Preferences for Inter-Regional Redistribution

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Abstract

What explains individual support for inter-regional redistribution? Few studies examine support for regional redistribution, even though such issues are politically salient in many democracies. We test models that hypothesize that such preferences are affected by regional and individual income, as well as other arguments beyond the traditional political economy framework. We focus on informational assumptions and implications of these models with an experiment embedded in a nationally representative survey in Spain. We randomly inform some citizens of the true relative income of their region to assess the impact of this information on regional redistribution preferences. We find that citizens' learning about their region's relative position affects these preferences in a manner consistent with some of the political economy models. We also find some support for out-group concerns as an important factor. The findings have implications for the applicability of economic models to explaining support for regional arrangements.

Keywords

decentralization, federalism, sub-national politics

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Introduction

What explains citizen preferences for redistribution across regions within a country? Around the world, countries vary greatly in how much central governments tax wealthier regions to redistribute to poorer ones to equalize living standards across territories. In many federations or multi-tiered polities, these issues are salient, electorally contested, and, at times, polarizing; they are sometimes linked to demands for or attempts at secession from disaffected regions. Such issues have been politicized in wealthy countries including Belgium, Canada, Italy, Spain, and the United Kingdom, as well as in poorer or middle-income states, including Argentina, Brazil, China, India, Mexico, and Russia. Yet the recent growth in research on the causes and consequences of different federal arrangements and fiscal federalism has generally ignored the determinants of individual preferences over these outcomes. This omission is surprising given the high salience of these issues in these countries. In this article, we address this omission by specifying and testing propositions about individual preferences over a key aspect of fiscal federalism, inter-regional redistribution.

Drawing on a variety of political economic models of federalism, we hypothesize that regional and individual income should explain variation in preferences for inter-regional redistribution. In addition, we argue that individual-level *information* about regional income should also affect preferences. We also consider other classes of models that are relevant for inter-personal redistribution and argue that identity-based factors and attitudes toward out-groups are also likely to matter for inter-regional redistribution, as concerns about regional redistribution are frequently linked to attitudes about different minority linguistic or ethnic groups that live in specific regions.

We focus on evidence regarding such preferences in Spain, an important illustrative case where much redistribution across regions (autonomous communities [ACs])[1] exists, and where regional redistribution and concerns about regional fiscal and political autonomy have become politically contested and salient over the last two decades. We test our hypotheses with a novel experiment embedded in a large nationally representative sample of Spain with an over-sample in Catalonia; the experiment examines the impact of information and out-group priming on regional redistribution preferences. We specifically over-sample and examine attitudes in Catalonia because it is the largest region with a distinct ethnic and linguistic identity where fiscal and political autonomy demands are an integral part of the regional and national-level policy discourse. These redistribution issues are closely related to secessionist demands in this region, which have increased since 2010.

We focus on testing two broad families of hypotheses for explaining preferences toward regional redistribution. The first family comes from extant

political economy models that posit that the main factors affecting redistribution preferences across regions should be regional and individual income. We test these factors and also basic assumptions of these models by assessing whether individuals *learning* about their region's relative income position affects preferences for regional redistribution. The second family of hypotheses examines the role of out-group concerns and whether making out-group concerns salient via priming alters preferences for regional redistribution (as transfers could go to or taxes could be collected from "out-group" regions). Our experimental design allows us to leverage randomization of two commonly cited interventions that are theorized to affect policy preferences in other contexts: information that is domain relevant (in this case, the respondent's regional relative income) and priming of relevant "out-group" or "in-group" categories.

We find that regional income position affects preferences for inter-regional redistribution; as expected, individuals living in poorer regions demand more redistribution than those living in richer ones. But, contra many models, we find little evidence that individual income conditions such effects on preferences. Furthermore, our experimental evidence shows important and previously undocumented effects of information on regional preferences: Respondents who learn that their region is poorer become more supportive of regional redistribution, and those who learn their region is above the median region in terms of income are less supportive of inter-regional redistribution. We also find some support for out-group concerns as a relevant factor for attitudes; within much of Spain, being primed about the wealthier out-group regions in conjunction with learning that one's region is poorer makes one more supportive of regional redistribution. Similarly, within Catalonia, individuals primed to think of the poorest out-group region (Extremadura) become more hostile toward regional redistribution.

The article proceeds as follows: The "Background and Hypotheses" section describes the relevant literature and our hypotheses, the "Empirical Design" section describes the research design, the "Results From the Control Group" section describes the results in the control group, the "Treatment Effects From Spain the Excluding Catalonia" and "Evidence From Catalonia" sections describe the experimental results, and the "Discussion" section concludes and poses avenues for future research.

Background and Hypotheses

Relevant Literature

Research on fiscal federalism and decentralization has progressed in explaining cross-national variation of the amount of fiscal redistribution across

regions, the differing amounts of decentralized authority across states, and the related outcomes of successful and/or violent regional autonomy movements. The fiscal federalism literature focuses mostly on the institutional determinants of why some federations redistribute among regions more than others (Beramendi, 2012; Rodden, 2010) One general finding of this literature is that "initially unequal" federations redistribute less than initially equal federations and that countries often do not adopt the most efficient forms of decentralization as predicted by classic economic models (Oates, 1999).[2]

An overlapping literature on regional autonomy movements focuses more on the economic optimality of autonomy or secession (Bolton & Roland, 1997; Bordignon, Manasse, & Tabellini, 2001; Flamand, 2014). In much of this literature, the underlying theoretical models explaining the amount of redistribution across regions are partially based on assumptions about citizen preferences over these outcomes. For example, in models such as those by Bolton and Roland (1997), the amount of regional autonomy depends on preferences of voters of regions with different incomes[3]; in models of secession such as those by Alesina, Spolaore, and Wacziarg (2005), voters have preferences over taxes and over public goods provision that are partly determined by group membership. In more recent work, Beramendi (2012) assumes that voters' regional redistribution and fiscal decentralization preferences are conditioned by individual and regional-level income. Despite the foundations of individual preferences that underlie these models, few studies test these assumptions, in contrast to the voluminous literature on preferences for inter-personal redistribution. Much of the empirical testing of these models has been in the domain of either cross-national or regional-level data on fiscal transfers and regional autonomy demands,[4] or of qualitative testing of these theories. Extant related work that does examine individual preferences generally neglects the specific issue of redistribution across regions. These studies have examined attitudes about "federalism" generally (e.g., Petersen, Scheller, & Wintermann, 2008), or document strong correlations between regional identity and support for regional autonomy, but focus less on the determinants of regional redistribution preferences (Brancati, 2008; Costa-Font & Tremosa-Balcells, 2008).

To the extent that the above models state preferences of individuals in different regions, a relevant assumption is that individuals are informed about their regional income and the tax and transfer scheme that constitutes regional redistribution. An emerging strand of literature on attitudes toward fiscal redistribution policies examines the degree to which citizens are misinformed about parameters that should sensibly affect these policy preferences, mostly in an inter-personal redistribution context. Recent empirical studies document how individuals are misinformed about various facts that are theorized

to influence redistribution preferences, including the extent of inequality (such as shares of income going to specific groups), national and individual income mobility prospects, inferences of their distribution based on exposure to relevant reference categories, and their own relative income position (Alesina & La Ferrara, 2005; Bénabou & Tirole, 2006; Cruces, Truglia, & Tetaz, 2013). Other studies demonstrate the impact of informing citizens of simple characteristics of redistribution schemes on support for such programs (e.g., Duflo & Saez, 2003; Kuziemko, Norton, Saez, & Stantcheva, 2013). However, to our knowledge, no study examines this issue of information in a regional redistribution context.[5]

Apart from this established literature on support for regional autonomy as a function of voter income maximization, another related subfield focuses on how identity and out-group views can dampen support for redistribution. Many studies document lower support for redistribution if citizens view that redistribution goes principally to undeserving out-groups (Billiet, Eisinga, & Scheepers, 1996; Cavaille & Trump, 2015; Ceobanu & Escandell, 2010; Duckitt, Wagner, du Plessis, & Birum, 2002; Finseraas, 2012; Hodson & Costello, 2007; Pettigrew & Meertens, 1995). One of the arguments is that negative affinity toward salient out-groups reduces support for transfers to them; another is that strong national identification reduces support for redistribution within a country because of beliefs about out-groups (Roemer, 1998; Shayo, 2009). According to both views, salience of out-group identities is thought to dampen support for redistribution toward those groups. This literature on how out-group concerns affect redistribution preferences should be highly relevant for inter-regional redistribution, as recipient or contributor regions can be more clearly associated with distinct out-groups.

