How does Party Fractionalization Convey Preferences for Redistribution in Parliamentary Democracies?

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Abstract

Running regressions on a sample of 18 OECD countries over 23 years, we consider the link between the demand for redistribution and social policy outcomes accounting for the party system. We investigate how the heterogeneity of the demand (distribution of preferences within countries) is translated into policy outcomes, according to the rules of the political game (number of parties). Our results show that a higher degree of party fractionalization enables the demand for redistribution to have a greater impact on the social policy actually implemented.

Keywords: Political demand, party fractionalization, redistribution

JEL Code: D78, H10, H53

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1 Introduction

The aim of this paper is to empirically study the link between demand for redistribution and social policy outcomes accounting for the structure of the political party system. It highlights the role played by the degree of fractionalization of the political supply in the transmission of the demand for redistribution.

The standard Meltzer and Richard (1981) model considers a simple framework where the median voter theorem applies; it neglects the complexity of political mediation and considers that government redistribution depends on the mean-to-median voter income gap. In contemporary societies, the way agents’ conflicting policy demands are brought together and conveyed into the set of choices of government cannot be reduced to a two-party competition on a single dimension. The structure of interest representation has a key role in the definition of the relationship between preference for redistribution and social policy.

Using individual survey data, we devise several measures of the preference for redistribution at the national level for 18 OECD countries over 23 years, going beyond the simple mean-to-median indicator. We consider indicators of the concentration vs. division of the party system to account for the structure of the political supply. We test the joint impact of preference
for redistribution and party fractionalization on the generosity of the social protection system on our panel of countries.

Our results show that the within country heterogeneity in preference for redistribution, more than the average level, has a positive impact on welfare state generosity in interaction with the characteristics of the party system. This impact increases with the degree of party fractionalization. Thus the structure of interest representation has a key role in the definition of the relationship between preferences for redistribution and the extent of government redistribution.

Our contribution to the existing literature on the political economy of the welfare state is threefold. First, we use a direct measure of preferences from microeconomic data gathered in ISSP surveys, thus avoiding the use of a proxy for the demand for redistribution or social protection. Most scholars in empirical political economy use income to proxy these preferences, as suggested by the work of Meltzer and Richard (1981). Second, we take into account the composition effect of the demand, through a measure of the dispersion of preferences. We thus render apparent the link existing between the degree of heterogeneity of voter preferences at the micro level and the policy outcome at the macro level. This enables us to take advantage of individual data on preferences. Third, we consider the interaction between demand and the political supply, taking into account that the impact of the
demand for redistribution is conditioned by the structure of the political supply, characterized here by the degree of fractionalization of the party system.

The paper is organized as follows. In Section 2, we review the related literature and further detail our argument. In Section 3, we describe the data used in the empirical analysis. Section 4 presents our estimation strategy and the results of the basic regressions, while criticisms are addressed in Section 5. Section 6 summarizes the results and Section 7 concludes.

2 Conceptual Framework

2.1 Related Literature

There is a long research tradition in political science that deals with the influence of electoral rules on party structures (Cox, 1990; Lijphart, 1994). Duverger’s law predicts that the majority rule will lead to a two-party system (Grofman, 2006). The outcome of the elections will be a single-party government much more often than when elections are held under the proportional rule. Indeed, the latter has a positive impact on the fractionalization of political parties and leads to coalition governments (Laver and Schofield, 1990).
Furthermore, some recent empirical research in political economics aims at studying the effect of electoral rules on social policy. Results show that majoritarian rule induces lower government spending, smaller budget deficits and more generally less protective welfare states than proportional rule (Iversen, 2005). However, the mechanism that is behind this result is not clear cut. On one hand, Milesi-Feretti, Perotti and Rostagno (2002) who study the size of government and Persson and Tabellini (1999) who consider the composition of government spending, all claim that the electoral rule has an effect on the public expenditure through the incentives of politicians to target marginal districts. According to the electoral rule, the distribution of preferences across social groups and across geographical districts will induce different equilibrium public policy. On the other hand, recent articles by Bawn and Rosenbluth (2006) and Persson, Roland and Tabellini (2007) point out that the electoral rule affects the level of public expenditures through the party structure and the type of government. They conclude that compared to single-party governments, coalition governments lead to higher expenditures. Our analysis partly uses this latter approach, since we aim to show how party structure can impact policy outcome. To explain this result, several arguments are evoked.

An electoral accountability argument is proposed by Bawn and Rosenbluth (2006): Single-party governments, even if they represent heterogeneous
social groups, are supposed to internalize more efficiently the cost of their policy compared to several small parties that vie together within coalition governments and represent each a single social group. This argument is close to the common-pool problem that arises in centralized decision making, when the costs of a policy are shared while the benefits are concentrated (Weingast, Shepsle and Johnsen, 1981).

