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Electoral institutions, parties, and the politics of class:

Why some democracies redistribute more than others

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***Abstract*:**

We develop a general model of redistribution and use it to account for the remarkable variance in government redistribution across democracies. We show that the electoral system plays a key role because it shapes the nature of political parties and the composition of governing coalitions, whether these are conceived as electoral alliances between classes or alliances between class parties. Our argument implies a) that center-left governments dominate under PR systems, while center-right governments dominate under majoritarian systems, and b) that PR systems redistribute more than majoritarian systems. We test our argument on panel data for redistribution, government partisanship, and electoral system in advanced democracies.

1. Introduction

Redistribution varies notably from country to country. According to data from the Luxembourg Income Study, the reduction in the poverty rate in United States as a result of taxation and transfers was 13 percent in 1994 whereas the comparable figure for Sweden was 82 percent (the poverty rate is the percentage of households below 50 percent of the median income). Why do some democracies redistribute so much more than others? This is a key question for political economy and for democratic theory, and it is the question that motivates this paper.

Most work on the politics of redistribution starts from the premise that democratic institutions empower those who stand to benefit from redistribution. The basic logic is succinctly captured in the Meltzer-Richard model where the voter with the median income is also the decisive voter (Meltzer and Richard 1981). With a typical right-skewed distribution of income the median voter will push for redistributive spending up to the point where the benefit of such spending to the median voter is outweighed by the efficiency costs of distortionary taxation.

But the implication that inegalitarian societies redistribute more than egalitarian ones is not well supported by the evidence (see Bénabou 1996; Perotti 1996; Lindert 1996; Moene and Wallerstein 2001). Instead, much of the comparative literature has emphasized the role of labor power and government partisanship (see, for example, Hibbs 1977; Korpi 1983; 1989; Hicks and Swank 1992; Huber and Stephens 2001; Bradley et al. 2003; Boix 1998; Kwon and Pontusson 2003). If left governments not only redistribute more, but also reduce inequality of earnings by, say, investing in public education, partisanship may also explain why equality and redistribution tend to co-vary. But this raises another puzzle: why are some countries dominated by left governments while others are dominated by right governments?

Although government partisanship is often assumed to reflect the level of working class mobilization, we argue that it is in fact mainly determined by differences in coalitional dynamics associated with particular electoral systems. Table 1 shows the strong empirical relationship using a new data set on parties and legislatures (see Cusack and Engelhardt 2002; Cusack and Fuchs 2002). The figures are the total number of years with right and left governments in 17 advanced democracies between 1945 and 1998, organized by type of electoral system. Mirroring a similar finding by Powell (2002), about three quarters of governments in majoritarian systems

were center-*right*, while three quarters of governments under PR were center-*left* (excluding here "pure" center governments). The numbers in parentheses convey a sense of the evidence at the level of countries, classifying countries according to whether they have an overweight (more than 50 percent) of center-left or center-right governments during the 1945-98 period. We discuss the data (and the one outlier) in detail below.

[Table 1 about here].

Our explanation for association in Table 1 builds on an emerging literature on the effects of electoral formula on economic policies and outcomes (see Rogowski and Kayser 2002; Milesi-Ferretti, Perotti and Rostagno 2002; Tabellini 2000; Persson and Tabellini 1999; 2000; 2003; Persson, Roland, and Tabellini 2004; Austen-Smith 2000). In particular, we argue that the electoral formula affects coalition behavior and leads to systematic differences in the partisan composition of governments – hence to different distributive outcomes. The model we propose assumes that parties represent classes, or coalition of classes, and that it is difficult for parties credibly to commit to electoral platforms that deviate from the preferences of their constituents. Unlike standard models, we allow taxes and transfers to vary across classes, making redistributive politics a multidimensional game. The only constraint is that the rich cannot "soak" the poor under democracy – a condition that can be justified on empirical, normative, and institutional grounds.

Based on these very general assumptions we show that in a two-party majoritarian system the center-right party is more likely to win government power, and redistribute less, than in a multi-party PR system where the center party is more likely to ally with parties to its left. The intuition is that in a majoritarian system where parties cannot fully commit, the median voter faces low taxes if a center-right party deviates to the right if elected, but faces high taxes and redistribution to low income groups if a center-left party in government deviates to the left. With PR, on the other hand, the middle class party has an incentive to form a coalition with the left party because they can "exploit" the rich. No such exploitation of the poor is feasible under realistic assumptions. We test the model on postwar data for redistribution and government partisanship for advanced democracies.

2. The model

We begin by explaining the assumptions of the model and then prove that these assumptions have two key implications: (i) that center-right governments are more frequent than center-left governments under majoritarian elections and redistribute less, and (ii) that the obverse holds true for proportional representation (PR).

2.1. Fundamental Assumptions

As in many examples in Persson and Tabellini (1999) and in Acemoglu and Robinson (forthcoming) we assume that individuals are members of one of three "income" groups or classes in society, indexed J. These are L, the low income, M the middle income, and H the high income groups. The voting population is equally divided between the three groups and has a total size of 3; individuals cannot move between different groups.

We adopt a widely used economic model (e.g in Persson, Roland and Tabellini 2003), where the utility of a J member is $U^J = c^J + G(b^J)$, which J maximizes subject to the household budget constraint $c^J = y^J - \tau^J$ where y^J is the exogenous gross income of J, τ^J is a lump-sum tax on J and b^J is government payment (benefit) to J. Since we are solely interested in redistribution in this paper we assume that $G(b^J) = b^J$. Thus J's indirect utility function is given by $V^J(\tau^J, b^J) = y^J - \tau^J + b^J$. For convenience we define $p^J \equiv b^J - \tau^J$, where p^J is the *net* payment from the government to J. Focusing on the net payment to each group[1], we write J's indirect utility function as

(1) $$V^J(p^J) = y^J + p^J$$

Evidently

(2) $$y^L < y^M < y^H$$

Next we make the assumption that each group has a maximum taxable capacity (or minimum

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[1]This has no efficiency implications, see fn 2.

negative payoff) $\overline{\tau}^J$ and impose the taxable capacity constraint

(3) $$p^J \geq -\overline{\tau}^J > -y^J$$

It is correspondingly assumed that

(4) $$0 = \overline{\tau}^L < \overline{\tau}^M < \overline{\tau}^H$$

Note that no assumption is made about the relation between median and average income – none of our results depend on that relationship. The *budget constraint* on the government is

(5) $$\tau^M + \tau^H = \sum_J b^J \implies \sum_J p^J = 0$$

so there is a balanced budget[2].

      Assumptions **(1)** to **(5)** leave governments free to redistribute income between different classes in society, subject only to the taxable capacity and the budget constraints. But this ignores an important fact about advanced democracies: redistributive policies are with almost no exceptions at least mildly progressive.[3] Indeed, Milanovic (2000) and Osberg, Smeeding, and Schwabisch (2003) show in a detailed analyses of LIS data on redistribution that the poor always gain from democratic redistribution, the rich always lose, while the middle class does less well than the poor but better than the rich. We therefore make the corresponding assumption:

(6) $$p^L \geq p^M \geq p^H$$

Note that this is *weaker* than the assumption commonly made of a proportional income tax and uniform benefit (as in the Meltzer-Richard model). In particular, it preserves the multidimensionality of the distributive space, so that there is no longer a simple median voter

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[2]So as to simplify the accounting of resources, it is assumed that no resources are needed to collect $\tau^J \leq \overline{\tau}^J$, but that there is some high cost of setting $\tau^J > \overline{\tau}^J$ such that it does not pay a government to set $\tau^J > \overline{\tau}^J$.

[3]See the data from the Luxemburg Income Study (LIS) that we use below.

result as in standard models based on Meltzer and Richard. In our model redistributive politics can only be understood as the result of class coalitions, where exclusion from the coalition carries a price. As we will see, allowing for such coalitions leads to very different conclusions from Meltzer-Richard's.

The non-regressivity assumption, which imposes constraints on coalition behavior, can be justified on a number of grounds. As noted, it is an accurate empirical description, and it is common to assume that democratic governments are constrained by a basic notion of fairness (see, for example, Roemer 2004). In our own view assumption (6) can also be seen as reflecting the wider institutions of advanced democracies. These include a free press, free trade unions and other forms of association, the ability to demonstrate collectively, and so on. These wider institutions underwrite the ability of both lower and middle classes to take collective action if right wing domination of legislature and/or executive leads to attempts to exploit less privileged groups. This is an argument that needs elaboration and is the subject of future research. But we want to present it here since it suggests a major difference between advanced democracies - in which these wider institutions play an important role - and democracies in many developing countries where their role is subdued.[4]

Together, assumptions (1) through (6) imply that L's optimal policy is to tax M and H at their taxable capacity and keep all the receipts, $M's$ optimal policy is to tax H at its taxable capacity and share the receipts with L, while the best H can do it not to tax (and redistribute) at all. The intuition behind all the results that follow is that the middle classes either ally with the poor for the purpose of soaking the rich (and splitting the booty), or they ally with the rich for the purpose of avoiding being soaked by the poor. Which motive dominates, and hence which type of coalition is likely to emerge, depends on the electoral system.

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[4] It is also interesting to consider this argument in light of Acemoglu and Robinson's (2005) work on the origins of democracy. They argue that democracy serves as a credible commitment mechanism by the rich to redistribute to the poor in order to fend off revolution (or to avoid excessive costs of repression). But democracy, in the narrow sense of free elections, cannot be a credible commitment since redistribution follows from democracy *only* if government policies are subject to a non-regressivity constraint such as assumption (6) (see also Roemer 2004). We suspect that the collective action capacities that underpin assumption (6) were developed before, rather than after, the transition to democracy.

2.2. Parties, elections and government formation

We now introduce electoral competition into the model and distinguish between proportional representation (PR) and majoritarian systems. A basic assumption of our model, and one which affects majoritarian quite differently to PR systems is:

(7) *Platform commitments are not legally binding.* This is a pervasive assumption in the current party literature, and rests on the simple fact that there are no practical devices for leaders to write enforceable contracts with voters (cf. Downs 1957; Persson and Tabellini 1999).

Next, in line with Persson, Roland and Tabellini (2004) and consistent with Duverger's law – and much empirical evidence that there are more than two parties in PR systems – we assume two parties under majoritarian and three under PR. Under PR each party, *L, M* and *H* "represents" its group, *L, M* and *H,* respectively (parties are in bold italics). Hence these parties can credibly (though not legally bindingly) commit at an election to pursue the interests of their group in post-election coalition bargaining over policies. *L, M* and *H* can indeed be thought of as citizen-candidates as in Besley and Coate (1997). Specifically:

(8) *Under PR there are three "representative" parties*, *L, M* and *H* (bold italics denote parties as opposed to classes).[5] Each party represents the relevant class in the sense that the party utility function is the same as that of the group.

