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# Political Reinforcement

## How Rising Inequality Curbs Manifested Welfare Generosity

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### Abstract

We propose a political reinforcement hypothesis, suggesting that rising inequality moves party politics on welfare state issues to the right, strengthening rather than modifying the impact of inequality. We model policy platforms by incorporating ideology and opportunism of party members, and interests and sympathies of voters. If welfare spending is a normal good within income classes, a majority of voters moves rightwards when inequality increases. As a response the left in particular, shift their welfare policy platform towards less generosity. We find support for our arguments using data on the welfare policy platforms of political parties in 22 OECD countries.

Short title: Political Reinforcement

Keywords: Wage inequality; welfare generosity; Comparative politics; political economy

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# 1 Introduction

How does rising inequality affect political parties? Do they adopt programs for more redistribution? In particular, do left parties act as the main guardians of the welfare state in times of increasing inequality?

The conventional approach suggests that all political parties aim at more welfare spending as inequality rises, redistributing more income from the rich to the poor. The reasoning is simple. Rising inequality lead discontent lower-income voters to demand more redistributive social policies (Romer 1975; Roberts 1977; Meltzer and Richard 1981). Political parties compete to cover this social demand. So as inequality goes up, political parties move left. We contest this view, suggesting, instead, that political parties, and in particular left parties, move right when inequality rises. This is the political reinforcement hypotheses, which, if true, strengthens the impact of inequality, rather than modifying it.

Thus, this paper adds to the growing literature that apply conventional modeling to argue against the conventional conclusion of how higher inequality is met by more redistribution (see for instance Benabou 2000; Iversen and Soskice 2001; Moene and Wallerstein 2001; Lindert 2004; Barth and Moene 2012). It focuses on how party programs are made in an environment where the welfare state offers better terms for the poor than for the rich, but where it does not simply take from the rich and give to the poor. The redistribution is tied to the supply of tax financed goods and services such as health care and social insurance. A voter's individual demand for these welfare goods may depend both on self interested and sociotropic preferences, that is both on his social vulnerability and his care for others—in addition to his income.

The pattern across income classes is a poor guide to what will happen when inequality change. To understand changes and differences we need to make the distinction between alterations within and between income classes. While the cross sectional pattern show that richer voters demand *less* welfare spending than the poor (Rehm, Hacker, and Schlesinger 2012), individuals demand *more* welfare spending when they become richer. This puzzle is easily resolved, however, once we account for the feature that the rich may have both higher incomes and higher security. Incomes and social conditions are bundled and as

we move from lower to higher income classes we see an overall decline in the support of welfare spending.

A rise in income within an income class, in contrast, improves the individual economic situation, while the social conditions remain unchanged, inducing, as we shall see, an increase in the support for the welfare state's provision of social services and social security. A low income citizen prefers a generous welfare state because of a high risk of income loss, not because of a low income, and if he becomes poorer, he becomes more concerned with immediate needs and less willing to pay taxes to insure against a the probability of income loss.

Intuitively, the effects of variations between and within income classes can be related to the concepts of normal and inferior goods in consumer theory in economics. In that theory *normal goods* are any goods that increase in demand, for a given price, when income rises, and fall when income declines, while *inferior goods* are any goods that decrease in demand, for a given price, when income rises, and increase in demand when income falls. In the following we make a case for the proposition that welfare spending is a normal good within each income class, but an inferior good across income classes. We use this distinction in an uncomplicated manner. For each voter it boils down to whether or not changes in incomes are associated with basic alterations in the social situation, such as the risk of income loss.

The rise in inequality since 1980s is likely to reflect changes within income classes, rather than changes in their composition; cross-country variations in the OECD area are likely to reflect variations in the gaps between income classes rather different class structures. To isolate the effects of rising inequality we consider changes in the income distribution that preserve the mean income. Voters below the mean experience declining incomes and feel more pressure to cover immediate necessities. As a result they become discontent and less interested in paying high taxes to finance a generous welfare spending. Their political demand goes down as they find that they no longer can afford their previous welfare ideals.

Our reasoning resonates well with the empirical findings in Kelly and Enns (2010),

which shows that public opinion in the US has responded to the increases in income inequality by reducing its demand for welfare spending. While Kelly and Enns (2010) find it puzzling that the poor become less supportive of spending when inequality increases, this is exactly what our theoretical model predicts. Accordingly, rising inequality for a given class division would tend to reduce the vote share of the left and increase the vote share of the right as long as party programs remain unchanged. Faced with more inequality, however, parties revise their programs, involving internal negotiations and external competition with the other bloc. To analyze this double interaction, we apply a simple mixture of cooperative and non-cooperative games, where party idealists find it costly to deviate from the party ideology, and where party opportunists find it necessary to deviate to win elections.

To see the political trade-offs between ideology and opportunism, let us first consider the case where the ideology of each party (their ideal policy) is unaffected by changes in the income distribution. With one eye on the given party ideology and one eye on the rivalry for voters, left parties downplay the importance of their ideology to attract more voters, while right parties drift more towards their ideological position without losing many voters. As party platforms are strategic complements, each party further reduces its welfare generosity because the opposition has reduced its. Both sides of the political spectrum move in a rightward direction for both internal and strategic reasons, resulting in party programs with a less favorable description of the need to expand social services and social security.

When also party ideology is affected by changes in the income distribution the picture becomes a little more complicated — in particular for the adjustments of the right party. To the extent that party ideology represents the interests of the the core group of voters, higher incomes to the rich may then change the ideal policy of the right party towards a little more generous welfare spending. For the left party, in contrast, the ideal policy of the poor implies lower spending as their immediate needs become more pressing with declining incomes. The net effect of higher inequality on the left party is therefore an unambiguous move to the right, while it for the right party depends on which is the

stronger of opportunism and idealism.

Empirically, we should therefore expect a clearer effect of rising inequality on left parties than on right parties. To analyze the changes we explore information on policy platforms of left and right parties prior to 120 elections in 22 countries. Party manifestos provide a first hand source of information on policy responses as long as they are real political to do lists, as we assert, and not just party cosmetics—a feature that we test by studying the link between platforms and implemented policies of the winning party.

Welfare state platforms are tailored in accordance with the costs and benefits of equity as perceived by the party leadership. The platforms provide a much more targeted measure of the policy implications of inequality than policy outcomes such as a country's social spending as percentage of the national income.<sup>1</sup> Outcome measures are contaminated by a host of other factors, including changes in unemployment, income and other parts of public budgets.

We never observe isolated increases in inequality, however, but rather combined changes in inequality and the mean income. When the rich get richer we naturally associate the changes with increasing inequality even though the mean income and the tax base go up as well. When the poor get poorer we naturally associate the change with a declining tax base even though inequality goes up as well. We demonstrate that the effects of a change in the mean income depends on who gets it.

Our measures of the political parties' welfare policy positions over time are taken from the Comparative Manifesto Project (Budge et al. 2001; Klingemann et al. 2006). We combine these data with observations of wage inequality. Over the last decades most developed democracies have indeed experienced increasing wage inequality (OECD 2008) that has lead to much research on the determinants of inequality (Mahler 2004; Wallerstein 1999) and the political consequences of inequality (Kelly and Enns 2010; Pontusson and Rueda 2010; McCarty, Poole, and Rosenthal 2006). Yet, studies of how income inequality

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<sup>1</sup>Governments do not have complete discretion in implementing public policy, and discretion depends on political institutions. The relationship between party manifestos and government policy is therefore a contested issue, but Stokes (1999, 261) concludes that “most studies do find a substantial consistency between campaigns or pre-election manifestos, on the one hand, and government policy, on the other”. Below we regress the subsequent actual generosity of welfare policies on pre-election party positions on the welfare state, and find support for Stokes' conclusion in our data.

influences party platforms on welfare state generosity are particularly rare.<sup>2</sup>

As we shall see, our key empirical result supports the reinforcement hypothesis. First, however, we present our theoretical model (in section 2), before we present the data and the empirical analysis (in section 3), and finally conclude (in section 4).

## 2 Welfare platforms and inequality—Theoretical links

We emphasize the welfare state as a provider of social services and social security. The insurance logic of welfare spending is important. First of all, broad insurance motives, for one self and others, have been more important for the expansion of the welfare state than pure redistribution motives (Baldwin 1990). Secondly, social insurance against loss of income (due to unemployment, disability, sickness and occupational injury) reacts more to changes in the income distribution than other types of public spending (Moene and Wallerstein 2003).

### 2.1 Voters: Social interests and ideological sympathies

The electorate consists of three classes of voters: the poor, the middle class, and the rich,  $\{p, m, r\}$ , with incomes  $w_p < w_m < w_r$ . The social parameter  $h_i$  captures the vulnerability to own risks of income loss and the identification with others who might lose theirs. The bundling of economic and social characteristics produces a pattern: Consistent with rates of job loss and unemployment being higher among low skilled groups, lower income groups are more exposed to risk than higher income groups. In addition, as identification declines with social distance, lower income groups identify themselves more with others in need. For both reasons we assert that  $h_p > h_m > h_r \geq 0$ .

Finally, no income class is in majority, and income class  $i$  has a share of voters  $n_i < 1/2$  where  $\sum_{i \in J} n_i = 1$ . The average income in society is thus  $\bar{w} = \sum_{i \in J} n_i w_i$  which is assumed to be higher than the median income  $w_m$ .

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<sup>2</sup>To our knowledge, Pontusson and Rueda (2010) is the only paper examining this issue, and they have a very different approach from us. We discuss their paper below.

## Social interests depend on income class

Preferences for redistribution can seldom be fully explained by economic self-interest (Luttmer and Singhal 2011). They might be influenced by economic, political, and social aspects of the current environment, and by the cultural background. We summarize these social preferences over disposable income  $C_i = (1 - t)w_i$  and welfare spending  $G$ , contingent on the social parameter  $h_i$ , by a quasi concave utility function,  $V_i = v(C_i, G; h_i)$  for members of income class  $i$ . In the exposition we use a simple example

$$V_i = U((1 - t)w_i) + h_i G \equiv V_i(G; w_i) \quad (1)$$

(but all proofs in Appendix A use the general formulation). In (1) the immediate utility  $U$  has a coefficient of relative risk aversion,  $\mu \equiv -U''C/U'$ , that is greater than one, but not necessarily a constant; the preferences for welfare spending have the simple form  $h_i G$  to capture both self interested social insurance and more identification with weak groups.<sup>3</sup> In addition we assume a balanced budget  $t\bar{w} = kG$  where  $k$  represents the cost of welfare spending.

