Heterogeneity in preferences for redistribution and public spending: A cross country analysis[*]

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Abstract

Political coordination and policy outcomes may be the result not only of the position of the 'median voter' in a political scale, but also of the heterogeneity of preferences around the median. Depending on the level of government and on the type of policy, such heterogeneity may lead to lower public spending and redistribution. We assess this issue empirically, by analyzing the relationship between the distribution of preferences for redistribution and the amount of public expenditures at different levels of government and for several types of spending in 23 European countries. Our results suggest a negative and significant correlation between heterogeneity of preferences for redistribution and public spending, that is stronger at local level and for redistributive functions, independently of the preferences of the median individual.

1 Introduction

Government public spending depends on the propensity for redistribution of individuals through the democratic process, and the propensity for redistribution depends in turn on the level of income and wealth inequality. This simple relation dates back to Meltzer and Richard (1981) and an impressive amount of political economics studies focused on it since then, trying to empirically test its validity and investigating more in depth whether and how other factors may affect this apparently straightforward theoretical prediction. Among others, Bellani and Ursprung (2019) provide a very recent survey on the link between inequality and support for redistributive public policies, while Alesina and Giuliano (2010) review the reasons other than economic inequality that may influence the propensity for redistribution.

A society in which all individuals have the same propensity for redistribution and a society in which only slightly more than half share the same propensity may have different outcomes in terms of actual redistribution. And a third society in which only the mean (or the median) individual has that propensity for redistribution may have a third different outcome, even if the preferences of the pivotal individual are the same in each of the three societies. Therefore, not only the average level, but also the *diversity* of those preferences is likely to have an impact on actual redistribution in the society.

In this paper we focus in particular on the relationship between the *heterogeneity* of preferences for redistribution across individuals and both the level of general public spending and its allocation between different types of expenditures, at different levels of government.

There are two main innovations with respect to the existing literature: first, we are able to look directly at individual attitudes, instead of proxying them by socio-economic variables; second, we can analyze possible different effects on general public spending at different levels of government and on specific spending functions.[1] Both improvements are possible by using survey data from the European Social Survey, that includes specific questions on several aspects of social trust, politics, welfare attitudes and so on, and expenditure data from Eurostat, newly available also at central and local levels. Our findings confirm the role played by the heterogeneity of preferences in shaping the features of public expenditures and the public sector, even if we are not able to disentangle between the possible channels described in the

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[1]According to the classification by the European System of National Accounts (ESA 2010), spending functions classify 'the purpose for which expenditure transactions are undertaken.' (European Commission, 2013).

following sections. Indeed, not only diverse preferences affect the amount of public spending, but also its composition, with some kind of public spending, namely those more related to cash redistribution, being mostly affected by diversity in those preferences.

The remainder of our paper proceeds as follows. In the next subsections, we briefly review the most relevant literature and sketch our conceptual framework. In Sections 2 and 3 we introduce the data used and the empirical strategy chosen, respectively. Section 4 presents and discusses our main results. Finally, Section 5 concludes.

1.1 Related Literature

Government public spending is decided through the democratic process. We know from the literature that electoral motives, government ideology, economic conditions and globalization might influence the level of the budget and its composition (see, among others, Schulze and Ursprung, 1999; Dreher et al., 2008; Castro and Martins, 2018; Potrafke, 2011, 2019). We also know that government public spending depends on the propensity for redistribution of individuals. The first, more intuitive feature affecting individuals' propensity for redistribution is their level of income and wealth. Quite intuitively, the rational agents literature predicts that richer individuals would choose lower levels of redistribution (Meltzer and Richard, 1981). However, there are several reasons for rich individuals to ask for more redistribution, for instance if redistribution has positive spillovers (in terms of less crime, healthier society, more political participation, more education, and so on), or for poor individuals to demand less of it, maybe because of the prospect of upward mobility (Benabou and Ok, 2001), or because of the trickle-down effect (Aghion and Bolton, 1997). Meltzer and Richard (1981) also study the effects of heterogeneity of income, or income distribution, since the amount of redistribution preferred by individuals rationally depends on the distance between the mean and the median income. Over the years, in particular after the Presidential Address to the Royal Economic Society in 1997 by Atkinson (Atkinson, 1997) and after the erosion of the middle class in the western societies since the early 2000s, a fast growing literature has investigated the topic of income and wealth inequality in general, and also its effect on preferences for redistribution.

Together with income and wealth, several non-economic features may affect the propensity for redistribution. First, it can be a matter of social and cultural identity (see Costa-Font and Cowell, 2015, for a recent survey), that may shape the individual behavior above and beyond the simple utility-

maximizing approach. Indeed, social trust and social capital and identity tend to increase the level of welfare state. This may happen either because of a more productive cooperation among individuals (Bergh and Bjørnskov, 2014), or because people believe in a more appropriate use of public resources by other individuals (Bergh and Bjørnskov, 2011; Daniele and Geys, 2015), or because of stronger externalities (Yamamura, 2012). Second, Alesina and Giuliano (2010) find some evidence that religion may impact the propensity for redistribution, Protestants being less favorable than Catholics and Jewish. Finally, other factors affecting the propensity for redistribution are family ties and informal networks, that may substitute the demand for redistribution and the need for a developed public welfare state, and the 'acceptability' of inequality: relying on the definition by Roemer (2009), the higher the share of 'acceptable' inequality, that is the inequality due to personal effort, the lower the support for redistribution. Similarly, social mobility and the attitude toward poverty (whether it is due to bad luck or to lack of effort) may shape the preferences for redistribution.

All these features, however, have only been studied relatively to their levels, not to their distribution, assuming implicitly that the prevailing attitude is the dominating one and the only relevant to determine the outcome. Therefore, while the literature on the preferences for redistribution is large and growing, very little is known about the effects of *heterogeneity* of preferences. Alesina et al. (1999) are the first to investigate the effect of heterogeneity, specifically ethno-linguistic fractionalization, on the provision of public goods. Looking at public education in the United States, they find that local communities more racially diverse find it more difficult to agree on the nature of the goods and services provided by the government, and therefore reduce the demand for in-kind redistribution. The same intuition motivates a more recent paper by Bellani and Scervini (2015), with a broader definition of heterogeneity and a wider set of in-kind redistribution expenditures. Such a mechanism may be reversed when looking at the same issue with the governments' eyes, since office-seeker policy makers can have the incentive to increase the public spending in order to get higher consensus from different groups, and even more so the more heterogeneous the population and the more proportional the electoral rule (Becher, 2016; Padovano et al., 2016).