Specifically, party J maximizes V^J , and since $V^J = y^J + p^J$ and y^J is exogenous, J maximizes p^J for all J. Again, parties that reflect their constituent preferences will be referred to as *representative parties*. But they can equally be thought of as citizen candidates since party

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[5] The three party assumption under PR deviates from Persson and Tabellini (and Meltzer-Richard) who assume two parties. In our view this makes little sense when the empirical literature clearly shows that PR always produces multiple parties and coalition governments (there are no contemporary cases of majority parties, or single-party majority governments, under PR). Majoritarian systems, on the other hand, are typically dominated by two parties as predicted by Duverger's law.

J's utility is identical to that of citizen *J*.

With majority voting, the two parties *LM* (or center-left) and *MH* (or center-right) can be considered coalitions – in the first of *L* and *M*, and in the second of *M* and *H*. This reflects the perceptive observation in Bawn and Rosenbluth (2002) that under PR coalitions are coalitions of parties while under majoritarianism parties are coalitions of groups. In our conception, if coalition parties are representative parties it would mean that bargaining over policies between *L* and *M* takes place if *LM* if elected. But, as argued many years ago by Downs (1957), the obvious problem with such parties in a majoritarian system is that they will significantly deviate from the position of the median voter and therefore induce parties to offer more moderate platforms in order to win the election. To achieve this, *LM* can opt to be a "leadership" party in which power to choose policies if elected is vested in the party's leader. If the leader can persuade the electorate that he represents *M* then *LM* will beat a representative *MH* party. In Appendix 1 we show that, under reasonable assumptions, a leadership party will beat a representative party in a two-party majoritarian contest. We therefore assume that coalition parties in majoritarian systems are typically leadership parties:

(9) *Under majoritarian voting, there are two "leadership" parties, **LM** and **MH** (one is center-left; the other center-right). If a leadership party is elected, its leader chooses the government's program.*

The assumption that platforms are not legally binding means that the leader can never absolutely guarantee to commit to *M* policies if elected. One potential incentive for party leaders to occasionally deviate from an *M* platform is their need to mobilize the party base in order to maximize voter turnout among prospective supporters. This involves appeals and policy promises to placate party activists, and such promises may occasionally have to be honored to be credible (Aldrich 1993; 1995, ch. 6; Schlesinger 1984; Kitschelt 1994). We adopt a slightly different and very simple approach that captures the basic idea without producing an unnecessarily complicated model - namely that the type of the candidate is not fully known by voters in advance. Specifically, it is assumed that:

(10) The *type* of the leader of party **IJ** is not known in advance of the election but either maximizes V^I or V^J.

Leadership parties can also be thought of as *incomplete information citizen candidates*, where the *type* of the citizen candidate in party **IJ** is either a candidate maximizing V^I or V^J. For specificity we assume that, prior to the election campaign, the probability that the leader of **LM** or of **MH** maximizes V^M (the preference of *M*) is uniformly distributed in the open interval $(.5,1)$. During the election campaign, voters make a drawing $\left(\pi_{LM}, \pi_{MH}\right)$ from $(.5,1) \times (.5,1)$, where π_{LM} and π_{MH} are the updated probabilities that the leaders of **LM** and of **MH** respectively maximize V^M.

For our purposes the key is simply that parties in a majoritarian system cannot fully commit always to follow an *M* platform.[6] Commitment under PR, on the other hand, is not a problem since parties represent groups and voters can work out which coalition will be in power (probabilistically) and which policies will be adopted. This logic is reflected, we believe, in a widely observed difference in the nature of political competition in multiparty PR and two-party majoritarian systems. In the latter parties are obsessed, to an extent that is not true for parties under PR, with portraying themselves as centrist and their competitor as extremist (as in the recent US presidential election). It is also supported empirically by the systematic tendency for parties to take more extreme positions in PR than in majoritarian systems (Kedar 2003). The greater importance of leaders in majoritarian systems is also supported by evidence on party organizations (see Curtice, forthcoming).

Turning to voters we make the following assumption:

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[6] This is obviously weaker than assuming that they can, and the contrast between majoritarian and PR systems still holds if parties *can* credibly commit, although the differences will be less pronounced.

(11) *Voters vote strategically and do not abstain.* Voters anticipate the outcome of the election and vote for the parties that maximize their utility. In our model this leads voters to vote for the party that is also closest to their policy preferences. In that sense voters are also "sincere". But sincere voting is not an assumption.

Finally, we need to specify how governments are formed after the election:

(12) *Majoritarian elections.* Voters vote with knowledge of π_{LM} and π_{MH} . The party with more than 50% of votes becomes the government.

(13) *PR Elections*. Coalitions are bargained between two parties, where the party recognized to make the first offer to a party of its choice is called the "formateur". We allow two possible ways of choosing the formateur: first, that **M** is always chosen; second, that the formateur is randomly chosen.[7] For presentational reasons it is useful to begin with the former.[8] After the formateur has been selected, the specific rules of bargaining are given by **(i)** to **(iii)** below:

(i) The formateur, **I**, chooses another party, **J,** to bargain with over $P_{IJ} = (p_{IJ}^{L}, p_{IJ}^{M}, p_{IJ}^{H})$, the program which parties **I** and **J** will adopt in a coalition government.

(ii) **I** and **J** bargain over the division of the cake, defined as the maximum taxable capacity of the economy, $\overline{\tau}^{M} + \overline{\tau}^{H}$ **,** less any payoff to *L* and/or *M* implied by assumption **(6)**.

(iii) The bargaining takes the form of a Rubinstein alternating offers game, in which **I** makes the first offer; both bargaining parties exhibit equal degrees of impatience and it is assumed that the delay between offers goes to zero.

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[7] Random selection makes it as easy as possible for **H** to be included in government, and thus harder to reach our conclusion.

[8] Empirically, the probability of being recognized as the formateur is higher for large parties and for centrist parties. Since all our parties are equally-sized, this would imply a weighted combination of the two selection rules. We show that our basic results hold regardless of the decision rule.

In order to allow the formateur to threaten to switch, or to actually switch, bargaining partners, we also model an augmented bargaining game in which in addition to **(i)** to **(iii)** the following assumption also holds:

(iv) In the bargaining game, *I* can switch to a bargaining game with *K* at any period after *I* has rejected an offer of *J*. Thus the augmented bargaining game is an outside options game.

2.3. Implications

We now show that assumptions **(1)** through **(13)** imply two key propositions, the first relating to majority rule and the second to PR.

Majoritarian elections.

Proposition I: *Under majoritarian elections, if the ex-ante probability that the MH party will*

win is Π_{MH} *, then* $1 > \Pi_{MH} = 0.5\left(1 + \dfrac{1}{1 + \left(\overline{\tau}^H / 2\overline{\tau}^M\right)}\right) > 0.5$. The **MH** party thus wins more

than 50% of the time.

Proof: See Appendix **2(a)** for details. The intuition is this. Assume *M* believes that the probability of deviation from the *M* platform is the same in the two parties, $1 - \pi_{LM} = 1 - \pi_{MH} = 1 - \pi$. Then the payoff from voting **LM** is $-(1-\pi)\overline{\tau}^M + \pi.\left(\overline{\tau}^H / 2\right)$: if the **LM** government turns out to be left-wing (with probability $1 - \pi$) then it both imposes high taxes on the middle class, $\tau^M = \overline{\tau}^M$, and transfers the receipts to *L*. This is the first payoff term. If the **LM** government is middle-class then it divides $\overline{\tau}^H$ between *L* and *M* ($p^L = p^M = \overline{\tau}^H / 2 > p^H = -\overline{\tau}^H$ to satisfy assumption **(6)**). This is the second payoff term. The payoff from voting **MH** is $\pi.\left(\overline{\tau}^H / 2\right)$: if the **LM** government is middle-class the payoff is

the same as in the **LM** case; but if it is right-wing the interest of *H* is to set zero taxes - so *M* loses nothing. Thus, with equal probability of deviation to left and right, there is more to fear from an **LM** party, which can impose high taxes on *M* and redistribute the proceeds to *L*, than from an **MH** party, which can only cut taxes to zero (and thus leave *M* no worse off). The proposition shows is that if the probabilities of deviation are drawn from the same distribution, the probability that *M* will vote **MH** is greater than one half.

Proportional representation elections.

Proposition II(a): <u>M as formateur</u>. If the formateur is always chosen as M, and given the bargaining rules (13)(i)-(iii), M will always choose the coalition LM.

Proof: (Technical details are given in Appendix **2(b)**.) Note that the outcome of a Rubinstein alternating offers game without outside options with equal impatience and with the delay between offers going to zero is to split the cake evenly. Thus *M* has to consider the payoff from an **LM** coalition as compared to an **MH** coalition, always ensuring that the non-regressivity assumption **(6)** is satisfied.

In an **LM** coalition, the payoffs are:

$$\begin{aligned}
p_{LM}^{L} &= 0.5(\overline{\tau}^{M} + \overline{\tau}^{H}) \\
p_{LM}^{M} &= 0.5(\overline{\tau}^{M} + \overline{\tau}^{H}) - \overline{\tau}^{M} \\
&= 0.5(\overline{\tau}^{H} - \overline{\tau}^{M}) \\
p_{LM}^{H} &= -\overline{\tau}^{H}
\end{aligned}$$

where $p_{LM}^{L} > p_{LM}^{M} > p_{LM}^{H}$ so that assumption **(6)** is satisfied..

