Income Inequality, Electoral Rules and the Politics of Redistribution*

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Abstract

Why are governments elected by proportional representation more prone to redistribute income than those elected by majoritarian rules? We argue that the answers to this question in the existing literature leave something to be desired and propose an alternative theory that focuses on demand for redistribution by voters rather than the strategic behavior of parties or politicians. We argue that middle-income voters will be inclined to ally with low-income voters and support redistributive policies when the distance between the middle and the poor is small and when the distance between the middle and the rich is large. Our empirical results demonstrate that redistribution is associated with dispersion of the upper half of the wage distribution and with compression of the lower half the wage distribution. Moreover, we find that the direct effects of electoral rules on redistribution diminish significantly when we take the structure of wage inequality into account. We attribute the latter result to the fact that centralized wage bargaining in PR countries compresses the lower half of the wage distribution more than it compresses the upper half of the distribution.

The recent growth of empirical literature on the politics of inequality in advanced capitalist societies is impressive. We now have a large number of studies that investigate the relationship between the distribution of market income and the degree of redistribution through taxes and transfers across countries and over time (e.g., Milanovic 2000, Kenworthy and Pontusson 2005, Mahler and Jesuit 2009). More recently, comparative political economists have begun to tackle the question of how inequality affects the policy preferences of voters and partisan politics (e.g., Pontusson and Rueda 2008, Finseeras 2009). Informed by the theoretical model typically attributed to Meltzer and Richard (1980) and by the alternative model proposed bv Moene and Wallerstein (2001), this literature essentially seeks to establish whether or how (or under what conditions) the *level of inequality* matters to redistributive politics. Simply put, the literature asks, does rising inequality generate more (or less) redistribution?

The basic purpose of this paper is to make the case that we ought to pay more attention to the *structure of inequality*. As suggested some time ago by Kristov, Lindert, and McClelland (1992), there are good reasons to suppose that dispersion in the upper half of the income distribution has different political implications than dispersion in the lower half of the distribution. The alternative perspective that we put forth here boils down to the following proposition: voters in the middle of the income distribution will be inclined to ally with low-income voters and support redistributive policies when the distance between the middle and the poor is small and when the distance between the middle and the rich is large.

By taking into account the structure of inequality, our paper seeks to shed new light on another question that has animated recent literature on the political economy of redistribution, namely, why it is that countries with proportional representation (PR) are typically characterized by more redistributive tax and spending policies than countries with majoritarian electoral rules.[1] Persson and Tabellini (2000, 2003) argue that electoral rules affect the types of spending incumbent politicians choose. While majoritarian rules favor geographically targeted spending, PR favors more broad-based or universalistic spending programs. In a somewhat different vein, Persson, Roland and Tabellini (2007) propose a model in which the effect of PR on government spending hinges on the greater probability of a coalition government under PR rules. Taken together, these arguments provide a plausible account of why PR

1

countries not only devote more resources to social programs than majoritarian countries, but also engage in more redistributive forms of social spending.

In the Persson-Tabellini framework, electoral rules affect the behavior of political parties of all stripes. By contrast, the explanation for the empirical association between PR and redistribution proposed by Iversen and Soskice (2006) proceeds from the observation that since 1945 government participation by Left parties has been much more common in PR countries than in majoritarian ones. Iversen and Soskice develop a formal model in which uncertainty leads the median voter to favor Center-Right parties under majoritarian rules while centrist parties prefer to ally with Left parties under PR. Similarly, Ticchi and Vindigni (forthcoming) conclude that "consensual democracies should be expected to be ruled relatively often by center-left coalitions, more willing to tax and redistribute income, while the more fiscally conservative right should have an advantage in majoritarian countries" (3).

Sympathetic to the idea that partisanship matters, we begin our empirical analysis by replicating Iversen and Soskice's analysis of the determinants of redistribution with updated and corrected data. Going beyond Iversen and Soskice's own analysis, we also interact government partisanship with electoral rules. The results of this exercise call into question Iversen and Soskice's (as well as Ticchi and Vindigni's) explanation of why PR countries tend to redistribute more than majoritarian ones.[2] Like Iversen and Soskice, we find that Left participation in government is associated with more redistribution over the period 1967-97. When we interact partisanship with a dummy for electoral rules, however, this partisan effect turns out to hold only for majoritarian countries. The partisan effect for majoritarian countries diminishes and we still fail to find any partisan effects when we add observations from 1998-2004. In the absence of partisan effects in PR countries, it is difficult to sustain the claim that the higher incidence of Left participation in government explains why PR countries engage in more redistribution.

To clarify, we do not deny that Center-Left governments tend to pursue more redistribution in PR countries than do Center-Left governments in majoritarian countries. Our point is simply that this observation also holds if we compare the policies of Center-Right governments in PR countries with those of Center-Right governments in majoritarian countries. Consistent with the Persson-Tabellini line of

argument, our analysis suggests that the association between PR and redistribution has to do with the center of political gravity rather than the partisan composition of government.

The Persson-Tabellini framework revolves around the strategic behavior of parties. By contrast, our alternative account of why Center-Right as well as Center-Left parties are more supportive of redistribution in PR countries proceeds from the observation that voters in the middle of the political spectrum – including the median voter – are more supportive of redistribution in these countries. As we show, the structure of wage inequality in PR countries is also distinct from that of majoritarian countries. The overall distribution tends to be more compressed, but it is first and foremost compression of the bottom half of the distribution that distinguishes PR countries. Our core argument links these observations about median-voter preferences for redistribution and the structure of wage inequality. Our results show that dispersion of the upper half of the wage distribution is associated with more redistribution while dispersion of the lower half is associated with less redistribution, and the direct effects of electoral rules on redistribution diminish when we account for the structure of wage inequality.

We argue that labor-market institutions rather than electoral rules constitute the proximate cause of cross-national differences in the structure of wage inequality. In our view, the fact that wage bargaining tends to be more centralized in PR countries than majoritarian countries needs to be taken into account in explaining the empirical association between PR and redistribution. Now, it may well be the case that political dynamics associated with PR have contributed to the emergence and maintenance of more centralized wage-bargaining arrangements in these countries. Our goal here is not to argue that electoral rules are altogether irrelevant to redistributive politics, but rather to identify, theoretically and empirically, the structure of wage inequality as a proximate determinant of redistribution.

Our paper is organized into two parts. In the first part, we document the empirical association between PR and redistribution, review existing explanations of this association, and develop our argument about the effects of the structure of income inequality. In the second part, we analyze the determinants of redistribution using several empirical specifications. As the preceding remarks make clear, the progression of our theoretical discussion partly depends on the results of our empirical analysis.

Although the analysis has yet to be presented, we will reference these results in the first part of the paper.

Part I: Motivation and Theory

We begin by presenting some descriptive data in support of the generalization that countries with PR tend to have larger and more redistributive welfare states than countries with majoritarian electoral rules.[3] We then review the arguments advanced by Persson and Tabellini on the one hand, and Iversen and Soskice on the other. Though these authors differ with respect to the role of government partisanship, they share the assumption that voter preferences for redistribution do not vary systematically between PR and majoritarian countries.[4] By contrast, our own approach to explaining the association between PR and redistribution proceeds from the observation that middle-income voters in PR countries tend to be more supportive of redistributive policies than middle-income voters in majoritarian countries.

Descriptive Data

The data presented in Table 1 encompass thirteen OECD countries for which we have comparable measures of income redistribution from the Luxembourg Income Study (LIS). (Our coding of countries as majoritarian or PR is identical to that of Iversen and Soskice as well as Persson and Tabellini). While the first column presents figures for total government spending on social programs (expressed as a percentage of GDP) for 1990, the second column shows the percentage change in Gini coefficients that we observe as we move from gross market income (household income before taxes and transfers) to disposable income (household income after taxes and transfers) for 1990 or years as close as possible to 1990.[5]

[Table 1 here]

It should be noted that the figures in the second column of Table 1 pertain to the distribution of income among working-age households, defined here (for pragmatic reasons) as households headed by individuals between the ages of 25 and 59.[6] In restricting our analysis to redistribution among working-

age households, we follow much of the recent literature on the politics of redistribution (e.g., Bradley et al. 2003; Iversen and Soskice 2006; Kenworthy and Pontusson 2005; Milanovic 2000). The standard justification for this restriction is that generous public pensions reduce the incentive for individuals to accumulate savings. The more generous are public pensions, the less pre-transfer income retirees tend to have. Studies of redistribution that include the retired population yield very high levels of market inequality and, in a sense, exaggerate the redistributive effects of public spending in countries with generous public pension systems.[7]

In the spending data presented in Table 1, France stands out as a prominent outlier among the majoritarian countries, and Switzerland as an equally notable outlier among the PR countries. Setting these exceptional cases aside, we observe a perfect correspondence between electoral rules and the size of the welfare state: every one of the remaining majoritarian countries spent less than 20 percent of their GDP on social programs while every one of the remaining PR countries spent more than 22 percent of their GDP on social programs in 1990.[8] Average spending in the latter (seven) countries was more than ten percentage points higher than average spending in the former (four) countries.

Turning to the redistributive effects of taxes and income transfers, France and Switzerland again represent prominent outliers in their respective groups. With the Canadian welfare state being more redistributive than we would expect based on spending levels, the contrast between majoritarian and PR countries may be less obvious with respect to redistribution than with respect to social spending. Still, PR countries hold the top five positions when countries are ranked by this redistribution among working-age households, and the spending and redistribution data presented in Table 1 are in fact closely correlated (r=0.785). Even with Switzerland included, average redistribution in PR countries was more than seven percentage points higher than the corresponding figure for majoritarian countries in the early 1990s.[9] In view of this evidence, it is hardly surprising that a number of scholars have recently asked what it is about PR that favors high levels of social spending and redistribution.

