

# Information, Inequality, and Mass Polarization: Ideology in Advanced Democracies

Comparative Political Studies

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## Abstract

Growing polarization in the American Congress is closely related to rising income inequality. Yet there has been no corresponding polarization of the U.S. electorate, and across advanced democracies, mass polarization is *negatively* related to income inequality. To explain this puzzle, we propose a comparative political economy model of mass polarization in which the same institutional factors that generate income inequality also undermine political information. We explain why more voters then place themselves in the ideological center, hence generating a negative correlation between mass polarization and inequality. We confirm these conjectures on individual-level data for 20 democracies, and we then show that democracies cluster into two types: one with high inequality, low mass polarization, and polarized and right-shifted elites (e.g., the United States); and the other with low inequality and high mass polarization with left-shifted elites (e.g., Sweden). This division reflects long-standing differences in educational systems, the role of unions, and social networks.

## Keywords

political economy, elections, public opinion, voting behavior, political parties

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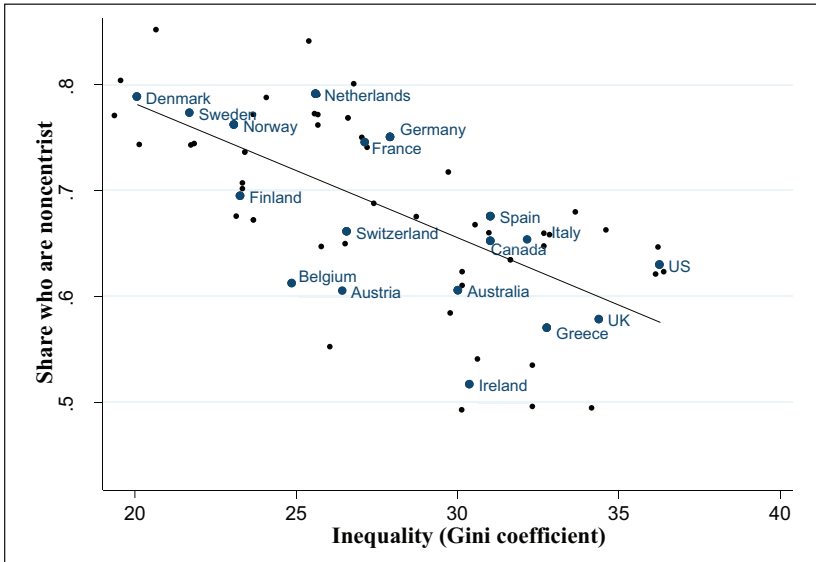
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**Figure 1.** The relationship between income inequality and ideological polarization in mass publics (advanced democracies, 1996-2011).

The Gini is for disposable per person household income, including all market income, social transfers, and taxes. Household income is assigned to individuals through the standard procedure of dividing by the square root of the number of household members (to adjust for economies of scale), and it includes only households headed by working-age individuals (aged 25-59). The data are from the latest version of the Luxembourg Income Study as compiled and transformed by Evelyne Huber and John Stephens. The share of noncentrists is the share of respondents in National Election Studies who placed themselves to the left or right of the center on a 10-point scale. These data refer to the period 1996-2011, where small dots represent each of the 49 individual surveys (the number of surveys varies by country) and large labeled circles are the country means. The data are from Comparative Study of Electoral Systems (CSES).

## Introduction

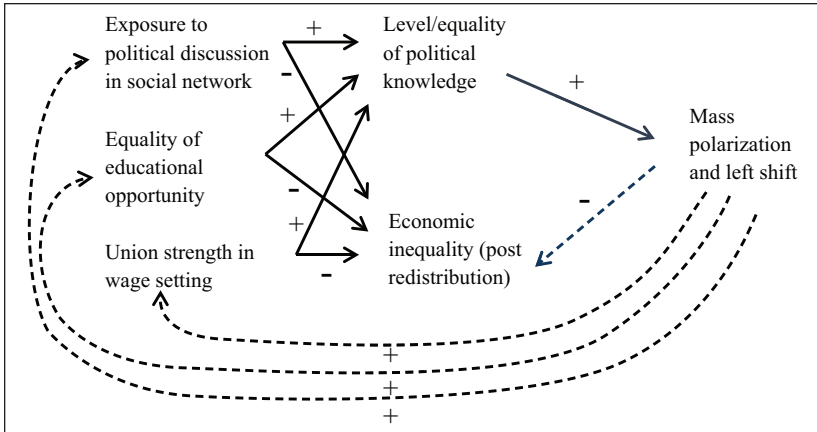
It is a widely believed that economic inequality is associated with political polarization, with the frequently drawn implication that polarization is “bad” (e.g., McCarty, Poole, & Rosenthal, 2006; Pontusson & Rueda, 2008; Rehm, 2011). But as illustrated in Figure 1, across advanced democracies there is in fact a strong *negative* relationship between mass polarization and inequality. The vertical axis shows the share of the electorate who identify to the left (0-4) or right (6-10) of the center, measured on a 0 to 10 left–right self-placement scale where 5 is the center, while inequality is measured as the Gini of

disposable income on the horizontal axis. Strikingly, whereas around 80% of adults declare themselves to be noncentrist in an egalitarian country like Denmark, in inequalitarian Britain or the United States, the figure is closer to 60%. We do not believe that this relationship has been documented before, and it presents a major empirical puzzle because standard political economy models imply that greater inequality should lead to greater divergence in preferences (e.g., McCarty et al., 2006; Meltzer & Richard, 1982; Pontusson & Rueda, 2008; Rehm, 2011). These models also imply that the median voter, and hence a majority, will prefer more redistribution as inequality rises. We find the opposite: Higher inequality and lower mass polarization tend to be associated with more right-shifted ideological self-placements.

The key to our explanation of these puzzles is the role of political information. Using a spatial model of self-placement under uncertainty, we begin by demonstrating that lack of political information by individuals produces a *centrist bias* in self-placement measured relative to what would be predicted from people's actual economic position. Weak mass polarization now reflects the fact that many voters place themselves closer to the center "ideologically" than would be expected if self-placement were determined directly by economic self-interest. Polarization is thus strongly mediated by political information.

The next step in the argument is to show that incentives to be politically informed are closely linked to the political, economic, and social institutions of egalitarian societies. A major contribution of the article is the establishment of this causal argument at the micro level—explaining political information by the institutions of egalitarian societies—and its empirical validation using large cross-country micro data sets (notably the Comparative Study of Electoral Systems [CSES]). Because these same institutions also produce a more egalitarian distribution of income, the inverse relationship between polarization and inequality is explained. In addition, because institutions that promote equality also make it more likely that those with low incomes acquire political information, it pulls the political center of gravity to the left. Countries with more egalitarian distributions of income will therefore tend to be associated with more polarized *and* left-leaning constituencies.

Specifically, we argue that there are three social-institutional mechanisms that link distribution, political knowledge, and polarization. The most obvious is the equality of the education system: More equal educational opportunities reduce income inequality, and they also affect the dispersion of political information by making the cost of acquiring such information more equal. This in turn shifts low income citizens away from the center and leads to higher mass polarization. Second, strong unions produce wage compression, especially when collective bargaining is centralized (Freeman, 1988; Rueda & Pontusson, 2000; Wallerstein, 1999). At the same time, many unions have



**Figure 2.** Sketch of predicted linkages between socioeconomic conditions, political knowledge, and mass ideological polarization.

political ties to the left and seek to mobilize and inform their members about politics, sometimes by cultivating political discussion inside and outside the workplace (Ahlquist & Levi, 2012; Przeworski & Sprague, 1988). This again reduces the centrist bias and leads to mass polarization. Finally, people who are embedded in social networks where politics is discussed frequently will not only be more exposed to political information but also have a stronger social incentive to acquire such information (Abrams, Iversen, & Soskice, 2011; Iversen & Soskice, 2012). Because social networks tend to be socioeconomically homogeneous—what sociologists call homophily (McPherson, Smith-Lovin, & Cook, 2001)—political discussion in these networks fosters polarization along economic lines. Although more speculative, greater network involvement by low-income groups may also provide these with information about job opportunities that in turn facilitate economic equality (Montgomery, 1991).

