Information, policy preferences and voting

Juan Dodyk

February 25, 2020

Abstract

I develop a model of policy preference formation with uncertainty about economic fundamentals. I study the effects of the precision of the information that citizens possess on the aggregate demands for various policies: a pure public good, pure redistribution, unemployment insurance, and distributive politics between groups. I find that uncertainty distorts preferences in aggregate despite the citizens observing unbiased signals, and if lower income citizens have access to less precise information, and the median income is sufficiently small, more inequality leads to less redistribution in equilibrium. I find some evidence for these claims in survey data from Latin America. Similar results hold for insurance policies if the citizens' relative risk aversion is relatively small. In the case of distributive politics, I find that (counter-intuitively) electoral competition yields the largest transfers to the groups of less informed citizens. The theory can shed light on the puzzle of why poor and highly unequal countries under democracy do not redistribute more than richer, more equal countries.

1. Introduction

In democratic politics, information is power. Voters can use information to hold incumbent politicians accountable, as standard models predict (Fearon, 1999),[1] and empirical work in developed (Snyder and Strömberg, 2010), as well as developing countries (Pande, 2011), shows.[2] Information is valuable to voters as it lets them choose the candidate that better represents their interests, assuming that accountability is not a problem (Baron, 1994). Moreover, voters need information in order to establish their own ideological placement (Iversen and Soskice, 2015).

Following this last line of research, the main claim of this article is that information has an effect on policy preferences. Concretely, the accuracy of the information that an individual has,

[1] Although information can harm voter welfare under some conditions, as explained by Ashworth and Bueno de Mesquita (2014).

[2] However, many studies find no effects of information on voting behavior (see Dunning et al., 2019).

even if the information is unbiased, has an impact on the rational formation of preferences for social policies. Simplifying a bit, the argument is that if a risk-averse individual has high uncertainty about the impacts of a policy, she may be wary to demand too much of it. Hence, for instance, less informed voters may tend to demand less redistribution for fear of its potential negative incentive effects, or for being uncertain as to how much it will benefit them personally.

My second claim is that information may affect the salience of economic policy positions to voters, and that the effects may be opposite for low- and high-income voters. The intuition is that if uncertainty is high, low-income voters do not know if they will benefit or lose from an increase in government spending, so on expectation they will be indifferent to a promise of more generous policies. On the contrary, high-income voters know for sure that they will lose if there is an increase in taxes, so under risk-aversion uncertainty about the welfare losses of taxation will make them worry even more about an increase in spending.

My argument differs from other treatments of the political effects of information on policy preferences. First, it is not an argument about "false consciousness" — I assume that individuals are fully rational and fully materialist when forming preferences for social policies. It is not an argument about media bias either — in my model, individuals receive unbiased information from the media, or are able to discount such bias if it exists. Second, in contrast to other models (e.g., Baron, 1994; Strömberg, 2001; Larcinese, 2005; Lind and Rohner, 2017) I do not treat information as binary — in those models, voters are either perfectly informed or not informed at all, and when they are not informed, they do not consider policy positions when evaluating candidates. I assume that all voters are informed to some extent, and thus care about social policy positions, but some voters have more precise information than others. This assumption lets me study how the level of information affects the formation of policy preferences, which are treated as fixed in those models.

I borrow the crucial modeling idea from Iversen and Soskice (2015), but, in contrast to their model, I do not treat voters as receiving information about their interests. I model explicitly how voters form their political positions from the information about the world that they gather, and I am thus able to derive different insights. Concretely, I show that, depending on the specific trade-offs that each policy poses, the effects of information may differ, and I usually find not a centrist bias, but an anti-redistribution bias. Moreover, I argue that low levels of information may have different effects on low- and high-income voters: I expect uncertainty to make low-income voters pay less attention to social policy positions, and the opposite for high-income voters. Thus I show how information can affect the salience of positional issues. However, I do not posit a psychological mechanism — in my model, voters do not change how they evaluate candidates when they receive more information, nor they are more aware of issues; they apply the same calculus, but information endogenously shapes the "elasticity" of the vote to the candidate's policy position.

In order to evaluate empirically the validity of my claims, I study the determinants of infor-

mation, social policy preferences, and voting behavior using survey data from 23 Latin American countries. I provide suggestive evidence for my claims, with some qualifications. First, I find that, as expected, information has a positive effect on demand for various kinds of social policies in Latin America. Second, I show that information has consequences for voting behavior. I find in 3 countries that, as predicted by the model, information makes social policy positions more salient for poor voters and less salient for rich voters.

These findings contribute to our understanding of Latin American politics. Inequality in Latin America continues to be high despite decades of democratic rule, and part of the reason lies in political systems have a center-right bias (Schneider and Soskice, 2009). Moreover, Holland (2018) shows that, contrary to the predictions of standard political economy models (Meltzer and Richard, 1981), poor voters do not demand more redistribution in more unequal Latin American countries. She argues that, since existing social policies are regressive, poor voters do not expect to be benefited from higher levels of social expenditures, and therefore do not support increased social policies. My argument is orthogonal: even if poor voters expect social policy to be progressive (and hence to benefit the poor), they may be wary of demanding policies that raise taxes[3] if they have imprecise information about the productivity of the state in the provision of public goods, the tax elasticity of investment,[4] or their position in the income distribution.

My argument has two non-trivial implications that I do not pursue empirically, but that may motivate further work. First, I analyze a simple model of public goods provision financed by a linear tax and chosen by Downsian party competition, and find that if information acquisition is endogenous to market income (richer voters can afford to consume more information) then the opposite to the famous Meltzer and Richard (1981) result holds: if inequality is high enough, more inequality leads to less redistribution, not more. The reason is simply that if inequality grows, the median voter would demand more redistribution if he were perfectly informed, since he is poorer, but since he is also less precisely informed, he in fact demands less. This result is consistent with other models, e.g., Campante (2011), but the mechanism is new.

Second, I consider the possibility of groups differing in their levels of information in Dixit and Londregan (1996) model of distributive politics. I arrive at the opposite conclusion of Strömberg (2004), who finds that better informed voters receive greater offers of transfers. In my model, groups with *less* precise information should be promised more transfers. The intuition is that risk-averse politicians fear that voters with imprecise information will think that the promise is less generous than it really is, and hence will over-promise transfers. My theory does not contradict the empirical evidence showing that "information is power" in retrospective voting (e.g. Strömberg,

[3]Value added taxes are the largest source of tax revenue, and are approximately neutral (Goñi, Humberto López and Servén, 2011). Hence even poor voters in the informal sector pay taxes.

[4]This is especially worrying in the Latin American context, where macroeconomic volatility is high, and capital mobility constrains the ability of the state to raise taxes (Campello, 2015).

2004), but suggests that politicians may face contradictory incentives when promising transfers during campaign and when actually delivering them while in office. A theory of broken campaign promises could perhaps be developed from these insights.

Literature This article contributes to the literature on the effects of political information. It presents the first model that I am aware of that shows how the precision of information (not its bias) shapes policy preferences, and studies its consequences on equilibrium policy choice when political competition is Downsian (not on types, and moral hazard is not a problem). The theoretical literature has focused on moral hazard and adverse selection for the most part (see Ashworth, 2012, for a review), as a large part of the empirical work (e.g., Dunning et al., 2019). High-quality empirical work that studies the effects of information on positional-issue voting has emerged (Bidwell, Casey and Glennerster, 2015; Kendall, Nannicini and Trebbi, 2015; Cruz et al., 2018). The theoretical work on that topic (Baron, 1994; Bardhan and Mookherjee, 2000; Strömberg, 2001; Larcinese, 2005; Lind and Rohner, 2017) has a binary conception of information, and is not conducive to the study of information precision; my approach, following Iversen and Soskice (2015), takes a different route.

This article also contributes to the large literature on preferences for redistribution (Alesina and Giuliano, 2011), and specifically to the work focused on the Latin American context (Morgan and Kelly, 2017; Holland, 2018), which has ignored the effects of information, with the exception of Cramer and Kaufman (2011), who find that media attentiveness and access to information (at the country level) lead to higher dissatisfaction with the distribution of wealth. The empirical study of the determinants of information pursued in this article may contribute to the literature on the causes of information — this literature highlights, beyond demographic factors (education, income), the role of media and social networks (Barabas and Jerit, 2009; Schoonvelde, 2014; Banducci, Giebler and Kritzinger, 2017; Marshall, 2019).

There is a relevant empirical literature on the effects of information on policy preferences. Cruces, Perez-Truglia and Tetaz (2013) find that showing poor individuals their actual place in the income distribution increases their support for policies that target poverty, as most overestimate their income. Kuziemko et al. (2015) experimentally increase individuals' information on inequality, and find that subjects update correctly, and change their preferences for redistribution as expected, but the effects are very small; they argue that voters do not demand more redistribution because they do not trust the government. McCall et al. (2017) perform a similar intervention, and do find large effects on policy preferences. Barnes et al. (2018) experimentally increase individuals' information about government spending, but do not find effects on attitudes towards redistribution. Lergetporer et al. (2018) find that support for increased education spending and teacher salaries falls when subjects receive information about existing levels. Macdonald (2020) argues that a lack of general

political knowledge creates a disconnect between individuals' economic class group attitudes and their support for redistribution, and finds correlational evidence of this claim using survey data.

2. Theory

The model A voter i has a utility function $u(t, y_i, a)$ over a public policy, where $t \in [0, 1]$ measures the extent or the orientation of the policy (it will denote a tax rate in most specifications), y_i denotes the voters' income, and a captures an objective aspect of the economy that influences how the policy works. Let a^* be the true value of this parameter. The voter holds a prior belief μ_i on a^*, receives an unbiased signal s_i of a^* whose pdf is $p_i(\cdot|a^*)$. She then forms an updated belief $\mu_i(\cdot|s_i)$ given by Bayes rule by $\mu_i(a|s_i) = p_i(s_i|a)\mu_i(a)/\int p_i(s_i|\tilde{a})\, d\mu_i(\tilde{a})$. The expected utility of policy t is given by $U_i(t|s_i) = \mathbb{E}(u|s_i) = \int u(t, y_i, a)\, d\mu_i(a|s_i)$. This determines her most preferred policy $t_i^*(s_i) = \text{argmax}_t U_i(t|s_i)$. For the purposes of studying how the precision of the signal s_i affects policy preferences, we define σ_i^2 as its variance (i.e., $\sigma_i^2 = \text{Var}(s_i|a^*)$) and $h_i = 1/\sigma_i^2$ as its precision, and wish to study the average ideal policy $\mathbb{E}[t_i^*(s_i)] = \int t_i^*(s_i) p_i(s_i|a^*)\, ds_i$ as a function of σ_i. In other words, how the precision of information biases policy choice.

To give a concrete tractable example, suppose that preferences are given by

$$u = (1 - t)y_i + \left(a - \frac{1}{2}a^2\right)\log(ty).$$

This functional form can be interpreted as follows. The policy $t \in [0, 1]$ is a tax rate. Voters pay a fraction t of their market income y_i to the state and consume the rest, $(1 - t)y_i$. The government collects ty in revenue, where y is the aggregate income, and produces a public good with technology $f(t) = (a - \frac{1}{2}a^2)\log(t)$, where $a \in [0, 1]$ captures the government's ability or favorable conditions. The voter's utility is then given by the sum of her consumption and the public good. The production function $f(t)$ is meant to capture that the public good is produced with decreasing returns to scale both for a and t (i.e., $\frac{\partial^2 f}{\partial^2 a}, \frac{\partial^2 f}{\partial^2 t} < 0$) and that ability and revenue are complements (i.e., $\frac{\partial^2 f}{\partial a \partial t} > 0$). Let us assume that the voter's prior belief is uninformative, i.e., μ_i is the uniform distribution over $[0, 1]$. Given a signal s_i with variance σ_i^2, the posterior belief equals the signal's distribution with s_i in place of a. Thus the expected utility of the voter is $U_i = \mathbb{E}u = (1-t)y_i + (s_i - \frac{1}{2}s_i^2 - \frac{1}{2}\sigma_i^2)\log(ty)$. Assuming $y_i \geqq 1$ to ensure an interior solution, we set $U_i'(t) = 0$ and see that the ideal policy t_i^* is given by

$$t_i^*(s_i) = \frac{s_i - \frac{1}{2}s_i^2 - \frac{1}{2}\sigma_i^2}{y_i}.$$

This formula tells us that, holding the value of the signal constant, the demand for policy decreases as the uncertainty over its effectiveness increases, and that in absolute terms the distortion, i.e., the

difference between t_i^* with and without uncertainty, is greatest for low-income voters. Averaging over s_i, the most preferred policy $\mathbb{E}[t_i^*(s_i)]$ will be given by the formula

$$\mathbb{E}t_i^* = \frac{a - \frac{1}{2}a^2 - \sigma_i^2}{y_i}.$$

(See Figure 1, last panel.) It is immediate to prove the following.

Proposition 1. A higher precision (lower σ_i^2) leads to a higher demand for the policy, and the absolute average distortion is decreasing as a function of income.

