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Elvire Guillaud

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**Preferences for redistribution:  
A European comparative analysis**

**Elvire Guillaud**

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# Preferences for Redistribution: a European Comparative Analysis\*

Elvire Guillaud<sup>†</sup>

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## Abstract

What explains people's preferences for state intervention in social policies? Conducting a cross-section analysis on individual-level survey data, we highlight the link between the economic position of agents and their specific demand toward redistribution. Controlling for a number of factors usually found to impact individual preferences in the literature, we take the egoistic motives for redistribution seriously and focus on the role played by the occupational status of individuals in shaping their preferences. Thus, (i) we estimate the relative importance of economic factors in terms of current and expected gain, allowing for social mobility experience and risk aversion. Further, (ii) we try to identify which socio-political groups could be formed on the basis of their preferences for redistribution. Finally, (iii) we highlight differences between European countries as it comes to the grouping of agents.

**Keywords** Redistribution, Occupation, Social Mobility, Ordered Logit Regression

**JEL Code** D31, H23, C35

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# 1 Introduction

What explains people's preferences for state intervention in social policies or more specifically preferences for redistributive policies? In this paper, we conduct a cross-country analysis on the determinants of preferences for redistribution in Europe using individual-level survey data. We take the egoistic motives for redistribution seriously and estimate the relative importance of economic factors in terms of current and expected gain, allowing for social mobility concerns and risk aversion. To do that, we use ISSP (International Social Survey Programme) data on four European countries (Great Britain, Sweden, France and Germany) that represent ideal cases relative to the welfare state in Europe, and test the empirical validity of the main propositions of the literature using ordered logit regressions. We substantively assess the relative importance of each explanatory variable and conduct a series of robustness checks.

Throughout the analysis, our focus is on the role played by the occupational status of individuals in shaping their preferences for redistribution. Adopting a political economy viewpoint on the more general question of what determines redistributive policies, we further try to identify which socio-political groups could be formed on the basis of their preferences for redistribution. Indeed, the changing weight of social groups and the degree of homogeneity that exists inside groups crucially influences the political outcome<sup>1</sup>. The analysis of demand concerning social policies and the identification of social groups that formulate this demand are then necessary to be able to determine, in a comparative perspective, the support for potential reforms concerning the welfare state in Europe (Castanheira *et al.*, 2006).

There is a rapidly growing literature on the determinants of preferences for redistribution, with a large variety of arguments proposed to explain differences in attitudes towards the welfare state. This goes from purely pecuniary factors (Meltzer and Richard, 1981) to purely cultural factors (Algan and Cahuc, 2006), through subjective social positioning (Hirschman, 1973) or expectations of social mobility (Benabou and Ok, 2001). Our contribution to the existing literature is threefold: (i) We substantively assess the importance of the variables identified in the literature, infer a hierarchy in the arguments and emphasize the supremacy of economic factors in shaping preferences for

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<sup>1</sup>See on this point the political economy model of Pagano and Volpin (2001, 2005), and its extension by Amable and Gatti (2004, 2007).

redistribution; (ii) We identify the different social groups who might support redistribution according to their position on the labour market; (iii) We highlight differences between countries as it comes to the grouping of agents (hence potential coalitions) based on their policy preferences.

The rest of the paper is organized as follows. Section 2 presents the literature on the determinants of preferences for redistribution. Section 3 explains our empirical strategy, the data used and the careful construction of variables. Section 4 illustrates the econometric results, while Section 5 conducts a series of robustness checks. Section 6 concludes. Technical details on the econometric specification can be found in the appendix, along with descriptive statistics of the data and the results of robustness checks.

## 2 Literature

A recent body of the economic literature addresses the problem of the formation of preferences for redistribution.

The standard viewpoint is to consider a purely pecuniary factor as determining individual preferences (Meltzer and Richard, 1981): individuals whose income is below the mean income of the population ask for redistribution, given that they will directly benefit from it; symmetrically, individuals whose income is above the mean do not favour redistribution as they are net contributors. Therefore, if the median income is below the mean income in the population, a majority of voters will be in favour of redistribution. In their study of the differences between the level of welfare state in the United States and in four European countries (France, Germany, Sweden and the UK), Alesina and Glaeser (2004) show that the empirical validity of this argument is highly controversial.

Adding the “prospect of upward mobility” to enrich the standard model and assuming that a change in politics can not happen too often, Benabou and Ok (2001) leave a room for individuals whose income is just below the mean to rationally oppose redistributive policies. Then, there may be a “preference for inequality” (Suhrcke, 2001) linked to the fact that a majority of voters expect an upward mobility in the future, thus a net cost to redistribution (Clark, 2003; Senik, 2005). A similar argument has been recently tested by Alesina and La Ferrara (2005) using an objective mobility matrix.

But how do individuals estimate their chance of future mobility? Piketty (1995) assumes a learning process that leads individuals to take into account

not only their current income, but also their personal mobility history to compute their future income. Using their personal mobility experience, individuals, who do not know the true role of effort in determining income, update their initial beliefs (randomly distributed) while evaluating the cost of redistribution. Therefore, an individual who believes that effort is rewarded by the society and who experiences an upward mobility would have an incentive to oppose any redistributive policy and to pursue its effort to increase his social position. These beliefs, in the long run self-fulfilling<sup>2</sup>, imply multiple equilibria leading for instance the US to promote effort (thus to oppose redistribution) and European countries to reward chance (thus to favour redistributive policies). The standard income effect usually assumed in the Public Choice theories with an egoistic median voter may thus be false, since the effect comes from endogeneous beliefs about the role of effort<sup>3</sup>. More recently, Fong (2001), Alesina and Angeletos (2005) and Benabou and Tirole (2006) have revisited the relationship between collective beliefs on the relative importance of individual effort in one's success and the demand for redistribution.

The relative income does also play a role in determining preferences, as pointed out by Ravallion and Lokshin (2000) who take advantage of the "tunnel effect" originated by Hirschman (1973). In this approach, beliefs are strongly related to the way other people move in the society. The tunnel refers to a situation where a car driver is blocked in a traffic jam. If the queue beside him is moving, whereas his queue is stationary, the individual first has a positive reaction: the traffic jam is probably close to the end, and his queue will move very soon, too. But if, after a while, his queue still does not move, the individual is not only unsatisfied to be stuck, but his discontent is raised by the fact that other drivers next to him do move. This double effect is called the *tunnel effect*. Attitudes of individuals clearly depend on their expectations, and their expectations rely on the observation of others. Ravallion and Lokshin (2000) and Corneo and Grüner (2000, 2002) find empirical support for this relative social mobility argument, using Russian data for the former, and international survey data (ISSP 1992) for the latter.

Finally, a growing body of the literature focusses on behavioural and

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<sup>2</sup>See Piketty (1998) for a theoretical explanation of the persistence of inequalities.

<sup>3</sup>See Piketty (1999) for a test on French data.

cultural values as determinants of preferences for redistribution<sup>4</sup>. Alesina and Fuchs-Schündeln (2007) argue that there is a long lasting impact of political regimes on collective beliefs about redistribution. The authors take advantage of the natural experiment of East Germany to assess the impact of Communism on people’s preferences for redistribution. Alesina, Glaeser and Sacerdote (2001) and Roemer and Van der Straeten (2005, 2006) focus on the racial conflict that could explain the refusal of redistribution, when individuals expect migrants to take all the benefit from it. Clark and Lelkes (2005) and Scheve and Stasavage (2006) highlight the role of religion as a substitute to public redistribution. The hypothesis tested by the authors is that the social distress due to an economic shock (e.g. unemployment) is dampened if the individual belongs to a social network. Religion might be such a network. In all these studies, the insurance motive of redistributive policies (Buchanan and Tullock, 1962) is tackled<sup>5</sup>.

In the following, we test the empirical validity of these propositions on a sample of European countries. Adopting a political economy viewpoint on the more general question of what determines redistributive policies, we try to identify which socio-political groups could be formed on the basis of their preferences for redistribution. Throughout the analysis, the hypothesis is that preferences for redistribution rely on the economic positioning of agents on the labour market. Thus, conducting a cross-country analysis on the determinants of preferences for redistribution in Europe, we contribute to the existing literature in three ways. First, we assess the relative importance of the factors identified to impact preferences for redistribution and reveal the key role played by economic variables, as compared to cultural factors. Second, we identify the different occupational groups who might support redistributive policies. Third, we highlight differences between countries, especially as it comes to the grouping of agents who support redistribution.

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<sup>4</sup>See Algan and Cahuc (2006) for an international comparison using World Value Survey and ISSP (1991, 1998) that explains differences in welfare states and labour market institutions by differences in civic attitudes; See Amable (2008) for an empirical evaluation on European Social Survey data of the importance of cultural factors relative to other “materialists” factors in the individual support for the European social model.

<sup>5</sup>See Rehm (2005) for an empirical test on European Social Survey data of diverse insurance motives (globalization, deindustrialization) as determinants of preferences for redistribution.



## 3 Empirical Strategy

### 3.1 Estimation Process

We proceed to an ordered logit regression, since the variable to be explained encompasses discrete choices that can be easily ordered on a Likert scale<sup>6</sup>. Ordered models assume the existence of threshold values, thus implying an ordering to the categories of the dependent variable. More precisely, a latent variable is supposed to capture the outcome, following a decision rule based on those cut-points parameters that need to be estimated (see the appendix for a formal explanation on this).