Persson and Tabellini

It is quite commonplace to argue that majoritarian electoral rules favor geographically targeted spending while PR favors more broad-based or, in other words, universalistic spending programs. Persson and Tabellini (2000, 2003) formalize the implications of this argument, which also plays a prominent role in discussions of the association between PR and redistributive social spending (cf. Alesina and Glaeser 2004). As Persson and Tabellini emphasize, the logic of majoritarian electoral systems is that parties win elections by winning a majority of electoral districts rather than a majority of votes in the electorate as a whole. This creates a powerful incentive for politicians to target spending geographically. If universalistic spending is more redistributive than geographically targeted spending, as Persson and Tabellini assume, different electoral incentives might thus serve to explain why government spending tends to be more redistributive in PR systems than in majoritarian ones.

An obvious limitation of Persson and Tabellini's original model is that it takes the party system as fixed. In effect, the model assumes a two-party system and then compares party strategies and policy outcomes under different electoral rules. This setup is problematic since countries with PR almost always have multiparty systems. Recognizing this problem, Persson, Roland and Tabellini (2007) develop a model in which the effect of PR on government spending hinges on the greater probability of coalition governments under PR. In this model, each party in the governing coalition has an incentive to reward its core constituency with spending financed by taxes levied on all voters, for the electoral losses associated with higher taxes are shared by all members of the coalition.[10]

While the original Persson-Tabellini model pertains to the allocation of government spending and does not explain why spending levels tend to be higher under PR, the Persson-Roland-Tabellini model focuses on spending levels and does not make any strong predictions about the extent to which government spending is redistributive. Taken together, the two models provide a plausible explanation for why we observe both higher levels of spending and higher levels of redistribution in PR countries than in majoritarian countries. For our present purposes, a noteworthy feature of the arguments advanced by Persson and Tabellini is that they do not involve partisan differences over redistributive policy. In both

6

models, parties of the Left and the Right alike will be more inclined to spend and redistribute under PR. To be clear, Persson and Tabellini do not necessarily deny that parties of the Left and the Right differ with respect to redistribution; the point is simply that they do not conceive the effects of electoral rules as operating through partisanship.

Iversen and Soskice

As already noted, Iversen and Soskice (2006) begin from the observation that Center-Left government has been much more common in PR countries than in majoritarian ones. Excluding pure centrist governments, these authors calculate that over the period 1945-98 Center-Right governments account for 75 percent of all governments in majoritarian countries, but only 26 percent of all governments in PR countries (166). For Iversen and Soskice, in contrast to Persson and Tabellini, explaining why PR favors Left participation in government is the key to understanding the empirical association between PR and redistribution.

The formal model developed by Iversen and Soskice assumes that the electorate is equally divided among three classes: low-income (*L*), middle-income (*M*) and high-income voters (*H*). (Following Iversen and Soskice's notation, we here use italics to indicate classes and bold italics to indicate parties). Iversen and Soskice further assume that any redistribution undertaken by the government must be non-regressive: i.e., *M* cannot gain more than *L*, and *H* cannot gain more than *M*. This assumption rules out an *HM* coalition to "soak the poor," as well as a coalition of "the ends against the middle" (*HL* against *M*).[11]

Under majoritarian rules, there will be two parties, one Center-Left and one Center-Right. The former has its core base of support in *L*, whose first preference is a policy that redistributes from *H* and *M* to *L*. The latter has its core base of support in *H*, whose first preference is zero redistribution. Both parties must appeal to *M* in order to win elections. Since any redistribution from *H* to *M* will also benefit *L*, the **LM** party should always be able to offer *M* a better deal than the **HM** party, without losing the support of its core voters. However, there is always a possibility that parties, once elected, will revert to

the policy preferences of their core supporters, and *M* voters must take this possibility into account. Faced with a choice between the policies of a pure *L* party and a pure *H* party, *M* prefers the latter. In other words, *M* prefers an *LM* policy over an *H* or *HM* policy, but *M* prefers an *H* policy over an *L* policy. So long as parties cannot credibly commit to their election platforms, this situation favors Center-Right government.

Under PR, on the other hand, there will be a third party, with *M* as its core base of support. With each of the three parties representing the policy preferences of its core constituency, the problem of parties making credible commitments to voters no longer exists. After the election, the *M* party chooses whether to form a coalition with *L* or *H*. Since *M* prefers an *LM* policy over an *HM* policy, Center-Left government is more likely than Center-Right government under PR.

According to Iversen and Soskice (2006), their model implies that "center-left governments will always redistribute more to the poor under PR than under majoritarian rules" (175). This in turn would seem to imply that we should observe larger partisan effects (i.e., that the policy outcomes associated with a switch from Center-Right to Center-Left government should be larger) under PR than under majoritarian rules. Though Iversen and Soskice do not fully spell this out, their rationale appears to be as follows. On the one hand, Left parties can only win elections under majoritarian rules when they are firmly committed to the median-voter platform. As a result, the only cases of Left government that we observe under majoritarian rules are cases of moderate Left government. On the other hand, the *LM* coalitions that typically prevail under PR pursue policies that represent the Rubinstein bargaining outcome: i.e., the midpoint between the preferences of *L* and *M*. In other words, Center-Left governments will deviate from the median-voter platform under PR but not under majoritarian rules.

Following Iversen and Soskice's theoretical setup closely, Ansell (2008) argues instead that we should expect partisan differences over redistributive policy to be less pronounced under PR than under majoritarian rules. In Ansell's formulation, PR increases the bargaining power of *M* because *M* counts for one half of the post-election governing coalition. Under majoritarian rules, by contrast, "the two-party system squeezes the middle class into only a third of either of the two parties" (191). In a slightly

different vein, it also seems plausible to suppose that centrist parties with the capacity to monitor and sanction their coalition partners represent a more effective mechanism for securing congruence between government policy and median-voter preferences than the convergence logic of two-party competition under majoritarian rules (cf. Huber and Powell 1994; Powell 2000, 2006).

Our empirical analysis pursues the question of whether and how electoral rules alter the effects of government partisanship on redistribution by interacting partisanship and a dummy variable for PR. As noted earlier, our empirical results show that PR moderates rather than amplifies partisan differences over redistributive policy. Arguably, this finding does not in itself contradict Iversen and Soskice's account of the association between PR and redistribution. Iversen and Soskice well might retort that their argument is not really about the size of partisan effects, but rather about the partisan bias of electoral rules: Center-Right governments will deviate from the median-voter platform under majoritarian rules while Center-Left governments will deviate from the median-voter platform under PR. Still, our empirical analysis poses a significant problem for Iversen and Soskice, for we never obtain any significant partisan effects on redistribution for PR countries. Again, it is untenable to argue that the greater incidence of Left participation in government explains why PR countries redistribute more than majoritarian ones in the absence of any evidence that that partisan composition of government matters to redistributive policy in PR countries.

Our alternative account

Our empirical analysis suggests that the association between PR and redistribution has more to do with differences in the center of political gravity between PR and majoritarian countries than with differences in the partisan composition of governments. We are back, then, to Persson and Tabellini's question: why is it that most (if not all) parties favor more redistribution under PR than under majoritarian rules? As we have seen, Persson and Tabellini's answer has to do with the way electoral rules alter the strategic calculations of parties. The alternative account we wish to put forth proceeds from the observation that the median voter in PR countries wants more redistribution than the median voter in

majoritarian countries. Building on the model of redistributive spending proposed by Kristov, Lindert and McClelland (1992), we argue that differences in voter preferences result, at least in part, from differences in the structure of income inequality or, more specifically, the structure of wage inequality. We argue further that differences in the structure of wage inequality can largely be attributed to differences in labor-market institutions, which coincide with the distinction between PR and majoritarianism.

Table 2 presents preliminary, descriptive evidence on public support for redistribution in some of the countries included in our empirical analysis. This evidence is based on surveys conducted between 1985 and 1992 by the International Social Survey Program.[12] For each country, the table shows the distribution of responses to the statement that "it is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes."[13] The differences between PR and majoritarian countries are quite striking. Setting Switzerland aside, a clear majority of survey respondents in each of the remaining PR countries express support for income redistribution. This is also true for the UK, but in the remaining countries with majoritarian rules (Australia, Canada and the US) those who do not agree with the proposition that it is the responsibility of government to redistribute from the rich to the poor constitute the majority.

[Table 2 here]

Why do voter preferences for redistribution, in particular median-voter preferences for redistribution, tend to diverge in PR and majoritarian countries? One possible answer is that voter preferences are a cumulative expression of how parties seek to mobilize voters and what they do in office. In contrast to this top-down approach to preference formation, our bottom-up approach treats voter preferences as an expression of the distribution of income. Again, our argument on this score builds on Kristov, Lindert and McClelland (1992) and focuses on the preferences of middle-income voters. We assume that the median voter belongs to this group.