Hypotheses

We focus on two categories of hypotheses of individual preferences for regional redistribution, derived from the literatures described above. The first set comes from the prolific theoretical political economy models of regional redistribution and their expectations regarding the distributional consequences of inter-regional transfers from rich to poor regions. The second set of hypotheses builds on literature that emphasizes the importance of social identity and views toward out-groups on redistribution preferences, which should be relevant in a political context where certain regions receive more transfers than others and some regions can be thought of as consisting of out-groups. Many of the models cited above delineate conditions for when certain fiscal arrangements (such as the maintenance of the state) constitute

equilibria but do not specify the hypotheses of preferences of redistribution across regions at the individual level.

The first set of hypotheses builds on basic models of inter-regional redistribution that themselves draw on preferences for inter-personal redistribution. In these models, individuals wish to maximize their income, net of taxes and transfers to other regions (Beramendi, 2012; Bolton & Roland, 1997). Therefore, analogous from inter-personal redistribution models, regional income is the most plausible correlate of opposition to increased regional redistribution. Note that in contrast to some more specialized models of inter-personal redistribution, regional transfers to poorer regions are more likely to be viewed by individuals in wealthier regions as transfers that they will not benefit from, as such transfers are not constituted as a form of social insurance (Iversen & Soskice, 2001; Moene & Wallerstein, 2001). Hence, the most straightforward expectation that is derived from this general class of fiscal federalism models is that individuals in richer regions should be more opposed to inter-regional redistribution, whereas residents in poorer regions should be more in favor.

Hypothesis 1: Citizens in richer (poor) regions should be less (more) supportive of redistribution from richer to poorer regions.

Many of the models discussed above have contrasting predictions about how regional and individual income interact in explaining citizen preferences toward fiscal federalism (Beramendi, 2012; Bolton & Roland, 1997).[6] Specifying precise predictions about how individual income should condition such preferences in richer or poorer regions requires many assumptions about the nature of the tax and transfer system in place (this is true as well for hypotheses about inter-personal redistribution). However, we build on the previously cited class of models to outline some baseline expectations.[7] If we assume a basic progressive tax system (as many models of inter-personal redistribution do), and if poorer individuals have higher marginal benefits from transfers (a commonplace assumption in most public economics and consumer welfare models), rich individuals in rich regions should be expected to unambiguously lose from inter-regional redistribution whereas poor individuals in poor regions should unambiguously benefit. The preferences of "cross-pressured" groups (poor individuals in rich regions and rich individuals in poor regions) depend on assumptions about the nature of the transfer and the structure of inequality across and within regions. In principle, their support for regional redistribution should fall between these two groups.[8] Hence, our next hypothesis is as follows:

Hypothesis 2: Poor individuals in poor regions should be most favorable to inter-regional redistribution and rich individuals in rich regions should be most opposed.

Both of these simple hypotheses follow from fiscal models where a key assumption is that individuals are informed about the actual relative position of their own region. As with models of inter-personal redistribution, this information assumption matters for deriving predicted preferences. The fact that respondents are not fully informed about their regional relative income permits us to test the impact of information about regional income on preferences. More specifically, providing information allows us to test the effect of learning one's true relative regional income on redistribution preferences. Consistent with the emerging literature discussed above that demonstrates the impact of relevant information on support for inter-personal redistribution policies, we expect that citizens' learning of their true relative regional income position should affect preferences for regional redistribution in ways consistent with the above hypotheses that *assume* full information of relative regional income position. Information about a region's relative income position should also affect preferences for inter-regional redistribution in expected directions: Those learning that their own region is richer than what they thought should be more opposed to inter-regional redistribution, whereas those learning that their region is poorer than what they thought should become more supportive.[9]

Hypothesis 3a: Citizens who learn that their region is poorer (richer) will be more (less) supportive of regional redistribution compared with those who do not learn.

Learning about relative regional income can have different effects on preferences, depending on what one learns. One sensible impact of the information is that respondents make inferences from the information about whether their region is a net contributor or net recipient of inter-regional transfers, based on their regional income position. We posit another hypothesis that is a more precise version of Hypothesis 3a, building on the regional transfers models cited above:

Hypothesis 3b: Citizens who learn that their region is above (below) the median in the regional ranking position will be more opposed to (supportive of) inter-regional redistribution.

We now turn to a second family of hypotheses derived from the literature on how out-group concerns can affect attitudes toward redistribution (Cavaille

& Trump, 2015; Finseraas, 2012). Building on the literature on priming (DeMarree, Petty, & Wheeler, 2005), we hypothesize that making salient concerns of the out-group affects inter-regional redistribution preferences. Indeed, the introduction of priming in the design allows us to ascertain the effect of considering the out-group (in a policy relevant domain) on regional redistribution. In the context of inter-regional redistribution, we simply define "out-group" regions as ethnic or linguistically differentiated groups living in specific regions that are distinct from a reference "in-group." These out-group regions can be wealthier or poorer than the reference in-group.[10] To the extent that ethnic or linguistic boundaries overlap with actual regions, and out-group regions are expected to lose or benefit from inter-regional transfers, out-group concerns should be important for understanding citizen preferences toward regional redistribution. When the expected beneficiaries of a transfer from rich to poor regions are predominantly from an out-group, the in-group citizens should be more opposed to such redistribution. If, however, out-groups are expected to be among the losers from these transfers (e.g., if they populate regions that are net contributors), then the in-group would support such inter-regional redistribution.[11]

> **Hypothesis 4a:** In-group citizens who are primed to consider an out-group region will be more (less) supportive of inter-regional redistribution if the net loser of this type redistribution is the out-group (in-group).

Finally, combining the two approaches of information and out-group concerns, we suggest that learning that one's region is relatively richer or poorer should affect one's views differently, depending on whether one is reminded that transfers are paid for by, or go to, an out-group. If the out-group region is wealthier (and hence expected to be a net loser from regional redistribution), those in the in-group regions who learn that they benefit from inter-regional transfers should be more supportive of redistribution. Relatedly, those in the in-group regions who might lose from regional redistribution (or to benefit less) might be less opposed to such transfers, if out-groups are expected to lose from those transfers as well. This straightforward argumentation leads to an additional supposition.

> **Hypothesis 4b:** Those in the in-group who are primed to consider the out-group region will be more supportive of (opposed to) inter-regional redistribution when the net loser (beneficiary) of this type redistribution is the out-group, and they learn their in-group region is more likely to be a net beneficiary (contributor).

Note that the implication of this hypothesis for those in wealthy regions who consider poorer "out-group" regions is that increasing out-group salience should *reduce* support for regional redistribution.