Suppose that there are two parties, L and R, who propose policies t_L and t_R, respectively. The voter receives utility $U_i(t_L) - \epsilon_i$ if L wins, and utility $U_i(t_R)$ if R wins, where ϵ_i is a valence shock and follows a uniform distribution over $\left[-\frac{1}{2\varphi}, \frac{1}{2\varphi}\right]$. Hence the probability that i votes for L is $\pi_i = \frac{1}{2} + \varphi(U_i(t_L) - U_i(t_R))$ assuming that φ is small enough. In spatial theories of voting, we would have $\tilde{U}_i(t_L) = -\alpha_i|t_L - t_i^*|^p$ with $p > 0$, where α_i measures the salience of the policy to the voter (i.e., a higher α_i means that the voter cares more about the policy). These preferences over policy would define a probability of voting given by $\tilde{\pi}_i = \frac{1}{2} + \varphi(\tilde{U}_i(t_L) - \tilde{U}_i(t_R))$. Now, $\left|\frac{\partial \tilde{\pi}_i}{\partial t_L}\right| = \varphi\alpha p|t_L - t_i^*|^{p-1}$. Hence keeping t_L and t_i^* constant, an increase in $\left|\frac{\partial \tilde{\pi}_i}{\partial t_L}\right|$ reveals an increase in the salience α. Cheating a little bit, we can extrapolate this reasoning to our model: for fixed values of t_L and t_i^*, $\left|\frac{\partial \pi_i}{\partial t_L}\right|$ can be taken to measure the salience of the policy as long as $t_L \neq t_i^*$. How does it vary with σ_i? We have $\frac{\partial \pi_i}{\partial t_L} = \varphi(-y_i + (s_i - \frac{1}{2}s_i^2 - \frac{1}{2}\sigma_i^2)/t_L)$. Averaging over s_i and taking absolute value, we get $\left|\frac{\partial \mathbb{E}\pi_i}{\partial t_L}\right| = \varphi|-y_i + (a - \frac{1}{2}a^2 - \sigma_i^2)/t_L|$. For small enough y_i and t_L not too large, the derivative is positive, and increasing σ_i^2 makes it smaller. This means that, for poor voters, a decrease in the precision of their information makes them less attentive to the policy proposal. However, for large y_i, this is reversed: the derivative is negative, and increasing σ_i^2 makes it more negative. In other words, for rich voters, having less precise information makes them pay more attention to policy when voting. We thus see that information quality affects salience (as Cruz et al., 2018, find empirically), but does it in different directions depending on the income of the voter.[5]

I will now endogeneize σ_i by introducing media. I assume that the media supplies unbiased but imprecise information. Suppose that a, the productivity of the public good, is exogenous and uniformly distributed on $[0, 1]$. A possible interpretation is that a is an inverse measure of the international interest rate. The idea is that a affects the welfare costs of taxation: if the international interest rate is near zero, i.e., a is large in the model, capital will accept lower rates of return (and

[5]Well, perhaps a better way to interpret this result is that when researchers claim to find empirically that information increases the salience of policy proposals, that is in fact not the case. Voters who have more precise information will just rely more on it, making their preferences towards candidates more sensitive to the policy proposals. There may not be any psychological change going on with the increase in information — voters may just be using information precision as an input in their calculus about who to vote.

higher taxes) without escaping (Campello, 2015, Chapter 2). In other words, if a increases, t can be raised and net revenue will not fall, thereby increasing the supply of the public good.

Suppose that individual i processes an unbiased signal, normally distributed with precision 1 in $1/k_i$ units of time, where k_i measures her human capital. Each individual spends a unit of time consuming information, hence processes k_i signals, thereby reducing the variance of her unbiased information to $1/k_i$. Suppose that market income is purely given by human capital, so $y_i = k_i$. If the median voter decides, then the average policy choice will be $\mathbb{E}t_m^* = (a - \frac{1}{2}a^2 - 1/y_m)/y_m$. A noteworthy result is that this quantity is increasing in y_m if y_m is not too large.[6] Therefore we have

Proposition 2. An increase in income inequality (in the form of a mean-preserving decrease in the median income) decreases the expected equilibrium tax rate if the median income is sufficiently small.

This is the opposite to the Meltzer-Richard result: in this model, more inequality leads to less redistribution if inequality is already high. This result is consistent with Campante (2011), although the mechanism is different: in his model, the wealthy have more influence due to campaign contributions; in my model, the policy process implements the preferences of the median voter, but, as inequality increases, the median voter becomes more uncertain about the true productivity of the public good, and chooses less taxation due to risk-aversion. Note that this conclusion is made under the assumption that the media is unbiased. Incorporating the possibility of media bias, and assuming ownership by the rich, we should expect the anti-poor bias to be even stronger as inequality increases (Petrova, 2008).

If we further assume that y_i follows a log-normal distribution such that $\mathbb{E}(y_i) = y$ and the mean to median income ratio y/y_m is equal to r (a measure of inequality),[7] then it is not difficult to show that the correlation between t_i^* and y_i tends to $-1/r^2$ as y grows to infinity. This correlation is called the *income coefficient* by Holland (2018). Following the Meltzer-Richard logic, according to which inequality increases redistributive pressures, we should expect this correlation to be "more negative" (i.e., to be negative and decrease) as inequality grows. In my model, we get the opposite result: as inequality grows, the income coefficient grows (i.e., becomes "less negative"), and tends to zero.

Another way to make σ_i endogenous is as follows. Assume that each individual receives an independent signal, normally distributed with precision 1. Individuals share their signals, and thus increase the precision of their information. The amount of signals (including hers) that each individual receives is determined by her social capital, which we denote by k_i. Hence $\sigma_i^2 = 1/k_i$ as before. If we assume a perfect correlation between income and social capital, $y_i = k_i$, we arrive at

[6] We have $\partial \mathbb{E}t_m^*/\partial y_m = (2 - (a - \frac{1}{2}a^2)y_m)/y_m^3$. Hence $\mathbb{E}t_m^*$ is increasing in y_m if and only if $y_m \leqq 2/(a - \frac{1}{2}a^2)$. Since we assume that $a \in [0, 1]$, we have $a - \frac{1}{2}a^2 \leqq \frac{1}{2}$, so $\mathbb{E}t_m^*$ is increasing in y_m whenever $y_m \leqq 4$.

[7] This means that $y_i \sim \text{LogNormal}(\log(y/r), \log(r^2))$.

the same result. We reach the same conclusion if we suppose that the imprecise signals provided by the media are a normal good, and its demand is given (in quantity) by income.

Unfortunately, as I will show next, these conclusions (Propositions 1 and 2) are not robust to different specifications of the utility function u, even maintaining its first- and second-order properties (i.e., that it is increasing in y_i, concave in t, and so on). For a given functional form, the qualitative result that the ideal policy increases with the signal's precision holds, but only for a region in the parameter space. A common lesson remains despite the deviations: even if voters receive unbiased information, their policy preferences will in general be systematically biased by the imprecision of their knowledge. The preferences of the median voter, if she is imprecisely informed, should be biased as well, which thereby biases the equilibrium policy choice under Downsian competition. This general conclusion contradicts the expectation of much of the information aggregation literature, according to which electoral outcomes are unaffected by imperfect information if the number of voters is large enough.

I will now turn to the study of specific functional forms of u that capture the logic of different policies.

Redistribution and insurance A standard model of redistribution yields the utility function

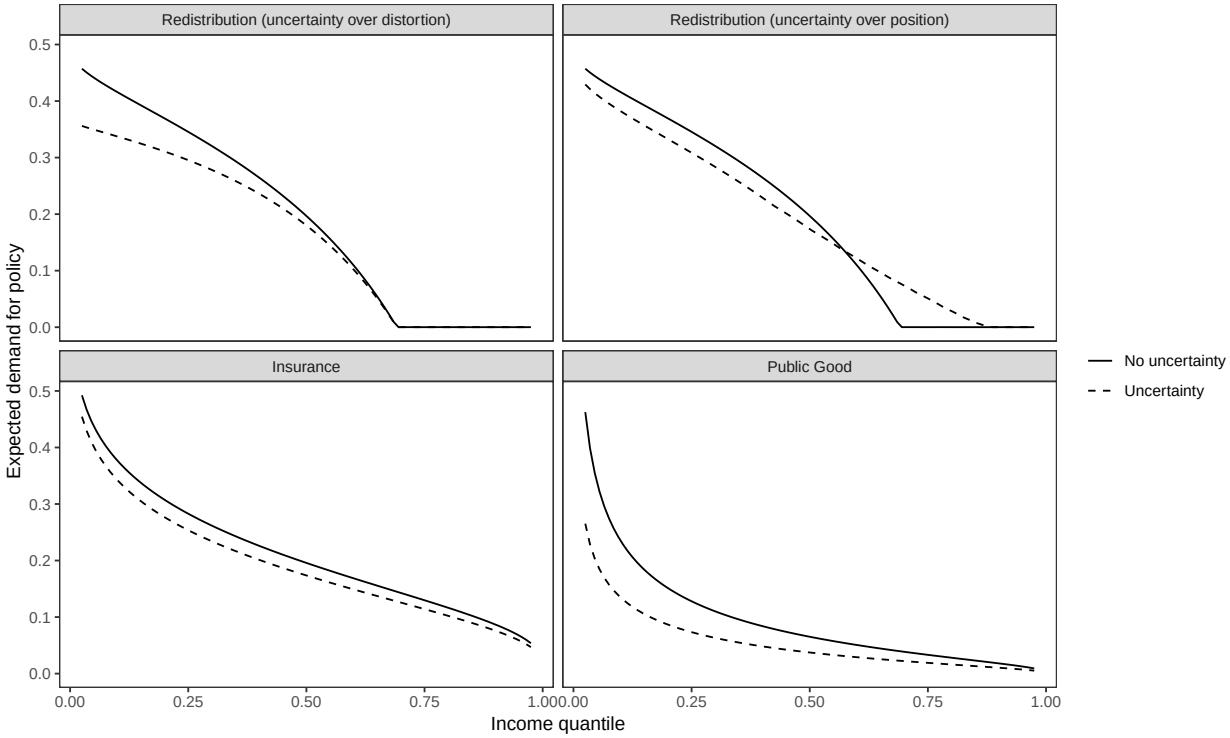
$$u_i = v((1-t)y_i + (t - at^2)y),$$

where $t \in [0, 1/a]$ is a tax rate, y is the average income, $a > 0$ measures the welfare costs of redistribution (driven by disincentives to investment or by a "leaky bucket"), and v is the utility function on income. The idea is that citizens pay a tax t on their market income y_i, the government collects per capita revenue ty, a fraction at of which is "lost", and transfers it back to the citizens.

There are two ways of introducing uncertainty in this model. First, uncertainty over the welfare costs of the policy a. This uncertainty can be driven by the lack of knowledge on the elasticity of investment with respect to the tax rate, or on the efficiency of government at collecting taxes and spending. Note that even a perfectly rational voter should be uncertain about a, because the welfare costs of taxation may be driven by opportunity costs (tax competition among states, rates of return elsewhere), the level of asset specificity in the economy, and the costs of capital mobility, all of which may change as a result of exogenous international factors (Campello, 2015). Second, voters may be uncertain about their position in the income distribution (Cruces, Perez-Truglia and Tetaz, 2013). Since they observe their own market income y_i, uncertainty over their position means uncertainty over y in the model.

Assume that v is a constant relative risk aversion (CRRA) utility function, i.e., $v(c) = c^{1-\rho}/(1-\rho)$ for $\rho \neq 1$, and $v(c) = \log(c)$ for $\rho = 1$. The voter's most preferred t maximizes $U_i(t) = \mathbb{E}u_i =$

Figure 1: Simulations of the expected demand for different social policies



Note. In all simulations, the income distribution is log-normal with parameters $\mu = -\frac{1}{2}$, $\sigma = 1$ (which yields mean income $y = 1$ and gini coefficient ≈ 0.52), except for the public good, where $\mu = 1.75$ (so $y \approx 9.5$). In the case on uncertainty, the signals are unbiased and follow a distribution $s_i \sim \mathcal{U}[a - \sigma, a + \sigma]$. For redistribution with uncertainty over distortion I use $v = \log$, $a = 1$, $\sigma = 1.5$. For redistribution with uncertainty over position I use $v = \log$, $a = 1$, $\sigma = 1$. For insurance I use $v(c) = c^{1/4}$, $a = .75$, $\sigma = .75$, take the probabilities of unemployment to follow a Beta$(16, 48)$ distribution, and assume that y_i and p_i have opposite orders (i.e., the higher the income, the lower the chances of unemployment). For the public good, I take $a = .5$, $\sigma = .4$.

$\int v((1-t)y_i + (t - at^2)y)\, d\mu_i(a)$, where μ_i is the probability distribution over a given by the citizen's beliefs. We have $U_i'(t) = \int v'((1-t)y_i + (t - at^2)y)(-y_i + (1 - 2at)y)\, d\mu_i(a)$. It is easy to show that if $\rho \leqq 1$ then the integrand is concave as a function of a. Therefore a mean-preserving spread in the distribution of a (i.e., an increase in uncertainty that leaves bias constant) decreases $U_i'(t)$ for each $t > 0$, and we can see that $U_i'(0)$ is unchanged. It is also easy to see that $U_i''(t) < 0$. These facts imply that t_i^* is weakly decreasing (strongly if it is interior) as uncertainty increases (in the sense of second-order stochastic dominance), keeping the expected a fixed. The reason is that if $U_i'(t) = 0$ and $t > 0$ under low uncertainty, $U_i'(t) < 0$ under high uncertainty, and, since U_i' is decreasing, this implies that $t_i^* < t$ under high uncertainty; the other cases follow similarly. In conclusion, uncertainty reduces demand for redistribution, holding the mean of the subjective distribution of a constant.