The Kristov-Lindert-McClelland model of redistributive politics dovetails nicely with Iversen and Soskice's model in that the electorate is divided into three income groups of more or less equal size. As

in the majoritarian half of the Iversen-Soskice model, the middle-income group (M) determines

government policy, but in this model M's preferences for redistribution vary depending on the structure of

the income distribution. If the distance to the poor (L) is small, the median voter sympathizes with the

poor or, alternatively, includes the possibility of becoming poor into her cost-benefit calculus. If the

distance to the rich (H) is small, the median voter leans against redistribution for similar reasons. Like

Kristov, Lindert and McClelland, we deliberately equivocate on the extent to which "social affinity" boils

down to "self-insurance."

The micro-foundations involved here need to be developed further. For now, let us just make a

couple of points to clarify where we think that this will take us. First, with regard to self-interest, the

premise is that the median voter does not simply calculate whether she gains or loses from redistributive

policy in the short term. Her policy preferences are also influenced by some notion (however imperfect)

of her prospects of moving into income brackets where redistributive policy will entail significantly larger

income gains or losses.[14] Such mobility is greater when the distance between income deciles is smaller.

Secondly, "sympathy with the poor" (or the rich) is not the same thing as pure altruism. Under pure

altruism, sympathy for the poor should increase with the distance between the income of the poor and the

median income. Rather, we have in mind a form of altruism that is bounded by group identities. We

suppose that middle-income citizens sympathize with the poor (rich) so long as they perceive the poor

(rich) as living lives similar to their own.

Like other recent empirical literature on the determinants of redistribution, Iversen and Soskice

(2006) include a measure of "market inequality" as a right-hand-side variable in their statistical model.

The obvious implication of the perspective we advance here is that we need to know more about the

distribution of income (or wages) than any single measure of this kind – be it the 90-10 wage ratio or Gini

coefficient – tells us. By the logic sketched above, the political consequences of income dispersion in the

lower half of the distribution are likely to be very different from the political consequences of income

dispersion in the upper half of the distribution.[15] Specifically, we expect the combination of small

income differences in the lower half of the distribution and large income differences in the upper half to

provide the most favorable conditions for redistribution.

The relevance of this hypothesis for the question of why PR countries redistribute more than majoritarian one hinges on the fact that the wage structure of PR countries tends to be more favorable to redistributive politics than the wage structure of majoritarian countries. Table 3 illustrates this point with 90-50 and 50-10 wage ratios averaged over the country-specific time periods covered by our analysis. In general, the upper half as well as the lower half of the wage distribution tends to be more compressed in countries with PR than in countries with majoritarian electoral rules. More importantly for our purposes, the compression of wages in the lower half of the distribution in PR countries is considerably more pronounced than the compression of wages in the upper half of the distribution. This emerges most clearly in the third column, which reports the ratio of 90-50 ratios to 50-10 ratios. Higher numbers on this measure of right skew (in the statistical sense) mean that the lower half is relatively more compressed than the upper half.

[Table 3 here]

In all the PR countries included in Table 3, the wage distribution is asymmetric in the sense that the bottom half is more compressed than the top half. Setting the French case aside, the countries with majoritarian electoral rules are characterized either by a "symmetrical" wage structure (Australia and the US) or by "reversed asymmetry" (Canada and the UK). In the latter cases, dispersion in the lower half of the distribution is actually greater than dispersion in the upper half. The French case is exceptional in that the 90-50 ratio is quite similar to that of other majoritarian countries, while the 50-10 ratio is comparatively low.[16] From our perspective, it should not come as a surprise that France is the majoritarian country with the largest and most redistributive welfare state (cf. Table 1). It is, however, noteworthy that Belgium and the Nordic countries are characterized by greater right skew of their wage structures as well as by more redistributive welfare states than other PR countries. On the other hand, our argument clearly does explain why Switzerland redistributes less than other PR countries.[17]

The obvious question that arises is why the wage structures of PR countries tend to be characterized by more right skew than those of majoritarian countries. It seems clear that this contrast has

little to do with electoral rules, at least not directly. Strong unions and wage-bargaining centralization provide a more plausible explanation. In the analysis reported by Pontusson, Rueda and Way (2002), wage-bargaining centralization is associated with more compressed 90-50 ratios as well as 50-10 ratios, but the effect of centralization on 50-10 ratios is nearly three times as large as the effect on 90-50 ratios. To illustrate this point, the last column of Table 3 reports average centralization scores for the period 1973-93. Again, the French case stands out as exceptional and, in this instance, French exceptionalism surely has to do with minimum-wage legislation (generating low-end compression in a manner akin to bargaining centralization in other countries). Without the French case, the correlation between centralization and right skew is 0.767 (with the French case, it is 0.508).

In short, we believe that the correlation between PR and redistribution is bound up with the correlation between PR and centralized (or coordinated) wage bargaining.[18] We do not mean to imply that the correlation between PR and centralized wage bargaining is accidental. As Iversen and Soskice (2009) and others (e.g., Gourevitch 2003) suggest, the consensual decision-making generated by PR may well have facilitated the institutionalization of coordinated wage bargaining by precluding radical shifts in macroeconomic policy. The origins of electoral rules and labor-market institutions lie well beyond the scope of this paper. Our goal here is not to contest any and all arguments that assign causal weight to electoral rules. Rather, we seek to demonstrate that the structure of wage inequality shapes the politics of redistribution and that its influence helps explain the empirical association between PR and redistribution. To anticipate, the direct effects of electoral rules diminish when we take the structure of wage inequality into account.

Part II: Empirical Analysis

Our empirical analysis involves two steps. First, we present our empirical critique of Iversen and Soskice's (2006) argument about government partisanship as the crucial mechanism through which PR affects redistribution. Using the same statistical model as Iversen and Soskice, and data from the same

time period, we interact partisanship with electoral rules. Adding more recent observations, we also replicate Iversen and Soskice's analysis for the entire period 1967-2004. Secondly, we test our own argument about the structure of inequality by estimating a series of models that include both 90-50 and 50-10 wage ratios, using our complete dataset. In this second step, we employ not only Iversen and Soskice's error-correction model but also the kind of statistical specification that is employed by Persson, Roland and Tabellini (2007). We begin by briefly specifying the statistical models and data that we use in both steps of our analysis.

Statistical models

Iversen and Soskice estimate an error-correction model that treats the level of redistribution today ($R_{i,t}$) as a function of previous levels of redistribution ($R_{i,t-1}$) and policies ($P_{i,t}$) that cause redistribution to deviate from the status quo. The model incorporates a scalar ρ, which captures the speed with which levels of redistribution respond to changes in government policy:

$$R_{i,t} = \rho\left[\alpha + \beta P_{i,t} - R_{i,t-1}\right] + R_{i,t-1} + u_{i,t} \tag{1}$$

Given that available data on redistribution are unequally spaced, while values for the independent variables are annual, Iversen and Soskice modify this basic model by replacing the lagged values of redistribution until reaching the previous observation of redistribution. By this procedure, we get:

$$R_{i,t} = \rho\alpha \sum_{s=0}^{N}(1-\rho)^s + \rho\beta \sum_{s=0}^{N}(1-\rho)^s \rho P_{i,t-s} + (1-\rho)^{N+1}R_{i,t-N+1} + \sum_{s=0}^{N}(1-\rho)^s \rho u_{i,t-s} \tag{2}$$

$$R_{i,t} - (1-\rho)^{N+1}R_{i,t-N+1} = \rho\alpha \sum_{s=0}^{N}(1-\rho)^s + \rho\beta \sum_{s=0}^{N}(1-\rho)^s P_{i,t-s} + \sum_{s=0}^{N}(1-\rho)^s u_{i,t-s} \tag{3}$$

The right-hand side of the model thus includes a constant followed by the cumulative effect of partisan government policies over the period N between the current observation of redistribution and the previous one (s represents the lags in years). The other independent variables are similarly calculated in terms of cumulative effects. Thus the estimated model takes into account the complete time-series of annual data even though observations of the dependent variable are not available annually. In other words, each observation of redistribution is thought to be shaped by the cumulative effect of independent variables in

all the years since the previous observation of redistribution. Like Iversen and Soskice, we estimate this

model with different values of ρ and present the results for the version that explains the most variance.

If we assume that the error term in equation (1) is not serially correlated, it follows that the errors

in equations (2) and (3) are also not serially correlated. However, since the error terms in (2) and (3)

depend on *N*, the errors must be heteroskedastic. Thus the model Iversen and Soskice (2006) estimate

adjusts the standard errors for heteroskedasticity but not for contemporaneous correlation of errors.[19] We

follow this specification, but note that our substantive results are unaffected when we also adjust for

contemporaneous correlation.

