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An analysis of heterogeneous preferences for income redistribution

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Abstract

The German government is strongly involved in redistributing income. For various reasons such as the capacity to govern and social stability this makes a good understanding of the citizens' respective preferences and their informal coalitions extremely important. The identification of such interest groups is non-trivial as they may be determined by latent characteristics and preferences for redistribution are difficult to measure. The aim of this study is to identify latent interest-groups in the context of preferences for redistribution adopting an inductive approach. The data for the estimation of the WTP values is generated by a DCE, based on a representative sample of 1,538 German individuals. To identify the latent interest-groups we investigate to which extent respondents can be divided into groups using Latent Class Models thereby accounting for both observable and unobservable heterogeneity within the society. Based on the econometric analysis we can identify six social interest groups that differ regarding their preferences for redistribution and their composition. Both, their preferences regarding the overall budget for redistribution and their preferences regarding the different recipient groups as well as the socio-demographic determinants for group membership are plausible and match well with the current political situation in Germany.

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1   Introduction

The knowledge of citizens' preferences as well as the resulting voting coalitions are of outmost importance for issues like the capacity to govern and social stability (Foley and Edwards, 1996; Richardson, 2000). In this context, topics such as redistribution that involve huge budgets and affect a large number of voters receive considerable attention. In welfare states, much of the political discussion is devoted to redistributive issues, i.e. who should receive benefits, subsidies or transfers and who should pay for it through taxes or contributions.

In this political process – building on the conceptualizations of Truman (1951) and Olson (1965) – any collection of individuals and ultimately voters that share common characteristics, attitudes or interests can form an interest group. As long as this group lacks any form of organization and interaction, this is called a potential or a *latent interest group*. Despite their lack of formal organization and genuine political initiative, knowledge about the composition and the size of such usually large groups gains relevance. In Germany, for example, the political agenda as well as election campaigns are increasingly driven by opinion polls rather than party ideology and leadership (Jucknat and Römmele, 2008; Becker and Hornig, 2014). The identification of such informal groups is non-trivial as they may be determined by latent characteristics; their interests are usually concrete and multidimensional while the overall issue – in our case preferences for redistribution – is rather abstract, hence difficult to measure and to observe.

On the basis of representative data from Germany we identify such latent interest groups with regard to redistribution. Besides the overall volume of redistribution the distribution of resources between different recipient groups are considered. We overcome methodological issues of prior studies by accounting for selected socio-demographic as well as latent characteristics using data from a discrete choice experiment (DCE). The DCE was conducted in the field – based on a sample that is representative of the German voting age population – and was collected in 2012 specifically for the analysis of preferences for redistribution. The DCE framework enforces trade-offs and budget constraints on the participants. We obtain willingness to pay (WTP) values that allow us to compare the strength of preferences across groups and with respect to the different recipient groups. The use of Latent Class Models allows for an inductive approach of identifying the latent interest groups without having to rely exclusively on observable factors. This expands the scope of the analysis of studies such as Alesina and Giuliano (2011), Neustadt and Zweifel (2011) and Pfarr (2013) that to some extent analyze preference heterogeneity but focus separately on single observable factors. Our results may help to explain some of their partially surprising or inconclusive evidence.

We find six distinct *latent interest groups* that can be characterized by their composition as well as their preferences. Besides expected differences for example between retirees and family oriented individuals we also see heterogeneity within categories, e.g. with regard to the willingness to accept any form of reform that changes the status quo. By virtue of the WTP values we can see which changes in the redistributive scheme will help to convince which groups to approve a proposed alternative. Our findings are plausible when we compare them to the political situation in Germany and can be used to inform policy makers as well as empirical and

theoretical economists on relevant factors that need to be considered when decomposing preferences for redistribution. In political economics most models are based on majority votes, thus the analysis of latent interest groups can provide a better understanding on the potential composition of such majorities.

The remainder of the paper is organized as follows. The next section describes in more detail our contribution in the context of the existing literature. The following explains the background as well as the econometric features of DCEs and introduces LCM. Subsequently the design and the implementation of the field experiment are presented. Section 5 highlights the results. Finally, we discuss and conclude on our findings.

2   Literature

Overall the literature on preferences for redistribution is vast. The *theoretical* foundations are to a large extent provided by the baseline work of Romer (1975), Roberts (1977) and Meltzer and Richard (1983) – focusing on individuals' utility derived from their income and on the median voter. This literature is the starting point for most models that incorporate other factors such as the dynamic relationship between inequality and growth, past or expected social mobility, inequality or fairness considerations. Alesina and Angeletos (2005) and Benabou and Tirole (2006) are two examples of more recent implementations that explicitly account for the interplay of such at least partly psychological factors and economic rationality.

The related *empirical* evidence is mixed, mostly due to the fact that it is rarely one factor that drives the results and that for data and methodological reasons it is difficult to capture all potential aspects at once. Overall, empirical studies on preferences for redistribution can be categorized by at least four dimensions: Firstly, the level of aggregation – i.e. micro or macro data, secondly, the determinants they look at, thirdly, the ends of redistribution – if any – they differentiate and fourthly, the method used to elicit preferences. In the following we illustrate how our approach relates to these dimensions as well as the pertaining literature.

Macro level analyzes of the effects of income levels (e.g. Fields and Ok, 1999; Karabarbounis, 2011), of inequality and growth (e.g. Alesina and Rodrik, 1994), of the role of political institutions such as different electoral systems (e.g. Milesi-Ferretti et al., 2002; Persson and Tabellini, 2003 and Feld et al., 2010) or the role of political parties (e.g. Perotti and Kontopoulos, 2002) are of limited relevance to our study as we aim at exploring preference heterogeneity at individual level and at identifying social interest groups within a country. The same is true for studies that relate to the effect of ethno-linguistic fragmentation on preferences for redistribution (e.g. Luttmer and Singhal, 2011; Fong, 2006 and Alesina et al., 2012).

Some of these factors are also analyzed in studies looking at individual level determinants. Such micro level studies focus mostly either on economic factors, such as past, current or expected income and social status (e.g. Alesina and Giuliano, 2011; Alesina and La Ferrara, 2005), behavioral factors, such as beliefs regarding the role of luck and effort (e.g. Alesina and La Ferrara, 2005; Alesina and Angeletos, 2005; Fong, 2001; 2006), altruism (e.g. Andreoni and Miller, 2002; Fong et al., 2006 and Fong and Oberholzer-Gee, 2011) or religion (e.g.

Benabou and Tirole, 2006; Gruber and Hungerman, 2007). While all of them can closely relate to theoretical models and look at specific determinants while controlling for selected other observable aspects, they do not provide insights on the composition of latent interest groups which are very likely influenced by a number of observable and non-observable factors.

In this context and also with regard to our analysis other socio-demographic characteristics without a direct connection to the aforementioned models gain relevance, e.g. such as employment status, education, age, gender and race. For example, Alesina and Giuliano (2011) and Guillaud (2013) cover family structures and gender and Fong (2001) and García-Valiñas et al. (2008) elaborate on the education of voters.

Regarding different ends of redistribution, Alesina and Giuliano (2011) point out that the two core objectives of the welfare state – redistribution from the rich to the poor and providing social insurance – are difficult to disentangle. But the authors argue that as they are close correlates, from an empirical point of view, this is not fatal. While being appropriate in most cases, this means that in almost all of the aforementioned studies redistribution is interpreted as the size of government – including redistribution and social insurance – without differentiating according to the goals or the recipients of the redistributive measures. We argue that the ends to which the redistributive budget is used does have a significant impact on the formation of interest groups and is closely linked to the socio-demographic characteristics of individuals. The interaction of these two aspects determines an individual's expectation regarding the effect of a change in the redistributive system on his personal utility.