The problem with the previous reasoning is that high uncertainty may imply that the variance in the beliefs of the population is correspondingly high. That means that some voters will believe that a is lower than it really is, so even though their ideal tax rate will be lower than if they were certain, the fact that they believe that a is low will make them demand a higher tax rate. Note that if voters

do not account for their uncertainty, the chosen tax rate would be $t_i^* = \max\{(1 - y_i/y)/(2a_i), 0\}$, where a_i is their estimate for a, and this is a convex function of a_i. Convexity implies that a mean-preserving spread in the distribution of a_i among the population will lead to an increase on the average demand for redistribution. There are thus two forces pulling in opposite directions: uncertainty reduces the demand for redistribution, but dispersion of beliefs increases it.

In order to account for these two forces, suppose that citizens have a non-informative prior belief on a (they only know that $a \geqq 0$), and each one receives an unbiased signal s_i about the true a, say, $s_i \sim \mathcal{U}[a - \sigma_i, a + \sigma_i]$. They update their belief: $a|s_i \sim \mathcal{U}[\max\{s_i - \sigma_i, 0\}, s_i + \sigma_i]$ and calculate their most preferred t by maximizing

$$U_i(t) = \frac{1}{s_i + \sigma_i - \max\{s_i - \sigma_i, 0\}} \int_{\max\{s_i - \sigma_i, 0\}}^{s_i + \sigma_i} v((1 - t)y_i + (t - at^2)y)\, da.$$

On expectation, the resulting ideal policy is given by

$$\mathbb{E}[t_i^*] = \frac{1}{2\sigma_i} \int_{a - \sigma_i}^{a + \sigma_i} \underset{t \in [0, 1/(s_i + \sigma_i)]}{\operatorname{argmax}} U_i(t)\, ds_i.$$

The question is how $\mathbb{E}[t_i^*]$ varies as σ_i increases, and how this change interacts with income y_i, since we know from the previous section that uncertainty has different effects for different income levels. The answer is that it depends. For some set of parameters we have the result of Proposition 1 (shown in Figure 1), but for others we have that uncertainty in fact increases the expected demand for redistribution.

When uncertainty is about the citizen's position in the income distribution, i.e., about y instead of a, the analysis and the conclusions are the same. We have the same two forces pulling in opposite directions: uncertainty reduces demand for redistribution, but dispersion of beliefs increases it. As can be seen in the numerical example (Figure 1), uncertainty over the position in the income distribution makes poor voters demand less redistribution, but upper-middle class voters demand more.

I will now consider a social insurance policy. At each period, the citizen i can be either in a good or a bad state (e.g., unemployment or sickness). She is in a bad state with probability p_i. If she is in a good state, she receives market income y_i and pays a share t in taxes, so is left to consume $(1 - t)y_i$. In the bad state, she does not receive market income, but receives a government transfer paid by the citizens who are themselves currently in a good state. If the share of the population in the good state is e, the per capita transfers to citizens in the bad state is $e/(1 - e)ty_e$, where y_e is the mean market income among citizens in the good state. The expected utility of citizen i is thus

$$u_i = (1 - p_i)v((1 - t)y_i) + p_i v(aty),$$

where $a = e/(1-e)y_e/y$. Citizens may be uncertain as to the value of a. They may know their own risks, but not the joint distribution of risk and income among the population.

Given her information about a, the voter calculates $U_i = \mathbb{E}u_i$ and finds her most preferred tax rate t_i^* by maximizing U_i. In this case, assuming that v is CRRA, we arrive at the formula

$$\left(\frac{t_i^*}{1-t_i^*}\right)^{\rho} = \frac{p_i}{1-p_i}\left(\frac{y_i}{y}\right)^{1-\rho}\mathbb{E}(a^{1-\rho}).$$

For $0 < \rho < 1$, we see again that if the uncertainty over a increases, holding $\mathbb{E}a$ constant, t_i^* decreases, since the function $a \mapsto a^{1-\rho}$ is concave. Also, t_i^* can be convex as a function of a. For $\rho > 1$ we have that $a \mapsto a^{1-\rho}$ is convex, hence uncertainty increases the demand for insurance. Moreover, in that case t_i^* is convex as a function of a, so dispersion in beliefs also increases demand for insurance on average. In sum, for $0 < \rho < 1$ we arrive at the same conclusion as with redistribution (see Figure 1). For $\rho > 1$ we conclude that more uncertainty increases the demand for insurance for all income levels. In this case we also have that the demand for insurance increases with income, as Moene and Wallerstein (2001) argue.

Distributive politics I will now consider how political information affects distributive politics in the model proposed by Dixit and Londregan (1996). There are G groups, $1, \dots, G$. Group j has size N_j and its individuals earn market income y_j. There are two parties, L and R, who promise transfers t_j^L and t_j^R to each group j, respectively, that satisfy the budget constraint $\sum_{j=1}^G N_j t_j^P = 0$ for $P = L, R$. A voter i in group j receives utility $\mathbb{E}_j v(y_j + t_j^L) - \epsilon_i$ if L wins, and utility $\mathbb{E}_j v(y_j + t_j^R)$ if R wins, where $v(c) = c^{1-\rho}/(1-\rho)$, $\rho > 0$, $\epsilon_i \sim \left[-\frac{1}{2\varphi_j}, \frac{1}{2\varphi_j}\right]$ is a valence shock, and the expectation is taken with respect to the group's information about t_j^L, t_j^R, which is inferred from a signal s_j. The expected number of votes received by party L is

$$\sum_{j=1}^{G} N_j \left(\frac{1}{2} + \phi_j \mathbb{E}\left[\mathbb{E}_j v(y_j + t_j^L) - \mathbb{E}_j v(y_j + t_j^R)\right]\right),$$

where the first expectation averages over the possible signals s_j. Parties maximize the expected number of votes.[8] The first order condition is $\phi_j \mathbb{E}\left[\mathbb{E}_j v'(y_j + t_j^L)\right] = \lambda_L$, where λ_L is fixed between groups. Hence for two distinct groups j, k, we have $\phi_j \mathbb{E}\left[\mathbb{E}_j v'(y_j + t_j^L)\right] = \phi_k \mathbb{E}\left[\mathbb{E}_k v'(y_k + t_k^L)\right]$.

Suppose that when L announces t_j^L, the voters in group j receive a signal $s_j^L \sim \mathcal{U}[t_j^L - \sigma_j, t_j^L + \sigma_j]$, and suppose that they have uninformative priors. Then they form a belief $t_j^L | s_j^L \sim \mathcal{U}[s_j^L - \sigma_j, s_j^L + \sigma_j]$. It is not difficult to show that in this case $\mathbb{E}\left[\mathbb{E}_j v'(y_j + t_j^L)\right] = \mathbb{E}v'(y_j + t_j^L + \epsilon_j)$, where $\epsilon_j = \epsilon_j^1 + \epsilon_j^2$,

[8] If parties instead maximize the probability of winning, we can add a common popularity shock to the voters' utility, also uniformly distributed, and we arrive at the same formula.

and $\epsilon_j^1, \epsilon_j^2 \sim \mathcal{U}[-\sigma_j, \sigma_j]$ are independent. The number σ_j measures the amount of distortion in the communication of the party platform to group j. It is decreasing as a function of the precision of the political information that group j has.

How does σ_j affect the transfers that party L promises to group j? We have the following result.

Proposition 3. If σ_j increases but everything else remains constant, then t_j^L increases.

Proof. Suppose that σ_j becomes $\tilde{\sigma}_j > \sigma_j$, and define $\tilde{\epsilon}_j = \tilde{\epsilon}_j^1 + \tilde{\epsilon}_j^2$, where $\tilde{\epsilon}_j^1, \tilde{\epsilon}_j^2 \sim \mathcal{U}[-\tilde{\sigma}_j, \tilde{\sigma}_j]$ are independent. Let $\tilde{t}_1^L, \ldots, \tilde{t}_G^L$ be the new equilibrium vector of transfers. We want to prove that $\tilde{t}_j^L > t_j^L$. Before increasing σ_j we had, for any $k \neq j$, that $\phi_j \mathbb{E}v'(y_j + t_j^L + \epsilon_j) = \phi_k \mathbb{E}v'(y_j + t_k^L + \epsilon_k)$. Suppose that $\tilde{t}_j^L \leqq t_j^L$ for the sake of contradiction. Since $\tilde{\epsilon}_j$ is a mean-preserving spread of ϵ_j (and therefore $\tilde{\epsilon}_j$ is second-order stochastically dominated by ϵ_j), and $v'''(c) = \rho(\rho+1)c^{-\rho-2} > 0$, we have that $\mathbb{E}v'(y_j + t_j^L + \tilde{\epsilon}_j) > \mathbb{E}v'(y_j + t_j^L + \epsilon_j)$. Since we are assuming that $\tilde{t}_j^L \leqq t_j^L$, and v' is decreasing, we have $\mathbb{E}v'(y_j + \tilde{t}_j^L + \tilde{\epsilon}_j) \geqq \mathbb{E}v'(y_j + t_j^L + \tilde{\epsilon}_j)$. Since $\sum_{k=1}^G N_k \tilde{t}_k^L = \sum_{k=1}^G N_k t_k^L$ and $\tilde{t}_j^L \leqq t_j^L$, there must be $k \neq j$ such that $\tilde{t}_k^L \geqq t_k^L$. This implies $\mathbb{E}v'(y_k + \tilde{t}_k^L + \epsilon_k) \leqq \mathbb{E}v'(y_k + t_k^L + \epsilon_k)$. We had $\phi_k \mathbb{E}v'(y_k + t_k^L + \epsilon_k) = \phi_j \mathbb{E}v'(y_j + t_j^L + \epsilon_j)$, and we saw that $\mathbb{E}v'(y_j + t_j^L + \epsilon_j) < \mathbb{E}v'(y_j + \tilde{t}_j^L + \tilde{\epsilon}_j)$. Therefore $\phi_k \mathbb{E}v'(y_k + \tilde{t}_k^L + \epsilon_k) < \phi_j \mathbb{E}v'(y_j + \tilde{t}_j^L + \tilde{\epsilon}_j)$. But since $\tilde{t}_1^L, \ldots, \tilde{t}_G^L$ is the new equilibrium, we must have $\phi_k \mathbb{E}v'(y_k + \tilde{t}_k^L + \epsilon_k) = \phi_j \mathbb{E}v'(y_j + \tilde{t}_j^L + \tilde{\epsilon}_j)$. This is a contradiction that comes from assuming that $\tilde{t}_j^L \leqq t_j^L$. Therefore we must have $\tilde{t}_j^L > t_j^L$. In other words, if σ_j increases, t_j^L must increase as well. □

It may be worthy of note that the same reasoning applies if the parties have imprecise information about the voters' income, i.e., they observe y_j with error. In that case the model predicts that parties will target more resources to groups about which they are less informed, other things being equal.

The result that politicians in campaign should target low-information groups is counter-intuitive. In fact, from a similar model Strömberg (2001) derives the opposite conclusion. The difference is that in his model voters are either perfectly informed or not informed at all. A low-information group has a large number of un-informed voters, who are completely unresponsive to policy proposals. For that reason parties favor high-information groups. Note that Strömberg (2004) and Snyder and Strömberg (2010) find that groups with more access to information are favored by politicians, but in that case information benefits voters because of retrospective electoral incentives. Those papers do not directly contradict my model.

Comment. This is an idea looking for an application, which I do not provide in this paper. The only way to make it square with the findings mentioned above is to find that parties promise more to low-information groups, but, when in government, break their campaign promises in favor of high-information groups. There may be a compromise between the "ex ante" incentives to pander to low-information groups and the "ex post" incentives to actually benefit high-information constituencies. Alternatively, high-information voters may be aware of this misalignment between

"ex ante" and "ex post" incentives, and discount campaign platforms that promise too much to low-information groups. But if voters can perfectly see through the strategy of pandering to low-information groups, then why do we observe candidates bothering to make campaign promises and people paying attention? A possibility is that candidates make promises that they know they are going to break and voters discount this in equilibrium (with everybody knowing what the other is doing) but information is conveyed by promises nevertheless, so it pays off to voters to listen, as in models of "signal jamming". A model showing how that may work in elections could be interesting, but, again, it is an idea looking for applications. Perhaps one could study exactly how campaign promises are broken. The results could be relevant to the work on policy switches in Latin America, such as Stokes (2001) and Campello (2015).

3. Political information and preferences for social policy

In this section I will test the empirical implications of the theory that I presented. I will use the 2012 wave of the AmericasBarometer survey of the Latin American Public Opinion Project (LAPOP).

First, I will look at the determinants of political information. In parts of the argument, I assumed that the acquisition of information is positively influenced by income (information may be a normal good), human capital (it may decrease the cost of information acquisition), and social capital proxied by group membership (individuals may share their information in groups). In this section I will put those assumptions to empirical test.

To measure political information, I rely on three questions. First, the subjects were asked what the length of term for the president is (`gi4`), and I create a binary variable that is 1 if and only if the answer was correct. Second, frequency of paying attention to the news (`gi0`); the answers range from "never" to "daily", and I code them as integer numbers (from 0 to 4). Third, how much the respondent agrees with the statement "you feel that you understand the most important political issues of this country" (`eff2`). These variables are not strongly correlated (pairwise correlations range from 0.07 to 0.3), but I take them as plausible proxies for political information. While political information is usually measured by questions on political knowledge (such as `gi4` above), I claim that in the context of my theory, the concept (defined as the accuracy of information about variables that shape indirect preference over social policies) is not captured solely by factual knowledge about political institutions, but more in general by media consumption (which implies being up to date with the news) and subjective evaluation of the accuracy of the individual's information. In any case, for robustness I will show that my results do not depend on the measure of political information used: each of the three measures have qualitatively the same effects on the outcomes that I will consider.