In an **MH** coalition, assumption **(6)** does not hold unless the cake is reduced, since unconstrained bargaining between *M* and *H* implies that *L* receives less than *M*. Hence the cake needs to be

reduced by $x = p_{MH}^L = p_{MH}^M$ to satisfy assumption **(6)**:[9]

$$p_{MH}^M = 0.5(\overline{\tau}^M + \overline{\tau}^H - x) - \overline{\tau}^M = 0.5(\overline{\tau}^M + \overline{\tau}^H - p_{MH}^M) - \overline{\tau}^M = \frac{1}{3}\left(\overline{\tau}^H - \overline{\tau}^M\right)$$

$$p_{MH}^H = \frac{1}{2}\left(\overline{\tau}^H + \overline{\tau}^M - \frac{1}{3}(\overline{\tau}^H - \overline{\tau}^M)\right) - \overline{\tau}^H = \frac{2}{3}\left(\overline{\tau}^M - \overline{\tau}^H\right)$$

As can be seen **(6)** is now satisfied since

$$p_{MH}^L = p_{MH}^M = \frac{1}{3}\left(\overline{\tau}^H - \overline{\tau}^M\right) > p_{MH}^H = \frac{2}{3}\left(\overline{\tau}^M - \overline{\tau}^H\right).$$

Note also that since $\overline{\tau}^H > \overline{\tau}^M$, **M** will always demand redistributive spending in an **MH**

coalition. Finally, since $p_{LM}^M = \frac{1}{2}\left(\overline{\tau}^H - \overline{\tau}^M\right) > p_{MH}^M = \frac{1}{3}\left(\overline{\tau}^H - \overline{\tau}^M\right)$, **M** will choose the coalition

LM over the coalition **MH.** ∎

Proposition II(b): *Threat of **M** switching partners. In the augmented bargaining game described by rules (i) to (iv) in assumption (13), if the formateur is **M**, **M** will prefer **LM** to **MH**.*

Proof: The "outside option principle" (see, e.g. Osborne and Rubinstein [1994], 7.4.3, p 128) states that if the value to **M** of switching to an outside option (here bargaining with **H**) after

rejecting an offer of **L** is $\overline{V}_{MH}^M$, then if $\overline{V}_{MH}^M < V^M(s_M^L)$, where $V^M(s_M^L)$ is the value to **M** of

M's sub-game perfect offer to **L**, this has no effect on the **LM** game and **L** continues to offer

$V^M(s_L^M) = \beta V^M(s_M^L)$, where s_L^M is **L**'s sub-game perfect offer to **M** (beta is the discount

factor). Since as the time between offers goes to zero $V^M(s_M^L) = 0.5\left(\overline{\tau}^H - \overline{\tau}^M\right)$, and

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[9] In fact, our results go through even if the assumption is relaxed to be simply $p_{LM}^L > 0$.

$\bar{V}_{MH}^{M} = \frac{1}{3}\left(\bar{\tau}^{H} - \bar{\tau}^{M}\right)$, the ability of **M** to switch to **H** has no effect on the outcome of the **LM**

bargaining game.

The intuition is as follows. The augmented bargaining game, allowing the formateur **M** potentially to switch negotiating partners, is designed to explore a possible objection to the simple bargaining model of Proposition II(a) - namely that the simple model does not allow **M** to put pressure on, say, **L** by threatening to switch to negotiating with **H**. (For instance **M** might say to **L**, offer me $p_{LM}^{L} = p_{LM}^{M} = \bar{\tau}^{H}/2$ or I'll switch to negotiating with **H**.) The proof shows that this is not a credible threat. This is because, if **M** is bargaining with **L** and does not switch to bargaining with **H, M** will get $\frac{1}{2}\left(\bar{\tau}^{H} - \bar{\tau}^{M}\right)$. But if **M** switches to bargaining with **H**, **M** will only get $\frac{1}{3}\left(\bar{\tau}^{H} - \bar{\tau}^{M}\right)$, see Prop II(a) above. Hence the non-credibility of the threat. The proof can be generalized to the situation where **M** can switch back and forth repeatedly. The proof is available from the authors upon request.

Proposition II(c): *Randomly chosen formateur. If the formateur is randomly chosen, and given the rules* **(i)** *to* **(iii)** *of assumption* **(13),** *the proportion of* **LM** *coalitions relative to* **LM** *and* **MH** *coalitions is greater than or equal to 3/5. (Note that* **LH** *coalitions are considered neutral with respect to partisanship.)*

Proof: See Appendix **2 (c)**.

Table 2 summarizes the key results. It shows **M**'s expected payoffs from supporting different parties, or coalitions, depending on the electoral rule. Since we know that **M**'s party choice determines the outcome of majoritarian elections, and since **M**'s choice of coalition partner in a PR system determines whether **LM** governments will be more frequent, the key results of the model are captured by **M**'s choice over parties or coalitions.

Note that in a PR system the incentive of **M** to pick **L** as a coalition partner follows from

the fact that *L* can never be entirely shut out from sharing in redistributive spending, even when *L* is not in the coalition. This implies that *M* has to share with both *L* and *H* in an *MH* coalition, whereas *M* only has to share with *L* in an *LM* coalition. *M* therefore has a common interest with *L* in soaking the rich. In a majoritarian system, by contrast, the main concern of *M* will be to avoid being soaked by the poor. Although both parties will present the same *M* platform, if there is a chance that *LM* becomes dominated by *L* (which happens with probability $1 - \pi$) *LM* will soak both the rich *and* the middle class. An *H*-dominated *MH* party, on the other hand, is constrained by **(6)** to leave *L* and *M* no worse off, and its best option is therefore to cut taxes, and hence its own losses, to zero. With an equal chance of parties deviating from their electoral platforms, *M* will therefore be more prone to support *MH.* The same non-regressivity assumption that leads the middle class to support center-left governments under PR rules thus causes it to support the center-right under majoritarian rules (the shaded cells). The model therefore implies that the electoral system is associated with both government partisanship and levels of redistribution. The next section tests these propositions.

[Table 2 about here]

2.4 From Model to Structural Estimating Equations

The purpose of the paper is to show that electoral systems (E) explain the partisan composition of government (P), and in turn that P explains redistribution (R). The basic forms of the structural estimating equations are therefore:

(SE.1) $\qquad\qquad P = f(E)$ with $f' > 0$

(SE.2) $\qquad\qquad R = g(P)$ with $g' > 0$

Propositions I and II established **(SE.1)** up to $\Pr LM < \Pr MH$ given $E = $ *Majoritarian* and $\Pr LM > \Pr MH$ given $E = PR.$ **(SE.2)** is more complicated because of the definition of redistribution. It is straightforward to show from the proofs of Propositions I and II that if *R* is measured by p_L , then the switch from an *MH* to an *LM* government increases *R* under both *M* and *PR.* However we also want to define redistribution more broadly as the percentage change in

the Gini coefficients from before to after taxes and transfers. In Proposition III we show *R* in this definition is also unambiguously higher with an **LM** government both under *M* and *PR.*

Proposition III: *Let* $R \equiv G_{net} - G_{gross}$ *and* $R(P, E)$ *be the value of R with government P and electoral system E. Then* $R(LM, E) > R(MH, E),\ E = Majoritarian, PR.$

Proof: See Appendix 3.

Note that Proposition III does not necessarily imply that an *LM* (or *MH*) government redistributes the same under different electoral systems. We cannot say anything about that in general (it depends on π), although there are reasons to expect that *LM* governments will redistribute more to the poor in a PR system than *LM* governments in a majoritarian system. We explain why in the discussion of the empirical results for redistribution.

3. The evidence

We test our argument in two parts. In the first we use partisanship and electoral system as explanatory variables to account for differences in the level of redistribution **(SE.1)**. In the second part we use partisanship as the dependent variable, testing the proposition that the electoral system shapes coalition behavior and therefore the composition of governments **(SE.2)**.

3.1. Data

We base our analysis of redistribution on the Luxembourg Income Study (LIS), which has been compiling a significant database on pre- and post-tax and transfer income inequality during the past three decades. The LIS data used for this study cover 14 countries from the late 1960s (the first observation is 1967) to the late 1990s (the last observation is 1997). All 14 countries have been democracies since the Second World War. There are a total of 61 observations, with the number of observations for each country ranging from 2 to 7. About one fifth of the observations are from the 1970s and late 1960s, about 40 percent from the 1980s, and the remainder from the 1990s. The data are based on separate national surveys, but considerable

effort has gone into harmonizing (or "Lissifying") them to ensure comparability across countries and time. The LIS data are widely considered to be of high quality and the best available for the purposes of studying distribution and redistribution (see OECD 1995, Brady 2003).

As noted above we use the data specifically to explore the determinants of redistribution as measured by the percentage reduction in the gini coefficient from before to after taxes and transfers. The gini coefficient is perhaps the best summary measure of inequality, and varies from 0 (when there is a perfectly even distribution of income) to 1 (when all income goes to the top decile). Using an adjusted version of the LIS data – constructed by Huber, Stephens and their associates (Bradley et. al. 2003)[10] – we include only working age families, primarily because generous public pension systems (especially in Scandinavia) discourage private savings and therefore exaggerate the degree of redistribution among older people. Furthermore, because data are only available at the household level, income is adjusted for household size using a standard square root divisor (see OECD 1995).

On the independent side, the key variables for explaining redistribution are government partisanship and electoral system. The first is an index of the partisan left-right "center of gravity" of the cabinet based on i) the average of three expert classifications of government parties' placement on a left-right scale, weighted by (ii) their decimal share of cabinet portfolios. The index goes from left to right and is standardized to have a mean of zero and a standard deviation of one. The center of gravity measure was conceived by Gross and Sigelman (1984) and has been applied by Thomas Cusack who generously shared a new comprehensive data set on parties and partisanship (see Cusack and Fuchs 2002, and Cusack and Engelhardt 2002 for details). The expert codings are from Castles and Mair (1984), Laver and Hunt (1992), and Huber and Inglehart (1995).

One issue raised by this measure is how we can be sure that partisan effects are due to differences in "who governs" as opposed to differences in voter preferences. Our argument is that the electoral system affects the party composition of governments, and hence government policies -- *not* that electorates in different countries want different governments and policies (although that might of course also be the case). One way of making sure is to compare the ideological

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[10] We are grateful to the authors for letting us use their data.

center of gravity of the government to the ideological position of the median voter. Since the position of each party represented in the legislature is known, we can use the position of the party with the median legislator as a proxy for the median voter preference. Hence we also test our model using this relative center of gravity measure. (In cases with single party majority governments – where the government party controls the median legislator by definition – we use the *mean* position of the legislative parties weighted by the parties' seat shares).[11]

Turning to measurement of electoral system, the theoretical distinction between majoritarian two-party systems and proportional multiparty systems is roughly matched by differences in actual electoral systems (see Table 3). With the partial exception of Austria (because of the strong position of the two main parties), all PR systems tend to have multiple parties and coalition governments, whereas the non-PR systems have few parties and frequent single party majority governments (although Australia and Ireland *have* experienced several instances of coalition governments).[12] This is indicated in the third column of Table 3 using Laasko and Taagepera's (1979) measure of the effective number of parties in parliament.[13] France is somewhat of an outlier among the majoritarian cases, but the second round of voting in the French run-off system usually involves candidates from only two parties.