The aim of discriminating different ends of redistribution is closely linked to a methodological challenge that most of the survey based studies face. Usually, authors try to capture preferences for redistribution through questions such as *"To what extent do you agree or disagree with the statement, 'It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes'?"* (for example Alesina and La Ferrara, 2005 and Corneo and Grüner, 2000). Such questions neither allow to differentiate between recipients nor do they impose a budget constraint. In cases in which similar questions target specific recipient groups like the elderly or the sick, this is of limited use as long as the inherent trade-offs are not enforced. Furthermore, such typical survey questions capture attitudes – i.e. some degree of favor or disfavor – rather than preferences as defined by microeconomic theory (Eagly and Chaiken, 1996; Kahneman et al., 1999).

Some studies try to overcome these problems by implementing choice based experiments in field surveys. For example Boeri et al. (2001; 2002) use contingent valuation (CV) to analyze attitudes towards redistribution with a focus on pension schemes and unemployment insurance. In such CV setups respondents have to state the maximum amount of money they are willing to pay to get or to avoid a certain good or scenario (cf. Mitchell and Carson, 1989; Bateman et al., 2002). This approach enforces some trade-offs – especially regarding the price of the good – but does not account for trade-offs between the remaining characteristics. Investigating the shares of redistribution that are dedicated to different recipient groups requires an approach which enforces trade-offs between all characteristics. Thus standard CV are not able to separate valuations for different recipient groups of redistribution.

Another alternative are discrete choice experiments (DCEs) which again confront respondents with hypothetical choice situations. In contrast to CV, all characteristics of the choice options are allowed to vary. The willingness to pay is not stated directly but derived from the price which is just one of several varying characteristics that can be covered in a DCE. Besides explicit trade-offs between all characteristics this approach also implements a budget constraint (Louviere and Lancscar, 2009; for more details on DCE see section 3 and 4). If in the context of redistribution such attributes also reflect different recipient groups, this allows to obtain a much more detailed picture of preference structures. Furthermore, the approach is rooted in microeconomic theory and thus allows to approximate preferences in terms of willingness to pay (WTP) rather than pure attitudes (Bateman et al., 2002). Summarizing, DCEs have a number of advantages over the aforementioned approaches, which makes it the preferred method for our study.

In the context of redistribution, this method has been implemented in two studies (Neustadt and Zweifel, 2010; Pfarr, 2013). Both studies analyze preferences for redistribution on the basis of a DCE – using WTP as a proxy for the strength of preferences and accounting for different ends of redistribution by incorporating alternative allocations between recipient groups. Similar to the standard microeconomic studies mentioned above they analyze different theory based determinants for preferences for redistribution. Moreover, Neustadt and Zweifel (2011) also try to shed some light into preference heterogeneity that is driven by socio-demographic characteristics by looking separately at the effects of age, employment and health status in a Swiss context. They hypothesize that an insurance motive explains most of the preferences, i.e. for example that retired people strongly support redistribution towards the elderly. Despite finding significant differences in WTP, none of their corresponding hypotheses is strongly supported by the results. We argue that this is mostly driven by the isolated analysis of single observable factors and by neglecting unobservable characteristics.

Thus this study represents the first attempt to identify social interest groups in the context of redistribution based on the analysis of preference heterogeneity by taking into account the interaction of different observable as well as latent characteristics. We consider various determinants focusing on socio-demographic characteristics and by virtue of the DCE analyze them in direct relation to the volume and the allocation of the redistributive resources. Applying a Latent Class Model (LCM) allows not only to account for unobservable characteristics but also to approximate the size of these social interest groups and potential coalitions thereof. Thus we add to the literature by overcoming methodological challenges of prior studies and extending the analysis with regard to latent interest groups.

3   Econometrics

Preferences for redistribution are difficult to measure as redistribution is a good that is not traded in real economic markets and preferences are not revealed or observed directly. In such cases, *stated preference* techniques can serve as a tool for identifying these preferences (e.g. Louviere et al., 2000). We apply a DCE to capture preferences for redistribution. This concept is consistent with traditional microeconomics treating preferences as a latent construct that is

revealed by choices. Within a choice experiment, individuals face a decision between at least two alternatives. Each alternative, in our case redistribution schemes, exhibits the same attributes – i.e. characteristics defining the good – but varies regarding the attribute levels – i.e. the quantity of each attribute. Following utility maximization, the chosen alternative must be the one contributing the highest utility.

The underlying theory of DCE is based on Lancaster's Consumer Theory (LCT) (Lancaster, 1966) and Random Utility Theory (RUT) (Luce, 1959; McFadden, 1974). In LCT, consumer preferences are defined in relation to bundles of characteristics and the demand for goods is a derived demand. Consumption is the activity of extracting characteristics from goods (Gravelle and Rees, 2004). The model applied in the parametric analysis of responses is a Mixed Logit Model which can be derived in a number of different ways (see Hensher and Greene, 2003; Train, 2003). The point of departure is a model formulation which incorporates an error component (EC). Following Scarpa et al. (2005) an Alternative Specific Constant (ASC) is specified for the status quo alternative in order to capture the systematic component of a potential status quo effect. Furthermore, an error component additional to the usual Gumbel-distributed error term is incorporated in the model to capture any remaining status quo effects in the stochastic part of utility. The error component, μ, which is implemented as zero-mean normally distributed random parameter, is assigned exclusively to the status quo alternatives. Thus, the error component captures any additional variance associated with the cognitive effort of evaluating the status quo alternative relative to the experimental designed hypothetical alternative – positive or negative (Brownstone and Train, 1998; Herriges and Phaneuf, 2002; Scarpa et al., 2005; Scarpa et al., 2008). This results in the following general utility structure:

$$(3.1) \quad U_{ntj} = \begin{cases} V(ASC, x_{ntj}, \beta, \mu) + \varepsilon_{ntj}, & j = 1 (status - quo); \\ V(x_{ntj}, \beta) + \varepsilon_{ntj}, & j = 2 (hypothetical - alternative) \end{cases}$$

where the indirect utility, V, is a function of the vector of explanatory variables, x_{njt}, and associated parameters, β. For the status quo alternative, the error component μ enters the indirect utility function, while it is restricted to zero for the experimental designed policy alternative. The unobserved error term ε_{ntj} is assumed iid extreme value distributed. The individuals are denoted by n, while j is the alternative and t is the choice set. The probability of individual n choosing alternative k out of j alternatives can be defined by the Conditional Logit Model:

$$(3.2) \quad P_{ntk} = \frac{e^{\lambda \beta' x_{ntk}}}{\sum_{j}^{J} e^{\lambda \beta' x_{ntj}}}$$

where β' is a vector of all betas, λ is the scale parameter which is typically normalized to unity. Following Train (2009) and Scarpa et al. (2005), the probabilities of the ECL mixed logit type

model can be described as integrals of the standard conditional logit function evaluated at different μ's with a density function as the mixing distribution. Furthermore, this specification can be generalized to allow for repeated choices by the same respondent, i.e. a panel structure, by letting z be a sequence of alternatives, one for each choice occasion, $z = \{z_1, ..., z_T\}$. Thus, the error component coefficient may vary over people but is constant over the T choice occasions for each individual. The marginal choice probability then becomes:

$$(3.3) \qquad P_{nkz} = \int \left(\prod_{t=1}^{T} \left[\frac{e^{\lambda \beta' x_{ntk}}}{\sum_{j}^{J} e^{\lambda \beta' x_{ntj}}} \right] \right) \varphi\left(\mu \big| 0, \sigma^2\right) d\mu$$

Where $\varphi\left(\mu \big| 0, \sigma^2\right)$ is the normal density distribution function for μ.