Persson, Roland and Tabellini (2007) highlight the fact that economic policy formation is built on electoral conflicts between the government and the opposition, but also between parties within coalition governments. Given that the electorate can discriminate between different parties in a coalition government, the authors conclude (and empirically test) that social spending is higher under coalition governments, due to increased intra-government electoral competition. Finally, they claim that the mechanism that yields to inflate public expenditures under the proportional electoral regime has no direct link with the electoral rule, but instead owes to the fractionalization of political parties: “PR induces higher spending than majoritarian elections, but only through more party fragmentation and higher incidence of coalition government. In other words, if we hold the type of government constant, the electoral rule has no direct effect on public spending.” (p.158)

In democracies political demand has a central role in policy formation. Hence, a proper analysis of public policy should take into account the role
played by demand. This political demand does, however, interact with the structure of the political supply. The way heterogeneous demands for redistribution or social protection, are conveyed into the policy arena determines the size of public spending or the generosity of the welfare state. This depends on the structure of the political supply, in terms of party system and electoral rules. Consequently, it is the interaction between the conflictual demands and the way to satisfy them in accordance with the proper objectives of the political parties that determines the final policy equilibrium.

2.2 Our Argument

In the traditional median voter framework (Black, 1948; Downs, 1957), the political demand is rooted in the individual preferences of voters for economic policies, preferences are single-peaked and there is only a single dimension upon which to vote. In order to win the election, two competing parties propose policy platforms which give them the best chances of winning, i.e. the policy preferred by the median voter. The poorer the median voter, the more redistribution or social protection is featured in party platforms. Since these are binding, the bigger the welfare state implemented by the government. One may thus conclude that the more numerous people who agree with redistribution, the bigger the welfare state.
In the Meltzer and Richard (1981) model, redistribution is higher, the larger the gap between the mean and the median income, individual preferences for redistribution being directly derived from individual income. However, the characteristics of the preference distribution influencing the aggregate demand for redistribution or social policy may go beyond the mere consideration of the mean and median. More or less concentrated distributions may lead to different types of aggregate demands. Since empirically the distribution of preferences for redistribution is systematically skewed in favor of a higher demand for redistribution, an increase in dispersion should increase the weight of individuals highly favorable to redistribution. In majority voting, this may have an influence on the platforms proposed by parties and to a higher aggregate demand for redistribution or social policy, particularly in political systems different from the simple two-party competition of the median voter theorem.

In the simple median voter framework, extremes of the preference distribution do not play a role in the determination of party platforms or actual policies. In reality, extremes of the distribution may be the targets of parties in a multiparty competition, and thus play a role in the determination of public policy when parties representing them enter a governing coalition. Therefore, a stronger demand for social policy expressed at one end of the preference distribution would have more influence on the determination of the
policy actually implemented if there is a political party structure which enables these preferences to be represented. A more fractionalized party structure would then be more permissive towards the expression of a demand for strong redistribution or social protection. Consequently, the degree of fractionalization of political parties has a positive impact on the level of public expenditures, but for reasons different from those found in the literature, which mostly rely on the common pool problem. In Baron and Ferejohn (1989), single-party governments internalize the cost of their policy, while coalition governments only see the interest of the social group who supports them. It follows that coalition governments underestimate the total cost of their policy, which is borne by the entire population (Bawn and Rosenbluth, 2006). In our argument, a less concentrated party structure gives opportunities to fractions of the electorate favorable to a more generous social policy to have more weight in the determination of public policy.

3 Data

We use time-series cross-section data for 18 OECD countries over the period 1980-2002 (Table 5). Data come from different sources, some microeconomic

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1 See also Persson, Roland and Tabellini (2007).
2 Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, United Kingdom and USA.
ones when we deal with the demand for redistribution (ISSP surveys over several years\(^3\)) and other macroeconomic ones when it comes to the size of government (Scruggs, 2004). Political variables come from the widely-used databases of Armingeon et al. (2004) and Cusack and Engelhardt (2002).

In order to measure the economic policy that deals with income protection, we use a global index of generosity of the welfare state (Figure 1) calculated by Scruggs (2004)\(^4\). This index is a computation of net replacement rates of unemployment benefits, sickness benefits and pension insurance, the extent of program coverage and duration -it is actually an extension of the decommodification index of Esping-Andersen (1990). The advantage of this index is that it gives a better idea of the willingness of the States to protect income than the ratio of social expenditures to GDP, since it encompasses not only generosity scores, but also measures of access conditions.

The political demand is here defined as being the share of people who agree with government redistribution. More precisely, it is the share of individuals, by year and by country, who agree or strongly agree while answering to the following ISSP survey question: “What is your opinion of the following statement: It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes”.


\(^4\)Scruggs’ Overall Generosity Score is available on his website.
Possible answers rank from 1 (strongly agree) to 5 (strongly disagree). The higher the measure of the demand, the higher the number of people who agree with redistribution\(^5\).