The proportionality of the electoral system measure in the last column is a composite index of two widely used indices of electoral system. One is Lijphart's measure of the effective threshold of representation based on national election laws. It indicates the actual threshold of electoral support that a party must get in order to secure representation. The other is Gallagher's measure of the disproportionality between votes and seats, which is an indication of the extent to which smaller parties are being represented at their full strength. The data are from Lijphart (1994). Note that the proportionality index is consistent with the division into a majoritarian and a

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[11] We did the same in a small number of cases where the government position is equivalent to the median legislator, but where it is not a single-party majority government.

[12] Ireland is perhaps the most ambiguous case, but it is not part of the redistribution regression and the results for partisanship are not sensitive to the particular electoral system measure we use or whether Ireland is included or excluded.

[13] The effective number of parties is defined as one divided by the sum of the square root of the shares of seats held by different parties (or one divided by the Hilferding index).

proportional group: there are no cases that should be "switched" based on their value on the index.

[Table 3 about here]

We also controlled for variables that are commonly assumed to affect redistribution and/or partisanship. These variables, with definitions, sources, as well as a short discussion of causal logic, are listed below. Country means and a correlation matrix are provided in Appendix 4.

Pre tax and transfer inequality. This variable is included to capture the Meltzer-Richard logic that more inequality leads to more redistribution. It is measured as 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. We are using earnings data, despite their limitations, because the Meltzer-Richard model applies to individuals, not households. The data is from OECD's wage dispersion data set (unpublished electronic data).

Constitutional veto points. This is Huber, Ragin, and Stephen's (1993) composite measure of federalism, presidentialism, bicameralism, and the frequency of referenda. The more independent decision nodes, the more veto points. The left in countries with many veto points may have found it harder to overcome opposition to redistributive spending.

Unionization. According to the power resource argument, high union density should lead to more political pressure for redistribution and a stronger left, while simultaneously reducing primary income inequality. The data are from Visser (1989; 1996).

Voter turnout. Lijphart (1997) argues that there is much evidence to the effect that voter non-turnout is concentrated among the poor. Higher turnout may therefore be associated with less redistribution. The turnout data are from annual records in Mackie and Rose (1993) and in

International Institute for Democracy and Electoral Assistance (1997).

Unemployment. Since unemployed receives no wage income, they are typically poor in the absence of transfers. Since all countries have public unemployment insurance, higher unemployment will therefore "automatically" be linked to more redistribution. We us standardized rates from OECD, *Labour Force Statistics* (Paris: OECD, various years).

Real per capita income. This is a standard control to capture "Wagner's Law", which says that demand for social insurance is income elastic and therefore will raise spending and redistribution. The data are expressed in constant 1985 dollars and are from the World Bank's Global Development Network Growth Database (http://www.worldbank.org/research/growth/GDNdata.htm) – itself based on Penn World Table 5.6, Global Development Finance and World Development Indicators.

Female labor force participation. Women's participation in the labor market is likely to affect redistributive spending because it entitles some women to benefits (unemployment insurance, health insurance, etc) that they would otherwise not receive. Since women tend to be lower paid it may also increase support for the left and for redistributive policies. The measure is female labor force participation as a percentage of the working age population and is taken from OECD, *Labour Force Statistics,* Paris: OECD, various years.

3.2. Statistical model

Our starting point for estimating **(SE.1)** is a simple error correction model. In this model, current redistribution, $R_{i,t}$, is equal to past redistribution plus a contribution from redistributive partisan policies, $P_{i,t}$ (and potentially other factors), that deviate from policies that would preserve the status quo level of redistribution:

$$R_{i,t} = \lambda \cdot [\alpha + \beta \cdot P_{i,t} - R_{t,t-1}] + R_{i,t-1} + u_{i,t}$$

where λ is speed with which redistribution changes in response to changes in policy, and *u* is

identically and independently distributed with mean 0 and variance s_u^2.

With our data on redistribution, however, we cannot estimate this model directly since the observations on the dependent variable for each country are unequally spaced, varying between 2 and as many as 10 years. To deal with this missing data problem we develop a modified version of the model where we substitute the above expression for $R_{i,t-1}$, $R_{i,t-2}$, etc., until we get to another observation of the lagged dependent variable. This procedure yields the following expression:

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

or

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

The second term in the last expression is a measure of the cumulative effect of partisanship over a period of N years, where N is the gap between the current and previous observation (s is the lag in years). Of course, in so far as other variables affect redistribution we need to calculate the cumulative effects of these in precisely the same manner as for partisanship. Since we have annual observations for partisanship and all control variables, the estimated model is based on complete time series except for the dependent variable. The model is estimated by choosing a value for λ that maximizes the explained variance.

Given our assumptions the composite errors are serially uncorrelated[14], but because the error term depends on N, there is heteroscedasticity. The reported standard errors adjust for such heteroscedasticity, but not for contemporaneous correlation of errors because the latter tends to be inaccurate when there are few observations over time (Wallerstein and Moene 2003). In practice, however, the results are very similar when also adjusting for contemporaneous correlation (known as panel corrected standard errors; see Beck and Katz 1995), and we therefore do not

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[14] $E\left(\sum_{s=1}^{N_1}\left[(1-\lambda)^s u_{i,t-s}\right] \cdot \sum_{s=1}^{N_2}\left[(1-\lambda)^s u_{i,t-(N_1+1)-s}\right]\right) = 0$ since the errors in the first square bracket run from $u_{i,t}$ to $u_{i,t-N_1}$ and in the second from $u_{i,t-(N_1+1)}$ to $u_{i,t-(N_1+1)-N_2}$.

report them here.

The model used to explain partisanship in the second part of the analysis **(SE.2)** is a simple OLS regression that is explained below.

3.3. Findings

3.3.1. Redistribution. We begin our presentation with the results from estimating a simple baseline model with economic variables only (column 1 in Table 4). As expected, female labor force participation and unemployment are associated with more redistribution. Contrary to Wagner's Law, higher per capita income slightly reduces redistribution, although the result is not statistically significant across model specifications.

As in other studies, we also find that inequality of pre tax and transfer earnings has a *negative* effect on redistribution, contrary to the Meltzer-Richard model expectation. This negative effect is statistically significant at a .01 level, and the substantive impact is also strong: a one standard deviation increase in inequality is associated with a .3 standard deviation reduction in redistribution.

[Table 4 about here]

Yet the effect of inequality *reverses* (though the positive effect is not significant) when we include controls for the political-institutional variables (columns 2-4). One likely reason for this change is that left governments, as well as strong unions and PR, not only cause an increase in redistribution but also reduce inequality. For example, partisan differences in educational policies are likely to have an effect on the equality of the wage structure. If so, excluding partisanship produces an omitted variable bias on the coefficient for inequality.

The most important result in Table 4 is that right partisanship has a strong and statistically significant negative effect on redistribution, regardless of whether we use the absolute (column 2) or the relative (column 3) measure of partisanship. A one standard deviation shift to the right reduces redistribution by about one third of a standard deviation. This is confirmatory evidence

for much previous research, especially Bradley et al. (2003). The result that partisanship matters *even* when measured relative to the ideological center of the legislature, however, is new and important to our story. It implies that political parties, and the coalitions they form or represent, matter for redistribution. Our model is precisely designed to explain why center-left coalitions form in some countries and center-right coalitions in others.

The results also suggest that multiple veto points, as expected, reduce redistribution, and that PR has a direct (positive) effect on redistribution. The latter effect holds regardless of which measure of electoral system in Table 3 that we use. One possible reason for this effect is implied by our model. Center-left governments in the model will redistribute more to the poor under PR than center-left governments under majoritarian systems, assuming that the probability of a left deviation from a median voter platform under majoritarian rules is not very high. Center-right governments in both systems, on the other hand, operate under the same democratic constraint and will either give the same to the poor or less under majoritarian rules if there is a deviation from a median voter platform. To test whether this holds true, we ran the same model using the percentage reduction in the poverty rate instead of reduction in the gini coefficient as the dependent variable. The poverty rate is defined as the percentage of households with incomes below 50 percent of the median. In turns out that whereas the effect of partisanship is about the same, the direct effect of PR is notably stronger (and highly statistically significant).[15] At least part of the reason for the direct effect of PR therefore appears to be that center-left governments redistribute more to the poor under PR than under majoritarian rules.[16] But the key for our argument is that electoral system affects partisanship, which is the topic of the next section.

3.3.2. Partisanship. While both government partisanship and electoral system are important in explaining redistribution, partisanship itself is shaped by the distinct coalitional politics

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[15] The effect of going from a majoritarian system to a PR system is to increase redistribution to the poor by .7 standard deviations whereas the effect on the gini coefficient is .5 standard deviations.

[16] The effects of the control variables are roughly similar with the exception that the negative effect of earnings inequality remains after inclusion of all controls (though this effect is not significant).

associated with different electoral systems. A key implication of our argument is that center-left governments tend to dominate over long periods of time under PR, whereas center-right governments tend to dominate under majoritarian institutions. Although the electoral system has a direct effect on redistribution, we argue that partisanship is one of the key mechanisms through which it exerts an effect on redistribution.

We use the partisan center of gravity (CoG) index as a dependent variable and indicators for party and electoral systems as independent variables. We have data for 18 countries that have been democracies since the Second World War, beginning with the first democratic election after the war and ending in 1998. One country – Switzerland – has a collective executive that prevents coalition politics from having any influence on the composition of the government. We therefore exclude this case from the analysis, although every result reported in this section goes through with Switzerland included.[17]

Table 1 presented in the beginning of this paper is a simple cross-tabulation of electoral system and government partisanship using annual observations as the unit of analysis. Governments are coded as being left-of-center if their position on the composite left-right index is to the left of the overall mean. This is somewhat arbitrary since the mean may not correspond to a centrist position. An alternative would be to define the center as the middle of the scale. But in two of the three expert surveys the middle of the scale is not explicitly defined as centrist in terms of a common standard, and experts may well equate it instead with the *observed* center of a party system, whether or not this center is shifted to the left or right. In practice, the choice has little effect on the results.