The present paper is therefore a further step in empirically analyzing the relationship between heterogeneity of preferences and the level of public spending.

1.2 Conceptual framework

In this section we provide a simple conceptual framework to clarify the relationship between public spending and heterogeneity of preferences for redistribution. The traditional median voter framework leaves no role for heterogeneity of preferences, stating that the only feature of the distribution of preferences that matters for the policy implementation is that of the median voter. A naive representation of such relationship is the equation

$$Exp = \alpha Exp^*_{mv} - (1 - \alpha) Exp_{het} \qquad (1)$$

in which the median voter theorem states that $\alpha = 1$ and therefore that the implemented policy Exp is equal to that preferred by the median voter Exp^*_{mv}, while the heterogeneity of preferences, Exp_{het}, leaves the outcome unaffected. However, it is well-known that the median voter theorem fails to work in many real world cases (see for instance Alesina and Giuliano, 2010; Bellani and Ursprung, 2019).

There are several reasons why this may happen, represented by a decline of the parameter α in eq.(1) and a consequent negative impact of heterogeneity on the implemented (redistributive) policy.

On the 'demand side', uncertainty or non-single peaked preferences may bias the preferences of the voters; on the 'supply side', more polarized preferences make coordination among politicians more difficult. More in detail, with uncertainty, the higher the heterogeneity of preferences, the higher is the expected distance between the preferred policy of each individual and the one that would be implemented. Therefore, an increase of heterogeneity given by a move of preferences towards the extreme of the distribution makes the individuals less inclined to finance these policies (Bellani and Scervini, 2015). Moreover, preferences on some kinds of redistributive measures, like education and health, may fail to be single-peaked when private alternatives exist. For example, if the middle class benefits from the public provision of education more than both richer and poorer classes, the rich and the poor may agree on a lower provision of redistributive goods (Epple and Romano, 1996). Finally, heterogeneity may affect the policy outcome because polarized political frameworks may make it more difficult for parties and politicians to agree on some common policy, thus reducing the level of redistribution (Bordignon et al., 2016). Even if the so-called 'median voter' has the same preferences for redistribution, in a more diverse population the implementation of her preferred level of spending is hindered by the political pressure of the voters with more extreme preferences.

This paper follows this branch of the literature, investigating empirically

whether there is a statistically significant negative impact of heterogeneity of preferences for redistribution on the amount of public spending ($\alpha < 1$) implemented by the governments of 23 European countries in the last two decades. In particular, as we detail in the next section, we focus on all public spending and all levels of government, disaggregating the former into redistributive and non-redistributive spending and the latter into general, central and local governments.

As we are not able with the data at hand to empirically disentangle the mechanisms behind this correlation, we do not make specific assumptions on which of the channels summarized above are at work in this specific framework, nor for which level of government this is more relevant.

In addition to the distribution of preferences (that is, the median and the variance, or heterogeneity), there are several other reasons that may bias the prediction of the median voter theorem. We do not explicitly include them in eq.(1), but we briefly discuss their impact here and we include them as control variables in the empirical model described in the next sections. First of all, there are some macroeconomic indicators that may 'automatically' affect the level of public spending, even without explicit political interventions: the unemployment rate is typically associated to higher public spending for benefits and welfare, while the opposite is true for the level of per-capita GDP or GDP growth. Second, demographic features may also have an impact on the level of public spending, since the expenditure on pensions and retirement benefits on one side and education and schooling on the other crucially depend on the share of elderly and children in the population. Third, for the same reason also the average age and education may shape the public budget size and composition. Finally, a bunch of economic and political characteristics can affect the level of public spending, such as income inequality, the ideology of the government in charge and the overall political stability of the system, the level of corruption, the degree of public intervention in the economy. We do not extensively analyze all these features as it is beyond the scope of this paper (refer to Padovano et al., 2016, on this topic).

2 Data sources and measures

This paper exploits the variability of individual heterogeneity across countries and over time in order to correlate it to the amount of public spending. To this end, we gather data from several sources.

Public spending statistics are collected by Eurostat yearly since 1990 and are available for all EU countries since 1995. They are presented at coun-

try level, for five different sectors (general government, central government, state government, local government, social security funds) and 80 functions, according to the COFOG-99 classification. In order to compare the size of the public sector across countries and over time, we measure all the public expenditures in terms of GDP. Table A.1 reports the availability of public spending measures in Europe since 1995, while Appendix B shows the detailed content of each function. In order to identify the effect of preferences heterogeneity on different spending functions, we broadly divided them between redistributive and non-redistributive, and, within the former, in cash and in-kind redistribution. In detail, we classify social protection and economic affairs as cash redistribution; education, health, housing, recreation and public services as in-kind redistribution; defense, order and safety and environment as non-redistributive spending.

Individual attitudes can only be derived from survey data. The European Social Survey (ESS) is a relatively recent project, started in 2002, and is collected every second year, resulting in 8 rounds available (as of mid-2019). While covering a short period of time, ESS allows tracking short-run variation on attitudes and beliefs of European citizens from 32 different countries (see Table A.2). Its structure consists of a repeated cross-section including detailed information on socio-demographic characteristics of individuals and a wide set of answers to questions regarding religion, politics, ethics, tolerance, economics, and so on. To our goal, we use as the main variable a measure of individual preference for redistribution, that is the answer to the question 'The government should take measures to reduce differences in income levels' on a 5-level scale from 'Agree Strongly' to 'Disagree Strongly'.