The equation to estimate can be defined as follows:

$$Y_i^* = \gamma D_i + \chi E_i + \delta M_i + \phi V_i + \eta C + \epsilon_i \quad (1)$$

where vectors  $\gamma$ ,  $\chi$ ,  $\delta$ ,  $\phi$ ,  $\eta$  and  $\epsilon$  are parameters to estimate, and  $Y_i^*$  is the latent variable, i.e. the intensity of preferences for redistribution.

$D$  is a vector of individual socio-demographic characteristics (age, sex, marital status).  $E$  is a vector that measures the socio-economic position of individuals (type of occupation, current income, risk aversion). This vector includes also a binary variable for individuals who are union members.  $M$  is a vector of binary variables that captures the personal social mobility experience and the perception of mobility relative to the father, or alternatively the subjective social position.  $V$  is a vector of dummies that captures cultural values, here reduced to the religion of individuals and the intensity of their religiosity. In the finer study of Germany, we include a dummy for living in former East Germany, in order to capture a potential long lasting effect of the communist regime on preferences. Finally,  $C$  is a vector of country

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<sup>6</sup>The Likert scale is commonly used to measure the degree of satisfaction of individuals. This type of scale uses a classification in 5 points, that goes from the strong agreement to the simple agreement, indifference, disagreement, and strong disagreement to rank attitudes. Even though some scholars treat this scale as being an interval scale (hence applying OLS estimates), we do not know whether the distances between the different alternatives are equal (i.e. the gap between “strongly agree” and “agree” is not necessarily of the same magnitude as the gap between “agree” and “indifferent”). Therefore, the presence of a Likert scale calls for the use of categorical dependent variable regression models (CDVMs). Unlike the OLS, CDVMs are not linear.

dummies, and  $\epsilon$  is the error term.

We do not observe  $Y_i^*$ , but a variable  $Y_i$  that takes the values 1 to 5 and increases with the individual support for redistribution. In particular, we have:

$$Y_i = j \text{ if } \alpha_{j-1} \leq Y_i^* < \alpha_j \quad (2)$$

for  $j = 1, \dots, 5$  where  $\alpha_j$  are cut points to estimate, assuming that  $\alpha_0 = -\infty$  and  $\alpha_5 = +\infty$ .

The interpretation of categorical variables estimates is not straightforward (King *et al.*, 2000; Tomz *et al.*, 2003). Coefficients give us the marginal effect of a unit variation of the independent variable on the value of the latent variable. However, we do not know the value of the latent variable, but only its cut points. Therefore, a first interpretation of results is done through the interpretation of the *sign of coefficients* and of their *statistical significance*. Notice that within the same regression, the magnitude of coefficients is comparable. We thus interpret the relative impact of independent variables in terms of *odds ratios* (i.e. for a unit increase in  $x$ , the odds of a lower outcome compared with a higher outcome are changed by a factor  $\beta$ , holding all other variables constant). We further assess the substantive effect of coefficients by computing *predicted probabilities* for a few ideal types (Long and Freese, 2006).

## 3.2 Data

Our micro-econometric analysis is based on the ISSP dataset “Social Inequality III” (International Social Survey Programme - 1999). Questions of the survey deal with the political demand, votes, social and economic characteristics of individuals (between 500 and 1000 respondents per country). We select four countries in the dataset, that correspond to four ideal cases relative to the welfare state in Europe, according to the literature (Esping-Andersen, 1990; Amable, 2003 and 2005): Great Britain, which has the lowest level of welfare state and is based on a Beveridgean individualistic logic; Sweden, which has the highest level of welfare state and an universalist and egalitarian system; France and Germany that are the two biggest European countries and have a welfare state based on the insurance system originated by Bismarck.

To measure attitudes towards redistribution, we assume that agents are sincere revealers of their preferences, while answering to the following survey question:

“What is your opinion of the following statement: It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes.”

For presentational purpose, the original scale has been inverted, from cons to pros in five categories: 1 Strongly Disagree, 2 Disagree, 3 Neither Agree Nor Disagree, 4 Agree, 5 Strongly Agree. The distribution of answers is shown in the Tables below (see also Figures 1 and 2 in the appendix).

Table 1: Distribution of answers by country

%	Germany	GB	Sweden	France	Total Sample
Strongly disagree (SD)	5	2	6	6	5
Disagree (D)	17	13	13	14	14
Don't know (NN)	17	17	22	17	18
Agree (A)	42	48	36	30	37
Strongly agree (SA)	19	19	24	33	25
Total	100	100	100	100	100

Question: “It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes.”. Source: ISSP 1999 - Social Inequality III

Table 2: Distribution of answers by occupation

%	SD	D	NN	A	SA	Total
Managers	12	24	18	29	16	100
Professionals	10	20	18	33	20	100
Associate professionals	5	12	20	38	25	100
Clerks	3	13	16	40	29	100
Service workers	2	9	18	41	30	100
Agricultural workers	7	8	20	38	28	100
Craftmen	3	14	19	39	25	100
Machine operators	3	9	14	42	32	100

*To be continued next page...*

Table 2: Distribution of answers by occupation (cont')

%	SD	D	NN	A	SA	Total
Elementary workers	4	6	16	39	35	100
Total sample	5	14	18	37	25	100

Question: "It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes.". Source: ISSP 1999 - Social Inequality III

### 3.3 Testing the Argument

We further select in our dataset a series of explanatory variables, each of which corresponding to a possible explanation of the formation of preferences. The causal link involved is briefly exposed below.

**Occupation** ISCO-88 (International Standard Classification of Occupations<sup>7</sup>): The type of occupation, which depends on skills level and specialization, is assumed to influence preferences of agents regarding social policies. Indeed, according to Iversen and Soskice (2001), specific jobs are more threatened by globalization and macro shocks than others. Moreover, specialized workers have more difficulties to find vacancies that correspond to their speciality (Estevez-Abe *et al.*, 2001). Consequently, agents with *specific skills* are supposed to be more supportive of the welfare state, compared to agents with *general skills*. To test their argument, the authors construct a linear *skill specificity index* based on ISCO classification. However, we do not see any reason why all specific skills -by definition specific to a job or a sector- would be threatened in the same way by globalization or macro shocks. Thus, the linearity of the effect does not seem intuitive to us. Moreover, the skill specificity index of the authors is negatively related to the level of education of

<sup>7</sup>As EUROSTAT (1994, p.1) clearly explains: "ISCO-88 organises occupations in an hierarchical framework. At the lowest level is the unit of classification -a job- which is defined as a set of tasks or duties designed to be executed by one person. Jobs are grouped into occupations according to the degree of similarity in their constituent tasks and duties. [...] For the purpose of aggregating occupations into broadly similar categories at different levels in the hierarchy, ISCO-88 introduces the concept of skill, defined as the *skill level* -the degree of complexity of constituent tasks- and *skill specialisation* -essentially the field of knowledge required for competent performance of the constituent tasks."

workers (Cusack *et al.*, 2006, p.371).

Thus, to ease the argument and the interpretation, we simply cluster the ISCO indicator into the 9 major groups indicated by the ILO and strongly related to the *education degree* of individuals and the level of *in-the-job training* they received<sup>8</sup>. Importantly, by entering occupation major groups as binary variables into the regression, we are able to assess which occupations can be grouped together according to the similarity of their political demand. The major groups we use are the following: Manager, Professional, Associate professional, Clerk, Service worker, Craftman, Machine operator, Elementary worker. Agricultural workers are excluded from our sample, since their size is too small and their composition too heterogeneous to infer robust results.

**Income** The higher income an individual has, the less he needs public funding, hence the less he should be in favor of social spending (Meltzer and Richard, 1981). On the other hand, the higher income an individual has, the more he has to lose providing he falls into unemployment, if he does not earn replacement benefits. Hence, the linearity of his preferences towards redistribution is not theoretically obvious and calls for more precise tests at the empirical level (Moene and Wallerstein, 2001). Therefore, current income enters the regression in quintiles, from the lowest (Q1) to the highest (Q5) level of income<sup>9</sup>.

**Risk Aversion** The employment status (workers in the private sector, self-employed and publicly employed) is used to proxy risk aversion. Self-employed workers are supposed to be less risk averse than average (Alesina and La Ferrara, 2005), while publicly employed people are supposed to be more risk averse than average. Indeed, public employees are less likely to lose their job: Job tenure is more insured in the public sector than in the private sector. This is especially true in France and in Sweden. Assuming a decision process while choosing their work status, those individuals who have chosen to be publicly employed should correspond to more risk averse people.

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<sup>8</sup>See Tables 11 and 12 in the appendix.

<sup>9</sup>In order to ease comparison and interpretation, the income variable is considered in quintiles and labeled in the country money. However, keeping the original coding does not affect the results. On the contrary, quintiles being less precise than the original data, this gives power to the analysis, as current income remains an important regressor while considered in quintiles.

Furthermore, the level of public employment directly relies on the size of government, and more particularly on the size of social programs. Therefore, public employees have a direct interest in supporting redistributive policies.

**Unions** We measure the belonging to a trade union or employers' association by a dummy for union membership. The idea is that union members are better informed about the costs and benefits of redistribution. Moreover, union members are supposedly willing to influence public policy decisions, by giving power to an organization that gathers common interests (Olson, 1965).

**Religion** Religious denomination (dummies for Catholic and Protestant) and church attendance are used to assess the validity of the literature results in our sample (Clark and Lelkes, 2005; Scheve and Stasavage, 2006).