The ideal policy for income class  $i$  is determined by the first order condition

$$h_i = \frac{w_i}{\bar{w}} k U'(C_i^*) \quad \text{where} \quad C_i^* = \left(1 - \frac{kG_i^*}{\bar{w}}\right) w_i \quad (2)$$

which simply states that the marginal gain  $h_i$  equals the marginal costs of welfare spending  $(w_i/\bar{w})kU'(C_i^*)$ . To be clear, one unit increase in  $G$  costs a voter in  $i$  a reduction in disposable income  $kw_i/\bar{w}$  worth  $U'(C_i^*)$  in utilities, where risk aversion implies that this individual cost of welfare spending is convex. Lower income classes have higher marginal costs, but also higher marginal gains  $h_i$ . In the exposition we assume that  $h_i$  increases sufficiently as we move to lower income classes, so that the preferred welfare spending is lower for higher income classes, confirming that welfare spending is an inferior good across income classes  $G_p^* > G_m^* > G_r^*$ .

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<sup>3</sup>We can replace  $h_i G$  by  $h_i U(G)$  and think about welfare spending as self-interested social insurance only with  $h_i$  as the odds of income loss. The general case used in the appendix incorporates both. In either case the level of  $G$  correlates with the provision of insurance against the loss of income.

In contrast, a higher wage, for a given level of the social parameter and a given average wage, raises the ideal policy  $G_i^*$ . Hence, welfare goods that have an inferior good property across income classes, can be a normal good within each income class, as long as the coefficient of relative risk aversion  $\mu$  is greater than one (as we demonstrate in Appendix A).

When  $\mu$  is constant, we can obtain the closed form solution

$$G_i^* = \frac{\bar{w}}{k} - \left[ \frac{\bar{w}}{kw_i} \right]^{\frac{\mu-1}{\mu}} h_i^{-\frac{1}{\mu}} \quad (3)$$

Hence, the preferred level of welfare spending is increasing in the individual income  $w_i$ , and in the social parameter  $h_i$ , while it is declining in the cost of welfare spending  $k$ . It is also increasing in the average wage  $\bar{w}$ , but the magnitude depends on how  $\bar{w}$  is raised. A proportional increase in all wages implies  $dG_i^*/d\bar{w} = 1/k > 0$  as both the individual wage and the tax base increase proportionally; a rise caused by higher wages to other income classes, keeping  $w_i$  constant, implies a smaller effect<sup>4</sup> as the impact only comes through a higher tax base.

### Ideological sympathies differ within income classes

We use a probabilistic voting model (Hinich 1977; Lindbeck and Weibull 1993; Roemer 2001), and incorporate voters' ideological sympathies  $\epsilon_i$ , that can take positive and negative values. Higher values mean more right-wing sympathies. The distribution of sympathies is not correlated with class characteristics. The cumulative distribution function for  $\epsilon_i$  is  $F_i(\cdot)$ . When parties run on platforms  $G_L$  and  $G_R$ , all voters in income class  $i$  for whom the left right utility threshold

$$\Delta_i = V_i(G_L, w_i) - V_i(G_R, w_i) \geq \epsilon_i \quad (4)$$

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<sup>4</sup> $dG_i^*/d\bar{w} = (1/k)\{1 - [(\mu - 1)/\mu][(\bar{w}h_i)/(kw_i)]^{-1/\mu}[1/w_i]\} > 0$  where the inequality can be seen from (3), since  $G_i^* > 0$  implies  $1 > [(\mu - 1)/\mu][(\bar{w}h_i)/(kw_i)]^{-1/\mu}[1/w_i]$  and the inequality sign follows as  $(\mu - 1)/\mu < 1$ .

vote left. In (4) a voter with  $\epsilon_i > 0$  must evaluate the left sufficiently above the right platform in order to vote left. Hence, the expected vote share of the left is  $s_L = \sum_{i \in J} n_i F_i(\Delta_i)$ . It follows that prosperity generates leftist attitudes within the electorate:

**Proposition 1** *Keeping policies  $G_L > G_R$  and the distribution of the social parameter  $h_i$  constant, the expected vote share of the left is higher in affluent societies: The left vote share increases with the left-right utility threshold  $\Delta_i$  of each income class  $i$ . All these thresholds increase with higher average incomes. Each individual threshold increases with higher incomes within own class.*

Thus, people vote more to the left when society can better afford a more generous welfare policy, but irrespective of whether higher affluence comes within own income class or only within other income classes (see Appendix A for proof). The mirror image, of course, is that an economic decline in society, or within own class, erodes the political support for the left's welfare generosity.

Now, to go from expected vote shares to probabilities of winning we follow the literature of probabilistic voting by assuming that the actual votes are affected by random popularity waves after the program is written, but before the elections are held. The probability that the left wins is given by  $q = q(G_L, G_R)$  (formally derived in Appendix A, assuming that both the ideological sympathies and the the popularity shocks have a uniform distribution).

Using proposition 1, we know that for given policy platforms the probability that the left wins must go up with affluence. Similarly, when the rich gets richer the probability that the left wins goes up, and when the poor get poorer the probability that the left wins declines. It would be wrong, however, to derive the impacts of rising inequality on this basis. First, these changes are associated also with changes in average incomes (an increase in the first case and a decline in the second), while we would be interested in the isolated effect of inequality per se, keeping the average income constant. Second, policy platforms are not likely to remain constant when the income distribution changes.

## 2.2 Policies: a bargaining approach to political programs

Parties rarely act as unitary actors (Roemer 2001, ch 8). Parties are composed of factions and the policy platform is a compromise that requires consent from all major factions of the party.<sup>5</sup> We concentrate on the haggling between two factions, the idealists and the opportunists, representing typical political forces in every party. Each party plays a cooperative bargaining game between the opportunists and idealists internally and a non-cooperative game externally towards the opposing party.

*The idealists* may be considered far-sighted, or just stubborn. They are concerned with the party ideology. They are the guardians of the eternal flame, as Schumpeter (1942) said.

We represent the preferences of the idealists by  $W_L(G)$  in the left party, and  $W_R(G)$  in the right party. Their ideal policies are denoted  $G_L^*$  and  $G_R^*$ . Deviating from the ideals feels like a social cost, implying that  $W'_L(G) \geq 0$  for  $G \leq G_L^*$  and  $W'_R(G) \leq 0$  for  $G \geq G_R^*$ . The costs of deviating are likely to be higher the larger the deviations, or equivalently, both  $W_L(G)$  and  $W_R(G)$  are concave.

The preferences of the idealists may represent the basic interests of core supporters of their party, the poor for the left party and the rich for right. Idealists may insist that their ideals represent these interests in a pure form without the consideration of short term popularity waves and ideological sympathies.

*The opportunists* are concerned with the chances of winning elections. They are impatient and short sighted, obsessed by the coming election. They are willing to design their policies in the light of expected popularity waves and (temporary as well as lasting) ideological sympathies in the electorate.

The preference of the opportunists can be summarized simply by  $q$  for the left party and  $(1 - q)$  for the right party.

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<sup>5</sup>What we do below can be considered a simplistic version (for the case of one dimensional politics) of what John Roemer calls a party unanimity Nash equilibrium (PUNE).

## Bargaining needs consent by both factions

If no agreement is obtained the party loses the election. In the left party the threat points of the factions,  $\hat{q}$  and  $\hat{W}_L$ , are the fall-back position when the left is defeated. Thus we have  $\hat{q} = 0$  for the opportunists, and  $\hat{W}_L = W_L(G_R)$  for the idealists. Similarly, in the right party,  $(1 - \hat{q}) = 0$  and  $\hat{W}_R = W_R(G_L)$ .

By applying the Nash bargaining approach for the internal negotiations, with bargaining powers of  $\alpha_i \in [0, 1]$  to the opportunists and  $(1 - \alpha_i)$  to the idealists, the Nash-products can be written

$$N_L(G_L, G_R) = [q(G_L, G_R)]^{\alpha_L} [W_L(G_L) - W_L(G_R)]^{1-\alpha_L} \quad (5)$$

$$N_R(G_L, G_R) = [1 - q(G_L, G_R)]^{\alpha_R} [W_R(G_R) - W_R(G_L)]^{1-\alpha_R} \quad (6)$$

The equilibrium in the mixed cooperative non-cooperative policy game consists of a values  $\tilde{G}_L, \tilde{G}_R$  that fit in the internal bargaining solution, and that are consistent best responses to the program of the opposing party, i.e. where  $\max_{G_L} N_L(G_L, \tilde{G}_R) = N_L(\tilde{G}_L, \tilde{G}_R)$  and  $\max_{G_R} N_R(\tilde{G}_L, G_R) = N_R(\tilde{G}_L, \tilde{G}_R)$ .

Using the notations  $\partial q(G_L, G_R)/\partial G_L \equiv q_1$  and  $\partial q(G_L, G_R)/\partial G_R \equiv q_2$ , the first order conditions can be written

$$\alpha_L q_1 [W_L(G_L) - W_L(G_R)] + (1 - \alpha_L) q W'_L(G_L) = 0 \quad (7)$$

$$-\alpha_R q_2 [W_R(G_R) - W_R(G_L)] + (1 - \alpha_R) (1 - q) W'_R(G_R) = 0 \quad (8)$$

The left reduces its welfare ambitions,  $G < G_L^*$ , to increase the probability of winning, until the gain of winning,  $\alpha_L [W_L(G_L) - W_L(G_R)]$ , times the increase in winning chances equals the marginal costs of a less ambitious program,  $-(1 - \alpha_L) q W'_L(G_L)$ . Similarly, the right party increases its welfare program,  $G > G_R^*$ , until its gain of winning,  $\alpha_R [W_R(G_R) - W_R(G_L)]$ , times the increase in its winning chances equals the marginal ideological cost of more welfare spending  $-(1 - \alpha_R) (1 - q) W'_R(G_R)$ .