To construct the measure of political information, I take the average of the the answers to the

three questions, each scaled to have mean zero and unit standard deviation. Then I scaled the result to also have mean 0 and unit standard deviation. The advantage of this measure over taking the first principal component is that I can compute this quantity without imputing in the case that respondents only provide answers for one or two of the questions. But, again, for robustness I will show that my results hold using the first principal component as my measure.

In order to estimate the determinants of information, I run linear regressions with survey weights, homoskedasticity-robust standard errors, and country fixed effects. As outcomes, I take information and the answers to the three questions. I use the following independent variables. First, income, proxied by a wealth-based measure calculated as the quantile in the empirical distribution among respondents of the survey from the same country of a composite measure of asset ownership. Second, education, measured by years of schooling up to 18 and scaled to range from 0 to 1. Third, social capital, proxied by having helped solve a problem in the community, attendance at meetings of community improvement group, and attendance at meetings of professionals or merchants associations. Fourth, demographic controls: gender, age, rural area, size of location (ranges from 0, which is "rural area", to 4, "national capital"), employment status, perception of economic crisis, income shock (whether the household income decreased in the last two years), receiving conditional cash transfer (CCT), being non-white (binary, 1 if the individual self-identifies as indigenous, mulatto, or black), church attendance (ranges from 0, "never", to 3, "once a week"), and importance of religion (ranges from 0, "not at all important", to 3, "very important").

The results are recorded in Table 1. As claimed, income, education, and the measures of social capital correlate positively with political information. However, I do not find evidence of a positive correlation between attendance at community or professional groups and knowledge of the length of the term. All independent variables have coefficients with the same sign when precisely estimated ($p < 0.05$).

I will now explore how political information shapes preferences for social policy. To measure these preferences, I use the following questions. The main question is whether the subject agrees that the government should implement strong policies to reduce income inequality between the rich and the poor (`ros4`), that I interpret as asking about preferences for redistribution (Holland, 2018). Second, whether the government, more than individuals, should be primarily responsible for ensuring the well-being of the people (`ros2`), plausibly a measure of preferences for social policy broadly understood. Third, whether the government, more than the private sector, should be primarily responsible for creating jobs (`ros3`), plausibly a measure of preferences for active labor market policies. Fourth, whether the government, more than the private sector should be primarily responsible for providing health care services (`ros6`), a measure of preferences for health policy (may have a logic partly redistributive and partly about insurance). The answers for these questions range from 1 (strongly disagree) to 7 (strongly agree).

Table 1: Determinants of political information

	Political information	Knowledge of length of term	Attention to news	Understands political issues
Income	0.406***	0.121***	0.361***	0.256***
	(0.022)	(0.009)	(0.025)	(0.043)
Education	0.998***	0.309***	0.504***	1.305***
	(0.028)	(0.011)	(0.031)	(0.055)
Helped community	0.063***	0.007**	0.031***	0.137***
	(0.006)	(0.003)	(0.007)	(0.013)
Attendance at community group	0.050***	0.005	0.042***	0.090***
	(0.007)	(0.003)	(0.008)	(0.015)
Attendance at professional association	0.031***	0.000	0.010	0.092***
	(0.009)	(0.003)	(0.009)	(0.018)
Female	−0.221***	−0.054***	−0.113***	−0.359***
	(0.011)	(0.004)	(0.012)	(0.021)
Age	0.008***	0.002***	0.006***	0.007***
	(0.000)	(0.000)	(0.000)	(0.001)
Rural area	−0.041*	−0.006	−0.094***	0.050
	(0.019)	(0.008)	(0.021)	(0.038)
Size of location	−0.007	−0.001	−0.022***	0.019+
	(0.006)	(0.002)	(0.006)	(0.011)
Unemployed	−0.037+	−0.033***	−0.017	0.036
	(0.022)	(0.009)	(0.024)	(0.042)
Income shock	−0.045***	−0.006	−0.049***	−0.048+
	(0.013)	(0.005)	(0.014)	(0.025)
Receives CCT	−0.004	−0.005	0.019	−0.040
	(0.014)	(0.006)	(0.016)	(0.029)
Non-white	−0.034*	−0.025***	−0.010	0.021
	(0.016)	(0.007)	(0.018)	(0.031)
Church atendance	0.014**	0.007***	0.016**	−0.006
	(0.005)	(0.002)	(0.005)	(0.009)
Importance of religion	0.034***	0.001	0.059***	0.015
	(0.007)	(0.003)	(0.008)	(0.014)
Adj. R^2	0.155	0.119	0.097	0.086
Num. obs.	31254	31110	31000	30265

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{+}p < 0.1$

Table 2: Political information and social policy preferences

	Redistribution	Welfare	Provide jobs	Public health	Higher taxes for redistribution	Higher taxes for education	Higher taxes for health
Information	0.089***	0.114***	0.054***	0.095***	0.012*	0.018**	0.025***
	(0.011)	(0.011)	(0.010)	(0.009)	(0.006)	(0.006)	(0.006)
Income	−0.189***	−0.106**	−0.148***	−0.071*	−0.012	0.073**	0.052*
	(0.038)	(0.038)	(0.037)	(0.034)	(0.021)	(0.023)	(0.023)
Education	−0.044	−0.089+	−0.342***	0.048	−0.050+	0.111***	0.043
	(0.050)	(0.050)	(0.049)	(0.045)	(0.028)	(0.030)	(0.030)
Helped community	−0.009	−0.024*	−0.006	−0.031**	0.003	0.015*	0.003
	(0.012)	(0.012)	(0.011)	(0.010)	(0.007)	(0.007)	(0.007)
Attendance at community group	0.006	−0.002	−0.007	−0.007	0.022**	0.004	0.018*
	(0.013)	(0.013)	(0.013)	(0.012)	(0.008)	(0.008)	(0.008)
Attendance at professional association	−0.059***	−0.010	−0.026+	−0.042**	−0.002	0.020+	0.004
	(0.017)	(0.016)	(0.016)	(0.015)	(0.010)	(0.011)	(0.011)
Female	−0.022	−0.012	0.006	−0.010	−0.025*	−0.033**	−0.020+
	(0.019)	(0.019)	(0.018)	(0.016)	(0.010)	(0.011)	(0.011)
Age	0.000	0.002**	−0.003***	0.001**	−0.001*	−0.001*	−0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Rural area	0.010	0.008	−0.065*	−0.072*	−0.021	−0.007	−0.028
	(0.033)	(0.033)	(0.032)	(0.029)	(0.019)	(0.020)	(0.021)
Size of location	−0.013	−0.033***	−0.046***	−0.053***	−0.010+	−0.003	−0.011+
	(0.010)	(0.010)	(0.009)	(0.008)	(0.005)	(0.006)	(0.006)
Unemployed	0.047	0.041	0.080*	−0.022	−0.009	0.024	−0.012
	(0.037)	(0.036)	(0.035)	(0.034)	(0.023)	(0.026)	(0.025)
Income shock	0.085***	0.061**	0.048*	0.102***	−0.018	−0.008	−0.025+
	(0.022)	(0.022)	(0.021)	(0.019)	(0.013)	(0.014)	(0.014)
Receives CCT	0.043+	0.025	0.077***	0.044*	0.129***	0.072***	0.063***
	(0.024)	(0.024)	(0.023)	(0.021)	(0.015)	(0.016)	(0.016)
Non-white	0.102***	0.039	0.022	0.037	0.032*	0.011	0.018
	(0.026)	(0.027)	(0.026)	(0.023)	(0.014)	(0.015)	(0.015)
Church atendance	0.017*	0.020*	0.023**	0.040***	−0.006	−0.002	−0.005
	(0.008)	(0.008)	(0.008)	(0.007)	(0.005)	(0.005)	(0.005)
Importance of religion	0.049***	0.058***	0.102***	0.066***	0.004	0.005	0.008
	(0.012)	(0.012)	(0.012)	(0.011)	(0.006)	(0.007)	(0.007)
Adj. R^2	0.056	0.050	0.068	0.071	0.062	0.078	0.066
Num. obs.	30550	30704	30835	30835	6882	6869	6926

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{+}p < 0.1$. Standard errors between parentheses.

I also consider three other questions that better reflect the trade-off that I consider in my theory between benefits and taxes. These questions have two disadvantages: they are yes/no questions, hence they do not measure preferences for the scale or generosity of social policies, and they were asked for only half of the sample and for only 11 out of 26 countries. The questions are whether the subject would be willing to pay more taxes so that the government can spend more on an income transfer program (`soc11`), on primary and secondary education (`soc5`), and on public health services (`soc9`). The answers are binary: 1 if the respondent said "yes", and 0 if she said "no".

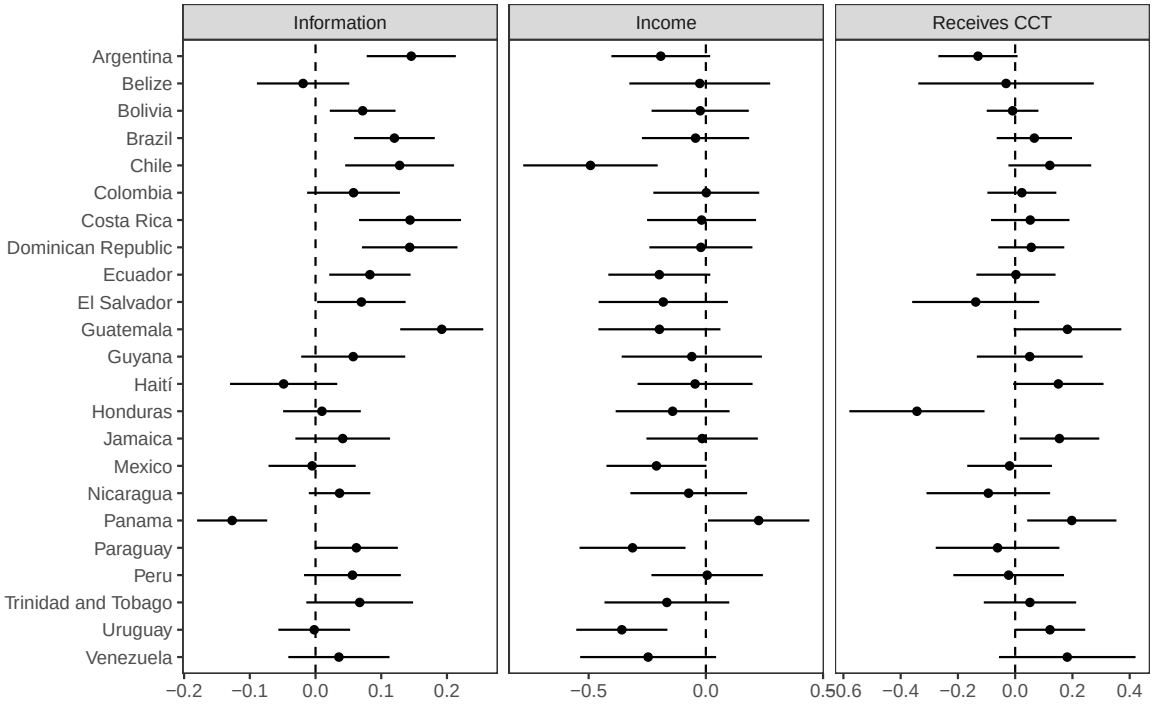
To estimate the effect of information on preferences, I run linear regressions of the answers to the questions to information, income, education, measures of social capital, and the controls that I used in Table 1. Again, I use survey weights, heteroskedasticy-robust standard errors, and country fixed effects. For robustness, I run ordered probit regressions, reported in Table 6 of the appendix, and I run linear regressions but using the three components of the measure of information, reported in Tables 3, 4 and 5. I also run the regressions using multiple imputation for units with missing values [NOT YET DONE].

The results are reported in Table 2. Information has positive average effects on every social policy. Income has negative effects on the first questions as expected by the theory, but positive and statistically significant effects for higher taxes for education and health. This unexpected result could be explained by tax regressivity (VAT and payroll taxes are generally regressive; see Goñi, Humberto López and Servén, 2011), or "truncated" welfare states (Holland, 2018); in fact, consistent with the latter view, the coefficient for receiving cash transfers is positive and highly significative. Education has negative effects for 5 policies, in one case being statistically significant, and positive, also statistically significant in one case, for the other 3. Education may be having an effect through income and political information. The measures of social capital have negative effects for the first questions, and positive effects for the latter. Religiosity appears to have a positive effect on demand for social policy, pace Scheve and Stasavage (2006).

In Figure 2 I plot the coefficients of country-by-country regressions with 95% confidence intervals. Information has positive estimated effects in 18 out of the 23 countries. In half of the 18, the coefficients are statistically significant. Income has negative effects on all but three countries, but only three are statistically significant. Receiving cash transfers (the main variable in Holland, 2018) has positive effects in 14 of the 23 countries, but the estimate is statistically significant in only two.