We also employ a set of control variables to consider, for each country and year, demographic characteristics (total population, average age, share of individuals younger than 15 or older than 65), education (average years of education), economic cycle (real per capita GDP and unemployment rate) and income inequality (Gini coefficient). All information is retrieved by Eurostat. In addition, we also include government ideology on a 0-10 left-right scale (retrieved from the ParlGov database, Döring and Manow, 2009), an index of globalization (Gygli et al., 2019; Dreher, 2006), an index of corruption (Transparency International, 2019), an index of economic freedom (Heritage Foundation) and one of political stability (from the World Bank).[2]

The wider sample of countries and waves for which all information on interest variables and controls is available generates an unbalanced panel of 154

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[2]Other indicators of economic and political 'performance' from the World Bank have not been taken into consideration due to the high correlation with the included variables. Our main results are not affected by this choice.

observation.[3] However, we decided to exclude from the analysis the countries with less than 4 observations over the period (namely, Croatia, Iceland, Italy, Lithuania, Luxembourg).[4] The resulting sample is made up by 145 observations in 23 countries, with 6.3 observations on average per country. Table A.3 lists the country/wave observations, while Table A.4 reports the descriptive statistics for all the variables included in the econometric models. In general, all variables of interest show a high variability in the sample, both in terms of the amount of public spending as a share of GDP, at any level of government, and in terms of heterogeneity of preferences.

While measuring preferences is not an easy task, measuring *heterogeneity* of preferences may be even more difficult. As many other surveys, ESS employs almost exclusively Likert scales and numeric ratings to measure individual attitudes or preferences toward a certain statement. Even though not perfect, such methods are commonly used in the social sciences and can be considered a benchmark for the measurement of attitudes and values.

Measuring heterogeneity is less straightforward and there are several potential directions to follow: one could use variance or standard deviation, assuming that the differences between values of the scale have the same meaning; or the share of people (dis)agreeing with a statement, after having dichotomized the scale; or the share of individuals self-reporting on the extremes of the scale; or even more complex indicators, such as the consensus index introduced by Tastle and Wierman (2007).

All these indicators capture different nuances of the broad concept of heterogeneity and there is no 'right' indicator to be used under any circumstance. In our view, the more suitable indicator to the analysis of the paper is the share of individuals taking extreme positions in the Likert scale. Indeed, both the standard deviation and the consensus index give the same weight to differences at the bulk of the distribution and at the extremes, a feature that is not desirable in our framework, and even more so in the case of the standard deviation, since Likert scales are not cardinal. For all these reasons, we decide to use as a measure of heterogeneity the share of extreme answers on the Likert scale, that is the share of individuals answering 'strongly agree' or 'strongly disagree' to the statement 'The government should take measures

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[3]Unemployment rate is not available for the 7 observations for Switzerland, while Gini coefficient is not available for 21 observations scattered in 19 countries over four ESS waves. In order not to lower the sample size, we replaced the missing observations for the Gini coefficient with the country mean and the missing for unemployment rate with the sample mean to get unbiased estimations. Table A.4 of descriptive statistics shows the distribution of both original and imputed variables.

[4]Results are qualitatively independent of the inclusion of these countries.

to reduce differences in income levels'.

On the one hand, one can think that in line with the idea of expressive behavior suggested in the literature (see among others, Hillman, 2010), the majority of individuals will agree with the statement, as it does not require real costs. On the other hand, we find that a non-negligible percentage of individuals, 32% on average in our sample, express an 'extreme' preference, strongly agreeing or even strongly disagreeing with the statement. Table A.5 displays the average and the variability of our heterogeneity measure in the sample, showing that there is enough variability not only between countries, but also within single countries, 'within' standard deviation being about 37% of 'between' one.

3 Empirical strategy

The aim of the paper is to ascertain a possible relationship between the heterogeneity in preferences for redistribution and public expenditures. The most intuitive and straightforward empirical tool to achieve this goal is a fixed-effects regression analysis such as

$$Exp_{c,t} = \alpha + \beta M_{c,t-1} + \gamma H_{c,t-1} + \mathbf{X_{c,t-1}}\mathbf{\Lambda} + \eta_c + \iota_t + \varepsilon_{c,t} \qquad (2)$$

where Exp identifies public spending in country c in wave t, M the median level of preferences at $t-1$, H their heterogeneity, $\mathbf{X}$ is a vector of control variables measured at $t-1$, η_c represents country fixed effects and ι_t represents year (wave) fixed effects, while ε is the usual idiosyncratic error term. Depending on the specification, the dependent variable refers to either general public spending or specific aggregations of expenditure functions at general, central or local level.

The specification in eq.(2) is quite demanding, given the relatively small sample size, but can solve some possible issues that frequently arise when analyzing country panels of small sample size. The first is about endogeneity. On the one side, we rule out reverse causality by lagging the interest variables and the controls by one wave (two years), on the ground that it takes some time for political and economic features to have an impact on implemented spending level. On the other side, joint country and year fixed effects may help to reduce the bias due to omitted variables, at least those sufficiently time-invariant. For time-varying variables, we include an extensive list of controls, to take into account heterogeneity arising from economic cycle (GDP), from the amount of public transfers for social security (unemployment ratio) and for the demographic structure (average age, share of

individuals less than 15 and older than 65, that may affect public spending for education and health), from the size of the country (total population), and from the level of inequality, that may affect the level of public spending. In addition, we also control for the efficiency of the public sector, the political orientation of the government, the globalization index and two measures of economic freedom and political stability. We acknowledge that this list might not be exhaustive and as there might be other variables that correlate both to the heterogeneity of preferences for redistribution and to the amount of public spending we therefore refrain from making any causal interpretation of our results.

A second possible issue is the persistence of the quantities involved. Indeed, both public spending and individual preferences are somehow persistent over time. On the one side, this feature should strengthen our results, since we rely on relatively small variations within countries, meaning that there is correlation between heterogeneity of preferences and public spending even if the quantities are persistent. On the other side, we control in the robustness checks that our results are not driven by the persistence of the measures: indeed, the same equation model as in (2), but with contemporaneous or forwarded regressors instead of lagged ones, produces non-significant coefficients for all the variables of interest.

At the end of section 4 we also discuss several robustness checks involving modifications of the model described in eq.(2) to test whether results hold under a broader set of hypotheses.

