Biased Democracies: The Social and Economic Logic of Interest-Based Voting

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Earlier versions of this paper were presented at the University of Essex, November 2008, at the Annual Meetings of the American Political Science Association 2009, at the Education, Religion, and the Gender-Vote-Gap Conference, University of Bremen, October 14-15, 2011, and at the “Political Economy of Skills and Inequality” workshop, July 26th and 27th 2012 at University of Konstanz, Germany. We wish to thank the participants at these conferences for many useful comments, and in particular Geoffrey Brennan, Geoff Evans, Rob Franzese, Nicola Lacey, Rakeen Mabud, Philip Manow, David Rueda, Vera Troeger and Paul Whiteley.
Abstract

While many people are rationally ignorant about politics, most political economy models of preferences and voting assume that people are well-informed about their interests. Here, we endogenize the individual incentive to acquire political information, with stark implications for understanding partisan politics. We argue that the incentive to acquire political knowledge is a byproduct of other incentives, both private and social, and that these incentives are unequally distributed across groups. For those who lack incentives to be informed the rational strategy is to vote centrist. We test the model on public opinion data from 16 advanced democracies and show that the coupling between economic interests and political choice depends on social networks that have weakened over time. Because those with low information vote centrist we can explain the decline in class voting as reflecting a decline in the social incentives to be politically informed, linked to declining union membership.
1. Introduction

In the past decade and a half a rich literature in the comparative political economy of advanced societies has emerged on individual economic preferences and voting, and the consequences for redistribution. Yet, our empirical and theoretical understanding remains limited. At the individual level basic economic variables, such as income and education, are only weakly related to policy preferences or to voting (Margalit 2013; Lynch and Myrskyla 2009), and at the macro-level high and rising inequality, contrary to expectations, has not increased support for redistribution and the political left (Georgiadis and Manning 2012; Allan and Scruggs 2004). In this paper we propose that an important element in solving these puzzles is the (changing) incentives that different groups have to be informed about politics, and the logic of voting choice for those without significant information.¹ We present a model of voting, consistent with rational choice, with two new features: endogenous incentives to acquire relevant information and the logic of voting when information is limited. Jointly these features significantly improve our ability to explain individual voting behavior, and they have striking implications for partisan and distributive politics across countries, including the political shift to the right. Specifically, our model implies that the uninformed tend to vote centrist, and that the incentives to acquire information (increasingly) favors the political right.

Our model of class voting fills what we see as a major lacuna in comparative political economy. The existing literature is largely focused on testing models of economic interests – the importance of income (e.g., Moene and Wallerstein 2001; Cusack et al. 2006), risk and job security (e.g., Rueda 2005; Rehm 2011; Margalit 2013), education and skills (e.g., Iversen and

¹ Assuming they decide to vote. The paper does not examine the logic of participation, although we suggest below why endogenizing this choice is likely to reinforce our conclusions.
Soskice 2001; Busemeyer 2012), property and debt (e.g., Ansell 2012), sector (e.g., Rehm and Wren 2012), and so on – and how these interests shape preferences for policies and political parties. But this work does not address the question of how people come to understand their interests (if they do) and the effect of public policies on these interests. This is not only an error of omission but of commission because Downs long ago argued that voters have an incentive to be “rationally ignorant” (Downs 1957). Moreover, we show that those who are informed vote differently than those who are not, and that the distribution of incentives to be informed is non-random. How people come to understand their interests is therefore consequential for explaining voting and public policies. Simply put, where most current research in the field seeks to pin down the nature of peoples’ interests under the assumption that these are common knowledge, we take interests as given and ask how people come to know and vote on these interests. Our answer suggests a major research frontier at the intersection of comparative political economy and sociological network analysis, which complements comparative work on economic class and voting (see Evans and de Graaf 2013 for the most comprehensive recent treatment) by bringing in the role of informal networks and discussion.

In modeling the process of information acquisition we posit two rational motivations. The first is the private economic incentive to seek information about public policies and regulations, and how governments may change these, because such information facilitates better financial and management decisions when the outcomes depend on future public policies. As originally argued by Larcinese (2001), private incentives tend to be concentrated among those with high incomes and wealth, or among those who are in managerial or supervisory positions where familiarity with public policies and how they may change is important for making sound economic decisions. Private incentives are not exclusively reserved for the rich and powerful because ordinary people are also making longer term investments in schooling, pensions and
other areas where political information about the future may be relevant to current decisions. But
we suggest that private incentives are increasing in economic variables that are conducive to
right voting.

The second, and equally general, motivation is social. Mounting evidence in social
psychology shows that human behavior is strongly motivated by the desire to gain the
recognition and respect of others (Baumeister and Leary, 1995), and this insight has gained
influence in both political science (e.g., Abrams et al. 2011) and in economics (e.g., Brennan and
Pettit 2004). The desire to belong to groups and to receive the approval of peers is now widely
thought to have an evolutionary basis. As Baumeister and Leary (1995) suggest, these social
incentives are as fundamental as the desire for personal security and material welfare, and they
cannot be reduced to the economic ones (even if they surely complement each other in many
cases). The social desire for approval, we argue, has two effects: First, it motivates some people
to acquire costly knowledge about politics when politics is a recurrent topic of discussion in the
groups and informal networks which they belong to. Second, it motivates other people to
assimilate more passively the opinions of those around them when group members can
reasonably be assumed to have well-aligned interests and when conformity is valued. Formal
groups like unions make use of social incentives, since in effect the informal social networks of
many workers are partially within unions; and we will argue that their decline since the 1980s
has been a significant cost to the political left.

The role of discussion of politics has a long pedigree in sociology, beginning with the
pioneering work of Lazarsfeld and Berelson and their associates (Lazarsfeld et al 1944; Berelson
et al 1954) and echoed more recently in the highly influential study by Huckfeld and Sprague
(1991, 1995) and an insightful recent book by Walsh (2004). We build on this work and connect
it to political economy and rational choice in a manner that aligns it with mainstream models in
comparative politics. What we seek is a cross-disciplinary integration of these insights that sheds light on comparative patterns of voting and partisan politics from a rational choice perspective. Our econometric tests show the highly significant role of political discussion in informal political networks in correctly identifying one’s political interest. But why exactly? Here the composition of networks is of great importance. The critical glue between political science and sociological analyses is what sociologists call *homophily*: Informal social networks tend to be structured on an economic basis, so that people from similar economic strata are much more likely to associate with each other than those from different strata. People from the same class marry each other at higher rates; they tend to live in the same neighborhoods, they work in the same office or factory, and they send their children to the same schools: “Birds of a feather flock together” is the title of most widely cited review of the literature (McPherson et al 2001). Homophily is a critically important fact about social reality because it means that what people learn from political discussion in their networks tends to be close to their own interests. Overriding the Downsian incentive to be ignorant, political discussion in social networks gives political economy models explanatory power.

Organized groups understand the power of social incentives and they try to use social networks to their advantage. Building on a new study by Ahlquist and Levi (2012), we find strong indications in our data of such organizational effects in the case of unions. As powerfully argued by Przeworski and Sprague (1982), organized uses of social incentives have historically served as counterweights to the concentration of private incentives among right constituencies; and we show that the decline of unions since 1980, adding to the effect of the decline of mass parties, has played a major role in the decline of the left.

We present our argument in the form of a formal model that can be directly estimated using the data we have. We will show that when information is limited there is a striking centrist
bias in voting, which we believe is a completely new result. Because the incentives to be informed are stronger on this centrist bias is more consequential on the left, with implications for the left-right balance of support. The presence of partisan biases is strongly confirmed in public opinion data from 16 advanced democracies, which shows that among those who rarely discuss politics and are not in unions, the support for the center and right is much higher. We further show that left support is strongest when political discussion is interacted with union membership.

The rest of the paper is divided into three sections. The first presents the model, the second tests the model on comparative survey data on voting, and the third summarizes the key results and discusses broader implications of the argument.

2. The Model

Our point of departure is a very simple spatial model of voting, where voters are incompletely informed about their own position relative to those of parties that they can vote for. With limited information the model shows that people are much more prone to vote centrist. We then introduce private and social incentives and consider the consequences for partisan politics.