In each party the members perceive the policy of the other party when the internal

negotiations over own policy take place. Figure 1 illustrates the consistency across parties by the intersection of the response curves for the outcome of the internal bargaining for each party contingent upon the policy of the opposing party  $G_j(G_s)$ . The equilibrium is in the intersection **a** in the figure. As seen from the figure (and demonstrated in Appendix A) party platforms are strategic complements—higher levels of  $G_R$  for instance, induce more generous welfare programs of the left.

### **Inequality affects party platforms**

Since the expected vote share of the left declines with higher inequality, the winning probability of the left also declines for given policies. To increase its vote share, the left party lowers its welfare ambitions to attract more middle class voters, who now favors a lower  $G$ . Similarly, the declining vote share for the left means that the right party moves towards its ideologically preferred welfare policy platform without losing as many voters as before. These effects hold as long as the ideal party policies,  $G_L^*$  and  $G_R^*$ , remain unchanged. As discussed above, the ideal party policies may represent the interests of core voters. If so, the ideal of the left party becomes less ambitious, while the ideal of the right party may become more ambitious with a higher level of  $G_R^*$  (if  $h_r > 0$ ).

We can show the following proposition for  $0 < \alpha_i < 1$  with  $i = L; R$ :

**Proposition 2** *i) As long as party ideals remain unchanged a mean preserving increase in earnings inequality leads each party to offer a less generous welfare policy in their programs. ii) If the party ideals reflect the interests of the core group of each party the adjustments of ideals reinforce the effect of inequality on the welfare policy of the left party, while it moderates the effects on the welfare policy of the right party.*

Part i) of the proposition is shown in Appendix A. Part ii), the partial effects of rising inequality on party ideals, follows from the discussion of pure idealism below. Notice that part (ii) implicitly states *a right wing policy indeterminacy* to higher inequality.

The proposition states the effects of a mean preserving increase in inequality. Most changes in the income distribution are not mean preserving, however. When the rich get richer, the rise in inequality is mean increasing, implying a higher tax base. The welfare

policies of the left and right party both become more generous because the higher tax base (and for the right party with  $h_r > 0$ , because the income of its core group goes up). When the poor get poorer, however, the rise in inequality is mean declining, implying a lower tax base. The welfare policy of the left party becomes less generous because both the income of its core voters and the tax base decline. The welfare policy of the right party becomes less generous because of the lower tax base.

When the higher inequality is not mean preserving, the generosity of the welfare policy of each party moves in the same direction as the tax base. When the rise in inequality is mean preserving, in contrast, the tax base remains unchanged and the resulting policies are a combination of the two cases, implying a more narrow gap between the right and the left.

### Special cases

For specific values of the bargaining power of the factions, there are interesting special cases.

*Pure idealism:*  $\alpha_L = \alpha_R = 0$ : When idealists are all powerful and their preferences reflect the interest of core groups, a mean preserving increase in inequality implies that the left party moves to the right, while the right party, if anything, moves to the left. These changes mean less polarization and more convergence of welfare platforms since  $G_L = G_p^*$  goes down and  $G_R = G_r^*$  goes up (as long as  $h_r > 0$ ) (see Appendix A for proof).

Also in this case the generosity of the welfare policy of each party moves in the same direction as the tax base, when the higher inequality is not mean preserving. When the rise in inequality is mean preserving, in contrast, the tax base remains unchanged and the resulting policies reflect rising incomes to the rich and declining incomes to the poor. The net result is a more narrow gap between the right and the left policies.

*Pure opportunism,*  $\alpha_L = \alpha_R = 1$ : When opportunists are all powerful, policies converge and rising inequality leads to a lower common value of  $G_L = G_R = G^*$ . Each party is simply interested in maximizing its vote share (the left maximizes  $q$  while and

the right maximizes  $(1 - q)$ ). Policies converge since the two parties end up maximizing the same thing. As higher inequality spurs a right-wing movement of a majority of voters political parties would change their platforms to benefit from the trends. The platforms that maximize the probability of winning, must maximize the expected vote share. Rising inequality bends the interests of a majority of voters more towards less generous spending. Opportunistic parties run after the voters and this is reflected in the welfare statements of their policy platforms. If opportunists think that voters cast their votes according to popularity or ideological sympathies, they would design policies in order to benefit from these sentiments. Formally, the wider the spread of popularity waves and sympathies the less impact do the real interests of voters have on the policy platforms.

*Fair compromise,  $\alpha_L = \alpha_R = 1/2$ :* When opportunists and idealists are equally strong, the equilibrium outcome is as if both parties maximize their expected party utilities,  $qW_L(G_L) + (1 - q)W_L(G_R)$  for the left and  $(1 - q)W_R(G_R) + qW_R(G_L)$  for the right, using the idealists' preferences  $W_i(\cdot)$ . The equilibrium platforms satisfy the following first order conditions:

$$q_1[W_L(G_L) - W_L(G_R)] + qW'_L(G_L) = 0 \quad (9)$$

$$-q_2[W_R(G_R) - W_R(G_L)] + (1 - q)W'_R(G_R) = 0 \quad (10)$$

Compared to the case with pure ideals, there are some convergence in equilibrium, but the convergence is not complete. Fair compromise is a special case where proposition 2 applies.

### **In sum**

The bargaining approach to policy platforms shows that mean preserving rises in inequality spur a less generous welfare policy of the left parties irrespective of whether their policy platforms are written out of idealistic identification with core groups of supporters, or out of opportunism in the hope of winning elections, or out of a combination of the two.

The same also holds for right wing parties as long as their ideal party policies are

unaffected by the rise in inequality. If higher incomes of the core groups lead to a more generous ideal policy of the right party, the net effect on its policy platform is ambiguous, depending on which is the strongest—idealism or opportunism.

So, the core implication of rising inequality is a less generous welfare policy by the left bloc, and a less clear tendency to follow suit by the right bloc. In addition, our theory predicts that a higher average income raises the welfare generosity of the policy platforms. Conversely, when the poor get poorer—rising inequality combined with declining average incomes—erode manifested welfare generosity.

The political reinforcement effects are more substantial the stronger the opportunists in the internal bargaining. The party with a higher weight on opportunism also increases its chance to win elections. This can easily result in competing opportunism which in the end leads to a complete convergence of policies and to the strongest reinforcement effects.

### **3 Welfare platforms and inequality—Empirical links**

Our key propositions are tested comparing party positions as announced in their manifestos. We distinguish between the position of the left and right bloc parties. Data on party positions are from the Comparative Manifesto Project (CMP) (Budge et al. 2001; Klingemann et al. 2006), which quantify the content of party manifestos prior to each election.<sup>6</sup>

#### **3.1 Measures: party platforms and wage inequality**

We construct a measure of party positions on the welfare state, *Welfare support*, using two variables from the CMP data set: The variable “Welfare State Expansion” and “Welfare State Limitation” (see Budge et al. 2001, 226). Following the recent recommendations by Lowe et al. (2011) our measure is the difference between favorable mentions of welfare expansion and limitation in the programs.<sup>7</sup>

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<sup>6</sup>The CMP is the only source to test hypotheses requiring longitudinal data on party positions. Volkens (2007) show that there is a high level of correlation between the CMP data and alternative measures of party positions.

<sup>7</sup>There is a long-standing debate regarding whether the CMP data measures the saliency of a policy area for a political party, or the policy position of the party on that policy area. Lowe et al. (2011) show

We classify each political party as belonging to the left bloc or the non-left bloc based on CMP’s party family classifications, and calculate bloc *Welfare support* as the weighted sum of the party positions within the respective bloc.<sup>8</sup> A more positive score implies a more pro-welfare state platform.

Wage inequality is measured as the ratio of pre-tax earnings between the 90th and the 10th percentile.<sup>9</sup> The data are mainly from OECD’s earnings inequality database.<sup>10</sup> We consistently include country fixed effects to account for country-specific unobserved, time-invariant heterogeneity, and for time trends by including a second order polynomial in time. Control variables, and why we account for them in the regressions, are described in Appendix B.

### 3.2 A simple estimate of the reinforcement mechanism

Consistent with our main theoretical results, Table 1 shows that higher inequality shifts the position of the left parties in terms of welfare policies to the right, whereas the position of the right is not significantly changed. Columns 1 and 3 present “stripped-down” models including the country fixed effects, the controls for the time trend, and the source dummies only. Columns 2 and 4 include control variables.

The coefficient for wage inequality is negative and significant for the left: Rising wage inequality implies a rightward shift in the platforms. The coefficient is robust to the vector of controls. The results are politically significant as well: The size of the coefficient

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how to empirically separate these two dimensions. We follow the suggestion for how to capture a party’s policy position on the welfare state. See Appendix B for details.

<sup>8</sup>We weight the influence of each party on the bloc score based on their percentage of total seats within the respective bloc, to make sure that the positions are not unduly influenced by extreme parties. We have cross-validated CMP’s party family classifications by examining the parties where the left-right-positioning of the party differs between the CMP and Benoit and Laver (2006). We rely on the party family classifications, not the left-right-positioning, to classify the parties into blocs, but the comparison in Benoit and Laver (2006) is useful to identify potentially problematic parties. We identify two problematic parties. First, the CMP inaccurately classifies the Portuguese party PSD as a social democratic party (Freire 2006), we assign it to the right bloc. Second, the CMP and Benoit and Laver (2006) disagree on the placement of the Canadian party Bloc Québécois. We assign it to the left bloc as “The party’s political discourse and platform are distinctly centre-left” (Gagnon and Hérvault 2007, 113). No conclusions hinge on the classification of these two parties.

<sup>9</sup>We present results using the 50/10 and 90/50 ratios in Appendix C.