**Social Class** In order to infer the potential impact of the subjective social ranking on attitudes towards redistribution, we use the self-positioning of agents on a social scale that ranks from 1 (top) to 10 (bottom). We define two binary variables: upper class (positioning from 1 to 4) and lower class (from 7 to 10). Individuals who positioned themselves on the 5th and 6th ranks are considered to belong to the middle class (our reference category). We thus expect a negative effect of individuals who express the feeling to belong to the upper class on preferences for redistribution, and a positive effect of individuals having the feeling to belong to the lower class, relative to those who belong to the middle class.

**Social Mobility** We use two different specifications to assess the social mobility argument. The first one is the self-assessment by individuals of their job prestige, compared to their father's. This specification can also be found in Corneo and Grüner (2002) and in Alesina and La Ferrara (2005). The second specification we use is the personal history of individuals, concerning their social mobility. To construct this variable, we use the previous question on the self-positioning of individuals on a social scale: Indeed, the question is asked twice, for today and regarding 10 years ago (*ex post* assessment). We calculate the difference between both answers to measure the subjective social mobility of respondents and classify the newly created variable in 3 categories (upward mobility, immobility, downward mobility). This is a direct test of the argument of Piketty (1995), stating that people who experienced an upward mobility should oppose redistribution, while people who expe-

rienced a downward mobility should support redistribution. Our reference category gathers people who consider they did not experience any mobility within the last 10 years.

As a set of control, we introduce the following variables: Gender (dummy for female), age and age squared (to allow for concavity), and marital status (dummy for individuals who are married or live as married).

An important variable that could have been introduced into our analysis is the education level of individuals. Because it is already included into our ISCO variable, it has not been put into the regression to avoid multicollinearity. However, if tested separately, we find the same result as in the literature: The more educated an individual is, the less does he favor redistribution. The explanation for this is twofold. First, the more he studies, the more he is informed, hence the more he knows about the cost and benefits of redistribution; Second, the more he studies, the higher his productivity and wage, thus the more he pays taxes while employed. Therefore, the less he will favor redistribution that represents a net cost for him<sup>10</sup>. Finally, another interesting explanatory variable would be the work status of individuals (unemployed, disabled, retired, part-time, etc.). Unfortunately, the high number of missing points on this question constrained us to let this set of variables out of the regression.

## 4 Results

We first run a pooled country regression that constrains the residual variance to be the same, hence assuming the homogeneity of unobserved variables. While presenting the results of our estimates, we systematically provide odds ratios to compare the impact of explanatory variables in a meaningful way. Indeed, odds ratios allow to interpret a unit increase in  $x_k$  as a change in the odds of a lower outcome compared with a higher outcome by a factor  $\beta_k$ , holding all other variables constant. We next propose a few ideal types and compute their predicted probabilities to fall into one or the other category of our dependent variable. Econometric results are provided in Table 3

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<sup>10</sup>If we further assume that long-term unemployment risk is decreasing with education, this effect is emphasized.

for the pooled country regressions, using ordered logit estimation technique. Predicted probabilities are gathered in Table 4 for four different ideal types.

Throughout the regression Table, column [1] presents our baseline model, which includes only explanatory variables linked to the labour market (occupation, income, employment status, union membership) and the usual control variables (socio-demographic characteristics, country dummies). Columns [2] and [3] extend the baseline model with variables related to religion. These include the frequency of church attendance (column [2]) and the religious denomination (column [3]). The aim is here to test the validity of arguments emphasizing the role of religion in the formation of preferences for redistribution. Column [4] extends the baseline model by incorporating dummy variables for the social class of individuals (upper class, lower class). Our reference category is the middle class. Finally, columns [5] and [6] test the arguments linked to the role of subjective social mobility in the formation of preferences for redistribution. More particularly, column [5] tests the argument of intergenerational mobility, while column [6] tests the impact of personal mobility history on preferences for redistribution. Following our baseline model throughout the different regressions allow us to assess the robustness of the impact of economic variables.

## 4.1 The Supremacy of Economic Factors

Running an ordered logit regression on pooled country data (Table 3), it clearly appears that the economic factors we have identified in the previous discussion do play a crucial role in determining preferences for redistribution (occupation, income, risk aversion). Not surprisingly, family income is a good predictor of preferences: The higher it is, the lower the individual support for redistribution<sup>11</sup>. This is a simple revenue effect: Wealthier individuals are directly burdened by redistributive policies, while low income should gain from it. The result also implies that the supposed insurance effect remains relatively modest compared to the revenue effect.

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<sup>11</sup>Notice that the result of the Chow test (H0: equal coefficients) for income quintiles is  $\chi^2(3) = 32.37$ ,  $p < 0.01$ , meaning that the categories of income are not evenly spaced, so we should not treat income as an interval scale variable. It implies that an increase from the first quintile of income to the second quintile of income does not involve a similar decrease in the probability to favor redistribution, as an increase from the second quintile to the third quintile of income. This is the reason why we keep entering income quintiles separately into the regression.



Our proxies for risk aversion are also shown to have an important effect on preferences for redistribution. Self-employed workers, who are supposed to be less risk averse than dependent employees, are indeed less in favor of redistribution: Their odds of having more *negative* attitudes toward redistribution are 1.3 times (30%) larger than dependent employees. To the contrary, more risk averse people, proxied by public employees in our sample, appear to be strongly and significantly in favor of redistributive policies: Their odds of having more *positive* attitudes toward redistribution are 1.5 times (50%) larger than workers in the private sector.

Finally, the type of occupation that individuals do is also a good predictor of their preferences, even after controlling by income. Indeed, in all our specifications, our occupation indicator is strongly and significantly related to our dependent variable. We interpret the coefficients relatively to our reference category, which represents a Clerk. Thus, the negative and significant coefficients of Managers, Professionals and Associate professionals indicate that individuals who belong to these types of occupation are clearly less in favour of redistribution than Clerks: based on column [1], the odds of having more *negative* attitudes toward redistribution are 2.1 times (110%) larger for Managers than for Clerks, 1.6 times (60%) larger for Professionals than for Clerks, and 1.25 times (25%) larger for Associate professionals than for Clerks. By opposition, Machine operators and Elementary workers are much more in favour of redistribution than Clerks: Their odds of having more *positive* attitudes toward redistribution are increased by, respectively, 43% and 38% compared to Clerks. Finally, Service workers and Craftmen have attitudes toward redistribution that cannot be distinguished from those of Clerks (non significant coefficients). Results clearly suggest that a straight ordering of occupation categories may be relevant: The less skills an individual has, the higher his probability to favour redistributive policies. Results further suggest that a grouping of occupation categories might be drawn, according to the proximity of their coefficients: (i) Elementary workers and Machine operators do have the same attitudes towards redistribution; their attitudes differ from those of (ii) Craftman, Service workers and Clerks; finally, (iii) Associate professionals, Professionals and Managers do form another group, which encompasses similar attitudes towards redistribution.

## 4.2 Does Religion Act as a Substitute to Redistribution?

Columns [2] and [3] introduce variables on church attendance and religious denomination, respectively. Our results confirm the argument of Scheve and Stasavage (2006): Religion seems to act as a substitute for redistributive policies. Being Catholic increases the odds of having more *negative* attitudes toward redistribution by 30%, while being Protestant increases it by 24%, relative to having no religion<sup>12</sup>. According to the literature, this could be due to an insurance effect of religious communities that lessen the social distress of individuals, hence their need for redistribution. Indeed, Clark and Lelkes (2005) have shown that religious individuals suffer from significantly lower estimated losses in subjective utility after adverse life events, such as unemployment. However, our results for religion, if not vanished, are less clear cut when it comes to separated country regressions (Tables in the appendix). We come back to this point in the conclusion, assembling all our results to infer a general picture of the issue.

## 4.3 How Does Individuals' Social Self-ranking Affect their Support for Redistribution?

Column [4] introduces the subjective belonging to a social class. We try here to capture the differentiated impact on preferences of an individual's feeling to belong to the upper or to the lower class. Not surprisingly, individuals who express the feeling to belong to the upper class are less encline to favour redistribution than those who subjectively belong to the middle class (our reference category): Their odds of having more *negative* attitudes toward redistribution is increased by 43%. Symmetrically, individuals who (subjectively) belong to the lower class have a higher probability (increased by 60%) to favor redistributive policies.

Two remarks have to be done, concerning the incorporation of this variable into our model. On one hand, the *subjective* feeling to belong to a certain social class is highly correlated to *objective* variables of job occupation and family income. Notice indeed that the introduction of the social class variable decreases the coefficients of occupation and income, although it does not

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<sup>12</sup>The category "other religion" is quite negligible, representing only 3% of the population in our sample. Including it into the regression does not change the results.

strongly affect their significance. On the second hand, two individuals who have the same occupation and a similar family income may have different views of their social position. The self-positioning of an individual on the social ladder thus captures the feeling he has regarding his relative ranking, hence his vision of the society where he lives (this could even act as a proxy of his social satisfaction).

#### 4.4 The Strong Impact of Subjective Social Mobility on Preferences for Redistribution

Columns [5] and [6] introduce the social mobility argument. Two different specifications are tested. The first one (column [5]) tries to capture the effect of intergenerational social mobility in a family context. Surprisingly, the coefficient of job prestige is positive. Taking the result seriously, this would mean that an individual who considers his job as more prestigious than his father's would yet be encline to have a more *positive* attitudes towards redistributive policies (increased by 13%). Apart from intergenerational altruism, this effect could be due to a long-lasting effect of family experience (an impact of the social position of parents on the believes and attitudes of children). This result is consistent with the argument of Piketty (1995) about endogenous believes of individuals.