2.1. A simple spatial baseline model

Take a very simple case of limited information from which we will derive some key intuitions. In this case there are three parties, left (L), center (C), and right (R), with policy positions uniformly distributed on a left-right scale with the range \([-a, a]\): \(C = 0, \ L = -b, \ R = b; \ a > b\). We assume that voter \(i\) chooses \(L, C\) or \(R\) to minimize expected losses, where the ex-post loss to \(i\) from voting for party \(P\) is the distance between the party position and the voter position, \(y_i\):

\[
L_i = |P - y_i|
\]

With complete information about \(y_i\) and \(P\), this reduces to a simple spatial voting model where \(i\) always chooses the party closest to her (Adams 2001).
The proximity result is simple and intuitive, and it is widely used in the comparative voting literature. Yet, surprisingly, it is fundamentally altered if voters have incomplete information. Voters may be uncertain about both their own policy preferences and those of political parties. The latter arises simply from limited information about policy platforms, and the credibility and capacity of parties to implement these platforms. Voters may also be uncertain about their own policy preferences. Even if preferences were simply a function of current income, as in the canonical Meltzer-Richard model (Meltzer and Richard 1981), what is optimal depends on the progressivity of taxation, the efficiency costs of such taxation, and the composition of spending. The information problem is greater still when preferences are dependent on multiple factors in addition to income, as implied by most political economy models. Even if voters knew the policy positions of parties, and could trust parties to implement these, they would not necessarily know which policies would best advance their interests. So if there are costs to knowledge acquisition, it is not hard to see why people often make decisions that deviate from standard model predictions.

To begin with the most extreme possibility, imagine now that a voter is completely uninformed about politics ("rationally ignorant"). If she votes, who should she vote for? If the

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2 In the spatial voting tradition it is sometimes recognized, going back to Downs, that voters are “information misers” who parties can only capture by assimilating a large number of issues into a single ideological left-right dimension (Munger and Hinich 1994). The spatial analysis is then applied to this simpler world. But, of course, this does not explain how voters decide where they belong on the ideological left-right scale.

3 Since the incentives to acquire information are almost certainly related to the incentives to vote, those without information are also less likely to vote (see Abrams et al, 2011). Yet, voter non-
parties are uniformly distributed, the temptation would be to say that she should vote for each party with equal probability. After all, each party is equally likely to best represent her preferences. But that intuition is wrong. In fact, with reasonable assumptions the voter would always vote for party C. The reason is that voters are trying to minimize losses (measured as spatial distances), and voting for C minimizes the expected loss. Note again that this conclusion is an implication of the standard spatial voting model under uncertainty. It does not require any specialized assumptions or non-linearities in the utility function.\(^4\) To illustrate the logic, imagine that voter \(i\) is has no information and shares the positions of \(L, C,\) or \(R\) with equal probability (we will subsequently generalize this simple case to any distribution of voters). If \(i\) votes \(L\) the expected loss, \(\lambda_{L,i}\), is 
\[
\frac{1}{3} \cdot 0 + \frac{1}{3} \cdot (C - L) + \frac{1}{3} \cdot (R - L),
\]
where the first term is the (zero) loss if \(L\) turns out to be the “correct” party (i.e., the most representative), and the other two terms are the losses if either \(C\) or \(R\) is the correct party. Similarly, if \(i\) votes \(C\) the expected loss, \(\lambda_{C,i}\), is 
\[
\frac{1}{3} \cdot (C - L) + \frac{1}{3} \cdot 0 + \frac{1}{3} \cdot (R - C).
\]
It is easy to see that the only difference between the two expected losses is the last term, which is greater if \(i\) votes \(L\) than if \(i\) votes \(C\). So \(\lambda_{L,i} > \lambda_{C,i}\). The same holds if we compare \(R\) to \(C\) since \(\lambda_{L,i} = \lambda_{R,i}\) if we assume symmetrical spacing. Voting \(C\) is therefore always the best choice for \(i\).

This logic will prove important to our results, and we show in appendix A that it can be generalized to any distribution of subjective probabilities across the three parties. Specifically, turnout that is related to the lack of incentives to be informed only reinforces our conclusions, so we assume that everyone votes for simplicity.

\(^4\) Some spatial voting models assume that voters minimize squared distances. This makes no difference to our substantive results.
we show that for any continuous distribution if $y_{LC}$ is the midpoint between $L$ and $C$, $i$ votes left when the portion of the distribution to the right of $y_{LC}$ is less than 0.5, or:

(2) \[ F(y_{LC}) > 0.5 \]

An analogous result holds for voting right. The implications is that for $i$ to vote left or right there must be a greater than one half probability that $L$ or $R$ is the best party. If the choice between the three parties was symmetrical $\pi_{i,L} = \pi_{i,C} = \pi_{i,R} = 1/3$, so this condition would not hold. Again, there is a centrist bias in voting under uncertainty, and this bias has a very precise meaning.

An intuition behind this result, which to our knowledge has not been derived before, is that people who are uncertain about their policy preferences relative to those offered by parties try to “insure” themselves by voting for the centrist party rather than non-centrist parties. If the center party is close to the status quo, this will appear empirically as a status quo bias, but note that such a bias is a consequence of loss aversion in our model; it is not an assumption.

Note also that the centrist bias does not mean that voters tend to choose parties that are different from their own stated policy positions. Policy-preferences will mirror party preferences in the sense that uncertain voters who vote centrist are also likely to express centrist policy opinions. Our model is therefore fully consistent with mounting evidence that voters tend to position themselves at the center of the political space compared to most political parties (see Macdonald, Listhaug and Rabinovitz 1991; Iversen 1994; Kedar 2005). Indeed, insofar as parties represent the preferences of informed voters (including, presumably, party elites themselves), our model explains this long-standing puzzle.

Up to this point the left and right are equality disadvantaged by the centrist bias, but this depends on the level of information being equal across the political spectrum. We therefore need to be explicit about the process by which people acquire information. Such information could be
about both the positions of political parties or voters’ own positions, but for simplicity we can fix either and vary the other without loss of generality. We assume here that party positions are given but that voters are uncertain about their own preferences relative to those of parties’.

2.2 Endogenizing the acquisition of knowledge

Our starting point is a “rationally ignorant” voter who only knows that there is some probability distribution of his or her interests across the policy space. We assume that the distribution is symmetric and centred at the mean of the space so that we do not prejudice the results in one partisan direction or another. Apart from this requirement, the distribution could have any conceivable shape, including multi-peaked, polarized, and normal. As we showed above that the centrist bias is independent of the distribution. In the following we assume a normal distribution because it allows us to easily translate the model into probit, which can be estimated directly.\(^5\) We can also justify this assumption on empirical grounds since the distribution of voter preferences in most countries is approximately normal, and it would be natural to think that the overall distribution is the starting point for most voters. But, again, none of our substantive analytic results depend on assuming a normal distribution.

More precisely we assume that (uninformed) voter \(i\)’s prior is a normal distribution with mean \(\bar{y}\) and a variance of \(\sigma^2\):

\(^5\) This is strictly speaking an approximation because the policy space is constrained to the range \([-a,a]\), but since we can choose \(a\) to be arbitrarily large there are no practical consequences of doings this. The uniform distribution we considered above is now approximated by a normal distribution where \(\sigma^2 \to \infty\) for large enough \(a\).
\[ y_i \sim N(\bar{y}, \sigma^2) \]

It is natural to think that \( \bar{y} \) is close to, or identical to, the position of C, but we can allow the data to determine the exact location.

All people start out with this prior distribution, but they are likely over time to acquire at least some information about their interests from newspapers and other media, from the formal groups they belong to (such as unions and churches), and from the discussion of politics with others in their informal networks of family, friends, neighbors, and co-workers, which we treat as exogenous.\(^6\) We assume that voters use this kind of information to update their prior and arrive at a position that is closer to their “true” preferences.\(^7\) Specifically, the signal \( i \) receives through \( i \)’s network or organizational affiliations is called \( y_i^* \), and we assume that the signal is drawn from a normal distribution centered on \( i \)’s own interests, \( y_i \):

\[ y_i^* \sim N(y_i, \sigma_i^2) \]

Information is thus unbiased, and this assumption is likely to be a good approximation to reality as long as the network or group is small and homogeneous, consisting of people who are similar to \( i \) in terms of relevant socioeconomic attributes -- what sociologists call homophily (see McPherson et al. 2001). We will discuss below what happens if the group is large and

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\(^6\) It is possible that some people choose their work, neighborhood, and so on because people in these have political views that are well-aligned with their own, although we think this is rare. Note however that in this case social interaction inside networks should have no independent effect on attitudes since they are decided prior to network membership.

\(^7\) We do not have in mind “objective interests” in the Marxian sense, but simply the preferences we would observe if people were fully informed about politics. We are agnostic in this paper about the content of these preferences or what determines them.
heterogeneous, such as national unions, because then some members will have economic positions that are distinct from the center of the group-defined position. In this case our model implies that groups can shape individual preferences away from the prediction based on economic position.