The structure of the argument is sketched in Figure 2. Income inequality and the level and equality of political knowledge are inversely related to the three socioinstitutional conditions we have identified, and because political knowledge increases mass polarization, inequality and polarization will be negatively related—the main puzzle that motivates this article. Furthermore, because we expect a more informed and polarized electorate to be more left leaning, there could be feedback effects whereby center–left parties and governments take measures to bolster unionization, to promote the education of lower income groups, and directly to increase redistribution. In this article,

we largely treat these potential feedback effects as hypotheses for future work and focus instead on the explanation of mass polarization (and the associated left shift in ideological self-placement). But it is easy to see that the political effects of polarization may reinforce such polarization, creating enduring differences across countries. Although not to be taken dogmatically, this suggests a broad division of countries between two poles, which we might think of as Weberian ideal types: one that combines an egalitarian school system, strong and coordinated unions, and high involvement in social networks with high mass polarization and strong identification with the political left; and another that combines an inegalitarian school system, weak and uncoordinated unions, and low involvement in social networks with low mass polarization and strong identification with the political center–right.

The rest of the article is organized into three sections. The first presents the model, the second the empirical evidence, and the third concludes.

## The Model

### *The Centrist Bias*

Political economy models of political preferences assume that voters know their interests. This is a very demanding assumption, and it is supported by neither theory nor evidence. As public policies are collective goods, while political information is costly to the individual, voters have an incentive to be “rationally ignorant” about policies (Downs, 1957). Downs suggested that voters overcome this problem by using an informational shortcut whereby they evaluate policies and parties on a broad ideological left–right scale. But while it makes sense that voters are “information misers” (Munger & Hinich, 1994), this still does not explain how voters decide where to place themselves on the left–right scale. To our knowledge, political economy has never developed a clear model for how voters project their economic conditions onto an ideological left–right continuum.

In place of such a model, political economy assumes that people either have complete information or that “errors” in self-placement are random. As long as there is a systematic element tied to socioeconomic position, errors will cancel each other out. For each poor voter identifying with the right, there is a rich voter identifying with the left, with no consequences for partisanship at the aggregate level. Hence, political economy models can simply treat “errors” as white noise and interpret statistical models of voting as approximations to the complete information model.

This approach seems straightforward and logically impeccable. But it is wrong. To see why, imagine that there is a single ideological left–right scale,

y, that can be interpreted as a summary of all the relevant socioeconomic variables that go into the determining an individual's interests. Imagine further that there are three parties, left (L), center (C), and right (R), and that the left–right ranking of these parties is common knowledge (so *that* information is available).<sup>1</sup> The problem for the voter is to decide which party is closer to his or her own position.

This is in fact a complex decision. Imagine for example that L offers to raise taxes and spending, R to cut both, and C to keep both at current levels. For the voter to decide which policy maximizes his or her welfare, even the simplest of political economy models requires knowledge about the tax structure, the targeting of benefits, the administrative costs of running government programs, the effect of taxation on work disincentives, and the individual's own exact position in the tax-benefit distribution. Simple as the choice may at first appear, picking the best party/policy is in fact a tall order.

Given this complexity, how should an uninformed voter, *i*, vote, assuming that he or she is simply trying to pick the closest party? Not knowing what the optimal policy is, the probability that each party presents the best choice is identical. Standard spatial (proximity) voting now implies that if *i* votes L, the expected loss is  $1/3 \cdot 0 + 1/3 \cdot (C - L) + 1/3 \cdot (R - L)$ , where the first term is the (zero) loss if L turns out to be the “correct” party (i.e., the most representative of *i*'s interests), and the other two terms are the losses if either C or R is the best party. Similarly, if *i* votes C, the expected loss is  $1/3 \cdot (C - L) + 1/3 \cdot 0 + 1/3 \cdot (R - C)$ . 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. The same holds if we compare R with C, assuming symmetrical spacing. The stark conclusion is that *uninformed voters should always vote centrist*.

We show in Online Appendix A that this logic can be generalized to *any* distribution of subjective probabilities across the three parties, using a standard spatial decision rule. Specifically, for any continuous distribution,  $F(\cdot)$ , if  $y_{LC}$  is the midpoint between L and C, *i* votes left when the portion of the distribution to the left of  $y_{LC}$  is greater than 0.5, or

$$F(y_{LC}) > 0.5. \quad (1)$$

An analogous result holds for voting right. So for a voter to vote noncentrist, there has to be greater than 50% probability that the party is the best choice. If spatial voting implied symmetrical voting, the probability would be 1/3. The upshot of this analysis is that using the spatial model under the assumption of complete information (or random errors) will produce incorrect inferences and biased statistical estimators.

We now apply this logic to self-placement on an ideological left–right scale. We treat each point on the scale as a distinct policy cluster that the respondent can pick if prompted. The “choice” is again presumed to be related to people’s position on  $y$ —the underlying socioeconomic dimension—and as before we assume that people choose a left–right location that reduces the distance to their own socioeconomic location. If there are three “positions” on the left–right scale, the analysis is exactly the same before, except that there is now no reference to political parties.

Applying the spatial logic to ideological self-placement has the great advantage of removing party strategies from the equation. This means that we can avoid difficult issues of how the relative positions of parties affect the choice, or how strategic voters might adapt their vote in response to institutional incentives (such as electoral systems) or to a particular political context (say, the number of parties or a specific constellation of likely government coalitions). Voter positions may of course still be affected by political parties, but we can categorically rule out simple choice set effects (or what Fiorina & Abrams, 2008, call party sorting effects).

Left–right self-placement is only indirectly related to vote choice, but it is a very good predictor of such choices (Adams, 2001). A single dimension of politics is also a good approximation to party competition in most advanced democracies (Japan being a notable exception). Factor analyses of data from the Comparative Manifesto Project (CMP), for example, show only a single major dimension (McDonald, Mendes, & Kim, 2007), and simple left–right indices based on the CMP data are also highly correlated with expert surveys of party left–right positioning (Laver, Benoit, & Garry, 2003). If the single-dimension assumption is nevertheless violated, it will work against finding support for our model. More specifically, if the reason some people place themselves in the center is that they are “cross-pressured” by cross-cutting cleavages and therefore ambivalent about where they fit on the scale, information will only make them more ambivalent and more likely to locate at the center (Alvarez & Brehm, 2002). As we show next, our model implies the opposite.

### *Information and Polarization*

According to the logic developed in the previous section, uninformed people will always identify  $C$ . The fact that many identify noncentrist suggests that some voters have acquired relevant political information. To complete our algorithm for the individual self-placement decision, we therefore need to introduce information and a mechanism for how individuals acquire and use such information.

Our approach is Bayesian and starts with the idea that people are exposed to signals about their interests, which they use to update the information they already have. This updating process implies a logic that is illuminating for understanding why some people end up more informed than others, and it helps explain why some national-institutional contexts are more conducive to political knowledge than others, hence also to more polarized—and, we will see, more left-leaning—electorates.

The simplest and most general model is one in which individuals start out with no information but then receive a signal that conveys some relevant information. There is a large and growing literature that information predominantly originates from informal social networks where people spend much of their time.<sup>2</sup> Of course, some people are socially isolated or in networks where politics is never discussed, and we would expect these people either to receive no signals at all or to get ones that are too noisy to be of much value. But for others who are in groups and networks with people in similar situations in terms of income, education, type of work, and so on, and where politics is at least an occasional topic of discussion, it is reasonable to expect that they will receive informative signals about their interests. The tendency for people to be in networks with others who share their socioeconomic position—for “birds of a feather to flock together”—is what sociologists call homophily, and it is one of the most important and well-documented results in the informal network literature (McPherson et al., 2001).