The heterogeneity of the political demand is defined as being the coefficient of variation of preferences for redistribution: It is a measure of dispersion of the within-country distribution of answers, based on the disaggregated data of micro surveys (Figure 2). We first compute the standard deviation, for each survey year and each country, of answers to the question on redistribution; we then divide the standard deviation by the country mean answer, in order to have a scale-free measure of dispersion\(^6\): \[ CV = \frac{\sigma_{p_{i,t}}}{\mu_{p_{i,t}}} \] with \(\sigma\) the standard deviation of the distribution of preferences \(p_{i,t}\) and \(\mu\) the mean preferences, by country \(i\) and year \(t\). We are thus able to compare the dispersion of answers in countries with very different mean preferences\(^7\). The higher the

\(^5\)In order to have a demand variable that is continuous, and given that mean preferences by country are slowly changing over time, we interpolate the missing points between two surveys and suppose that the demand is invariant over the beginning period 1980-1985. Several robustness check have been done (using the mean answer of individuals with and without weights, using the median answer, dropping some time span), which do not affect the results.

\(^6\)We could also take advantage of a measure of the asymmetry of the distribution of preferences by country, either proxied by the difference between the mean and the median divided by the standard deviation of the distribution (Pearson’s skewness), or calculated with respect to the third moment about the mean (Fisher’s skewness). However, since the distribution of preferences is systematically skewed to the right in our sample (mean > median), results are similar to those obtained using the mean level of preferences.

\(^7\)As a robustness check, we also computed the index of ordinal variation (I.O.V.) instead of the standard deviation of demand for redistribution. The I.O.V. is 0 when all values fall into one category, and 1 when extreme polarization is present. In our sample, it varies from 0.47 to 0.79. The correlation between the index of ordinal variation and the standard deviation of our demand variable is 98%. This comforts our assumption of continuous preferences. Hence, considering that the standard deviation is a more popular concept,
CV, the more heterogeneous within-country preferences for redistribution.

Finally, the fractionalization of the party system is taken from Armingeon et al. (2004) and measured according to the formula of Rae (1967): $F = 1 - \sum_{i=1}^{m} t_i^2$ with $t_i$ the share of votes for party $i$ and $m$ the number of parties (Figure 3). The higher the Rae’s index, the more fractionalized the party system (the higher the number of parties).

As for controls, we include in our regressions the government’s ideological position in the left-right spectrum (continuous variable) weighted by votes, calculated by Amable, Gatti and Schumacher (2006) using information from Cusack and Engelhardt (2002) database. This database builds itself on the Comparative Manifesto Project (Budge et al., 2001). The standardized unemployment rate (OECD) is used as an additional macroeconomic control, along with a measure of productivity (GDP per employed worker based on US dollars 2002, OECD). Productivity enters the regression in natural logarithm and with a 1 period lag, in order to limit collinearity with the unemployment rate.

Our time-series cross-section data set contains 18 OECD countries over 23 years. However, only 15 countries participated to the ISSP modules we are interested in to construct our demand variable. Indeed, Belgium and

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8We also checked for the inclusion of a measure of inflation and budget deficit, but these never turned out to be significant, so we do not include them in the final regressions.
Finland did not participate, and data for Denmark are available only for the last wave (year 1999), on a non standardized separate data set. We did not include it in the analysis. Nor did we include Netherlands and Portugal, since the ISSP data were available only for the year 1999, implying a time-invariant demand for redistribution over the entire period. Finally, when dealing with the generosity score of the welfare state constructed by Scruggs (2004), data for Portugal and Spain are not available. We eventually run the regressions for 12 countries over the time span 1980-2002 (Table 5).

There are a number of problems coming with the use of cross-section time-series data. Below, we discuss some of them and the solutions we adopted to deal with them. Specifically, we explain our choice of including fixed effects into the model, hence consciously restricting our insight to intra-country variation (Section 4). We further deal with the issue of correctly estimating the impact of time-invariant variables while keeping fixed effects into the model (Section 5).

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9 As a robustness check, we included Netherlands in the sample. Results are left unchanged.
10 As a benchmark, we first estimated a naive pooled OLS model (results not shown here), which did not take into account the panel structure of our data. We concluded from this first set of basic results that there is a positive relationship between the level of the demand for redistribution and the generosity of governments, and between the degree of party fractionalization and the generosity of governments. Importantly, demand for redistribution and party fractionalization are complementary: An increase in the former enhances the positive impact of the latter on welfare state generosity, and vice versa.
4 Estimation Strategy and Basic Results

4.1 Model Specification

Our baseline model includes country fixed effects to account for unobserved heterogeneity:

\[ y_{it} = \beta_1 f_{it} + \beta_2 p_{it} + \beta_{12} f_{it} p_{it} + \delta_t + \eta_i + \mu_{it} \] (1)

where \( \eta_i \) represents the country unit effect and \( \mu_{it} \) is the i.i.d. error term, \( y_{it} \) being the overall generosity score of the welfare state, which is defined by country \( i \) and by year \( t \), \( f_{it} \) being the level of party fractionalization measured by the Rae formula, \( p_{it} \) being either the level or the coefficient of variation of preferences for redistribution, and \( f_{it} p_{it} \) being the interaction between party fractionalization and preferences (level or dispersion). Moreover, while adding time dummies \( \delta_t \) we control for additional (macroeconomic) shocks that are common to all countries\(^{11}\). In other words, we test a reduced form of a relationship with a complementarity effect.