In line with standard Bayesian updating, the new information $i$ receives through $i$’s network is $y_i^*$ and $\sigma_i^2$, not $y_i$ itself. In other words, $i$ gets a *noisy* (while unbiased) signal about her own interests. The prior distribution (with center $\bar{y}$) is then combined with the new, updating distribution to yield a posterior distribution of $y_i$ given the signal $y_i$

$$y_i | y_i^* \sim N \left( \frac{y_i^* + \bar{y}}{\sigma_i^2 + \sigma^2}, \left( \frac{1}{\sigma^2} + \frac{1}{\sigma_i^2} \right)^{-1} \right)$$

The posterior distribution is also a normal distribution, and the mean is a weighted average of $y_i^*$ and $\bar{y}$ with weights $\alpha$ and $1 - \alpha$:

$$Ey_i | y_i^* = \frac{y_i^* + \bar{y}}{\frac{1}{\sigma_i^2} + \frac{1}{\sigma^2}} = \alpha y_i^* + (1 - \alpha)\bar{y},$$

where $\alpha \equiv \frac{\sigma^2}{\sigma_i^2 + \sigma^2}$ is the relative precision of the signal $y_i^*$, and determined by the variance of the prior and updating distributions. In other words, using Bayesian updating, how much weight $i$ places on the new information depends on the uncertainty associated with this information compared to the uncertainty associated with the original information.

Using the loss function in (1) $i$ will vote left (L) iff

$$Ey_i | y_i^* = \alpha y_i^* + (1 - \alpha)\bar{y} < y_{LC},$$

(3)
where $y_{LC}$ is the midpoint between $L$ and $C$. This is because $y_i \mid y_i^*$ is normally (hence symmetrically) distributed, so that $Ey_i \mid y_i^* < y_{LC}$ implies $F(y_{LC}) > 0.5$. As explained in Appendix A, $i$ votes $L$ when more than half the distribution is to left of the midpoint between $L$ and $C$. Compared to the example of complete uncertainty, the posterior distribution for a voter to the left of $y_{LC}$ may satisfy this condition because the information received from $i$’s network is centered on $y_i$. If there is complete information, a voter with $y_i < y_{LC}$ will always vote left since the entire distribution will be to the left of $y_{LC}$. This is equivalent to standard spatial voting with complete information.

2.3. Predicting the vote

Voting in our model is deterministic, even if there is incomplete information. This is because voter $i$ knows the signal he or she receives and hence $\alpha y_i^* + (1- \alpha) \overline{y}$ exactly (this is $Ey_i \mid y_i^*$, the expected value of $y_i$ given the signal $y_i^*$). Since $y_{LC}$ is also known, whether the best choice is to vote $L$ follows from Equation (3). An analogous argument applies to $C$ and $R$.

But as analysts we do not see the signal, $y_i^*$, that each voter receives. Instead we have to rely on our knowledge of $y_i$, which the voter does not know, to predict $i$’s vote probabilistically. Appendix B shows exactly how this is done, but the intuition is simple. Essentially we use information about $y_i$ to predict the probability that $i$ received a particular signal, which then determines the vote. Since there is a distribution of signals we can ask what the probability of us (as analysts) observing a particular $y_i$ is when the signal is to the left of the midpoint between $L$ and $C$, to the right of the midpoint of $C$ and $R$, or between the two midpoints. The probability of voting left is now:
Analogous results hold for voting center and right (shown in Appendix B).

The centrist bias when \( i \) has low information is clear from \( (4) \) if \( y_{RC} > \bar{y} > y_{LC} \), since when \( \sigma_i \to \infty \) (ie., when the signal is very noisy) the probability of voting center goes to 1 (shown formally in Appendix B). If voters who have no prior information learn nothing from their network they will vote centrist. This corresponds to the simple example of complete uncertainty that we started out with.

The final step it to endogenize the private and social incentives to acquire information. We do so explicitly in Appendix C, but the intuition is very straightforward. Social incentives to be informed arise from engagement in political discussion, \( D_i \), with people who can be assumed to share your interests. If politics is a recurrent topic of discussion in the groups or networks to which people belong, there is a social incentive to acquire information about the group interest in order to benefit from the social approval that comes from being knowledgeable. Private incentives, \( k_{p,i} \), arise when information about politics enables people with substantial wealth to make better investment decisions, or people in managerial or high administrative positions to make better business and organizational decisions. Any choices that have consequences beyond the next electoral period and that are affected by public policies can be improved with knowledge about how these policies may change.\(^8\)

\(^8\) Note that the private incentive for \( i \) to acquire political knowledge arises when \( i \) needs to know, in taking a decision now the return on which depends on future policies, how likely those policies are to change. Those on low incomes may be well-informed about rules governing, say, welfare and tax credits that affect them, but they only have an incentive to know about politics if
We combine the two types of knowledge into a simple additive utility function with standard concave properties. Since information is costly, there are levels of information acquired for private and social purposes that will be optimal to the individual. The acquired information in turn helps voters choose parties that are well-aligned with their interests. As explained in Appendix C, we assume that when making the voting decision information acquired for private and public purposes can substitute for each other.

Based on these assumptions the predictions of the model can now illustrated as in Figure 1. The figure assumes that \( L, C, \) and \( R \) are located at -1, 0, and 1 in a space that ranges from -2 to +2 (approximately 95 percent of the fictional electorate), and it simulates the probability of voting for each party if the directions of effects are as predicted by the model. Panel a) shows the probability of voting for each party when we set \( k_{p,i} = 0 \), so that private knowledge plays no role. Note that when discussion is low – that is, when voters receive only very imprecise signals about their own interests and therefore lean heavily on the prior distribution – the support for the center party tends to be high across the left-right scale. The relationship between economic position and left and right voting is correspondingly weak. When discussion and information they are taking decisions (for example investing in training) the return on which depends on future policies; by contrast to many professionals or high-income earners taking financial decisions, we assume (and show some evidence) that this is a relatively unusual situation.

\(^9\) The predictions are based on the voting equation at the end of Appendix C. Since the model only predicts the direction of effects, their magnitudes are arbitrary. Since the model only implies the direction of effects, their magnitudes are arbitrary. We have chosen these magnitudes to roughly correspond to the range of empirically observed propensities to vote for different parties, given our set of variables.
rise, the support for the center declines among those who are natural constituencies for the left and right. The strength of the relationship between left-right position and left or right voting correspondingly increases.

[Figure 1 about here]

Panel b) shows what happens when we introduce private information (now ignoring the center). When private incentives to acquire information are rising in \( y \) – say, a simple linear function such as \( k_{P_i} = \alpha + \lambda y_i \) -- we find that the effect of political discussion in the support for the right is smaller than for the left. This is because high-\( y \) individuals, who are predisposed to vote for the right, have greater private incentives to be informed. They consequently have less reason to acquire additional information as discussion rises.

This logic has important implications for the partisan balance of power because at low levels of political discussion the right has a political advantage. This advantage disappears as discussion rises because low-\( y \) voters now have a greater incentive to be informed and therefore “catch up” to the level of information in right constituencies. In the empirical analysis we test this effect and measure its magnitude in terms of vote shares.

2.4. Group versus individual preferences

The model we have presented assumes that people are in groups with others who share their economic situation, and hence their underlying interests. This is reasonable because homophily is well-documented in the sociological literature. At the same time, the extent to which this is true does vary over time, across countries, and across segments of the population. So what happens when people are members of groups with heterogeneity in terms of socioeconomic situation?

An intriguing possibility raised by our argument is that if people assume that those around them have congruent interests, they will adopt the mean of the distribution of views in the
group. It is also sensible to assume that what yields social approval in groups is to help identify the group interest, not their own individual interest. When all do the same, the signal people in heterogeneous groups receive is

$$y_i^* \sim N(\bar{y}_i, \sigma_i^2)$$

where $\bar{y}_i$ is the center of the distribution of preferences in $i$’s group, or the “group interest”. Until now we have assumed that the distribution is centered on $y_i$; the individual interest.

Being a member of heterogeneous groups where political discussion and social incentives matter will induce people to adopt the group interest as their own, even if it is away from their individual interest as defined by the position they would adopt with complete information. This means that discussion could affect not only the level of information, but also preferences. Empirically, this will show up as an independent effect of group membership, shifting the probability of voting for particular parties to the left or to the right of the prediction using our best estimate of $y_i$. As we will discuss there is strong evidence of such effects in the case of union membership.