We also present some results based on statistical specifications that follow Persson, Roland and

Tabellini (2007), who employ a more straightforward panel specification in which all the independent

variables are averaged across the period since the previous observation of redistribution. Thus if two

observations of redistribution are five years apart (*t* and *t-5*), each independent variable is the average

value for the five intervening years (*t-5* through *t-1*). Our models based on this specification also include

the lagged dependent variable to account for potential serial correlation, and the number of years since the

previous observation of redistribution, to account for potential measurement errors associated with the

different lengths of periods over which the independent variables are averaged.[20] Thus, using our prior

notation, the basic model can be written as:

$$R_{i,t} = \alpha + \beta \frac{\sum_{s=0}^{N} P_{i,t-s}}{N} + \gamma R_{i,t-1} + \delta N + u_{i,t} \tag{4}$$

As in our error-correction models, we again account for heteroskedasticity in the standard errors.[21]

Variables and data

The dependent variable in all of our models is the measure of redistribution reported in Table 1:

the percentage change in Gini coefficients for working-age households that we observe as we move from

gross market income (household income before taxes and transfers) to disposable income (household

income after taxes and transfers). This is the same dependent variable used in Iversen and Soskice's

(2006) analysis of the determinants of redistribution. However, the dataset used by Iversen and Soskice is

flawed in that the observations of redistribution for Belgium, France and Italy are actually the percentage

change in Gini coefficients from *net* market income to disposable income, while the observations for the

other countries measure the percentage change from *gross* market income to disposable income. In other

words, their values of redistribution for these three countries measure the redistributive effects of income

transfers only, while their values of redistribution for the other 11 countries included in the analysis

measure the combined effect of taxes and transfers. [22] Relying primarily on data generated by Lane

Kenworthy, our dataset includes observations of total redistribution for Belgium and France, but Italy

drops out of our analysis for lack of comparable data.[23] Our dataset also covers a longer time period than

Iversen and Soskice's. Altogether, we have 75 observations of redistribution for 13 countries over the

period 1967-2004 (whereas Iversen and Soskice have 61 observations for 14 countries over the period

1967-97).[24]

As the preceding discussion indicates, we are interested in the effects of electoral systems and

government partisanship as well as the structure of inequality. Like Iversen and Soskice (2006) and

Persson, Roland and Tabellini (2007), we use a dummy variable for PR to capture the effects of electoral

rules. This dummy is coded in the conventional manner (see Table 1 above). Following Persson, Roland

and Tabellini (2007), some of our models include district magnitude as an additional indicator of electoral

system. As measured by these authors, district magnitude is the average number of legislators elected

from each district divided by the number of seats in the lower house of parliament.[25]

Like Iversen and Soskice (2006), we use Cusack's "cabinet center of gravity" (CABCOG) index

as our measure of government partisanship. This index relies on the average of three expert surveys to

classify parties on the Left-Right continuum and weights party scores by the share of cabinet portfolios

held by different parties (Cusack and Engelhardt 2002). The index is here standardized to vary between 0

and 1, with higher values representing more Right-leaning governments.[26]

The structure of inequality is our primary theoretical concern. To test our core argument, we

need to include separate measures of the income dispersion in the upper and lower halves of the

distribution in the same regression model. The OECD database on relative earnings among full-time employees provides the most readily available source of such measures. [27] Our theory suggests that the 90-50 wage ratio is positively associated with redistribution and the 50-10 wage ratio negatively associated with redistribution.

Following Iversen and Soskice (2006), our models include a series of control variables, taking into account determinants of redistribution suggested by prior studies.[28] Power resources theory predicts that unionization will generate pressure on government to redistribute and will also be associated with more Left participation in government (e.g., Korpi 2006), so we include a measure of union density. On the assumption that low-income earners are less likely to vote, higher turnout rates should be associated with higher levels of redistribution (Lijphart 1997), so we also control for voter turnout. We further control for unemployment since an increase in unemployment will more or less automatically lead to more redistribution so long as unemployment insurance generosity remains unchanged. We control for real per capita GDP since, by Wagner's Law, demand for redistribution is income elastic and should therefore increase as the economy grows. And we control for constitutional veto points, as measured by Huber, Ragin and Stephens (1993), on the assumption that veto points might restrict the ability of Left parties to adopt and implement redistributive policies.

Finally, we control for female labor-force participation. According to Iversen and Soskice (2006), "women's participation in the labor market is likely to affect redistributive spending because it entitles some women to benefits… for which they would otherwise not be eligible" (174). A second motivation for including female labor-force participation deserves to be noted: across the OECD countries, women are more likely to be part-time workers than men and the hourly wages of part-time workers tend to be lower than those of full-time workers. As the OECD data on relative wages pertain to full-time employees, female labor-force participation is likely to pick up effects of inequality that are not captured by our measures of wage inequality.

Step 1: Partisan effects reconsidered

The first column in Table 4 reproduces the results Iversen and Soskice (2006) report. The second column (Model 1) shows the results we obtain when we replicate their statistical model with our data for the period 1967-97. In terms of the data used to estimate these two models, the main differences are (again) that we use different observations of redistribution for Belgium and France and that we do not include Italy. In general, our results are quite similar to Iversen and Soskice's. With the exception of turnout, which is entirely insignificant in both models, the signs of the coefficients are always the same. Like Iversen and Soskice, we obtain statistically significant coefficients (with the expected signs) for government partisanship, electoral rules, unemployment, unionization and constitutional veto points. With respect to statistical significance, there is one discrepancy between our results and Iversen and Soskice's. While they obtain a marginally significance effect of female labor-force participation, our coefficient for this variable is smaller and not even close to significant. Our estimate of the effect of wage inequality (measured by the 90-50 ratio) is smaller than Iversen and Soskice's, but, like theirs, fails to reach statistical significance.

[Table 4 here]

Government partisanship is the variable of primary interest here. When our analysis is restricted to the same time period as Iversen and Soskice's analysis, the coefficient we obtain for this variable is noticeably larger than the coefficient they report. In both cases, the coefficient is significant at the 99% confidence level. Our Model 1 thus confirms the plausibility to Iversen and Soskice's claim that the higher incidence of Left participation in government explains why we observe higher levels of redistribution in PR countries than in majoritarian ones. It should be noted, though, that Iversen and Soskice's own analysis and our replication both show that PR remains strongly associated with redistribution even when we control for the effects of government partisanship. At best, then, Iversen and Soskice's argument about the partisan biases of electoral rules constitutes a partial explanation of why PR countries tend to redistribute more than majoritarian ones.

Our second model in Table 4 replicates Iversen and Soskice's analysis with our complete dataset.

Relative to Model 1, this means that we add 16 observations from the period 1998-2004. With the addition of recent data, the effects of wage inequality become more pronounced and voter turnout emerges as a statistically significant (correctly signed) predictor of redistribution. However, the most noteworthy consequence of incorporating data from 1998-2004 is that the effects of government partisanship seem to disappear entirely. Relative to Model 1, the coefficient for government partisanship is much smaller while the standard error is more or less the same.

Consistent with arguments and evidence presented in Kwon and Pontusson (2008), the sharp decline of partisan effects that we observe as we move from Model 1 to Model 2 suggests that governments of the Center-Left and the Center-Right have converged with respect to redistributive policy from the mid-1990s onwards. Since the level differences in redistribution that we observe across countries are the cumulative effects of many years of redistributive politics, the decline of partisan effects does not necessarily contradict Iversen and Soskice's argument that the partisan composition of government is the key to the question of why some countries redistribute more than others. But it certainly highlights the need to qualify the argument – perhaps by incorporating the idea of cycles of partisan polarization and convergence.

Models 3 and 4 in Table 4 explore how electoral rules condition the effects of government partisanship by interacting these two variables. As noted above, Iversen and Soskice (2006) suggest that Center-Left governments under majoritarian rules will stick closely to the median-voter platform while Center-Left governments under PR will pursue more redistributive policies than the median voter prefers. They do not explicitly spell out how electoral rules affect the policies of Center-Right governments relative to the median-voter platform, but the implication of their model seems to be that we should observe larger partisan effects under PR than under majoritarian rules. In any case, their overall explanation of the association between PR and redistribution clearly presupposes robust partisan effects in PR countries.

While Model 3 (like Model 1) is based on data for 1967-97 only, Model 4 (like Model 2) is based on our complete dataset. In both models, the coefficient for the interaction term has a positive sign.

Since the coefficient for partisanship is negative (more rightist government being associated with less redistribution), this means that PR reduces the effect of government partisanship. To clarify the meaning of our interaction results, Table 5 reports the conditional effects of government partisanship based on Models 3 and 4. The results we obtain are quite troubling for Iversen and Soskice's theory: regardless of whether we restrict the analysis to the period 1967-97, we never obtain any significant effects of government partisanship in PR countries. By contrast, we observe a large partisan effect in majoritarian countries for the period 1967-97. This effect diminishes when we add more recent observations, but it remains significant at the 90% level in Model 4.

[Table 5 here]

Our interaction results are similar to the results Ansell (2006: Ch. 4) obtains in his analysis of public education spending in 24 OECD countries over the period 1962-2002. Like him, we interpret these results to mean that the need to form government coalitions (or at least legislative coalitions) with centrist parties has the effect of moderating the policies of mainstream parties of the Left and the Right in PR countries. As Powell (2000) might put it, the coalition politics characteristic of PR would appear to be more effective than the majoritarian logic of SMD systems in making the major parties responsive to the preferences of the median voter.

To summarize, the results presented in Table 4 indicate that the partisan effects identified by Iversen and Soskice are quite sensitive to the time period covered by their analysis, but the more important finding is that PR moderates partisan differences over redistributive policy. Not only are partisan effects more pronounced in majoritarian countries, they are absent in PR countries. In light of these results, Iversen and Soskice's claim that the higher incidence of Left participation in government explains why PR countries engage in more redistribution seems untenable.

Step 2: The structure of inequality

We now turn to testing our hypotheses concerning the effects of the structure of inequality for the politics of redistribution. To reiterate, these hypotheses pertain to the preferences of the median voter and

the center of political gravity. The first hypothesis states that Center-Left and Center-Right governments alike will pursue less redistributive policies when the distance between the bottom and the middle of the income distribution is large. The second hypothesis states that Center-Left and Center-Right governments alike will pursue more redistributive policies when the distance between the middle and the top of the distribution is large. Needless to say perhaps, the point here is not to deny that there are partisan differences over redistributive policy. Our claim is simply that the two inequality variables move all (mainstream) parties in the same direction, more or less to the same extent.