In a second specification of our model, we add some of the controls usually found in the literature: Unemployment rate, labor productivity (in log,}

\(^{11}\)We also checked for the existence of non linear relationships between variables, as it would make sense according to our descriptive statistics. To do this, we applied a logarithmic transformation to our dependent and continuous independent variables in equation (1). Results are globally the same as those obtained with a linear approximation, so we do not report them here.
lagged once in order to limit collinearity with the unemployment rate) and a measure of the partisanship of the government (continuous left-right index). There are a number of statistical properties to verify while using the fixed effects model. First, cross-section correlation (spatial correlation) is a problem for fixed effect estimation. Then, after running a standard fixed effect model, we look at the Breusch-Pagan statistic that tests for cross-section independence in the residuals. Indeed, a fixed effect model assumes the independence of the errors. A likely deviation from independent errors in the context of pooled cross-section time-series data is the presence of contemporaneous correlations across cross-sectional units (here across countries). The null hypothesis of the Breusch-Pagan test is that of cross-sectional independence. The test rejects the null hypothesis, hence there is spatial correlation in our data.

Second, a fixed effect model assumes homoskedasticity. The most likely deviation from homoskedastic errors in the context of pooled cross-section time-series data like ours is the presence of error variances specific to the cross-sectional unit. Therefore, we calculate a modified Wald statistic for

\[ \chi^2(66) = 158.526, \; p < 0.01 \] for the model with the level of demand, and \[ \chi^2(66) = 145.016, \; p < 0.01 \] for the model with the dispersion of preferences.

\[ \chi^2(66) = 158.526, \; p < 0.01 \] for the model with the demand variable, which is precisely the reason why it is usually included in the literature given that scholars try to proxy the demand (Tabellini, 2000).

It is worth to notice that we do not include a measure of age dependency (e.g. share of the population below 15 or over 65), since this would be strongly correlated with our demand variable, which is precisely the reason why it is usually included in the literature given that scholars try to proxy the demand (Tabellini, 2000).
groupwise heteroskedasticity in the residuals of a fixed effect regression model. The null hypothesis of homoskedasticity is strongly rejected\textsuperscript{14}.

Thus, the above tests suggest that we might not use the standard fixed effect procedure without taking into account spatial correlation and panel heteroskedasticity. As a consequence, we run least squares dummy variables (LSDV) regressions (i.e. the unobserved effect is brought explicitly into the model) that allow us to compute panel corrected standard errors (PCSE), following Beck and Katz (1995)\textsuperscript{15}.

Since we consider an interaction term between fractionalization and preferences \((f_{it}p_{it})\) in equation (1), the assessment concerning the expected over-all effect of \(p_{it}\) needs the computation of its marginal effect conditional on specific values of \(f_{it}\):

\[
\frac{\partial E(y_{it}/x)}{\partial p_{it}} = \hat{\beta}_2 + \hat{\beta}_{12}f_{it} \tag{2}
\]

given that \(x\) is the vector of explanatory variables.

Hence, it is worth to notice that a positive and significant \(\beta_2\) means nothing but that preferences for redistribution increase the generosity of the State, only for those countries where the degree of party fractionalization is zero \((f_{it} = 0)\). That is for the unrealistic case of a single-party legisla-

\textsuperscript{14}Modified Wald test for groupwise heteroskedasticity: \(\chi^2(12) = 457.44, p < 0.01\) for the model with the level of demand, and \(\chi^2(12) = 1092.01, p < 0.01\) for the model with dispersion of preferences.

\textsuperscript{15}Indeed, PCSE take into account panel-level heteroskedasticity and contemporaneous spatial correlation.
Keeping in mind that the coefficient and standard errors that appear in the output of the regressions are partial ones - and not general ones like in an additive model - it is not surprising that statistically insignificant (and negative) coefficients might combine to produce statistically significant (and positive) overall effects (Friedrich, 1982). Hence in the following, we systematically report marginal effects of preferences for redistribution at different sample values of party fractionalization (minimum, mean minus one standard deviation, mean, mean plus one standard deviation, maximum).