How important is information as an explanatory factor? To answer this question, I fit a random forest (Breiman, 2001) to the data. The advantage of this procedure over classic ANOVA is that it is agnostic to the correct functional form (which may involve non-linearities

Figure 2: Effects on preferences for redistribution

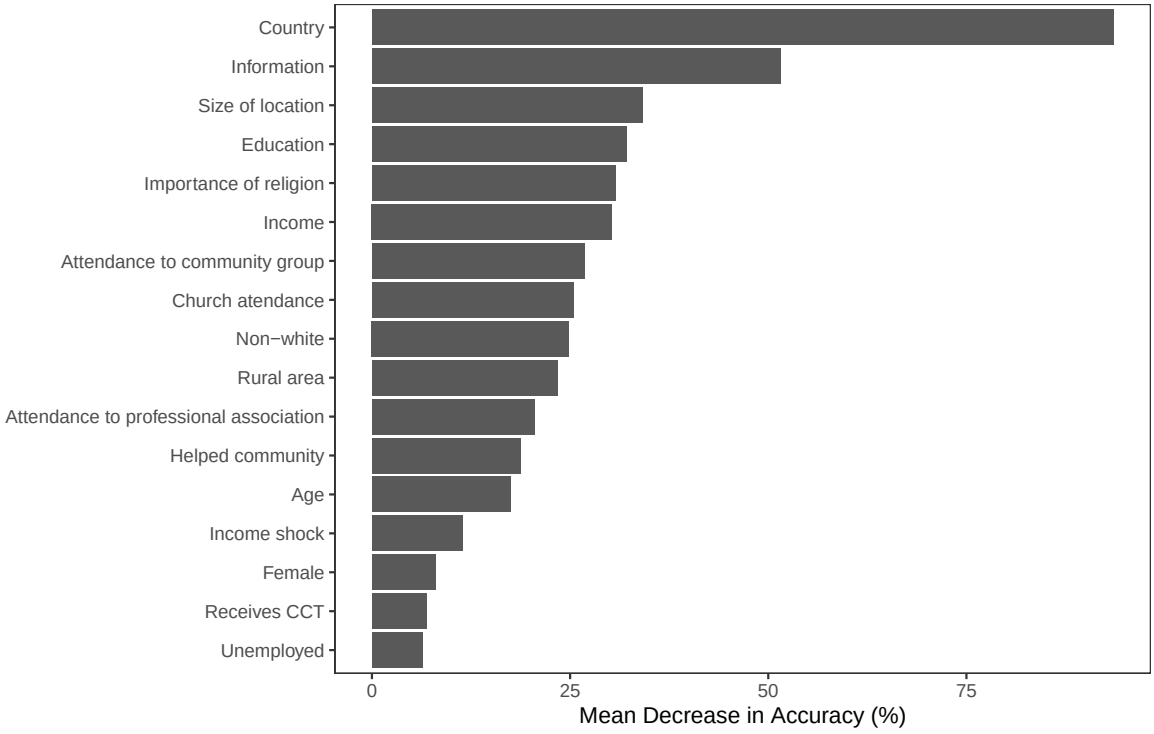


and interactions). In Figure 3 I plot the importance of each variable, measured by how much the accuracy of the prediction decreases when the variable is excluded. As we can see, information is the second most important variable after country. This puts into question the neglect of this variable in the literature (Morgan and Kelly, 2017; Holland, 2018), and justifies the emphasis put in this article.[9]

The theory predicts that information moderates or amplifies the effect of income on preferences for social policies depending on the level of income. In particular, for the simple public goods model we had Proposition 1, according to which the distortion that lack of information does to preferences is stronger for low income individuals. To evaluate this prediction empirically, I plot the average level of demand for redistribution as a function of income, separately for individuals with above-median and below-median levels of information. I do this after projecting these three variables on the orthogonal complement of the subspace generated by the control variables and country dummies (in other words, regressing them on those variables, and replacing them with the residuals of these regressions), in order to control for the variables

[9]However, cross-country differences explain most of the variance. That justifies the approaches taken by Morgan and Kelly (2017) and Holland (2018).

Figure 3: Importance of predictors of preferences for redistribution



that I am not focusing on. I run a local linear regression of demand for redistribution on income in order to account for nonlinear effects.

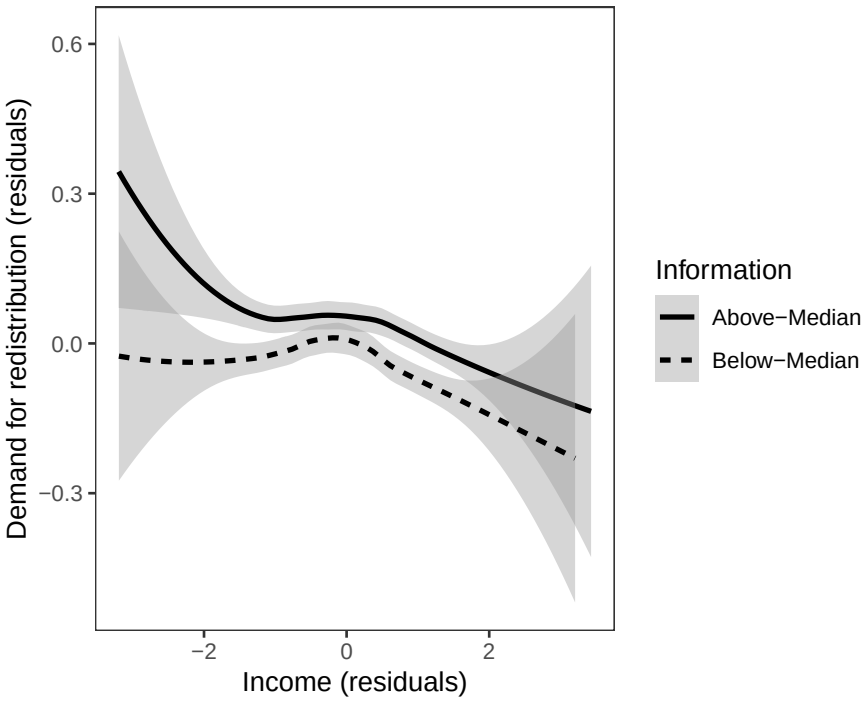
The result is in Figure 4. We see that, as in the simple public goods model considered in the theory section, low information pushes the demand down for every income level, but more for low income individuals.

To summarize, the evidence suggests that, as expected, information has systematic effects on social policy preferences. In fact, the estimates suggest that information increases the demand for all the policies considered. Moreover, a closer look at demand for redistribution suggests that this increase holds at all income levels. However, it is important to clarify that, while the theoretical argument is causal, the evidence is not.

4. Political information and the vote

In the previous section I provided suggestive evidence for the claim that information increases demand for social policies. Does this finding have behavioral consequences? In this section I show, first, that preferences for social policies matter for voting behavior: voters that demand

Figure 4: Effect of income on preferences for redistribution by information level



more redistributive policies tend to choose candidates that are more leftist in most countries. Second, I test the hypothesis that information makes ideology more salient for poor voters and less salient for rich voters. I find evidence for this claim in three countries (Costa Rica, Nicaragua, and Uruguay).

To test these hypotheses, I look at (self-reported) past vote choice in the survey. Concretely, the survey asks which presidential candidate the subject voted in the previous election. To measure the candidate's ideology, I use the database compiled by Andy Baker and Kenneth F. Greene[10]. They assign to each candidate a numerical position ranging from 1 (extreme left) to 20 (extreme right), that I transform so that it ranges from −10 (extreme right) to 10 (extreme left). With my transformation, the ideological position is a measure of leftism. To measure the subject's ideology, I create an index of economic leftism based on the first four dependent variables in Table 2, viz, demand for redistribution, for welfare, for government provision of jobs, and for public health. I create the index using the first principal component of these four variables.

[10] https://www.colorado.edu/faculty/baker/latin-american-elections-and-ideology

To study voting behavior, I fit directional voting models.[11] A voter i with position t_i evaluates candidates $j = 1, \ldots, J$ with positions y_j. Candidates are more popular with some groups for reasons (positional or not) unrelated to preferences for social policy. Concretely, there are K traits $k = 1, \ldots, K$; a voter with level x_{ik} of trait k receives $\beta_{jk} x_{ik}$ "utils" from candidate j being elected. I assume that voters are not strategic. Thus voter i receives the following utility for voting candidate j:

$$u_{ij} = \alpha(y_j - y_0)(t_i - t_0) + \sum_{k=1}^{K} \beta_{jk} x_{ik} + \epsilon_{ij},$$

where y_0 and t_0 are the candidate and voter neutral points (in their respective positional space), and ϵ_{ij} has cumulative distribution function $F(x) = e^{-e^{-x}}$. The voter receives utility $u_{i\varnothing} = \epsilon_{i\varnothing}$ from not voting. Hence voter i chooses j with probability

$$\frac{\exp(\alpha(y_j - y_0)(t_i - t_0) + \sum_{k=1}^{K} \beta_{jk} x_{ik})}{1 + \sum_{j'=1}^{J} \exp(\alpha(y_{j'} - y_0)(t_i - t_0) + \sum_{k=1}^{K} \beta_{j'k} x_{ik})}.$$

Statistically, this is a conditional logit model. The parameter α measures how responsive the voter is to movements of the candidate's ideology in the voter's preferred direction. I will interpret this parameter as the salience of social policy positions.

In Figure 5 (left panel) I plot the estimated α coefficients for each country with 95% confidence intervals.[12] The coefficients are generally positive (with 4 exceptions), and 6 are statistically significant. I added the interaction Candidate Leftism × Voter's Leftism × Information in order to see if social policy preferences are more salient for more informed voters. Information does not appear to change salience on average.

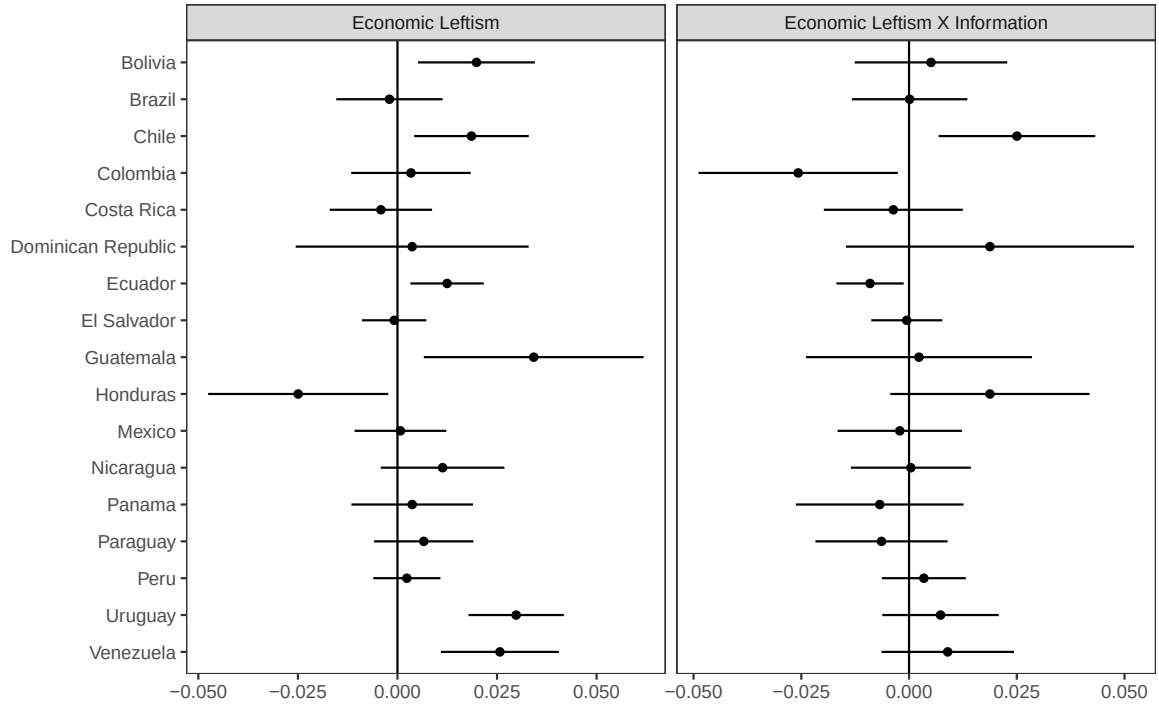
In Figure 6 I look at the coefficient of Candidate Leftism × Voter's Leftism × Information interacted with Income (which ranges from 0 to 1). Thus the panels show the effect of Information on salience for poor and rich voters (left and right panel, respectively). My prediction appears to hold in 3 countries: Costa Rica, Nicaragua, and Uruguay: information makes social policy more salient for poor voters, and less salient for rich voters.[13] There are some anomalous results, however: in Chile information increases salience for rich voters, and in Ecuador it reduces it for poor voters.

[11] Running spatial models is complicated, since my measure of the voter's policy position is different from my measure of the candidates' ideological position.

[12] I considered group-specific candidate popularity by gender, age, rural residence, years of schooling, non-whiteness, and church attendance.