Our second specification of social mobility (column [6]) has a more straightforward interpretation. We use individual perceptions of personal upward or downward mobility within the last ten years. Our reference category encompasses those individuals who experienced no social mobility. Coefficients have the expected signs: Individuals who get the feeling to have experienced an upward mobility are less supportive to redistributive policies than people who did not experience any mobility, whereas people who experienced a downward mobility within the last ten years are more in favor of redistribution. The odds of the former to have more *negative* attitudes toward redistribution is increased by 26%, while the odds of the latter to have more *positive* attitudes toward redistribution is increased by 27%. Notice again that this is not an *objective* indicator of social mobility, but a *subjective* one<sup>13</sup>. Although the effect is highly significant.

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<sup>13</sup>For the use of objective indicators of social mobility, see the contribution of Alesina and La Ferrara (2005).

## 4.5 Socio-demographic Controls and Country Dummies

Whereas being married (or living as married) has no significant effect on preferences for redistribution, being a female clearly increases the probability to have more favourable attitudes towards redistribution (by 41%, according to our baseline model in column [1]). As for age, if middle age people are more in favor of redistribution than the youth, this effect is dampened through time (concave function).

Turning now to country dummies, the puzzle is the following. Great Britain is our reference category. The negative and highly significant coefficients for Sweden and Germany mean that living in one of those countries leads individuals to adopt more negative attitudes towards redistribution (the odds of *negative* attitudes are increased by 47% and 31%, respectively), as compared to British citizens, all other things being equal. The difference between Great Britain and France is not significant. However, country dummies do not give any information on the reason why this is so. Indeed, they simply have the role of “capturing” country specific potential omitted variables, which might have an impact on the preferences of individuals for redistribution (level of income inequality, actual redistributive policy, unemployment rate, demographic situation, etc.). Including country dummies into the regressions thus allows to produce unbiased estimates of our variables of interest. The fact that country dummies do have significant coefficients means that there are, indeed, differentiated national attitudes. These dummies are like “black boxes”, whose information needs to be manually extracted. It might thus be relevant to run separated regressions for each country (see Section 5 below).

Table 3: Preferences for redistribution: pooled country

<i>Ordered logit</i>	[1]	[2]	[3]	[4]	[5]	[6]
<b>Occupation</b>						
<i>Reference category: Clerk</i>						
Manager	-.763*** (.156)	-.727*** (.158)	-.761*** (.158)	-.600*** (.158)	-.764*** (.160)	-.700*** (.158)
Professional	-.471*** (.126)	-.448*** (.127)	-.522*** (.128)	-.310** (.127)	-.496*** (.128)	-.441*** (.127)
Ass. professional	-.223* (.116)	-.226* (.118)	-.265** (.119)	-.182 (.117)	-.247** (.117)	-.235** (.117)
Service worker	.069 (.124)	.051 (.129)	.066 (.128)	.068 (.125)	.069 (.129)	.088 (.126)
Craftman	.129 (.135)	.080 (.139)	.146 (.138)	.084 (.136)	.096 (.138)	.089 (.136)
Machine operator	.360** (.160)	.325** (.163)	.382** (.166)	.316* (.164)	.324** (.161)	.346** (.163)
Elementary worker	.327* (.176)	.254 (.183)	.331* (.177)	.223 (.175)	.351* (.186)	.296* (.177)
<b>Income</b>						
<i>Reference category: Family income Q5</i>						
Family income Q1	1.066*** (.122)	1.071*** (.125)	1.016*** (.125)	.823*** (.127)	1.071*** (.125)	1.016*** (.125)
Family income Q2	.925*** (.119)	.963*** (.122)	.892*** (.122)	.755*** (.123)	.895*** (.122)	.878*** (.122)
Family income Q3	.928*** (.108)	.940*** (.111)	.889*** (.111)	.802*** (.111)	.926*** (.110)	.884*** (.111)
Family income Q4	.729*** (.106)	.705*** (.109)	.709*** (.108)	.651*** (.108)	.701*** (.108)	.716*** (.108)
<b>Employment status</b>						
Self-employed	-.282** (.138)	-.268* (.142)	-.341** (.140)	-.253* (.138)	-.295** (.140)	-.273* (.140)
Publicly employed	.397*** (.078)	.413*** (.079)	.396*** (.080)	.387*** (.078)	.407*** (.081)	.397*** (.079)
<b>Unions</b>						
Union membership	.268*** (.084)	.284*** (.086)	.284*** (.086)	.264*** (.085)	.266*** (.085)	.301*** (.085)
<b>Demographic characteristics</b>						
Female	.344*** (.074)	.362*** (.077)	.350*** (.076)	.307*** (.075)	.341*** (.077)	.315*** (.075)
Age	.029** (.014)	.029** (.014)	.030** (.014)	.024* (.014)	.026* (.014)	.023 (.014)
Age-sq/100	-.032** (.014)	-.031** (.014)	-.031** (.014)	-.026* (.014)	-.029** (.015)	-.028* (.015)

*To be continued next page...*

Table 3: Preferences for redistribution: pooled country (cont')

<i>Ordered logit</i>	[1]	[2]	[3]	[4]	[5]	[6]
Married	-.047 (.081)	-.039 (.083)	-.044 (.083)	-.068 (.082)	-.047 (.084)	-.032 (.083)
<b>Country</b>						
<i>Reference category: Great Britain</i>						
Sweden	-.386*** (.104)	-.412*** (.108)	-.334*** (.108)	-.276*** (.105)	-.408*** (.107)	-.399*** (.105)
Germany	-.271** (.105)	-.290*** (.109)	-.294** (.122)	-.277*** (.106)	-.310*** (.109)	-.281*** (.107)
France	.131 (.106)	.032 (.110)	.193 (.119)	.148 (.108)	.105 (.109)	.151 (.110)
<b>Religion</b>						
Church attendance		-.098*** (.026)				
Catholic			-.265** (.105)			
Protestant			-.221** (.087)			
<b>Social class</b>						
<i>Reference category: Middle class</i>						
Upper class				-.356*** (.091)		
Lower class				.465*** (.085)		
<b>Social Mobility</b>						
Job prestige					.124* (.074)	
<i>Reference category: No mobility</i>						
Upward mobility						-.235*** (.080)
Downward mobility						.244*** (.094)
Number of Obs	3064	2924	2921	3026	2918	2994
Pseudo R-Squared	.045	.047	.048	.052	.046	.048
Log Pseudolikelihood	-4270.5	-4068.4	-4070.1	-4185.5	-4071.3	-4155.9
Chi 2	358.81	357.45	370.60	405.15	346.54	373.42

Note: Robust standard errors in parentheses. \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

## 4.6 Predicted Probabilities

To further illustrate our results, we make use of predicted probabilities to assess the relative importance of a few independent variables. Based on Table 3, Model [5] with social mobility, we construct four ideal types and compute their predicted probabilities of having different attitudes toward redistribution. Our first two ideal types are a Male Self-employed Manager in the Private sector (Type 1) and a Female Elementary worker employed in the Public sector (Type 2). Results are shown in Table 4. We clearly see the strong impact of occupation on predicted outcomes, along with the gender dimension and risk aversion.

Table 4: Preferences for redistribution: predicted probabilities

	<b>Type 1</b>	<b>Type 2</b>	<b>Type 3</b>	<b>Type 4</b>
Strongly Disagree	.12	.02	.05	.03
Disagree	.27	.06	.15	.11
Neither agree Nor disagree	.25	.12	.21	.17
Agree	.27	.39	.39	.41
Strongly Agree	.09	.41	.19	.28

Note: Based on Table 3, Model [5]. Predicted probabilities for different ideal types, holding all other variables constant at their means.

**Type 1:** Male, Self-employed, Private sector, Manager; **Type 2:** Female, Publicly employed, Elementary worker; **Type 3:** Average individual, Upward mobility; **Type 4:** Average individual, Downward mobility

Our last two ideal types represent an Average individual, who experiences an Upward mobility (Type 3) or a Downward mobility (Type 4). An average individual has about 3 to 5% probability to strongly disagree with redistribution, about 11 to 15% probability to disagree with redistribution, 17 to 21% to have no idea about it, and 39 to 41% probability to agree with redistribution. But most importantly, he has 28% probability to strongly agree with redistributive policies if he experienced a Downward mobility, while this probability falls to 19% if he experienced an Upward mobility within the last 10 years. This example illustrates the non negligible impact of personal social mobility history on preferences for redistribution, as it was already visible with odds ratios.

## 5 Robustness Checks

We run a series of robustness checks, including binary regressions for the pooled data, a test of the proportional odds assumption, and separated country regressions that allow to identify varying determinants of preferences for redistribution without needing to interact each variable with each country dummy. Results of binary regressions are given in Table 5, while Tables 6, 7, 8 and 9 in the appendix give results for the separated country regressions.

### 5.1 Binary Dependent Variable

As a first robustness check, we run the same pooled regressions with a binary dependent variable. People answering that they “agree” or “strongly agree” with the question on whether the government should reduce income differences were coded 1, whereas others (including “neither agree nor disagree”, “disagree” and “strongly disagree” answers) were coded 0. Results are shown in the appendix (Table 5). They remain globally unchanged.