Identifying a centrist position, however, is important for a different reason. If an **LM** leadership party in a majoritarian system is centrist then the model implies that it stands a good chance of winning. Observing such a party in government is therefore consistent with the model. At the same time it cannot be counted as confirmatory evidence since we do not have any measure to determine whether the party platform is credible. The relative frequency of center and

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[17] Because right parties cannot be excluded from government power in Switzerland, we should expect redistribution to be lower than in other PR countries. This is in fact the case since the average pre to post-tax and transfer reduction in the gini is 9 percent in Switzerland whereas it is 28 percent in other PR countries

center-right governments therefore cannot be hypothesized a priori. Moreover, because our theory implies that the political space in majoritarian systems is tilted to the right (due to strategic voting in a setting of incomplete platform commitment), *if* we include governments that are centrist in an absolute sense, these would be counted as center-left in terms of their relative position. Using a scale such as the composite CoG index the results would therefore be biased against the theory since the center on this scale is almost certainly affected by relative assessments. Our solution is to use one of the component measures in the CoG index by Castles and Mair to exclude governments that are centrist in the absolute sense. The Castles-Mair measure is the only one that explicitly defines the middle value (3) as a party having a centrist left-right ideology.[18]

As pointed out in the introduction, in a simple cross-tab of electoral system and government partisanship there is only one country, Germany, that does not conform to the predicted pattern. In this case there were 34 years with center-right governments and only 16 years with center-left governments. A possible explanation is the role of the German Christian Democrats (CDU/CSU). This party is usually seen as a coalition of groups from different locations in the income distribution, where group differences are worked out through intra-party bargaining (as we would expect in a representative party). The Christian Democrats can therefore credibly claim to be closer to the center than a typical conservative party representing mainly high-income voters. This helps explain why the small pivotal liberal party (FDP) chose to ally with CDU/CSU instead of the Social Democratic Party (SPD) in most of the postwar period. But note that even in this special case, government policies are heavily influenced by PR since the right has, in effect, gained access to government power only by accepting a compromise with lower income groups that involves at least some redistribution.

Germany aside, one can question the results in Table 1 for the same reason that was pointed out when using the government center of gravity measure to explain redistribution: It could reflect differences in voter preferences rather than in coalitional party politics. Note, however, that strategic voting in majoritarian systems is expected to shift the legislative center to the right, and the distribution of seats in PR systems should not matter so long as coalitions can

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[18] We also excluded centrist governments from the PR cases because they neither confirm nor disconfirm the theory (although bias is less of a concern here). In total, 95 out of 734 country-years were coded as centrist on the Castles-Mair scale.

be formed that are either to the left or to the right of the center. So evidence on absolute differences in partisanship is clearly relevant to our theory. Still, using the relative measure of partisanship allows us to exclude explanations that emphasize the distribution of voter preferences (discussed below), and it serves as a useful robustness test. In Table 5 governments are therefore coded as center-left (center-right) only if they are to the left (right) of the legislative median (or the legislative mean in cases with single party majority governments). This does not change the results very much, although they are (not surprisingly) slightly weaker. About two thirds of governments under PR are now to the left of the legislative median, whereas two thirds of governments under majoritarian institutions are to the right. As before, all but one country conform to this pattern.[19]

[Table 5 about here]

What alternative explanations might there by for the pattern observed in Table 5? Because we use the difference between the position of the government and the median legislator we have limited such alternatives to variables that affect the *post-election* partisan composition of governments. We thus implicitly "control" for all variables that may affect the distribution of preferences in the electorate. While there are obviously a plethora of situationally specific factors that shape each instance of government formation, variables that would *systematically* bias the composition of governments in one ideological direction or the other are in fact not easy to think of.

To our knowledge there are only two candidates for such variables in the existing literature. The first goes back to Rokkan's (1970) well-known explanation for the choice of

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[19] The "outlier" is no longer Germany since most governments in that country were in fact to the left of the median, even as they tended to be to the right compared to other PR systems. Instead, the deviant case is France where slightly more than half (29 of 52) of the observations are to the left of the legislative median. This is because the party with the median legislator tends to be very right-wing, whereas French governments sometimes include representation from more moderate parties. The rightist orientation of French politics is also clearly evident in the fact that every president in the postwar period, except for François Mitterrand, has been from a right of center party.

electoral systems (see also Boix 1999 and Alesina and Glaeser 2004). Rokkan argues that at the time of the extension of the franchise, when a united right faced a rising but divided left, the governing right chose to retain majoritarian institutions. Conversely, when a divided right faced a rising and united left, the response was to opt for PR. *If* this pattern of fractionalization persisted in the postwar period, the right would tend to have an advantage in majoritarian systems while the left would tend to have an advantage under PR (in the latter case because the transaction costs of bargaining presumably rise with the number of parties). This would produce the pattern that our model predicts, but for different reasons.

A simple test of this argument is to see if there is a relationship between fragmentation and electoral system in the expected direction. For this purpose we use a variable in the Cusack-Engelhardt data set, which is the difference between party fractionalization on the left and right, where fractionalization is defined the usual way as one minus the sum of the squared seat shares held by parties to the left or to the right of the center (Rae 1968). There is in fact no significant correlation (r = -0.15), which could either mean that Rokkan was wrong or that the relationship between fractionalization and electoral systems has changed over time. Either way, fractionalization should not affect the relationship between electoral system and partisanship in the period we focus on.

To confirm this we ran a simple multiple regression, using partisanship as the dependent variable and electoral system and fractionalization as independent variables (see Table 6).[20] Note that the coefficient for electoral system variable is very similar whether fractionalization is included or not (compare columns 1 and 2). In substantive terms, going from a majoritarian to a PR system shifts the center of gravity of the government by a factor that is roughly equivalent to moving from an average Christian democratic government to a social democratic government, or from a conservative government to a Christian democratic government. Not surprisingly, greater

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[20] Since there is little meaningful variance in electoral systems over time, we simply ran a cross-section regression on the averages from 1950-1996 (for which we have complete data on several control variables). It is of course possible, indeed standard, to pool the country time-series while correcting for serial correlation by adding a lagged dependent variable (PCTS). Our results hold up in such a specification – indeed the levels of significance improve notably – but in our view it is misleading to use PCTS regressions when nearly all the evidence is cross-sectional.

fractionalization on the left than on the right *does* lead to more right-leaning governments on average. But this is not relevant to our story.

The second argument is that vote-seat disproportionalities may favor the right under majoritarian institutions. The explanation would be that the boundaries of electoral districts in majoritarian democracies were drawn up before the full impact of the industrial revolution, which led to an under-representation of urban areas where the left had the strongest support (Cox and Katz 2002; Monroe and Rose 2002; Rodden 2005). While subsequent redistricting may have addressed some of these inequities, they could still play a role in explaining why the left is disadvantaged in majoritarian systems (PR being more unbiased by design). We tested this possibility using a variable that is simply the difference between the legislative seat share of right parties and these parties' share of the vote. It is referred to as "right over-representation" in Table 6.

[Table 6 about here]

In contrast to left-right fragmentation, this variable does not register any significant effect, and the sign is in fact in the wrong direction (see column 3). This is somewhat puzzling since there is a positive bivariate correlation between this variable and government partisanship (r=.37), as well as between this variable and electoral system (r=.51). The explanation is probably very simple, however. Remember that we are modeling government partisanship, not the governing party's margin of victory. The latter does not matter in a majoritarian "winner-take-all" system. Hence, the only scenario in which the vote-seat disproportionality would affect government partisanship is when the right loses the electoral vote but wins a majority of seats. As illustrated by the British case, such instances are rare. In only one postwar election (1951) did the Conservative win more seats than Labour despite losing the popular vote, and in another (1974) Labour in fact came out on top despite getting fewer votes.[21]

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[21] The right over-representation variable, defined as the difference between right seat and vote shares, over-states the right advantage in the case of Britain. The reason is that the Liberal Party is located between Labour and the Conservatives and always gets fewer seats than votes. As a result *both* Labour and the Conservatives tend to get more seats than implied by their votes.

The last two columns use the *absolute* government CoG measure as the dependent variable, which maximizes the cross-national variance in partisanship. But when entered simultaneously, neither fragmentation nor over-representation simultaneously register a significant effect. The electoral system, on the other hand, continues to have roughly the same impact as before. Finally, the last column tests three variables that may reasonably be expected to affect the distribution of voter preferences, and hence the political center of a country. Predictably, high unionization rates are associated with more left-leaning governments, but the effect is weak and statistically insignificant. Electoral participation and female labor force participation (both of which might be expected to benefit the left) are also insignificant and the signs are in the wrong direction.[22] The electoral system remains the sole variable with a strong and statistically significant effect.

4. Conclusion

The details of actual tax and spend policies for the purpose of redistribution are complex, but the explanation for redistribution in advanced democracies is probably fairly simple. To a very considerable extent, redistribution is the result of electoral systems and the class coalitions they engender. The contribution of this paper is to provide a very general model that explains the electoral system effect, and to empirically test this model.

Electoral systems matter because they alter the bargaining power and coalition behavior of groups with different interests. In majoritarian systems, parties have to balance the incentive to capture the median voter with the incentive to pursue the policy preferred by their core constituencies. Because the median voter is closer to the distributive interests of the center-right party, any probability that parties will defect from a median voter platform once elected will make the median voter more likely to vote for the center-right.

This result contrasts to multiparty PR systems where governments are based on coalitions

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However, we resisted the temptation to "finesse" the measure to reflect this and other unique national circumstances.

[22] The same is true for other potential variables that we tested such as unemployment, the size of the industrial work force, and income per capita.

of class parties. In this context, center parties will tend to find it in their own interest to ally with parties to the left. This result follows because the middle class can use taxation of the rich to bargain a tax rate and benefit level with the poor that is closer to its own preference. There is no opportunity for a coalition of the center and right to exploit the poor in the same manner. We have shown that these propositions are supported by data for redistribution.

The argument and findings raise several questions for further research. First, the model may have very different implications for developing democracies if the poor has no collective action capacity or the rich can threaten coups in such countries. Specifically, if the poor can be ignored when they are not participating in government, this increases the likelihood of center-right governments under PR. It also seems plausible that better measures of differences in the collective action capacity of the poor will explain some of the residual variance in redistribution for rich democracies.

Another major area of research is how to integrate arguments about the role of insurance into the model. Transfer spending not only redistributes but also provides insurance against income loss in the event of unemployment, sickness, etc. (Moene and Wallerstein 2001). We have argued elsewhere that there exists a strategic complementarity between such insurance and individuals' decisions to invest in particular types of skills (Iversen and Soskice 2001; Estevez et al. 2001; Iversen forthcoming). Specifically, if the government can credible commit to redistributive spending, it serves as an insurance against the loss of income when specific skills are rendered obsolete by technological and other forms of change. The argument in this paper suggests that PR may be a key commitment mechanism in political economies that depend on workers making heavy investments in highly specific skills.