<sup>10</sup>We supplement with ECHP data, a few observations are net of taxes, and data from some countries are based on annual earnings, see Appendix B. We consistently include index variables to account for source-driven breaks in the wage inequality series.

in column 2 suggests that a one standard deviation increase in the 90-10 ratio implies a rightward shift in the left bloc's position amounting to a shift of two thirds of a standard deviation of the dependent variable.<sup>11</sup>

For the right we find no significant relationship between wage inequality and welfare state policy platforms, consistent with the right wing policy indeterminacy. The opportunistic effect appears to dominate for the right bloc as the coefficient is negative, but it is imprecisely estimated and smaller compared to the coefficient for the left bloc.<sup>12</sup>

The signs of the coefficients for the control variables are similar for the left and the right, suggesting that these variables first and foremost move the political center of gravity, yet only a few of them reach the conventional levels of significance. Table 1 suggests an underlying polarization, but this polarization is independent of changes in the wage distribution and the other controls (see Appendix C). The main message from Table 1 is that rising inequality leads to less, not more, welfare generosity in party platforms. Before we explore a causal interpretation of this link (in section 3.3), we consider the roles of affluence, political cosmetics, and alternative explanations.

### **The effect of higher affluence depends on who gets it**

Table 1 also shows the effects of economic growth for given inequality. These effects are less precisely estimated, yet we find them worth commenting. The point estimates are in accordance with proposition 2: Higher affluence shifts the center of political gravity towards the left. Voters become richer, have more to lose if their income is lost, and value the extra tax dollar less (Markussen 2008; Durr 1993; Stevenson 2001).

The total estimated effects of higher income depend on who gets it, since there is an added effect of the corresponding changes in inequality. The estimated coefficient of .079 for the left is the benchmark effect of higher income on manifested welfare generosity

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<sup>11</sup>The wage inequality coefficient is slightly smaller, but statistically significant, if we exclude the time trends from the model.

<sup>12</sup>The estimate might also reflect that the right bloc is more heterogeneous than the left bloc. For instance, Christian Democratic parties have been less critical of public social insurance than Liberal or Secular-Conservative parties (Manow 2009). To examine the importance of right bloc heterogeneity, we constructed a right bloc consisting of only the Liberal and the Conservative party families. The wage inequality coefficient becomes larger, but is insignificant ( $\beta=-0.653$ , Robust SE=0.534).

when 'the tide lifts all boats'. It is the effect of economic growth distributed with an equal rate on the income of every social group. Increasing income per capita then means uniformly stronger support for the welfare state among the electorate, transformed into higher ambitions in the party programs.

If the economic growth is unevenly distributed across groups, however, the strength of the effect on manifested welfare generosity depends on the vulnerability of the group that gets most the growth. For instance, if the economic growth is distributed to high wage groups only (the rich get richer), the effect is weakened compared to the benchmark because inequality increases. If, in contrast, the growth is mainly distributed to low wage groups, the effects of higher average incomes are enhanced by the positive effect of lower inequality.

According to our estimates, a decline in national income that mainly hurts low-wage groups, the ensuing rightward shift is larger than if the decline hits the high wage groups the most. The reason is simple: When the poor get poorer, declining affluence is associated with rising inequality, implying two negative effects on the manifested welfare generosity. When the rich get poorer, however, declining affluence is associated with declining inequality, implying two effects in opposite directions.

### **Party platforms are not only political cosmetics**

Higher wage inequality leads to lower support for the welfare state, in particular among the parties of the left, consistent with our reinforcement hypothesis. Does this decline in support translate into actual welfare policies? In Table 2 we regress Scruggs' (2004; 2006) indices of actual welfare state policies on the manifested positions of the left bloc. Each index is averaged over the election period and we regress it on the bloc position from the respective election period with left bloc representation in government.

Table 2 shows a consistently positive coefficient for the left bloc, implying that policies of the left become more generous in election periods where the left ran on more generous platforms. The coefficient on pensions is however not statistically significant. This may be because the long term nature of pension systems implies that reforms are implemented

only rarely, often as a result of large negotiated packages involving several parties and social partners, and they are often implemented in a staggered way, at different pace for different generations.

### **The reinforcement effect survives robustness checks**

In Appendix C we show that the inequality coefficient is robust to a long list of checks, including additional control variables such as left majority in government, welfare state generosity, the unemployment rate, immigration and voter turnout. Next, while major parties tend to change their policy position in response to changes in voter preferences (Adams 2012), there is a discussion on whether electoral system and party fragmentation impact on the strength of this relationship (Budge and McDonald 2007). We control for country fixed effects which should account for the impact of electoral systems since such institutions rarely change. We show, using an interaction model, that the relationship between wage inequality and party positions is slightly stronger in majoritarian systems, but the interaction term is insignificant. Neither does the relationship between wage inequality and party positions change when we control for the effective degree of party fragmentation of the legislative. It also survives when we use alternative measures of wage inequality and party positions, when we account for measurement errors in the party positions, and when we include a lagged dependent variable. It is not driven by outliers or the data from a single country. In addition, we show that the competing claim in Pontusson and Rueda (2010) receives no support once we account for time trends. Thus the reinforcement mechanism seems remarkably robust.

We also find indications in opinion data that voters demand less social insurance when wage inequality increases.<sup>13</sup> The International Social Survey Program's (ISSP) modules

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<sup>13</sup>Our argument says that the majority of the voters demand less social insurance when wage inequality increases. Direct evidence is hard to come by. The "policy mood" literature is partly related to our study. Durr (1993) and Wlezien (1995) show that US public opinion shift to the right when the public expects the economy to decline, while Erikson et al. (2002) find a shift to the left when unemployment increases. Soroka and Wlezien (2005) find a positive correlation between "economic misery" and demand for public spending in the UK, but a negative one in Canada (Soroka and Wlezien 2004). Stevenson (2001), the only cross-national study, finds a rightward shift when the economy contracts. Thus, there is no consensus in this literature, and it appears that some economic variables have pro-cyclical effects which are sometimes outweighed by counter-cyclical effects of other economic variables. Nonetheless, this literature is not very informative about our claims, mainly because our theory is about demand for social insurance, and silent

on Role of Government from 1996 and 2006 include suitable measures on support for social insurance spending (health, unemployment benefits, and pensions) at two time points for 13 of the countries in our sample. We take the mean of these survey items for each country and module to represent support for social insurance among the voters and use the mean as a dependent variable in regression models including country and module fixed effects.

For all three variables we find a negative coefficient for wage inequality, i.e. public opinion moves towards less spending on social insurance when wage inequality increases (Table 3). The coefficient is significant for unemployment benefits, but not for health and pensions. However, we have a very small sample of only 26 observations from 13 countries, which makes it difficult to achieve precise estimates. Thus, although we readily admit that this evidence of shifts in public opinion is far from conclusive, the results are at least consistent with a reinforcement effect among the voters.

### 3.3 A search for independent variation

We cannot give a causal interpretation to the correlation between wage inequality and welfare state platforms reported above. Wage inequality might be correlated with the error term due to an omitted variable. It is also conceivable that changes in welfare state platforms have an impact on wage inequality, as more generous welfare policies raise the effective reservation wage, thus reducing wage inequality from below (Barth and Moene 2012).

Instrumental variable (IV) regressions is one solution to this problem. The key challenge is to find variables that provide independent variation in wage inequality. Variations in bargaining institutions and unionism are known to affect the wage distribution (Wallerstein, 1999), but known to affect politics as well. In our view, unions' influence on politics arises mainly through their sheer weight as voters, which is why we include union density in our main model. Yet conditional on union density and country fixed effects, we argue

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on how inequality influences other aspects of policy mood and areas of public spending. Moreover, none address the importance of wage inequality. Kelly and Enns (2010), however, show that public opinion in the US shifts its social spending preferences to the right when income inequality increases. What appears as a puzzle to them—the rightward shift of the poor—is exactly what our theoretical model predicts. Lack of public opinion data on social insurance from a large number of countries over time precludes a similar analysis.

that certain properties of the bargaining system are likely to affect wages, but not union involvement in politics. These properties are the adjusted *bargaining coverage* among employees and the *effective number of union confederations*.<sup>14</sup>

We expect an increase in bargaining coverage to reduce wage inequality. Measured by the scope of bargaining we also expect the effective number of union confederations to have a negative impact on wage inequality. Our claim is that coverage and the number of union confederations mainly influence the wage distribution, through the obvious direct channel of affecting wage setting, whereas the political influence of unions mainly depends on the unions' power in terms of vote share, not directly on how the wage bargaining is organized. However, since the two variables are relatively close in terms of what independent variation in wage setting they provide, we cannot rely on overidentification tests to substantiate our claim.<sup>15</sup>

To investigate our claim that the wage bargaining institutions do not have an independent effect on union involvement in politics, we analyze the relationship between our instruments and the involvement of unions in tripartite bargaining and policy making. Table A9 in Appendix D shows that our instruments, conditional on union density and country fixed effects, are neither significantly correlated with whether a social pact is announced (column 1) or signed (column 2) in a given year, nor significantly correlated with routine involvement of unions and employers in government decisions on social and economic policy (column 3). This strengthens our confidence that the exclusion restriction is satisfied.

To show which countries that are important in the “experiment” underlying our IV analysis, Table A3, Appendix B, shows the percentage change in the instruments from the first to the last observation by country. As is evident from the table, there are movement in these variables for most of the countries. Large reductions in coverage are found in New Zealand, the UK and the US, large increases in Finland and France. The effective number of union confederations has risen in Canada, France and Norway, and declined in

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<sup>14</sup>Measured as the inverse of the Herfindahl index. The data are from Visser (2011). See Appendix B for details.

<sup>15</sup>Even though the Hansen J-test statistic is very low and suggests that the instruments are valid.

Japan and the US.

In line with our expectations, the coefficients for our instruments are negative and significant in the first stage of the IV-regression.<sup>16</sup> The F-value from the first stage is large (11.69) and above the “threshold” of 10, suggesting that the relevance criteria is fulfilled (Murray 2010).

Turning to the substantive results from the second stage, reported in Table 4, we find that higher wage inequality, as picked up by changes in the instruments, move both blocs in a right direction. Only the coefficient for the left bloc, however, is significant.<sup>17</sup> These results clearly weaken potential concerns that the results in Table 1 should be driven by omitted variables or reverse causality.