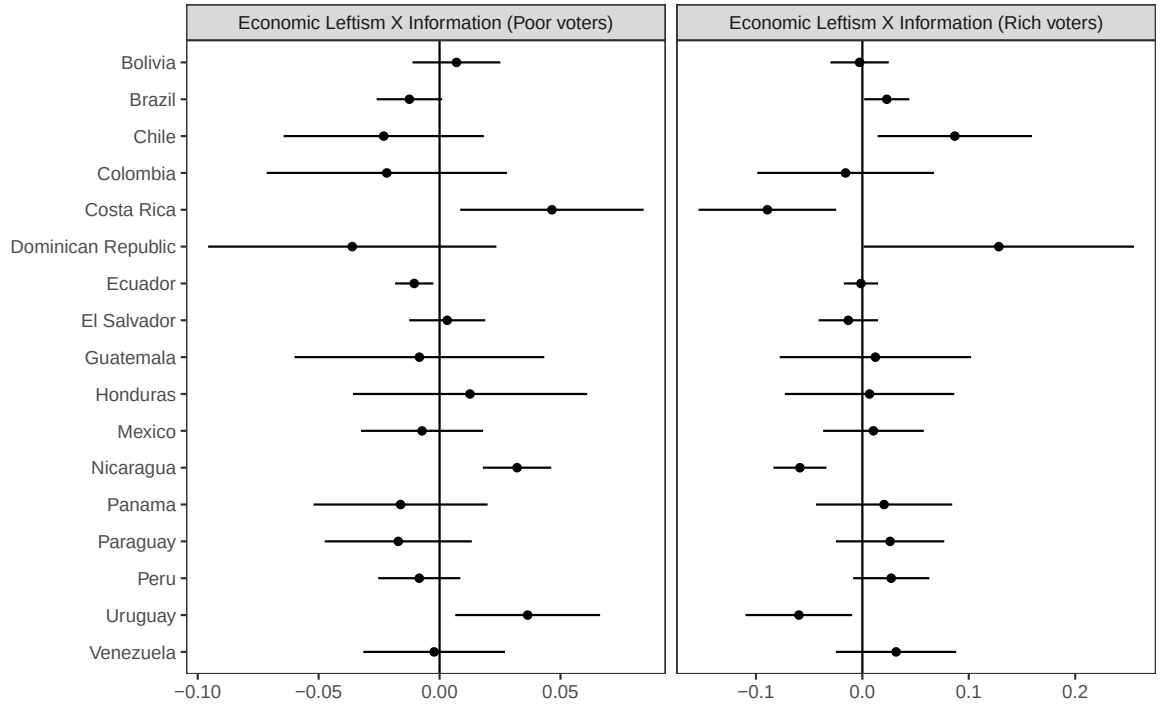
[13] *Comment*. If I really want to make this inference, I should use p-values corrected for multiple testing.

Figure 5: Preferences for social policy and voting behavior



We should take these results with caution for the following reasons. First, the candidates' placement in the left-right axis may reflect policy positions on issues different from social policy. Second, if competition on positional issues is multidimensional, information may increase the salience of other issues and decrease the salience of social policy. Third, the expert-coded placement of candidates does not take into account the voters' perception of the candidates' positions. Finally, I should point out that I excluded Argentina because the coefficients had disproportionately high standard errors. The reason is that the 2011 election was anomalous in the following sense. Cristina Fernandez, the incumbent, ran on a center-left campaign, having implemented social policy expansions in her first term (a Conditional Cash Transfer and near-universal non-contributory pensions), and won with 54% of the vote. However, her party was the heterogeneous Peronist Party, and she was coded as a centrist (1.65, where positions range from −10 to 10). Hermes Binner (from the Socialist Party), who won the second place, was coded as a moderate leftist (3.69). However, his support was strongest among high-income voters (rich voters were 14% more likely to vote form him, as a simple linear regression indicates). The reason is that the center-right did not participate in the election,

Figure 6: Salience of social policy preferences for low- and high-income voters



knowing that it was impossible to win (given the extraordinary popularity of the incumbent), so rightist voters had to vote for the center-left opposition. In 2015, when the popularity of the peronist candidate was much lower, the center-right Cambiemos participated and won the election. This case illustrates the problems, and shows the need for taking into account the details of each particular electoral contest. However, the results suggest that the model, despite its simplicity, is able to explain patterns of voting behavior in some contexts.

5. Conclusion

The theory, nuance aside, makes a testable assumption and yields two hypotheses. The assumption is that the level of information is increasing in income, education, and social capital. The first hypothesis is that information increases the demand for social policy, and the effects are greater for poor voters. The second hypothesis is that information increases the salience of social policy positions for low-income voters in elections, and it decreases the salience for rich voters.

I found correlational micro evidence for the hypotheses in Latin America, with some qualifications. The effect of information on preferences for social policy was not significant for all countries. And I could provide evidence for the second hypothesis for only 3 countries. The study of voting behavior in presidential elections requires more careful modeling and measurement.

The theory shows how low information can create an anti-redistribution bias in democracies. This is especially relevent in Latin America, where inequality is high and redistribution keeps being low despite the decades since democratization. A hopeful conclusion is that the bias that I identified can (theoretically) be corrected, as political information can be increased according to experimental work (e.g., Cruz et al., 2018).

Limitations I provide correlational micro evidence, but the theory is causal, and it has macro implications. So, first, a next step is to study the cross-country (macro) implications of the theory. This poses some challenges. How can we measure levels of information at the country level? Can information explain differences in, say, levels of redistribution? If there are significant cross-country differences in levels of information, how can we explain them? Is information just a matter of socioeconomic development, inequality, technology, and the structure of associations, or is it directly affected by institutions and politics? For instance, leftist parties may benefit from investing in information, and the rich may benefit from distorting the media (as Petrova, 2008, argues). Second, a next step is to try to find causal evidence for or against the claims made in this article. Strömberg (2004) provides one possible observational strategy: looking at plausibly exogenous changes in media access. Another route is to conduct an experiment such as Kuziemko et al. (2015) or Cruz et al. (2018). The problem with an experimental treatment is that I do not expect information to shape preferences immediately (as in Cruces, Perez-Truglia and Tetaz, 2013) — in my model individuals need to believe that they understand policies, and, upon reflection, update their preferences. I don't know how much media consumption or participation in political conversations with peers this requires, but it's probably a lot. A survey experiment will probably not be enough to make a significant change. A field experiment like that in Marshall (2019) seems more appropriate, but the ideal research design would be to find a "natural" experiment.

My operationalization of information is problematic, since it conflates knowledge with "understanding" of issues. Both are important in my theory, since I assume that uninformed voters are conscious about their imprecise knowledge (they know that they don't know). But understanding of political issues is conceptually close to the notion of "civic-ness", and my theory is *not* about that. Civic-ness is somewhat close to information (an aspect of civic-ness

is being informed and having an opinion about the matters of the polity), but may have all sorts of other causes and effects. I think that this is a problem, and I should find either a better way to measure information (using only knowledge, if necessary), or a strong argument for the claim that understanding of issues is not a measure of civic-ness (even though it may be an aspect of it).

Finally, perhaps I should consider the possibility of multi-dimensionality, since a non-economic dimension may interfere with the effects of information on voting behavior. Perhaps I should also explore the interaction between prospective and retrospective evaluations in a model of voting with imprecise information. Treating them as distinct paradigms does not do justice to reality, where they are intermingled and affect each other.

References

Alesina, Alberto and Paola Giuliano. 2011. Preferences for Redistribution. In *Handbook of Social Economics*, ed. Jess Benhabib, Alberto Bisin and Matthew O. Jackson. Vol. 1 North-Holland pp. 93–131.

Ashworth, Scott. 2012. "Electoral Accountability: Recent Theoretical and Empirical Work." *Annual Review of Political Science* 15(1):183–201.

Ashworth, Scott and Ethan Bueno de Mesquita. 2014. "Is Voter Competence Good for Voters?: Information, Rationality, and Democratic Performance." *American Political Science Review* 108(3):565–587.

Banducci, Susan, Heiko Giebler and Sylvia Kritzinger. 2017. "Knowing More from Less: How the Information Environment Increases Knowledge of Party Positions." *British Journal of Political Science* 47(3):571–588.

Barabas, Jason and Jennifer Jerit. 2009. "Estimating the Causal Effects of Media Coverage on Policy-Specific Knowledge." *American Journal of Political Science* 53(1):73–89.

Bardhan, Pranab K. and Dilip Mookherjee. 2000. "Capture and Governance at Local and National Levels." *American Economic Review* 90(2):135–139.

Barnes, Lucy, Avi Feller, Jake Haselswerdt and Ethan Porter. 2018. "Information, Knowledge, and Attitudes: An Evaluation of the Taxpayer Receipt." *The Journal of Politics* 80(2):701–706.

Baron, David P. 1994. "Electoral Competition with Informed and Uniformed Voters." *The American Political Science Review* 88(1):33–47.

Bidwell, Kelly, Katherine Casey and Rachel Glennerster. 2015. Debates: The Impact of Voter Knowlegde Initiaties in Sierra Leone. Research Paper Stanford University, Graduate School of Business.

Breiman, Leo. 2001. "Random Forests." *Machine Learning* 45(1):5–32.

Campante, Filipe R. 2011. "Redistribution in a Model of Voting and Campaign Contributions." *Journal of Public Economics* 95(7):646–656.

Campello, Daniela. 2015. *The Politics of Market Discipline in Latin America: Globalization and Democracy*. New York, NY: Cambridge University Press.

Cramer, Brian D. and Robert R. Kaufman. 2011. "Views of Economic Inequality in Latin America." *Comparative Political Studies* 44(9):1206–1237.

Cruces, Guillermo, Ricardo Perez-Truglia and Martin Tetaz. 2013. "Biased Perceptions of Income Distribution and Preferences for Redistribution: Evidence from a Survey Experiment." *Journal of Public Economics* 98:100–112.

Cruz, Cesi, Philip Keefer, Julien Labonne and Francesco Trebbi. 2018. Making Policies Matter: Voter Responses to Campaign Promises. Working Paper 24785 National Bureau of Economic Research.

Dixit, Avinash and John Londregan. 1996. "The Determinants of Success of Special Interests in Redistributive Politics." *The Journal of Politics* 58(4):1132–1155.

Dunning, Thad, Guy Grossman, Macartan Humphreys, Susan D. Hyde, Craig McIntosh and Gareth Nellis. 2019. *Information, Accountability, and Cumulative Learning: Lessons from Metaketa I*. Cambridge University Press.

Fearon, James D. 1999. Electoral Accountability and the Control of Politicians: Selecting Good Types versus Sanctioning Poor Performance. In *Democracy, Accountability, and Representation*, ed. Adam Przeworski, Susan Carol Stokes and Bernard Manin. Cambridge Studies in the Theory of Democracy Cambridge, U.K. ; New York: Cambridge University Press.

Goñi, Edwin, J. Humberto López and Luis Servén. 2011. "Fiscal Redistribution and Income Inequality in Latin America." *World Development* 39(9):1558–1569.

Holland, Alisha C. 2018. "Diminished Expectations: Redistributive Preferences in Truncated Welfare States." *World Politics* 70(4):555–594.

Iversen, Torben and David Soskice. 2015. "Information, Inequality, and Mass Polarization: Ideology in Advanced Democracies." *Comparative Political Studies* 48(13):1781–1813.

Kendall, Chad, Tommaso Nannicini and Francesco Trebbi. 2015. "How Do Voters Respond to Information? Evidence from a Randomized Campaign." *American Economic Review* 105(1):322–353.

Kuziemko, Ilyana, Michael I. Norton, Emmanuel Saez and Stefanie Stantcheva. 2015. "How Elastic Are Preferences for Redistribution? Evidence from Randomized Survey Experiments." *American Economic Review* 105(4):1478–1508.

Larcinese, Valentino. 2005. "Electoral Competition and Redistribution with Rationally Informed Voters." *Contributions in Economic Analysis & Policy* 4(1).

Lergetporer, Philipp, Guido Schwerdt, Katharina Werner, Martin R. West and Ludger Woessmann. 2018. "How Information Affects Support for Education Spending: Evidence from Survey Experiments in Germany and the United States." *Journal of Public Economics* 167:138–157.

Lind, Jo Thori and Dominic Rohner. 2017. "Knowledge Is Power: A Theory of Information, Income and Welfare Spending." *Economica* 84(336):611–646.

Macdonald, David. 2020. "Class Attitudes, Political Knowledge, and Support for Redistribution in an Era of Inequality." *Social Science Quarterly* n/a(n/a).

Marshall, John. 2019. "Signaling Sophistication: How Social Expectations Can Increase Political Information Acquisition." *The Journal of Politics* 81(1):167–186.

McCall, Leslie, Derek Burk, Marie Laperrière and Jennifer A. Richeson. 2017. "Exposure to Rising Inequality Shapes Americans' Opportunity Beliefs and Policy Support." *Proceedings of the National Academy of Sciences* .

Meltzer, Allan H. and Scott F. Richard. 1981. "A Rational Theory of the Size of Government." *Journal of Political Economy* 89(5):914–927.

Moene, Karl Ove and Michael Wallerstein. 2001. "Inequality, Social Insurance, and Redistribution." *American Political Science Review* 95(4):16.

Morgan, Jana and Nathan J. Kelly. 2017. "Social Patterns of Inequality, Partisan Competition, and Latin American Support for Redistribution." *The Journal of Politics* 79(1):193–209.

Pande, Rohini. 2011. "Can Informed Voters Enforce Better Governance? Experiments in Low-Income Democracies." *Annual Review of Economics* 3(1):215–237.

Petrova, Maria. 2008. "Inequality and Media Capture." *Journal of Public Economics* 92(1):183–212.

Scheve, Kenneth and David Stasavage. 2006. "Religion and Preferences for Social Insurance." *Quarterly Journal of Political Science* 1(3):255–286.

Schneider, Ben Ross and David Soskice. 2009. "Inequality in Developed Countries and Latin America: Coordinated, Liberal and Hierarchical Systems." *Economy and Society* 38(1):17–52.

Schoonvelde, Martijn. 2014. "Media Freedom and the Institutional Underpinnings of Political Knowledge*." *Political Science Research and Methods* 2(2):163–178.

Snyder, James M. and David Strömberg. 2010. "Press Coverage and Political Accountability." *Journal of Political Economy* 118(2):355–408.

Stokes, Susan Carol. 2001. *Mandates and Democracy: Neoliberalism by Surprise in Latin America*. Cambridge Studies in Comparative Politics Cambridge ; New York: Cambridge University Press.

Strömberg, David. 2001. "Mass Media and Public Policy." *European Economic Review* 45(4):652–663.

Strömberg, David. 2004. "Radio's Impact on Public Spending." *The Quarterly Journal of Economics* 119(1):189–221.