Third, the model may be expanded to explain changes in partisan advantage over time. Although we have abstracted from differences in the dispersion of the earnings distribution, it may be conjectured that as pre-fisc income inequality grows, middle class fears of being soaked by the poor grow in majoritarian systems, while their incentive to join the poor in soaking the rich intensifies under PR. Thus, contrary to Meltzer-Richard, rising inequality in majoritarian systems may be associated with a greater advantage for the right. This is in fact what Poole, Rosenthal, and McCarty (forthcoming) find in a new study of polarization and partisanship in the U.S. Whether the opposite is true in PR countries is an interesting question for future research.

Appendix 1:

Leadership parties dominate representative parties in majoritarian systems

We sketch out in this appendix why we make the assumption that there are two leadership parties in majoritarian elections. (It is not meant as a formal proof as that would require assumptions on the conditions under which different types of parties can be formed.)

If a representative pary, a ρ party for convenience, represents more than one group, as in a majoritarian system, policy decisions in government are arrived at by Rubinstein consensus bargaining between the two groups involved. If, under majoritarian rule, **LM** and **MH** are ρ parties, their chosen policies if elected will be respectively to the left and to the right of the median voter's ideal point. Both **LM** and **MH** might wish to commit during the election to policies closer to M's position, but they cannot since policies will be bargained out between the two groups the party represents if it is in power. Note that elections have no informational importance since voters know what policies a ρ party will carry out if in government.

In a leadership party, a λ party for convenience, (say **LM**), the leader has complete powers to choose policies if elected, but voters are unsure whether the leader represents M or L. Before the election voters know only that the probability that the leader in either party represents M is in the open interval (0.5,1). This assumes that each party is equally good at picking M leaders on average. The election period provides information about their probabilities: let π_{LM} and σ be the probabilities that the **LM** leader and the **MH** leader are seen by the electorate as representing M.

We now show that if both parties are ρ parties, **LM** will always win, which implies that **MH** will switch to becoming a λ party, since it will then sometimes win. But if **MH** is a λ party, it will always beat an **LM** ρ party. Only leadership parties are therefore sustainable in equilibrium.

(i) Assume both parties are ρ parties (**LM**-ρ, **MH**-ρ). Then, if **LM**-ρ is elected the payoff to M is $\frac{1}{2}(\overline{\tau}^{H} - \overline{\tau}^{M})$, the result of Rubinstein bargaining between the L and M factions after the

election. If **MH**-ρ is elected, M's payoff is $\frac{1}{2}(\overline{\tau}^H - \overline{p}^L - \overline{\tau}^M)$. Hence M will always vote for

LM-ρ, so that:

Proposition A.1 Given (**LM**-ρ, **MH**-ρ), **LM**-ρ wins with probability 1.

Thus (**LM**-ρ, **MH**-ρ) is not an equilibrium and **MH** will switch to a λ party since, given **LM**-ρ, it will have some positive probability of winning – whenever π_{MH}, the probability of the **MH**-λ leader being an M-type, is close enough to 1.

(ii) Now assume ((**LM**-ρ, **MH**-λ). As in (i), if **LM**-ρ is elected the payoff to M is $0.5 \cdot (\overline{\tau}^H - \overline{\tau}^M)$. The probability that the **MH**-λ leader is an M-type $\pi_{LM} \in (0.5,1)$, so the minimum payoff to M from electing **MH**-λ is greater than $0.5 \cdot (\overline{\tau}^H - \overline{p}^L)$. Since by assumption $\overline{\tau}^M > \overline{p}_L$, this implies the following proposition:

Proposition A.2: Given (**LM**-ρ, **MH**-λ), **LM**-ρ has a zero probability of winning.

[Note also that the payoff to M from **LM**-λ, $\pi_{LM}(\overline{\tau}^H - \overline{p}^L) - (1 - \pi_{LM})\overline{\tau}^M$, is always greater

than that from **MH**-ρ, $\frac{1}{2}(\overline{\tau}^H - \overline{\tau}^M - \overline{p}^L)$, since $\pi_{LM} > 0.5$]

Appendix 2

The probabilities of partisan governments under different electoral systems

2(a) Proof of Proposition I: *MH* probability of winning in majoritarian elections is greater than fifty percent.

Proposition I: *Under majoritarian elections, the ex-ante probability that the MH party will win is*

$$\Pi_{MH} = 0.5\left(1 + \frac{1}{1 + \overline{\tau}^H / (2\overline{\tau}^M)}\right) > 0.5.$$

Proof: **(i)** *L* votes *LM* iff $\pi_{LM}\left(\overline{\tau}_H / 2\right) + (1 - \overline{\pi}_{LM})(\overline{\tau}^H + \overline{\tau}^M) \geq \pi_{MH}\left(\overline{\tau}_H / 2\right).$ Since $(\overline{\tau}^H + \overline{\tau}^M) > \overline{\tau}_H / 2$, this is always true. **(ii)** *H* votes *MH* iff $-\pi_{MH}\overline{\tau}^H > -\overline{\tau}^H$, which is always true. **(i)** and **(ii)** imply that *MH* wins iff *M* votes *MH*. Therefore Π_{MH} is the same as the probability that *M* votes *MH*.

M votes *MH* iff $\pi_{MH}(\overline{\tau}^H / 2) > \pi_{LM}(\overline{\tau}^H / 2) - (1 - \pi_{LM})\overline{\tau}^M$. Thus

$$\Pi_{MH} = \Pr\left[\pi_{MH}(\overline{\tau}^H / 2) > \pi_{LM}(\overline{\tau}^H / 2) - (1 - \pi_{LM})\overline{\tau}^M\right]$$

where π_{MH} and π_{LM} are independently uniformly distributed on $(0.5, 1)$. Let F_X be the distribution function of *X* and f_X its probability function and defining : $\beta \equiv \dfrac{\overline{\tau}^M}{\overline{\tau}^H / 2}$ Then:

$$\Pi_{MH} = \Pr\left[\pi_{MH} > \pi_{LM}(1 + \gamma) - \gamma\right]$$

$$= \Pr\left[\pi_{MH} > \pi_{LM}(1 + \gamma) - \gamma \mid \pi_{LM}(1 + \gamma) - \gamma \geq 0.5\right] + \Pr\left[\pi_{LM}(1 + \gamma) - \gamma < 0.5\right]$$

$$= \int_{\pi_{LM} = \frac{.5+\gamma}{1+\gamma}}^{1} \left(1 - F_{\pi_{MH}}(\pi_{LM}(1 + \gamma) + \gamma)\right) f_{\pi_{LM}}(\pi_{LM}) d\pi_{LM} + F_{LM}\left(\frac{.5 + \gamma}{1 + \gamma}\right)$$

$$= \int_{\pi_{LM} = \frac{.5+\beta}{1+\beta}}^{1} \frac{1 - \pi_{LM}(1+\gamma) + \gamma}{0.5^2} dy + 2\left(\frac{.5+\gamma}{1+\gamma} - .5\right)$$

$$= 4(1+\gamma)\left[1 - \frac{.5+\gamma}{1+\gamma}\right] - 4(1+\gamma)\left[\frac{1}{2} - \frac{1}{2}\left(\frac{.5+\gamma}{1+\gamma}\right)^2\right] + \frac{\gamma}{1+\gamma}$$

$$= \frac{0.5}{1+\gamma} + \frac{\gamma}{1+\gamma} = 0.5\left(1 + \frac{\gamma}{1+\gamma}\right) = 0.5\left(1 + \frac{\bar{\tau}^M/(\bar{\tau}^H/2)}{1 + \bar{\tau}^M/(\bar{\tau}^H/2)}\right)$$

$$= 0.5\left(1 + \frac{1}{1 + (\bar{\tau}^H/2\bar{\tau}^M)}\right) > 0.5$$

for $\bar{\tau}^H < \infty$. ∎

The intuition of the first term is that $\dfrac{\gamma}{1+\gamma}$ is the probability that $\pi_{LM}(1+\gamma) - \gamma < .5$ where M certainly votes **MH** and there is a .5 probability that M votes **MH** when $\pi_{LM}(1+\gamma) - \gamma \geq .5$ which occurs with probability $1/1+\gamma$

2(b). Proof of Proposition II (a): When M is formateur it chooses L

The equations underlying the bargaining between M and L: M's offer to L is $s_M^L = \beta s_L^L$, where β is the common discount factor; and L's offer to M is $\bar{\tau}^H + \bar{\tau}^M - s_L^L = \beta\left(\bar{\tau}^H + \bar{\tau}^M - s_M^L\right)$.

Solving these two equations for s_M^L yields $s_M^L = \dfrac{\beta}{1+\beta}\left(\bar{\tau}^H + \bar{\tau}^M\right)$;

with $s_M^M = \dfrac{1}{1+\beta}\left(\bar{\tau}^H + \bar{\tau}^M\right)$ reflecting M's first mover advantage. As $\beta \to 1$ (i.e. the time period between offers goes to zero), $s^L = s^M = 0.5\left(\bar{\tau}^H + \bar{\tau}^M\right)$. Hence

$$p_{LM}^{M} = s^{M} - \overline{\tau}^{M} = 0.5\left(\overline{\tau}^{H} - \overline{\tau}^{M}\right).$$

The equations underlying the bargaining between **M** and **H** have to take into account that the "cake" is reduced to allow a payment to L such that $p^{L} = p^{M}$ as the time period between offers goes to zero. This requires that the reduction is $\frac{1}{3}\left(\overline{\tau}^{H} - \overline{\tau}^{M}\right)$. **M**'s offer to **H** is

then $s_{M}^{H} = \beta s_{H}^{H}$ and **H**'s offer to **M** is

$$\overline{\tau}^{H} + \overline{\tau}^{M} - \frac{1}{3}\left(\overline{\tau}^{H} - \overline{\tau}^{M}\right) - s_{H}^{H} = \beta\left(\overline{\tau}^{H} + \overline{\tau}^{M} - \frac{1}{3}\left(\overline{\tau}^{H} - \overline{\tau}^{M}\right) - s_{M}^{H}\right) \text{ implying}$$

$$s_{M}^{H} = \frac{\beta}{1+\beta}\left(\frac{2}{3}\overline{\tau}^{H} + \frac{4}{3}\overline{\tau}^{M}\right) \rightarrow s^{H} = \frac{1}{3}\overline{\tau}^{H} + \frac{2}{3}\overline{\tau}^{M} \text{ and therefore}$$

$$s_{M}^{M} = \frac{1}{1+\beta}\left(\frac{2}{3}\overline{\tau}^{H} + \frac{4}{3}\overline{\tau}^{M}\right) \rightarrow s^{M} = \frac{1}{3}\overline{\tau}^{H} + \frac{2}{3}\overline{\tau}^{M}. \text{ So}$$

$$p^{M} = s^{M} - \overline{\tau}^{M} = \frac{1}{3}\left(\overline{\tau}^{H} - \overline{\tau}^{M}\right) \text{ which is indeed equal to } p^{L}.$$