We elaborate on this model by taking preference heterogeneity for the program attributes into account, by the introduction of a Mixed Logit Model.

$$(3.4) \qquad P_{nkz} = \int \left(\prod_{t=1}^{T} \left[\frac{e^{\lambda \beta' x_{ntk}}}{\sum_{j}^{J} e^{\lambda \beta' x_{ntj}}} \right] \right) f\left(\beta \big| b, \eta\right) d\beta$$

Where f is the density distribution function for β with a mean of b and a standard deviation of η. This model also holds the error component specification, in the case where $\mu = \beta_\mu \sim f(\mu | 0, \sigma^2)$. In this specific case, all program attributes and the error component are assigned to follow a normal distribution.

Finally, we examine whether the true distributions of some of the coefficients are better explained by using more flexible distributions, which do not necessarily match a convenient mathematical form (see e.g. Wedel et al., 1999; Hess et al., 2007). By applying a Latent Class specification we can avoid the issue of predefined statistical distributions as in the mixed logit case, but some may argue that the LCM is less flexible than the Mixed Logit Model, since the number of possible values for the taste coefficients is finite (this issue should though be expected to decrease as the number of points used increases). An illustration of an example where more flexible distributions are needed would e.g. be in the case where a mass of the respondents is located around zero, while the remaining part of the respondents either are located around a strictly positive value or a strictly negative value. So instead of using a continues mixture distribution as above, we separate the heterogeneity by applying a latent class logit specification. The unconditional choice probability for alternative k and individual n is given by:

$$(3.5) \qquad P_{nk} = \sum_{s=1}^{S} \pi_s \prod_{t=1}^{T_n} \frac{e^{\lambda \beta'_s x_{ntk}}}{\sum_{j}^{J} e^{\lambda \beta'_s x_{ntj}}}$$

Where S is the number of classes, π_s is the probability that individual n belongs to class s, and $P_n(k|\beta_s)$ is the probability of individual n choosing alternative k conditional on individual n being in class s.

Equation 3.5 implicitly assumes the same probability for the scale classes across all the taste classes, thus implying that the scale is confounded within the estimated beta parameter. To avoid the issue of scale when comparing marginal utilities, we instead examine marginal rates of substitutions (MRS/MWTP), so that the scale parameter λ from equation (3.2) cancels out, thus we are able to compare estimates across classes. Since the utility function is linear in price, the marginal WTP (MWTP) for the attribute is the ratio between the parameter of the attribute and the price parameter, such that:

$$\text{MWTP} = -\frac{\text{Attribute\ parameter}}{\text{Price\ parameter}}$$

(3.6)

In the interpretation of the results, we both consider the program attributes as well as the determinants of class membership. With regard to the latter, class membership is determined by socio-demographic variables. The inclusion of these was based on a priori expectations which we will elaborate on below. Finally, to circumvent the risk of being trapped in a local maximum instead of reaching the global maximum of the likelihood function, the estimation process was repeated 10 times using different starting values. We have used the software package NLOGIT to estimate the econometric models.

4 Design of the choice experiment

Design and data presentation

The hypothetical nature of DCEs requires the incorporation of the relevant attributes affecting individuals' utility and choice behavior respectively. Following Bateman et al. (2002), the setup of the DCE – including the selection of relevant attributes, the assignment of meaningful attribute levels as well as the application of an experimental design to create a manageable number of choice – was developed using evidence from the existing literature, expert interviews, group discussions, and paper based pretests involving 629 students and faculty members. Finally, the DCE setup has been tested in three independently conducted pretests with about 40 participants each.

To reduce the complexity of the experiment, the German social service budget – which summarizes all social spending, including public and social insurance spending – served as a starting point for the selection of relevant attributes. The social service budget has one major advantage, as all dimensions of redistribution are merged into a limited number of categories reflecting different beneficiaries of redistribution. Therefore, we chose a number of potential attributes based on this source which were then successively revised during the process sketched out above.

At the end, we singled out ten attributes which are grouped together in four diagrams to reflect the substitutive character and to make the inherent trade-offs explicit: First, the price attribute is the *personal tax and social insurance contribution* individuals have to pay out of their monthly gross income. Second, the level of redistribution is measured as percentage of GDP. Third, five attributes reflect the socio-demographic status of beneficiaries (i.e. *sick persons and persons in need of care*, *families with children*, *retirees*, *unemployed*, *working poor*). Finally, the forth group covers the nationality of the recipients (i.e. German, West-European, other).

The second step incorporates the assignment of attribute levels. They should be plausible, realistic and sufficiently spaced to make respondents trade-off the different attribute and levels between the alternatives (cf. Bateman et al., 2002; Telser, 2002). To begin with, we chose the levels of the status quo based on official statistics following the German social service budget for each attribute. Following this, other realistic and plausible attribute levels were assigned for each attribute to translate into a meaningful setting for the respondents. Table 1 presents the chosen attributes and their respective levels – categorized by their substitutive relationship.

The complete factorial design – containing all possible combinations of attributes and their levels – results in a total of 129,600 combinations (alternatives) that cannot be realized in an experiment. Accordingly, we apply a D-optimal fractional factorial design (see Kanninen, 2002; Kuhfeld et al., 1994; Kuhfeld, 2006)[1] resulting in 49 unique alternatives. As this number of alternatives still exceeds the mental burden respondents are able to handle (see e.g. Bech et al., 2011), the number of choice tasks was further split into seven blocks – each block consisting of 7 choice sets. Each choice set consisted of a fixed status quo and a hypothetical redistributive scheme. Comparing a fixed status quo with one alternative ensures that comparisons of utilities always refer to an identical reference point. Respondents were randomly assigned to one of these blocks.

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[1] While the D-optimality was developed essentially for linear estimation models, Carson et al. (1994) suggest that the application for non-linear models such as probit or logit is also possible.

Table 1: Attributes, labels and levels

Attribute	Explanation	Levels in %
Tax	Personal tax and social insurance contributions[2]	15, 25, **30**, 35, 45
Redistribution	Total amount of redistribution as a percentage of GDP	20, 25, **30**, 35, 45
Socio-demographic status of beneficiaries		
Retirees	Retirees	30, **40**, 45
Sick	Sick persons and persons in need of care	30, **35**, 40
Unemployed	Unemployed	5, **10**, 15
Families	Families with children	5, **10**, 15, 20
Working poor	Working poor	**5**, 10
Nationality of recipients		
German	German citizens	75, 80, **85**, 90
West Europe	West-European	**5**, 10
Other	Other nationalities	5, **10**, 15
Note: attribute levels in bold mark the status quo value.		

Administration of the Survey

Figure 1 shows one of the final choice tasks. In each choice situation, the alternative representing the status quo was placed on the left side. On the right side, an alternative offering a hypothetical redistributive scheme – which simultaneously differ in one or more attribute levels compared to the status quo alternative – was presented. Respondents were able to directly compare both options and check which one they preferred.