### 5.2 Generalized Ordered Logit

Further, we test the validity of the *parallel lines assumption*, also called proportional odds assumption (Long and Freese, 2006). Indeed, if the effect of an independent variable on our dependent variable is not uniform across categories, then the parallel lines assumption is violated, leading to a fallacious interpretation of the magnitude of the coefficient<sup>14</sup>. The test compares slope coefficients of the  $J - 1$  binary logits implied by the ordered regression model. In our pooled models, the Brant test indicates that the parallel regression assumption has been violated for control variables (age, age-squared, female, country dummies). We consider this is not a problem, as we do not interpret their substantive impact. Further, there is some evidence that it has been violated for the dummies representing publicly employed workers and union members, although not changing the sign of coefficients but only the magnitude of the impact according to the category of the dependent variable considered. The same issue is found for our dummy variables representing Catholics and a downward mobility experience. We thus run *generalized*

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<sup>14</sup>This can be tested through the Brant test (command *brant* in Stata).



*ordered logit* estimates<sup>15</sup>, in order to assess differentiated effects of these independent variables. However, no valuable additional information is given by this estimation technique, which marginally affects the magnitude of coefficients (but neither their significance, nor their sign), but does not tackle the essential message of this study<sup>16</sup>. Consequently, we remain confident with the inferences we made in Section 4 based on ordered logit estimates.

### 5.3 Separated Country Regressions

We finally check for the necessity of running separated country regressions. The pooled analyses include a fixed effect for each country to allow for different mean levels of support for redistribution due to any number of national characteristics, including the actual level of redistribution. However, this does not allow the effects of the other independent variables to vary across countries as is possible by estimating separate coefficients for each case. Running a Chow test to assess whether coefficients remain equal between countries, we find that the test is strongly significant<sup>17</sup>, so that the hypothesis that the coefficients do not vary between countries is unvalidated. Therefore, it is relevant to run separated country regressions. We thus estimate the models in Table 3 separately for each of the four countries in the sample. Tables 6, 7, 8 and 9 in the appendix report the coefficient estimates for Great Britain, Swede, France and Germany, respectively<sup>18</sup>. We briefly discuss the results, essentially pointing to the differences in the grouping of individuals by occupation category<sup>19</sup>.

Notice first that in all our country estimates, the type of occupation an

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<sup>15</sup>Stata user-written command *gologit* written by Fu (1998) and extended by Williams (2006).

<sup>16</sup>Notice that the only coefficients that can be affected by this technique are those of control variables, publicly employed, union membership, Catholic and downward mobility where the parallel line assumption has been violated. All other coefficients are left unchanged.

<sup>17</sup>Given that H0: equal coefficients,  $\chi^2(66) = 170.71$ ,  $p < 0.01$

<sup>18</sup>In the pooled regressions, the reference category regarding the type of job occupation was a Clerk. For national regressions, we choose to modify our reference category to Managers, for presentational purpose. This does not affect the results at all, only the way to present it.

<sup>19</sup>As there are no further controls in the separated country regressions, results should be taken with cautious. The main issue is here to assess the consequences of contextual effects on the variables of interest.

individual exercises remains a key factor in the determination of preferences for redistribution, along with the family income. This suggests the pooled estimates are not driven by a couple of outlier countries. However, these new estimates make clear that the grouping of individuals based on their role on the labour market and relying on similar individual preferences for redistribution highly differs from one country to another. Concerning the structure of the society for instance, we see two major socio-political groups in Sweden and in Germany, which are (i) the Managers (who could form a coalition with the Professionals and the Associate professionals in Sweden), and (ii) all other occupation categories. By contrast, there are three major socio-political groups in Great Britain and in France, which are (i) the Managers (associated to the Professionals and the Associate professionals in France), (ii) the Elementary workers in Great Britain and the Craftmen in France, and (iii) the rest of the population. This suggests that political strategies to reform the welfare state in those countries might highly differ, since potential social coalitions based on common interests do differ (Castanheira *et al.*, 2006). Moreover, in France and in Sweden, another dimension clearly divides the population: The distinction between the public and the private sector, and between union members and non-union members. This is not surprising, knowing the importance of the public sector and the power of unions in both countries. Finally, as a specific feature of Germany, we find that the dummy for living in former East Germany is strongly related to the support for redistribution: The odds of being in favor of redistribution is almost 3 times larger if an individual lives in East Germany, compared to an individual living in West Germany. We meet up here with Alesina and Fuchs-Schündeln (2007) result on the long lasting impact of political regimes on collective preferences.

## 6 Conclusion

Building on a rapidly growing literature on the political economy of redistribution, this paper proposes an empirical analysis of the determinants of individual preferences for redistributive policies. Using individual-level survey data for four representative European countries, we run a series of regressions specified to assess the main arguments of the literature. We systematically compare coefficients in a meaningful way by the use of odds ratios and predicted probabilities. Consequently, (i) we are able to infer which factors are

the most important in shaping attitudes towards redistribution, and clearly emphasize the supremacy of economic factors. We further argue that the position of individuals on the labour market has a direct impact on their preferences for redistribution. This appears to be indeed the case, and to be robust to a change in model specification. Hence, (ii) based on the results of our regressions, we draw a grouping of individuals along this occupational dimension. Finally, (iii) we highlight the differences between countries in terms of the potential varying effects of explanatory variables on the preferences for redistribution; we thus give a hint on the need for diverse political strategies while implementing national reforms. Below is a summary of our results.

First, our analysis confirms the importance of a pure revenue effect on preferences. Indeed, work occupation, family income, subjective social class or expected social mobility all point to the same direction: The poorer (objectively or subjectively), the more supportive to redistribution. These attitudes towards redistribution are linked to the economic position of individuals on the labour market. Indeed, generally speaking, Managers, Professionals and Associate professionals form a separate group from Clerks, by expressing a lower support for redistribution. On the other hand, Machine operators and Elementary workers form another group, which is more supportive to redistribution than Clerks.

Second, the revenue effect does not act similarly on all individuals. It can be reinforced (dampened) by the risk aversion (risk willingness) of individuals. Indeed, looking at the employment status of individuals, we find that being publicly employed sensitively increases the probability to support redistribution, while being self-employed decreases it. This is especially true in France and in Sweden. Hence, our proxies for risk aversion are good predictors of preferences for redistribution, which is not surprising if one considers the insurance motives of redistributive policies.

Third, the political and social backgrounds of individuals can somehow temper this effect: We find that (i) the social position of fathers can have a long lasting impact on the attitudes of children, (ii) the political regime can have a long lasting effect on collective preferences. These results clearly call for more research in the way social competition is perceived in European countries and the way it impacts social preferences (Fong, 2001; Alesina and Angeletos, 2005; Alesina and Fuchs-Schündeln, 2007).

Fourth, one of the most empirical issue in the literature on redistribution remains the question of whether religion plays an active role in shaping

preferences. The conclusion is far to be obvious: According to our results, it seems impossible to say if Catholics are more pros or cons redistribution, and the same for Protestants since the sign of coefficients differs from one country to another. However, one can take a different view: The literature states that religion (without looking at specific denomination) decreases the social distress of individuals, hence decreasing the insurance motive for redistribution, potentially through network externalities. Taking the major religion of each country, results confirm this view. Thus, Protestantism is the major religion of Great Britain and Sweden, while Catholicism is the major religion of France. In these countries, the effect of the major religion is indeed to decrease the probability to favor redistribution<sup>20</sup>. The effect is not clear-cut for Germany, but this is not surprising given that the country is fairly divided between both Protestantism and Catholicism. Further, looking at church attendance reinforces the conclusion that religion could play an active role in shaping preferences for redistribution.

Fifth, it seems that a cluster of countries might be drawn from the comparison of separated country regressions. Based on the socio-political groups formed by individuals who belong to different work occupations but express similar attitudes, we find on one hand France and Sweden, and on the other hand Germany and Great Britain. Indeed, Managers, Professionals and Associate professionals form an homogenous group in France and Sweden, whereas Managers differentiate themselves from other categories of workers in Great Britain and Germany. On the basis of personal social mobility, other clustering are possible: Great Britain and France are two countries where personal mobility history has no impact on the demand for redistribution, whereas the current social ranking is particularly important for lower classes. In a singular manner, French people are strongly impregnated by the social history of their fathers. Finally, France and Sweden are relatively close regarding the important role that takes risk aversion in the determination of preferences along with union membership, thus opposing Great Britain and Germany on this dimension. This country heterogeneity that undoubtedly translates into socio-political coalitions calls for differentiated political strategies in the implementation of national reforms.

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<sup>20</sup>However, the coefficient for Protestantism is not significant in Sweden.