3. An empirical test

The empirical test of our model consists of directly estimating Equation (6) using nonlinear ordered probit. Because we do not have information on people’s private information we only consider the effects of political discussion, but with the implicit hypothesis that discussion will disproportionately affect the support for the left because of the concentration of private incentives among right constituents (as illustrated in Figure 1b). To simplify the estimation we use a linear first-order approximation for the coefficient on $y_{LC}$ with a positive slope,
\((\alpha + \beta D_i)y_{LC}\), while that on \(\bar{y}\) is linear in \(D_i\) with a negative slope, \((\eta - \rho D_i)\bar{y}\). These approximations imply the following estimating equations:

\[
P(v_i = L) = \Phi\left[\left(\alpha + \beta D_i\right)y_{LC} - (\gamma + \delta D_i)y_i - (\eta - \rho D_i)\bar{y}\right]
\]

\[
P(v_i = C) = \Phi\left[\alpha y_{RC} + \beta D_i y_{RC} - \gamma y_i - \delta D_i y_i - \eta \bar{y} + \rho D_i \bar{y}\right]
\]

\[
P(v_i = R) = 1 - \Phi\left[\alpha y_{RC} + \beta D_i y_{RC} - \gamma y_i - \delta D_i y_i - \eta \bar{y} + \rho D_i \bar{y}\right]
\]

Equation (7) is technically a nonlinear ordered probit, and since this does not exist as a canned procedure, we wrote a program for Stata. The basic code for this program is provided in Appendix D. The model is estimated using maximum likelihood.

3.1. The data

We use data from the 2004 International Social Survey Program (ISSP) survey of citizenship, which is unique in asking respondents how often they engage in political discussion. Our analysis covers 16 established democracies for which we have complete data on all the key variables. In total we have nearly 23,000 individual observations.

The survey question about political discussion reads:

10 The countries are: Australia, Austria, Britain, Canada, Denmark, Finland, France, Germany, the Netherlands, New Zealand, Portugal, Norway, Spain, Sweden, Switzerland, and the United States. We had to exclude Ireland and Japan because more than half of the respondents did not indicate their preferred party (64 and 56 percent, respectively). In addition these two party systems are also difficult to classify on a left-right dimension because of clientilism in the case of Japan and the historical division of Irish parties on the independence issue.
“When you get together with your friends, relatives or fellow workers how often do you discuss politics?”

Note that the question specifically refers to people who we would usually consider part of an informal network, which is precisely what our model calls for. The respondent could answer “never” (1), “rarely” (2), “sometimes” (3), or “often” (4). In our pooled sample the distribution of answers across the four categories is 14, 30, 43, and 13 percent, respectively.

The dependent variable is based on a question about party preferences. In most cases the respondent was simply asked to indicate which party he or she voted for in the previous election, or would vote for in the next. In some cases respondents were asked more broadly about the party they supported or felt close to. In a single case, the US, respondents were given a non-party choice and asked whether they think of themselves as Republican, Democrat, or Independent, and how strongly they felt about their allegiance. We treated those with a clear Democratic or Republican preference as left and right, respectively, and the rest (36 percent) as centrist. In all other cases we classified parties into left, center, and right, as detailed in Appendix E.11 Some small regionalist and single-issue parties were excluded from the analysis because they do not lend themselves easily to a left-right interpretation.12 On average the distribution of the

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11 Although our model assumes (at least) three parties, it can still be used to predict voting in two-party systems. In this case uninformed people will place themselves in the center of the political space and be equally likely to vote left and right. As in the three-party case, information will lead to more interest-based voting.

12 A few large parties are also difficult to classify because they are really cross-class policies. The most notable example is the German Christian Democratic Union (CDU/CSU), which is classified as a center party (in line with Manow and Van Kersbergen 2009).
electorate into the three groups is fairly even: 31 percent for the left, 39 percent for the center, and 30 percent for the right.

Our classification deviates somewhat from one devised by the ISSP’s survey, with a correlation of .91. As a robustness test we ran our regression on the ISSP party choice variable, and the substantive results are nearly identical (the results for the ISSP codes are reported in Appendix F). The results discussed in the body of the paper are based on the party classification in Appendix E.

The estimate of individuals’ left-right position, $y$, is arrived at through the following procedure. We first regressed party choice on a large set of economic predictors for each country separately, using standard ordered probit. The full set of economic explanatory variables is: family income (standardized into nine nationally-specific quantiles), education, supervisory position, self-employment, unemployment, occupational unemployment, part-time employment, public sector employment, skill-specificity, retirement status, gender, rural residence, and an indicator variable for not being in the labor market. These variables reflect a variety of standard political economy arguments that need not be recounted here. Again, we are treating economic interests as given and seek instead to understand the effects of incentives to be informed about them.

---

13 We collapsed the five categories on the ISSP scale into three, which yields fewer centrist votes and more left votes compared to our classification (25 and 38 percent, respectively). ISSP do not use party choice to classify Spain and New Zealand, where we retained our classification.

14 This procedure is in effect the first step in a 2-Step MLE procedure which implies consistency (Wooldridge 2002, 414).
In addition to these economic variables we follow Rueda (2012) and include a measure of altruism, which is based on a survey question about the respondent’s views on what it takes to be a good citizen. One option is “to help people [in the respondent’s country] who are worse off than yourself”, with respondents being able to indicate one of seven degrees of importance, ranging from “not at all important” to “very important”. As one might expect, the measure is heavily left-skewed with about one third saying “very important”, 25 percent indicating the next highest level of importance, and only 1.3 percent saying “not at all important”. Answers undoubtedly reflect a healthy dose of “cheap talk”, but like Rueda we find that they are in fact associated with distinct voting patterns (controlling for the economic variables above), so they are not meaningless. If we allow people to be altruistic, then political discussion should have exactly the same effect as shifting people to the left when they have low income, high risk, and so on. Each national \( y \)-variable is calculated as a linear combination of altruism and the economic variables with weights determined by the regression coefficients.\(^{15}\)

Finally, we standardized each national measure by dividing the population into deciles where a value of 1 means that an individual is in the bottom decile of the \( y \)-distribution and a value of 10 means that he or she is in the top decile. This is to ensure that the left-right measure has the same interpretation across countries. As we will see, it also makes it easy to translate predicted probabilities into shares of the population who support different types of parties.

\(^{15}\) Because there are missing observations on every variable, we dropped regressors with p-values less than 0.2, starting with the least significant, then the next, until all retained variables were significant at a 0.2 level.
3.2. Results

Table 1 shows the regression results. The first column is the predicted probability of supporting the left, center and right, solely as a function of people’s left-right position. The results from this regression are illustrated in Figure 2. The first thing to note is that standard political economy variables do a reasonably good job at predicting left and right voting, mirroring the findings in Rehm (2011) and in Cusack et al (2006). For those in the lowest decile of the \( y \)-distribution the probability of supporting the left is almost 50 percent, while the probability of supporting the right is less than 20 percent. For those in the highest decile the pattern is reversed and of similar magnitude. Given that the support for the left and right is about even in our sample (31 versus 30 percent), this symmetry is unsurprising. Keep in mind that the overall support for different parties is dependent on the exact strategic positioning of parties, and we only know their ranking.

[Table 1 and Figure 2 about here]

A notable aspect of the pattern in Figure 2 is that voting for center parties is high throughout the left-right space, falling only slightly below 35 percent on the extremes. In our model the explanation of this puzzle is that even voters with “extreme” inferred left-right positions frequently vote center because they view centrist parties as “safe havens” whenever they are uncertain about how their welfare will be affected by different parties. Loss-averse individuals do not like to take chances with extreme parties unless they are confident that the policies are right for them.

The implication of this logic is that a large number of voters will shift their support away from centrist parties as their political information rises. This is not because informed voters are less loss-averse than uninformed voters, but because they have less reason to worry about non-centrist parties leading to failed policies. This expectation is powerfully confirmed in Figure 3. It
shows the estimated probabilities of supporting different parties contingent on the level of political discussion (detailed results are in Appendix E). The drop in support for the center is remarkable, declining from nearly 50 percent across the y-scale when discussion is low to less than 30 percent when discussion is high.