4.2 Results

Results concerning the impact of the demand for redistribution in level on the welfare state generosity are shown in Tables 1 and 2, columns [1], [2] and [3], whereas Tables 3 and 4 investigate the impact of the dispersion of the demand. Throughout the estimation process, we add variables step by step (Tables 1 and 3): First, we test a linear model without the complementarity effect (columns [1] and [5]), then we add the interaction term (columns [2] and [6]), and finally macroeconomic and political controls (columns [3] and [7]). As a start, we notice the high R-squared: Our fixed effects model is able to explain more than 95% of the sample variation. Moreover, fixed

\footnote{This case, actually, could be achieved through a dictatorship, but since we only include democratic countries in our dataset zero party fractionalization never occurs.}
effects are strongly significant\textsuperscript{17}, which means that not including them into the regression leads to an important omitted variable bias (Green, Kim and Yoon, 2001).

Two important results show up. First, the impact of the demand for redistribution, which is a slowly changing variable, is entirely captured by country fixed effects: The coefficients of columns [2] and [3] Table 2 cannot be distinguished from 0 -although we still capture the complementarity effect between the demand and party fractionalization\textsuperscript{18}.

Second, the impact of the dispersion of preferences for redistribution, which is also a slowly changing variable, resists the introduction of country fixed effects: The coefficients of columns [6] and [7] Table 4 are positive and significant. Moreover, once controls are included in the regression we capture the complementarity effect between dispersion of preferences and party fractionalization.

In addition, the effect of party fractionalization on welfare state generosity is strongly decreased by the inclusion of fixed effects: Except when the demand for redistribution (in level or in dispersion) is at its maximum value, we merely find an impact of party fractionalization (the effect vanishes when

\textsuperscript{17}Fixed effects coefficients are not shown here for space reason.

\textsuperscript{18}Interestingly though, the impact of the demand for redistribution on welfare state generosity is negative and significant when party fractionalization is at very low levels. However, we have no explanation for this, except that running a fixed effects regression with slowly changing variable may lead to inefficient estimates (Beck and Katz, 1995; Plümper and Troeger, 2007).
Looking at control variables, we notice the positive but non-significant coefficient of government partisanship once country fixed effects are included. This would suggest that governments directly encompass the demand within their policy decision, and have themselves no preferred policy. But we could also assume that the partisan position of governments, due to a feedback effect, is already captured by the term which expresses individual preferences (Gerber and Jackson, 1993). Concerning the macroeconomic controls, we notice that the unemployment rate acts negatively on the index of generosity of the welfare state. We interpret this as a downward adjustment of the replacement rates to an increase in the number of beneficiaries. 

5 Extensions

Our measure of preferences \( p_{it} \), be it in level or in dispersion, is considered as a rarely changing variable. This means that the demand for redistribution is almost time-invariant or at least cross-sectionally dominated. Indeed, as shown in Table 5, the between variance is more than 3 times higher than the within variance. Hence, we are confronted to the well-known problem.

\footnote{We computed the marginal effects of party fractionalization at different sample values of preferences. However, due to space constraints, the tables summarizing the marginal effects of party fractionalization are not shown here.}

\footnote{See Amable, Gatti and Schumacher (2006) for evidence on this point.}
of estimating a fixed effects model with (almost) time-invariant variables. The problem comes from the fact that all the effect of the time-invariant variables is likely to be captured by the unit fixed effects\(^{21}\). To deal with this issue, we make use of the estimator proposed by Plümper and Troeger (2007): A three-stage panel fixed effects vector decomposition model (FEVD procedure).

The FEVD process allows for the inclusion of time-invariant variables and efficiently estimates almost time-invariant explanatory variables within a panel fixed effects framework. The first stage estimates a pure fixed effects model in order to obtain an estimate of the unit effects (here our country effects \(\eta_i\)). The second stage decomposes the fixed effects vector into a part explained by the time-invariant or almost time-invariant variables (here our demand for redistribution \(p_{it}\)) and an unexplainable part -the error term of the second stage. Finally, the third stage re-estimates the original model by pooled OLS, including the error term of the second stage. This third step assures to control for collinearity between time-varying and invariant right-hand side variables, and adjusts the degrees of freedom. To complement the estimation process, we apply panel corrected standard errors (PCSE) to the

\(^{21}\)The problem of almost time-invariant variables with fixed effects is slightly different from the issue raised by time-invariant variables with fixed effects. As explained by Plümper and Troeger (p.16, 2007), “When the within variance is small, the FE model does not only compute large standard errors, but in addition the sampling variance gets large and therefore the reliability of point predictions is low and the probability that the estimated coefficient deviates largely from the true coefficient increases.”
third stage pooled OLS.

Results for the level of the demand are shown in Tables 1 and 2, column [4]. We notice that the main impact of applying the FEVD procedure is to change the coefficient of the almost time-invariant variable, while letting the other coefficients unchanged. The marginal effects of the demand for redistribution calculated in Table 2 for different values of party fractionalization are positive and highly significant. They increase with the fractionalization of the party system. Hence, the demand for redistribution is shown to have a strong impact on welfare state generosity.