## A Further Results: Robustness Checks

Table 5: Preferences for redistribution (binary): pooled country

<i>Binary logit</i>	[1]	[2]	[3]	[4]	[5]	[6]
<b>Occupation</b>						
<i>Reference category: Clerk</i>						
Manager	-.650*** (.174)	-.639*** (.179)	-.667*** (.178)	-.501*** (.178)	-.664*** (.180)	-.586*** (.177)
Professional	-.389*** (.147)	-.354** (.150)	-.444*** (.150)	-.238 (.150)	-.419*** (.150)	-.358** (.149)
Ass. professional	-.161 (.142)	-.160 (.145)	-.236 (.145)	-.126 (.143)	-.179 (.145)	-.172 (.144)
Service worker	.061 (.160)	.049 (.165)	.041 (.164)	.081 (.162)	.041 (.166)	.096 (.163)
Craftman	.058 (.164)	.011 (.169)	.069 (.169)	.015 (.166)	.008 (.169)	.027 (.167)
Machine operator	.406** (.196)	.388* (.202)	.390* (.202)	.356* (.201)	.369* (.201)	.386* (.200)
Elementary worker	.283 (.222)	.229 (.229)	.294 (.225)	.172 (.221)	.242 (.232)	.254 (.221)
<b>Income</b>						
<i>Reference category: Family income Q5</i>						
Family income Q1	.917*** (.137)	.957*** (.141)	.872*** (.140)	.682*** (.145)	.918*** (.141)	.889*** (.141)
Family income Q2	.825*** (.136)	.869*** (.139)	.801*** (.139)	.678*** (.141)	.801*** (.139)	.798*** (.138)
Family income Q3	.873*** (.125)	.897*** (.128)	.843*** (.130)	.753*** (.130)	.879*** (.128)	.845*** (.127)
Family income Q4	.664*** (.123)	.644*** (.126)	.661*** (.126)	.589*** (.126)	.635*** (.125)	.657*** (.124)
<b>Employment status</b>						
Self-employed	-.288* (.153)	-.273* (.156)	-.369** (.160)	-.256* (.154)	-.308** (.156)	-.277* (.156)
Publicly employed	.352*** (.092)	.373*** (.093)	.345*** (.093)	.349*** (.093)	.369*** (.094)	.368*** (.093)
<b>Unions</b>						
Union membership	.149 (.098)	.159 (.101)	.173* (.101)	.144 (.100)	.159 (.100)	.177* (.100)
<b>Demographic characteristics</b>						
Female	.425*** (.087)	.428*** (.089)	.436*** (.090)	.391*** (.088)	.417*** (.090)	.389*** (.089)
Age	.008 (.017)	.005 (.018)	.008 (.018)	.004 (.018)	.008 (.018)	.002 (.018)

*To be continued next page...*

Table 5: Preferences for redistribution (binary): pooled country (cont')

<i>Binary logit</i>	[1]	[2]	[3]	[4]	[5]	[6]
Age-sq/100	-.009 (.018)	-.004 (.019)	-.007 (.019)	-.005 (.019)	-.009 (.019)	-.005 (.019)
Married	-.035 (.094)	-.006 (.097)	-.021 (.097)	-.055 (.095)	-.028 (.097)	-.017 (.096)
<b>Country</b>						
<i>Reference category: Great Britain</i>						
Sweden	-.529*** (.130)	-.540*** (.135)	-.489*** (.134)	-.422*** (.132)	-.554*** (.133)	-.533*** (.131)
Germany	-.274** (.135)	-.282** (.139)	-.262* (.154)	-.274** (.137)	-.302** (.139)	-.274** (.137)
France	-.144 (.128)	-.220 (.135)	-.012 (.142)	-.126 (.132)	-.159 (.132)	-.135 (.132)
<b>Religion</b>						
Church attendance		-.097*** (.030)				
Catholic			-.367*** (.114)			
Protestant			-.194* (.109)			
<b>Social class</b>						
<i>Reference category: Middle class</i>						
Upper class				-.331*** (.100)		
Lower class				.428*** (.106)		
<b>Social Mobility</b>						
Job prestige					.076 (.084)	
<i>Reference category: No mobility</i>						
Upward mobility						-.178* (.093)
Downward mobility						.202* (.111)
Number of Obs	3064	2924	2921	3026	2918	2994
Pseudo R-Squared	.065	.069	.071	.074	.065	.068
Log Pseudolikelihood	-1902.6	-1812.0	-1808.7	-1859.8	-1814.7	-1852.7
Chi 2	234.07	233.91	235.38	263.73	223.78	239.47

Note: Robust standard errors in parentheses. \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

Table 6: Preferences for redistribution: Great Britain

<i>Ordered logit</i>	[1]	[2]	[3]	[4]	[5]	[6]
<b>Occupation</b>						
<i>Reference category: Manager</i>						
Professional	.651* (.342)	.682* (.350)	.666** (.337)	.595* (.341)	.627* (.342)	.701** (.343)
Ass. professional	.681* (.380)	.811** (.411)	.721* (.369)	.604 (.381)	.756* (.402)	.625 (.382)
Clerk	.637** (.310)	.617* (.322)	.661** (.308)	.531* (.309)	.722** (.319)	.608** (.310)
Service worker	.652** (.308)	.626* (.323)	.707** (.307)	.543* (.314)	.666** (.322)	.657** (.311)
Craftman	.690** (.297)	.597* (.316)	.712** (.299)	.492 (.304)	.639** (.308)	.623** (.297)
Machine operator	.761* (.463)	.931** (.466)	.848* (.467)	.552 (.473)	.766 (.467)	.713 (.472)
Elementary worker	1.259*** (.353)	1.121*** (.374)	1.296*** (.356)	1.070*** (.362)	1.325*** (.372)	1.221*** (.356)
<b>Income</b>						
<i>Reference category: Family income Q5</i>						
Family income Q1	1.048*** (.293)	1.218*** (.314)	1.071*** (.292)	.808*** (.301)	1.083*** (.316)	.979*** (.309)
Family income Q2	.888*** (.321)	1.011*** (.345)	.950*** (.322)	.718** (.319)	.984*** (.340)	.858*** (.331)
Family income Q3	.842*** (.256)	.817*** (.274)	.904*** (.254)	.674*** (.260)	.925*** (.266)	.780*** (.262)
Family income Q4	.829*** (.237)	.848*** (.261)	.792*** (.232)	.743*** (.238)	.848*** (.250)	.775*** (.239)
<b>Employment status</b>						
Self-employed	-.398 (.265)	-.276 (.284)	-.409 (.265)	-.358 (.269)	-.382 (.273)	-.387 (.273)
Publicly employed	-.042 (.191)	-.058 (.199)	-.052 (.191)	-.057 (.192)	.021 (.204)	-.049 (.191)
<b>Unions</b>						
Union membership	.126 (.205)	.121 (.220)	.114 (.202)	.148 (.204)	.146 (.209)	.144 (.205)
<b>Demographic characteristics</b>						
Female	.122 (.170)	.138 (.181)	.129 (.169)	.085 (.173)	.070 (.178)	.083 (.170)
Age	.018 (.026)	.025 (.027)	.031 (.026)	.014 (.026)	.006 (.028)	.009 (.025)
Age-sq/100	-.021 (.025)	-.027 (.026)	-.031 (.026)	-.017 (.026)	-.011 (.027)	-.014 (.025)

*To be continued next page...*

Table 6: Preferences for redistribution: Great Britain (cont')

<i>Ordered logit</i>	[1]	[2]	[3]	[4]	[5]	[6]
Married	-.068 (.175)	-.018 (.182)	-.065 (.174)	-.051 (.178)	-.049 (.185)	-.041 (.178)
<b>Religion</b>						
Church attendance		-.074 (.046)				
Catholic			.680** (.314)			
Protestant			-.384** (.170)			
<b>Social class</b>						
<i>Reference category: Middle class</i>						
Upper class				-.327 (.215)		
Lower class				.398** (.177)		
<b>Social Mobility</b>						
Job prestige					.247 (.167)	
<i>Reference category: No mobility</i>						
Upward mobility						-.053 (.193)
Downward mobility						.105 (.199)
Number of Obs	674	609	674	659	621	657
Pseudo R-Squared	.030	.033	.038	.034	.031	.028
Log Pseudolikelihood	-870.6	-780.8	-863.5	-845.4	-807.6	-846.8
Chi 2	46.66	50.11	65.06	52.93	44.73	43.67

Note: Robust standard errors in parentheses. \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$



Table 7: Preferences for redistribution: Sweden

<i>Ordered logit</i>	[1]	[2]	[3]	[4]	[5]	[6]
<b>Occupation</b>						
<i>Reference category: Manager</i>						
Professional	.168 (.373)	.082 (.374)	.157 (.374)	.122 (.378)	.060 (.375)	.083 (.366)
Ass. professional	.600 (.367)	.516 (.370)	.596 (.367)	.361 (.374)	.489 (.370)	.471 (.358)
Clerk	1.045*** (.392)	.997** (.395)	1.028*** (.393)	.715* (.401)	.861** (.391)	.950** (.386)
Service worker	1.012*** (.380)	.949** (.382)	1.004*** (.380)	.631 (.390)	.895** (.384)	.918** (.372)
Craftman	1.114*** (.405)	1.026** (.406)	1.117*** (.406)	.677 (.412)	.953** (.411)	.931** (.399)
Machine operator	1.473*** (.406)	1.375*** (.409)	1.470*** (.405)	1.144*** (.421)	1.264*** (.407)	1.414*** (.399)
Elementary worker	1.084** (.429)	1.063** (.433)	1.063** (.426)	.574 (.431)	1.026** (.439)	.908** (.421)
<b>Income</b>						
<i>Reference category: Family income Q5</i>						
Family income Q1	.857*** (.222)	.804*** (.224)	.859*** (.223)	.683*** (.225)	.870*** (.226)	.849*** (.223)
Family income Q2	1.060*** (.229)	1.054*** (.231)	1.054*** (.229)	.921*** (.230)	1.077*** (.234)	1.038*** (.234)
Family income Q3	.820*** (.215)	.772*** (.219)	.821*** (.216)	.759*** (.216)	.822*** (.219)	.787*** (.221)
Family income Q4	.595*** (.203)	.562*** (.205)	.617*** (.204)	.504** (.208)	.572*** (.205)	.573*** (.207)
<b>Employment status</b>						
Self-employed	-.381 (.279)	-.439 (.283)	-.401 (.279)	-.288 (.267)	-.348 (.283)	-.321 (.273)
Publicly employed	.528*** (.137)	.509*** (.139)	.501*** (.140)	.540*** (.139)	.549*** (.140)	.528*** (.139)
<b>Unions</b>						
Union membership	.387** (.182)	.370** (.183)	.407** (.183)	.361** (.181)	.368** (.184)	.480*** (.185)
<b>Demographic characteristics</b>						
Female	.373*** (.142)	.371*** (.144)	.388*** (.143)	.341** (.141)	.381*** (.143)	.337** (.144)
Age	.041 (.027)	.046 (.028)	.041 (.028)	.031 (.028)	.046* (.028)	.031 (.028)
Age-sq/100	-.041 (.028)	-.046 (.029)	-.040 (.028)	-.033 (.028)	-.044 (.029)	-.036 (.028)