Conversely, the relationship between y and left and right voting gets progressively stronger, resembling a pair of opening scissors. This polarizing effect of political discussion stands in sharp contrast to Habermas-inspired arguments about deliberation as a source of political moderation. In the real world, those who discuss politics tend to be strong partisans.16

An equally clear result is that the effect of discussion is much higher on the left than on the right. For someone in the lowest decile of the distribution, going from never discussing politics to often discussing politics nearly doubles the probability of voting left from 32 to 61 percent, whereas the probability of voting right for someone in the top decile only increases from 41 to 51 percent. This differential effect of discussion is exactly as predicted by the model, if

---

16 It is conceivable that people first become partisan and then begin to discuss politics. But this cannot explain why discussion has different effects on the left and right; a pattern we document next. Also, if discussion is caused by partisanship, party choice must be the result of something other than left-right position since we are comparing people with the same l-r position (but with different levels of discussion). This then has the strange implication that while people become partisan for reasons that are unrelated to their left-right position, discussion makes left-right position an increasingly strong predictor of their party choice. The much simpler and plausible story is that discussion yields useful information about who to vote for.
private information is indeed rising in $y$. At low levels of discussion many on the right have private incentives to be informed.

Another notable aspect of Figure 3 is the right-shifting location of the point of intersection between the support curves for the left and right. To the left of this point the probability of supporting the left exceeds the probability of supporting the right, while the opposite is true to the right of this point. Because the $y$-variable is measured in deciles the projection of the point of intersection onto the x-axis (indicated with a vertical line) conveniently shows the share of the electorate whose probability of voting left is greater than the probability of voting right. At the lowest level of discussion this share is 40 percent. As discussion rises, the point moves to the right, and at the highest level of discussion the left disadvantage has turned into an advantage with more than 60 percent supporting the left. Political discussion thus unambiguously benefits the left more than the right. This reflects the lack of private incentives for those on lower incomes. But it also partly reflects that those with a high sense of altruism are more likely to vote left when political discussion increases (as we should expect).

On average the two blocks end up with is about the same share of the total vote. Again, the aggregate shares of the vote depend on relative party positions, which we do not have data on. But the relationship between discussion and left and right advantage is precisely as expected from the model. At low levels of discussion the left is at a disadvantage because, unlike the right, few in their constituencies have private incentives to be informed.

Again, we do not have direct evidence that high-$y$ voters have greater private incentives to be informed, but indirect evidence can be gleaned from ILO’s standard classification of occupations (ISCO-88). For some occupations we have strong priors that public policies would affect the optimal decisions people make about the future. A manager making hiring decisions, or investing in new equipment, would clearly benefit from information about potential changes
in job protection legislation, rules about tax depreciation, minimum wage regulations, and so on. This is true for a range of occupations and industries, even though the exact reasons differ. A company that relies on public procurement, for example, would want to know whether the policy in the affected area is likely to continue. Surely legislators have private incentives to be politically informed! We think it is uncontroversial to conjecture that they are particularly strong in the following range of occupations:

<table>
<thead>
<tr>
<th>ISCO-88 class:</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Legislators and senior officials</td>
</tr>
<tr>
<td>12</td>
<td>Corporate managers</td>
</tr>
<tr>
<td>13</td>
<td>General managers</td>
</tr>
<tr>
<td>241</td>
<td>Business professionals (accountants, personnel and career professionals, others)</td>
</tr>
<tr>
<td>242</td>
<td>Legal professionals (lawyers, judges, others)</td>
</tr>
<tr>
<td>315</td>
<td>Safety and quality inspectors</td>
</tr>
<tr>
<td>3412</td>
<td>Insurance representatives</td>
</tr>
<tr>
<td>3414</td>
<td>Estate agents</td>
</tr>
<tr>
<td>3417</td>
<td>Appraisers</td>
</tr>
<tr>
<td>342</td>
<td>Business services agents and trade brokers</td>
</tr>
<tr>
<td>344</td>
<td>Customs, tax and related government associate professionals</td>
</tr>
</tbody>
</table>

If we assign these occupations a value of 1, and all others a value of 0, it is hardly surprising that the variable exhibits a strong association with our left-right indicator (although this does not include direct information about occupation). Thus, whereas someone in the bottom decile of the $y$-distribution has less than five percent probability of being in one of these occupations (based on a simple probit regression), someone the top decile has a greater than 30 percent probability.

The likelihood of having a high level of education also rises notably from low to high $y$-values, and while education itself is not a measure of private incentives, it almost certainly reduces the costs of acting on private incentives to acquire information. For those at the low end of the $y$-distribution Martin Gilens provided us with some telling, if ultimately inconclusive,
evidence from the 2004 American National Election Study. Respondents were asked to place the
two main political parties and their presidential candidates (Bush and Kerry) on a left-right scale.
Assuming the Republican Party and Bush were to the right of the Democratic Party and Kerry,
only slightly over half of those in the bottom quartile of income were able to rank them correctly
(53 percent for parties and 56 percent for candidates). In the top quartile of income about three
quarter of respondents were able to do so (77 percent for parties and 71 percent for candidates).
Again, this does not imply that low income people are ill-informed about public policies that
directly affect them, such as food stamps and housing subsidies, but they have no private
incentives to link these policies to parties because such knowledge yields no private benefits.

The evidence for the importance of political discussion is to our knowledge novel. Yet, it
highlights an age-old understanding of the different importance attached by left and right parties
to the mobilization of voters. As already argued by Duverger (1951), the left was historically
different than the right because the former depended more on activating the masses and breaking
their traditional allegiance to economic and religious patrons. With the event of democracy such
mobilization required mass organizations that could reach constituencies and foster a sense of
common cause. In Przeworski and Sprague’s (1988) influential formulation, building a strong left
necessitated the creation of a working class identity, distinct from the bland middle-of-the-road
alternative of the center. And from the work of Huckfeld and Sprague (1991, 1995), and more
recently Ahlquist and Levi (2012), we know that such identities are constructed in part through
political discussion and network involvement.

Incentives for political mobilization are of course also present on the right, but to a lesser
extent. As described by Duverger, the rise of class-mass parties produced a “contagion from the
left” as right parties began to imitate the left and build stronger mass organizations to compete
outside their original upper and upper middle class constituencies. But class-mass parties
remained a predominantly left phenomenon with membership rates far outpacing those on the right (Mair 1998). From the perspective of our model, the greater importance of class mobilization to the left is explained by the different incentives to acquire political information.

3.3. The role of unions

In our data we can suggest the importance of mass mobilization with reference to the changing role of union. Over the past four decades party membership has collapsed everywhere, and while new forms of mass-media communication and targeted campaigning have substituted for traditional membership organizations (see Epstein 1967; Dalton et al. 1984; Norris 2006), the decline of organizational life is a real concern for the left because it likely reduces engagement in social interaction involving political discussion. We cannot here examine the role of party membership, in part because it is so low in our sample (less than four percent in average) and in part because membership is itself a function of partisanship. But we can explore the role of unions. Most workers join unions for economic reasons (more on this below), and membership in unions is still fairly common in our sample (22 percent in average).

Following the logic of the model, unions can exert an influence on voting in two main ways. First, they can influence the level and distribution of political discussion by engaging members in political discussion. Second, they can influence the content of political discussion by presenting focal points for collective interpretations of economic interests (the “group interest” as defined in section 2.5). Both logics are succinctly captured in a new study on unions by Ahlquist and Levi (2012). Reporting results from interviews with union leaders and members, they describe how unions can create a social foundation for the political beliefs of members. Referring to the Longshore and Warehouse Union they observe that

“[The hiring hall] provided the rare place where [workers] could get warm, drink coffee, read the newspaper, and interact off the job with other workers and union officers. They
could talk politics and raise questions about the union and their officers.” … “[The] clear sense of an occupational community was enhanced by the importance of family and neighborhood connections among workers, common social activities, debate and discussion …”

To estimate the effect of unions on the level and distribution of political discussion we regressed political discussion on union membership (in addition to $y$, the private information dummy variable, and fixed effects). It turns out that the probability of frequent discussion (“sometimes” or “often”) is about 10 percent higher among union members (about 60 percent in average) than among non-union members (about 50 percent in average). This is a much stronger effect than that of $y$ on discussion, so unionization appears to be an effective way to overcome lack of political engagement among relatively low-income groups.

But an even more important role of unions is to cultivate a common understanding of the collective interest (also emphasized in Ahlquist and Levi). In our model, if individual members assume that there is a correspondence between the group interest and the individual interest, and if the group interest is observable without engaging in discussion, unions can exert an effect even among those who do not actively engage in discussion. As long as sharing the common identity with others is a source of social approval, following the political preferences of the union leadership is optimal (see section 2.5). Hence, unions can have a significant effect on the preferences of members whose underlying $y$-position is away from the median. We test this possibility by including union membership in our nonlinear model and exploring how it shapes voting preferences jointly with left-right position at different levels of discussion.