In testing these hypotheses, we set aside the question of how electoral rules condition partisan effects and estimate the new models with our complete dataset. We begin by estimating these models in the error-correction setup employed by Iversen and Soskice. The baseline here is Model 2 from Table 4. To facilitate comparison, we include the results of this model in Table 6 and then present the results we obtain when we add the 50-10 wage ratio (Model 5). Consistent with our expectations, the 50-10 ratio is strongly and negatively associated with redistribution; that is, dispersion in the bottom half of the wage distribution is associated with less redistribution. At the same time, the coefficient for the 90-50 ratio remains positive and strongly significant. (Both coefficients clear the 99% significance threshold).

[Table 6 here]

It is noteworthy that the effects of voter turnout disappear when we add the 50-10 wage ratio to our model, confirming the intuition that countries with more dispersion in the bottom half of the wage distribution also tend to be characterized by lower voter turnout and less redistribution. More importantly for our present purposes, introducing the 50-10 wage ratio into the model diminishes the effect of PR considerably. The coefficient for the PR dummy is halved and its statistical significance becomes borderline as we move from Model 2 to Model 5. This finding lends at least some plausibility to our claim that differences in wage structure between majoritarian and PR countries explain why the latter engage in more redistribution. Following Persson, Roland and Tabellini (2007), we introduce district magnitude as an additional variable in Model 6. This variable captures the basic distinction between majoritarian and PR electoral systems, but also takes account of cross-national differences among

countries with one or the other electoral formula. As shown in Table 6, district magnitude turns out to have a strong positive association with redistribution and its inclusion entirely eliminates the effect of the PR dummy. The effects of the 90-50 and 50-10 wage ratios are essentially unchanged, still highly significant in Model 6, but these results clearly suggest that electoral rules affect the politics of redistribution independently of the structure of inequality.[29]

Table 7 reports the results of replicating these analyses within the framework of a panel-data specification similar to that of Persson, Roland and Tabellini (2007). Again, the dependent variable here is the level of redistribution in a given year. The models include the lagged dependent variable, and the other independent variables are averages for the time period between the year in question and the previous observation of redistribution. Model 7 is the equivalent of our Model 2, the baseline in Table 6. As in the error-correction setup, we do not observe any significant effect of partisanship when we estimate this model with the complete dataset (covering the entire period 1967-2004). Consistent with the arguments advanced by Persson and Tabellini, the PR dummy has a positive and significant effect. And consistent with the standard argument that inequality increases demand for redistribution, the 90-50 wage ratio also has a positive and significant effect. In Model 8, we add the 50-10 wage ratio. Consistent with our hypotheses, the 90-50 ratio remains significantly and positively associated with redistribution, while the 50-10 ratio is significantly and negatively associated with it. As in the error-correction framework, the coefficient for the PR dummy remains positive and significant, but it becomes smaller when we add the 50-10 wage ratio. Finally, Model 9 again introduces the district magnitude variable, which again proves to be significantly associated with redistribution, effectively "trumping" the PR dummy.

[Table 7 here]

As a test of the robustness of our findings, we reanalyzed our models after eliminating observations that appeared to be outliers (results not shown). We identified outliers as those with standardized residuals that were more than 1.75 standard deviations away from the mean residual. Eliminating these observations from our models, however, had no affect on our substantive results.

In sum, using both an error-correction specification similar to that of Iversen and Soskice (2006)

and a levels specification similar to that of Persson, Roland and Tabellini (2007), our results confirm that the structure of inequality matters to the politics of redistribution. The 50-10 ratio is strongly and negatively associated with redistribution; that is, dispersion in the bottom half of the wage distribution is associated with less redistribution. Conversely, the 90-50 wage ratio is strongly and positively associated with redistribution; that is, dispersion in the upper half of the wage distribution is associated with more redistribution. Taking both of these effects into account appears to diminish the association between PR and redistribution, but we still observe an electoral-system effect, independently of the structure of inequality. District magnitude evidently captures this effect better than the simple distinction between PR and majoritarian electoral formulas.

Conclusion

Using corrected and updated data similar to that of Iversen and Soskice (2006), we fail to observe any significant effects of government partisanship in countries with PR. In majoritarian countries, partisan effects appear to have declined sharply from the mid-1990s onwards, but they remain significant for the entire period 1967-2004. Our findings regarding the differential effects of partisanship under PR and majoritarian rules appear to run counter to Iversen and Soskice's theoretical expectations. More importantly, the absence of partisan effects in PR countries calls into question their claim that the higher incidence of Left government explains why PR countries engage in more redistribution than majoritarian countries.

Our analysis suggests instead that the association between PR and redistribution is, at least partly, attributable to the distinctive wage structure characteristic of most PR countries. Specifically, wages in the lower half of the wage distribution tend to be more compressed in PR countries than in majoritarian countries. Our empirical results are consistent with two propositions suggested by Kristov, Lindert and McClelland (1992): (1) compression of the lower half of the income distribution makes middle-income voters more inclined to ally with low-income voters in support of redistributive policies, and (2)

compression of the upper half of the income distribution makes middle-income voters more inclined to ally with high-income voters in opposition to redistributive policies.

The distinctive wage structure of the PR countries included in our analysis can hardly be construed as a direct result of electoral rules. The fact that these countries also have stronger unions and more centralized wage-bargaining arrangements points to a far more plausible explanation. As noted earlier, we do not wish to contest the proposition that coalitional politics generated by PR may have been an important factor behind the institutionalization of coordinated wage bargaining in these countries. Our disagreements with Persson and Tabellini as well as Iversen and Soskice pertain specifically to the causal mechanisms behind the empirical association between PR and redistribution in the period 1967-2004.

Like much of the comparative political economy literature, the existing literature argues that institutions matter. We agree with this broad claim, but disagree over which institutions matter. We also disagree over how institutions matter. In the Persson-Tabellini framework as well as the Iversen-Soskice framework, institutions alter the strategic behavior of voters and parties with essentially the same preferences. In our framework, by contrast, institutions shape preferences. This claim is quite commonplace among historical institutionalists, but it typically involves a constructivist twist that we eschew. Our claim is that labor-market institutions shape the structure of inequality and thereby alter the "objective" policy preferences of middle-income voters.

Needless to say perhaps, our discussion highlights the difficulty of parsing between the effects of electoral rules and the effects of labor-market institutions given that these two sets of institutional arrangements are closely bundled in the sample of OECD countries. From this perspective, the French case is of particular interest, since it combines majoritarian electoral rules with a structure of wage inequality that resembles that of PR countries with centralized wage bargaining. The fact that the French welfare state is redistributive, at least by the standards of other majoritarian countries, would seem to lend some support to our argument that the structure of wage inequality matters to redistributive politics. On the other hand, the Swiss case represents a troublesome outlier from the perspective of our theory.

Cases of change in electoral rules might also provide an opportunity to parse between bundled

variables. Unfortunately, there are only two cases of such change in OECD countries in the time period covered by our analysis, Italy and New Zealand, and we do not have comparable measures of redistribution for either of these cases. A more fruitful way to extend our discussion might be to explore cases in which wage bargaining became more decentralized in the 1980s and 1990s, with two questions in mind: first, how did decentralization affect the structure of wage inequality? And, secondly, what were the consequences for redistributive politics?

While our analysis suggests that the structure of wage inequality accounts for some of the empirical association between PR and redistribution, let us again point out that an electoral-system effect remains when we control for the structure of wage inequality as well as government partisanship. The argumentation developed by Persson and Tabellini (2000, 2003) and by Persson, Roland and Tabellini (2007) provides a very plausible account of this effect. In the end, our empirical analysis does not disprove their account, but rather shows that the structure of inequality also matters.

In our view, the relevance of the finding that upper-end and lower-end inequality have different political implications goes beyond the question of why PR countries tend to engage in more redistribution than majoritarian countries. We imagine that the argument about the coalitional affinities of middle-income voters suggested by Kristov, Lindert and McClelland (1992) might also serve to advance the literature on inequality and democratization. Crudely put, the standard argument in this literature is that high levels of inequality will make propertied elites more resistant to democratization, because they stand to lose more from the redistributive policies generated by democratic politics under these conditions (Boix 2003; Acemoglu and Robinson 2005).[30] From the perspective we have set out in this paper, this is clearly an argument about upper-end inequality. To the extent that propertied elites rationally anticipate redistributive policies, we might expect inequality at the other end of the income distribution, i.e., the distance between the middle and the poor, to have the effect of rendering propertied elites more willing to accommodate demands for democratization. To be sure, data availability becomes a serious problem for testing this version of the thesis that the structure of inequality matters, but that does not change the theoretical relevance of the argument.

In closing, we wish to make clear that we recognize that a more sophisticated version of the core argument of this paper needs to tackle the issue of racial and ethnic diversity. In the preceding analysis, income differences serve as a proxy for the social distance between poor and middle-income voters on the one hand, the rich and middle-income voters on the other. Yet it seems quite obvious, especially in light of the American experience, that the degree to which middle-income voters feel affinity with the poor partly depends on whether or not the poor belong to the same racial or ethnic group (Alesina and Glaeser 2004; Gilens 2000). Arguably, this holds even if middle-income voters are purely self-interested actors who derive their preferences for redistribution from some calculation that takes into account the probability of becoming poor. For now, suffice it to say that the perspective developed in this paper suggests that what matters to the politics of redistribution is not racial or ethnic fragmentation *per se*, but rather the way that racial or ethnic cleavages map onto the income distribution. More specifically, what matters to the politics of redistribution is the extent to which racial or ethnic minorities are concentrated among the poor or, in some settings, among the rich. Developing quantitative measures of this variable is a challenge we plan to tackle in future work.

