Full Sample	(1b) OECD	(2a) Full Sample	(2b) OECD	(3a) Full Sample	(3b) OECD	(4a) Full Sample	(4b) OECD
pi_gini (Gini, private sector incomes)	0.854	0.360	0.028	0.093	0.584***	0.581***	0.192	0.168
	(0.530)	(0.264)	(0.536)	(0.547)	(0.107)	(0.111)	(0.146)	(0.153)
unemp (unemployment rate)							0.457***	0.468***
							(0.160)	(0.165)
oldage (population 65+ years)							0.900**	1.056**
							(0.360)	(0.410)
constant	–0.040	0.198	0.297	0.330	0.074	0.102**	0.094**	0.105**
	(0.233)	(0.115)	(0.237)	(0.241)	(0.046)	(0.048)	(0.048)	(0.053)
n =	110	99	110	99	110	99	110	99
number of clusters/groups	26	21	26	21	26	21	26	21
R^2	0.146	0.029	0.000	0.002	0.266	0.261	0.371	0.376

Notes: R^2 refers to R^2 (overall) for model (1), to R^2 (between) for the between-effects model (2), and to R^2 (within) for the within-effects model (3) and (4). Standard errors are given in parentheses; those in model (1) refer to robust cluster standard errors. ***, **, and * denote significance at risks levels 0.01, 0.05, and 0.10, respectively.

Source: Based on LIS (pi_gini and dependent), ILO (unemp), World Bank (oldage) and Statistics Bureau of Taiwan, Province of China (unemp and oldage for Taiwan, POC). For details, see Appendix 2.

holding institutions constant).[10] Models (3a) and (3b) therefore present a fixed effects model to test the within-country relationship. The results appear to offer overwhelming support to this "weak" hypothesis. Although the explanatory power of the regression is modest (within $R^2 = 0.266$), the coefficients are highly significant and robust to the exclusion of observations from East Asia and Latin America. Two interpretations offer themselves for the contradictory results from the between- and within-country models: unobserved country characteristics—say, differences in the electoral process (see Iversen and Soskice, 2006)—could obscure the median voter's influence, which only becomes evident once they are controlled for by introducing country dummies. The fixed effects model would then be the only valid test, and the results would offer sufficient support for the median voter theorem.

However, the within-country effect could also be due to a different mechanism (or, technically speaking, omitted variable bias). Recall that Meltzer and Richard built a rudimentary model of redistribution under which all income is taxed at a flat rate and the entire revenue is redistributed in equal lump-sum benefits. In the real world, benefits are means-tested and income taxes are generally progressive (see also Prasad and Deng, 2009). The automatic stabilization of inequality through a progressive tax and transfer system would be greater than what we would expect in the "model world" of Meltzer and Richard. If demographic change causes greater market inequality, relative redistribution might increase as a result of the very same demographic shifts—and not as a result of changes in welfare generosity (or the hypothetical tax rate t).

Rich countries have of course experienced a large increase in unemployment since the early 1970s, and low fertility and rising life expectancy have led to a steady growth in the share of the elderly population. Model (4) adds two control variables, the unemployment rate and the share of the population aged 65 years and above. Both variables turn out to be highly significant (at the 0.01 and 0.05 level, respectively). Once these factors are controlled for, changes in the initial inequality of private sector incomes no longer carry any explanatory power and the regression coefficient loses its significance. It therefore appears that structural changes in the labor market and demography sufficiently explain within-changes in inequality. Moreover, the explanatory power of the model improves, which indicates that the private sector inequality was a poor proxy for the underlying demographic and labor market trends. The results are robust to the exclusion of observations from East Asia and Latin America, as can be seen in marginal difference between models (4a) and (4b). In sum, within-country changes in redistribution offer no convincing support for the Meltzer and Richard hypothesis.