## 4 Conclusion

We derive the political reinforcement mechanism from a bargaining approach to political party platforms, utilizing probabilistic voting models with welfare provision as a normal good within each income class. We demonstrate how rising inequality can push party platforms rightwards; why this pattern is clearer in the left bloc than in the right bloc; why the rightward policy shift is larger when the opportunists become stronger within the parties; and why the effects are most distinct when the average income per capita drops as inequality increases. How rises and declines in average incomes affect party platforms depend on how the rises and declines are distributed over income classes in the first place.

We find empirical support for the reinforcement mechanism in the platforms of the left bloc. The negative effect of higher wage inequality on the manifested welfare generosity of the left is clear and strong; the implemented welfare generosity by left parties in power is highly correlated with their manifested welfare policy prior to the elections, indicating that their party programs are not political cosmetics only. There are also signs

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<sup>16</sup>*Number of confederations:*  $\beta = -.15$ , Robust SE=.08,  $t=1.99$ . *Coverage:*  $\beta = -.01$ , Robust SE=.004,  $t = 2.08$ .

<sup>17</sup>For the 90-50 and 50-10 ratios, Z-values are 2.10 (90-50) and 1.75 (50-10), but the first stage F-statistic is low in the 50-10 equation (F=5.69). By including lags, however, we show that identification is equally strong using 50-10 and 90-50 (Table A5, Appendix C). We furthermore conduct a “placebo-regression”, instrumenting wage inequality from  $t+1$  in a regression of platform generosity from  $t$  and find no significant effect (Table A10).

of political polarization in our data, but our estimates indicate that rising inequality does not contribute to polarization as it mainly shifts the left to the right.

Does these political shifts indicate that left parties are not particularly important for social policy? Huber, Ragin, and Stephens (1993) claim that 'left of Christian democratic presence in government' is indeed crucial. Our results do not question that left parties normally propose a more generous welfare policy than the right parties. What our results emphasize, however, is that left parties are less efficient guardians of welfare spending whenever inequality rises without much growth in average incomes. Under such circumstances welfare expansion may be most needed, but still the manifested welfare policy of the left becomes less generous. Indeed, regardless of the color of the government, most European countries have experienced rising wage inequality and declining welfare generosity since the end of the 1980s, in particular after the financial turmoil in 2008. Thus the protection offered by the welfare state can be weakened by the same economic and social forces that it was meant to protect against.

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Figure 1: The political party equilibrium

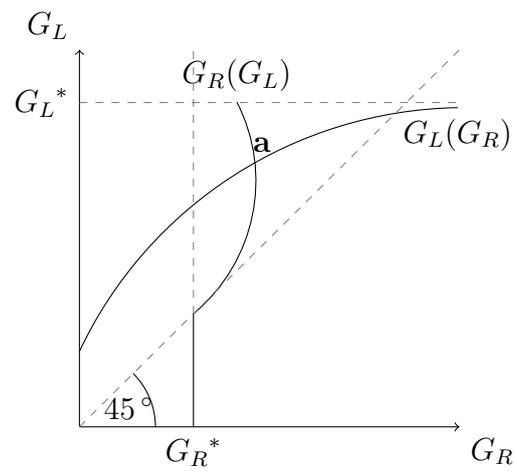


Table 1: Welfare support. Dependent variable: Party bloc position on welfare.

	(1)	(2)	(3)	(4)
	Left bloc	Left bloc	Right bloc	Right bloc
Wage inequality	-0.717*** (0.249)	-0.757*** (0.234)	-0.284 (0.594)	-0.251 (0.505)
Economic growth		0.079* (0.045)		0.081 (0.065)
Percentage elderly		0.069 (0.067)		0.025 (0.094)
Trade openness (log)		1.147 (1.018)		4.163*** (1.393)
Union density		0.064 (0.040)		0.003 (0.088)
Union density-sq.		-0.001* (0.0004)		-0.001 (0.001)
Trend	-0.026*** (0.008)	-0.047 (0.040)	-0.004 (0.028)	-0.118* (0.057)
Trend-sq.	0.002*** (0.001)	0.002** (0.001)	0.001 (0.001)	0.0004 (0.001)
Country FE	Yes	Yes	Yes	Yes
Adj. R-squared	0.23	0.28	0.27	0.44
Number of countries	22	22	22	22
Number of elections	120	120	120	120

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  (two-tailed tests). Robust standard errors adjusted for country clustering in parentheses.

Table 2: Actual welfare generosity of left governments.

	(1)	(2)	(3)	(4)
	Overall index	Unemployment	Sickness	Pensions
Left bloc position	0.838*** (0.277)	0.385** (0.136)	0.321* (0.164)	0.132 (0.124)
Country FE	Yes	Yes	Yes	Yes
Time trend	Yes	Yes	Yes	Yes
Adj. R-squared	0.95	0.96	0.97	0.83
Number of countries	18	18	18	18
Number of elections	68	68	68	68

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  (two-tailed tests). Robust standard errors adjusted for country clustering in parentheses.

Table 3: Wage inequality and support for social insurance among the voters

	(1)	(2)	(3)
	Unemployment	Health	Pension
Wage inequality (90-10)	-0.120** (0.045)	-0.037 (0.087)	-0.109 (0.077)
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	26	26	26
Adj. R-squared	0.78	0.73	0.79
Number of countries	13	13	13

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  (two-tailed tests). Robust standard errors adjusted for country clustering in parentheses.

Table 4: Instrument variable (IV) regression models. Dependent variable is party bloc position on welfare policy.

	Left bloc	Right bloc
Wage inequality (90/10)	-1.426** (0.722)	-1.685 (1.068)
Economic growth	0.099** (0.044)	0.093 (0.066)
Percentage elderly	0.070 (0.051)	0.001 (0.075)
Trade openness (log)	0.980 (1.054)	3.947** (1.621)
Union density	0.066* (0.038)	-0.039 (0.076)
Union density-squared	-0.001** (0.0004)	-0.0003 (0.001)
Trend	-0.048 (0.037)	-0.128** (0.057)
Trend-sq.	0.002** (0.001)	0.002 (0.001)
Country FE	Yes	Yes
Adjusted R-squared	0.26	0.48
Number of countries	21	21
Number of elections	117	117
Kleibergen-Paap F-statistic	11.69	11.69
Sargan statistic p-value	0.77	0.34

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 (two-tailed tests)

Excluded instruments are the adjusted bargaining coverage and the effective number of union confederations (see Appendix B/D.). Robust standard errors adjusted for country clustering in parentheses.

## Supporting information

## Appendix A: Mathematical Appendix

We use the general description of voters' interests: Members of income class  $i$  has social preferences, shaped by their social vulnerability  $h_i$ . The social preferences are over consumption  $C_i$ , welfare policies  $G$  represented by  $V_i = v(C_i, G; h_i)$  where  $C_i = (1-t)w_i$ ,  $t = kG/\bar{w}$ ,  $v_1 \equiv dv/dC_i$ ,  $v_2 \equiv dv/dG$ ,  $v_{11} \equiv d^2v/dC_i^2$ ,  $v_{22} \equiv d^2v/dG^2$ ,  $v_{12} \equiv v_{21} \equiv d^2v/dC_idG$

- With  $h_i$  given the function  $v$  is quasi-concave with  $v_1 > 0$ ,  $v_2 > 0$ ,  $v_{11} < 0$ ,  $v_{22} \leq 0$ , and  $v_{12} \geq 0$ .
- Relative risk aversion:  $\mu \equiv -v_{11}C/v_1 > 1$ , but not necessarily a constant.
- Both relative risk aversion,  $\mu$ , and the degree of complementarity,  $v_{21}$ , between private goods  $C$ , and welfare goods and benefits  $G$ , are not increasing as we move from lower to higher income groups.
- $V_i = U(C_i) + h_iG$  used in the exposition is a special case.

### $G$ being a normal good:

The ideal policy of a voter in class  $i$  is determined by

$$\frac{dv(C_i, G; h_i)}{dG} = -\frac{w_i}{\bar{w}}k v_1 + v_2 = 0 \quad (\text{A1})$$

$G$  is a normal good within each income class:

$$\frac{dG_i^*}{dw_i} = \frac{(\mu - 1)v_1k/\bar{w} + (1-t)v_{21}}{-d^2V_i/dG^2} > 0 \quad (\text{A2})$$

Quasi concavity implies  $-d^2V_i/dG^2 > 0$ , and the assumptions that  $\mu > 1$  and  $v_{21} \geq 0$  are sufficient, but not necessary, for  $G$  being a normal good within each income class.

### Expected vote shares and winning probabilities

$\Delta_i$  is the critical level of  $\epsilon_i$  that makes voters of income class  $i$  indifferent between the two parties, voters with  $\epsilon_i \leq \Delta_i$  vote left, and we can express the expected vote share of the left by  $s_L = \sum_{i \in J} n_i F_i(\Delta_i)$ . We call  $\Delta_i \equiv V_i(G_L; w_i) - V_i(G_R; w_i)$  the left-right utility threshold.

To have a transparent case we assume that the density of voters in the distribution of sympathies are constant [the distribution  $\epsilon_i$  is uniform over the interval  $-1/(2f)$  to  $1/(2f)$ ]. Realistically we also assume that there are some voters from all income classes among the voters of both parties, implying that the actual interval of ideological sympathies  $1/f$  is larger than the maximum left-right utility threshold  $V_i(G_L^*; w_i) - V_i(G_R^*; w_i)$ . The expected vote share of the left can then be expressed as

$$s_L = 1/2 + \sum_{i \in J} n_i f \Delta_i \quad \text{where} \quad \Delta_i \equiv V_i(G_L; w_i) - V_i(G_R; w_i) \quad (\text{A3})$$

The random effects may be caused by popularity waves, the personality of major candidates, appearances on TV etc., implying that the outcome of the election can be

written  $s_L - r$  and  $1 - s_L + r$  where  $r$  is a random variable with zero mean. Assuming again the convenient uniform distribution for the popularity shock with a density  $z$ , the probability that the left wins  $q = \Pr[s_L - r \geq 1/2]$  can be written as

$$q(G_L, G_R) = 1/2 + zf \sum_{i \in J} n_i \Delta_i \quad \text{where} \quad \Delta_i \equiv V_i(G_L; w_i) - V_i(G_R; w_i) \quad (\text{A4})$$

Using proposition 1, we know that for given policy platforms the probability that the left wins must go up with affluence. Similarly, when the rich gets richer the probability that the left wins goes up, and when the poor get poorer the probability that the left wins declines. It would be wrong, however, to derive the impacts of rising inequality on this basis. First, these changes are associated also with changes in average incomes (an increase in the first case and a decline in the second), while we would be interested in the isolated effect of inequality per se, keeping the average income constant. Second, policy platforms are not likely to remain constant when the income distribution changes—our next topic.