A simple way to model this is to assume that individual  $i$  gets a signal  $y_i^*$  from his or her informal network. We can think of this signal as being drawn from a distribution with a mean of  $y_i$ —the “true” representation of  $i$ ’s interest, reflecting the homophily of the network—and a variance of  $\sigma_i^2$ . If  $\sigma_i^2$  is small, the signal will be a good predictor of  $y_i$  and vice versa. We will assume that  $\sigma_i^2$  depends inversely on  $i$ ’s political information or knowledge,  $k_i$ . This can be explained in two complementary ways. One is that those with good political information are able to use signals from their informal networks to self-place more accurately. The second is that current political information is function of the frequency of exposure to network political discussion (“signals”) in the past. By the central limit theorem, as the number of signals increases, information improves, and the variance of the mean of these signals declines. Using this logic, the “updating function” can be interpreted as the mean of all signals received in some relevant period of time. Individuals who are in large networks where politics is discussed frequently will receive many signals in a given period of time, and be more informed (have a lower  $\sigma_i^2$ ) as a consequence. Online Appendix B develops an explicit Bayesian model along these lines. The reader interested in the technical details should consult this online appendix (available at [cps.sagepub.com/supplemental](http://cps.sagepub.com/supplemental)).



Online Appendix B also shows that, with additional technical assumptions, this logic can be used to model the probability of a particular self-placement as an ordered probit equation. For example, the probability,  $P(\cdot)$ , that individual  $i$  will self-place as L is given by

$$P(\text{sp}_i = L) = \Phi \left[ \sigma_i^{-1} (y_{LC} - y_i) - \sigma_i (\bar{y} - y_{LC}) \right]. \quad (2)$$

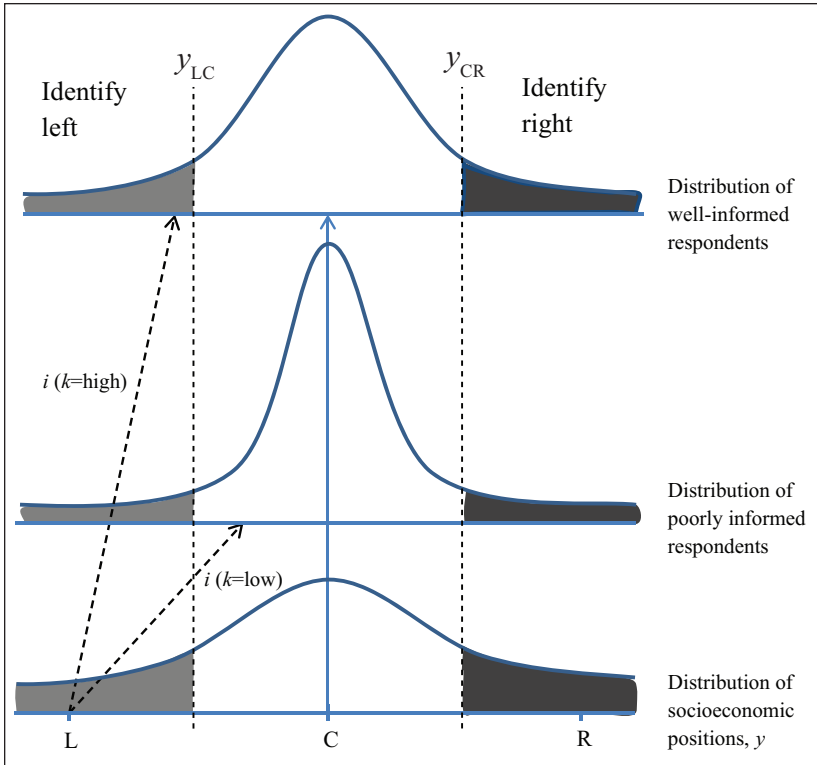
This equation is not difficult to interpret: It contains three bits of information, the values of  $y_{LC} - y_i$  and  $\bar{y} - y_{LC}$ , plus weights determined by  $\sigma_i^{-1}$ , which is a function of  $i$ 's level of information. Note that there are two limiting cases: If  $i$  has no information,  $\sigma_i \rightarrow \infty$ , and if  $i$  has very extensive information,  $\sigma_i \rightarrow 0$ . This implies that in the no information case, we are in the framework of "The Centrist Bias" section, where  $i$  identifies as centrist, and  $P(\text{sp}_i = L) = \Phi[-\sigma_i(\bar{y} - y_{LC})] = \Phi[-\infty] = 0$  (an analogous logic applies to right self-placement). In the high-information case, if  $y_i < y_{LC}$ , then  $P(\text{sp}_i = L) = \Phi[\sigma_i^{-1}(y_{LC} - y_i)] = \Phi[\infty] = 1$ , so that  $i$  always self-places to the left (analogously, always to the right if  $y_i > y_{CR}$ ). Thus, the ordered probit model is very general in that it captures both the case of complete ignorance and the case of full information, and any case in between. The more information  $i$  has (continuing the assumption that  $y_i < y_{LC}$ ), the more accurately will  $i$  self-place as left; the less information  $i$  has, the more likely is  $i$  to self-place as centrist.

This logic implies that information produces polarization, which is illustrated in Figure 3. It shows the micro logic for two individuals who share the same socioeconomic position to the left of  $y_{LC}$ , but where one is well-informed (high  $k$ ) and the other is not (low  $k$ ). The well-informed will self-locate to the left whereas the ill-informed will self-locate at the center. In Online Appendix B, we formalize the logic and prove that the share of people who place themselves away from the center (which is the standard definition of polarization that we used in Figure 1) increases in political knowledge.<sup>3</sup>

In the "Micro-Level Evidence" section, we estimate the ordered probit model directly on data for ideological self-placement, socioeconomic position, and political information in 20 countries with around 55,000 observations. This enables us to test the hypothesis that a higher level of political information improves the accuracy of ideological self-placement, while increasing polarization. We will see that this is strongly confirmed by the data.

### Explaining Political Information

The previous section argued that political information generates mass polarization. In this section, we present our argument as to why some individuals



**Figure 3.** From socioeconomic position to left–right self-placement and vote.

acquire more information than others, and we hypothesize that the factors that are conducive to political information also generate lower inequality. This implies that inequality and polarization are negatively related—the key puzzle we want to explain.

As most individuals have limited private incentives to be informed about public policies (but see Larcinese, 2005), political information is either a by-product of social incentives or simply incidental to being exposed to political information. The first is an active channel of information acquisition; the latter is a passive channel. We have suggested that informal social networks are an important source of information, and such networks also illustrate the role of both active and passive channels of knowledge.

Socially embedded individuals are more likely to encounter political discussion, in part simply because they communicate with more people, and in

part because repeated encounters may be a precondition for broaching potentially contentious political topics (Mutz, 2006). The Bayesian framework can easily capture these logics by assuming that the precision of the signal rises with the frequency of exposure to political discussion, or by repeating the updating process through time when people are in stable networks. In the latter case, each repetition is simply another “draw” from the same distribution.

Being exposed to political discussion in one’s network is a passive form of knowledge acquisition. Active acquisition occurs when people seek independent information to contribute more effectively to the discussion itself. Mounting sociopsychological evidence shows that people are motivated to seek the approval of their peers and to avoid their disapproval (Baumeister & Leary, 1995). This includes building up a reputation for being politically informed when politics is seen as important by the group, and when politics is a recurrent topic of discussion. Active acquisition of knowledge probably leads to more detailed factual information than passive acquisition, and some people acquiring active information is a precondition for others receiving passive information. Yet, both forms may be sufficient for people to be able to locate themselves on a left–right scale.

Acquiring active political information has costs and these must be weighed against their social benefits. Compared with information about issues with which people often have personal experience—children, sports, travel, movies, gardening, and so on—seeking knowledge about politics is an intellectual enterprise. With the exception of voting, active involvement in politics is reserved for a tiny minority, and active acquisition of knowledge about politics necessitates engagement with complex political news, which in turn requires significant cognitive resources. For this reason, the marginal costs of acquiring political information is closely linked to education, and the optimal level of information is therefore also increasing with education (assuming a standard concave utility function). The individual acquisition of information in turn has knock-on effects on the incentives of others to acquire information as political discussion and social benefits depend on the total group investment in information. It is therefore not hard to see how groups with many high-educated members can end up in a high-discussion, high-information equilibrium, whereas groups with mostly low-educated members can end up in a low-discussion, low-information equilibrium.