4   Results and comments

Table 1 shows the results for the main specification in eq.(2), where the heterogeneity measure is the one described in section 2. The simplest model is reported in column (1), where the share of total general public spending over GDP is regressed only on the median preference for redistribution and the measure of heterogeneity in preferences, plus country and year fixed effects. In the following columns we include several control variables, such as economic controls (Col.2), average age and education (Col.3), demographic structure (Col.4), the Gini index of income inequality (Col.5), the ideology of the government (Col.6), indexes of globalization, economic freedom, political stability and perceived corruption (Col. 7).[5]

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[5]To notice that when the share of total general public spending over GDP is regressed only on the country fixed effects, time invariant characteristics of the countries alone can already explain more than 70% of the variation in spending.

Table 1: Baseline regressions, general spending

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	b/se	b/se	b/se	b/se	b/se	b/se	b/se
Preference for redistribution, median	0.439	0.520	0.545	0.830	0.816	0.953	0.978*
	(0.538)	(0.509)	(0.497)	(0.605)	(0.556)	(0.605)	(0.502)
Preference for redistribution, extremes	-1.095	-1.460*	-1.597*	-2.069*	-2.033*	-2.034*	-1.619**
	(0.658)	(0.715)	(0.786)	(1.201)	(1.155)	(1.156)	(0.764)
Real per capita GDP (000)	.	-0.166	-0.117	-0.262	-0.259	-0.312*	-0.321*
	.	(0.117)	(0.105)	(0.195)	(0.194)	(0.172)	(0.178)
Unemployment rate, filled	.	0.120	0.102	0.172	0.154	0.114	0.111
	.	(0.121)	(0.132)	(0.214)	(0.208)	(0.178)	(0.196)
Age, average	.	.	-0.011	-0.065	-0.092	-0.078	-0.023
	.	.	(0.162)	(0.157)	(0.151)	(0.134)	(0.146)
Years of education, average	.	.	1.146	0.984	0.819	0.941	1.097
	.	.	(1.135)	(1.152)	(1.173)	(1.157)	(1.056)
Total population	.	.	.	-0.040	-0.144	-0.269	-0.177
	.	.	.	(0.585)	(0.583)	(0.538)	(0.509)
Share of pop. less than 15 (in %)	.	.	.	-1.655	-1.701	-2.055	-2.049
	.	.	.	(1.693)	(1.657)	(1.612)	(1.363)
Share of pop. more than 65 (in %)	.	.	.	-1.939	-1.933	-2.410	-2.293*
	.	.	.	(1.609)	(1.598)	(1.446)	(1.297)
Gini coefficient, filled	.	.	.	.	-0.085	-0.101	-0.144
	.	.	.	.	(0.161)	(0.152)	(0.221)
Gini coefficient, dummy for filled	.	.	.	.	1.742**	1.682**	1.512*
	.	.	.	.	(0.798)	(0.741)	(0.839)
Ideology of the government	.	.	.	.	.	-0.931**	-0.446
	.	.	.	.	.	(0.448)	(0.567)
Globalization index	.	.	.	.	.	.	-0.216
	.	.	.	.	.	.	(0.477)
Corruption perception index	.	.	.	.	.	.	0.025
	.	.	.	.	.	.	(0.119)
Index of economic freedom	.	.	.	.	.	.	0.352
	.	.	.	.	.	.	(0.279)
Index of political stability	.	.	.	.	.	.	-2.552
	.	.	.	.	.	.	(2.387)
Constant	51.402***	56.859***	41.890**	108.963*	114.826*	134.070**	124.492*
	(0.352)	(4.503)	(18.935)	(55.602)	(55.972)	(52.140)	(70.326)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	145	145	145	145	145	145	145
R2	0.802	0.808	0.811	0.824	0.828	0.832	0.842

Dependent variable: Total general public spending, % of GDP; $^*p < 0.1,$ $^{**}p < 0.05,$ $^{***}p < 0.01$.

The sign and significance of the coefficients in the latter, more demanding specification suggest that while higher propensity for redistribution is positively associated with higher public spending,[6] there is a negative effect of the heterogeneity in those preferences. In particular our results show that one standard deviation increase in the median support for the role of government in reducing income inequality is associated with almost 1% increase in general public expenditure, while one standard deviation increase in the 'polarization' of those preferences is linked to a 1.6% decrease of spending on average on the 23 countries analyzed here, at any level of the median propensity for redistribution.[7] Among the control variables instead, none shows a robust significant correlation neither when separately nor when jointly introduced in the model.[8]

These results are in line with the idea mentioned in our conceptual framework that politicians representing voters with more disperse preferences are facing a stronger coordination problem when making policy decision than politicians representing a more cohesive electorate.

In principle, in our empirical specification this may be due either to the fact that politicians are not able to implement redistributive policies, or to the fact that they implement both redistributive and non-redistributive policies and that these two opposite policies compensate each other in aggregate.

To delve into the mechanism, we also analyze whether the overall effect on public spending regards indeed all the functions or is concentrated on specific ones, mainly redistributive in nature. As already mentioned in Section 2, we consider potentially redistributive expenses the ones on education, public services, health, housing and communities, recreation and culture, social protection and economic affairs, while spending on defence, enivronment, order and safety is by nature not of a redistributive type.[9]

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[6]The related coefficients are not statistically significant at usual levels in models in Columns (1)-(6).

[7]Adding an interaction terms does not affect the results and the interaction itself is not significant. However, this may be due to the small sample size and the consequent little variation of the interacted term.

[8]This can be due to various reasons, such as low variability, once controlling both for years and countries fixed effect, or different timing of the effect that could be more contemporaneous than the one of preferences. A deeper investigation of other determinants of expenditure is behind the scope of the present paper and therefore not provided here.

[9]We consider the public provision of private goods, such as education and health, as mainly redistributive, at least as far as such goods are not provided at market conditions. In Bellani and Scervini (2015), data availability allowed us to calculate the "redistributive" part of education and health public provision as the difference between the public expenditure and the tariffs and other "prices" received by the public sector. Unfortunately, this is not possible in this case. Anyhow, all the results in the paper are robust to the inclusion

Table 2 reports the results from the baseline specification, where the overall public spending is replaced by redistributive and non-redistributive public spending, respectively.[10] Results support the theoretical argument made above, suggesting that polarization in preference for redistribution is indeed affecting the relevant spending functions, making the political consensus on the amount of redistribution more difficult to achieve, while leaving decision making over non-redistributive spending unaltered. Stated differently, we could say that pure public goods, those really benefiting all individuals, are unaffected by heterogeneity of preferences, while the opposite is true for redistributive policies, that involve a transfer of resources from some individuals to others.