### Proof of proposition 1

Fix policies  $G_L > G_R$ . Clearly, the left vote share increases with the left-right utility threshold  $\Delta_i = v(C_i^L, G_L; h_i) - v(C_i^R, G_R; h_i)$ . Proposition 1 claims that  $d\Delta_i/d\bar{w} > 0$  and  $d\Delta_i/dw_i > 0 > 0$ .

Letting  $C_i^L = (1 - kG_L/\bar{w})w_i$  be the disposable income of  $i$  with  $G = G_L$ , and  $C_i^R = (1 - kG_R/\bar{w})w_i$  the disposable income with  $G = G_R$ , and using the first order condition we have

- $d\Delta_i/dw_i$  must be strictly positive since, by letting  $C_i^L = (1 - kG_L/\bar{w})w_i$  and  $C_i^R = (1 - kG_R/\bar{w})w_i$ , we easily see that  $\text{sign}[d\Delta_i/dw_i] = \text{sign}[v_1(C_i^L, G_L; h_i)C_i^L - v_1(C_i^R, G_R; h_i)C_i^R]$ . Now, complementarity,  $v_{12} \geq 0$ , implies  $v_1(C_i^L, G_L; h_i)C_i^L - v_1(C_i^R, G_R; h_i)C_i^R \geq v_1(C_i^L, G_R; h_i)C_i^L - v_1(C_i^R, G_R; h_i)C_i^R \equiv H$ . In addition  $H > 0$  since  $d(v_1C)/dC = (1 - \mu)v_1 < 0$  and  $C_i^R > C_i^L$ .
- the proof of  $d\Delta_i/d\bar{w} = [v_1(C_L, G_L; h_i)G_L - v_1(C_i^R, G_R; h_i)G_R]kw_i/\bar{w}^2 > 0$  is analogous

### Complementarity between party platforms:

Fix  $G_R$ . Using the first order condition for the left party,  $P'_L = \alpha_L q_1 [W_L(G_L) - W_L(G_R)] + (1 - \alpha_L)qW'_L(G_L) = 0$ , we find

$$\frac{dG_L}{dG_R} = \frac{-\alpha_L q_L W'_L(G_R) + (1 - \alpha_L)q_R W'_L(G_L)}{-P''_L} > 0 \quad (\text{A5})$$

To see the inequality observe that  $P''_L < 0$  (from the second order condition), and that  $-q_1 = -z \sum_i f_i n_i V'_i(G_L; w_i)$  and  $q_2 = -z \sum_i f_i n_i V'_i(G_R; w_i)$ . Now  $-q_1 \geq 0$  from the first order condition, and both  $-q_1$  and  $q_R$  are increasing in  $G$ . Hence, for  $G_L \geq G_R$  we have  $-q_1 \geq q_2$ .

- $\alpha_L \geq 1/2$ : From concavity we have  $W'_L(G_R) \geq W'_L(G_L)$ , implying that  $dG_L/dG_R > 0$ ;

- $\alpha_L \geq 1/2$ : Notice:  $q_2$  is a constant as long as  $G_R$  is fixed. The first order condition implies that  $(1 - \alpha)W'(G_L)$  goes monotonically to zero as  $\alpha$  goes to zero. Hence,  $dG_L/dG_R \geq 0$  also in this case.
- $dG_L/dG_R$  goes to zero as  $G_R$  becomes large and  $G_L$  approaches  $G_p^*$ .

## Proof of proposition 2

We prove the propositions for  $G_L$  (for a given  $G_R$  and constant ideals  $G_L^*$  and  $G_R^*$ ). The proof for  $G_R$  (for given  $G_L$ ) is analogous. Notice that as  $G_L$  declines for given  $G_R$ , and as  $G_R$  declines for given  $G_L$ , complementarity between the two parties, demonstrated in section ii) above, leads to further decline in both. The effect of rising inequality in Proposition 4 follows by setting  $\alpha_L = 1$ .

To see that (if  $f_i \approx f$  and  $\mu > 1$ ) a mean preserving increase in wage inequality leads the left party to reduce its welfare generosity, we visualize a mean preserving rise in inequality by an increase in an operator, denoted  $I$ . Let  $M_i \equiv n_i dw_i/dI$ . Then a mean preserving overall spread implies  $M_p + M_m = -M_r$  with  $M_p < 0$  and  $M_m < 0$ . From the first order condition we have

$$\frac{dG_L}{dI} = \frac{q_{1I}\alpha_L[W_L(G_L) - W_L(G_R)] + q_I(1 - \alpha_L)W'_L(G_R)}{-P''_L} \quad (\text{A6})$$

showing that  $dG_L/dI < 0$  if  $q_{1I} = -z \sum_i f_i n_i V'_i(G_L; w_i)$  declines as inequality goes up, denoted  $q_{1I} \leq 0$ ; or that  $q$  declines as inequality goes up, denoted  $q_I \leq 0$ ; or both.

- We have

$$q_{1I} = z \sum_{i \in J} x_i f_i M_i \text{ where } x_i \equiv \frac{dV'_i(G_L; w_i)}{dw_i} \quad (\text{A7})$$

$$q_I = z \sum_{i \in J} y_i f_i M_i \text{ where } y_i \equiv \frac{d\Delta_i}{dw_i} \quad (\text{A8})$$

- $y_i \equiv d\Delta_i/dw_i > 0$  declines when we move to higher income classes, as  $\text{sign}[dy/dw] = \text{sign}[C^L v_{11}(C^L, G_L) - v_{11}(C^R, G_R)] = \text{sign}[C^R v_1(C^R, G_R) - C^R v_1(C^L, G_L)] \mu < 0$
- $x_i \equiv dV'_i/dw_i = (\mu - 1)(k/\bar{w})v_1 + (1 - t)v_{21} > 0$  declines when we move to higher income classes, as  $dx_i/dw \leq (\mu - 1)(k/\bar{w})v_{11}$  when  $\mu$  and  $v_{12}$  are non-increasing in income  $w$ .
- Using  $\sum M_i = 0$  we have that  $q_{1I} = z \sum_{i \in J} x_i f_i M_i = (f_p x_p - f_r x_r)M_p + (f_m x_m - f_r x_r)M_m < 0$  as long as  $f_i \approx f$ ,  $x_p > x_m > x_r$ , and  $M_p < 0$  as well as  $M_m < 0$ .
- Similarly,  $q_I = z \sum_{i \in J} f_i y_i M_i = (f_p y_p - f_r y_r)M_p + (f_m y_m - f_r y_r)M_m < 0$  as long as  $f_i \approx f$ ,  $y_p > y_m > y_r$ , and  $M_p < 0$  as well as  $M_m < 0$ .

## Appendix B: Data definitions and descriptive statistics

*Welfare support:* The Comparative Manifesto Project derives party positions by extensive analyzes of party manifestos prior to each election. We follow the recent recommendations of Lowe et al. (2011) closely when deriving policy positions. In other words, we assume that it is the *balance* of favorable mentions of expansion versus favorable mentions of limitation that matters when a party wants to state its position on welfare state generosity. Next, we impose no bounds of extremity, yet we assume that expressing extreme positions require exponentially more pro- or anti-welfare state sentences in the party program. Finally, we smooth the positions slightly towards zero by adding .5 to both variables, something which should make estimates more stable (Lowe et al. 2011, 132). Together this implies that a party’s welfare state policy platform, *Welfare*, is measured as:

$$Welfare = \log(\text{“Welfare State Expansion”} + .5) - \log(\text{“Welfare State Limitation”} + .5)$$

*Wage inequality:* Wage inequality is measured by the ratio of gross earnings between the 90th and the 10 percentile, mainly taken from the OECD earnings database. The OECD wage data are supplemented by data calculated from ECHP for the period 1994 to 2001 for Austria, Belgium, Denmark, Finland, France, Greece, Ireland, Italy, Netherlands, and Portugal. Data from France, Italy (1979-1984), and Switzerland are net of taxes. Data from Canada (1967-1994), Finland, France, Netherlands, and Sweden are based on annual earnings. Index variables reflecting data source, and whether the basis is net wages and annual earnings, are included in all regressions to account for source-driven breaks in the wage inequality series.

*Controls: Economic growth:* Increasing income per capita is an important variable in our theoretical model as it increases support for welfare state spending, and is correlated with wage inequality. *The percentage elderly* can increase the generosity of welfare policy platforms, in particular on pensions, as the proportion of elderly in the electorate grows (Persson and Tabellini 2000). Demographic changes can also have an impact on wage inequality (see e.g. Hagemann and Nicoletti 1989 for a discussion of the effects of population aging on the labor market). *Trade openness:* implies a higher risk of income loss, and thus higher support for social insurance. Trade openness might also increase wage inequality (e.g. Wood 1994). *Union density:* There is a large literature on the impact of the unionization of the working class on the generosity of the welfare state (e.g. Korpi 1983). Encompassing unions also tend to equalize wages (Wallerstein 1999). The definition and sources of the control variables are described in Table A1. All variables are lagged one year, i.e. they refer to the situation the year preceding the election.

*Instruments:* Bargaining coverage is defined as employees covered by wage bargaining agreements as a proportion of all employed income earners with a potential right to bargaining. The *adjusted bargaining coverage* is obtained by removing sectors or occupations without a defacto right to bargain from the number of income earners (see Visser (2011)). The adjusted bargaining coverage data are typically reported in five year intervals. We have interpolated between the observations and smoothed the observation by taking the average of the previous five years. A (few) missing observations are interpolated using the effective number of union confederations. The effective number of union confederations is defined as the inverse of the Herfindahl index. The union confederation data are missing for Iceland, reducing our sample to 116 elections from 21 countries. Table A3 shows the percentage change in the instruments from the first to the last observation by country.