Appendix

Figure 7: Effects on preferences for welfare

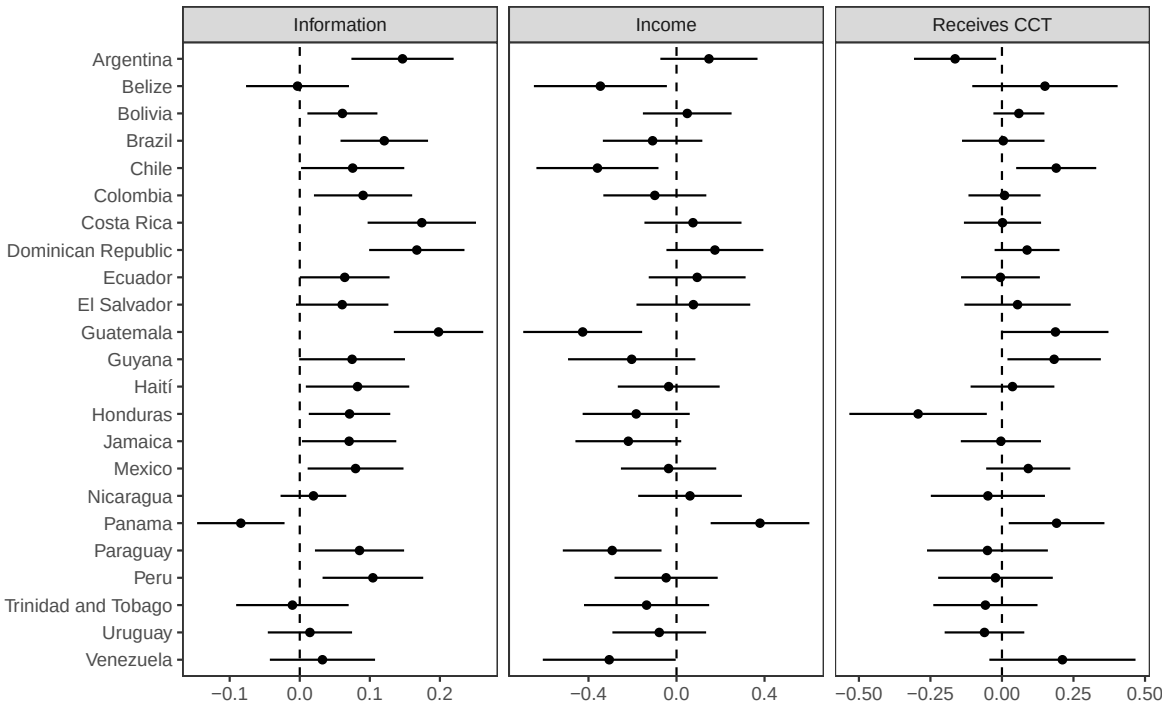


Figure 8: Effects on preferences for government's provision of jobs

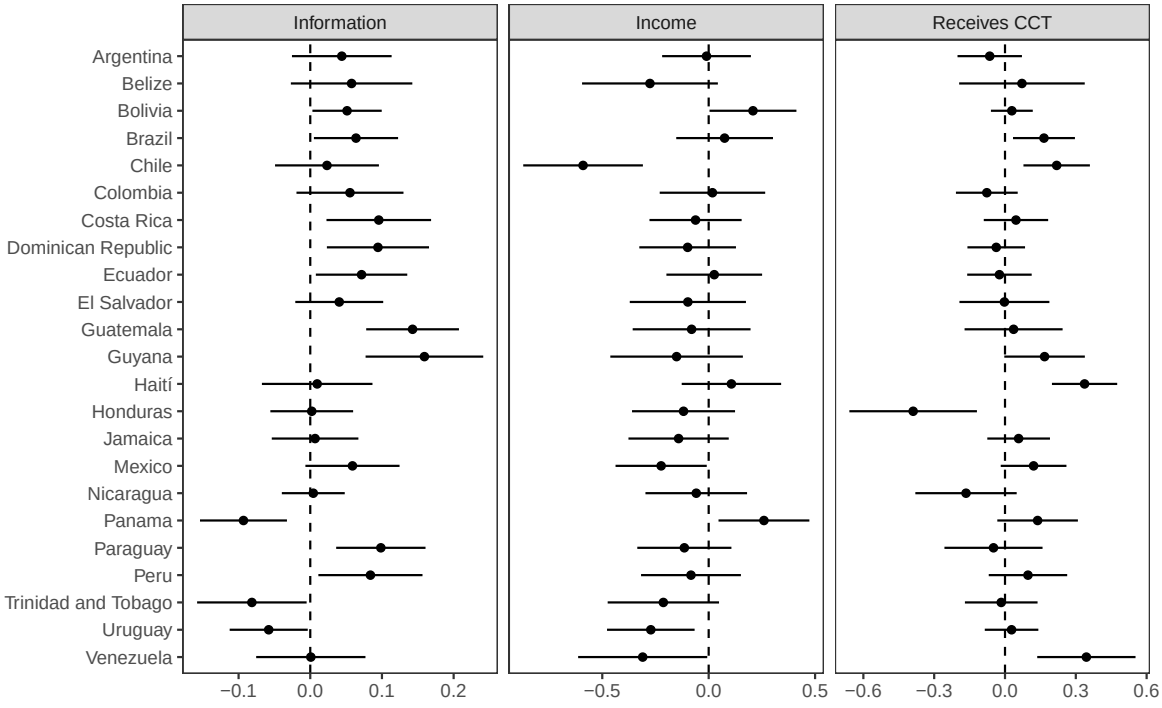


Figure 9: Effects on preferences for public health

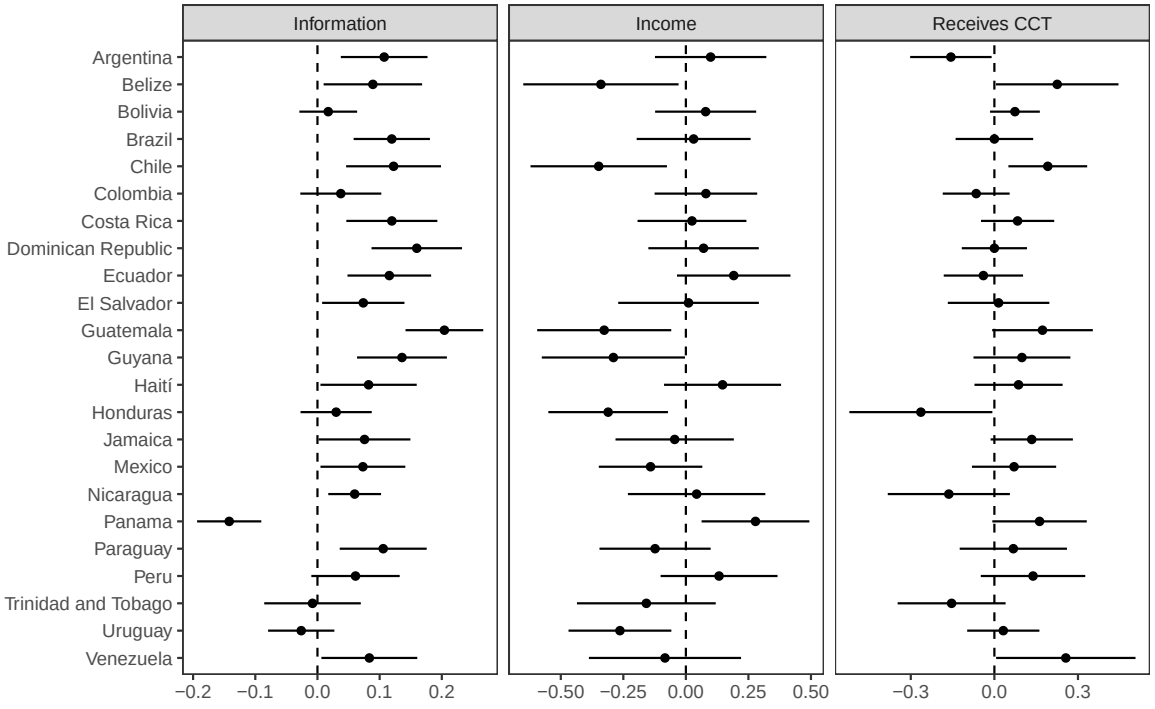


Figure 10: Effects on willingness to pay more taxes for redistribution

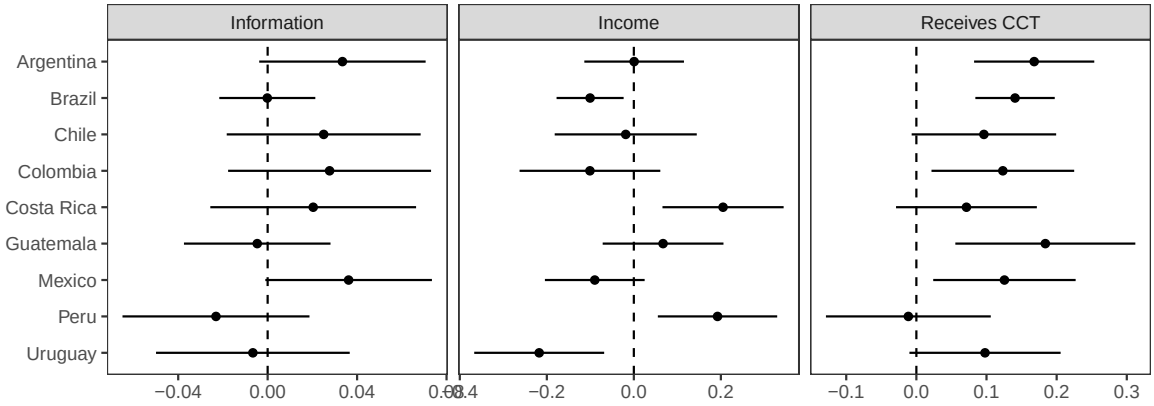


Figure 11: Effects on willingness to pay more taxes for education

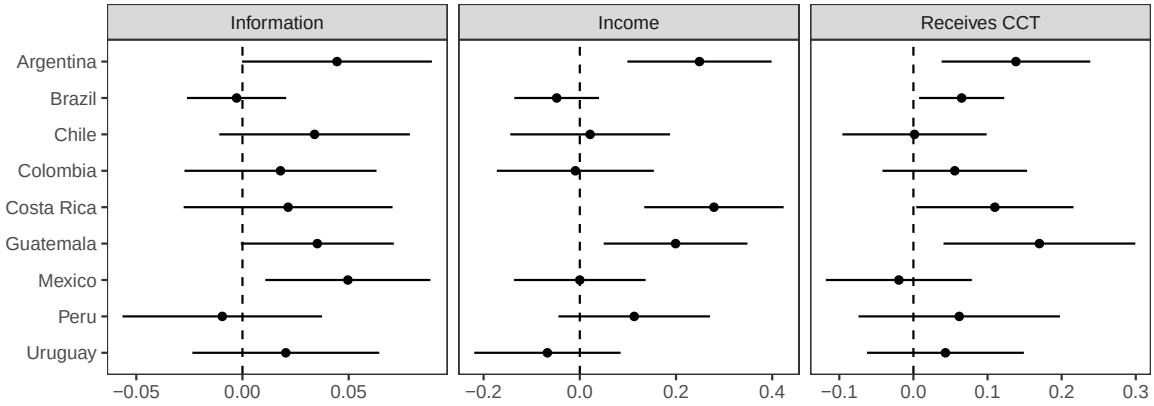


Figure 12: Effects on willingness to pay more taxes for health

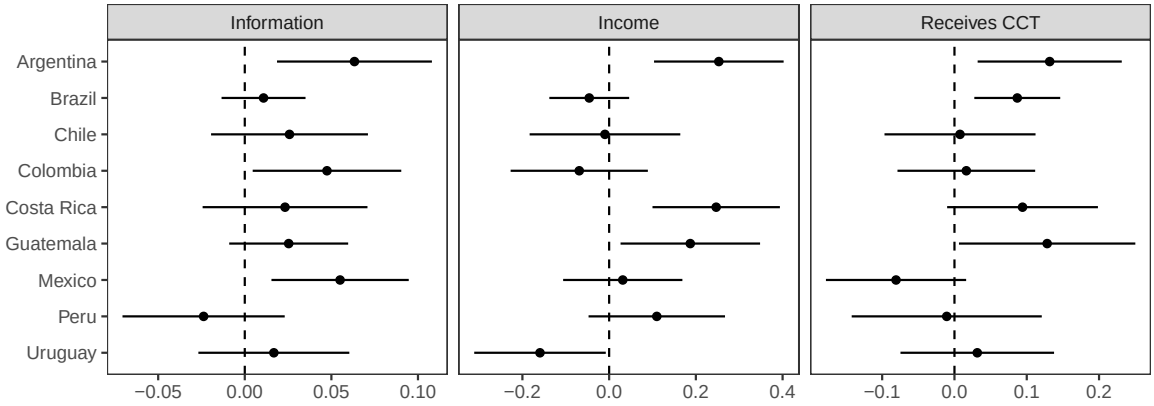


Table 3: Robustness: different measures of information

	Redistribution	Welfare	Provide jobs	Public health	Higher taxes for redistribution	Higher taxes for education	Higher taxes for health
Knowledge of length of term	0.079**	0.084***	0.034	0.089***	−0.022	−0.013	−0.004
	(0.025)	(0.025)	(0.023)	(0.021)	(0.015)	(0.016)	(0.016)
Income	−0.162***	−0.067+	−0.129***	−0.042	−0.007	0.077***	0.057*
	(0.038)	(0.038)	(0.038)	(0.034)	(0.021)	(0.023)	(0.023)
Education	0.016	−0.012	−0.299***	0.111*	−0.031	0.135***	0.070*
	(0.049)	(0.049)	(0.049)	(0.044)	(0.027)	(0.030)	(0.030)
Helped community	−0.005	−0.019	−0.003	−0.026*	0.004	0.016*	0.004
	(0.012)	(0.012)	(0.012)	(0.011)	(0.007)	(0.007)	(0.007)
Attendance at	0.011	0.004	−0.004	−0.001	0.022**	0.005	0.019*
community group	(0.013)	(0.013)	(0.013)	(0.012)	(0.008)	(0.008)	(0.008)
Attendance at	−0.056***	−0.007	−0.026+	−0.040**	−0.002	0.020+	0.004
professional association	(0.017)	(0.016)	(0.016)	(0.015)	(0.010)	(0.011)	(0.011)
Female	−0.038*	−0.034+	−0.003	−0.027	−0.028**	−0.037**	−0.025*
	(0.018)	(0.019)	(0.018)	(0.016)	(0.010)	(0.011)	(0.011)
Age	0.001	0.003***	−0.002***	0.002***	−0.001+	−0.001+	−0.001*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Rural area	0.010	0.008	−0.066*	−0.074*	−0.020	−0.008	−0.029
	(0.033)	(0.033)	(0.032)	(0.029)	(0.019)	(0.020)	(0.021)
Size of location	−0.013	−0.033***	−0.047***	−0.053***	−0.009+	−0.002	−0.010+
	(0.010)	(0.010)	(0.009)	(0.008)	(0.005)	(0.006)	(0.006)
Unemployed	0.044	0.041	0.081*	−0.021	−0.010	0.021	−0.015
	(0.037)	(0.036)	(0.035)	(0.034)	(0.023)	(0.026)	(0.025)
Income shock	0.084***	0.060**	0.047*	0.098***	−0.019	−0.010	−0.027+
	(0.022)	(0.022)	(0.021)	(0.019)	(0.013)	(0.014)	(0.014)
Receives CCT	0.042+	0.022	0.076***	0.043*	0.128***	0.071***	0.061***
	(0.024)	(0.024)	(0.023)	(0.021)	(0.015)	(0.016)	(0.016)
Non-white	0.101***	0.034	0.021	0.036	0.030*	0.011	0.018
	(0.027)	(0.027)	(0.026)	(0.023)	(0.014)	(0.015)	(0.015)
Church atendance	0.018*	0.021**	0.023**	0.040***	−0.005	−0.002	−0.004
	(0.008)	(0.008)	(0.008)	(0.007)	(0.005)	(0.005)	(0.005)
Importance of religion	0.053***	0.062***	0.102***	0.069***	0.003	0.004	0.008
	(0.012)	(0.012)	(0.012)	(0.011)	(0.007)	(0.007)	(0.007)
Adj. R^2	0.054	0.046	0.067	0.068	0.061	0.077	0.064
Num. obs.	30413	30567	30697	30696	6859	6846	6903

$^{***}p < 0.001, ^{**}p < 0.01, ^{*}p < 0.05, ^{+}p < 0.1$

Table 4: Robustness: different measures of information

	Redistribution	Welfare	Provide jobs	Public health	Higher taxes for redistribution	Higher taxes for education	Higher taxes for health
Attention to news	0.050***	0.050***	0.047***	0.062***	−0.000	0.004	0.010+
	(0.010)	(0.010)	(0.010)	(0.009)	(0.005)	(0.006)	(0.006)
Income	−0.169***	−0.080*	−0.143***	−0.053	−0.011	0.076**	0.057*
	(0.039)	(0.039)	(0.038)	(0.034)	(0.021)	(0.023)	(0.023)
Education	0.015	0.001	−0.311***	0.109*	−0.035	0.134***	0.061*
	(0.049)	(0.049)	(0.049)	(0.044)	(0.027)	(0.030)	(0.030)
Helped community	−0.003	−0.017	−0.003	−0.025*	0.004	0.015*	0.003
	(0.012)	(0.012)	(0.012)	(0.010)	(0.007)	(0.007)	(0.007)
Attendance at community group	0.008	−0.000	−0.007	−0.007	0.024**	0.006	0.021*
	(0.013)	(0.013)	(0.013)	(0.012)	(0.008)	(0.008)	(0.009)
Attendance at professional association	−0.056***	−0.007	−0.026	−0.039**	−0.002	0.019+	0.004
	(0.017)	(0.016)	(0.016)	(0.015)	(0.010)	(0.011)	(0.011)
Female	−0.032+	−0.028	0.002	−0.021	−0.027**	−0.036**	−0.025*
	(0.018)	(0.019)	(0.018)	(0.016)	(0.010)	(0.011)	(0.011)
Age	0.001	0.002***	−0.003***	0.002***	−0.001+	−0.001*	−0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Rural area	0.017	0.012	−0.056+	−0.065*	−0.024	−0.007	−0.031
	(0.034)	(0.033)	(0.032)	(0.029)	(0.019)	(0.021)	(0.021)
Size of location	−0.012	−0.032***	−0.044***	−0.052***	−0.010+	−0.002	−0.011+
	(0.010)	(0.010)	(0.009)	(0.008)	(0.005)	(0.006)	(0.006)
Unemployed	0.047	0.038	0.079*	−0.028	−0.010	0.021	−0.014
	(0.037)	(0.036)	(0.035)	(0.034)	(0.023)	(0.026)	(0.025)
Income shock	0.079***	0.058**	0.045*	0.096***	−0.019	−0.012	−0.026+
	(0.022)	(0.022)	(0.021)	(0.019)	(0.013)	(0.014)	(0.014)
Receives CCT	0.044+	0.026	0.076***	0.044*	0.129***	0.073***	0.061***
	(0.024)	(0.024)	(0.023)	(0.021)	(0.016)	(0.016)	(0.016)
Non-white	0.100***	0.041	0.022	0.038	0.030*	0.010	0.017
	(0.026)	(0.027)	(0.026)	(0.023)	(0.014)	(0.015)	(0.015)
Church atendance	0.018*	0.022**	0.024**	0.041***	−0.006	−0.003	−0.005
	(0.008)	(0.008)	(0.008)	(0.007)	(0.005)	(0.005)	(0.005)