[It is also possible, instead of working out what p^{L} has to be in advance and taking the necessary reduction in the cake as exogenous, to assume that the reduction in the cake has to be equal to $p_{M}^{M} = s_{M}^{M} - \overline{\tau}^{M}$ whenever **M** makes an offer and equal to $p_{H}^{M} = s_{H}^{M} - \overline{\tau}^{M}$ whenever **H** makes an offer. The equations are then $s_{H}^{M} = \beta s_{M}^{M}$ and

$$\overline{\tau}^{H} + \overline{\tau}^{M} - \left(s_{M}^{M} - \overline{\tau}^{M}\right) - s_{H}^{H} = \beta\left(\overline{\tau}^{H} + \overline{\tau}^{M} - \left(s_{H}^{M} - \overline{\tau}^{M}\right) - s_{M}^{H}\right). \text{ These imply as}$$

$$\beta \rightarrow 1 \text{ that } p^{M} = p^{L} = \frac{1}{4}\overline{\tau}^{H} - \frac{1}{2}\overline{\tau}^{M} \text{ so long as } \overline{\tau}^{H}/2 \geq \overline{\tau}^{M} \text{ and } p^{L} = p^{M} = p^{H} = 0$$

otherwise. So **M** will clearly prefer to choose the **LM** coalition in this formulation as well. In effect **M** does worse here because **M** is bargaining for **L** as well as for **M**: thus this relates to Harsanyi's paradox (1977) that if 3 players bargain independently in a Nash bargaining game they split the cake 1/3 each; but if any two players join forces they each get only 1/4 of the cake.]

2(c): **Proof of Proposition II(c) :** *LM* **coalitions are more frequent with a randomly chosen formateur**

In the following Rubinstein alternating offers games with equal impatience it is assumed that the the delay between offers goes to zero. First, we consider the payoffs to the three parties from each of the three coalitions **IJ**.

 LM:

$$p_{LM}^{L} = 0.5(\overline{\tau}^{M} + \overline{\tau}^{H})$$
$$p_{LM}^{L} = 0.5(\overline{\tau}^{M} + \overline{\tau}^{H}) - \overline{\tau}^{M}$$
$$= 0.5(\overline{\tau}^{H} - \overline{\tau}^{M})$$
$$p_{LM}^{H} = -\overline{\tau}^{H}$$

where $p_{LM}^{L} > p_{LM}^{M} > p_{LM}^{H}$ so that assumption **(6)** is satisfied.

MH: Assumption **(6)** does not hold here since unconstrained bargaining between **M** and **H** implies that L receives less than M. Hence the cake needs to be reduced by $x = p_{MH}^{L} = p_{MH}^{M}$ to satisfy assumption **(6)**.

$$p_{MH}^{M} = 0.5(\overline{\tau}^{M} + \overline{\tau}^{H} - x) = 0.5(\overline{\tau}^{M} + \overline{\tau}^{H} - p_{MH}^{M}) - \overline{\tau}^{M} = \frac{1}{3}\left(\overline{\tau}^{H} - \overline{\tau}^{M}\right)$$

$$p_{MH}^{H} = \frac{1}{2}\left(\overline{\tau}^{H} + \overline{\tau}^{M} - \frac{1}{3}(\overline{\tau}^{H} - \overline{\tau}^{M})\right) - \overline{\tau}^{H} = \frac{2}{3}\left(\overline{\tau}^{M} - \overline{\tau}^{H}\right)$$

MH: Here there are two cases to consider. In case **(i)** bargaining is not constrained by assumption **(6)**:

$$p^L_{LH} = 0.5(\overline{\tau}^M + \overline{\tau}^H)$$

(i) $$p^M_{LH} = -\overline{\tau}^M$$

$$p^H_{LM} = 0.5(\overline{\tau}^M + \overline{\tau}^H) - \overline{\tau}^H = 0.5(\overline{\tau}^M - \overline{\tau}^H)$$

It can be seen the condition for assumption **(6)** holding is $-\overline{\tau}^M \geq 0.5(\overline{\tau}^M - \overline{\tau}^H)$ or $\overline{\tau}^M \leq \overline{\tau}^H / 3.$ If this does not hold, then in case **(ii)** the cake needs to be reduced by x, where x is now defined by $p^M_{LH} = x - \overline{\tau}^M = p^H_{LH}$: M needs to be given x to make M's payoff equal to that of H. Hence:

(ii) $$p^H_{LH} = 0.5\left(\overline{\tau}^H + \overline{\tau}^M - (p^H_{LH} + \overline{\tau}^M)\right) - \overline{\tau}^H = -\overline{\tau}^H / 3$$

$$p^L_{LH} = 0.5\left(\overline{\tau}^H + \overline{\tau}^M - (p^H_{LH} + \overline{\tau}^M)\right) = 0.5\left(\overline{\tau}^H + \overline{\tau}^M - (-\overline{\tau}^H / 3 + \overline{\tau}^M)\right) = 2\overline{\tau}^H / 3.$$

Next we consider the choices **L** and **M** will make as formateur:

1) M is formateur. Since $p^M_{LM} > p^M_{MH}$, **M** will always choose **LM.**

2) L is formateur. **L** is indifferent between between **LM** and **MH** **(I).** In **MH** **(ii)**, since the cake is smaller **L** will have a lower payoff than in case **(I)** so that **L** will prefer **LM** to **MH** **(ii).**

Proposition II follows directly from **1)** and **2)**: Since **M** will always choose **LM,** $v^M_{LM} = 1$. Since **L** will choose **LM** at least half the time (and will otherwise choose **MH**), $\min v^L_{LM} = 0.5$. Only **H** may choose **MH,** so $\max v^H_{MH} = 1$. Hence the minimum probability that **LM** will be chosen is $1 \times \frac{1}{3} + \frac{1}{2} \times \frac{1}{3} = \frac{1}{2}$. And the maximum probability that **MH** will be chosen is $\frac{1}{3}$. Hence the minimum proportion of **LM** coalitions relative to **LM** and **MH** coalitions is $\frac{3}{5}$. ∎

Appendix 3

The effect of partisanship on redistribution

In this Appendix we prove Proposition III, that given the electoral system a move from an **MH** government to an **LM** government increases redistribution where redistribution is defined as the difference between Gini coefficients of net and gross income.

Proposition III Let $R \equiv G_{Net} - G_{Gross}$ and $R(P, E)$ be the value of **R** with government P and electoral system E. Then
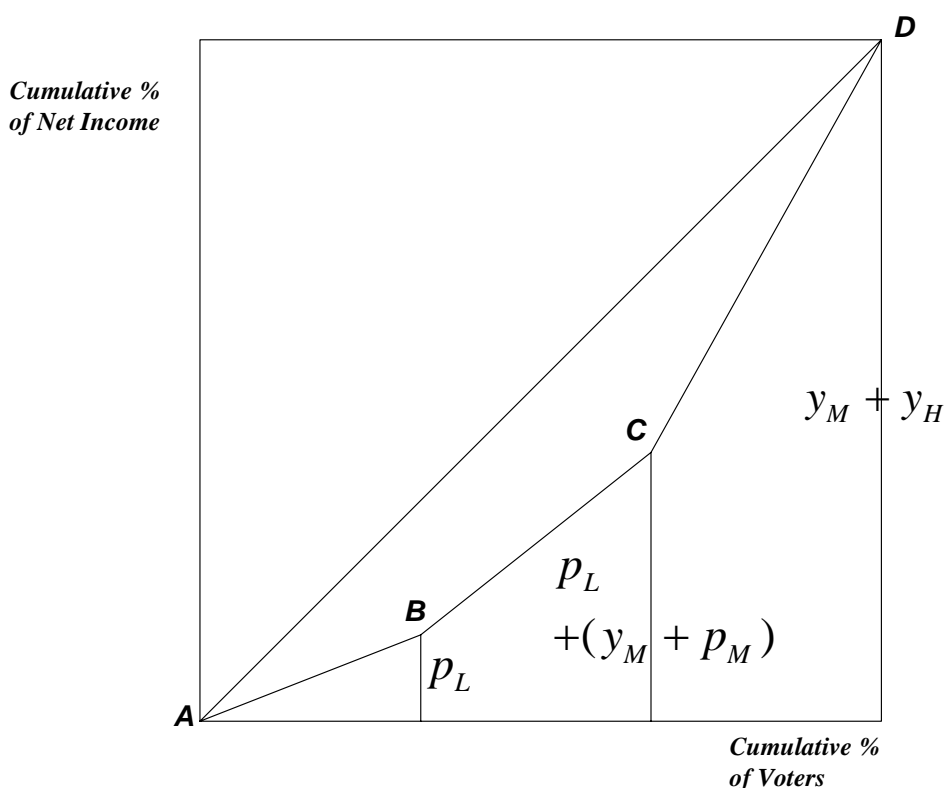
The Gini coefficient is the ratio of the area under ABCD to half the square. Perfect equality is when ABCD coincides with AD. We will assume that $\sum_{I=L,M,H} y_I = 1$ in what follows.

It can be seen that the area under ABCD is equal to

$$G_{Net} = \left(\frac{p_L/3 + p_L/6 + (y_M + p_M)/6}{+(p_L + y_M + p_M)/3 + (p_H + y_H)/6} \right)/0.5$$

(Remember that $\sum_I p_I \equiv 0$.)