Figure 1: Choice situation

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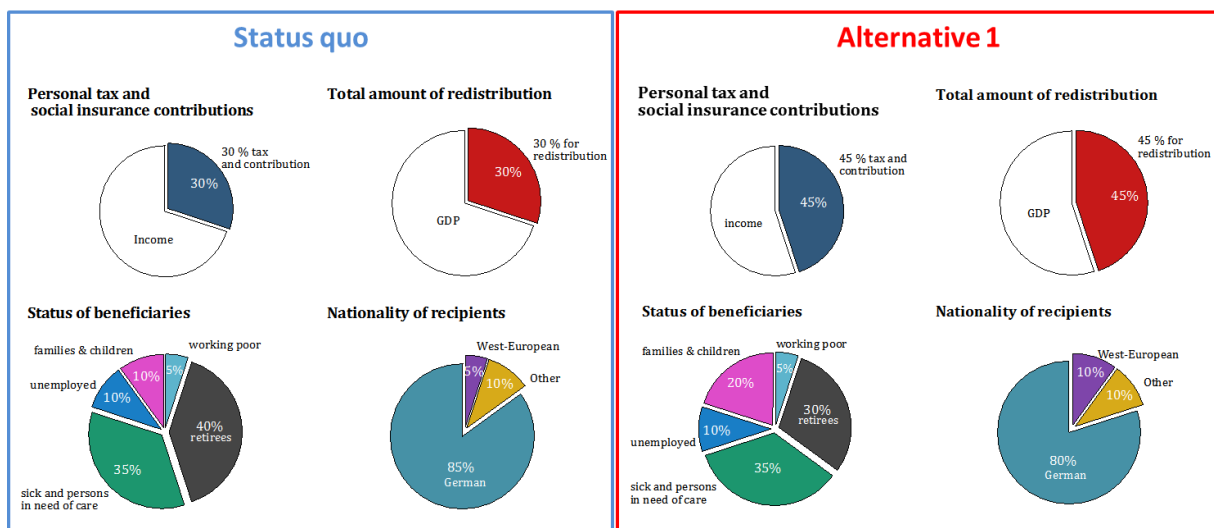
[2] Averages for the personal income tax are chosen as the progressivity of the German income tax cannot be covered. If personal income tax would be individual specific – e.g. with respect to the progression – the econometrically required independency of attributes and individuals would fail. As this is a critical assumption we test for this, e.g. by adjusting for income levels.

The DCE and a complementing questionnaire were administrated in the field by the market research institute GfK Nuremburg. Participants were recruited using a national quota sample[3] of the German voting age population and interviewed face-to-face with computer assistance. The latter ensures that respondents were not able to go back and forth between choice tasks and helped to reduce the complexity of the experiment.

In the first part of the interview process, socio-demographic characteristics and attitudes towards different aspects of redistribution were collected. The second part gave the respondents a comprehensive description of the current structure, volume and interdependencies of the German welfare state (see online appendix) to obtain unbiased estimates and ensure that all participants have a common knowledge. About one quarter of the interview time was been spent on this aspect. Within the description, all attributes and their corresponding levels were introduced consecutively. Participants were instructed that the hypothetical redistributive schemes potentially were to be implemented in the future, asking them to decide which one they would choose if only the status quo alternative and the respective hypothetical scenario existed. To avoid learning effects, two warm-up decisions were included in the description. Following this and giving the respondents the chance to clarify open questions, the seven choice-tasks were consecutively presented. After the participants made their decisions, more sensitive information such as participants' income and questions for further robustness tests were collected. It took the participants about 36 minutes on average to answer the questions and to complete the choice tasks. Respondents were provided with a small in-kind acknowledgement upon completion.

Data and class membership variables

Data from a representative cross-section survey of 1,538 German individuals of voting age conducted in 2012 are used to analyze preferences for redistribution. Table 1 compares some selected items from the dataset with data from official statistics. The presented mean values of these items do not differ significantly from each other indicating a high degree of representativeness.

Table 1: Representativeness

	Sample	Official Statistics
Female	0.516	0.509
East German	0.214	0.197
Age		
18-29	0.169	0.171
30-39	0.141	0.143
40-49	0.203	0.201
50-59	0.171	0.171
60+	0.316	0.314
Gross income from employment	2,172 €	2,150 €[1)]

Weighted data of the sample. [1)] The value is based on measures from 2005 and extrapolated to 2012 using the general wage development.

Source: Statistisches Bundesamt (2011); BMAS (2008).

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[3] Quota samples – as an equal alternative to random sampling – are frequently applied in social science research (cf. ESOMAR, 2006). The sample is stratified by age, gender, education, federal state, household size, location indicator and household net income. Due to the nature of the sampling procedure, take-up rates are not available.

The dependent variable in our econometric models is the binary variable *choice*, reflecting individual's decision for the status quo (zero) or a hypothetical alternative redistributive scheme (one). With a mean value of 0.35, about one third of the decisions were made in favor of a hypothetical redistributive scheme.

To identify latent interest groups, we select a set of nine socio-demographic characteristics based on existing evidence and relevance to inform policy makers about voting coalitions. Table 2 show the class membership variables used in the later Latent Class Models and how they are defined, including mean value and std. dev.

Table 2: Description of class membership variables.

Variable name	Label	Mean	Std. Dev.
Female	1 if female, 0 if male	0.52	0.50
Married	1 if married, 0 if not married	0.54	0.50
Poor	1 if equivalent household net income is less than 60% of the mean, 0 if not	0.21	0.41
Transfer	1 if receives unemployment benefits, housing benefits or social welfare, 0 if not	0.06	0.23
Retired	1 if retired, 0 if not retired	0.26	0.44
SAH	self-assessed health (1=very good – 5=very bad)	2.25	0.85
Child Benefits	1 if receives child benefits, 0 if not	0.28	0.45
Fam-members unempl.	1 if family members or friends are unemployed, 0 if not	0.37	0.48
Fam-members sick	1 if family members or friends suffer from severe chronically diseases, 0 if not	0.47	0.50

In detail, we chose characteristics which reflect potential beneficiaries of redistribution. For example, the variable *poor* or *transfer* indicates potential recipients of redistribution towards working poor. Respondents with a (very) bad health status are supposed to benefit from an extension of redistribution devoted to sick and people in need of care (the same is likely for individuals with family members who suffer from severe diseases). The descriptive statistics in table 2 reveal about 26 % of the sample to be retired. Half of the sample has family members or friends suffering from severe chronically diseases. The average self-assessed health status is 2.25 which is somewhere between good and ok. In the following analysis, these characteristics are supposed to define distinct social interest groups regarding preferences for redistribution.[4]

5   Results

Before turning to the LCM and the corresponding analysis of social interest groups we assess the appropriateness of different models and first look at the results of an Error Component

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[4] We do not account for any nationality variables for explaining class membership as the sample aims at the German voting age population. By law, foreigners do not have this right. However, there are 2.5 % foreigners in our dataset. Stratified by individuals from Western Europe (0.65 %) and other countries (1.75 %), the number of observations is too small to be included in an empirical analysis. Additionally, only 2.5 % of the sample do have a migration background.

Logit Model and of a Random Parameter Logit Model in table 3. As the results show all main effects of the program attributes in both models are significant, while this also goes for the standard deviation of the program attributes in the RPL model, except for the attribute working poor. A comparison of the two models shows no differences in signs across attributes or with respect to the internal ranking of the attributes. Comparing the fit of the two models by running a LR test shows that the RPL model clearly outperforms the ECL model – with an improvement of more than 200 LL units on the expense of 8 additional parameters (with a Chi-square distributed test result of 414 versus a critical value of 15.51 with 8 df.).

Table 3: Error Component Logit and Random Parameter Logit Model results.