Notes

[1] Like the existing literature, we refer to countries with single-member-district (SMD) electoral systems as "majoritarian," even though plurality is the basis for winning individual seats in most of these systems.

[2] Ticchi and Vindigni's (forthcoming) empirical analysis deals with the implications of inequality for the adoption of electoral rules rather than the effects of partisanship on redistribution. As we do not wish to engage with their ambitious effort to "endogenize constitutions," our discussion of the partisanship perspective will focus on Iversen and Soskice (2006). Still, we note that Ticchi and Vidigni's account of the adoption of electoral rules very clearly presupposes partisan effects under PR.

[3] See Persson and Tabellini (2003: Ch. 6) and Verardi (2004) for more systematic evidence in support of this generalization.

[4] In other work (most notably Iversen and Soskice 2001), Iversen and Soskice do argue that voter preferences for social protection vary systematically between coordinated and liberal market economies, a distinction that closely maps onto the distinction between PR and majoritarian countries, but this argument does not figure in their article on the implications of electoral rules for redistributive politics. In any case, our argument is different from theirs in that we link positions in the income distribution to preferences for redistribution while they link skills to preferences for social protection.

[5] The data in Table 1 are centered on 1990 to maximize the number of countries included.

[6] Note also that the measure adjusts for household size in the conventional LIS fashion (household income divided by the square root of the number of household members).

[7] One might object that this is but one instance of "second-order effects" that call into question the premise that the distribution of "market income" is unaffected by government policies (cf. Esping-Andersen and Myles 2007). Suffice it to say that pensions are undoubtedly the most significant instance of second-order effects and also the one that is easiest to set aside.

[8] The same pattern holds for total social spending in 2003, except that the two ranges almost meet, with the top spender among the majoritarian countries (the UK at 20.6 percent) only slightly below the lowest

spender among PR countries (the Netherlands at 20.7 percent). Taking taxation of social benefits and government-mandated private expenditures into account, the UK and the Netherlands switch places in the rank order, but otherwise it remains the case that all PR countries spend more on social programs than majoritarian countries (see OECD 2007).

[9] For eleven countries, we have observations of redistribution for 1999-2000. Switzerland still stands out as the country with the least redistributive government in this period. Leaving the Swiss case aside, redistribution in the remaining (six) PR countries ranges between 27.6 percent (Germany) and 38.8 percent (Denmark). For the (four) remaining majoritarian countries, it ranges between 16.2 percent (US) and 27.3 percent (Australia).

[10] Empirically, Persson, Roland and Tabellini (2007) show that PR has no direct effect on the level of spending once we control for the size of governing coalitions.

[11] By contrast, Ticchi and Vindigni's (forthcoming) otherwise very similar model assumes that spending takes the form of group-specific public goods and that governments can target any combination of two groups.

[12] For some countries, the figures in Table 2 are averages based on as many as four different surveys conducted over this time period; for others, they refer to a single survey. More recent ISSP surveys also include France. Table 2 represents an attempt to maximize country coverage while comparing survey results drawn from the same (relatively short) period of time. We note, however, that more recent surveys reveal similar patterns.

[13] A recent study by Kenworthy and McCall (2008) utilizes this same question as a measure of individual support for redistribution.

[14] According to Milanovic's (2000) analysis of LIS data, taxes and transfers typically reduce the income share of households between the 50th and 60th percentiles, but the losses are quite small by comparison to those of households above the 60th percentile.

[15] To our knowledge, Moene and Wallerstein (2003) is the only recent contribution to the literature on

redistributive politics that tests this hypothesis. With social spending as the dependent variable, they fail to find a significant difference between the effects of 90-50 and 50-10 wage ratios.

[16] It should be noted that for France the OECD data on relative earnings refer to net (after-tax) earnings, while for all other countries these data refer to gross (before-tax) earnings. However, there is no obvious reason why income taxation would generate the right skew we observe in the French data. (France does not have a negative income tax that might raise the earnings of low-paid workers relative to the median wage).

[17] With Switzerland included, the cross-sectional correlation between right skew (Table 3) and redistribution (Table 1) is 0.524; without Switzerland, it is 0.635.

[18] We believe that strong unions also matter, but how centralization and unionization interact is not a question we pursue here. Note that our argument pertains to the effects of centralization for the *structure* rather than the *level* of wage inequality. See Scheve and Stasavage (2008) for a cogent empirical critique of the proposition that wage-bargaining centralization has been a major determinant of levels of wage inequality in OECD countries over the twentieth century.

[19] As Moene and Wallerstein (2003) show, moreover, corrections for contemporaneous correlation in the error term yield biased results in samples, like ours, with few observations over time.

[20] Omitting this variable does not affect our results substantively.

[21] Beck and Katz (2007) show that the maximum-likelihood estimator is more efficient for random coefficient models of time-series-cross-section data than the GLS estimator used here. For the sake of consistency and comparability with the models of Iversen and Soskice as well as Persson and Tabellini, we report the results of our analysis using the same estimator as in our earlier models. However, our results are substantively equivalent when we use the maximum-likelihood estimator. Another methodological concern is the potential for non-stationarity, which could induce spurious correlations. We used an augmented Dickey-Fuller test to look for a trending non-stationary process in our data (Maddala and Shaowen 1999). Five of the independent variables included in our analysis do appear to

trend over time. When we correct for this by smoothing the variables in questions, using a moving-average process with one lag, and then replicate our analysis using the smoothed data, we obtain results that are substantively equivalent.

[22] The dataset used by Iversen and Soskice was put together by Stephens and co-authors for Bradley et al. (2003). Stephens has subsequently generated a corrected 1967-97 dataset, which he has generously shared with us.

[23] Initially put together for Kenworthy and Pontusson (2005) and recently updated, Kenworthy's dataset does not include any observations of gross market income for France and Italy, and only one observation for Belgium (1997). However, a different LIS-based dataset assembled by Mahler and Jesuit (2006) includes four observations of gross market income for France and one additional observation for Belgium. Since the Mahler-Jesuit data are virtually identical to the Kenworthy data when they overlap, we have simply added these observations to our dataset.

[24] As our models include a lagged dependent variable, the *N* of our analysis is 62. See Table A1 for a complete list of country-years included in our analysis.

[25] Like Iversen and Soskice (2006), we also tested our models using Gallagher's (1991) continuous measure of proportionality in place of the dummy variable for electoral system. Doing so does not substantively change our main findings.

[26] Iversen and Soskice (2006) refer to this as an "absolute" measure of government partisanship and also present results with a measure that relates government partisanship to the position of the median legislator on the Left-Right scale. The latter results are very similar to their main results. Note that the partisan effects estimated with Cusack's CABCOG measure are "relative" in the sense that they tell us the distinctiveness of more Right-leaning governments relative to less Right-leaning governments.

[27] There are quite a few missing years in the OECD dataset on wage inequality. We deal with this problem in the same manner as Iversen and Soskice (2006): for missing values between two observations, we interpolate data based on the assumption of linear change; for missing values at the beginning or end

of a time series, we extrapolate the earliest or most recent observation available.

[28] See Table A2 in the Appendix for information on our data sources. Although most of our independent variables are also included in Iversen and Soskice's analysis, we generated our own dataset rather than updating theirs. As far as the values of the independent variables are concerned, however, the discrepancies between the two datasets are very minor.

[29] Note that voter turnout again becomes significant when we introduce district magnitude. Female labor-force participation also turns out to be associated with redistribution in Model 6.

[30] In a similar vein, Ticchi and Vindigni (forthcoming) argue that the adoption of PR is more likely at lower levels of inequality.

References

Acemoglu, Daron and James Robinson. 2005. *Economic Origins of Dictatorship and Democracy*. New York: Cambridge University Press.

Alesina, Alberto, and Edward L. Glaeser. 2004. *Fighting Poverty in the US and Europe: A World of Difference*. New York: Oxford University Press.

Ansell, Ben W. 2008. "From the Ballot to the Blackboard." Unpublished book manuscript.

Armingeon, Klaus; Philipp Leimgruber, Michelle Beyeler, and Sarah Menegale. 2006. "Comparative Political Data Set 1960-2004." Institute of Political Science, University of Berne Working Paper.

Beck, Nathaniel, and Jonathan N. Katz. 2007. "Random Coefficient Models for Time-Series–Cross-Section Data." *Political Analysis* 15 (2): 182-95.

Boix, Carles. 2003. *Democracy and Redistribution*. New York: Cambridge University Press.

Bradley, David, Evelyne Huber, Stephanie Moller, François Nielsen, and John D. Stephens. 2003. "Distribution and Redistribution in Postindustrial Democracies." *World Politics* 55 (2): 193-228.

Cusack, Thomas R., and Lutz Engelhardt. 2002. Parties, Governments and Legislatures Data Set.

Esping-Andersen, Gøsta, and John Myles. 2009. "The Welfare State and Redistribution." In *Handbook on Economic Inequality*, edited by W. Salvedra, B. Nolan and T. Smeeding. New York: Oxford University Press.

Finseeras, Henning. 2009. "Income Inequality and Demand for Redistribution." *Scandinavian Political Studies* 32 (1): 94-119.