Results for the dispersion of preferences are shown in Tables 3 and 4, column [8]. The marginal effects of the dispersion of preferences for redistribution calculated in Table 4 for different values of party fractionalization are positive and highly significant. They increase with the fractionalization of the party system. We notice that the results obtained by FEVD estimates (column [8]) are very close to the one obtained by FE estimates (column [7]).

Finally, the fractionalization of political parties has a positive impact on the welfare state only to the extent that there is a relatively high demand for redistribution. Contrary to what has been found in the literature (Milesi-Ferretti, Perotti and Rostagno, 2002; Bawn and Rosenbluth, 2006), we do not find strong evidence of a direct impact of the fractionalization of parties
on the size of government\textsuperscript{22}.

Due to the fact that almost time-invariant variables are estimated by quasi-pooled OLS in the second stage, their coefficients are possibly biased, depending on their correlation with the unobserved unit effects (Plümper and Troeger, 2004). The bias is positive (negative) if the rarely changing variables covary positively (negatively) with the unit fixed effects. The importance of the bias depends on the size of the correlation and on the size of the between-to-within ratio of the rarely changing variable: The smaller the actual correlation and the larger this ratio, the smaller the actual bias. Plümper and Troeger (2007) run Monte-Carlo estimates to identify the conditions under which the FEVD procedure is preferable to the FE estimates. They show that if there is no correlation between the rarely changing variable and the unit country effect, the between-to-within ratio can be as small as 0.2; if the correlation is 0.3, the ratio should be larger than 1.7; at a correlation of 0.5, the threshold increases to about 2.8.

Running the correlation matrix between our variables of interest and the

\textsuperscript{22}Milesi-Ferretti, Perotti and Rostagno (2002) use data for 20 OECD countries over the period 1960-1995. They look at the impact of a macro shock at different level of proportionality of the political system on the spending/GDP ratio and on the transfer/GDP ratio (OECD data). They conclude that the higher the proportionality of the system, the higher the impact of a macro shock on the public spending. Bawn and Rosenbluth (2006) use data for 17 Western European countries over the period 1970-1998. They look at the impact of the number of parties \textit{in government} (extracted from the database of Warwick, 1994) on the overall government expenditure as a fraction of GDP in a given year (OECD data). They find a positive impact of the number of parties in government on the overall government expenditure.
estimated unit effects (after the fixed effects model of the first stage), we find correlations of 0.32 (demand for redistribution) and 0.04 (dispersion of preferences). We know from Table 5 that the between-to-within ratio of our slowly changing variables is 3.46 if we consider the demand for redistribution (i.e. two times the recommended threshold of 1.7), and as big as 2.90 if we consider the dispersion of preferences for redistribution. Hence, our FEVD estimates are undoubtedly consistent and we can be confident in our results.

6 What Have We Learned?

The analysis conducted in this paper helps to know what drives the generosity of the welfare state. Focusing on the interaction between the political demand for redistribution and the fractionalization of political parties, our results have two important implications. First, we show that the political demand is indeed conveyed to the political arena, since it has a direct impact on the level of generosity of the State even when the fractionalization of the political supply is weak (in other words, democracy works well). In addition, the political demand and the fractionalization of parties are complementary.

In order to interpret these results, it is important to get some sense of the magnitude of the effect. Other things being equal, raising by 10% the number of people who agree with redistribution implies: An increase of 3.2%
of the welfare state generosity score, when the number of political parties (Rae’s index) is at its minimum (2 parties); An increase of 5.3% when the number of political parties reaches its maximum value (10 parties). Hence, the political demand has a non trivial impact on public policy outcome. This impact is bigger, the higher the number of parties in the legislature.

Second, while assessing the impact of the dispersion of preferences on the generosity of the welfare state, we show that this impact is increasing with the fractionalization of the party system. The generosity of the government is higher when the demand is spread out, and the fractionalization of parties helps to convey the dispersion of this demand. Results are robust to the choice of the estimation process.\(^{23}\)

Indeed, other things being equal, raising by 10% the coefficient of variation of preferences for redistribution implies: An increase of 3.7% of the welfare state generosity score, when the number of political parties (Rae’s index) is at its minimum (2 parties); An increase of 5.4% when the number of political parties reaches its maximum value (10 parties). We conclude that within-country heterogeneity of the political demand for redistribution is highly conveyed by party fractionalization.

\(^{23}\)Even if the unit fixed effect partly captures the impact of the demand when running an OLS with country dummies, the coefficient of preferences dispersion remains positive and significant.
7 Conclusion

This paper has proposed an empirical analysis of the interaction between the demand for redistribution expressed by individuals and the structure of the political supply. This is done to explain the level of generosity of the welfare state and its variation within countries. The originality of our study is to use a direct measure of individual voter preferences, then to analyze the composition effect of the demand on policy outcome, and to take into account the interaction between the demand for redistribution and the structure of the political supply.

Results clearly show that the demand for redistribution measured in level and in dispersion leads to a more generous welfare state, the more fractionalized the party system (the higher the number of parties in Parliament). This is robust to a large variety of econometric specifications.