Relevance of the Spanish Context

Before turning to the empirical design to test the above hypotheses, we briefly discuss why Spain is an especially instructive case and useful testing ground for these hypotheses. As with other federalist or multi-tiered polities, in Spain, the issues of inter-regional redistribution are politically salient; among other factors, these issues are underlying the current push for secession in Catalonia. In Spain, there is greater political division over territorial issues than over traditional inter-personal redistribution issues (Colomer, 1998; Fernández-Albertos & Manzano, 2012).[12] For example, public opinion in Catalonia over the last 20 years has drifted toward less support for regional transfers and more support for fiscal autonomy for the region (Amat, 2012; de la Fuente, 2011). A current prominent political argument in Catalonia is that the net transfers from Catalonia to other Spanish regions are an important cause of the ongoing debt crisis of the Catalan regional government and that increased fiscal autonomy would alleviate economic problems of this region. Tensions between the Catalonia regional government and the Spanish central government have grown since the Spanish government's rejection of the Catalan regional government's proposals for a new fiscal pact more favorable for Catalonia; on November 9, 2014, the Catalan government supported the celebration of a non-binding referendum that had been deemed unconstitutional by the Constitutional Court.

Much academic and political controversy exists in Spain over the amount of income that is taxed in some regions and transferred to others (de la Fuente, 2011; León, 2007, 2009). Some argue that the system over-equalizes regional incomes, leaving relatively richer regions in a worse fiscal position as compared with relatively poorer ones (Paluzie, 2010) and that such regional transfers generate perverse incentives for subsidized regions (Montasell & Sánchez, 2012). Others counter that regional transfers within Spain have stabilizing effects that benefit the national economy and that inter-regional redistribution mostly reflects the fact that regions have individuals with different levels of income (de la Fuente, 2011).

Spain also has regional out-groups that allow us to test out-group priming hypotheses. Although the intensity of ethnic traits in the country (such as language culture) varies and overlapping identities exist, it is uncontroversial to label two regions, the Basque Country and Catalonia, as "out-group" regions, where very large segments of the populations have distinct identities.

Recall that in the context of the in-group and out-group framework presented above, Catalonia and the Basque Country would be the out-group regions from the perspective of those living in the rest of Spain; from the perspective of those living in Catalonia and the Basque Country, the other Spanish regions would be the out-group.[13] Overall, Spain has a number of features that allow us to test the competing hypotheses of regional redistribution preferences, although we discuss in the conclusion the exportability of our findings.

Empirical Design

To test the above hypotheses, we gathered data using a web-based survey of 4,000 respondents in Spain in July 2012. The survey was administered by *Netquest*, a Spanish survey firm. The resulting sample has a similar demographic composition to large nationally representative surveys in Spain (i.e., those fielded by the *Centro de Investigaciones Sociológicas*) and included an over-sample of Catalonia ($n = 1,200$).[14]

The dependent variable is whether the individual prefers more or less inter-regional redistribution. Respondents were asked how much they agreed with the statement, "The Spanish fiscal system should tax autonomous communities [regions] with higher incomes to transfer resources to autonomous communities with lower incomes." The response options were "strongly agree," "somewhat agree," "neither agree nor disagree," "somewhat disagree," "strongly disagree," with agreement responses coded as 1 and the rest 0.[15] To experimentally test the impact of information on regional income on preferences, respondents outside of Catalonia ($n = 2,800$) were randomly assigned to a control group and a treatment group with equal probabilities. In the control group, respondents were first asked this policy preference. They were asked afterwards to place the relative income position of their own AC and two other randomly selected ACs, receiving no information. Spain has 17 ACs and two autonomous cities; respondents simply had to choose an integer number 1 through 19 for each AC (with 1 referring to the on average richest AC and 19 indicating the poorest).[16] In the treatment group, respondents were asked about the relative placement of their own AC and two others, but they *were then told the correct relative position of their own AC*. Individuals then answered the same dependent variable questions as the control group.

This design enables us to determine whether accurate information about the respondent's AC's relative regional income affects preferences for regional redistribution. In addition, the fact that people were asked about the relative placement of two randomly assigned regions (in addition to their

own) allows us to determine whether being asked to consider specific regions affects these preferences.

We used a similar design for residents in Catalonia but with two additional treatments. Respondents were randomly assigned to one of four experimental groups, with a .2 probability assignment for the first two and .3 probability assignment for the latter two. In the control group, respondents answered the same questions as the control group for the rest of Spain. In the second experimental group, the "cultural treatment" group, respondents answered three questions that were designed to prime Catalan identity,[17] followed by the same question about regional redistribution (this is labeled as "Group 4"). (After answering the dependent variable question, respondents in these first two groups were also asked to rank Catalonia and two other randomly chosen ACs.) In the third experimental group, the "information treatment" group, respondents were asked about the relative placement of Catalonia as well as two other randomly chosen ACs and were told the correct placement of Catalonia. (This group matches in design the treatment group for the respondents outside of Catalonia, and is labeled "Group 5.") In the fourth and final group, the "both treatments" category, respondents were asked about the relative placement of Catalonia as well as two other randomly chosen ACs and were then told the correct placement of Catalonia; they then answered the same three questions as in Group 2 designed to prime Catalan identity, and they then answered the same dependent variable question (this is labeled "Group 6"). Table 1 displays the experimental design.[18]

We code a number of relevant demographic control variables. Income is a 10-point scale corresponding to household deciles. Education is coded on a 3-point scale, with the categories referring to the highest level of education completed: primary or basic secondary, upper secondary, or university. Age is coded linearly. Political ideology is the standard 10-point scale, with 1 being most left-wing and 10 being most right-wing. Female gender and unemployment status are binary variables. We recode placement of region rank so that higher values correspond with richer regions (to be consistent with the direction of individual income). In the sub-section dealing with the attitudes of Catalan residents, we code a binary variable of 1 if the respondent responds to a question on whether she feels more Catalan or Spanish, with "more Catalan than Spanish," or "only Catalan" (the three other response categories are "as Catalan as Spanish," "more Spanish than Catalan," "only Spanish," and are coded as 0). Because of the salience out-group concerns and potential effects in specific regions, in all specifications, we also control for binary indicators indicating residence in a Basque-speaking region (Basque Country and Navarra) and region of Madrid; in estimations that include the full sample, we also include a binary indicator for residence in the region of Catalonia.[19]

Table 1. Design.

Experimental group	Geographic location	Information treatment	Catalan cultural prime treatment	Probability of receiving treatment within geographical area
Control group	Spain excluding Catalonia	No	No	.5
Group 2	Spain excluding Catalonia	Yes	No	.5
Control group	Catalonia	No	No	.2
Group 4	Catalonia	No	Yes	.2
Group 5	Catalonia	Yes	No	.3
Group 6	Catalonia	Yes	Yes	.3

Results From the Control Group

Descriptive Statistics: Preferences

We first discuss descriptive statistics from the control group to assess baseline preferences. For presentational clarity, we focus first most only on descriptive statistics, control group results, and experimental analyses for Spain without Catalonia, and then turn to Catalonia in a separate results section.[20] Appendix B presents the descriptive statistics on the demographic variables of interest.

In all of Spain, a majority of respondents (52%) in the populated-weighted sample are favorable to redistribution from rich to poor regions. The two clear outliers are the two culturally distinct regions of the Basque Country and Catalonia, where support plummets to 24% and 23%, respectively. Support for regional redistribution is roughly the same across rich and poor individuals living in poor regions (about 60%).