Gallagher, Michael. 1991. "Proportionality, Disproportionality and Electoral Systems." *Electoral Studies* 10 (1):33-51.

Gilens, Martin. 2000. *Why Americans Hate Welfare: Race, Media, and the Politics of Antipoverty Policy*. Chicago: The University of Chicago Press.

Golden, Miriam, Michael Wallerstein, and Peter Lange. 2006. "Union Centralization Among Advanced Industrial Societies: Update to 1995/2000." Working Paper.

Gourevitch, Peter. 2003. "The Politics of Corporate Governance Regulation." *Yale Law Journal* 112:

1829-80.

Huber, Evelyne, Charles C. Ragin, and John D. Stephens. 1993. "Social Democracy, Christian Democracy, Constitutional Structure and the Welfare State." *American Journal of Sociology* 99 (3): 711-49.

Huber, John D., and G. Bingham Powell, Jr. 1994. "Congruence Between Citizens and Policymakers in Two Visions of Liberal Democracy." *World Politics* 46 (3): 291-326.

Iversen, Torben. 1999. *Contested Economic Institutions: The Politics of Macroeconomics and Wage Bargaining in Advanced Democracies*. Cambridge: Cambridge University Press.

Iversen, Torben and David Soskice. 2009. "Distribution and Redistribution." *World Politics* 61 (3).

Iversen, Torben, and David Soskice. 2006. "Electoral Institutions and the Politics of Coalitions." *American Political Science Review* 100 (2): 165-81.

Iverson, Torben and David Soskice. 2001. "An Asset Theory of Social Policy Preferences." *American Political Science Review* 95: 875-893.

Judson, Ruth A., and Ann L. Owen. 1999. "Estimating dynamic panel data models: a guide for macroeconomists." *Economic Letters* 65 (1): 9-15.

Kenworthy, Lane, and Leslie McCall. 2008. "Inequality, public opinion and redistribution." *Socio-Economic Review* 6 (1): 35-68.

Kenworthy, Lane, and Jonas Pontusson. 2005. "Rising Inequality and the Politics of Redistribution in Affluent Countries." *Perspectives on Politics* 3 (3): 449-72.

Korpi, Walter. 2006. "Power Resources and Employer-Centered Approaches in Explanations of Welfare States and Varieties of Capitalism: Protagonists, Consenters, and Antagonists." *World Politics* 58 (2): 167-206.

Kristov, Lorenzo, Peter H. Lindert, and Robert McClelland. 1992. "Pressure Groups and Redistribution." *Journal of Public Economics* 48 (2): 135-63.

Kwon, Hyeok Yong, and Jonas Pontusson. 2008. "Unions, Globalization and the Politics of Social Spending Growth in OECD Countries, 1962-2000." Paper presented at the Workshop on

Government Partisanship in Comparative Political Economy, Princeton University.

Lijphart, Arend. 1997. "Unequal Participation." *American Political Science Review* 91: 1-14.

Lundell, Krister, and Lauri Karvonen. 2003. A Comparative Data Set on Political Institutions.

Maddala, G. S., and Wu Shaowen. 1999. "A Comparative Study of Unit Root Tests With Panel Data and A New Simple Test." *Oxford Bulletin of Economics and Statistics* 61: 631-52.

Mahler, Vincent A., and David K. Jesuit. 2006. "Fiscal redistribution in the developed countries." *Socio-Economic Review* 4 (3): 483-511.

Meltzer, Allan H., and Scott F. Richard. 1981. "A Rational Theory of the Size of Government." *Journal of Political Economy* 89 (5): 914-27.

Milanovic, Branko. 2000. "The median-voter hypothesis, income inequality, and income redistribution." *European Journal of Political Economy* 16: 367-410.

Mitchell, Deborah. 1991. *Income Transfers in Ten Welfare States*. Aldershot: Avebury.

Moene, Karl Ove, and Michael Wallerstein. 2001. "Inequality, Social Insurance, and Redistribution." *American Political Science Review* 95 (4): 859-74.

Moene, Karl Ove, and Michael Wallerstein. 2003. "Earnings Inequality and Welfare Spending." *World Politics* 55 (4): 485-516.

OECD. 2007. "The Social Expenditure Database: An Interpretive Guide."

Persson, Torsten, Gérard Roland, and Guido Tabellini. 2007. "Electoral Rules and Government Spending in Parliamentary Democracies." *Quarterly Journal of Political Science* 2 (2): 155-88.

Persson, Torsten, and Guido Tabellini. 2000. *Political Economics: Explaining Economic Policy*. Cambridge, MA: MIT Press.

Persson, Torsten, and Guido Tabellini. 2003. *The Economic Effects of Constitutions*. Cambridge: MIT Press.

Pontusson, Jonas and David Rueda. 2008. "Inequality as a Source of Political Polarization." In Christopher Anderson and Pablo Beramendi, eds., *Democracy, Inequality, and Representation* (New York: Russell Sage Foundation, 2008), 312-353.

Pontusson, Jonas, David Rueda, and Christopher Way. 2002. "Comparative Political Economy of Wage

    Distribution: The Role of Partisanship and Labour Market Institutions." *British Journal of*

    Political Science 32: 281-308.

Powell, G. Bingham, Jr. 2000. *Elections as Instruments of Democracy*. New Haven: Yale University

    Press.

Powell, G. Bingham, Jr. 2006. "Election Laws and Representative Governments." *British Journal of*

    Political Science 36 (2): 291-315.

Scheve, Kenneth and David Stasavage. 2009. "Institutions, Partisanship and Inequality in the Long Run."

    World Politics 61 (2).

Ticchi, Davide and Andrea Vindigni. Forthcoming. "Endogeneous Constitutions." *Economic Journal*.

Verardi, Vincenzo. 2004. "Electoral Systems and Income Inequality." *Economic Letters* 86: 7-12.

Table 1. *Social spending and redistribution in OECD countries, ca. 1990*

	Total social spending (% GDP), 1990	Redistribution among working-age households	LIS observation year
Majoritarian countries			
Australia	14.2 (12)	22.9 (10)	1989
Canada	18.6 (10)	24.9 (8)	1991
France	26.6 (5)	27.9 (6)	1989
United Kingdom	19.5 (9)	21.5 (11)	1991
USA	13.4 (13)	17.4 (12)	1991
Average	18.5	22.9	
Average w/o FRA	16.4	21.7	
PR countries			
Belgium	26.9 (4)	38.9 (2)	1992
Denmark	29.3 (2)	38.0 (3)	1992
Finland	24.8 (6)	35.3 (4)	1991
Germany	22.8 (8)	23.0 (9)	1989
Netherlands	27.6 (3)	25.8 (7)	1991
Norway	24.7 (7)	29.5 (5)	1991
Sweden	30.8 (1)	41.7 (1)	1992
Switzerland	17.8 (11)	8.1 (13)	1992
Average	25.3	30.0	
Average w/o SWI	26.7	33.2	

Rankings in parentheses.

Sources: OECD Social Expenditures Database and Luxembourg Income Study.

Table 2. *Public support for redistribution*

	Agree strongly	Agree	Neither nor	Disagree	Disagree strongly
Majoritarian countries					
Australia	12.6	30.4	**19.3**	26.9	10.9
Canada	16.1	31.9	**21.2**	21.3	9.7
United Kingdom	22.2	**37.4**	17.4	18.7	4.4
USA	10.0	23.5	**22.7**	30.5	13.4
Average	15.2	30.8	**20.2**	24.4	9.6
PR countries					
Germany	23.5	**39.4**	17.8	12.8	6.6
Netherlands	16.3	**48.8**	11.2	18.1	5.6
Norway	17.7	**40.4**	17.8	18.3	6.0
Sweden	17.4	**35.6**	17.9	19.3	9.8
Switzerland	12.0	30.7	**17.9**	28.4	11.1
Average	17.4	**39.0**	16.5	19.4	7.8
Average w/o SWI	18.7	**41.1**	16.2	17.1	7.0

Bolded values are sample median values. Cell values are averages across surveys of proportions of respondents who responded, "Agree strongly," "Agree," "Neither agree nor disagree," "Disagree," or "Strongly disagree" to the question, "What is your opinion of the following statement: It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes."

Source: International Social Survey Program, 1985 and 1990 surveys on Role of Government and 1987 and 1992 surveys on Social Inequality.

Table 3. *Wage inequality and wage-bargaining centralization in sample countries*

	Wage inequality			Average centralization 1973-93
	90-50 ratio	**50-10 ratio**	**Right skew (90-50/50-10)**	
Majoritarian countries				
Australia	1.70	1.61	1.03 (9)	0.457 (4)
Canada	1.81	2.14	0.85 (13)	0.071 (12)
France	1.98	1.68	1.18 (1)	0.114 (11)
United Kingdom	1.78	1.88	0.95 (12)	0.182 (10)
USA	2.01	1.98	1.02 (11)	0.071 (12)
Average	1.86	1.86	1.01	0.179
Average w/o FRA	1.83	1.90	0.96	0.195
PR countries				
Belgium	1.63	1.44	1.13 (4)	0.338 (8)
Denmark	1.54	1.41	1.09 (6)	0.467 (3)
Finland	1.67	1.46	1.14 (3)	0.445 (5)
Germany	1.72	1.67	1.03 (9)	0.353 (7)
Netherlands	1.64	1.58	1.04 (8)	0.392 (6)
Norway	1.50	1.34	1.12 (5)	0.569 (1)
Sweden	1.59	1.37	1.16 (2)	0.485 (2)
Switzerland	1.69	1.61	1.05 (7)	0.265 (9)
Average	1.62	1.49	1.10	0.414

Rankings in parentheses. Wage ratios are averages over the years included in our dataset (see Table A1 for details).