In particular, the impact of the dispersion of preferences on the generosity of the welfare state increases very rapidly with the degree of the fractionalization of parties: It increases by half-size in the various fixed effect specifications, when the fractionalization varies from its minimum value (2 parties) to its maximum value (10 parties). Hence, conflictual demands of heterogeneous agents can find a way to be expressed in public policies according to the design of the political mediation.
References


## A Demand for Redistribution

Table 1: Welfare state generosity (FE)

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<th>[1]</th>
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<tr>
<td>demand for redist.</td>
<td>-0.043</td>
<td>-0.231*</td>
<td>-0.178</td>
<td>0.028***</td>
</tr>
<tr>
<td></td>
<td>(0.032)</td>
<td>(0.118)</td>
<td>(0.126)</td>
<td>(0.007)</td>
</tr>
<tr>
<td>party fract.</td>
<td>0.091**</td>
<td>-0.077</td>
<td>-0.105</td>
<td>-0.105**</td>
</tr>
<tr>
<td></td>
<td>(0.043)</td>
<td>(0.116)</td>
<td>(0.109)</td>
<td>(0.045)</td>
</tr>
<tr>
<td>dem. redist. x fract.</td>
<td>0.003</td>
<td>0.002</td>
<td>0.002***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.002)</td>
<td>(0.000)</td>
<td></td>
</tr>
<tr>
<td>unempl. rate</td>
<td>-0.304***</td>
<td>-0.304***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.065)</td>
<td>(0.066)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>productivity (-1)</td>
<td>-5.024**</td>
<td>-5.024**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.348)</td>
<td>(2.388)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>gov. partisanship</td>
<td>0.003</td>
<td>0.003</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.007)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Estimator</th>
<th>lsdv</th>
<th>lsdv</th>
<th>lsdv</th>
<th>fevd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year dummies</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Country dummies</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Number of Obs</td>
<td>276</td>
<td>276</td>
<td>245</td>
<td>245</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.955</td>
<td>0.955</td>
<td>0.971</td>
<td>0.971</td>
</tr>
</tbody>
</table>

Note: Panel corrected standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Table 2: Marginal effect of the demand for redistribution (FE)

<table>
<thead>
<tr>
<th>party fract.</th>
<th>[2]</th>
<th>[3]</th>
<th>[4]</th>
</tr>
</thead>
<tbody>
<tr>
<td>min</td>
<td>-0.100**</td>
<td>-0.053</td>
<td>0.153***</td>
</tr>
<tr>
<td></td>
<td>(0.040)</td>
<td>(0.042)</td>
<td>(0.018)</td>
</tr>
<tr>
<td>mean_less_lsd</td>
<td>-0.067**</td>
<td>-0.022</td>
<td>0.184***</td>
</tr>
<tr>
<td></td>
<td>(0.030)</td>
<td>(0.027)</td>
<td>(0.022)</td>
</tr>
<tr>
<td>mean</td>
<td>-0.045</td>
<td>-0.001</td>
<td>0.204***</td>
</tr>
<tr>
<td></td>
<td>(0.030)</td>
<td>(0.023)</td>
<td>(0.025)</td>
</tr>
<tr>
<td>mean_plus_lsd</td>
<td>-0.023</td>
<td>0.019</td>
<td>0.225***</td>
</tr>
<tr>
<td></td>
<td>(0.038)</td>
<td>(0.028)</td>
<td>(0.029)</td>
</tr>
<tr>
<td>max</td>
<td>-0.004</td>
<td>0.038</td>
<td>0.244***</td>
</tr>
<tr>
<td></td>
<td>(0.047)</td>
<td>(0.037)</td>
<td>(0.031)</td>
</tr>
</tbody>
</table>

Note: Standard errors in parentheses.

*p < 0.10, **p < 0.05, ***p < 0.01
B Dispersion of Preferences

Table 3: Welfare state generosity (FE)

<table>
<thead>
<tr>
<th></th>
<th>[5]</th>
<th>[6]</th>
<th>[7]</th>
<th>[8]</th>
</tr>
</thead>
<tbody>
<tr>
<td>disp. pref. redist.</td>
<td>0.086**</td>
<td>0.107</td>
<td>-0.006</td>
<td>0.052***</td>
</tr>
<tr>
<td></td>
<td>(0.043)</td>
<td>(0.239)</td>
<td>(0.230)</td>
<td>(0.010)</td>
</tr>
<tr>
<td>party fract.</td>
<td>0.100**</td>
<td>0.115</td>
<td>-0.090</td>
<td>-0.090*</td>
</tr>
<tr>
<td></td>
<td>(0.045)</td>
<td>(0.194)</td>
<td>(0.181)</td>
<td>(0.051)</td>
</tr>
<tr>
<td>disp. redist. x fract.</td>
<td>-0.000</td>
<td>0.003</td>
<td>0.003***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.003)</td>
<td>(0.001)</td>
<td></td>
</tr>
<tr>
<td>unempl. rate</td>
<td>-0.354***</td>
<td>-0.354***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.068)</td>
<td>(0.070)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>productivity (-1)</td>
<td>-6.194**</td>
<td>-6.194**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.578)</td>
<td>(2.591)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>gov. partisanship</td>
<td>0.004</td>
<td>0.004</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.007)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Estimator                  | lsdv    | lsdv    | lsdv    | fevd    |
Year dummies               | yes     | yes     | yes     | yes     |
Country dummies            | yes     | yes     | yes     | yes     |
Number of Obs              | 276     | 276     | 245     | 245     |
R-Squared                  | 0.955   | 0.955   | 0.972   | 0.972   |