What do people know about where their region is in the distribution of income? Figure 1 presents histograms of the difference in the actual position of a region and the belief of respondents (regions with fewer than 80 respondents are not included in the graph). They are centered at zero, represented by the red vertical line, which corresponds to those respondents who have assigned the correct ranking to their own region. Those to the right of the red line indicate beliefs that the region is richer than it actually is; those to the left of the red line believe that the region is poorer than it actually is. Note that, partially due to the truncated nature of the data, people in rich regions tend to deviate to the left of the right value, and people in poor regions to the right.
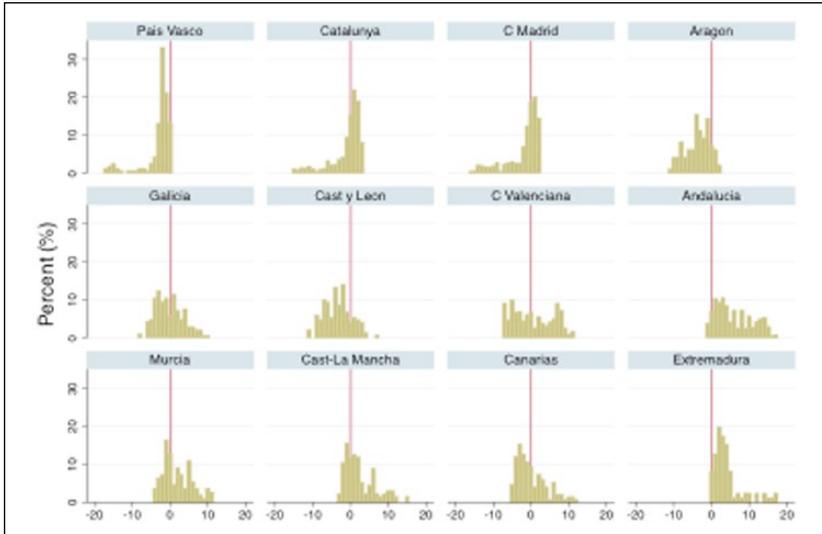
Figure 1. Difference in the perceived relative location of the autonomous community and the actual position.
Graphs by autonomous community.

For example, in poor regions, on average, 62% of individuals believe their region is richer than it actually is; in rich regions, on average, only 23% of individuals believe their region is richer than it actually is.[21] The dispersion around the red lines indicates how much inaccuracy citizens in the region have about the position of their AC; the greatest variation in perceptions is observed in middle-income regions.

Estimations From the Control Group: Explaining Preferences for Inter-Regional Transfers

What explains support for inter-regional redistribution in the control group? To test the first two hypotheses of the effect of regional income and the conditional effect of income on regional income, we first estimate a series of logistic models where the dependent variable is whether the respondent supports transfers from rich to poor regions.[22] Our main coefficient of interest is the individual's self-placement on the regional income scale (the variable "self reg rank"—recall that the scale is recoded so that *higher* values indicate relatively *richer* regions). Table 2 displays these estimations for

Table 2. Control Group Findings.

	(1)	(2)	(3)	(4)
Self reg rank	−0.023* (0.012)	−0.023* (0.012)	−0.024* (0.013)	−0.024* (0.013)
Inc decile	0.016 (0.023)		0.012 (0.0277)	0.024 (0.035)
Female	−0.32** (0.11)	−0.31** (0.11)	−0.32** (0.12)	−0.31** (0.16)
Age	0.015** (0.0051)	0.015** (0.0051)	0.015** (0.0051)	0.015** (0.0051)
Unemployed	0.013 (0.14)	0.016 (0.14)	0.012 (0.14)	0.012 (0.14)
Education	−0.025 (0.089)	−0.026 (0.089)	−0.025 (0.089)	−0.025 (0.089)
Ideology	−0.045* (0.025)	−0.045* (0.025)	−0.045* (0.025)	−0.045* (0.025)
Basque region	−1.24** (0.25)	−1.24** (0.25)	−1.24** (0.27)	−1.24** (0.27)
Madrid	0.14 (0.17)	0.14 (0.18)	0.15 (0.21)	0.15 (0.21)
Abs income		0.09 (0.13)		
Rich region			−0.077 (0.28)	
Inc × Rich region			0.013 (0.042)	
Poor region				0.078 (0.28)
Inc × Poor region				−0.013 (0.042)
Constant	0.34 (0.36)	−0.25 (0.89)	0.36 (0.37)	0.29 (0.41)
n	1,405	1,405	1,405	1,405
Pseudo-R^2	.037	.037	.037	.037

Standard errors in parentheses. Sample excludes Catalonia.
*$p < .10$. **$p < .05$.

Spain without Catalonia.[23] Overall, we find confirmation of Hypothesis 1. Column 1 shows that the respondent's *perceived relative position* of the region is correlated with opposition to regional redistribution.[24] A one-rank increase in regional income (meaning the region is one rank richer) corresponds to a 1 percentage point decrease in support for regional redistribution. Thus, the marginal effect of regional income is in the expected direction, although the overall effect size is modest, as moving from the poorest to richest region reduces support for redistribution by about 10 percentage points. As column 1 shows, the largest coefficient is a binary indicator for residence in the Basque Country; this is unsurprising given that the region is not only the richest region but also has a long politically contentious history with the rest of the Spain (and a special fiscal arrangement). We note that the individual income variable has a small magnitude and is imprecisely estimated.

To account for the possibility that national-level deciles are too coarse to test hypotheses about individual-level income, as the relevant individual income indicator for each person might be the relative income within the region, we also use data on fine-grained income categories to test for the

impact of absolute income on preferences within the control group.[25] The results controlling for this income variable ("Abs income" in Table 2) are seen in column 2. The results show that the effect of regional income on preferences is similar using this alternative individual income measure, which captures a more "absolute" income measure as opposed to the national income decile.[26] We use deciles in the remainder of analyses for ease of interpretation, though all analyses give similar results when using this alternative absolute income measure.

We now use the control group data to test Hypothesis 2, which is about the conditioning role of income. The most straightforward way to test this hypothesis is to examine the impact of the interaction term between individual income and regional income, at differing levels of regional income (specifically, rich vs. poor regions). These results are displayed in Table 2. Columns 3 and 4 of Table 2 show that individual income interacting with regional income does not seem to affect preferences. Column 4 examines this hypothesis by testing for the conditioning role of income in poor regions; there is little impact.[27] These null findings of individual income persist regardless of how one measures individual or regional income, including interacting absolute income with regional income measures, interacting decile or absolute income with continuous regional income measures, and interacting binary measures of a rich versus poor person and a person residing in a rich versus poor region. Furthermore, if we conduct analysis independently by each region, the coefficient on the income variable never has a negative effect (even within the richest regions). Note that throughout the models, the Basque resident variable is negative and the Madrid dummy has no effect.

Overall, the control group findings show some support for fiscal federalism models that emphasize the role of regional income, as regional income is modestly but negatively correlated with support for regional redistribution. But there is little support for theories that pose a more complex relationship between regional and individual income. We suggest that this might be because individuals are misinformed about important factors determining such preferences and because other concerns, in particular views about out-group regions, are relevant. To test this, we turn to our experimental results on information provision.

Treatment Effects From Spain Excluding Catalonia

We first present the information treatment results testing the hypotheses for Spain excluding Catalonia. We then turn to the experimental results in Catalonia specifically.

The Impact of Information on Preferences

We find evidence that informing individuals of their true regional income position affects preferences for inter-regional redistribution, supporting Hypothesis 3. To assess its impact, we compare individuals between the control and experimental group. However, the treatment impact should of course differ depending on whether the respondent learns that her region is relatively poorer or richer. The most straightforward estimation method of assessing the treatment effect of information on regional redistribution preferences is to estimate a model that includes an indicator variable for treatment assignment, the respondent's prior for whether she thinks the region is poorer (or richer) than it actually is, and an interaction term between the treatment assignment and the prior. This interaction term allows us to interpret the effect of learning one's region is richer (poorer) relative to a baseline category, which is those who learn about their region's income in the opposite direction. The estimation should also include an interaction term between treatment assignment and a dichotomous variable indicating whether the respondent's prior belief about his regional ranking is correct (this interaction term captures respondents who learn that they are correct).