4. Alternative Explanations for Variance in Redistribution and the Perspective of Behavioral Economics

Can behavioral economics account for differences in redistribution where rational choice offered no conclusive explanation? Recall that the two central

[10]In the period covered by the dataset, the only major change in political regime was the transition to democracy in Taiwan, Province of China, which is excluded from the reduced sample of OECD countries.

assumptions of the rational choice model were that the political system responds to demands of the median voter, and that the median voter seeks to maximize her own, narrowly defined utility. At least one of these assumptions appears to be faulty, and an extensive literature has indeed discussed their respective shortcomings (for a short review, see Kaufman, 2009). One body of literature, with many contributions from political science, has concentrated on the question how political systems translate preferences into policy outcomes. Various authors have investigated differences between proportional representation and majority voting, the impact of voter turnout, or how the structure of inequality will influence coalitions between different groups (see, e.g., Bassett *et al*., 1999; Tanninen, 1999; Austen-Smith, 2000; Cukierman and Spiegel, 2003; Iversen and Soskice, 2006; Borck, 2007; Mahler, 2008; Solt, 2008; Lupu and Pontusson, 2011). Others have argued that social security systems have unclear *a priori* distributive outcomes and serve primarily insurance purposes (Moene and Wallerstein, 2003). Hence, greater risk exposure should increase support for these schemes (see Cusack *et al*., 2006).

More fundamentally, questions have arisen about the underlying *Menschenbild* (view of the nature of man) of rational choice—do people only consider their own advantage when voting? While this proposition is unproblematic within the rational choice framework, behavioral economics has challenged the utility maximization paradigm and explored the role of social norms in explaining actual, observed human behavior. This has brought into focus the role of altruism, inequality aversion, and fairness orientations (see, e.g., Fehr and Fischbacher, 2004; Fehr and Schmidt, 2005).

One prominent approach within behavioral economics has been to conduct experiments with groups of individuals who are asked to distribute small amounts of money between themselves and another person. Results from the dictator game and the ultimatum game have been interpreted as evidence that individuals behave altruistically by passing on part of their endowment, and that they are willing to forego a small gain when they reject splits perceived as overly unfair (see Andreoni *et al*., 2008). Interestingly, while altruism appears to be a universal phenomenon, there is some variation between countries and communities (see Cardenas and Carpenter, 2008, for a review). Similarly, Falk *et al*. (2008) show that fairness intentions matter, and that individuals frequently prefer an option seen as "fair" over an alternative that maximizes only their own utility.

However, the sample size and coverage of these experiments are too small to gain reliable information on cross-national (and inter-temporal) variations in inequality aversion. Building on large cross-national survey datasets, political sociology has studied the role of value orientations in shaping people's preference for equity and their support for redistribution (Blekesaune and Quadagno, 2003; Luebker, 2004). Unlike the rational choice literature, this political sociology approach leaves room for social norms and individual belief systems as intervening factors to shape support for redistribution (that is no longer a direct function of initial market inequality; see, e.g., Kuhn, 2009a, 2009b). If tolerance of inequality varies between societies, different societies will evaluate income inequality differently and also display differences in their support for redistribution—even when the level of initial inequality is identical (Luebker, 2004, 2007; Alesina and Angeletos, 2005). Research on social welfare responsiveness has shown that these

differences matter for redistributive outcomes and welfare state generosity, at least as far as rich countries are concerned (see Burstein, 1998; Brooks and Manza, 2006, 2007).

The key challenge to this literature is that the causality might run in the other way—generous welfare states might not be a response to citizen's demands, but could have generated their own support through performance over time (Kenworthy, 2009). Socialization in a particular welfare regime type undoubtedly shapes social norms by providing a benchmark of what can reasonably be expected, and hence also evaluations of inequality and support for redistribution. The post-war division and subsequent reunification of Germany provides for an insightful natural experiment: East Germans, who were brought up in a nominally socialist state, expect a far greater welfare state engagement than their West German compatriots, even when other individual-level factors are controlled for (Alesina and Fuchs-Schündeln, 2007).

The question on the direction of causality has probably no clear answer—it would seem plausible that it in fact runs *both* ways. Easton's (1957, 1965) system analysis of the political life provides a useful theoretical framework. For him, the political system generates outputs (such as welfare payments and redistribution) that are evaluated by the citizenry and, through a feedback loop, influence the inputs that feed into the political system in the form of demands and support. From this perspective, support for redistribution could then be shaped by previous performance of the welfare state, and explain why the welfare state is maintained through popular support once it is established (see Brooks and Manza, 2007). However, the present paper has a more limited concern: Are the observed preferences of real individuals a better guide to reality than the "hypothetical" preference for redistribution (as deducted by the rational choice literature)?