Another interesting aspect that could help us shed lights on the political mechanisms behind the relationship between heterogeneity in preferences for redistribution and redistributive public expenditure is which level of government is mostly affected by those preferences.

In our baseline results we focus on the general government sector, which is defined, according to European system of national and regional accounts (ESA 2010), as consisting *'of institutional units which are non-market producers whose output is intended for individual and collective consumption, and are financed by compulsory payments made by units belonging to other sectors, and institutional units principally engaged in the redistribution of national income and wealth.'*[11] The general government sector is itself formed by four sub-sectors: (1) central government, (2) state government (which is only applicable in Belgium, Germany, Spain, Austria and Switzerland), (3) local government and (4) social security funds (which are not separately reported in Ireland, Cyprus, Malta, the United Kingdom and Norway).

Theoretically one would expect stronger response to voters' preferences at the level of government mostly in charge of redistributive policies, which are the ones affected the most by the dispersion of those preferences.

The central government sub-sector has a national sphere of competence and it is typically responsible for providing collective services for the benefit of the community as a whole, such as national defense, relations with other countries, public order and safety, and for regulating the social and economic

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of education and health among non-redistributive expenditures.

[10]As a robustness check we also implement the Seemingly Unrelated Regression (SUR) estimator, which considers that expenditure in those categories are likely to be correlated, and the results are unchanged. Tables are not reported here but available from the authors upon request.

[11]https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Government

Table 2: Comparison between functions, general spending

	(1)	(2)
	b/se	b/se
	Redistributive	Non Redistributive
Preference for redistribution, median	0.998**	-0.039
	(0.470)	(0.043)
Preference for redistribution, extremes	-1.449*	-0.125
	(0.731)	(0.081)
Age, average	-0.018	-0.004
	(0.140)	(0.026)
Years of education, average	1.047	0.073
	(1.013)	(0.078)
Total population	-0.145	-0.044
	(0.479)	(0.097)
Share of pop. less than 15 (in %)	-1.890	-0.113
	(1.288)	(0.126)
Share of pop. more than 65 (in %)	-2.105	-0.186
	(1.276)	(0.112)
Real per capita GDP (000)	-0.327*	0.004
	(0.171)	(0.019)
Unemployment rate, filled	0.129	-0.023
	(0.192)	(0.016)
Gini coefficient, filled	-0.156	0.009
	(0.214)	(0.022)
Gini coefficient, dummy for filled	1.424*	0.105
	(0.796)	(0.093)
Globalization index	-0.241	0.022
	(0.461)	(0.028)
Ideology of the government	-0.346	-0.072
	(0.551)	(0.052)
Corruption perception index	0.010	0.013
	(0.115)	(0.011)
Index of economic freedom	0.355	0.002
	(0.255)	(0.038)
Index of political stability	-2.697	0.058
	(2.240)	(0.281)
Constant	118.989	4.672
	(69.299)	(5.332)
Country fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Obs.	145	145
R2	0.857	0.906

Dependent variable: Total general public spending, % of GDP; $^*p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

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system of the country. In addition, it may provide services, such as education or health, and it may make transfers to other institutional units, including other levels of government. The local government sub-sector has instead a local sphere of competence and typically provides a wide range of services to local residents, some of which may be financed out of grants from higher levels of government. Local governments cover a wide variety of governmental units, such as counties, municipalities, school districts, etc. Table 3 presents the results for these two different sub-sectors of government, central and local, for which we have consistent information for all the countries. Results show that, while the point estimate is slightly higher[12] for the central government, its significance is stronger for the the local government. This may suggest that while central governments have a larger budget, local governments might be primarily involved in redistributive policies, mainly decided at a political level closer to the final beneficiaries, and therefore more affected by changes in heterogeneity of preferences.

Furthermore, Table 4 reports an additional classification of redistributive expenditures, that is cash and in-kind redistribution, as defined previously in Section 2. Given the type of preferences that are elicited with the survey question that we use, we might indeed expect a closer link with measure of direct income redistribution instead of (indirect) in-kind redistribution. Results are not only consistent with the expectations, but tell us something more: central governments seem to be held responsible for cash redistribution, that is strongly and significantly correlated to heterogeneity of preferences, while the opposite is true for local governments, for which the correlation is much lower with respect to cash transfers (less than a quarter of the effect) and much higher with respect to in-kind redistribution. This result is also in line with the predictions from the model in Bellani and Scervini (2015), where an increase in heterogeneity of preferences leads to a decrease in in-kind redistribution.

Finally, we run two robustness checks, to show that the results do not depend on the persistence of quantities, an issue that may undermine our model, nor are driven by single countries, a possible issue given the small sample size. In order to rule out persistence issues, we report in Table A.6 the coefficients of interest from a model in which the variables of interest and the controls are forwarded by one wave, instead of lagged. Coefficients are not statistically different from zero at any acceptable level, confirming that the mechanism at work is not a long run spurious correlation, but a meaningful one.[13] Table

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[12]The difference between the two coefficients is not statistically different from zero at standard significance levels.

[13]Results from contemporaneous regressions show the same insignificant results, con-

Table 3: Comparison across levels of government.