In a simple comparison between the control and treatment group, individuals who learn that their region is *poorer* than they thought are more supportive of regional redistribution from wealthier regions to poorer ones (.60 vs. .64, $p < .09$). These treatment effects remain when we estimate standard logistic models with relevant demographic covariates as controls. The results are displayed in Table 3. All estimations control for female gender, labor market status, education, and residence in the Basque region and Madrid. The variable "believes reg richer" is the individual's prior that the region is richer than it actually is (thus, if assigned to the treatment, she will learn that it is in fact poorer). The coefficient of interest is the interaction term between the treatment (assignment to receiving information about the region's true relative rank) and the prior; the variable is simply called "learns reg poorer." The interaction term simply designates the direction of learning (whether the respondent learns that the region is richer or poorer than it actually is). Columns 1 and 2 present the main treatment effects. In column 1, we examine the impact of learning the region is poorer relative to those who learn that it is richer, excluding those who are correct. The positive coefficient on the interaction terms indicates that learning that one's region is poorer makes these respondents more favorable to regional redistribution. Column 2 examines the impact of also including respondents who are correct and learn they are correct; the resulting coefficient has the same effect. Figure 2 displays the

Table 3. Main Information Treatment Effects.

	(1)	(2)
Self reg rank	−0.035** (0.014)	−0.044** (0.013)
Decile	0.028 (0.017)	0.025 (0.016)
Female	−0.33** (0.087)	−0.32** (0.082)
Age	0.010** (0.0039)	0.011** (0.0036)
Unemployed	0.053 (0.11)	0.066 (0.10)
Education	0.038 (0.067)	0.055 (0.064)
Ideology	−0.047** (0.019)	−0.048** (0.018)
Believe reg rich	−0.12 (0.13)	−0.15 (0.13)
Info treatment	−0.11 (0.12)	−0.11 (0.12)
Learns reg poorer	0.28* (0.17)	0.28* (0.17)
Basque region	−1.04** (0.23)	−0.98** (0.22)
Madrid	0.18 (0.17)	0.25 (0.16)
Correct		−0.20 (0.20)
Learns correct		0.34 (0.28)
Constant	0.45 (0.29)	0.46* (0.28)
n	2,476	2,755
Pseudo-R^2	.037	.040

Standard errors in parentheses.
*p < .10. **p < .05.

marginal effects of this information; those who learn their region is poorer are 4 percentage points more supportive of regional redistribution than those who do not learn. The fact that learning that one's region is poorer makes respondents more favorable to regional redistribution is consistent with some of the more straightforward assumptions of many regional redistribution models (Beramendi, 2012).[28]

Do the information effects presented in Table 3 vary by individual or regional income? That is, does individual or regional income condition the effect of information on preferences? Recall from the discussion in the control group that we found little compelling evidence that individual income consistently conditions the impact of regional income on preferences. Overall, we find little experimental evidence that the treatment varies by regional income or individual income. The above treatment effect is not driven by rich versus poor individuals, nor rich versus poor individuals in rich and poor regions. We estimate a set of models that replicate those described in Table 3, and we also interact the treatment assignment with direction of learning with both continuous indicators of regional and individual income and do not observe precisely
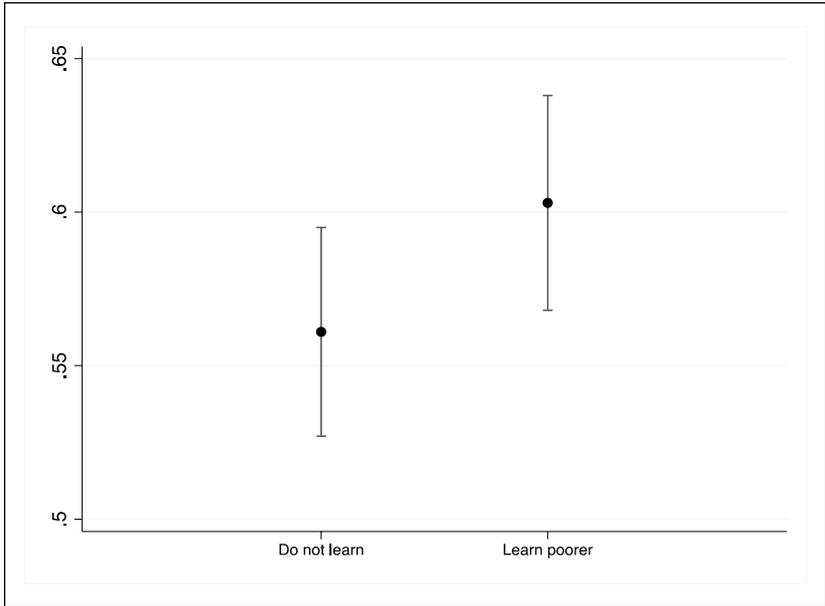
Figure 2. Predicted probabilities of supporting redistribution for those who believe that their region is poorer than it really is, by information (from coefficients of Model 1 in Table 3).

estimated nor substantively large coefficients for individual income. That is, we are unable to discover a consistent conditional impact of either regional income or individual income, or both, regarding the effect of information on regional redistribution preferences. With respect to the conditioning impact of individual income, our null findings challenge models that emphasize the importance of the income distribution within regions as a determinant of preferences.[29]

Even though we find an absence of obvious conditional effects based on one's regional or individual income, we find evidence for another assumption of basic models of regional redistribution, that of inferences based on being a net beneficiary or net contributor. We now turn to test Hypothesis 3b, which posits one intuitive way in which learning effects should differ: If respondents learn their region is above or below the median when they thought it was in the opposite direction, this indicates more relevant information, as respondents could infer that their region is now a net beneficiary or contributor of regional redistribution. Respondents who learn their

Table 4. Effect of Learning Region Is Above or Below Median.

	(1)	(2)
Self reg rank	−0.045** (0.0142)	−0.055** (0.013)
Decile	0.028 (0.017)	0.025 (0.016)
Female	−0.34** (0.087)	−0.34** (0.08)
Age	0.011** (0.0038)	0.012** (0.0037)
Unemployed	0.058 (0.11)	0.071 (0.10)
Education	0.041 (0.067)	0.058 (0.064)
Ideology	−0.049** (0.019)	−0.050** (0.018)
Info treatment	0.17 (0.12)	0.17 (0.12)
Prior = reg < med	0.57** (0.21)	0.62** (0.20)
Learn reg > med	−0.53** (0.26)	−0.52** (0.26)
Believe reg poorer	0.0011 (0.14)	0.027 (0.14)
Learn reg richer, no median-crossing	−0.19 (0.18)	−0.18 (0.18)
Basque region	−0.86** (0.24)	−0.81** (0.22)
Madrid	0.28 (0.18)	0.35** (0.17)
Correct		−0.023 (0.19)
Learn correct		0.058 (0.28)
Constant	0.39 (0.27)	0.36 (0.26)
n	2,476	2,755
Pseudo-R^2	.040	.043

Standard errors in parentheses.
*$p < .10$. **$p < .05$.

region is a net contributor (when their prior was that it was a recipient) should be more opposed to regional redistribution. Table 4 shows that there is an effect of learning whether the region "crosses the median" or learning that the region is above the median. The relevant variable is the interaction between the treatment assignment and the prior belief that the region is below the median (the prior variable is labeled "prior = reg < med"). The interaction term that indicates the respondent learns the region is in fact richer than the median is labeled "learn reg > med." As column 1 shows, its negative value indicates that such learning dampens support for regional redistribution. One inference is that respondents who learn their regions are more likely to be net contributors (receivers) are less (more) likely to support regional redistribution.[30]

Experimental Results: Priming the "Out-Group" and Information's Effect on Preferences

We now turn to a second family of hypotheses that posits the importance of out-group concerns. Hypotheses 4a and 4b capture this approach by specifying the impact of out-group priming in conjunction with information on preferences for regional redistribution. We do so by exogenously priming out-group regions, first focusing on Spain without Catalonia. To do this, we leverage an aspect of the design that randomly asked some respondents to rank ethnically and linguistically distinct regions (the Basque Country and Catalonia) on the regional income scale, whereas other respondents were not asked to rank such regions. This prime is also relevant because it makes those out-group regions salient in a policy relevant context (by asking about their relative income).[31] Although these two regions are among the richest ones in Spain, the fact that there are also rich "in-group" regions in Spain (such as Madrid and La Rioja) enable us to disentangle out-group concerns from purely distributive ones.[32]

The estimation results of these priming effects and priming and information effects are displayed in Table 5.[33] Column 1 shows the effect of being primed by being asked about either the Basque Country or Catalonia; it appears that just being asked about either region significantly increases support for regional redistribution. This is consistent with expectations that being primed to think about the out-group when the out-group is wealthier increases support for transfers from the out-group region. However, as column 2 shows, once we condition the prime on learning, the effect of the prime disappears. (This coefficient is labeled "Primed × Learn poorer.") Instead, respondents who are primed *and* learn their region is relatively poorer are more supportive of regional redistribution. Priming culturally distinct regions affects preferences for fiscal transfers across regions, confirming Hypothesis 4b, but only for those who learn that their region is poorer than they thought. This weakens support for Hypothesis 4a. Column 3 shows that this result holds when we control as well for individuals who are correct and learn that they are correct. This difference in support for regional redistribution is substantively large, as shown in Figure 3.[34] On balance, we find that out-group concerns matter only in the context of other relevant information about relative regional income.