A related controversy has focused on measurement issues, particularly the treatment of pensions. In countries where pensions are provided though public social insurance schemes, people save less in their working years but pay compulsory social security contributions. When they reach retirement age, their private sector income often falls to zero and they live from transfer payments in the form of old-age pensions. In countries without such public systems, people pay into private, capital-based schemes and receive annuities in retirement (which are usually counted as private sector incomes). In the latter class of countries, inequality of market incomes and redistribution will be lower, whereas public pension systems "inflate" market inequality and redistribution (see Bradley *et al*., 2003, p. 208). One approach to address this observation has been to exclude the elderly population from the analysis and compute measures for inequality and redistribution for the working-age population (Bradley *et al*., 2003; Kenworthy and Pontusson, 2005; see also Mahler and Jesuit, 2006). An alternative is to adjust income concepts by including social insurance and state pensions into a concept of "primary income" (in line with private pensions), and by treating payroll taxes analogous to savings and including them in "adjusted disposable income" (Jesuit and Mahler, 2010).

While the concern is valid, it raises a more fundamental question: Do we want to control for differences in pension systems when analyzing redistribution and welfare states? After all, old-age pensions are not fundamentally different from

other types of social insurance, such as unemployment, sickness, maternity, or invalidity benefits—the design of which will all lead to different redistributive outcomes.[11] In all cases, employees (often matched by employers) pay contributions, and receive benefits when certain qualifying conditions are met. Not all who contribute to a scheme will also receive a benefit, and while benefits are often linked to previous contributions, they also reflect other, social objectives. For example, times spent in education or caring for children are frequently credited as contribution periods, and spouses who survive a beneficiary typically receive a survivor's benefit (for which no extra contributions have been made). Often, a substantial part of benefits is funded not out of contributions, but out of general tax revenue.

Social insurance institutions are one of the main mechanisms for welfare states to redistribute incomes, and their design is of central importance for redistributive outcomes (see Korpi and Palme, 1998; Kraus, 2004; Conde-Ruiz and Profeta, 2007). By comparison, private pensions have different distributive outcomes (Behrendt, 2000). Pension systems are thus subject to intense political debate, and even incremental transitions from one model to another go hand-in-hand with intense conflict. Excluding the pension system from the comparative analysis of welfare regimes and redistribution would mean to miss a large part of the picture. The empirical analysis in the following section will therefore maintain the dependent variable for relative redistribution as introduced in the previous section (i.e., based on the total population).

5. Can Voters' Actual Preferences for Distribution Account for Differences in Redistribution between Countries?

To test the proposition that actual (as opposed to "hypothetical") public opinion matters for policy outcomes, we need to find an appropriate way to measure public support for redistribution. The International Social Survey Programme (ISSP) is the most reputable and most commonly used source for this type of analysis (see, e.g., Alesina and Angeletos, 2005; Osberg and Smeeding, 2006). The consortium started in 1984 with four members (Australia, Germany, Great Britain, and the United States) and has since expanded to a total of 48 member countries, including several newly industrialized and developing countries. One of the questions in the module on Social Inequality addresses support for government redistribution directly:

> How much do you agree or disagree with each statement about differences in income? It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes.

The Social Inequality module has so far been in the field in 1987, 1992, 1999, and 2009, and an identical question was also included in the Role of Government module in 1985, 1990, and 1996. Respondents were asked to record their answers

[11]See Statistical Appendix Part B in ILO (2010) for a comprehensive overview of the different social insurance systems. For redistributive outcomes in the case of different sickness benefit systems, see Khan and Jansson (2008).

on a five-point Likert-scale that ranges from "strongly agree" to "strongly disagree." The proportion of those who either agreed or strongly agreed is a good proxy for the prevalence of support for redistribution. It captures the appetite among the electorate for government intervention to reduce income disparities, which modern welfare states achieve through the tax and transfer system.