From this logic follows the straightforward conjecture that there is likely to be a strong class bias in information because those with higher incomes tend to have better education and more involvement in discussion networks.<sup>4</sup> At the same time, there is likely to be variation across countries and that variation in turn affects ideological polarization. The less the lower classes have access to good education, and the lower the rate of membership in political discussion

networks, the lower the expected average level of political information and ideological polarization. Moreover, as education and inclusion in social networks are both related to income and economic success—the latter by helping people find jobs (Montgomery, 1991; Pellizzari, 2010)—a more unequal distribution of these traits will also tend to be associated with a more unequal distribution of income and socioeconomic status. So even though standard political economy models predict that inequality is linked to polarization, the concomitant lack of social network inclusion and educational opportunity point in the opposite direction.

This informational logic is reinforced by the role of unions, which are one of the few remaining formal organizations with political objectives that still play a significant role in the welfare of a large (while declining) number of people. Unions have consistently been found to reduce inequality (Kristal & Cohen, 2015; Rueda & Pontusson, 2000; Wallerstein, 1999), and they are historically linked to the political left as part of the broader labor movement (Huber & Stephens, 2001; Korpi, 1983; Korpi & Shalev, 1979; Przeworski & Sprague, 1988). Unions are a source of passive information for members because many will see unions as custodians of their economic interests and therefore also as reliable sources of information. Unions also sometimes play a more active role in engaging members in political discussion and encouraging them to acquire costly political knowledge (Ahlquist & Levi, 2012)—something we can confirm with our data.

The macro-level implications of our argument were summarized in Figure 2 above. Broad exposure to political discussion in social networks, equality of educational opportunity, and strong unions all reduce socioeconomic inequality, while increasing the level and equality of political knowledge. As the latter increases polarization, the logic implies that inequality and polarization are negatively correlated. This negative relationship is reinforced insofar as a more equal distribution of information leads to more left-leaning policies, as such policies are themselves conducive to a more equal distribution of education and income, as well as unionization.

## Micro-Level Evidence

### *Data and Method*

For the micro-level analysis, we rely on the CSES ([www.cses.org](http://www.cses.org)), which is a compilation of national election studies using a common module of survey questions. The period of coverage runs from 1996 through 2011 (survey years vary by country), and we have data for 20 advanced democracies, 56 country-years, and more than 55,000 individuals.<sup>5</sup> For one variable, political

discussion, we imputed values based on the 2004 International Social Survey Program (ISSP) survey. The exact procedure is explained below.

The statistical model to be estimated is a first-order approximation to Equation 2, which itself follows directly from the theoretical model:

$$\begin{aligned} P(\text{sp}_i = L) &= \Phi \left[ (\alpha + \beta k_i) y_{LC} - (\gamma + \delta k_i) y_i - (\eta - \rho k_i) \bar{y} \right] \\ &= \Phi \left[ \alpha y_{LC} + \beta k_i y_{LC} - \gamma y_i - \delta k_i y_i - \eta \bar{y} + \rho k_i \bar{y} \right]. \end{aligned} \quad (3)$$

This equation is equivalent to a nonlinear ordered probit, and we wrote a program for Stata to estimate it (the probabilities for identifying center and right are found in an analogous way). The Stata program is provided in Online Appendix C.<sup>6</sup>

The dependent variable is left–right self-placement, which is based on the following survey question:

In politics people sometimes talk of left and right. Where would you place yourself on a scale from 0 to 10 where 0 means the left and 10 means the right?

Noncentrist positions are chosen much less frequently than centrist ones, as we would expect, and we simply divided answers into left, center, and right responses, where the center is defined as choosing a position of “5,” which is the exact midpoint of the scale and therefore indisputably centrist.<sup>7</sup> With this classification, 30%, 25%, and 35% of our respondents classify themselves as left (coded –1), center (coded 0), and right (coded 1), respectively.

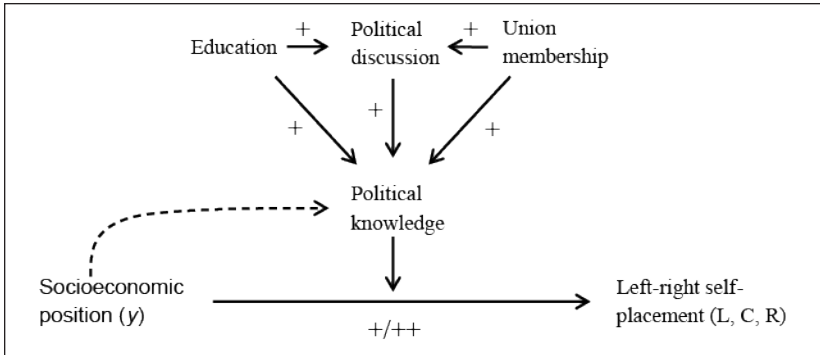
Our measure of socioeconomic position,  $y_i$ , is a weighted index of a set of standard individual-level variables from the political economy literature: household income (measured as a set of dummies for each quintile of income), education (measured as eight dummies for different educational levels), self-employment, unemployment, occupational unemployment (a measure of risk), part-time employment, public-sector employment, skill specificity, retirement status, gender, and rural residence.<sup>8</sup> The weights are determined by running an ordered probit regression on these variables using self-placement as the dependent variable for each country-year separately.<sup>9</sup> To combine the nationally specific  $y$ -indices into a single variable for the whole data set, we first standardized the indices to have a mean of zero and a standard deviation of one. This implies that individuals falling into the bottom half of the distribution have negative  $y$  values, whereas those falling into the top half of the distribution have positive values. As it turns out, the distribution of  $y$  closely resembles a normal distribution (see Figure B1 in Online Appendix B for details), and values on the distribution can approximately be read as  $z$  values. This is reassuring because the probit model assumes a normal distribution.

Political information,  $k_i$ , is based on three factual questions about politics in each country, where answers are coded as correct, incorrect, or “don’t know” (a few who refused to answer the question are omitted).<sup>10</sup> The three questions are nationally specific and designed to be “easy,” “slightly more difficult,” and “difficult.” We combined the three questions into a political knowledge index that takes on the value 0 if the respondent did not know the answer to any of the three, or answered all three incorrectly (15%), 1 if the respondent answered one question correctly (29%), 2 if the respondent answered two correctly (25%), and 3 if the respondent answered all three questions correctly (28%).

This measure of information is clearly mainly tapping “active” information—factual information about politics—and such information may not always be necessary to accurately self-place on the ideological scale, or even to know which party to vote for, although it is surely correlated with such “passive” information. Indeed, as we will see, a fair number of people were able to pick a left–right self-placement consistent with their imputed economic position (as predicted by political economy models) even though they answered all political information questions incorrectly. This is particularly true among union members and among otherwise uninformed individuals with high socioeconomic status.

Another limitation of the information measure is that the component variables were designed to get a similar distribution of answers in each country. So the information index does not tell us anything about cross-national differences in the level of political knowledge, and it will thus underestimate the overall effect of information (if there *are* differences across countries). To explain cross-national differences in polarization, we instead rely on national-level differences in structural-institutional variables that are predicted to affect the level and equality of information, as captured in Figure 2: social networks, union coverage, and equality of educational opportunity. We explain these variables, and the estimation procedure, in the “Macro-Level Evidence” section.

At the individual level, however, we are able to directly test the relationship between political knowledge and measures of participation in discussion networks, education, and union membership. This also enables us to explore the extent to which knowledge is class biased. We should note that the CSES data do not contain questions about political discussion, but such a question was used in the 2004 ISSP survey, which covers 18 of our 21 countries and contains the same set of socioeconomic variables as the CSES.<sup>11</sup> As we expect political discussion to be related to these variables, we used ordered probit to estimate these relationships (by country) in the ISSP data set, and then imputed discussion values to individuals in the CSES data based on their values on identical socioeconomic variables (again, by country). This procedure assumes



**Figure 4.** The micro-level hypotheses.

that political discussion is stable over time, but the average survey year for the CSES data is 2003 and thus close to the timing of the ISSP survey in 2004. (We show in Online Appendix D that the measurement error in the imputed values of political discussion disappears in large samples so that its estimated coefficient and related  $t$  statistic are consistent.)