Evidence From Catalonia

We now turn to discussion of the correlates of regional redistribution preferences in Catalonia and examine the role of information and out-group priming. Due to the relevance of Catalan identity in calls for more autonomy, we also test the specific impact of in-group priming. To test our hypotheses

Table 5. Out-Group Priming Effects.

	(1)	(2)	(3)
Self reg rank	0.036** (0.012)	0.034** (0.014)	0.043** (0.013)
Decile	0.028 (0.017)	0.027 (0.017)	0.025 (0.016)
Female	−0.32** (0.086)	−0.33** (0.087)	−0.32** (0.082)
Age	0.12** (0.042)	0.12** (0.042)	0.13** (0.040)
Unemployed	0.054 (0.11)	0.056 (0.11)	0.070 (0.10)
Education	0.038 (0.067)	0.041 (0.067)	0.058 (0.064)
Ideology	−0.046** (0.019)	−0.047** (0.019)	−0.048** (0.018)
Primed	0.26* (0.14)	−0.017 (0.20)	−0.088 (0.18)
Basque region	−1.027** (0.23)	−1.04** (0.23)	−0.98** (0.22)
Madrid	0.18 (0.17)	0.18 (0.18)	0.25 (0.16)
Thinks reg richer		−0.035 (0.10)	−0.080 (0.10)
Primed × Learn poorer		0.54* (0.28)	0.61** (0.27)
Correct			−0.15 (0.19)
Learns correct			0.25 (0.25)
Constant	−0.22 (0.28)	−0.18 (0.28)	−0.32 (0.27)
n	2,476	2,476	2,755
Pseudo-R^2	.038	.039	.041

Standard errors in parentheses.
*$p < .10$. **$p < .05$.

within Catalonia, we present results from the same estimation models in Table 3, for Catalonia only. Table 6 displays the results. Column 1 examines the correlates in the control group. Perceived regional income is not precisely estimated, but strength of Catalan identity is negatively correlated with support for regional redistribution. The binary variable indicating strong Catalan identity reduces support by about 16 percentage points, indicating that within this region, identity orientation is relatively more important than the economic variable of perceived regional income. The results show the limited importance of perceived regional and individual income as a predictor, as opposed to Catalan identity.

We now turn to experimental results to assess the impact of information, out-group priming, and in-group priming. (Recall we now consider "out-group" the rest of Spain.) The results are presented in columns 2 to 4. In each of the columns, the sample is the relevant treatment group and control group, and we are interested in the relevant interaction term of Treatment × Direction of learning or Treatment × The relevant identity prime. In columns 2 and 3, we present the same estimation set-up as in Table 3, where the relevant coefficient
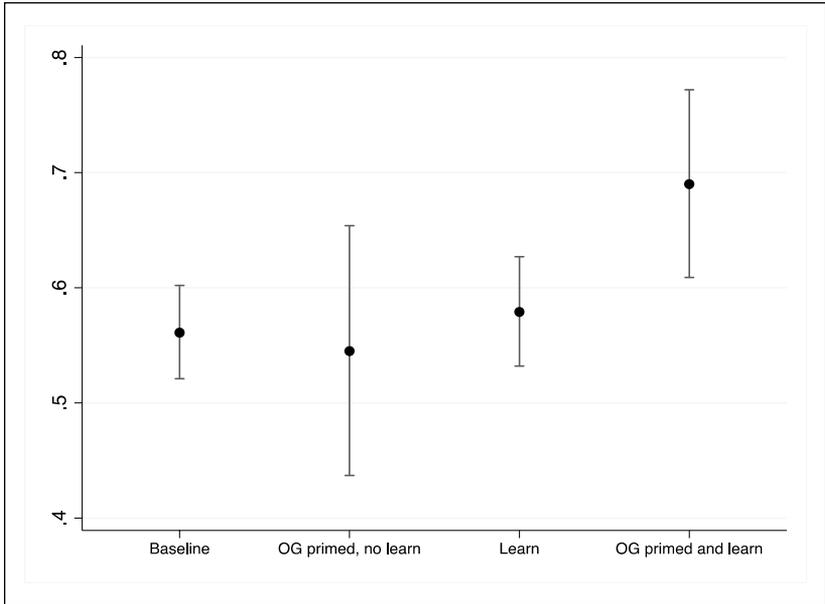
Figure 3. Predicted probabilities of supporting redistribution for those who are primed with an OG, learn that their region is poorer, and both (from Model 2 in Table 5).
OG = out-group.

is Information assignment × Direction of learning. For column 2, the coefficient of interest is "learn richer," which refers to the interaction term of treatment assignment and belief that the region is poorer (thus, the respondent learns the region is richer). For column 3, the coefficient "Learns region richer × Identity prime" refers to the interaction between assignment to Treatment Group 6 (where the respondent learns and is primed on her Catalan identity) and the belief that the region is poorer (thus, the respondent learns the region is richer and is primed). For column 4, the coefficients of interest are the impact of being primed on one's Catalan identity (assignment to the identity prime, "Identity prime") and the interaction between that assignment and prior measured Catalan identity (the coefficient is called "Identity prime × Strong Catalan").

Overall, as columns 2 to 4 of Table 6 show, we find little evidence that information (learning about Catalonia's regional income position) affects preferences for regional redistribution relative to those in the control group. Individuals in Catalonia do not become more opposed to this redistribution

Table 6. Evidence From Catalonia.

	(1)	(2)	(3)	(4)	(5)
Self reg rank	−0.039 (0.040)	−0.067* (0.039)	−0.043 (0.036)	−0.031 (0.027)	−0.0082 (0.025)
Decile	0.026 (0.065)	0.027 (0.041)	0.025 (0.040)	0.0029 (0.046)	0.027 (0.031)
Female	0.22 (0.36)	−0.31 (0.22)	−0.19 (0.20)	−0.15 (0.23)	−0.42** (0.011)
Age	0.027* (0.014)	0.026** (0.0085)	0.0048 (0.0082)	0.013 (0.0093)	0.011** (0.0063)
Unemployed	0.53 (0.48)	0.31 (0.29)	0.17 (0.29)	−0.098 (0.34)	0.19 (0.22)
Education	−0.0029 (0.26)	0.29* (0.16)	0.00094 (0.15)	−0.10 (0.18)	0.18 (0.12)
Ideology	−0.080 (0.081)	−0.028 (0.051)	−0.064 (0.047)	−0.056 (0.057)	−0.044 (0.038)
Strong Catalan	−1.44** (0.40)	−1.22** (0.23)	−1.050** (0.208)	−1.461** (0.395)	−1.01** (0.16)
Thinks Cat poorer		−0.56 (0.49)	−0.39 (0.46)		
Info treatment		0.27 (0.30)			
Learn richer		0.0051 (0.48)			
Correct place		−0.94* (0.52)	−0.68 (0.52)		
Learn correct		1.22* (0.63)			
Info × Identity			0.38 (0.28)		
Learns region richer × Identity prime			−0.11 (0.46)		
Learns correct × Identity prime			0.94 (0.61)		
Identity prime				0.13 (0.28)	
Identity prime × Strong Catalan				0.48 (0.49)	
Extremadura primed					−0.66* (0.31)
Constant	−1.42 (1.23)	−1.31 (0.95)	−0.033 (0.89)	−0.33 (0.84)	−1.10** (0.55)
n	221	565	578	475	922
Pseudo-R^2	.093	.083	.056	.060	.05

Standard errors in parentheses.
*p < .10. **p < .05.