Although there is a large overlap in coverage between the LIS and the ISSP, the match between the two sources is not perfect. For instance, the Latin American countries covered by the ISSP (Argentina and Chile) differ from those included by the LIS (Brazil, Colombia, and Guatemala) so that there are no common observations from this region. In Asia, both the ISSP and LIS cover Taiwan, Province of China, and the Republic of Korea; they also share a large, common pool of advanced industrialized economies. However, the years for which there are observations from the two sources do not always match. This necessitates estimating support for redistribution in some years, mainly by interpolating between neighboring years (see Appendix 2). Such approximations are of course not ideal and compromise the quality of within-country trends. However, they are the best possible solutions in a world of non-perfect data and should have less impact on between-country comparisons.

Again, an examination of the scatter-plot is a first step to approach the data, which cover the 58 observations from 22 countries. The scatter shows a reasonably close, though not perfect association between the two variables: as expected, relative redistribution grows roughly in line with support for redistribution (see Appendix 4). This is particularly true for between-country variation, but less apparent within countries. However, this is perhaps not surprising, given that within-country variation is relatively small on either variable. Two outliers which combine relatively high support for redistribution with very limited actual redistribution can be found (the Republic of Korea and Taiwan, Province of China). Latin American countries would most likely be found in the same corner since redistribution is typically very limited in the region, even though public opinion is strongly in favor.[12]

In line with the previous design, the first regression will use both the time-series and the cross-section component of the pooled sample and estimate an OLS model with cluster-robust standard errors. However, due to the mismatch of years for which observations are available from the two primary sources, the time-series component of the pooled analysis is not always robust and model (5) is presented with this caveat. For the same reasons, no within-effects model is estimated and more trust is placed in the between-effects model (6) that only captures the variation between countries. In addition to the support for redistribution, the models carry over the share of the population aged 65 years and above and the unemployment rate as control variables.

To control for the "automatic stabilization" effect of the welfare state that goes beyond the impact of unemployment insurance and old-age pensions, the specifications also maintain the initial level of private sector inequality as an explanatory variable. Incidentally, this also addresses a possible criticism of the

[12]In the ISSP dataset, 84.8 percent of respondents in Argentina and 73.0 percent in Chile agreed with the statement introduced above.

TABLE 2

Regression Results for Models with "Support for Redistribution" as an Explanatory Variable (dependent variable: relative redistribution)

	(5) OLS Regression, Robust Cluster SE		(6) Between-Country Effects	
Variable/Model	(5a) Full Sample	(5b) OECD	(6a) Full Sample	(6b) OECD
pi_gini (Gini, private sector incomes)	–0.003	–0.819*	0.180	–1.357**
	(0.491)	(0.404)	(0.727)	(0.598)
support (support for redistribution)	0.169	0.348***	–0.008	0.383**
	(0.114)	(0.086)	(0.197)	(0.161)
unemp (unemployment rate)	0.630	0.335	1.461	0.527
	(0.436)	(0.308)	(1.113)	(0.794)
oldage (population 65+ years)	2.311***	1.534**	2.600**	1.138
	(0.631)	(0.676)	(1.075)	(0.800)
constant	–0.115	0.285	–0.187	0.558**
	(0.237)	(0.197)	(0.258)	(0.239)
n =	58	56	58	56
number of clusters / groups	22	20	22	20
R^2	0.395	0.490	0.468	0.458

Notes: R^2 refers to R^2 (overall) for model (5) and to R^2 (between) for the between-effects model (6). Standard errors are given in parentheses; those in model (5) refer to robust cluster standard errors. ***, **, and * denote significance at risks levels 0.01, 0.05, and 0.10, respectively. OECD refers to old OECD member countries and those in Europe; the Republic of Korea is excluded.

Source: Based on LIS (pi_gini and dependent), ISSP (2011a, 2011b, 2011c, 2011d, 2011e, 2011f) and related sources (support), ILO (unemp), World Bank (oldage) and Statistics Bureau of Taiwan, Province of China (unemp and oldage for Taiwan, POC). For details see Appendix 2.

model, namely that measured support for redistribution is nothing but a proxy for initial inequality (which, as rational choice would predict, drives up demand for redistributive government interventions). If this were the case, the variable that measures initial inequality directly should carry the explanatory power (and not the proxy).[13] As before, the regressions will be estimated for the full sample and for a reduced sample that excludes the East Asian economies.[14] (Recall that the Latin American countries are missing from both samples due to lack of data on public opinion.)