Figure 4 shows the estimated voting probabilities among members compared to non-members. Note that union membership notably increases the proportion of the electorate where the left is preferred to the right. Among those who do not discuss politics, the share of the
electorate who are more likely to support the left than the right is 70 percent among members, while it is only 30 percent among non-members. With high discussion these figures increase to 80 and 55 percent, respectively.

[Figure 4 about here]

The total effect of union membership and political discussion on the support of the left and right can be estimated simply by taking the integral of each support function. The results are reported in Table 2. Note first that both members and non-members are much more likely to support the left if they discuss politics than if they do not. The average effect is to increase left support by about 15 percent compared to an increase of only about four percent for the right.\(^\text{17}\) At the same time, union membership increases left support by an average of 11 percent, while it decreases right support by roughly the same amount. If the two effects work together, the left is greatly advantaged; it receives close to an absolute majority among members with high levels of political discussion (48 percent). In this sense our results are entirely in line with the emphasis on unions as a vehicle for political power in power resource theory (Korpi 1983; Stephens 1979).

[Table 2 about here]

Of course, we cannot entirely rule out that those who are ideologically committed to the left self-select into unions. But it seems highly implausible that this could account for the strong associations we find in the data. Even among those who never discuss politics -- presumably not people who join unions for political reasons -- are much more likely to support the left if they are in unions, and most research on union membership suggests that workers join unions for economic, not political, reasons (Wallerstein 1989, Ebbinghaus and Visser 1999).

If unions indeed have the effect on left support that our results suggest, and if we assume that these effects are the same across countries, what are the comparative implications for

\(^{17}\) Remember that it is possible for both sides to gain by taking away votes for the center.
partisan politics? To take two extremes, 78 percent of workers were union members in Sweden in the year of the survey (2004), whereas only 12 percent were members in the US (Visser 2009). In the adult population as a whole about 60 percent were union members in Sweden and only 9 percent in the US. Our results suggest that the average effect of union membership is to increase the net support for the left by 24 percent (from 28 to 41 percent in terms of voting left and from 34 to 23 percent in terms of voting right). So the left in Sweden may have an advantage over the left in the US that is as large as 12 percent of the electorate (.6*24 - .09 *24). Again, these differences do not necessarily show up in election results because parties adjust their platforms to voter preferences, but they do give the left in Sweden a much greater scope for taking policy positions closer to their core constituents.

We can use this logic to simulate changes in the extent to which the left is advantaged or disadvantaged over time as a result of changing union membership rates (see Figure 5). Unionization rates have changed notably over time, and by multiplying the average population shares of unionized and non-unionized members in our 16 countries by the predicted gap in left support between members and non-members we can a measure the left (dis-)advantage each year compared to the first data point (1960). The results, in percent of the electorate, are recorded on the right axis in Figure 5. We see that the trend towards higher unionization rates benefited the left in the 1970s, but that the left has been significantly disadvantaged since then by the sharp decline in unionization in some (though not all) countries. Compared to 1960, in 1980 the left had an almost one percent advantage over the right, but by 2000 this advantage had turned into an almost one percent disadvantage. This figure is much higher in some countries than in others, but even the magnitude of the average shift is enough to make or break many close elections.

[Figure 5 about here]
This logic can help explain the increasing success of the right since the 1980s, but, as we have emphasized, parties move their policy platforms in response to changes in the distribution of voter preferences, so these shifts will not necessarily show up in lower vote shares or lost elections for the left. Instead they may appear as a right shift in platforms. To explore this possibility we make use of data from the Party Manifesto Project (Klingemann et al. 2006). Figure 5 shows averages of party positions on a composite economic left-right scale constructed by Cusack and Fuchs (2002) from these data. The averages are weighed by seat shares in national legislatures (lower house only) and include only our 16 countries.

We note that the political space has indeed shifted to the right in tandem with the growing electoral disadvantage of the left. Needless to say, there are many potential confounders for this relationship, including some that are important in our own theory, such as the degree of network homophily, level of political discussion, and turnout. We treat the correlation merely as illustrative of the potential of our model to explain significant changes in the partisan balance of power over time. Considering the strong effects of union-membership in our individual data we think it is highly likely that the decline of unions has played a major role in the decline of the left. Other studies show that the decline of unions has also increased inequality (Rueda and Pontusson; Kristal and Cohen 2013) so the combination of political and economic effects of declining unions may help explain the paradoxical drop in redistribution as inequality rises (Korpi & Palme 2003).

4. Conclusion

In this paper we have presented a model of voting with endogenous information that posits two indirect – but highly consequential – types of incentives for people to acquire political information. One is ‘social’: participation in informal social networks in which politics is
discussed provides an incentive to acquire enough political information to be ‘part of the group’, or at least to show adherence to the group-defined interest; and because in the social network literature ‘birds of an economic feather flock together’ the individual interest is likely to be close to the group interest. The other is ‘private’: political information enables a range of voters to make better financial or managerial decisions. In both cases we posit that such information makes voters more aware of the match between parties and self-interest. A further analytic result of the paper is that those with limited information tend to identify with centrist parties: thus with low information democratic outcomes are biased towards the political center. These results are strongly confirmed in our large dataset across 16 advanced democracies.

The findings have profound implications for partisan politics in advanced democracies. Private incentives, the Larcinese model, favor the right in our results – in line with intuition. Social incentives are therefore much more important to the left, given that limited information pushes voters towards centrist parties. In so far as social networks have declined over recent decades, and in particular given the decline of unions within which many informal social networks are or have been partially embedded, the bias against the political left has increased. Note that this assumes neither elite manipulation, nor media bias, nor voter irrationality (although we are certainly not rejecting any of these). Our model implies that free and fair elections produce partisan-biased outcomes.

It also offers a disturbing interpretation of the prima facie paradoxical concomitant increase in income inequality and rightward shift in governments in the advanced democracies in recent decades. According to Meltzer-Richard this cannot happen; nor do comparative political economic models of advanced democracies, in which voters know their interests, have any general explanation. The disturbing, if only so far suggestive, interpretation is that the move from the more collectivist world of the quarter century after the second world war to the liberal
contemporary world shifted governments right as a result of a decline in class – especially union – based informal social networks on the one hand and an increase in private incentives as individual management of financial decision-making has increased.

Our model has implications for how we move the study of the economy and mass politics forward. Mainstream rational choice models in comparative political economy assume that interests are defined by economic position and that people understand these interests and vote accordingly. We follow Zuckermann (2005) in seeing ‘personal networks as contexts for political behavior’. Network analysis in sociology suggests that people define their interests through deliberation with others, and that there is no or little rational pursuit of economic interests. Our model offers a middle-ground alternative that builds on both traditions. Voting is clearly shaped by economic interests, but the process by which people acquire knowledge about their interests is deeply embedded in social networks. What we suggest, therefore, is a political economy model of interest-based voting where the incentives to make informed choices are sometimes privately, but more often socially, induced. Some of the most striking discoveries yet to be made in political economy, we believe, will be at the intersection of economic, social, and political institutions.
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Figures and tables

Figure 1. The effects of left-right position and political discussion on voting

Panel a) Without private information

Panel b) With private information

Note: Predictions are based on the voting equation in Appendix C.
Figure 2. The probability of voting left, center, and right as a function of people’s economic left-right position ($y$).

Note: Based on ordered probit results in Table 1. Grey bands are 95% confidence intervals.
Figure 3. The probability of voting left, center, and right as a function of left-right position ($y$) and frequency of political discussion

Notes: Each graph corresponds to a declared level of political discussion. Probabilities are based on non-linear ordered probit results in Table 1.
Figure 4. The probability of voting left and right among union and non-union members as a function of y and political discussion

Note: Estimates from non-linear ordered probit model with union membership included as a predictor.
Figure 5. The estimated left disadvantage over time and the average position of legislatures on an economic left-right scale, 16 OECD countries, 1949-2002.

Notes: Left electoral disadvantage is the net left advantage from average union membership compared to 1960. The effects are measured as a percentage of the electorate and based on non-linear ordered probit results combined with data on unionization rates (from Visser 2009) and labor force participation rates (from the OECD). The legislative left-right position data are from Cusack and Fuchs (2002).
Table 1. Regression results.