Note: Panel corrected standard errors in parentheses.

*p < 0.10, **p < 0.05, ***p < 0.01
Table 4: Marginal effect of the dispersion of preferences (FE)

<table>
<thead>
<tr>
<th></th>
<th>[6]</th>
<th>[7]</th>
<th>[8]</th>
</tr>
</thead>
<tbody>
<tr>
<td>min</td>
<td>0.093</td>
<td>0.135**</td>
<td>0.193***</td>
</tr>
<tr>
<td></td>
<td>(0.081)</td>
<td>(0.066)</td>
<td>(0.032)</td>
</tr>
<tr>
<td>mean_less_1sd</td>
<td>0.089*</td>
<td>0.170***</td>
<td>0.228***</td>
</tr>
<tr>
<td></td>
<td>(0.050)</td>
<td>(0.039)</td>
<td>(0.040)</td>
</tr>
<tr>
<td>mean</td>
<td>0.087**</td>
<td>0.194***</td>
<td>0.251***</td>
</tr>
<tr>
<td></td>
<td>(0.041)</td>
<td>(0.039)</td>
<td>(0.045)</td>
</tr>
<tr>
<td>mean_plus_1sd</td>
<td>0.084*</td>
<td>0.217***</td>
<td>0.275***</td>
</tr>
<tr>
<td></td>
<td>(0.051)</td>
<td>(0.057)</td>
<td>(0.051)</td>
</tr>
<tr>
<td>max</td>
<td>0.082</td>
<td>0.239***</td>
<td>0.297***</td>
</tr>
<tr>
<td></td>
<td>(0.068)</td>
<td>(0.079)</td>
<td>(0.056)</td>
</tr>
</tbody>
</table>

Note: Standard errors in parentheses.

*p < 0.10, **p < 0.05, ***p < 0.01
C Descriptive Statistics

Table 5: Summary statistics of the sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SDbw</th>
<th>SDwth</th>
<th>b/w</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
<th>n</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>WS generosity</td>
<td>26.61</td>
<td>7.80</td>
<td>1.70</td>
<td>4.60</td>
<td>17.42</td>
<td>45.38</td>
<td>276</td>
<td>12</td>
<td>23</td>
</tr>
<tr>
<td>demand for redist.</td>
<td>56.82</td>
<td>11.73</td>
<td>3.40</td>
<td>3.46</td>
<td>29.47</td>
<td>81.76</td>
<td>276</td>
<td>12</td>
<td>23</td>
</tr>
<tr>
<td>disp. pref. redist.</td>
<td>48.22</td>
<td>5.82</td>
<td>2.00</td>
<td>2.90</td>
<td>35.66</td>
<td>63.48</td>
<td>276</td>
<td>12</td>
<td>23</td>
</tr>
<tr>
<td>party fract.</td>
<td>71.12</td>
<td>7.78</td>
<td>3.87</td>
<td>2.01</td>
<td>50.10</td>
<td>86.85</td>
<td>276</td>
<td>12</td>
<td>23</td>
</tr>
<tr>
<td>unempl. rate</td>
<td>7.04</td>
<td>2.73</td>
<td>2.01</td>
<td>1.35</td>
<td>1.60</td>
<td>16.80</td>
<td>276</td>
<td>12</td>
<td>23</td>
</tr>
<tr>
<td>gov. partisanship</td>
<td>55.34</td>
<td>11.84</td>
<td>12.66</td>
<td>0.93</td>
<td>18.20</td>
<td>93.29</td>
<td>257</td>
<td>12</td>
<td>&gt;21</td>
</tr>
<tr>
<td>productivity (log)</td>
<td>10.89</td>
<td>0.10</td>
<td>0.13</td>
<td>0.77</td>
<td>10.46</td>
<td>11.24</td>
<td>276</td>
<td>12</td>
<td>23</td>
</tr>
</tbody>
</table>

Note: Our sample includes 12 countries over 18: Belgium, Denmark, Finland, Netherlands, Portugal and Spain are excluded from the sample due to the lack of data availability.

Figure 1: Welfare state generosity by country
Figure 2: Distribution of preferences for redistribution - 1999

Figure 3: Party fractionalization by country