The logic of the individual-level analysis is illustrated in Figure 4. Position in the socioeconomic distribution,  $y$ , predicts ideological self-placement, but the strength of the relationship is determined by the level of political knowledge. As political knowledge increases, the probability of self-placing away from the center also increases. Political knowledge is itself affected by political discussion, education, and union membership, and we also consider the possibility that socioeconomic status (other than education) affects knowledge directly (we discuss why below). To anticipate, we find that political knowledge causes more polarized self-placements, but that political knowledge has a bigger effect on the left than on the right, and that the distribution of knowledge is biased in favor of the right. This bias, however, is greatly attenuated by union membership.

### *Information and Polarization*

The results are shown in Table 1. Column 1 shows the results for left–right self-placement.<sup>12</sup> We see that union membership, as expected, benefits the left. Higher position in the  $y$  distribution also increases the likelihood of voting center or right, as expected. But this relationship is conditioned by political information in two ways. First, the effect of socioeconomic position is magnified by political information, so that  $y$  becomes a better predictor of ideological

**Table 1.** Regression Results.

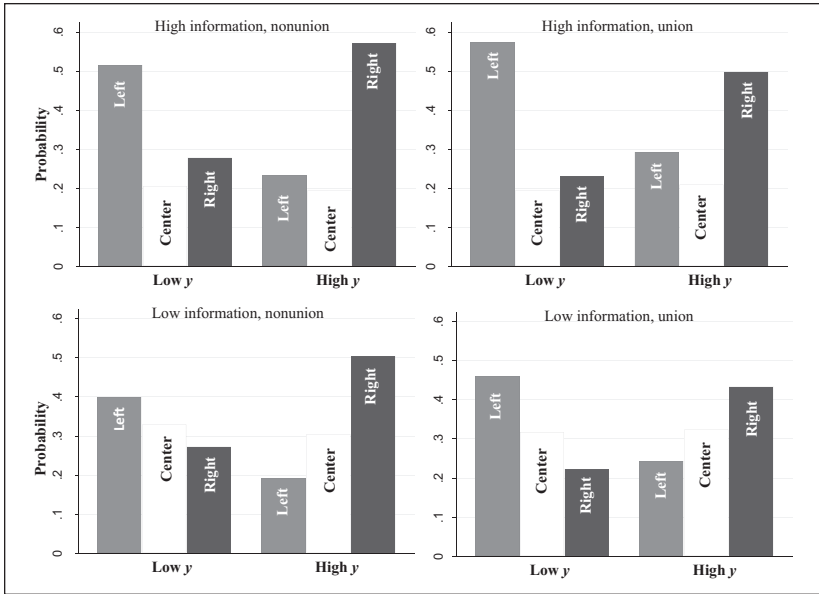
	Left–right self-placement			Political information
	(1)	(2)	(3)	(4)
	Full results	Low information	High information	
Position in $y$ distribution	0.244 (0.010)	0.244	0.304	0.027 (0.002)
$y$ position $\times$ Political information	0.020 (0.005)	—	—	
Political discussion	—	—	—	0.530 (0.015)
Education	—	—	—	0.077 (0.004)
Union membership	-0.160 (0.011)	—	—	0.076 (0.011)
Center–left cutoff	-0.572 (0.013)	-0.572	-0.349	—
Center–right cutoff	0.296 (0.011)	0.296	0.205	—
Center–left cutoff $\times$ Political information	0.074 (0.006)	—	—	—
Center–right cutoff $\times$ Political information	-0.030 (0.006)	—	—	—
No. of observations	52,754	—	—	52,968

Results for left–right self-placement are based on nonlinear ordered probit regression (the full Stata program is provided in Online Appendix C). The results for political knowledge are based on an ordered probit regression with a full set of country dummies (cutoff points and dummies omitted). The results in columns 2 and 3 are estimated values for two different levels of information, based on the results in column 1. The cutoff points are expressed in  $z$  values on the standard normal distribution.

self-placement as information rises. This is captured by the positive interaction between  $y$  and political information. Because there is a centrist bias among the less-than-fully informed, this is equivalent to the tails in the normal distribution becoming “thicker” as information increases (as illustrated in Figure 3).

Second, information shifts the two cutoff points toward the center, thus “squeezing” the middle. Specifically, as the left is below zero (the mean of the  $y$  distribution) the center–left cutoff point is negative (-0.572), but it becomes less negative as information rises, which is captured by the positive interaction between the cutoff point and political information (0.074). Conversely the center–right cutoff point is positive, but gets smaller as information rises (so the interaction term is now negative). Note, however, that





**Figure 5.** The probability of identifying left, center, and right as a function of socioeconomic position ( $y$ ), political information, and union membership.

these shifts in the two cutoff points occur to different degrees on the left and right: Left identification rises more with information than right identification does, implying that information has a bigger effect on the left.

To get a better sense of these results, columns 2 and 3 show the effects for low- and high-information respondents separately. Comparing across the two columns, we see that the effect of  $y$  (socioeconomic position) on ideological self-placement increases from 0.244 to 0.304. A stronger relationship is good news for both the left and right because when information is low and  $y$  is a poor predictor of self-placement, people tend to identify centrist. At the same time, we see that there is a notable shift of the center–left cutoff point toward the center of about 0.223 units on the standard normal distribution. The center–right cutoff point is also moving toward the center, but by a smaller amount of about 0.091. The difference in these numbers is a partisan effect, which shows that rising information benefits the left more.

The resulting pattern of polarization is illustrated in Figure 5. We distinguish between individuals at different ends of the socioeconomic distribution, where “low  $y$ ” refers to the bottom 25%, and “high  $y$ ” to the top 25% of the distribution (so a combined 50% of the total distribution). For each subset, we distinguish between low- and high-information respondents, and

union and nonunion members. Again, 15% of our sample falls into the low-information group, and 28% into the high-information group. About one quarter of all respondents said that they were union members.

The pattern is striking. Consider first nonunionized respondents, who make up three quarters of the sample. Among those with low information, the relationship between socioeconomic position and self-placement is weak, in particular for the low- $y$  group where almost as many identify centrist or right as there are people identifying left. As information rises, the pattern becomes more polarized with aggregate centrist identification dropping from 32% to 20% and left and right self-placement increasing accordingly.<sup>13</sup> The shift is particularly large for low- $y$  individuals whereas those at the high end of the  $y$  distribution are relatively better at distinguishing the right from the left when information is low (this is the differential effect of information on the cutoff points picked up in the regression results). The most plausible explanation for this is that there is more “passive” information among high- $y$  voters, even when “active” information is low. Again, by passive information, we have in mind information that is useful for ideological self-placement, even as it does not show up as factual knowledge (more on the likely sources of such information in the next section).

Passive information also appears to play an important role among union members. Even at low levels of factual information, unions help raise the support for the left. Although this is especially true among low- $y$  respondents, it also happens to some extent at the high end of the  $y$  distribution. We see this as an indication that there are strong social incentives to conform to the norms of a group and to display support for the group-sanctioned ideological position (which is almost always to the left in the case of unions). Although it is of course always conceivable that those who join unions do so because they are committed to a left political platform (a selection effect), this seems implausible, especially in the case of those who are politically uninformed. Uninformed workers, and probably the large majority of all workers, are unlikely to have joined unions because of their political convictions. Most likely, they did so for economic reasons as most models of unionization assume (e.g., Wallerstein, 1989).<sup>14</sup> At high levels of information, left self-identification among union members exceeds that of right self-identification by 8%, a stark contrast to uninformed nonunion members where right identification exceeds left identification by 10%.