	ECL			RPL		
	Coefficient	Std. Err.	P-value	Coefficient	Std. Err.	P-value
ASC	0.499	0.038	<0.0001	0.784	0.064	<0.0001
Tax	-0.085	0.003	<0.0001	-0.147	0.007	<0.0001
Redistribution	0.042	0.003	<0.0001	0.063	0.006	<0.0001
Beneficiaries (base - sick and persons in need of care)						
Working Poor	-0.041	0.010	0.0001	-0.066	0.018	0.0002
Unemployed	-0.033	0.007	<0.0001	-0.057	0.011	<0.0001
Retirees	0.028	0.006	<0.0001	0.061	0.010	<0.0001
Families and children	0.026	0.007	0.0001	0.036	0.011	0.0006
Nationality of recipients (base - German)						
West Europe	-0.066	0.009	<0.0001	-0.127	0.015	<0.0001
Others	-0.055	0.005	<0.0001	-0.086	0.009	<0.0001
Std. dev. of random parameters						
EC	*0.640*	*0.038*	*<0.0001*	*0.971*	*0.070*	*<0.0001*
Tax				*0.147*	*0.007*	*<0.0001*
Redistribution				*0.089*	*0.009*	*<0.0001*
Beneficiaries (base - sick and persons in need of care)						
Working Poor				*0.075*	*0.082*	*0.3583*
Unemployed				*0.123*	*0.018*	*<0.0001*
Retirees				*0.143*	*0.012*	*<0.0001*
Families and children				*0.144*	*0.015*	*<0.0001*
Nationality of recipients (base - German)						
West Europe				*0.175*	*0.029*	*<0.0001*
Others				*0.133*	*0.018*	*<0.0001*
Number of observations	10766			10766		
LL	-6397			-6190		
Adj. Rho squared	0.1420			0.1692		
# Parameters	10			18		
AIC3	12823			12433		
AIC	12813			12415		
BIC	6443			6273		

Turning back to the results from the base models, they both suggest that people in general are against a tax increase, but would like to have a larger budget for redistribution – none of these

results are surprising. Examining in more detail whom this money should be handed to, our results show that respondents prefer to redistribute more to retirees, as well as to families with children compared to people who are sick or in need of care (our base level). On the contrary, the results also show that respondents prefer to decrease the redistribution to unemployed and low income individuals (although the latter group is working (*working poor*)) compared to sick and people in need of care. In addition, the results show that individuals in general prefer to redistribute to beneficiaries with a German nationality compared to recipients coming from both within and beyond the western part of Europe, respectively.

Finally, when examining the heterogeneity in the samples – i.e. the standard deviations – the results of the RPL model show that a large degree of heterogeneity is observed across most attributes. This potentially suggests that a rather large proportion of the respondents have either substantially weaker or stronger preferences than the estimated mean, which again could imply that the sample is highly segmented. This is further investigated by applying a LCM.

Before going more into the interpretation of the coefficients in the LCM, we examine the appropriate number of classes. Determination of the optimal numbers of classes is done by a balanced assessment of the statistics reported in table 4. To some extent the log likelihood value decreases as more classes are added, indicating the presence of multiple segments in the sample. The AIC and AIC3 is minimized in the six class model (compared to the other LCM) whereas the BIC criterion is minimized with the two class model[5]. Thus the choice between LC models is now between the two class model and the six class model. Running a Likelihood ratio test reveals that the six class models outperforms the two class model[6]. Now comparing the six class model with the RPL model, table 4 shows, that with respect to AIC, AIC3 and the BIC criterion, the RPL model seems best, but again running a Likelihood ratio test, the six class model end up with an improvement of 84 LL units on the expense of 86 additional parameters. This improvement is significant (with a Chi-square distributed test result of 168 versus a critical value of 108.65 with 86 df.), and we end up by choosing the six-class model.

Table 4: Comparison of model fit statistics.

	MNL	EC	RPL	LC2	LC3	LC4	LC5	LC6	LC7	LC8
Number of observations	10766	10766	10766	10766	10766	10766	10766	10766	10766	10766
LL	-6465	-6397	-6190	-6223	-6354	-6353	-6437	-6106	-6347	-6291
Adj. Rho squared	0.0757	0.142	0.1692	0.1639	0.1448	0.1434	0.1306	0.1738	0.1396	0.1456
# Parameters	9	10	18	28	47	66	85	104	123	142
AIC3	12956	12823	12433	12530	12849	12905	13128	12524	13063	13009
AIC	12947	12813	12415	12502	12802	12839	13043	12420	12940	12867
BIC	6507	6443	6273	6353	6572	6660	6831	6589	6918	6951

As can be seen from the results of the below six class model presented in table 5, across all six classes all individuals show negative preferences for the tax attribute, which implies that paying more in tax provides less utility – as expected. However, clear differences between preferences

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[5] AIC3 (Bozdogan AIC) is (-2LL+3P); AIC (Akaike Information Criterion) is (-2LL+2P); BIC (Bayesian Information Criterion) is –LL+(P/2)*ln(N)

[6] Results can be received from the authors upon request.

in the different classes are found – especially between the preferences of to whom the redistribution should be provided to – the beneficiaries. One could argue that these differences were due to differences in scale, but as can be seen the estimates goes in different directions across classes, and hence cannot (solely) be explained by scale differences between classes. As mentioned above – the scaling issue can be overcome by comparing MRSs between classes, thus we turn directly to discussing the results in terms of MRS, which in our case can be interpreted as WTP.

Table 6 shows the WTP estimates across all six classes. The estimates are to be interpreted as individuals' WTP in percentage points of their monthly gross income per additional percentage point of one of the other attributes – e.g. redistribution, working poor, unemployed etc. The alternative specific constant (ASC) represents the preference for the status quo, i.e. if this is negative, a general aversion against any form of change is expressed. To opt for an alternative, the benefits achieved by changes in the attributes have to outweigh the disutility that is caused by having to move away from the status quo in the first place.

This interpretation of the LCM by examining the preferences in each class along with the class specific probabilities – the probability of class membership relative to the sixth class – furthermore allows us to derive insights on the composition and potential coalitions of latent interest groups. I.e. in our interpretation each of the classes represents one statistically determined latent interest group with similar preferences, the composition of these groups being driven by the selected observable socio-demographic as well as unknown latent characteristics.

Table 5: Latent Class Model with 6 classes.