*To be continued next page...*

Table 7: Preferences for redistribution: Sweden (cont')

<i>Ordered logit</i>	[1]	[2]	[3]	[4]	[5]	[6]
Married	-.241 (.160)	-.307* (.163)	-.242 (.161)	-.248 (.161)	-.243 (.164)	-.209 (.163)
<b>Religion</b>						
Church attendance		.004 (.064)				
Catholic			.294 (.438)			
Protestant			-.223 (.145)			
<b>Social class</b>						
<i>Reference category: Middle class</i>						
Upper class				-.688*** (.161)		
Lower class				.534*** (.193)		
<b>Social Mobility</b>						
Job prestige					-.217 (.142)	
<i>Reference category: No mobility</i>						
Upward mobility						-.318** (.153)
Downward mobility						.319* (.183)
Number of Obs	878	860	878	869	851	862
Pseudo R-Squared	.064	.065	.065	.081	.065	.071
Log Pseudolikelihood	-1218.7	-1188.2	-1217.1	-1182.3	-1180.1	-1186.7
Chi 2	157.64	155.99	162.42	184.42	158.85	168.98

Note: Robust standard errors in parentheses. \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

Table 8: Preferences for redistribution: France

<i>Ordered logit</i>	[1]	[2]	[3]	[4]	[5]	[6]
<b>Occupation</b>						
<i>Reference category: Manager</i>						
Professional	.160 (.202)	.126 (.207)	.094 (.205)	.167 (.209)	.070 (.212)	.138 (.212)
Ass. professional	.314 (.204)	.213 (.210)	.236 (.207)	.252 (.212)	.251 (.215)	.258 (.215)
Clerk	.513** (.252)	.415 (.256)	.476* (.253)	.405 (.259)	.508* (.259)	.491* (.259)
Service worker	.714** (.324)	.544 (.357)	.677** (.341)	.620* (.336)	.616* (.337)	.675** (.334)
Craftman	1.070*** (.385)	.853** (.418)	1.049*** (.384)	.904** (.397)	.989** (.393)	.971** (.398)
Machine operator	.953*** (.343)	.707** (.356)	.852** (.351)	.810** (.349)	.919** (.357)	.838** (.345)
Elementary worker	.621 (.608)	.219 (.640)	.464 (.633)	.510 (.616)	.300 (.800)	.390 (.624)
<b>Income</b>						
<i>Reference category: Family income Q5</i>						
Family income Q1	1.252*** (.221)	1.275*** (.228)	1.262*** (.223)	1.061*** (.248)	1.318*** (.224)	1.239*** (.230)
Family income Q2	.940*** (.209)	.960*** (.212)	.943*** (.210)	.812*** (.231)	.896*** (.216)	.894*** (.219)
Family income Q3	.992*** (.208)	1.032*** (.215)	1.028*** (.207)	.922*** (.230)	.958*** (.213)	.918*** (.216)
Family income Q4	.616*** (.215)	.546** (.219)	.628*** (.216)	.546** (.229)	.610*** (.218)	.614*** (.223)
<b>Employment status</b>						
Self-employed	-.511* (.274)	-.546* (.279)	-.507* (.277)	-.468* (.283)	-.519* (.272)	-.500* (.292)
Publicly employed	.480*** (.133)	.508*** (.136)	.448*** (.134)	.462*** (.134)	.464*** (.136)	.481*** (.134)
<b>Unions</b>						
Union membership	.275** (.133)	.338** (.137)	.276** (.134)	.267** (.133)	.280** (.134)	.280** (.134)
<b>Demographic characteristics</b>						
Female	.366*** (.127)	.389*** (.132)	.416*** (.131)	.353*** (.129)	.366*** (.129)	.347*** (.129)
Age	.053 (.033)	.058* (.033)	.052 (.032)	.063 (.040)	.040 (.036)	.074 (.052)
Age-sq/100	-.061* (.037)	-.066* (.036)	-.056 (.036)	-.073 (.046)	-.045 (.041)	-.087 (.062)

*To be continued next page...*

Table 8: Preferences for redistribution: France (cont')

<i>Ordered logit</i>	[1]	[2]	[3]	[4]	[5]	[6]
Married	.093 (.154)	.174 (.158)	.180 (.157)	.049 (.159)	.073 (.161)	.105 (.161)
<b>Religion</b>						
Church attendance		-.116*** (.044)				
Catholic			-.376*** (.125)			
Protestant			.091 (.430)			
<b>Social class</b>						
<i>Reference category: Middle class</i>						
Upper class				-.072 (.173)		
Lower class				.381** (.156)		
<b>Social Mobility</b>						
Job prestige					.342*** (.125)	
<i>Reference category: No mobility</i>						
Upward mobility						-.081 (.135)
Downward mobility						.252 (.180)
Number of Obs	996	939	984	988	954	968
Pseudo R-Squared	.048	.052	.050	.050	.050	.050
Log Pseudolikelihood	-1396.8	-1319.2	-1379.2	-1383.4	-1332.6	-1354.1
Chi 2	129.79	131.97	137.73	133.46	130.75	130.68

Note: Robust standard errors in parentheses. \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

Table 9: Preferences for redistribution: Germany

<i>Ordered logit</i>	[1]	[2]	[3]	[4]	[5]	[6]
<b>Occupation</b>						
<i>Reference category: Manager</i>						
Professional	1.207** (.473)	1.207** (.470)	1.098* (.615)	1.222** (.479)	1.502*** (.499)	1.157** (.493)
Ass. professional	1.303*** (.445)	1.295*** (.445)	1.333** (.598)	1.190*** (.445)	1.409*** (.459)	1.208*** (.459)
Clerk	1.580*** (.476)	1.545*** (.479)	1.734*** (.603)	1.458*** (.477)	1.706*** (.495)	1.407*** (.490)
Service worker	1.291** (.532)	1.242** (.540)	1.533** (.709)	1.235** (.542)	1.393** (.565)	1.149** (.541)
Craftman	1.524*** (.451)	1.518*** (.455)	1.588*** (.555)	1.428*** (.456)	1.649*** (.466)	1.338*** (.464)
Machine operator	1.551*** (.493)	1.510*** (.496)	1.829*** (.619)	1.392*** (.499)	1.505*** (.521)	1.382*** (.515)
Elementary worker	2.131*** (.639)	2.141*** (.637)	2.358*** (.711)	1.865*** (.652)	2.303*** (.674)	2.030*** (.634)
<b>Income</b>						
<i>Reference category: Family income Q5</i>						
Family income Q1	.646* (.353)	.692** (.349)	.588 (.419)	.494 (.360)	.531 (.356)	.558 (.353)
Family income Q2	.275 (.288)	.307 (.292)	.271 (.314)	.264 (.299)	.136 (.295)	.235 (.303)
Family income Q3	.773*** (.243)	.775*** (.244)	.779*** (.278)	.726*** (.260)	.739*** (.253)	.790*** (.258)
Family income Q4	.577** (.252)	.598** (.250)	.588** (.289)	.604** (.253)	.425* (.256)	.613** (.261)
<b>Employment status</b>						
Self-employed	.264 (.403)	.262 (.401)	.156 (.518)	.176 (.403)	.185 (.414)	.216 (.412)
Publicly employed	.084 (.230)	.100 (.232)	.153 (.278)	.068 (.230)	-.033 (.233)	.040 (.235)
<b>Unions</b>						
Union membership	.262 (.225)	.270 (.228)	.321 (.259)	.281 (.228)	.265 (.235)	.309 (.226)
<b>Demographic characteristics</b>						
Female	.598*** (.213)	.602*** (.212)	.551** (.247)	.579*** (.216)	.642*** (.218)	.594*** (.214)
Age	.004 (.047)	-.004 (.047)	-.008 (.055)	.011 (.048)	-.005 (.049)	-.003 (.048)
Age-sq/100	-.001 (.055)	.011 (.055)	.012 (.063)	-.008 (.056)	.009 (.057)	.002 (.056)

*To be continued next page...*

Table 9: Preferences for redistribution: Germany (cont')