The pooled analysis on the full sample in model (5a) produces no significant regression coefficients apart from the highly significant coefficient on the variable "oldage" (see Table 2). At first sight, the performance of the "behavioral" model is therefore no better than the previous test of the Meltzer and Richard hypothesis. However, this changes when the two outliers from East Asia are excluded, as done in model (5b): the regression coefficient on support for redistribution is now highly

[13]The behavioral approach will only "outperform" the rational choice model in so far as public support for redistribution (as measured by the ISSP questionnaire item) diverges systematically from what the rational choice approach deducts based on the level of initial inequality.

[14]Note that the relatively small sample size of only 58 observations reduces the statistical power of the test, i.e. there is a lower likelihood to obtain a significant result than would be the case with a larger sample. Small sample sizes increase the risk of committing a type II error (false negative), but do not influence the probability of committing a type I error (false positive). The risk of making a type I error is given by the p-value, or the level of significance, the computation of which takes into account the size of the underlying sample.

significant (at the 0.01 level), and the control variable "share of the population aged 65 years or above" also gains significance (at the 0.05 level). With an R^2 of 0.490, the explanatory power of the model is satisfactory. The between-effects model (6a) on the full sample largely replicates the results of the pooled OLS model and does not produce any significant coefficients with the exception of the variable "oldage." Once the East Asian observations are removed, as done in model (6b), support for redistribution again becomes a significant explanatory variable (at the 0.05 level). These results confirm that, as far as the old industrialized countries are concerned, public support for redistribution is an input into the political system that is strongly associated with actual redistribution at the output side of the system (to use Easton's terminology).

Note that the level of inequality is a significant predictor in the models with the reduced sample. However, this does not lend support to the median voter theorem since the sign on the coefficient is *negative*, and hence opposite of what the rational choice model predicts. This unexpected result is partly an artifact of the way the dependent variable—relative redistribution—has been constructed. As discussed above, it is obtained by dividing absolute redistribution (i.e., the difference between the Gini coefficients for disposable incomes and private sector incomes) by the Gini coefficient for private sector incomes. Hence, the same level of absolute redistribution will result in a lower value for relative redistribution if the initial private sector inequality was higher. The variable "pi_gini" (private sector inequality) can therefore best be thought of as a control variable that is necessitated by the nature of the dependent variable. As a robustness test, models (5) and (6) were re-estimated with *absolute* redistribution as a dependent variable (reported in Luebker, 2012). While the coefficient on the initial level of inequality lost its significance, the results did not change materially otherwise.

What do these findings imply? One interpretation would be that governments in the old OECD countries and in Eastern Europe are, to some extent, responsive to public demands to reduce inequality through the tax and transfer system. However, this conclusion comes with two caveats. The first is that the finding is based primarily on the between-country variation; due to data limitations, this paper has not exploited the time-series element of the dataset. Kenworthy and McCall (2008) study over-time variation in support for redistribution and changes in actual redistribution for 15 countries, and find no consistent pattern. Over-time variation in support for redistribution is relatively small when compared to between-country differences, and does not necessarily match redistributive outcomes (which are heavily influenced by other factors, such as the business cycle and unemployment).

The second caveat is that the aggregate finding may obscure a lack of government responsiveness in some countries, or in fact hide a bias in one direction across all countries. In the United States, the corrosive effects of inequality on democracy itself have become an issue of debate (see Jacobs and Skocpol, 2005). To summarize a complex literature, it appears that the government is responsive to citizens' demands, but more so to the views of affluent voters (Gilens, 2005). This matters since the poor and the rich differ in their preferences when it comes to welfare spending and other policies with redistributive consequences (Gilens, 2009). At the level of individual United States senators, Bartels (2005) shows that