Importance of religion	0.047***	0.056***	0.098***	0.064***	0.003	0.006	0.009
	(0.012)	(0.012)	(0.012)	(0.011)	(0.007)	(0.007)	(0.007)
Adj. R^2	0.055	0.047	0.068	0.069	0.061	0.078	0.065
Num. obs.	30305	30455	30584	30585	6810	6794	6852

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{+}p < 0.1$

Table 5: Robustness: different measures of information

	Redistribution	Welfare	Provide jobs	Public health	Higher taxes for redistribution	Higher taxes for education	Higher taxes for health
Understands political issues	0.039***	0.061***	0.016**	0.036***	0.016***	0.017***	0.019***
	(0.006)	(0.006)	(0.005)	(0.005)	(0.003)	(0.003)	(0.003)
Income	−0.150***	−0.066+	−0.127***	−0.031	−0.010	0.076**	0.052*
	(0.039)	(0.039)	(0.038)	(0.034)	(0.021)	(0.023)	(0.023)
Education	0.014	−0.044	−0.302***	0.105*	−0.070*	0.102***	0.034
	(0.050)	(0.050)	(0.049)	(0.045)	(0.028)	(0.030)	(0.030)
Helped community	−0.009	−0.026*	−0.002	−0.028**	0.000	0.012	−0.000
	(0.012)	(0.012)	(0.012)	(0.011)	(0.007)	(0.008)	(0.007)
Attendance at community group	0.008	−0.000	−0.007	−0.004	0.020*	0.004	0.018*
	(0.013)	(0.013)	(0.013)	(0.012)	(0.008)	(0.009)	(0.009)
Attendance at professional association	−0.061***	−0.013	−0.024	−0.044**	−0.002	0.018+	0.003
	(0.017)	(0.016)	(0.016)	(0.015)	(0.010)	(0.011)	(0.011)
Female	−0.030	−0.019	0.000	−0.023	−0.022*	−0.032**	−0.016
	(0.019)	(0.019)	(0.018)	(0.017)	(0.010)	(0.011)	(0.011)
Age	0.001	0.002***	−0.002***	0.002***	−0.001*	−0.001*	−0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Rural area	0.002	0.006	−0.070*	−0.085**	−0.023	−0.006	−0.027
	(0.034)	(0.033)	(0.032)	(0.029)	(0.019)	(0.021)	(0.021)
Size of location	−0.013	−0.034***	−0.046***	−0.055***	−0.010+	−0.002	−0.010+
	(0.010)	(0.010)	(0.010)	(0.008)	(0.005)	(0.006)	(0.006)
Unemployed	0.051	0.045	0.089*	−0.013	−0.010	0.020	−0.017
	(0.038)	(0.036)	(0.035)	(0.034)	(0.023)	(0.026)	(0.025)
Income shock	0.085***	0.064**	0.047*	0.103***	−0.017	−0.009	−0.026+
	(0.022)	(0.022)	(0.021)	(0.019)	(0.013)	(0.014)	(0.014)
Receives CCT	0.049*	0.028	0.074**	0.049*	0.127***	0.072***	0.060***
	(0.024)	(0.024)	(0.023)	(0.022)	(0.016)	(0.016)	(0.016)
Non-white	0.105***	0.044	0.029	0.033	0.030*	0.008	0.018
	(0.027)	(0.028)	(0.026)	(0.024)	(0.014)	(0.015)	(0.015)
Church atendance	0.017*	0.021**	0.024**	0.041***	−0.006	−0.001	−0.004
	(0.008)	(0.008)	(0.008)	(0.007)	(0.005)	(0.005)	(0.005)
Importance of religion	0.053***	0.063***	0.103***	0.069***	0.005	0.006	0.010
	(0.012)	(0.012)	(0.012)	(0.011)	(0.007)	(0.007)	(0.007)
Adj. R^2	0.056	0.052	0.070	0.070	0.065	0.080	0.067
Num. obs.	29760	29896	30008	29998	6729	6704	6758

$^{***}p < 0.001, ^{**}p < 0.01, ^{*}p < 0.05, ^{+}p < 0.1$

Table 6: Robustness: nonlinear models of preferences for social policies

	Redistribution	Welfare	Provide jobs	Public health	Higher taxes for redistribution	Higher taxes for education	Higher taxes for health
Information	0.093***	0.118***	0.053***	0.111***	0.073+	0.097**	0.130***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.039)	(0.037)	(0.036)
Income	−0.217***	−0.122**	−0.162***	−0.113*	−0.077	0.356**	0.247*
	(0.047)	(0.046)	(0.047)	(0.049)	(0.133)	(0.123)	(0.124)
Education	−0.081	−0.092	−0.382***	0.010	−0.301+	0.574***	0.223
	(0.061)	(0.060)	(0.061)	(0.063)	(0.178)	(0.155)	(0.156)
Helped community	−0.009	−0.018	−0.005	−0.029+	0.015	0.076+	0.012
	(0.014)	(0.014)	(0.014)	(0.015)	(0.043)	(0.039)	(0.037)
Attendance at	0.018	0.009	0.009	0.004	0.134**	0.021	0.089*
community group	(0.016)	(0.016)	(0.016)	(0.017)	(0.045)	(0.041)	(0.040)
Attendance at	−0.059**	−0.003	−0.027	−0.051*	−0.009	0.095+	0.019
professional association	(0.020)	(0.019)	(0.020)	(0.020)	(0.061)	(0.053)	(0.052)
Female	−0.028	−0.012	0.007	−0.001	−0.160*	−0.169**	−0.102+
	(0.023)	(0.023)	(0.023)	(0.024)	(0.063)	(0.058)	(0.056)
Age	0.001	0.003***	−0.002**	0.003***	−0.004*	−0.005*	−0.005**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Rural area	−0.004	0.002	−0.087*	−0.100*	−0.124	−0.048	−0.143
	(0.041)	(0.041)	(0.041)	(0.043)	(0.147)	(0.141)	(0.139)
Size of location	−0.020+	−0.044***	−0.059***	−0.065***	−0.059	−0.015	−0.053
	(0.012)	(0.012)	(0.012)	(0.012)	(0.038)	(0.039)	(0.039)
Unemployed	0.069	0.033	0.111*	−0.017	−0.063	0.124	−0.062
	(0.046)	(0.045)	(0.046)	(0.047)	(0.134)	(0.123)	(0.123)
Income shock	0.128***	0.107***	0.078**	0.169***	−0.107	−0.044	−0.129+
	(0.027)	(0.027)	(0.027)	(0.028)	(0.084)	(0.076)	(0.076)
Receives CCT	0.045	0.007	0.089**	0.083**	0.696***	0.357***	0.301***
	(0.031)	(0.030)	(0.031)	(0.032)	(0.080)	(0.077)	(0.077)
Non-white	0.142***	0.083*	0.064+	0.071*	0.218*	0.053	0.093
	(0.034)	(0.033)	(0.034)	(0.035)	(0.093)	(0.090)	(0.088)
Church atendance	0.012	0.017+	0.022*	0.040***	−0.032	−0.011	−0.024
	(0.010)	(0.010)	(0.010)	(0.010)	(0.030)	(0.026)	(0.027)
Importance of religion	0.069***	0.074***	0.123***	0.101***	0.023	0.025	0.042
	(0.014)	(0.014)	(0.014)	(0.015)	(0.043)	(0.039)	(0.039)
Num. obs.	28266	28409	28531	28533	6882	6869	6926
Dispersion					1.052	1.053	1.054

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{+}p < 0.1$