	LC6-CL1			LC6-CL2			LC6-CL3			LC6-CL4			LC6-CL5			LC6-CL6		
	Coef.	Std. Err.	P-value	Coef.	Std. Err.	P-value	Coef.	Std. Err.	P-value	Coef.	Std. Err.	P-value	Coef.	Std. Err.	P-value	Coef.	Std. Err.	P-value
ASC	-0.899	1.128	0.43	1.103*	0.120	<0.0001	0.389*	0.128	0.0023	0.634*	0.095	<0.0001	0.709	0.287	0.0136	-0.238	0.257	0.3533
Tax	-0.500*	0.208	0.02	-0.048*	0.009	<0.0001	-0.060*	0.011	<0.0001	-0.087*	0.007	<0.0001	-0.154*	0.031	<0.0001	-0.479*	0.062	<0.0001
Redistribution	0.135*	0.073	0.07	0.080*	0.011	<0.0001	0.008	0.010	0.4115	0.042*	0.007	<0.0001	0.109*	0.029	0.0002	0.083*	0.019	<0.0001
Beneficiaries (base - sick and persons in need of care)																		
Working Poor	-0.564*	0.332	0.09	-0.110*	0.034	0.0011	0.007	0.035	0.8521	-0.024	0.025	0.3421	-0.025	0.080	0.7502	-0.025	0.068	0.7124
Unemployed	-0.577*	0.284	0.04	0.021	0.020	0.3087	-0.071*	0.024	0.0036	-0.028*	0.017	0.0961	-0.082	0.056	0.1415	0.008	0.045	0.8491
Retirees	0.289*	0.153	0.06	0.020	0.018	0.2723	-0.044*	0.021	0.0375	0.023	0.014	0.1130	0.325*	0.076	<0.0001	0.099*	0.038	0.0085
Families and children	-0.464*	0.248	0.06	0.005	0.020	0.7891	0.050*	0.019	0.0072	0.036*	0.017	0.0373	0.022	0.059	0.7045	0.103*	0.040	0.0099
Nationality of recipients (base - German)																		
West Europe	0.048	0.164	0.77	-0.057*	0.026	0.0309	-0.057*	0.029	0.0487	-0.032	0.022	0.1491	-0.159*	0.073	0.0285	-0.152*	0.049	0.0021
Others	0.121	0.183	0.51	-0.043*	0.017	0.0093	-0.057*	0.016	0.0003	-0.070*	0.014	<0.0001	-0.247*	0.050	<0.0001	-0.041	0.036	0.2506
Class probability variables																		
Constant	-1.962*	1.086	0.07	-0.280	0.387	0.4696	-0.050	0.486	0.9174	-4.801	58.278	-0.9343	-2.821*	0.798	0.0004			
Self-assessed-health	0.435	0.434	0.32	0.458*	0.163	0.0049	0.290	0.201	0.1492	-0.371	1.324	0.7796	0.772*	0.235	0.0010			
Poor	-0.025	0.884	0.98	0.054	0.316	0.8652	0.020	0.363	0.9571	-0.062	0.367	0.8651	-0.005	0.468	0.9917			
Recives transfer paym.	0.591	2.584	0.82	0.079	0.563	0.8879	0.221	0.603	0.7145	-0.021	1.117	0.9850	0.214	1.148	0.8524			
Retired	0.023	1.148	0.98	1.490*	0.418	0.0004	-0.116	0.577	0.8403	-3.850*	0.577	<0.0001	3.072*	0.604	<0.0001			
Female	0.819	0.606	0.18	-0.128	0.229	0.5768	0.217	0.280	0.4381	0.455	1.795	0.8001	0.225	0.374	0.5462			
Recieves child benefits	0.005	0.558	0.99	0.003	0.218	0.9897	-0.004	0.021	0.8377	-0.009	0.048	0.8461	-0.004	0.021	0.8320			
Married	0.046	0.560	0.93	-0.003	0.251	0.9898	-0.025	0.293	0.9327	-4.438	42.955	0.9177	-0.759*	0.396	0.0556			
Fam-members unempl.	-2.534	2.212	0.25	-0.139	0.238	0.5578	-0.002	0.291	0.9955	0.770	1.889	0.6834	-0.274	0.393	0.4855			
Fam-members sick	-1.464*	0.779	0.06	-0.406	0.249	0.1027	-0.499	0.305	0.1023	4.327	58.114	-0.9406	-0.312	0.403	0.4388			
Avg class probability	0.032			0.299			0.227			0.193			0.101			0.147		
# observations	10766																	
LL	-6106																	
Adj. Rho squared	0.1738																	
# Parameters	104																	
AIC3	12524.47016																	
AIC	12420.47016																	
BIC	6589.010792																	

Note: * indicates significance level at 10% or below.

Table 6: Mean and varians of marginal willingness-to-pay values for the six class model.

	LC6-CL1			LC6-CL2			LC6-CL3			LC6-CL4			LC6-CL5			LC6-CL6		
	Mean	Var	P-value	Mean	Var	P-value	Mean	Var	P-value	Mean	Var	P-value	Mean	Var	P-value	Mean	Var	P-value
ASC	-1.80	3.19	0.3147	23.12	23.95	<0.0001	6.49	5.29	0.0048	7.31	1.24	<0.0001	4.59	3.52	0.0145	-0.50	0.27	0.3421
Redistribution	0.27	0.01	0.0048	1.68	0.10	<0.0001	0.14	0.03	0.3762	0.48	0.00	<0.0001	0.71	0.02	<0.0001	0.17	0.00	<0.0001
Beneficiaries (base - sick and persons in need of care)																		
Working Poor	-1.13	0.13	0.002	-2.30	0.74	0.0076	0.11	0.34	0.8523	-0.28	0.09	0.3448	-0.16	0.27	0.7522	-0.05	0.02	0.712
Unemployed	-1.15	0.05	<0.0001	0.44	0.20	0.3316	-1.19	0.21	0.009	-0.33	0.04	0.1011	-0.53	0.11	0.1076	0.02	0.01	0.8485
Retirees	0.58	0.05	0.0094	0.42	0.16	0.2833	-0.73	0.14	0.0514	0.26	0.03	0.1052	2.10	0.19	<0.0001	0.21	0.00	0.0023
Families and children	-0.93	0.08	0.0009	0.11	0.18	0.7895	0.84	0.12	0.016	0.42	0.04	0.0328	0.14	0.14	0.7013	0.21	0.01	0.0061
Nationality of recipients (base - German)																		
Westen Europe	0.10	0.10	0.7666	-1.19	0.39	0.0556	-0.95	0.28	0.0727	-0.37	0.07	0.1544	-1.03	0.25	0.0388	-0.32	0.01	0.0021
Others	0.24	0.09	0.4275	-0.91	0.12	0.0086	-0.95	0.10	0.0025	-0.81	0.03	<0.0001	-1.60	0.09	<0.0001	-0.09	0.01	0.2436

Note: The variance of WTP was calculated using the Delta-method (Greene, 2008).

Latent interest groups

Class 1 is labeled as *Opinionated Minority*. Representing only 3 % of the population its political relevance is very limited. Compared to the other groups, the WTP for an extension of redistribution is modest. They favor a shift towards the sick and the retirees, and have a stronger aversion regarding support of working poor than all other classes (almost the same for unemployed). Furthermore they are the only group with a significant negative WTP for redistribution towards families and children. Furthermore, class one is the only group that does not exhibit a significant negative WTP against at least one of the two nationality based groups, i.e. Western Europe and / or other nations. Summarizing, the very pronounced preferences regarding the recipients suggest that the members have strong opinions that diverge from the majority. Nonetheless, overall the group is rather of limited interest due to very small number of members.

The label *Conservative Retirees* could be used to characterize class 2, which represents about 30 % of the population. Most importantly, these individuals have a very pronounced preference for the status quo and are very likely to object any form of reform. The WTP to maintain the status quo not only dwarfs all attributes but also is by far the highest across all groups. Despite this, they exhibit the highest WTP for an extension of redistribution of all classes, i.e. more than twice the WTP of the second highest class. Regarding the allocation of resources the WTP estimates suggest a shift from the working poor towards the sick. The retirees themselves are not supposed to benefit above average from the extension of the overall budget for redistribution. This is surprising, as being a retiree (together with an unfavorable SAH) is a strong predictor for being member of this group. Thus we characterize them as to some extent being egoistic despite the fact that they do not show preferences for redistribution towards the elderly per se. These individuals are likely to benefit from increasing the share for the sick and individuals with need for long term care because they themselves are considered having an unfavorable SAH. This seems plausible, especially when contrasting this group with the members of class 5. In addition, the members of this group also show preferences towards redistributing less to recipients from outside Germany. Overall, the group configuration seems to be very plausible regarding preferred recipients and membership predicting variables. The group is likely to have considerable political relevance due to its size. However, despite the strong preference for an increase of redistribution this group is rather impeding than leading change and has a strong interest in maintaining the status quo.