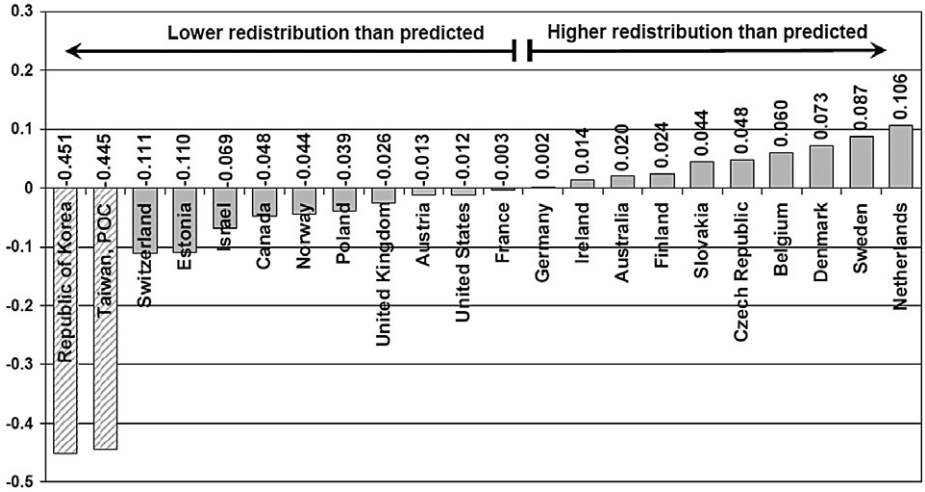

Figure 1. Departures from Predicted Extent of Relative Redistribution, by Country (residuals from regression model 6b)

Notes: Gray bars refer to residuals from regression model (6b). The same regression equation was also applied to the Republic of Korea and Taiwan, Province of China, to predict the extent of redistribution under the counterfactual assumption that these two economies displayed the same characteristics as the advanced countries (light gray bars).

Source: Based on LIS (pi_gini and dependent), ISSP (2011a, 2011b, 2011c, 2011d, 2011e, 2011f) and related sources (support), ILO (unemp), World Bank (oldage) and Statistics Bureau of Taiwan, Province of China (unemp and oldage for Taiwan, POC). For details, see Appendix 2.

they are more responsive to the views of affluent constituents in their home state than to those held by middle-class voters; the preferences of the bottom strata have no statistically significant impact on senators' voting behavior in Congress. Effectively, this literature gives support to the argument that the hypothetical median voter of Meltzer and Richard's model world is not the decisive voter in the real world.

Does the United States stand out for ignoring redistributive preferences of its voters? To approach this question, it is useful to look at the unexplained departure from the extent of redistribution that one would expect to find, given public support for redistribution and demographic factors. Figure 1 therefore displays the residuals from the between-effects regression model (6b). The striking finding is that redistribution in the United States is almost exactly in line with the model prediction (residual: –0.012). When compared to France (residual: –0.003) or Germany (residual: 0.002), the lower level of redistribution in the United States largely reflects differences in (measured) public opinion, initial inequality, unemployment, and demographic structure—and not a fundamental difference in how the political system translates inputs into outputs. This finding, however, leaves open to debate whether all of these countries share the same elite-bias. It is informative that some European welfare states (Denmark, Sweden, and the Netherlands) offer greater redistribution than expected, and somewhat counterintuitive that Switzerland, with its strong tradition of direct democracy, redistributes substantially less. In both cases, the historical evolution of the welfare state might

offer an explanation. By far the greatest disconcordance can be observed in the two East Asian economies: both the Republic of Korea (residual: –0.451) and Taiwan, Province of China (residual: –0.445) have far less government redistribution than one would expect if they behaved like the old OECD countries.

6. Conclusions

Explanations for the extent to which governments redistribute income through the tax and transfer system provide for an interesting example to contrast rational choice and behavioral perspectives, and how they differ in understanding human motivation. In a classical paper, Meltzer and Richard (1981) provide a theoretical "proof" that individual utility maximization and the vote-seeking behavior of politicians under majority rule produce greater redistribution when inequality is high. The model exemplifies the deductive reasoning of rational choice, and applies the median-voter theory of Schumpeter (1942) and Downs (1957) to a tangible question. As even critics would concede, the model is elegant and parsimonious and its logic is intuitively compelling. Yet, it suffers from the shortcomings of its very foundations that behavioral economics has found wanting. By portraying humans as "rational fools" (to use Amartya Sen's term), rational choice ignores that people are embedded in a society and share values and perceptions of fairness and social justice.