Sources: Definitions and sources of wage ratios available in Table A2; bargaining centralization scores from Iversen (1999: 56).

Table 4. *Determinants of redistribution (error-correction models)*

	Iversen-Soskice results	(1)	(2)	(3)	(4)
Sample period	**1967-1997**	**1967-1997**	**1967-2004**	**1967-1997**	**1967-2004**
90-50 Ratio	13.17	6.338	16.21***	20.55***	15.69***
	(9.36)	(4.03)	(4.17)	(6.32)	(4.15)
Partisanship (Right)	-2.38***	-9.891***	-2.561	-7.945***	-4.393*
	(0.73)	(3.19)	(2.12)	(3.01)	(2.64)
Electoral system (PR)	5.00**	7.633***	6.265***	4.280*	4.600**
	(2.15)	(1.82)	(1.44)	(2.47)	(2.04)
Partisanship * PR				8.694*	4.866
				(5.03)	(4.25)
Female LF participation	0.36*	0.161	0.127	-0.0332	0.138
	(0.20)	(0.16)	(0.11)	(0.14)	(0.11)
Unemployment	0.99***	1.506***	1.210***	1.355***	1.197***
	(0.27)	(0.20)	(0.18)	(0.19)	(0.18)
Real per capita GDP	-0.001	-0.000285	0.0000800	0.000246	0.0000913
	(0.00)	(0.00025)	(0.00015)	(0.00023)	(0.00015)
Unionization	0.16*	0.199***	0.164***	0.255***	0.158***
	(0.09)	(0.070)	(0.045)	(0.060)	(0.045)
Turnout	0.01	-0.0828	0.145***	0.0765	0.149***
	(0.10)	(0.051)	(0.041)	(0.058)	(0.041)
Veto points	-1.57**	-1.547***	-1.444***	-1.728***	-1.483***
	(0.62)	(0.41)	(0.33)	(0.38)	(0.33)
Constant	(not reported)	0.777	-37.47***	-35.86***	-36.69***
		(3.44)	(9.19)	(13.6)	(9.12)
Observations	47	46	62	46	62
Countries	14	13	13	13	13
R-squared	0.65	0.86	0.85	0.87	0.86
ρ	0.7	0.4	0.9	0.9	0.9

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1 (two-tailed tests).

Table 5. *Conditional effects of partisanship on redistribution*

	Majoritarian	Proportional representation
Model 3	-7.95**	0.75
	(3.01)	(4.11)
Model 4	-4.39*	0.47
	(2.64)	(3.38)

Standard errors in parentheses. ** p<0.05, * p<0.1 (two-tailed tests).

Table 6. *Determinants of redistribution (error-correction models) contd.*

	(2)	(5)	(6)
90-50 Ratio	16.21***	13.16***	14.83***
	(4.17)	(3.45)	(3.41)
50-10 Ratio		-11.30***	-9.680***
		(2.47)	(2.23)
Partisanship (right)	-2.561	-1.334	-2.182
	(2.12)	(2.37)	(1.71)
Electoral system (PR)	6.265***	2.814**	0.310
	(1.44)	(1.41)	(1.56)
District magnitude			8.613***
			(1.94)
Female LF participation	0.127	0.0883	0.175**
	(0.11)	(0.10)	(0.086)
Unemployment	1.210***	1.121***	1.236***
	(0.18)	(0.17)	(0.15)
Real GDP per capita	0.0000800	-0.0000343	0.0000287
	(0.00015)	(0.00015)	(0.00012)
Unionization	0.164***	0.161***	0.235***
	(0.045)	(0.046)	(0.041)
Turnout	0.145***	0.0503	0.103***
	(0.041)	(0.036)	(0.035)
Veto points	-1.444***	-1.112***	-0.367
	(0.33)	(0.34)	(0.33)
Constant	-37.47***	0.566	-20.24**
	(9.19)	(3.32)	(8.67)
Observations	62	62	62
Number of countries	13	13	13
R-squared	0.85	0.88	0.91
ρ	0.9	0.5	0.9

Standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$ (two-tailed tests).

Table 7. *Determinants of redistribution (levels models)*

	(7)	(8)	(9)
Redistribution (*t-1*)	0.322***	0.274***	0.138
	(0.095)	(0.093)	(0.099)
90-50 Ratio	13.00***	13.65***	16.96***
	(5.00)	(4.78)	(4.64)
50-10 Ratio		-6.428**	-7.913***
		(2.66)	(2.55)
Partisanship (right)	-2.590	-1.847	-2.332
	(2.29)	(2.21)	(2.08)
Electoral system (PR)	5.199***	3.585**	1.970
	(1.46)	(1.55)	(1.56)
District magnitude			6.310***
			(2.20)
Female LF participation	0.148	0.145*	0.191**
	(0.092)	(0.088)	(0.084)
Unemployment	0.715***	0.737***	0.885***
	(0.19)	(0.19)	(0.18)
Real GDP per capita	-0.0000736	-0.000124	-0.000105
	(0.00015)	(0.00014)	(0.00013)
Unionization	0.110**	0.115***	0.191***
	(0.045)	(0.043)	(0.048)
Turnout	0.101**	0.0681	0.0954**
	(0.046)	(0.046)	(0.045)
Veto points	-0.898***	-0.809**	-0.554*
	(0.35)	(0.33)	(0.33)
Constant	-29.64**	-13.94	-23.44*
	(11.6)	(12.9)	(12.6)
Observations	62	62	62
Number of countries	13	13	13
R-squared	0.88	0.89	0.90

These models include a control for the time elapsed since the previous observation of redistribution and show standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$ (two-tailed tests).

Table A1. *Observations of redistribution included in our dataset*

Country	Years
Australia	1981, 1985, 1989, 1995, 2000, 2003
Belgium	1992, 1997
Canada	1971, 1975, 1981, 1987, 1991, 1994, 1997, 1998, 2000
Denmark	1987, 1992, 1995, 2000, 2004
Finland	1987, 1991, 1995, 2000
France	1979, 1984, 1989, 1994
Germany	1973, 1978, 1981, 1983, 1984, 1989, 1994, 2000
Netherlands	1983, 1987, 1991, 1994, 1999
Norway	1979, 1986, 1991, 1995, 2000
Sweden	1967, 1975, 1981, 1987, 1992, 1995, 2000
Switzerland	1982, 1992, 2000, 2002
UK	1969, 1974, 1979, 1986, 1991, 1994, 1995, 1999
USA	1974, 1979, 1986, 1991, 1994, 1997, 2000, 2004

Table A2. *Definitions and sources of variables*

Variable	Definition	Source
Redistribution	Percentage change in Gini coefficients as we move from gross market income (i.e., household income before taxes and transfers) to disposable income (i.e., income after taxes and transfers)	Lane Kenworthy, complemented with data from www.lisproject.org/publications/fiscalredistdata/fiscred.htm
90-50 Ratio	The earnings of a worker in the 90th percentile of the earnings distribution as a share of the earnings of the worker with a median income	OECD Database on Relative Earnings
50-10 Ratio	The earnings of the worker with a median income as a share of the earnings of a worker in the 10th percentile of the earnings distribution	OECD Database on Relative Earnings
Partisanship	An index of the partisan left-right "center of gravity" of the cabinet based on the average of three expert classifications of government parties' placement on a left-right scale, and weighted by their decimal share of cabinet portfolios (the index goes from left to right and is standardized here to vary between 0 and 1)	Cusack and Engelhardt (2002)
Electoral system	Classification of systems as proportional (1) or majoritarian (0) using a composite index based on Lijphart's (1994) measure of the effective threshold of representation and Gallagher's (1991) measure of the disproportionality between votes and seats	Iversen and Soskice (2006)
District magnitude	The average magnitude of each district, divided by the number of seats in the Lower Chamber	Lundell and Karvonen (2003)
Female labor-force participation	The proportion of working-age women in the labor force	OECD Labor Force Statistics database
Unemployment	Annual rate of unemployment	Armingeon et al. (2006)
Real per capita GDP	Measured in constant 2000 US dollars	World Development Indicators database
Unionization	Annual union density measure	Golden, Wallerstein, and Lange (2006)
Turnout	Turnout (as a percentage of eligible voters) in the most recent national election for each year	Armingeon et al. (2006)
Veto points	A composite measure of the number of constitutional veto points (that is, important decision nodes resulting from bicameralism, federalism, referenda, etc.) that exist in a political system	Huber, Ragin, and Stephens (1993)

Table A3. *Summary statistics*

Variable	Mean	Standard Deviation	Minimum	Maximum
Redistribution	25.53	8.89	6.11	47.17
90-50 Ratio	1.71	0.16	1.42	2.28
50-10 Ratio	1.62	0.25	1.27	2.43
Partisanship	0.33	0.21	0	1
Electoral system	0.64	0.48	0	1
District magnitude	0.09	0.25	0.0015	1
Female LF participation	57.52	12.30	31	81
Unemployment	5.46	3.59	0	16.63
Real per capita GDP	18,709	6,590	5,818	39,353
Unionization	40.47	18.09	8	83
Turnout	78.16	14.69	35	95.8
Veto points	1.78	1.90	0	6