We also have

$$G_{Gross} \equiv \left(y_M / 6 + y_M / 3 + y_H / 6 \right) / 0.5$$

So redistribution is defined by

$$R \equiv G_{Net} - G_{Gross} = 2.\left(2 p_L / 3 + p_M / 3 \right) \propto 2 p_L + p_M$$

From the model we can at once write:

$$R(LM, PR) = \overline{\tau}^H$$

since $p_M = 0.5(\overline{\tau}^H - \overline{\tau}^M)$ and $p_L = 0.5(\overline{\tau}^H + \overline{\tau}^M) = 0.5\overline{\tau}$, etc, and

$$R(MH, PR) = 0.5(\overline{\tau}^H - \overline{\tau}^M - \overline{p}_L) + 2\overline{p}_L = 0.5\overline{\tau}^H + \overline{p}_L - 0.5(\overline{\tau}^M - \overline{p}_L).$$

Since $\overline{p}_L < \overline{\tau}^M < \overline{\tau}^H$, $R(LM, PR) > R(MH, PR)$. This establishes the first part of Prop III.

In the majoritarian case

$$R(LM, M) = \left(\overline{\pi}_{LM} (\overline{\tau}^H - \overline{p}_L) - (1 - \overline{\pi}_{LM})\overline{\tau}^M \right)$$
$$+ 2\left((\overline{\pi}_{LM} \overline{p}_L) + (1 - \overline{\pi}_{LM})\overline{\tau} \right)$$

where

$$\overline{\pi}_{LM} = \left[1 + \frac{0.5 + \beta}{1 + \beta} \right] / 2$$

Since $\overline{\pi}_{LM} < 1$, $\min_{\overline{\pi}_{LM}} R(LM, M) > (\overline{\tau}^H - \overline{p}_L) + 2\overline{p}_L > \max_{\overline{\pi}_{MH}} R(MH, M)$ since

$R(MH, M) = \overline{\pi}_{MH}(\overline{\tau}^H - \overline{p}_L) + 2\overline{p}_L$. This establishes the second part of Prop III.

Appendix 4:

Summary Statistics

Country means for variables used in regression analysis

	Redistr ibution	Inequal ity (wages)	Parti- san- ship	Voter turnout	Unioni zation	Veto points	Vocatio nal training	Frag- mentation	Per capita income	Female labor force parti- cipatio n	Unem- ploy- ment
Australia	23.97	1.70	0.47	84	46	3	0.9	-0.39	10909	46	4.63
Austria	-	-	0.30	87	54	-	-	-0.18	8311	51	2.76
Belgium	35.56	1.64	0.36	88	48	1	56.3	-0.34	8949	43	7.89
Canada	21.26	1.82	0.36	68	30	2	4.6	0.18	11670	48	6.91
Denmark	37.89	1.58	0.35	84	67	0	31.8	-0.40	9982	63	6.83
Finland	35.17	1.68	0.30	79	53	1	32.9	-0.18	8661	66	4.48
France	25.36	1.94	0.40	66	18	1	27.9	0.10	9485	51	4.57
Germany	18.70	1.70	0.39	81	34	4	34.9	-0.13	9729	51	4.86
Ireland	-	-	0.42	75	48	-	-	-0.33	5807	37	9.09
Italy	12.13	1.63	0.37	93	34	1	37.5	0.20	7777	38	8.12
Japan	-	-	0.78	71	31	-	-	0.22	7918	56	1.77
Netherlands	30.59	1.64	0.31	85	33	1	42.5	0.18	9269	35	4.62
New Zealand	-	-	0.43	-	-	0	37.4	-0.40	-	-	-
Norway	27.52	1.50	0.15	80	54	-	-	-0.02	9863	52	2.28
Sweden	37.89	1.58	0.17	84	67	0	33.2	-0.40	9982	63	6.83
Switzerland	8.84	1.68	0.25	35	32	6	35.5	0.16	12377	53	0.78
U.K.	22.67	1.78	0.52	76	42	0	10.4	0.08	9282	54	5.01
U.S.	17.60	2.07	0.40	56	23	5	2.9	0.00	13651	53	5.74

Note: Time coverage is 1950-96 except for redistribution and inequality, which are restricted to the LIS observations.

Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Redistribution	1.00												
(2) Inequality	-0.47	1.00											
(3) Partisanship	-0.58	0.48	1.00										
(4) Voter turnout	0.32	-0.76	-0.05	1.00									
(5) Unionization	0.67	-0.71	-0.42	0.49	1.00								
(6) Electoral system	0.38	-0.70	-0.42	0.31	0.47	1.00							
(7) Effective number of parties	-0.66	0.56	-0.39	-0.03	0.18	0.57	1.00						
(8) Left fragmentation	-	-	0.27	-0.40	-0.78	-0.24	-0.07	1.00					
(9) Number of veto points	-0.55	0.64	0.45	-0.56	-0.53	-0.27	0.58	-	1.00				
(10) Vocational training	0.32	-0.6	-0.46	0.52	0.23	0.79	-0.83	-	-0.29	1			
(11) Per capita income	-0.20	0.39	-0.27	-0.56	-0.21	-0.30	-0.08	0.10	0.53	-0.43	1.00		
(12) Female labor force part.	0.51	-0.22	-0.07	-0.19	0.41	0.03	0.05	-0.26	-0.31	-0.12	0.31	1.00	
(13) Unemployment	-0.11	0.09	0.11	0.38	-0.04	-0.09	-0.03	-0.21	-0.04	0.15	-0.31	-0.49	1.00
(14) Manufacturing workforce	-	-	-0.11	-0.30	0.12	0.22	0.16	-0.00	-	-	0.25	0.50	-0.63

Note: Correlations based on period averages.

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Tables

Table 1. Electoral system and the number of years with left and right governments (1945-98)

		Government partisanship		Proportion of right governments
		Left	Right	
Electoral system	Proportional	342 (8)	120 (1)	0.26
	Majoritarian	86 (0)	256 (8)	0.75

Note: Excludes centrist governments (see text below for details).

Table 2. M's payoffs from different party or coalition choices, depending on the electoral system (optimal choices are shaded)

	Choose LM party or coalition	Choose MH party or coalition
PR system	$\frac{1}{2}\left(\overline{\tau}^H - \overline{\tau}^M\right)$	$\frac{1}{3}\left(\overline{\tau}^H - \overline{\tau}^M\right)$
Majoritarian system	$\pi.\left(\overline{\tau}^H / 2\right) - (1-\pi)\overline{\tau}^M$	$\pi.\left(\overline{\tau}^H / 2\right)$

Table 3. Key indicators of party and electoral systems

		Electoral system	Effective number of legislative parties	Proportionality of electoral system
majoritarian	Australia	Majoritarity[1]	2.5	0.19
	Canada	SMP	2.2	0.13
	France	Run-off[2]	3.8	0.16
	Ireland	STV[3]	2.8	0.70
	Japan	SNTV[4]	2.7	0.61
	New Zealand	SMP	2.0	0.00
	UK	SMP	2.1	0.16
	USA	SMP	1.9	0.39
	Average		*2.5*	*0.30*
Proportional	Austria	PR	2.4	0.89
	Belgium	PR	5.2	0.86
	Denmark	PR	4.4	0.96
	Finland	PR	5.1	0.87
	Germany	PR	2.6	0.91
	Italy	PR	4.0	0.91
	Netherlands	PR	4.6	1.00
	Norway	PR	3.3	0.76
	Sweden	PR	3.3	0.90
	Average		*3.9*	*0.90*

Notes: [1] The use of the single transferable vote in single-member constituencies makes the Australian electoral system a majority rather than plurality system; [2] the two-round run-off system has been in place for most of the postwar period with short interruptions of PR (1945 until early 1950s and 1986-88); [3] The Irish single transferable vote system (STV) is unique. While sometimes classified as a PR system, the low constituency size (five or less) and the strong centripetal incentives for parties in the system makes it similar to a median voter dominated SMP system; [4] The single non-transferable voting (SNTV) in Japan (until 1994) deviates from SMP in that more than one candidate is elected from each district, but small district size and non-transferability makes it clearly distinct from PR list systems.

Table 4. Regression results for reduction in inequality (standard errors in parentheses)

	(1)	(2)	(3)
Inequality	-16.75***	13.17	12.48
	(5.68)	(9.36)	(8.96)
Political-institutional variables:			
Government partisanship (right)	-	-2.38***	-
		(0.73)	
Government partisanship relative to median legislator	-	-	-2.93***
			(0.75)
Voter turnout	-	0.01	-0.06
		(0.10)	(0.10)
Unionization	-	0.16*	0.15*
		(0.09)	(0.09)
Number of veto points	-	-1.57**	-1.79***
		(0.62)	(0.59)
Electoral system (PR)	-	5.00**	-4.44**
		(2.15)	(2.06)
Controls:			
Per capita income	-0.001***	-0.001	-0.001
	(0.00)	(0.00)	(0.000
Female labor force participation	0.73***	0.36*	0.45**
	(0.11)	(0.20)	(0.20)
Unemployment	0.81***	0.99***	1.08***
	(0.27)	(0.27)	(0.26)
λ	.4	.7	.7
R-squared	0.648	0.746	0.765
N	47	47	47

Significance levels: ***<.01; **<.05; *<.10 (two-tailed tests)

Note: All independent variables are measures of the cumulative effect of these variables between observations on the dependent variable. See regression equation and text for details.

Table 5. Electoral system and the number of years with governments farther to the left or to the right than the median legislator (1945-98).

| | | Government partisanship | | Proportion of right governments |
		Left	Right	
Electoral system	Proportional	291 (9)	171 (0)	0.37
	Majoritarian	116 (1)	226 (7)	0.66

Note: Excludes governments coded as centrist on the Castles-Mair scale.

Table 6. Regression results for government partisanship, 1950-96 (standard errors in parentheses)

	(1) Government CoG minus legislative median	(2) Government CoG minus legislative median	(3) Government CoG minus legislative median	(4) Government CoG	(5) Government CoG
Constant	0.653*** (0.039)	0.664*** (0.033)	0.663*** (0.051)	0.501*** (0.046)	0.375 (0.453)
Electoral system (PR)	-0.173*** (0.054)	-0.147*** (0.047)	-0.184*** (0.063)	-0.174*** (0.063)	0.176** (0.077)
Fragmentation (left minus right)	-	0.241** (0.094)	-	0.201 (0.116)	-
Right over-representation	-	-	-0.036 (0.101)	0.077 (0.104)	-
Electoral participation	-	-	-	-	0.001 (0.005)
Unionization	-	-	-	-	-0.004 (0.003)
Female labor force participation	-	-	-	-	0.004 (0.004)
Adj. R-squared	0.37	0.54	0.49	0.55	0.49
N	17	17	17	17	17

Significance levels: ***<.01; **<.05; *<.10 (two-tailed tests)