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depending on whether they learn that their region is richer or poorer than their prior. Furthermore, as column 4 shows, we find no evidence that residents in Catalonia who primed to think of their Catalan identity are more hostile toward regional redistribution. We discuss in the conclusion why information seems not to affect such preferences in this region; one reason might be that the relative economic position of Catalonia is not a less critical factor regarding preferences for redistribution, but that other relevant information is.

We do find evidence that out-group priming for Catalan respondents (i.e., priming a subset of regions *outside of Catalonia* that are recipients of transfers) affects preferences for regional redistribution in Catalonia. As we did for the rest of the sample, we assess whether priming via evaluation of randomly asked regions affected preferences over regional redistribution by comparing individuals who were primed to evaluate regions in either information provision treatment (Treatment 5 or Treatment 6) versus individuals in the Catalonia control group who were not primed. Each of the 18 other regions within this experimental group is evaluated by approximately 10% of the Catalan sample. We find that the only region that affects preferences over redistribution is Extremadura, the poorest region in Spain and the one that has arguably benefited the most from regional transfers (Paluzie, 2010). As column 5 shows, the difference between those primed to evaluate Extremadura and those not primed is dramatic; the effect is about 10 percentage points or about one half the effect of identifying as a strong Catalan. Thus, for the region of Catalonia, priming of a specific "out-group" (Extremadura) can dampen support of redistribution, consistent with previous results on inter-personal redistribution.[35] We can only speculate why the reaction is prompted only by this region and not by other recipient regions, but it is likely that for many Catalans, Extremadura encapsulates as no other region does the notion of being both a "recipient of transfers" and "culturally distinct."[36]

Discussion

In this article, we present new data on individual preferences over regional redistribution, a topic that has been surprisingly understudied given the established agenda of research on fiscal federalism and the voluminous literature on inter-personal redistribution. We provide and test some simple hypotheses of such preferences in Spain. We use observational data and experiments embedded in national survey to compare economic versus more identity-oriented factors. Overall, we find some limited support for the most straightforward political economic models that posit both individual and regional income as relevant predictors. Unsurprisingly, individuals in poorer regions

tend to be more supportive of regional redistribution, though the effect is quite modest; in addition, we do not find much effect of a conditional role of individual income in most regions. We use an experimental design to test the informational properties of these models and find that on average, individuals who learn their region is poorer than thought are more supportive of such redistribution and that individuals who learn their region is "above the median" are more opposed to regional redistribution.

Regarding hypotheses that focus on the role of out-group concerns, we find the Basque Country and Catalonia are the regions where people show the least support for inter-regional redistribution. We isolated the causal impact of "out-group" concerns by experimentally manipulating the salience of those out-group regions. We find that when Spaniards are primed by being asked to evaluate the economic rankings of regions representing their "out-group," they are more supportive of inter-regional redistribution, a result that holds throughout non-Catalan regions, even in areas that are also net contributors such as Madrid. However, this effect is driven more by the conjunction between information about being poorer and being primed, and not just being primed to think of out-group regions. Within Catalonia, when Catalan respondents are primed by the poorest region in Spain and the clearest net recipient of transfers (i.e., Extremadura), they are much more opposed to regional redistribution. The goal of the study was not necessarily to arbitrate between these competing families of theories but to show how both could be relevant in explaining preferences for regional redistribution.

Overall, in most of Spain, the observational and experimental evidence supports baseline predictions of simple theories of regional income and that out-group concerns matter in the context of revelation of relevant information about expected winners and losers from regional redistribution. Within Catalonia, where the debate is more salient, we find no evidence of information or income effects, but more evidence of the relevance of out-group region priming in affecting preferences. In the light of these results, we suggest that one reason why individual income does not appear to be an important conditioning variable as such models suggest is that attitudes toward inter-regional redistribution are driven more by attitudes toward out-groups, as well as general beliefs about whether a region is net contributor or receiver. But it could well be the case that individual income would matter more depending on the precise tax-and-transfer scheme across regions and in the case of Catalonia, other types of salient out-group priming could matter.

Our empirical design and results have broader implications, and additional studies might follow up on questions raised here. First, they fill a gap in explaining redistribution preferences in multilevel systems. Second, they also

demonstrate the ways in which providing simple information can affect preferences for regional redistribution. Future work might focus on the causal role of other types of information pertinent to regional redistribution (such as estimates on benefits from transfers or counterfactual incomes without such transfers) and other types of out-group priming besides the domain-relevant primes we provide. We suggest that additional studies might focus more on the conditions under which out-group concerns versus information become more important. It would be particularly interesting to replicate the design and gather data in contexts in which inter-personal redistribution concerns structure political competition more strongly than in the Spanish one and apply this information design to other multi-tiered contexts. Overall, we hope that this article lays a foundation for examining more specific ways in which relevant information as well as out-group priming affect preferences over issues relevant to fiscal federalism, as politicians would surely use both to shape the nature of political debate on this heated topic.

Appendix A

Rankings of Regions (1 = richest, 19 = poorest).

1	Basque Country
2	Navarra
3	Madrid
4	Catalonia
5	Rioja
6	Aragon
7	Balearic Islands
8	Castile and Leon
9	Cantabria
10	Asturias
11	Galicia
12	Valencia
13	Ceuta
14	Canary Islands
15	Murcia
16	Castile–La Mancha
17	Melilla
18	Andalusia
19	Extremadura

Source. Spanish Regional Accounts, Instituto Nacional de Estadística (2012).
The ranking is made on the basis of 2011 regional GDP per capita. GDP = gross domestic product.

Appendix B

Descriptive Statistics.

	M (SD)		Total (%)	
	Spain without Catalonia	Catalonia	Spain without Catalonia	Catalonia
Female			1,431 (51%)	575 (48%)
Age	38.7 (11.5)	44.6 (12.8)		
Redistribution ind (1-5)	4.12 (1.15)	4.10 (1.13)		
Ideology (1-10)	4.51 (2.2)	3.87 (2.04)		
Income decile	5.49 (2.8)	6.28 (2.68)		
Education (3 categories)	2.44 (0.67)	2.44 (0.66)		
Unemployed			594 (21.2%)	180 (15%)
Identifies as more Catalan than Spanish				616 (52%)

CSO2009-12620), and the Spanish Ministry for the Economy and Competitiveness (Reference 2013-48451-R).