Table A1: Descriptive statistics and variable descriptions. N=120, except if \* for which N=117.

Variable	Description	Data source	Mean	Std. Dev.
Left generosity	See text and appendix	Budge et al. (2001)	2.61	.75
Right generosity	See text and appendix	Budge et al. (2001)	1.50	1.20
Wage inequality (90/10)	90-10 percentile ratio	OECD's earnings database	2.97	.68
Wage inequality (90/50)	90-50 percentile ratio	OECD's earnings database	1.79	.25
Wage inequality (50/10)	50-10 percentile ratio	OECD's earnings database	1.64	.22
Economic growth	Growth of real GDP, % change from previous year	Armingeon et al. (2006)	2.60	1.93
Percentage elderly	Population 65 and over as % of population	Armingeon et al. (2006)	13.67	2.47
Trade openness (log)	Exports of goods and services as % of GDP	Franzese and Hays (2008)	3.81	.65
Union density	Net union membership as a proportion of employment	Visser (2011)	40.69	21.49
Union bargaining coverage	Proportion of employees covered by wage bargaining	Visser (2011)	68.89	24.05
Effective number of confederations	Defined as the inverse of the Herfindahl-index	Visser (2011)	2.53	1.66

Table A2: Countries and years included.

Country	Years
Australia	1977, 1980, 1983, 1984, 1987, 1990, 1993, 1996, 1998, 2001
Austria	1990, 1994, 1995, 1999, 2002
Belgium	1987, 1991, 1995, 1999, 2003
Canada	1968, 1974, 1993, 2000
Denmark	1981, 1984, 1987, 1988, 1990, 1998, 2001
Finland	1987, 1991, 1995, 1999, 2003
France	1962, 1967, 1968, 1973, 1978, 1981, 1986, 1988, 1993, 1997, 2002
Germany	1987, 1990, 1994, 1998, 2002
Greece	1996, 2000
Iceland	1987, 1991, 1995
Ireland	1997, 2002
Italy	1983, 1987, 1992, 1994, 1996, 2001
Japan	1976, 1979, 1980, 1983, 1986, 1990, 1993, 1996, 2000, 2003
The Netherlands	1981, 1982, 1986, 1989, 1994, 1998, 2002, 2003
New Zealand	1987, 1993, 1996, 1999, 2002
Norway	1981, 2001
Portugal	1995, 1999, 2002
Spain	1996, 2000
Sweden	1976, 1979, 1982, 1985, 1988, 1991, 1994, 1998, 2002
Switzerland	1999, 2003
United Kingdom	1979, 1983, 1987, 1992, 1997, 2001, 2005
United States	1976, 1980, 1984, 1988, 1992, 1996, 2000

Table A3: Percentage change in the instruments from first to last observation.

	Adjusted bargaining Coverage (log)	Effective number of union condederations
Australia	-40	-5
Austria	2	0
Belgium	0	2
Canada	13	28
Denmark	2	12
Finland	21	12
France	29	90
Germany	-9	0
Greece	-3	3
Ireland	-5	0
Italy	-5	2
Japan	-39	-21
The Netherlands	1	-3
New Zealand	-67	-14
Norway	6	41
Portugal	-3	-3
Spain	5	1
Sweden	12	26
Switzerland	0	-6
United Kingdom	-51	10
United States	-41	-19

## Appendix C: Robustness checks

Table A4 explores whether the wage inequality coefficient is robust to the inclusion of several additional control variables.

**Left majority:** Pontusson, Rueda and Way (2002) argue that left party in power may affect wage inequality. Bawn and Sumer-Topcu (forthcoming) suggest that there is a direct effect from being the incumbent on own party program. Together these two mechanisms may induce a bias in our estimates. Column 1 in the table demonstrates that the inequality coefficient is robust to the inclusion of the indicator of left majority in cabinet, indicating that this potential bias is not present in our case.

**Generosity:** Barth and Moene (2012) argue that a high level of welfare generosity may improve the bargaining situation of low-income workers and thus reduce wage inequality from below. Wilensky (2002) suggests a growth to limits effect, saying that the manifested political welfare ambitions decline in the current level of welfare generosity. Together the two mechanisms may induce a bias in our estimates. Column 2 in the table assures that the bias is not present as the inequality coefficient is robust to the inclusion of the current level of welfare generosity as measured by the overall generosity index in Scruggs (2004, 2006).

**Unemployment:** Higher unemployment may influence the support for social insurance and therefore also the party platforms. Unemployment may in addition affect wage inequality, in particular at the bottom of the wage distribution. Again this may induce a bias in our estimates. Column 3 in the table shows that bias is not present as the wage inequality coefficient is robust to the inclusion of current level of unemployment.

**Immigration:** Alesina and Glaeser (2004) argue that higher migration may reduce the support for the welfare spending that party programs can pick up. Immigration can in addition affect wage inequality in accordance with the skill profile of migrants (Card 2009). This may induce a bias in our estimates. Column 4 in the table indicates that the effect of wage inequality is even stronger controlling for the share of immigrants in the population implying that an omitted immigration variable is not a problem for our main conclusion.

**Turnout:** Pontusson and Rueda (2010) argue that voter turnout may influence party positions since more of the poor vote when the turnout is high. In addition voter turnout and inequality may be correlated, for instance because the actual education policy affects both, creating an omitted variable bias in our estimates. Column 5 in the table shows no sign of the bias as the wage inequality coefficient is robust to the inclusion of voter turnout. The turnout coefficient in Table A4 is insignificant, and the wage inequality coefficient barely changes.

**Electoral system:** Type of electoral system might be important for the transformation of voter preferences to changes in party positions, in particular it has been speculated that this relationship is stronger in two-party, majoritarian electoral systems. The empirics do not, however, provide much support for this claim (Budge and McDonald 2007). We consistently include country fixed effects which would remove any overall impact of electoral system on party positioning since electoral systems rarely change. We therefore examine a potential impact of electoral system by including an interaction term between a binary variable representing whether the country has a majoritarian electoral system and wage inequality. The interaction term is insignificant.

**Party fragmentation:** The degree of party fragmentation in the legislature is strongly associated with type of electoral system, yet has more variation over time. Furthermore, it has been shown that small, ideological “Niche”-parties tend to respond less to changes in the electorate than larger parties (Adams et al. 2006). Countries with more parties in the legislature are likely to have more “Niche”-parties, thus these countries might be less responsive to the electorate. We operationalize party fragmentation using the effective number of parties in the legislature, as reported in Armingeon et al. (2006). The party fragmentation variable is insignificant, and the wage inequality coefficient barely changes.

**Outliers:** We have a fairly small sample and one might worry that results are driven by a few extreme outliers. Estimating DFBETAS scores for the wage inequality coefficients<sup>18</sup> we examine if any observations change the wage inequality coefficient by one standard error or more (Bollen and Jackman 1990, 267). We find no observations close to this absolute cut-off, and the wage inequality coefficient is slightly smaller, but not substantively affected, if we instead rely on a size-adjusted cut-off and exclude the 5 per cent of the observations with the most extreme DFBETAS scores (see for instance Hamilton 1992, 126).

**Excluding countries:** Is the inequality coefficient driven by a single country? We re-estimate the models, excluding one country at the time in a rotating fashion. The largest drop in the coefficient is observed when we exclude Austria ( $\beta=-.804$ ,  $SE=.272$ ) and the US ( $\beta=-.784$ ,  $SE=.247$ ), while the largest increase occur when we exclude Canada ( $\beta=-.564$ ,  $SE=.191$ ) and Japan ( $\beta=-.553$ ,  $SE=.199$ ).

**Lags:** A party may not be free to decide its platform without taking its recent history into account. Table A5 in the Appendix shows that conclusions are not substantively different if we include the lagged dependent variable. In this table we also show that conclusions are similar if we rely on the ratio between the 90th and the 50th percentile or the 50th and the 10th percentile.<sup>19</sup>

**Alternative measures:** In column 6 in Table A5 we replace the dependent variable used so far with Cusack and Engelhardt’s (2002) economic left-right index. This index is based on ten variables in the Comparative Manifesto Project data set and represents a broader set of economic policy issues (see description in the Appendix). The index has a theoretical range from -100 to 100 where a high score implies a rightist position. As evident, conclusions are the same; an increase in wage inequality is associated with a rightward shift of left parties. The wage inequality coefficient is insignificant for the right bloc.

**Uncertainty in the estimates of the party positions:** An important criticism of the Comparative Manifesto Project data is the lack of uncertainty estimates in the derived party positions (Benoit, Laver and Mikhaylov 2009). Since we use the data as dependent variables, measurement error in the Comparative Manifesto Project data most likely only inflate the standard errors of the regressions. Nevertheless, as a robustness check we construct uncertainty estimates of the bloc positions based on the policy-specific uncertainty estimates constructed by Benoit et al. (2009).<sup>20</sup> Next, we estimate a weighted least squares regression including the same control variables as in Table 1, where each observation is weighted by its corresponding uncertainty estimate. The results support the same conclusion as above, reported in Table A6.

**Polarization:** In Table 1 the different signs of the time trends between the left and the right suggest an underlying polarization. This polarization is independent of changes in the wage distribution and the other controls. From 1976 and onwards the right has consistently moved towards the right in welfare policies, whereas the left from the early 1990s and onwards has moved towards the left, increasing its support for the welfare state. To check if this pattern varies across welfare state institutions we classify the countries according to Esping-Andersen’s (1990) welfare state regime types<sup>21</sup> and test if the time trends vary across the regime types. The interaction terms between the regime indicator dummies and the time trend are not jointly significant (see Table A7). Our model cannot explain these trends. What seems clear, however,

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<sup>18</sup>DFBETAS measure the influence of each observation on a specified coefficient by calculating by how many standard errors the coefficient change when the respective observation is excluded from the analysis (Hamilton 1992, 125)

<sup>19</sup>The size of the coefficients are different, yet this reflects that the distributions of the ratios differ.