Class 3 represents a quite distinct group of individuals that could be characterized as *Cost conscious Family Advocates* covering 23 % of the population. This group is against a change of the overall level of redistribution, i.e. the WTP is not significantly different from zero. The individuals have the highest WTP for shifts in favor of families and children of all groups and would like to do this especially on expense of the unemployed and the retirees. Similar to the other groups they strongly prefer German recipients. None of the observable factors that we used to predict class membership stands out for this group. Thus latent characteristics such as preferences regarding the recipient groups seem to be the primary driving force. Nonetheless, just by the pure size of the group their reluctance regarding a change of the redistributive budget is likely to have some political weight. In contrast to the preceding group their WTP for the status quo – despite being highly significant – is much smaller and it is realistic that reform options presented to this group reach a level of attractiveness that compensate the disutility suffered from change.

We label Class 4 *Indifferent Working Age Population.* The members – 19 % of the population – have a positive WTP for an extension of redistribution on a slightly below average level compared to the other groups. Besides an aversion against recipients from other nations, they have no interest in changing the allocation between the different recipient groups. Being not retired considerably increases the probability of being member of this class. Due to its size and the lack of extreme positions on shifts between recipient groups, this class seems to be a likely coalition partner, however, one that also appreciates the advantages of the status quo.

Class 5 exhibits a rather pronounced profile which could be classified as *Egoistic Single Retirees.* Representing 10 % of the population it is the second smallest group. The second highest WTP for an increase of redistribution goes along with a very strong preference for reallocating resources in favor of the retirees, thus benefiting twice – firstly, from the general increase of the budget and, secondly, from giving a higher proportion to the elderly. In contrast to the preceding groups this makes it comparatively easy for these individuals to leave the status quo. Looking at the variables used to predict class membership it seems quite likely that self-interest is a very strong motive for this group, which consists mainly out of retired individuals with a below average health status that are not married. Again this goes along with a very pronounced aversion against non German recipient groups.

The last group, class 6, is difficult to characterize and could capture what we call the *Residual Average.* This group has the second lowest WTP for an extension of redistribution of all classes and prefers a shift away from the sick towards retirees and families. Being the reference class, no completely clear picture emerges regarding class membership. But representing 15 % of the population the class still has some political relevance, especially as there is no strong interest to maintain the status quo.

Summarizing, we could identify six distinct social interest groups, most of which have a quite clear and plausible profile. All but one have a significantly positive WTP in favor of an extension of the overall budget for redistribution. But regarding the ends of the redistributive measures, it is still unclear, which results the political process might produce. For this reason we now turn towards potential coalitions. For the sake of simplicity we disregard the nationality of the recipient groups.

Coalition analysis

Class 1 seems to have too extreme positions for joining a larger coalition. Furthermore, its small size reduces its relevance also for the other groups. As illustrated by figure 2, there is an almost perfect match between class 4 and 6, adding up to 34 % of the population. When looking for potential coalition partners class 3 differs as it favors families with children over retirees and the unemployed. But what makes class 3 still a likely ally is a fairly similar preference regarding the overall level of redistribution, i.e. none of these groups has a pronounced interest in a considerable increase of the overall redistributive budget. This aspect makes class 2 an unlikely coalition partner, as this group's WTP for an expansion of redistribution is too high and their aversion against the working poor is too strong. Together group 4, 6 and 3 would achieve a majority of 57 %.

Groups 2 and 5 are very likely to form an opposition coalition. Both retiree groups have a high preference for a considerable increase of the overall level of redistribution and seem to be a

reasonable match despite some differences regarding some recipient groups (see figure 3). Together they add up to 40 % of the population.

Putting this in the context of the current political situation in Germany one has to consider that the right to vote does not directly translate into the participation in elections. In the German 2013 election, the turnout of voters was significantly higher in the elderly population. While in the age groups between 18 and 60 years the participation was between 60 and 74 %, the range for people aged 60 and older was between 75 and 80 % (Bundeswahlleiter, 2014). Assuming that there is a strong correlation between age and being retired, this directly affects the political power of the identified social interest groups. Measured in voters the coalition of group 2 and 5 grows. The result is a quite small – if any – majority for the coalition of group 3, 4 and 6.

Figure 2: Coalitions between social interest groups – the working age population
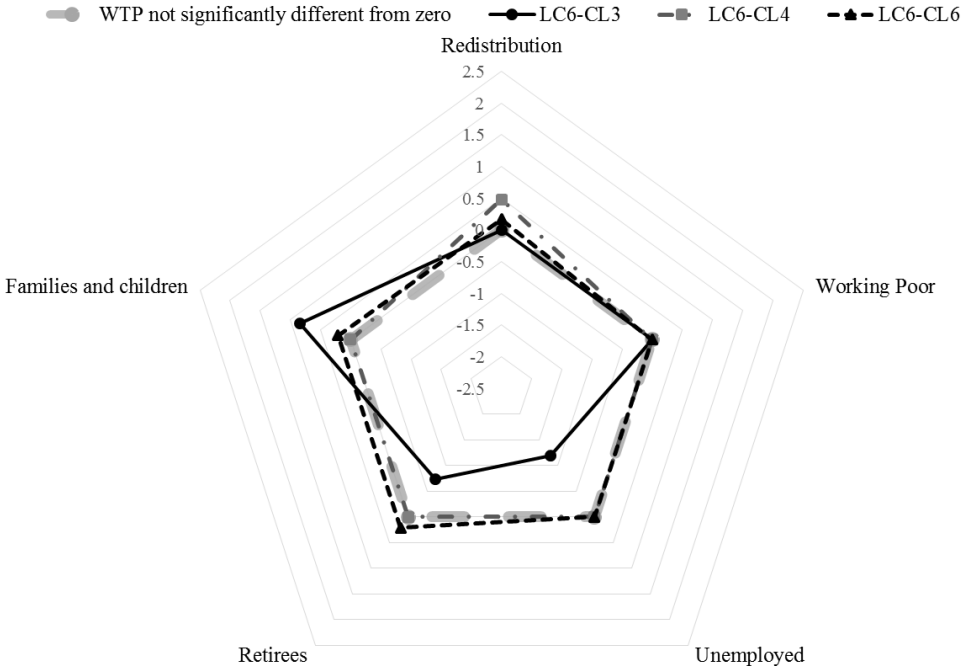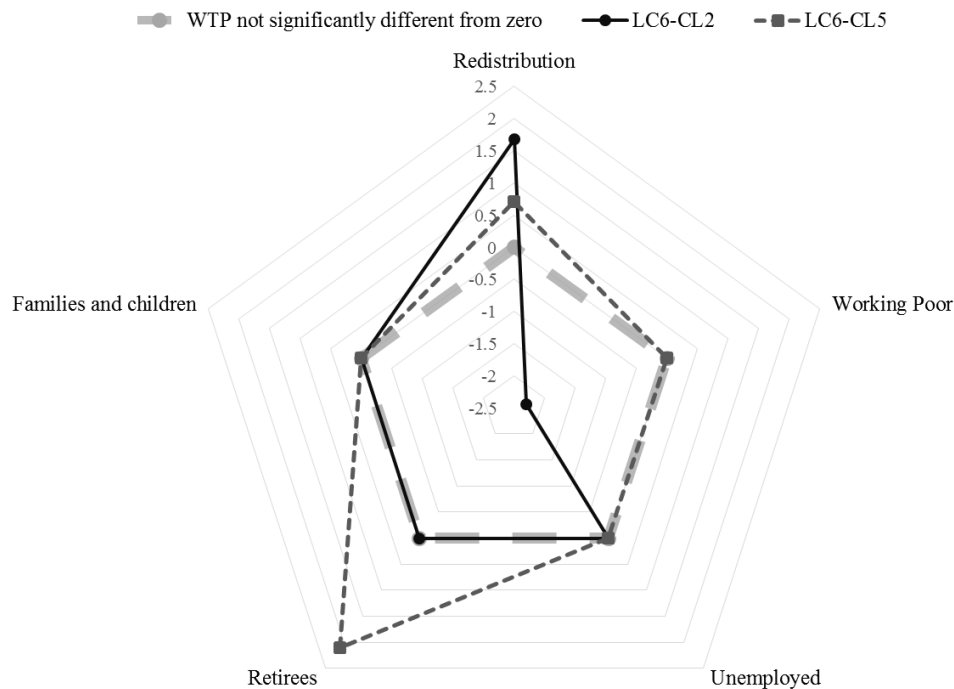
Figure 3: Coalitions between social interest groups – the elderly population