While a host of papers has tested the relationship between inequality and redistribution, one unresolved issue has been how best to define redistribution in empirical tests. While some authors have used "absolute redistribution" (measured as the difference between the Gini for private sector incomes and the Gini for disposable incomes), others have chosen a relative concept of redistribution (i.e., the reduction of the Gini coefficient relative to its initial level). To resolve this question, the present paper has revisited the original article by Meltzer and Richard and shown that their model assumptions imply that *relative* redistribution should rise in line with initial inequality. An increase in *absolute* redistribution should arise from the automatic stabilization properties of welfare states and finding such a relationship would not provide conclusive evidence for the median-voter hypothesis.

The empirical analysis in this paper has—in line with previous findings—shown that the simple mechanism proposed by rational choice is a poor guide to explain redistributive outcomes. The "pooled" analysis of cross-section time-series data with 110 observations from 26 countries revealed no significant relationship between inequality of private sector incomes and subsequent relative distribution. The approach also failed to account for differences between countries, but at first appeared to have some utility in explaining within-country changes over time. However, the explanatory power of the model remained poor and the regression coefficient on inequality became insignificant once control variables were added. As it turned out, changes in unemployment and an increasing share of the elderly population offer a simple and more powerful alternative explanation for the observed over-time changes in relative redistribution since the 1970s.

The failure of the real world to behave in line with model predictions puts into question at least one of the two underlying premises of the Meltzer–Richard

model: that voters' support for redistribution strictly depends on what they personally have to gain from it (i.e., their utility maximization), and that the political system produces outputs that are aligned to the median voter's interests. While a large body of literature has concentrated on the second point, the present paper has adopted the perspective of behavioral economics. This body of literature has challenged the axiom that rational utility maximization alone is sufficient to understand human motivation and has explored the role of altruism, social norms, and values in explaining people's choices. These have of course been central to political sociology and comparative welfare state research long before they entered mainstream economic analysis, as evident from a rich body of literature that has previously studied voters' actual views on inequality and redistribution. As it turns out, observed support for redistribution—measured as the share in the population who thinks that it is the government's role to reduce income differences—is a better predictor for actual redistribution, at least in the old industrialized countries.

Some caveats need to be added to this analysis. First, since people's views on what is just and fair, and on how the government should intervene in market outcomes, are shaped by their socialization in a political system, the direction of causality is open to debate—and it may well run in both ways. In Easton's (1965) terminology, the output of a political system will, through a feedback loop, influence the input that feeds into the system through elections or other forms of political participation. The central argument is that, when analyzing inputs into the system, observing and measuring what people want is a better guide to reality than simply deducting what they want on the basis of assumptions about their rational utility maximization. Second, while the behavioral perspective is a better guide than the median voter theorem, this type of micro-level analysis has its inbuilt limitations. For instance, limited redistribution in Latin America is not due to a lack of public support, but linked to entrenched concentrations of wealth and power. As Streeck (2010) has pointed out, the danger is to simply replace the supposedly "rational" choice of individuals with another simplistic explanation of human choice that follows universal behavioral dispositions and leaves no space for human agency or historical context. Redistribution will not follow automatically where inequality is highest or where it is demanded by voters. However, as countries such as Brazil have shown, democracy at least opens up the space for human agency to affect policy outcomes (Huber *et al*., 2006).

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Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's web-site:

Appendix 1: Alternative Proof for Equation (1′)
Appendix 2: Variable Definitions and Sources
Appendix 3: Basic Descriptive Statistics of the Dataset
Appendix 4: Scatter plots for relative redistribution and two explanatory variables
Appendix Figure 1: Gini for private sector income and relative redistribution in 26 countries and territories
Appendix Figure 2: Support for redistribution and relative redistribution in 22 countries and territories