<sup>20</sup>The uncertainty estimates are constructed in a similar manner as the dependent variables, i.e. it is the sum of the estimates for the two Comparative Manifesto Project variables we use to construct the dependent variable, and the uncertainty estimate for the bloc is the sum across the parties within the bloc, where each party’s contribution to the bloc score is weighted by the size of the party.

<sup>21</sup>We classify the Southern European countries not included in Esping-Andersen’s study as conservative and Iceland as a liberal welfare regime.

is that the polarization process (after 1990) cannot be explained by rising inequality. On the contrary, as it shifts the left towards the right, the contribution of rising inequality is in the direction of convergence rather than polarization.

Table A5: Linear regression models. Dependent variable is left bloc position on welfare policy (columns 1-5) or left bloc position on Cusack-Engelhardt's left-right economic policy index (column 6).

	(1) Welfare	(2) Welfare	(3) Welfare	(4) Welfare	(5) Welfare	(6) Index
Wage inequality (90-10)	-0.789*** (0.256)					30.00** (11.41)
Wage inequality (90-50)		-2.925** (1.285)	-2.952** (1.342)			
Wage inequality (50-10)				-1.654** (0.605)	-1.744** (0.640)	
Economic growth	0.080* (0.045)	0.082 (0.048)	0.083* (0.048)	0.069 (0.044)	0.071 (0.043)	-3.923** (1.656)
Percentage elderly	0.069 (0.069)	0.084 (0.069)	0.085 (0.071)	0.063 (0.074)	0.063 (0.076)	-1.382 (1.981)
Trade openness (log)	1.154 (1.019)	1.320 (1.017)	1.327 (1.035)	1.220 (1.031)	1.224 (1.028)	-56.231 (34.973)
Union density	0.065 (0.040)	0.055 (0.040)	0.055 (0.040)	0.069 (0.042)	0.070 (0.042)	-3.235** (1.326)
Union density-sq.	-0.001* (0.000)	-0.001* (0.000)	-0.001* (0.000)	-0.001* (0.000)	-0.001* (0.000)	0.029** (0.012)
Trend	-0.048 (0.041)	-0.048 (0.040)	-0.048 (0.041)	-0.050 (0.042)	-0.051 (0.043)	2.154 (1.528)
Trend-sq	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)	0.002** (0.001)	-0.077* (0.041)
Lagged dependent variable	0.044 (0.099)		0.019 (0.096)		0.043 (0.099)	0.293** (0.130)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.27	0.27	0.26	0.26	0.26	0.54
Number of countries	22	22	22	22	22	22
Number of elections	120	120	120	120	120	120

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 (two-tailed tests)

Robust standard errors adjusted for country clustering in parentheses

All models include dummies for wage inequality data source.

Column 6 uses the Cusack-Engelhardt's left-right economic policy index (2002)

Table A4: Welfare support of the left. Dependent variable is left bloc position on welfare.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Wage inequality (90-10)	-0.735*** (0.229)	-0.736*** (0.182)	-0.771*** (0.227)	-1.327*** (0.451)	-0.689*** (0.218)	-0.655** (0.273)	-0.755*** (0.240)
Left majority	0.216 (0.132)						
Generosity		0.095 (0.056)					
Unemployment			-0.005 (0.033)				
Immigrants (log)				-0.975 (0.604)			
Turnout					-0.037 (0.032)		
Maj.XWage ineq						-0.135 (0.189)	
Party fragmentation							0.061 (0.085)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.28	0.29	0.28	0.40	0.29	0.27	0.27
Number of countries	22	18	22	19	22	22	22
Number of elections	120	105	119	70	120	120	120

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 (two-tailed tests)

Robust standard errors adjusted for country clustering in parentheses. All models include dummies for wage inequality data source. Sample size differs from that of Table 1 because the added variable is missing for some observations.

Table A6: Weighted Least Squares regression models. Dependent variable is party bloc position.

	Left bloc	Right bloc
Wage inequality (90-10)	-0.619** (0.213)	-0.464 (0.758)
Controls	Yes	Yes
Country FE	Yes	Yes
Time trend	Yes	Yes
Adj. R-squared	0.42	0.54
Number of countries	22	22
Number of elections	120	118

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 (two-tailed tests)

Robust standard errors adjusted for country clustering in parentheses

Note: Two observations are dropped in the Right bloc regression because the uncertainty estimates are zero.

Table A7: Linear regression models. Test of whether time trends vary across welfare regime types. Dependent variable is party bloc position on welfare policy.

	Left bloc	Right bloc
Wage inequality (90/10)	-0.784** (0.260)	-0.115 (0.516)
Soc.dem.XTrend	-0.011 (0.020)	0.051 (0.035)
Cons.XTrend	-0.001 (0.024)	0.040 (0.039)
Trend	-0.039 (0.040)	-0.155** (0.055)
Trend-sq.	0.002** (0.001)	0.0001 (0.001)
Country FE	Yes	Yes
Adj. R-squared	0.26	0.45
Number of countries	22	22
Number of elections	120	120
F-test of interactions	0.2 (p=.83)	1.2 (p=.32)

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 (two-tailed tests)

Robust standard errors adjusted for country clustering in parentheses. All models include dummies for wage inequality data source.

## Replication of Pontusson and Rueda (2010).

Pontusson and Rueda (2010) argue that an increase in income inequality moves Left parties to the left, but only if voter turnout is high (i.e. more poor voters at the poll). They measure income inequality using top income share data, and measure party positions by using the CMP’s general left-right-scale (ranging from -100 to 100) where a high score implies a rightist position. To assess their claim they estimate the following model:

$$\begin{aligned} \text{RightScore}_{i,t} = & \alpha_{1i} + \beta_1 \text{Inequality}_{i,t} + \beta_2 \text{Turnout}_{i,t} + \beta_3 \text{Inequality}_{i,t} \times \text{Turnout}_{i,t} \\ & + \beta_4 \text{MedianVoter}_{i,t} + \beta_5 \text{UnionDensity}_{i,t} + \epsilon_{i,t} \end{aligned}$$

where RightScore refers to position on the left-right-scale,  $\alpha_{1i}$  is a country-specific intercept, UnionDensity is the level of union density, MedianVoter is the Kim-Fording-estimate of the position of the median voters, re-scaled to fit the left-right-scale. They estimate standard errors adjusted for country clustering. Their main findings are that  $\beta_1$  and  $\beta_2$  are positive, while  $\beta_3$  is negative, i.e. inequality moves the left to the right, however, this effect declines with the level of turnout and the marginal effect of inequality reverses to negative and significant (i.e. the Left moves to the left) when turnout is higher than its sample average.

We find no significant interaction between wage inequality and turnout on welfare policy position of the left in our data, once accounting for the trend in policy positions. In order to reconcile their results with ours, we “replicate” their findings in Column 1, Table A8 using their model-specification, their dependent variable,<sup>22</sup> and their set of control variables, but we estimate their model on our sample. Since we do not have top-income share for all countries in our sample, we rely on the 90-10 ratio as our measure of inequality.<sup>23</sup> As in Pontusson and Rueda (2010),  $\beta_1$  and  $\beta_2$  are positive, while  $\beta_3$  is negative. Moreover, the marginal effect of inequality is negative (i.e. left-leaning) when turnout is slightly above the sample mean. Thus, we are quite close to replicating their conclusions. When we add the trend terms in column 2, however, the interaction term is substantively reduced and no longer significant at conventional levels.

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<sup>22</sup>We still focus on the left bloc rather than the main left party to avoid deciding on the main left party in countries not included in their sample.

<sup>23</sup>We also include controls for inequality data source, but conclusions are similar if we exclude the data source dummies.

Table A8: Linear regression models. Dependent variable is left bloc position on the general left-right-scale.

	(1)	(2)
Wage inequality (90-10)	24.21 (16.07)	22.79* (13.207)
Turnout	0.987 (0.752)	0.575 (.597)
Wage ineq. $\times$ Turnout	-0.354* (0.207)	-0.261 (0.179)
Union density	-0.358 (0.231)	-0.209 (0.320)
Median voter	0.386*** (0.060)	0.378*** (0.072)
Trend		0.638** (0.224)
Trend-sq		-0.032** (0.012)
Constant	-65.72 (61.74)	-57.22 (41.50)
Observations	120	120
R-squared	0.51	0.55
Number of countries	21	21

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  (two-tailed tests)

Robust standard errors adjusted for country clustering in parentheses

## Appendix D: Additional results

This appendix presents the results from two examinations of our instruments that we discuss in section 3.3.

Table A9 shows that our instruments, conditional on union density and country fixed effects, are neither significantly correlated with whether a social pact is announced (column 1) or signed (column 2) in a given year, nor significantly correlated with routine involvement of unions and employers in government decisions on social and economic policy (column 3).

Table A10 shows the results from a “placebo-regression” where we instrument wage inequality from  $t+1$  in a regression of platform generosity from  $t$ . As evident, we find no significant effect of future wage inequality on current platforms.

Table A9: Instruments and tripartite consultations.

	(1)	(2)	(3)
	Pact negotiated	Pact signed	Routine consultations
Union bargaining coverage	0.013 (0.009)	0.007 (0.008)	0.003 (0.012)
Effective number of confederations	-0.101 (0.121)	-0.118 (0.116)	0.061 (0.135)
Controls	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
Adj. R-squared	0.09	0.17	0.85
Number of countries	21	21	21
Number of elections	117	117	117

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  (two-tailed tests)

Robust standard errors adjusted for country clustering in parentheses

Table A10: Instrument variable (IV) “Placebo”-regression models.

Dependent variable is party bloc position on welfare policy.

Excluded instruments are the adjusted bargaining coverage

and the effective number of union confederations at  $t+1$ .

	Left bloc	Right bloc
Wage inequality $t+1$ (90/10)	0.248 (0.700)	-0.176 (0.866)
Controls	Yes	Yes
Country FE	Yes	Yes
R-squared	0.08	0.23
Number of countries	21	21
Number of elections	130	130
Kleibergen-Paap F-statistic	7.37	7.37
Sargan statistic	0.94 (p=.33)	1.03 (p=.31)

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  (two-tailed tests)

Robust standard errors adjusted for country clustering in parentheses

All models include dummies for wage inequality data source.

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