Furthermore, none of the involved interest groups is in favor of a reduction of the overall budget for redistribution. Looking at the outcome of the 2013 election, this is likely to be one (besides several other) reason(s), why parties such as the liberal democrats (FDP) that want to reduce the size of government did not make it over the five percent hurdle and are thus not represented in the German parliament (Bundeswahlleiter, 2014). The fact that there is no clear cut opposition – i.e. that parts of the population strictly oppose big government while other are strongly in favor thereof – is also in line with the current political climate in Germany that is reflected by the formation of the grand coalition and the respective coalition treaty (CDU et al., 2013).

Looking at policies that target specific recipient groups one can see that in the current legislative period the unemployed are not in the focus. However, there is considerable activity regarding retirees. They will benefit from higher retirement pay for women who raised children and thus earned lower pension claims during their work life. The same legislation, enacted in July 2014, allows certain groups of individuals who have worked more than 45 years to retire before they reach the official retirement age. However, while experts argue for an increase of the official retirement age, the extension of benefits seems to be widely accepted in the general public (Rürup, 2011), though this is only partly supported by our results.

The interests of families with children are also catered by both major parties, the discussion is primarily about the right way of how to do this, e.g. giving money to family members who stay at home to care for the children or rather investing the resources in daycare facilities. The core decisions on this were already taken by the two preceding governments (CDU/CSU/SPD and CDU/CSU/FDP) that enacted a legal entitlement to daycare and a child care subsidy (Betreuungsgeld). Until 2014, the federal subsidies for the extension of daycare facilities added up to 5.4 billion Euros and further annual subsidies of 0.84 billion Euros are planned as a permanent installment (BMFSFJ, 2014).

Summarizing, what we see in Germany seems to be a grand coalition between all major social interest groups. The key concerns of the two groups (families with children and retirees) are both catered by the two large parties to attract as many voters as possible. As none of the groups is strongly opposed to higher levels of redistribution this is possible by increasing public expenditures. Thus our approach has identified the same key factors that also drive policy making in Germany at the moment.

6   Discussion and Conclusion

This study is the first to apply latent class modelling on data from a DCE with the goal to identify social interest groups regarding preferences for redistribution. We argue that the usually applied methods are not capable of reflecting the complex interplay of different observable and latent determinants of these preferences. Based on the econometric analysis we can identify six social interest groups that differ regarding their preferences for redistribution and their composition. Both, their preferences regarding the overall budget for redistribution and their preferences regarding the different recipient groups as well as the socio-demographic determinants for group membership are plausible and match well with the current political situation in Germany.

This contributes to the literature as no prior study has so far followed a similar approach to decompose preference heterogeneity within the field of redistribution. Usually, the evidence on the relevance of single socio-demographic determinants for preferences for the overall budget for redistribution or the size of government is mixed. For example, Alesina and Giuliano (2011) use different datasets to test a number of theory based hypotheses regarding the determinants for redistribution. In all their specifications they include age as control variable. While in some age seems to have an effect, in others the variable is not significant. Our results suggest that this may be at least partly explained by preference heterogeneity. Interpreting being a retiree as a proxy for age, we do find differences between the young and the elderly, but we also find considerable heterogeneity within these two groups. Using an approach that accounts for a discrete distribution of the effects of latent characteristics allows us to separate the respective individuals in (more) consistent groups. We assume that making use of this method when revisiting known theoretical concepts explaining preferences for redistribution should provide a better understanding of the currently heterogeneous empirical results.

Turning towards the study of Neustadt and Zweifel (2011) highlights some of the strengths of our approach. Their work is closest to our study regarding the focus on different recipient groups and the use of a DCE. The authors argue along the line of the insurance motive and are surprised to find no support regarding the hypotheses that preferences for redistribution favoring retirees are highest among this group and that WTP for redistribution in favor of people with ill health is expected to be higher among those who experience health problems among their close relatives. Our results show that there are two groups who are characterized by an over proportional share of retirees, but only one of them – the *Egoistic Single Retirees* (class 5) – show the expected behavior. Thus, the insurance motive seems to be a plausible explanation for this subgroup, while the *Conservative Retirees* (class 2) are likely determined by other factors. The health aspect is covered by two variables – *SAH* and *Fam-members sick*. While the latter is only significant regarding the small minority group, *SAH* is a strong predictor for being member in the two aforementioned retiree groups. Again, only for one of the two groups, i.e.

the *Conservative Retirees*, there is a significant WTP for a shift of resources towards the sick and the individuals in need of long term care. In contrast, the other group has even a positive WTP to shift resources away from the sick in favor of the retirees. Summarizing, regarding the insurance motive one could argue that the need of insurance is very heterogeneous even within the group of retirees. While some have a strong focus on health related issues, others are probably more worried about their retirement pay in general. Such very distinct preference patterns underline the presence of preference heterogeneity and the need to account for this.

However, despite being able to give a much more detailed picture of the complex interrelations, some limitations apply. For example, sticking for the moment with the insurance motive, other very likely determinants – such as receiving child benefits – are not significant. One very likely cause is that we work with a limited number of classes, as beyond a certain point the "statistical costs" of breaking down the sample into even smaller groups outweighs the "statistical benefits". Thus we have to focus on the core social interest groups that have the greatest explanatory power from an econometrics point of view. Furthermore, the number of variables that can be used to explain class membership are also limited – e.g. by correlation patterns and availability. Driven by the explorative nature of our study we based our selection of variables on a priori expectations. As at the same time we had to avoid correlation patterns, we had to omit other relevant variables such as education or employment status. Depending on the specific research question other setups may be preferable. Furthermore, one has to be aware of the fact that the data has been collected at a specific point of time, which may limit the generalizability of the results. With regard to our study in 2012 the situation in Germany was on the one hand characterized by the European debt crisis. On the other hand the unemployment rate was at an all-time low for reunified Germany (Bundesagentur für Arbeit, 2014). Such factors may likely influence the public opinion as well as the focus of respondents. Finally, as we use a different method, we cannot directly compare our results to the findings of other researchers. However, several robustness checks regarding the DCE itself as well as the comparison to the current political situation in Germany do support the internal as well as external validity of our results. Further research will though be needed to test this with alternative datasets and specifications.

Summarizing, our results suggest that in Germany there is no opposition against an extension of the welfare state. Quite contrary, most social interest groups have a strong interest in increasing the overall budget of redistribution. The groups differ regarding the preferred beneficiary groups and regarding the individuals' observable and unobservable characteristics that determine class membership. The successful implementation of this approach in the context of redistribution should encourage further work along these lines, hopefully disentangling some of the so far rather heterogeneous empirical results on preferences for redistribution.

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