	(1) b/se	(2) b/se	(3) b/se
	General	Central	Local
Preference for redistribution, median	0.998**	0.532	0.728***
	(0.470)	(0.401)	(0.141)
Preference for redistribution, extremes	-1.449*	-0.981†	-0.749**
	(0.731)	(0.609)	(0.324)
Age, average	-0.018	-0.069	-0.018
	(0.140)	(0.095)	(0.078)
Years of education, average	1.047	0.673	0.207
	(1.013)	(0.868)	(0.228)
Total population	-0.145	-0.528	0.120
	(0.479)	(0.468)	(0.283)
Share of pop. less than 15 (in %)	-1.890	-1.476	-0.563
	(1.288)	(1.121)	(0.410)
Share of pop. more than 65 (in %)	-2.105†	-1.649	0.424
	(1.276)	(1.216)	(0.477)
Real per capita GDP (000)	-0.327*	-0.263†	0.062
	(0.171)	(0.161)	(0.054)
Unemployment rate, filled	0.129	0.265	-0.111†
	(0.192)	(0.191)	(0.067)
Gini coefficient, filled	-0.156	-0.185	0.055
	(0.214)	(0.234)	(0.067)
Gini coefficient, dummy for filled	1.424*	1.126	1.012*
	(0.796)	(0.850)	(0.536)
Globalization index	-0.241	-0.385	-0.026
	(0.461)	(0.436)	(0.074)
Ideology of the government	-0.346	0.322	-0.133
	(0.551)	(0.462)	(0.271)
Corruption perception index	0.010	0.013	0.094***
	(0.115)	(0.115)	(0.033)
Index of economic freedom	0.355	0.373†	0.134
	(0.255)	(0.222)	(0.106)
Index of political stability	-2.697	-2.056	0.256
	(2.240)	(1.821)	(1.228)
Constant	118.989†	104.040†	-4.113
	(69.299)	(65.767)	(16.752)
Country fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Obs.	145	145	145
R2	0.857	0.908	0.985

Dependent variable: Total public redistributive spending, % of GDP; $^{\dagger}p < 0.15,^{*}p < 0.1,^{**}p < 0.05,^{***}p < 0.01$.

Table 4: Comparison between functions.

	(1) b/se	(2) b/se	(3) b/se	(4) b/se	(5) b/se	(6) b/se
	General		Central		Local	
	Cash	In-Kind	Cash	In-Kind	Cash	In-Kind
Preference for redistribution, median	0.966**	0.031	0.946**	-0.414**	0.193***	0.536***
	(0.372)	(0.272)	(0.375)	(0.163)	(0.050)	(0.124)
Preference for redistribution, extremes	-1.721**	0.273	-1.310**	0.329	-0.311**	-0.438*
	(0.719)	(0.291)	(0.630)	(0.321)	(0.145)	(0.226)
Age, average	0.082	-0.100	0.018	-0.087	0.003	-0.020
	(0.131)	(0.065)	(0.105)	(0.069)	(0.033)	(0.060)
Years of education, average	1.150	-0.103	0.694	-0.021	-0.071	0.278
	(0.914)	(0.247)	(0.759)	(0.309)	(0.186)	(0.190)
Total population	-0.171	0.026	-0.338	-0.191	0.079	0.041
	(0.393)	(0.159)	(0.396)	(0.230)	(0.079)	(0.238)
Share of pop. less than 15 (in %)	-2.112*	0.222	-1.580	0.104	-0.333*	-0.230
	(1.080)	(0.302)	(1.008)	(0.392)	(0.173)	(0.281)
Share of pop. more than 65 (in %)	-2.129*	0.024	-1.468	-0.180	0.149	0.275
	(1.070)	(0.327)	(1.095)	(0.365)	(0.191)	(0.346)
Real per capita GDP (000)	-0.299*	-0.028	-0.280**	0.017	0.049*	0.013
	(0.147)	(0.067)	(0.132)	(0.081)	(0.027)	(0.036)
Unemployment rate, filled	0.166	-0.037	0.159	0.106	-0.015	-0.097*
	(0.156)	(0.051)	(0.152)	(0.068)	(0.026)	(0.053)
Gini coefficient, filled	-0.088	-0.069	-0.137	-0.049	0.043	0.011
	(0.168)	(0.070)	(0.158)	(0.106)	(0.041)	(0.047)
Gini coefficient, dummy for filled	0.727	0.696**	0.499	0.627	0.311*	0.700
	(0.633)	(0.267)	(0.645)	(0.378)	(0.181)	(0.419)
Globalization index	-0.229	-0.012	-0.299	-0.085	-0.037	0.010
	(0.404)	(0.073)	(0.394)	(0.071)	(0.038)	(0.053)
Ideology of the government	-0.296	-0.050	-0.016	0.338	0.120	-0.253
	(0.443)	(0.162)	(0.424)	(0.200)	(0.081)	(0.224)
Corruption perception index	-0.038	0.048	-0.055	0.068*	0.031**	0.063**
	(0.092)	(0.037)	(0.097)	(0.036)	(0.015)	(0.023)
Index of economic freedom	0.250	0.105	0.183	0.190*	0.062	0.071
	(0.170)	(0.100)	(0.173)	(0.093)	(0.052)	(0.065)
Index of political stability	-2.772	0.075	-0.781	-1.275*	-0.365	0.621
	(1.733)	(0.751)	(1.604)	(0.699)	(0.475)	(0.883)
Constant	100.334	18.655	87.103	16.937	1.103	-5.216
	(59.820)	(13.081)	(59.624)	(18.605)	(5.389)	(13.816)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	145	145	145	145	145	145
R2	0.765	0.928	0.833	0.973	0.991	0.972

Dependent variable: Total redistributive public spending, % of GDP; $^*p < 0.1$,$^{**} p < 0.05$,$^{***} p < 0.01$.

A.7 reports only the coefficients of interest from the baseline model after the exclusion of single countries, in order to show that results are stable and are not driven by one particular outlier.

5 Concluding remarks

The same median level of propensity for redistribution in a population may mask very different underlying distributions of those preferences. In this paper we therefore choose to focus on the relationship between the *heterogeneity* of preferences for redistribution across individuals and the actual level of public spending in different domains and at different levels of government.

Using European data we look directly at heterogeneity in preferences instead of using heterogeneity in socio-demographics as a proxy for it. We find that heterogeneity in preferences is related to a lower actual redistribution, everything else equal. Our results show that one standard deviation increase in polarization of preferences over the role of government in reducing income inequality is associated with a 1.6% decrease in general public expenditure on average on the 23 countries analyzed here, independently of the median propensity for redistribution. We show that this decrease in expenditure is coming from a decrease in the domains that are indeed related to redistributive spending. Moreover, we find that while cash redistribution is affected at all levels of governments, and especially so at the central level, local government in-kind redistribution is also significantly decreasing when preferences are more polarized.

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firming the general result. Tables are not presented here, but are available for the authors upon request.