<table>
<thead>
<tr>
<th></th>
<th>Ordered probit</th>
<th>Non-linear ordered probit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L-R position</td>
<td>0.101</td>
<td>0.055</td>
</tr>
<tr>
<td>(0.003)</td>
<td>(0.005)</td>
<td></td>
</tr>
<tr>
<td>Political discussion x L-R position</td>
<td>-</td>
<td>-0.018</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>Center-left cutoff</td>
<td>0.095</td>
<td>-0.581</td>
</tr>
<tr>
<td>(0.022)</td>
<td>(0.026)</td>
<td></td>
</tr>
<tr>
<td>Center-right cutoff</td>
<td>1.049</td>
<td>0.805</td>
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<tr>
<td>(0.022)</td>
<td>(0.019)</td>
<td></td>
</tr>
<tr>
<td>Political discussion x C-L cutoff</td>
<td>-</td>
<td>0.256</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td></td>
</tr>
<tr>
<td>Political discussion x C-R cutoff</td>
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<td>0.094</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
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</tr>
<tr>
<td>Number of observations</td>
<td>13068</td>
<td>13068</td>
</tr>
</tbody>
</table>

Table 2. The effect of political discussion and union membership on the support for the left (first entry) and the right (second entry)

<table>
<thead>
<tr>
<th></th>
<th>Political discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Union member?</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>21.1</td>
</tr>
<tr>
<td>Yes</td>
<td>31.6</td>
</tr>
<tr>
<td></td>
<td>31.1</td>
</tr>
<tr>
<td></td>
<td>21.1</td>
</tr>
</tbody>
</table>

Source: Calculated from non-linear ordered probit regression estimates (full results are available from authors)
Online appendices for “Biased Democracies: The Social and Economic Logic of Interest-Based Voting”

Appendix A:

General proof for any distribution that \( i \) should vote for \( C \) if

\[
\max[F(y_{LC}), F(y_{RC})] < 0.5
\]

First consider the case where the voter is located at either \( L \), \( C \), or \( R \) with any distribution of subjective probabilities across these locations, \( \pi_{i,p} \). We now again ask when the voter would vote left. As before, the voter will compare the expected losses from voting for each party and then choose the party with the smallest expected loss:

The expected loss for \( i \) from voting \( L \) is

\[
E\lambda_{i,L} = \pi_{i,C}(C - L) + \pi_{i,R}(R - L)
\]

and from voting \( C \) and \( R \)

\[
E\lambda_{i,C} = \pi_{i,L}(C - L) + \pi_{i,R}(R - C)
\]

\[
E\lambda_{i,R} = \pi_{i,L}(R - L) + \pi_{i,C}(R - C)
\]

Hence, \( i \) votes \( L \) if

\[
E\lambda_{i,L} \leq \min[E\lambda_{i,C}, E\lambda_{i,R}]
\]

\[
E\lambda_{i,L} \leq E\lambda_{i,C} \rightarrow \pi_{i,C}(C - L) + \pi_{i,R}(R - L) \leq \pi_{i,L}(C - L) + \pi_{i,R}(R - C)
\]

\[
E\lambda_{i,L} \leq E\lambda_{i,R} \rightarrow \pi_{i,C}(C - L) + \pi_{i,R}(R - L) \leq \pi_{i,L}(R - L) + \pi_{i,C}(R - C)
\]

Since \( \pi_{il} = 1 - \pi_{ic} - \pi_{il} \) we have

\[
E\lambda_{i,L} \leq E\lambda_{i,C} \rightarrow \pi_{i,C}(C - L) + (1 - \pi_{ic} - \pi_{il})(R - C) + (C - L))
\]

\[
\leq \pi_{i,C}(C - L) + (1 - \pi_{ic} - \pi_{il})(R - C)
\]

\[\rightarrow \pi_{i,C}(C - L) + (1 - \pi_{ic} - \pi_{il})(C - L) \leq \pi_{i,L}(C - L)
\]

\[\rightarrow (1 - 2\pi_{il})(C - L) \leq 0
\]

\[\rightarrow \pi_{il} \geq 0.5
\]

This very simple result says that \( i \) votes left iff the probability that the left party is the best choice is greater than 0.5. We show next that this result can be generalized to any continuous probability function \( F \).
Take any distribution $F$.

\[
E\lambda_{IL} = F(y_{LC})[L - Ey(y < y_{LC})] + (F(y_{RC}) - F(y_{LC}))(Ey(y_{RC} > y > y_{LC}) - L) \\
+ (1 - F(y_{RC}))(Ey(1 > y > y_{RC}) - L) \\
E\lambda_{IC} = F(y_{LC})[C - Ey(y < y_{LC})] + (F(y_{RC}) - F(y_{LC}))(Ey(y_{RC} > y > y_{LC}) - C) \\
+ (1 - F(y_{RC}))(Ey(1 > y > y_{RC}) - C) \\
\Rightarrow E\lambda_{IC} - E\lambda_{IL} = F(y_{LC})(C - L) - (F(y_{RC}) - F(y_{LC}))(C - L) - (1 - F(y_{RC}))(C - L)
\]

So the condition

\[
E\lambda_{IC} < E\lambda_{IL} \\
\Leftrightarrow F(y_{LC})(C - L) - (F(y_{RC}) - F(y_{LC}))(C - L) - (1 - F(y_{RC}))(C - L) < 0 \\
\Leftrightarrow (C - L)[F(y_{LC}) - F(y_{RC}) + F(y_{LC}) - 1 + F(y_{RC})] < 0 \\
\Leftrightarrow 2F(y_{LC}) < 1 \\
\Leftrightarrow F(y_{LC}) < 0.5
\]

Using a symmetric argument

\[
E\lambda_{IC} < E\lambda_{IR} \\
\Leftrightarrow 1 - F(y_{RC}) < 0.5
\]

Hence $i$ votes $C$ iff

\[
\max[F(y_{LC}), 1 - F(y_{RC})] < 0.5
\]
Appendix B:  
Deriving the probabilities of voting for different parties

From the updating distribution $y_i^* = y_i + u_i$ we have that

$$P(v_i = L) = P(Ey_i | y_i^* < y_{LC}) = P[\alpha y_i^* + (1 - \alpha) y_i < y_{LC}] = P[\alpha y_i + (1 - \alpha) y_i + \alpha u_i < y_{LC}]$$

$$= P(\frac{y_{LC} - y_i}{\alpha} - (1 - \alpha) \frac{y_0 - y_{LC}}{\alpha} > u_i)$$

Since $u_i \sim N(0, \sigma_i^2)$, it follows that $\sigma_i^{-1} u_i \sim N(0,1)$, (because $E(\sigma_i^{-1} u_i)^2 = \sigma_i^{-2} E u_i^2 = \sigma_i^{-2} \sigma_i^2 = 1$).

Hence:

$$P(v_i = L) = P(Ey_i | y_i^* < y_{LC}) = \Phi \left[ \sigma_i^{-1} \left( \frac{y_{LC} - y_i}{\alpha} - (1 - \alpha) \frac{y_0 - y_{LC}}{\alpha} \right) \right]$$

Note that since $\frac{1 - \alpha}{\alpha} = \frac{\sigma_i^2}{\sigma_i^2}$ we can write

$$P(v_i = L) = \Phi \left[ \sigma_i^{-1} (y_{LC} - y_i) + \frac{\sigma_i}{\sigma_i^2} (y_{LC} - \bar{y}) \right]$$

Correspondingly, the probabilities of voting center and right are:

$$P(v_i = C) = P(y_{LC} < E y_i | y_i^* < y_{CR})$$

$$= \Phi \left[ \sigma_i^{-1} (y_{RC} - y_i) + \frac{\sigma_i}{\sigma_i^2} (y_{RC} - \bar{y}) \right] - \Phi \left[ \sigma_i^{-1} (y_{LC} - y_i) + \frac{\sigma_i}{\sigma_i^2} (y_{LC} - \bar{y}) \right]$$

$$P(v_i = R) = P(y_{CR} < E y_i | y_i^*) = 1 - \Phi \left[ \sigma_i^{-1} (y_{RC} - y_i) + \frac{\sigma_i}{\sigma_i^2} (y_{RC} - \bar{y}) \right]$$

The centrist bias is evident when $\sigma_i \to \infty$ and $y_{RC} > \bar{y} > y_{LC}$ since then

$$P(v_i = R) = 1 - \Phi \left[ \sigma_i^{-1} (y_{RC} - y_i) + \frac{\sigma_i}{\sigma_i^2} (y_{RC} - \bar{y}) \right] \to 0$$

and

$$P(v_i = L) = \Phi \left[ \sigma_i^{-1} (y_{LC} - y_i) + \frac{\sigma_i}{\sigma_i^2} (y_{LC} - \bar{y}) \right] \to 0$$

Hence, $P(v_i = C) \to 1$ when $\sigma_i \to \infty$. 