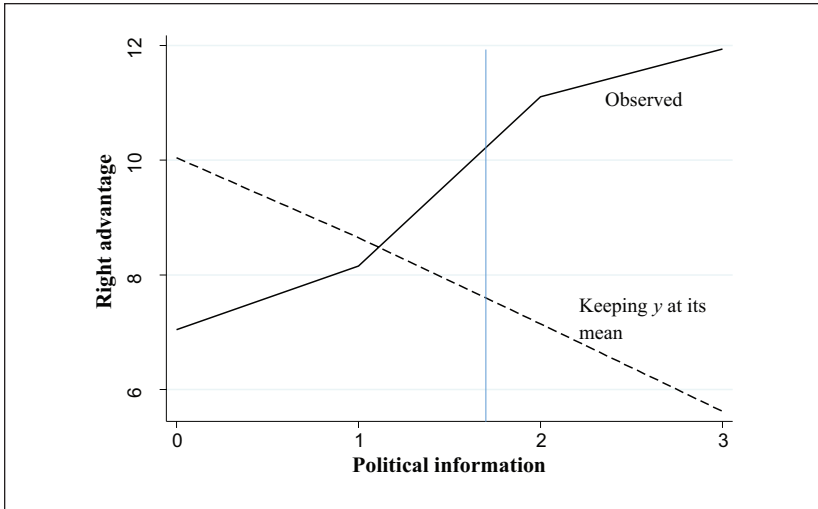
### *Information and Partisanship*

Figure 5 illustrated the polarizing effects of political information and also hinted at a partisan effect. Here we explore the partisan effect further by first

considering the (class-skewed) causes of differences in the level of information itself, and then by estimating the effects of these differences on left–right identification. Column 4 of Table 1 shows the results of regressing individual information on the  $y$  index, on political discussion, and on union membership. We include education as a separate variable because of its predicted strong direct relationship with political knowledge.<sup>15</sup> As expected, those with higher  $y$  values and education are much more likely to be politically informed. Going from the lowest to the highest level of education, the probability of having high information rises from 14% to 41%, a very large effect. Yet the other components of the  $y$  index—which refer more directly to economic interest, such as income and occupation—also matter. Going from the bottom to the top decile on the  $y$  index increases the probability of having high information from 27% to 33%. The most plausible interpretation is that those with high income and those who are in managerial positions have private incentives to be politically informed because such information helps them make better investment decisions (Larcinese, 2005). As position in the  $y$  distribution, as well as education, also predicts right partisanship, this means that the right is advantaged by the distribution of (passive) information in the electorate.

This conclusion is reinforced by the role of political discussion. As expected, people who often discuss politics with others are much more likely to be informed about politics. Controlling for socioeconomic position and union membership, going from the bottom to the top percentile on the (imputed) discussion variable increases the probability of answering all three political information questions correctly from 8% to 67%. Even if we allow that information also affects the frequency with which people engage in political discussion (reverse causation), social incentives appear to be a strong predictor of political information (and hence polarization). And as political discussion rises with socioeconomic status, social networks add to the class bias in political identification (although this effect is not strong).

We can get a direct estimate of the magnitude of the partisan bias by comparing left and right self-identification at different levels of information, before and after control for  $y$  (see Figure 6). The solid line shows the *observed* bivariate relationship between political information and partisanship, where partisanship is measured as the difference between right and left self-identification. As information goes up, so does the right advantage. This is not because informed people are more prone to identify right, it is instead because those with high socioeconomic status, who tend to identify right, are more likely to be informed. We can see this by controlling for socioeconomic position ( $y$ ) and then estimate the relationship between information and partisanship when  $y$  is kept constant at its mean. The effect of knowledge in this counterfactual simulation is now to *reduce* the right advantage. Again, the difference

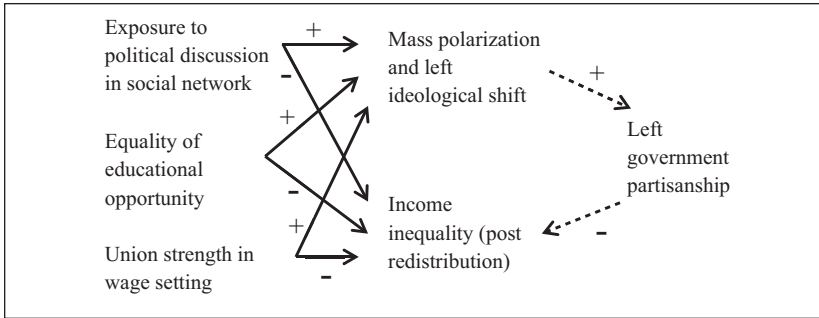


**Figure 6.** Political knowledge and the right advantage (nonunion members). Political knowledge: Number of correct answers for three factual questions; Right advantage: Percent identifying right minus percent identifying left.

between the observed and estimated relationship arises because socioeconomic position is strongly positively linked to political knowledge. In the counterfactual world where this is not the case (because  $y$  is held at its mean), the left is in fact advantaged by more information.

The difference between the observed and the counterfactual estimates when political knowledge is at its mean (the dotted vertical line) is the net right advantage in the sample as a whole, which is about 2.5%. This may not sound like much, but it is of course sufficient to swing many close elections, and in some (inegalitarian) countries, the right advantage is notably higher because those at the bottom of the  $y$  distribution are exceptionally poorly educated, disconnected from social networks, and unlikely to be in unions.

These findings help make sense of two related puzzles in comparative political economy. First, because the information bias is more pronounced in countries with high inequality and weak unions (which tend to go together), it helps explain why unequal societies redistribute less than more egalitarian ones (Moene & Wallerstein, 2001; Perotti, 1996). Second, as societies become more unequal and unionization rates fall—again the two tend to go together—the information bias will increasingly benefit the right, and political support for redistribution will decline, something that appears to be supported by the evidence (Allan & Scruggs, 2004; Georgiadis & Manning,



**Figure 7.** The macro-level hypotheses.

2012). In the case of the United States, McCarty et al. (2006) find that while inequality is rising, Republican identification is also increasing, contrary to the expectation of the Meltzer–Richard model, but consistent with a story where declining relative standing of the poor, deunionization, and disintegration of social networks undermine political information in the lower half of the distribution.

### Macro-Level Evidence

We now turn to the cross-national implications of our model. The logic of the analysis is based on the structural model in Figure 7, which is an adaptation of Figure 2 from the “Introduction” section. The main difference is that the political information variable is now missing. The reason is that the survey questions on political information are nationally specific, rendering them unusable for cross-national comparisons. Instead, we focus on the key factors that we have argued (and shown) to affect information at the individual level: education, unions, and involvement in discussion networks. In principle, these variables can all be aggregated to the macro level from the micro data, but as the information example shows, this is not always possible in practice. In the next section, we explain our choice of macro measures, noting where and why we deviate from a simple aggregation of the micro data. We then present the results. Although these are based on a very small number of observations, they go beyond the micro results in two ways: They show that the micro results (from education, social network, and union membership to polarization) do indeed reflect national differences in equality-promoting institutions, and they show in addition that these institutions indeed promote lower Gini coefficients.<sup>16</sup>

## Data

The dependent variables are ideological polarization and income inequality. The former is simply an aggregation of the individual data and defined as the share of respondents in each country who place themselves to the left or to the right of the center on the ideological left–right scale. Income inequality is the Gini coefficient for disposable household income (see note to Figure 1 for details). Income is only one component of the socioeconomic  $y$  index that we used in the micro analysis, but the  $y$  index is nationally specific and therefore unsuitable for cross-national analysis.

Our variables on the right-hand side of the equation are, again, education, unions, and discussion networks. The individual-level measure of education is the highest degree attained, and it cannot be aggregated to tell us much about cross-national differences in educational opportunity. Instead, we proxy equality of educational opportunity by spending on public education and on active labor market programs. Although all advanced countries have elites of well-educated individuals regardless of the level of public spending, those from lower income families rely exclusively on public financing (Ansell, 2010; Busemeyer, 2014; Iversen & Stephens, 2008). Spending on public education is therefore an indicator of the extent to which those at the lower end of the socioeconomic spectrum have access to a key resource in acquiring political information. We can support this claim with data from the Organisation for Economic Co-Operation and Development (OECD; 2010) International Adult Literacy Survey, which measures basic skills in the adult population.<sup>17</sup> The correlation between spending and average literacy in the bottom five percentiles is .72, while it is much weaker (.37) when we look at the top five percentiles. Indeed, the correlation between literacy scores at the bottom and polarization is exactly the same as between public educational spending and polarization (.76), but we only have literacy data for 16 of our 21 countries. The spending data (measured as a share of GDP) are from OECD (2010). We included spending on active labor market programs because such spending is targeted to workers at the low end of the skill distribution (but only a small portion of total spending). These data are from OECD, *Social Expenditure Statistics* (Online Database Edition).