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A   Tables

Table A.1: Eurostat, countries by year (availability of total public expenditure as a share of GDP).

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Austria	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Belgium	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Bulgaria				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		19
Croatia							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		16
Cyprus	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Czechia	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Denmark	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	23
Estonia	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Finland	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
France	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Germany	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Greece	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Hungary	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Iceland																			✓	✓	✓	✓		4
Ireland	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Italy	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Latvia	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Lithuania	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Luxembourg	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	23
Malta	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Netherlands	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Norway	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Poland	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Portugal	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Romania	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Slovakia	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Slovenia					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		18
Spain	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Sweden	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Switzerland	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
United Kingdom	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		22
Total	27	27	27	28	29	29	30	30	30	30	30	30	30	30	30	30	30	30	31	31	31	31	2	653

Table A.2: European Social Survey, countries by round.

	Round 1 2002	Round 2 2004	Round 3 2006	Round 4 2008	Round 5 2010	Round 6 2012	Round 7 2014	Round 8 2016	Total
Albania						✓			1
Austria	✓	✓	✓	✓	✓		✓	✓	7
Belgium	✓	✓	✓	✓	✓	✓	✓	✓	8
Bulgaria			✓	✓	✓	✓			4
Croatia				✓	✓				2
Cyprus			✓	✓	✓	✓			4
Czechia	✓	✓		✓	✓	✓	✓	✓	7
Denmark	✓	✓	✓	✓	✓	✓	✓		7
Estonia		✓	✓	✓	✓	✓	✓	✓	7
Finland	✓	✓	✓	✓	✓	✓	✓	✓	8
France	✓	✓	✓	✓	✓	✓	✓	✓	8
Germany	✓	✓	✓	✓	✓	✓	✓	✓	8
Greece	✓	✓		✓	✓				4
Hungary	✓	✓	✓	✓	✓	✓	✓	✓	8
Iceland		✓				✓		✓	3
Ireland	✓	✓	✓	✓	✓	✓	✓	✓	8
Israel	✓			✓	✓	✓	✓	✓	6
Italy	✓	✓				✓		✓	4
Kosovo						✓			1
Latvia			✓	✓			✓		3
Lithuania				✓	✓	✓	✓	✓	5
Luxembourg	✓	✓							2
Netherlands	✓	✓	✓	✓	✓	✓	✓	✓	8
Norway	✓	✓	✓	✓	✓	✓	✓	✓	8
Poland	✓	✓	✓	✓	✓	✓	✓	✓	8
Portugal	✓	✓	✓	✓	✓	✓	✓	✓	8
Romania				✓	✓				2
Russian Federation			✓	✓	✓	✓		✓	5
Slovakia		✓	✓	✓	✓	✓			5
Slovenia	✓	✓	✓	✓	✓	✓	✓	✓	8
Spain	✓	✓	✓	✓	✓	✓	✓	✓	8
Sweden	✓	✓	✓	✓	✓	✓	✓	✓	8
Switzerland	✓	✓	✓	✓	✓	✓	✓	✓	8
Turkey		✓		✓					2
Ukraine		✓	✓	✓	✓	✓			5
United Kingdom	✓	✓	✓	✓	✓	✓	✓	✓	8
Total	22	26	25	31	28	29	22	23	206

Countries and waves included in the cumulative file available at https://www.europeansocialsurvey.org/downloadwizard/.

Table A.3: Main sample.

	2002	2004	2006	2008	2010	2012	2014	Total
Austria	✓	✓	✓				✓	4
Belgium	✓	✓	✓	✓	✓	✓	✓	7
Bulgaria			✓	✓	✓	✓		4
Cyprus			✓	✓	✓	✓		4
Czechia	✓	✓		✓	✓	✓	✓	6
Denmark	✓	✓	✓	✓	✓	✓	✓	7
Estonia		✓	✓	✓	✓	✓	✓	6
Finland	✓	✓	✓	✓	✓	✓	✓	7
France	✓	✓	✓	✓	✓	✓	✓	7
Germany	✓	✓	✓	✓	✓	✓	✓	7
Greece	✓	✓		✓	✓			4
Hungary	✓	✓	✓	✓	✓	✓	✓	7
Ireland	✓	✓	✓	✓	✓	✓	✓	7
Netherlands	✓	✓	✓	✓	✓	✓	✓	7
Norway	✓	✓	✓	✓	✓	✓	✓	7
Poland	✓	✓	✓	✓	✓	✓	✓	7
Portugal	✓	✓	✓	✓	✓	✓	✓	7
Slovakia		✓	✓	✓	✓	✓		5
Slovenia	✓	✓	✓	✓	✓	✓	✓	7
Spain	✓	✓	✓	✓	✓	✓	✓	7
Sweden	✓	✓	✓	✓	✓	✓	✓	7
Switzerland	✓	✓	✓	✓	✓	✓	✓	7
United Kingdom	✓	✓	✓	✓	✓	✓	✓	7
Total	19	21	21	22	22	21	19	145

Countries and waves included in the final sample.

Table A.4: Descriptive statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
Total general public spending, % of GDP	145	45.714	6.6	27.1	65.1
Total central public spending, % of GDP	145	29.373	8.387	9.9	62.9
Total local public spending, % of GDP	145	11.599	7.31	1.6	35.9
Preference for redistribution, median	145	3.007	.323	2	4
Preference for redistribution, mean	145	2.853	.333	1.959	3.455
Preference for redistribution, extremes	145	.32	.118	.138	.66
Real per capita GDP (000)	145	34.569	10.749	11.68	63.299
Unemployment rate	138	8.386	3.986	2.7	24.8
Unemployment rate, filled	145	8.386	3.888	2.7	24.8
Age, average	145	47.956	2.264	42.193	54.03
Years of education, average	145	12.204	1.318	7.171	14.158
Total population	145	19.703	23.34	.751	81.716
Share of pop. less than 15 (in %)	145	16.549	1.929	13.127	21.497
Share of pop. more than 65 (in %)	145	16.083	2.14	10.776	20.866
Gini coefficient	124	28.737	3.807	22	37.8
Gini coefficient, filled	145	28.737	3.518	22	37.8
Globalization index	145	85.179	5	68.295	92.838
Ideology of the government	145	4.291	.927	2.295	5.956
Corruption perception index	145	29.648	17.048	3	65
Index of economic freedom	145	70.034	6.017	57.8	82.5
Index of political stability	145	.889	.404	-.381	1.755

Table A.5: Decomposition of the variable Preference for redistribution.