Appendix C: Endogenizing information

Individual uncertainty about $y_i$ is an inverse function of the knowledge, $K_{V,I}$, defined as the information which helps voters relate their interest to the positions of parties, hence enabling voters to vote their interest. So assuming that $\sigma^{-1}_i = \gamma + \beta K_{V,I}$ we can write (4) as:

$$P(v_i = L) = \Phi \left[ \left( \frac{1}{(\gamma + \delta K_{V,I})\sigma} \right) \left( \bar{y} - y_{LC} \right) \right].$$

As we would expect, more political knowledge makes voters to the left of $y_{LC}$ more likely to vote left, with analogous results for the probabilities of voting center and right. In this Appendix we show how $K_{V,I}$ is derived. People’s level of political knowledge is determined by private and social incentives to be informed. Private incentives, $k_{p,i}$, arise when information about politics enables people with substantial wealth to make better investment decisions, or people in managerial or high administrative positions to make better business and organizational decisions. Social incentives to be informed arise from engagement in political discussion, $D_i$, with people who can be assumed to share your interests. We assume for simplicity that information attained for private purposes is not be suitable for political discussion, just as information acquired for social purposes is not be suitable for making private economic decisions. We combine the two types of knowledge into a simple additive utility function:

$$U_i = a D_i \cdot \log K_{D,j} + b k_{p,i} \cdot \log K_{P,j} - c(K_{D,j} + K_{P,j}).$$

The first term is the social payoff from acquiring knowledge through discussion, the second term is the payoff from private knowledge, and the last term is a constant marginal cost of acquiring either type of knowledge, $c$. The function has standard properties, rising and concave in the two
different types of knowledge. It follows that the optimal levels of social knowledge is

\[ K_{D,j}^* = \frac{aD_i}{c}, \] and the optimal level of private knowledge is \[ K_{P,j}^* = \frac{bk_{p,j}}{c}. \]

This formulation assumes that the utility of the two types of knowledge are independent of each other because they are acquired for different purposes. Yet both types of knowledge can be used to relate their interest to the position of political parties, so in that sense they are substitutes. If we call such knowledge “voting knowledge”, or \[ K_{V,j}, \] we can capture the substitutability in a simple function such as:

\[ K_{V,j} = K_{D,j} + K_{P,j} \]

We can now find the optimal level of voting knowledge by substituting in the optimal levels of social and private knowledge:

\[ K_{V,j}^* = \frac{aD_i + bk_{p,j}}{c}. \]

Inserting this expression into the probability of voting left equation, and setting \( c=1 \) without loss of generality, we have that

\[ P(y_j = L) = \Phi \left[ \left( \gamma + \delta aD_i + \delta bk_{p,j} \right) \left( y_{LC} - y_j \right) - \left( \frac{1}{\left( \gamma + \delta aD_i + \delta bk_{p,j} \right)^2} \right) \left( \bar{y} - y_{LC} \right) \right]. \]

The probabilities of voting center and right can be found in an analogous way.
Appendix D: Stata program for non-linear ordered probit

capture program drop mly_1

program define mly_1
args lnf y pdy k1 k2 pd1 pd2
tempvar p1 p2 p3
quietly gen `p1'=ln(normal (`k1' +`pd1' -`y' +`pdy' ))
quietly gen `p2'=ln(normal (`k2' +`pd2' -`y' +`pdy' ) - normal(`k1' +`pd1' -`y' +`pdy' ) )
quietly gen `p3'=ln(1 - normal (`k2' +`pd2' -`y' +`pdy' ))
quietly replace `lnf' = (PartyChoice==0)*`p1' + (PartyChoice==1)*`p2' + (PartyChoice==2)*`p3'
end;

ml model lf mly_1 (PartyChoice = y, nocons) (pd_y, nocons) (k, nocons)(k, nocons)(pd, nocons) (pd, nocons), technique(bfgs)

ml maximize , difficult

Note: PartyChoice has tree values: left (1), center (2), and right (3). The variable “pd” is political discussion and “pd_y” is the interaction of political discussion and y.
### Appendix E: Our classification of parties into left, center, and right

<table>
<thead>
<tr>
<th>Country</th>
<th>Left and center-left</th>
<th>Center</th>
<th>Right and center-right</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>SPOE ; Gruene</td>
<td>Democrats; Labour Party</td>
<td>OVP, FPOE</td>
</tr>
<tr>
<td>Australia</td>
<td>Greens</td>
<td>Liberal Party; National Party; One Nation; Family First</td>
<td></td>
</tr>
<tr>
<td>Britain</td>
<td>Labour</td>
<td>Liberal Democrats</td>
<td>Conservative</td>
</tr>
<tr>
<td>Canada</td>
<td>New Democrats ; Bloc Quebecois</td>
<td>Liberals</td>
<td>Progressive Conservatives</td>
</tr>
<tr>
<td>Denmark</td>
<td>Social Democrats ; Socialist Peoples’ Party; Leftwing Alliance</td>
<td>Radical Liberals; Center Democrats; Christian Peoples Party</td>
<td>Conservatives; Danish Peoples Party; Liberal; Progressive</td>
</tr>
<tr>
<td>Finland</td>
<td>Social Democratic Party ; Left Alliance</td>
<td>Centre Party of Finland; Christian League</td>
<td>National Coalition Party ; True Finns</td>
</tr>
<tr>
<td>France</td>
<td>Communists ; Far left Socialists</td>
<td>UDF-Liberal</td>
<td>RPR-Conservative ; National Front;</td>
</tr>
<tr>
<td>Germany</td>
<td>SPD ; Buendnis 90/Gruene; PDS/Linke Liste</td>
<td>CDU/ CSU</td>
<td>FDP; Republikaner</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Labour; Greens; Socialist Party</td>
<td>Christian Democrats; Democrats 66</td>
<td>Liberals ; Calvinist State Party ; Calvinist Political Party ; Centrum Democrats</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Labour; Alliance ; Greens</td>
<td>New Zealand First</td>
<td>ACT ; National Party; United Future</td>
</tr>
<tr>
<td>Norway</td>
<td>Red Electoral Alliance ; Labour Party ; Socialist Left</td>
<td>Christ Demoer Party; Center party; Liberal Party</td>
<td>Progress Party ; Conservative Party</td>
</tr>
<tr>
<td>Portugal</td>
<td>Bloco de Esquerda; CDU-PCP; PSR; UDP</td>
<td>PS</td>
<td>CDS/PP; PPD/PPD</td>
</tr>
<tr>
<td>Spain</td>
<td>IU/ICV ; ERC</td>
<td>PSOE</td>
<td>PP</td>
</tr>
<tr>
<td>Sweden</td>
<td>S (Social Democrats) ; V (Socialists)</td>
<td>C (Centre Party); KD (Christ Demoer); MP (Ecologists)</td>
<td>FP (Liberals); M (Conservatives)</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Social Democratic Party ; Labour Party ; Green Party</td>
<td>Christian Democratic Party ; Radical Party ; Swiss Peoples Party ; Liberal Party ; Freedom Party</td>
<td></td>
</tr>
<tr>
<td>USA</td>
<td>Democrats</td>
<td>(Independent)</td>
<td>Republicans</td>
</tr>
</tbody>
</table>
# Appendix F: Regression results using ISSP party codes

<table>
<thead>
<tr>
<th></th>
<th>Ordered probit</th>
<th>Non-linear ordered probit</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-R position</td>
<td>0.106 (0.004)</td>
<td>0.053 (0.005)</td>
</tr>
<tr>
<td>Political discussion x L-R position</td>
<td>-</td>
<td>-0.020 (0.002)</td>
</tr>
<tr>
<td>Center-left cutoff</td>
<td>-0.364 (0.023)</td>
<td>-0.139 (0.018)</td>
</tr>
<tr>
<td>Center-right cutoff</td>
<td>1.037 (0.024)</td>
<td>0.822 (0.048)</td>
</tr>
<tr>
<td>Political discussion x C-L cutoff</td>
<td>-</td>
<td>0.189 (0.007)</td>
</tr>
<tr>
<td>Political discussion x C-R cutoff</td>
<td>-</td>
<td>0.081 (0.016)</td>
</tr>
</tbody>
</table>

*Number of observations*  
12269 12224