The union indicator seeks to measure the importance of unions in setting wages and working conditions. As before, the idea is that those who are union members and/or covered by union-bargained collective wage agreements see unions as important guarantors for their economic well-being and therefore look to unions for cues on how to think about politics. Our union variable assigns equal value to the rate of unionization and the rate of (union)

collective bargaining coverage, where the latter captures an important aspect of unions' capacity to affect worker interests. The data are from Visser (2011) as recorded in Armingeon's "Comparative Political Data Set" (Armingeon, Engler, Gerber, Leimgruber, & Beyeler, 2012). Numbers were assigned to each country-year and then averaged.

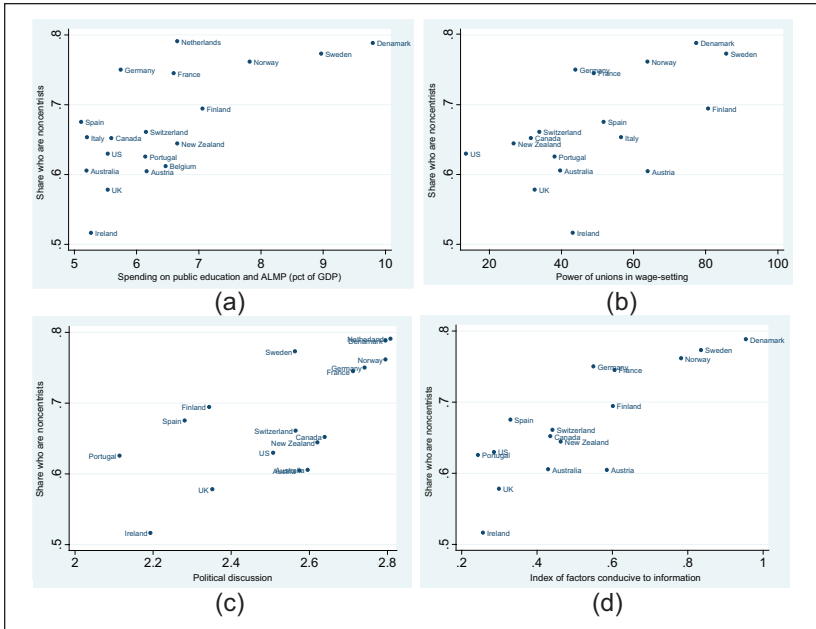
Finally, we include a measure of the extent to which people are involved in informal networks where politics is discussed. Here we again make use of the ISSP 2004 survey question about political discussion. The question neatly captures the key aspect of social networks that we are interested in—frequency of political discussion—and as those who are more integrated in networks are also more likely to be exposed to political discussion, it is sensitive to both network size and to how often political discussion occurs. We simply assigned numbers from 1 to 4 to each level of discussion, going from low to high, and then averaged by country.

### *Macro-Level Findings*

As we only have a few unequally spaced surveys from each country starting in 1996—in two cases (Austria and Italy) only a single survey, and in one case (Denmark) only one survey with political information questions—there is little meaningful variation over time. This is also true for some of our independent variables. So instead of running cross-section, time-series regressions when the evidence is virtually all cross-sectional, we simply use cross-country regressions on the averages for the available survey years. We are not claiming to identify causal effects. Instead, we are interested in documenting relatively stable long-run relationships that are implied by our model and micro evidence.

Figure 8 shows the bivariate relationship between polarization (the non-centrist share of respondents) and our three independent variables. As expected, all are strongly positive (Figures 8a-c), and if we use a simple additive index (Figure 8d), the correlation is almost perfect ( $r = .83$ ).<sup>18</sup> We think it is particularly noteworthy that countries where politics is a frequent topic of discussion—France, Denmark, Germany, the Netherlands, and Norway—also have the largest number of noncentrists.

Table 2 seeks to directly estimate the relationships we hypothesized in the structural model (Figure 7). We recognize, of course, that given the very small number of observations, the regression results are at best suggestive. Nevertheless, the macro data come from quite different sources from the micro data and are consistent with, and implied by, our micro evidence; *taken together*, the two levels of analysis paint a coherent picture of the sources of cross-national variance in polarization.



**Figure 8.** The correlates of ideological left–right polarization: (a) Public education spending, (b) power of unions in wage setting, (c) political discussion in network, and (d) index of factors conducive to political information. ALMP = active labor market policies.

The first column in Table 2 confirms that there is a strong negative bivariate correlation between inequality and polarization (as we saw in Figure 1 in the “Introduction” section), and the second column confirms a strong positive correlation between our composite “structural-institutional index” of the three independent variables and polarization. A 5% increase in the Gini (roughly equivalent to 1 *SD*) is associated with a 6% *drop* in the share of noncentrists whereas a 1 *SD* increase in the structural-institutional index is associated with an 8% *rise* in the share of noncentrists. Yet when both variables are included simultaneously (column 3), the effect of inequality switches around and becomes *positive* (although the effect is not statistically significant). The effect of the institutional index is slightly larger than before, and it continues to be significant (despite a large increase in the standard error). So while inequality may have a direct positive effect on polarization, this effect is easily outweighed by a negative effect that most likely runs through (lower) information. This is reinforced



**Table 2.** Macro Regression Results.

Independent variables	Dependent variables					
	Polarization (share who are noncentrist)			Inequality (Gini coefficient)		
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	1.02* (0.10)	0.48* (0.03)	0.28 (0.27)	45.9* (2.97)	38.1* (1.89)	44.5* (2.53)
Inequality (Gini coefficient)	-0.012* (0.003)	—	0.006 (0.007)	—	—	—
Spending on public education and ALMP	—	—	—	-2.83* (0.43)	—	-1.72* (0.55)
Union power in wage setting	—	—	—	—	-0.19* (0.03)	-0.11* (0.04)
Institutional index	—	0.36* (0.06)	0.43* (0.15)	—	—	—
Adjusted R <sup>2</sup>	.41	.67	.65	.70	.69	.81
No. of observations	18	17	14	17	15	15

All regressions are OLS. Models 1 to 3 correct for heteroscedastic standard errors on the estimated dependent polarization variable, using EDV regression as set out by Lewis and Linzer (2005). ALMP = active labor market programs; OLS = ordinary least squares; EDV = estimated dependent variable.

\* $p < .05$ .

by the partisan effects of information. Although there are many factors that go into determining government partisanship, there is a significant positive correlation of .37 between our measure of polarization and the left share of government seats, and the effect of partisanship on the post-fisc distribution of income is well documented (see Huber & Stephens, 2014, for a recent analysis and review of the evidence). So while there is no or only a weak direct relationship between polarization and inequality, there is likely an indirect effect of polarization on inequality through the role of partisanship,

Table 2 also includes results for inequality as a dependent variable (columns 4-6). Confirming existing work (see especially Huber & Stephens, 2014; Iversen & Soskice, 2010), they show a strong role for unions and education in reducing inequality. If we include political discussion as an independent variable, the explained variance increases to .87, but it is hazardous to assign causal weights given the strong collinearity among the independent

variables. Needless to say, the combined institutional index is also strongly predictive of inequality (not included in Table 2).

We did try to control for two related variables, proportional representation (PR) and the number of parties, which are known to be related to distribution and might be thought to also be related to polarization.<sup>19</sup> For example, it can be argued that multiparty PR systems produce more differentiated choices and targeted messages that could induce more polarized electorates—a conjecture that goes back to Sartori's (1976) concept of "polarized pluralism." Anderson and Beramendi (2012) likewise argue that when there are more parties and competition on the left, politicians have a stronger incentive to mobilize the poor. We see these as very plausible hypotheses, although neither PR nor the number of parties turns out to have any measurable direct impact on polarization, and all effects reported above are roughly of the same magnitude when PR or party system is included.<sup>20</sup> But because it is difficult to assign explanatory weights to collinear variables in a small sample like ours, one should not read too much into this nonfinding. Instead, to understand the role of parties in a world of weak formal organizations, our argument invites an analysis that traces the effects of political party mobilization through the informal networks where people increasingly get their political information.