Notes

1. We use the terms *regions* and *ACs* (autonomous communities) interchangeably.
2. Correlates of higher inter-regional redistribution include proportional electoral systems, larger electoral districts, less powerful second chambers, and cohesive national parties (Rodden, 2010).
3. Most of these models address conditions under which break-up or maintenance of the state are an equilibrium (Bolton & Roland, 1997). But an underlying assumption of these models is some level of regional redistribution that affects preferences for secession; richer regions prefer secession if the median voter in the rich region under autonomy is better off (transfers less to poorer regions).
4. Sambanis and Milanovic (2014) find that wealthier regions are more likely to demand greater levels of self-determination.
5. Cruces, Truglia, and Tetaz (2013) provide a straightforward formal intuition for how relative income perception affects tax and transfer preferences regarding inter-personal redistribution.
6. In this section, we refer to individual income in terms of a national scale, but in the empirical section we discuss implications of examining income within regions and alternative income categories.
7. Another contrasting set of hypotheses about the role of individual income examines the role of inequality aversion. Recent literature demonstrates the importance of self-interested inequality aversion; however, it is unclear under what circumstances this aversion would occur for residents of rich regions. We partially address this in the next section of hypotheses and test for its presence in the empirical tests (Fehr & Schmidt, 1999; Lu & Scheve, 2014).
8. Poorer individuals in richer regions might be more opposed to inter-regional redistribution than richer individuals because they view such inter-regional transfers as ones they should receive instead as inter-personal transfers (Beramendi, 2012).
9. Cruces et al. (2013) provide the most succinct formal analytical explanation of how income-relevant information should have a straightforward impact on redistribution preferences. Our approach builds on the conceptualization outlined by Lenz, who distinguishes between information that constitutes learning (what our design aims to, as it measures priors as well) from treatments that are pure priming (Lenz, 2009).
10. To reduce confusion regarding discussion of the specific Spanish case, when we refer to the sample in Spain excluding Catalonia, the "in-group" is Spain and the "out-group" regions are Catalonia and the Basque Country. When we refer to the perspective of residents of Catalonia, they are the "in-group" region and the rest of Spain constitutes the "out-group" set of regions.
11. In an inter-personal context, this is the argument regarding "native" opposition to redistribution toward racial minorities in the United States or to immigration, as those "out-groups" are perceived to be the net beneficiaries of redistribution.

12. Beramendi (2012) in Chapter 7 provides an efficient summary of the development of the system of inter-regional fiscal transfers and decentralized institutional change in Spain.
13. Of course, Spain is ethnically and linguistically much more complex than what this simple distinction indicates; dialects of Catalan are spoken in the Balearic Islands and Valencia, and Galicia in the north-west also has its own language. Other regions such as the Canary Islands or Andalusia have strong regional identities. However, the feeling of national identity and cultural distinctiveness among the majority of the people of the Basque Country and Catalonia is much larger and politically more contentious. Amat (2012) demonstrates that preferences for redistribution in these out-group regions are significantly different from other regions.
14. The supplemental online appendix (SOA) (available at cps.sagepub.com/supplemental) gives an overview of Netquest's stratification and sampling strategy and compares our survey with others on the relevant social and demographic variables. It shows no statistically significant differences in the distributions of these variables between the surveys. Our sample has a slight over-sample of younger respondents; all analyses that are re-estimated with weights for age do not change the results.
15. The Spanish-language text asked respondents how much they agreed with the statement, "El sistema autonómico de España debe extraer recursos de las comunidades autónomas con niveles más altos de renta para poder repartir dinero hacia las comunidades autónomas con niveles más bajos de renta."
16. The information question in Spanish is "Como usted sabe, en España hay 17 comunidades autónomas más las 2 ciudades autónomas de Ceuta y Melilla. Si ordenáramos estas 19 autonomías según su renta media, colocando a la más rica en la posición 1 y a la más pobre en la posición 19, ¿en qué posición diría usted que está [región X]?" [As you know, in Spain there are 17 autonomous communities plus the 2 autonomous cities of Ceuta and Melilla. If we sorted these 19 autonomies according the their average income, setting the richest one in position 1 and the poorest one in position 19, in which position would you say is [region X]?] Appendix A gives the objective ranking of each AC from the Instituto Nacional de Estadística (INE). The screenshots for the ranking question are included in the SOA.
17. The three questions asked about individual strength of Catalan identification, views on Catalan language instruction in schools, and views on the need for protection of Catalan culture.
18. The randomization checks in the SOA demonstrate the successful randomization of the treatments; no significant covariates in the Spanish only sample predict treatment assignment. In the Catalan sample, those who identify strongly as Catalan are slightly less likely to be assigned to the control group; as we explain in the discussion of the results, all models control for degree of Catalan identification as well as for the respondent speaking Catalan as a native language.
19. The estimation results are the same if we include a binary indicator for just residence in the Basque country.

20. Because the debate about regional transfers and autonomy is more politically charged in Catalonia (with more pronounced pressures for economic autonomy or independence), we examine those results separately.

21. On average, individuals in rich regions are more likely to learn that their region is *richer* than they thought, whereas individuals in poor regions are more likely to learn that their region is *poorer* than they thought. As Figure 1 shows, most individuals are mistaken about their region's true position.

22. Our results are substantively similar if we conduct ordinary least square (OLS) estimations.

23. All results remain the same (with more precise point estimates) if we include the full weighted Catalonia sample and a binary indicator variable for Catalonia resident.

24. Because the theorized variable of interest linking individual beliefs to preferences should be perceived regional rank, we use this variable as opposed to the actual regional rank. None of the substantive results that we report in the following analyses change if we use actual rank instead of the perceived rank.

25. To construct this absolute income measure, we use data on the 51 income categories where respondents placed themselves (we used these categories to generate national income deciles). We take the average of each income category response option, and normalize by the root of household size using the Organisation for Economic Co-Operation and Development (OECD) equivalence scale, and take its natural log. The actual income categories respondents placed themselves into were 51 intervals ranging from 500 Euros a month to 7,150 Euros per month.

26. We also do not find specific conditional effects among the unemployed.

27. There is no general interaction effect between individual and regional income if both are measured on a more continuous scale as opposed to binary categories.

28. Recall this largely means that individuals in poor regions are learning their regions are poorer than they thought, and those in richer regions are learning the regions are richer than they thought.

29. Due to space constraints, we do not display the full set of null results of individual and regional income here; they are available in the SOA. We estimate models the following ways: (a) division of sample into rich and poor regions and examine the coefficient of Information treatment × Direction of learning (as in Table 3), (b) division of sample into rich and poor regions and examine the three-way interaction coefficient of Information treatment × Direction of learning × Individual income (measured in relative decile and absolute income), and (c) estimation of the full sample including a three-way interaction term of Treatment × Direction of learning × Continuous or binary income wealth measure. In none of the specifications is the interaction of term "Information treatment × Direction of learning × Moderating income variable (regional or individual income)" precisely estimated. We also demonstrate that the amount learned does not affect redistribution preferences (the interaction term between the absolute value of the amount learned and treatment assignment does not have any impact beyond the fact that the respondent learns in one direction or the other).

30. We do not find symmetrical effects for those who learn their region is poorer (below the median).

31. Twenty-two percent of the Spanish sample outside of Catalonia was asked to rank Catalonia or the Basque Country's relative income.

32. We find no equivalent priming effects for respondents asked to evaluate these regions.

33. We check for priming results of the redistribution questions in the control group and find none; that is, a respondent's answer to the question on redistribution does not correlate with ranking either the Basque Country nor Catalonia differently.

34. We conduct a series of alternate specifications to test for other potential priming effects and do not find significant differences nor statistically significant coefficients on the relevant binary priming variables in estimations controlling for demographic covariates. First, we test "neighborhood priming" hypotheses that conjecture that being primed to evaluate one's neighboring region(s) would affect preferences differently from those not primed. We test whether being primed by being asked to evaluate either (a) one bordering neighbor, (b) two neighbors, (c) two poorer neighbors, or (d) two richer neighbors has any effect on preferences, and find no effect. Second, we test whether being primed to evaluate two richer or poorer regions affects preferences, and find no robust effects on preferences. We do find that individuals who rank their region as poorer than the two other regions are more pro redistribution, but this effect is driven by being asked to evaluate one of the two ethnically/linguistically distinct regions, a result discussed above. See the SOA.

35. We do not have sufficient sample sizes with our Catalonia sample to establish whether the priming effect varies based on whether Catalan respondents learn that Catalonia is richer or poorer than their prior.

36. In the Catalan nationalist discourse, Extremadura is often portrayed as a disproportionate beneficiary and the paradigmatic case of a heavily subsidized region.

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