Decomposition	Obs	Mean	Std. Dev.
Overall	145	.320	.118
Between	23	.	.115
Within	.	.	.044

Table A.6: Forwarded variables regressions.

	(1) b/se All	(2) b/se Redistributive	(3) b/se Non Redistributive
Preference for redistribution, median	0.207	0.151	0.061
	(0.403)	(0.357)	(0.071)
Preference for redistribution, extremes	0.352	0.530	-0.156
	(0.790)	(0.759)	(0.147)
Country fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Obs.	164	164	164
R2	0.910	0.919	0.888

Dependent variable: Total general public spending, % of GDP; $^*p < 0.1,^{**}p < 0.05,^{***}p < 0.01$.

Table A.7: Jackknife Country, general spending

	(1) b/se AT	(2) b/se BE	(3) b/se BG	(4) b/se CY	(5) b/se CZ	(6) b/se DK	(7) b/se EE	(8) b/se FI
Preference for redistribution, median	0.944*	0.955†	0.653	0.933†	0.997*	0.933*	1.012*	0.903*
	(0.500)	(0.561)	(0.471)	(0.551)	(0.500)	(0.491)	(0.538)	(0.492)
Preference for redistribution, extremes	-1.512*	-1.516*	-1.348*	-1.642*	-1.663**	-1.548*	-1.997**	-1.257†
	(0.759)	(0.761)	(0.683)	(0.823)	(0.750)	(0.750)	(0.882)	(0.738)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	141	138	141	141	139	138	139	138
R2	0.840	0.836	0.840	0.841	0.841	0.830	0.847	0.840
	FR	DE	GR	HU	IE	NL	NO	PL
Preference for redistribution, median	1.034*	1.036*	1.150**	1.175*	0.672	0.973*	0.917†	1.000**
	(0.525)	(0.513)	(0.521)	(0.568)	(0.456)	(0.505)	(0.555)	(0.460)
Preference for redistribution, extremes	-1.794**	-1.662*	-1.646**	-1.753*	-1.113*	-1.603**	-1.649*	-1.589*
	(0.793)	(0.848)	(0.761)	(0.884)	(0.598)	(0.766)	(0.855)	(0.860)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	138	138	141	138	138	138	138	138
R2	0.827	0.843	0.840	0.857	0.929	0.842	0.847	0.851
	PT	SK	SI	ES	SE	CH	GB	
Preference for redistribution, median	1.072**	0.992*	1.048*	1.129**	1.086*	0.854*	0.951*	
	(0.509)	(0.511)	(0.531)	(0.513)	(0.536)	(0.466)	(0.508)	
Preference for redistribution, extremes	-1.688*	-1.602*	-1.821**	-2.032**	-1.627**	-1.456**	-1.471*	
	(0.854)	(0.798)	(0.793)	(0.796)	(0.753)	(0.686)	(0.788)	
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Obs.	138	140	138	138	138	138	138	
R2	0.846	0.839	0.844	0.843	0.848	0.814	0.843	

Dependent variable: Total general public spending, % of GDP; $^†p < 0.15,^*p < 0.1,^{**}p < 0.05,^{***}p < 0.01$.

B   Description of functions of government

Hereafter the list of COFOG-99 functions of government and their components.

GF01 General public services

    GF0101 Executive and legislative organs, financial and fiscal affairs, external affairs

    GF0102 Foreign economic aid

    GF0103 General services

    GF0104 Basic research

    GF0105 R&D General public services

    GF0106 General public services n.e.c.

    GF0107 Public debt transactions

    GF0108 Transfers of a general character between different levels of government

GF02 Defence

    GF0201 Military defence

    GF0202 Civil defence

    GF0203 Foreign military aid

    GF0204 R&D Defence

    GF0205 Defence n.e.c.

GF03 Public order and safety

    GF0301 Police services

    GF0302 Fire-protection services

    GF0303 Law courts

    GF0304 Prisons

    GF0305 R&D Public order and safety

    GF0306 Public order and safety n.e.c.

GF04 Economic affairs

    GF0401 General economic, commercial and labour affairs

    GF0402 Agriculture, forestry, fishing and hunting

    GF0403 Fuel and energy

GF0404 Mining, manufacturing and construction

GF0405 Transport

GF0406 Communication

GF0407 Other industries

GF0408 R&D Economic affairs

GF0409 Economic affairs n.e.c.

GF05 Environmental protection

GF0501 Waste management

GF0502 Waste water management

GF0503 Pollution abatement

GF0504 Protection of biodiversity and landscape

GF0505 R&D Environmental protection

GF0506 Environmental protection n.e.c.

GF06 Housing and community amenities

GF0601 Housing development

GF0602 Community development

GF0603 Water supply

GF0604 Street lighting

GF0605 R&D Housing and community amenities

GF0606 Housing and community amenities n.e.c.

GF07 Health

GF0701 Medical products, appliances and equipment

GF0702 Outpatient services

GF0703 Hospital services

GF0704 Public health services

GF0705 R&D Health

GF0706 Health n.e.c.

GF08 Recreation, culture and religion

GF0801 Recreational and sporting services

GF0802 Cultural services

GF0803 Broadcasting and publishing services

GF0804 Religious and other community services

GF0805 R&D Recreation, culture and religion

GF0806 Recreation, culture and religion n.e.c.

GF09 Education

GF0901 Pre-primary and primary education

GF0902 Secondary education

GF0903 Post-secondary non-tertiary education

GF0904 Tertiary education

GF0905 Education not definable by level

GF0906 Subsidiary services to education

GF0907 R&D Education

GF0908 Education n.e.c.

GF10 Social protection

GF1001 Sickness and disability

GF1002 Old age Valid

GF1003 Survivors

GF1004 Family and children

GF1005 Unemployment

GF1006 Housing Valid

GF1007 Social exclusion n.e.c.

GF1008 R&D Social protection

GF1009 Social protection n.e.c.