In addition, we note that multiparty PR is likely to have *indirect* effects on polarization because it is associated with more public spending on education (Ansell, 2010; Busemeyer, 2014), as well as stronger unions and coordinated wage bargaining (Iversen & Soskice, 2010). Because education spending and strong unions in turn lead to more left-leaning voting, there is likely to be a reinforcing feedback loop between left policies and left voting in PR systems; conversely, there will be a right loop in majoritarian systems.

The combination of these results point to a (possibly emerging) clustering of countries, and it suggests a division into two ideal types of Weberian democracies. One exhibits high socioeconomic inequality yet low ideological mass polarization because inequality in educational opportunity, lack of unions, and a relative absence of politically engaged social networks undermine political information.<sup>21</sup> In this cluster of countries, we further expect politics and public policies to be shifted to the right because of the strong class bias in political information.

The second cluster is one in which inequality is low, but electorates are relatively polarized. This pattern arises, we have argued, because an egalitarian income distribution is caused by strong unions, equality of educational opportunity, and widespread integration into social networks, which are at the same time strong predictors of information and ideological polarization. At the same time political information will be less biased toward the political

right. Scandinavia fits this pattern best. We of course recognize that most countries fall somewhere between the two ideal types.

## Conclusion

Standard political economy models imply that socioeconomic polarization leads to political polarization by increasing divisions in the electorate, and that inequality produces more support for the political left. Both predictions are inconsistent with the evidence. High inequality is associated with *less* polarized electorates, and the political right thrives under these conditions. We have explained both puzzles by endogenizing the role of political information. Because those who are politically uninformed rationally position themselves in the political center, more political knowledge implies more polarization. Yet because information is negatively related to inequality, more inegalitarian societies are less polarized. At the same time, political information is heavily class biased in favor of the right in unequal societies.

Our argument is backed by evidence at both the individual and macro levels for the majority of advanced democracies. Although we are constrained by a small- $N$  problem at the macro level, the patterns we detect are quite consistent with our theory, and they reinforce strong micro-level evidence that exploits variation among a very large number of individuals. These results show that uninformed voters are much more likely to position themselves at the center of the political space, even when their socioeconomic position would suggest otherwise. This is much less true among informed voters, and such information is strongly linked to education, inclusion in informal social networks with political discussion, and union membership.

An implication of our results is that one has to be very careful in identifying polarization as a problem for democracy, as is often done in the American debate. Indeed, polarization in the electorate may be the hallmark of a healthy and well-informed electorate. The conditions that favor polarized electorates are also those that make the predictions of political economy more applicable—in particular the notion that democracy compensates for market inequality by increasing support for redistribution.

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## Notes

1. In the interpretation we use below, being able to rank parties is not even required; people simply have to know the existence of an ideological scale with a left, center, and right. When that assumption also fails, *then* self-placement will be completely random.
2. People also receive political information from formal political organizations and the mass media. But membership in political parties collapsed in most countries by the 1980s, and it plays almost no role today. Unions, however, continue to play a role and we discuss it below (where we also consider the implications of the decline of mass parties). For the mass media, we assume competitive markets and demand-driven content. This implies that political information transmitted through the mass media is targeted to "opinion groups" and biased in the direction of those who seek it most, which depends on informal network incentives (See Gentzkow & Shapiro, 2010). Of course the media market is not competitive in nondemocracies, and even new democracies, but for the advanced democracies considered in this article, it is a reasonable approximation.
3. This is not as obvious as it might appear because although a rise in political knowledge  $k$  increases the probability of identifying L for socioeconomic positions below  $Y_{LC}$  and increases the share identifying R for positions above  $Y_{CR}$ , it also increases the share identifying C for positions between  $Y_{LC}$  and  $Y_{CR}$ .
4. We think that this is reinforced by the role of mass media. If information channeled through mass media is demand driven (Gentzkow & Shapiro, 2010), and if those who seek information are not representative of the general electorate, then the information channeled through the mass media will also be biased.
5. The countries are Australia, Austria, Belgium, Britain, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, and the United States. We excluded Japan because the left-right scale is not fully applicable in this case, and because only 24% of respondents place themselves on the scale.

6. It is not possible to use a simple ordered logit regression because this does not allow the cutoff points to change with information, as is implied by our model.
7. One concern with this measure is that it could be affected by differences in “response styles,” which is the possibility that respondents systematically respond to questionnaire items regardless of item content (see Vaerenbergh & Thomas, 2013, for an overview). What has been called midpoint response style (MRS) and the extreme response style (ERS) are particular concerns, but we are aware of no research that systematically links these styles to any of our covariates. A recent attempt to measure cross-national (or “cultural”) patterns in response styles (Harzing, 2006) shows little variation among our sample of countries, and for the 12 countries that are common to both data sets, the observed MRS exhibits no correlation with our measure of centrist responses ( $r = -.05$ ), and hence also with our measure of polarization. We are grateful to a reviewer for alerting us to this issue and to the Harzing study.
8. All variables are based on information already in the data set except for occupational unemployment and skill specificity. These variables are based on EU labor force surveys and assigned to ISCO-88 occupations (which are included in the Comparative Study of Electoral Systems). The methods are described in Rehm (2009) and in Iversen and Soskice (2001).
9. There is no reason to think that all economic variables have identical effects in all countries—in part because of how individual policies have been historically associated with the left and right in different countries, and in part because the meaning of variables such as education changes over time.
10. The wording of the questions is very different across countries (and even years) for obvious reasons. Here are two examples. The first is for Australia in the 1996 National Election Survey: (a) “Australia became a federation in 1901” (true); (b) “The Senate election is based on proportional representation” (true); (c) “No one may stand for Federal Parliament unless they pay a deposit” (true). The second example is for the American National Election Studies (NES), also from 1996. Respondents were asked to identify the office held by persons whose names were read. These names were (a) “Al Gore” (Vice President), (b) “Newt Gingrich” (Speaker of the House of Representatives), and (c) “William Rehnquist” (Chief Justice of the Supreme Court).
11. The discussion question reads: “When you get together with your friends, relatives or fellow workers how often do you discuss politics?” The respondent could answer *never* (14%), *rarely* (30%), *sometimes* (43%), or *often* (13%).
12. Again, this model does the direct estimation of Equation 3, which is a first-order approximation of the key theoretical result in Equation 2. As the latter does not imply an independent role for political information, it is not included as an independent variable. However, if it is included, the variable registers no statistically significant effect and does not alter any of the other results.
13. The share that identifies right at the low end of  $y$ , and the share that identifies left at the high end of  $y$ , does not change much with information. The most likely reason is that there are cross-cutting issues. At the high end, altruists who favor

- redistribution despite having to pay more into the system will not disappear with more information; at the low end those who are motivated by anti-immigration sentiments will identify right regardless of political information.
14. In addition, those who are politically motivated can join parties, and very few union members do.
  15. In Online Appendix E, we regress political information against all the component variables of the  $y$  index. As expected, education is the strongest predictor of political information. More importantly, most variables that predict high information also predict right self-identification (noted in the table in Online Appendix E). This is true for all income quintiles, and for three of the four educational levels, and it holds for 11 of the 13 variables where there is a significant effect on information.
  16. It might be thought that we should model this as a single hierarchical model; but the national institutions are not themselves arguments in the micro equations, and we believe that the division between micro and macro makes for a clearer presentation.
  17. Measured along three “literacy” dimension: document, prose, and quantitative.
  18. This index is simply the average of the three indicators after each has been standardized to vary between 0 and 1.
  19. Proportional representation (PR) is simply an indicator variable taking on the value 1 if the electoral system is PR, and 0 otherwise. The number of parties is Laakso and Taagepera’s (1979) measure of the effective number of parties. The data are from Armingeon, Engler, Gerber, Leimgruber, and Beyeler (2012).
  20. Included with the institutional index, the coefficient on PR is 0.035 ( $SE = 0.031$ ) and the coefficient on the effective number of parties is  $-0.012$  ( $SE = 0.018$ ).
  21. This does not preclude elite polarization if elites are mainly responding to informed constituencies as argued by Adams and Ezrow (2009).

## Supplemental Material

The online appendices are available at <http://cps.sagepub.com/supplemental>

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