<i>Ordered logit</i>	[1]	[2]	[3]	[4]	[5]	[6]
Married	-.173 (.212)	-.116 (.218)	-.187 (.240)	-.203 (.221)	-.151 (.216)	-.179 (.218)
<b>Region</b>						
East Germany	1.054*** (.191)	.954*** (.195)	.879*** (.264)	.966*** (.197)	1.145*** (.203)	.956*** (.195)
<b>Religion</b>						
Church attendance		-.146* (.078)				
Catholic			.709* (.369)			
Protestant			.840** (.373)			
<b>Social class</b>						
<i>Reference category: Middle class</i>						
Upper class				-.048 (.234)		
Lower class				.433** (.220)		
<b>Social Mobility</b>						
Job prestige					.009 (.193)	
<i>Reference category: No mobility</i>						
Upward mobility						-.470** (.195)
Downward mobility						.198 (.221)
Number of Obs	516	516	385	510	492	507
Pseudo R-Squared	.067	.069	.064	.070	.073	.075
Log Pseudolikelihood	-697.8	-696.1	-527.2	-687.5	-661.3	-679.8
Chi 2	100.31	101.87	75.62	106.49	103.67	108.81

Note: Robust standard errors in parentheses. \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

## B Descriptive Statistics

Table 10: Summary statistics

Variable	n	%	N
<b>Government should reduce income differences?</b>			
Strongly disagree	271	5	5037
Disagree	706	14	5037
Neither agree nor disagree	906	18	5037
Agree	1878	37	5037
Strongly agree	1276	25	5037
<b>Occupation</b>			
Manager	400	9	4277
Professional	780	18	4277
Associate professional	929	22	4277
Clerk	568	13	4277
Service worker	518	12	4277
Agricultural worker	113	3	4277
Craftman	466	11	4277
Machine operator	298	7	4277
Elementary worker	205	5	4277
<b>Income</b>			
Family income Q1	1288	28	4586
Family income Q2	871	19	4586
Family income Q3	901	20	4586
Family income Q4	770	17	4586
Family income Q5	756	16	4586
<b>Employment status</b>			
Self-employed	352	9	3719
Publicly employed	1591	37	4280
<b>Unions</b>			
Union membership	1523	33	4613
<b>Demographic characteristics</b>			
Female	2572	49	5275
Married	3191	61	5237
<b>Religion</b>			
Catholic	1631	33	4940
Protestant	1792	36	4940
Other religion	169	3	4940
No religion	1348	27	4940
<b>Church attendance</b>			
Never	2085	42	5009
Once a year	1246	25	5009
Several times a year	898	18	5009

*To be continued next page...*

Table 10: Summary statistics (cont')

<b>Variable</b>	<b>n</b>	<b>%</b>	<b>N</b>
Once a month	240	5	5009
2-3 times a month	202	4	5009
Once a week	338	7	5009
<b>Social class</b>			
Upper class	1206	23	5174
Lower class	1392	27	5174
Middle class	2576	50	5174
<b>Social mobility</b>			
Job prestige > father	2170	46	4717
Upward mobility	1690	33	5094
Downward mobility	1143	22	5094
No mobility	2261	44	5094
<b>Country</b>			
Great Britain	804	15	5275
Sweden	1150	22	5275
France	1889	36	5275
Germany	1432	27	5275
incl. East Germany	511	36	1432
	<b>Mean</b>	<b>Std. Dev.</b>	<b>N</b>
Age (17 to 96 years old)	48	16.45	5257

Source: ISSP 1999 - Social Inequality III



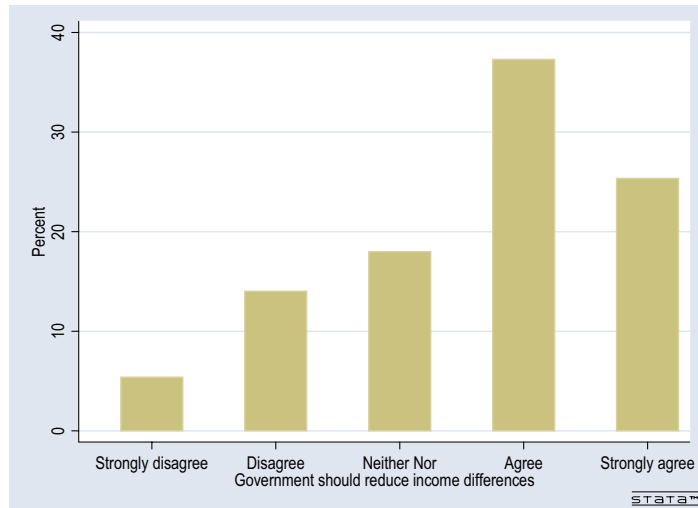


Figure 1: Attitudes towards redistribution, full sample

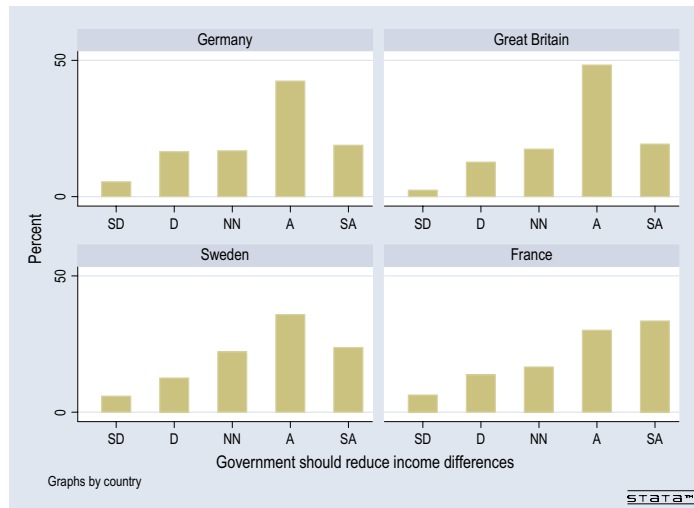


Figure 2: Attitudes towards redistribution, by country

## C Classification of Occupations

For cross-national comparisons, only a few skill level categories have been identified by EUROSTAT<sup>21</sup> (Statistical Office of the European Communities). ISCO-88 (International Standard Classification of Occupations, 1988 version) uses four skill levels to define the broad structure of the classification at its most aggregate level, the *major groups*. These four skill levels are partly operationalised in terms of the International Standard Classification of Education (ISCED) and partly in terms of the job-related formal training which may be used to develop the skill level of persons who will carry out such jobs (Table 11). The decisive factor for determining how an occupation should be classified is the nature of the skills that are required to carry out the tasks and duties of the corresponding jobs.

Table 11: Definition of Skill Levels

ISCO skill level	ISCED categories
First skill level	ISCED category 1: primary education
Second skill level	ISCED category 2 and 3: first and second stages of secondary education
Third skill level	ISCED category 5: education starting at the age of 17 or 18, which leads to an award not equivalent to a first university degree
Fourth skill level	ISCED category 6 and 7: education starting at the age of 17 or 18, which leads to a university or postgraduate university degree (or the equivalent)

Note: Category 4 of ISCED has been deliberately left without content, since it is now included in category 5. Source: ILO (1990)

Five of the eight major groups (groups 4, 5, 6, 7 and 8) are considered to be at the same skill level; they are distinguished by reference to broad skill specialisation groups. The definition of major groups 1 and 0 do not refer to skill levels, because other aspects of the type of work were considered more important as similarity criteria: policy making and management functions, and military duties, respectively (Table 12).

<sup>21</sup>This section largely relies on the EUROSTAT (1994) guideline written by Margaret Birch and Peter Elias.

Table 12: Definition of Occupation Major Groups

	Major Group of Occupations	ISCO skill level
1	Legislators, senior officials and managers	–
2	Professionals	Fourth level
3	Technicians and associate professionals	Third level
4	Clerks	Second level
5	Service workers and shop and market sales workers	Second level
6	Skill agricultural and fishery workers	Second level
7	Craft and related workers	Second level
8	Plant and machine operators and assemblers	Second level
9	Elementary occupations	First level
0	Armed forces	–

Note: We exclude from our regressions individuals who are attached to group 0 *Armed forces*. Source: ILO (1990)

## D Econometric Specification

In our regressions, we aim to estimate what determines the individual attitudes towards redistribution. However, individual attitudes are coded as a discrete choice variable. Hence, our true dependent variable (i.e. the continuous level of utility) is not directly observed. This leads us to estimate a categorical dependent variable model.

**Latent Variable** It is assumed that the true dependent variable is continuous, though unobservable. We consider that a latent variable is underlying the model:

$$y_i^* = x_i' \beta + \varepsilon_i \quad (3)$$

for  $i = 1, \dots, N$  where  $x_i$  is a vector of observations on a set of explanatory variables,  $\beta$  is a vector of unknown parameters,  $\varepsilon_i$  is a random error term independently distributed with distribution function  $F$  (to be defined below).

**Distribution Function** While  $y_i^*$  is unobserved,  $y_i$  is observed. The observed dependent variable, which is discrete, is thus taking one of the values 1, 2, ..., J.

$y_i$  is related to  $y_i^*$  as follows:

$$y_i = \begin{cases} 1 & \text{if } y_i^* < \alpha_1 \\ 2 & \text{if } \alpha_1 \leq y_i^* < \alpha_2 \\ \vdots & \\ J & \text{if } \alpha_{J-1} \leq y_i^* \end{cases} \quad (4)$$

with  $\alpha_j$  being additional parameters such that  $\alpha_1 < \alpha_2 < \dots < \alpha_{J-1}$  acting as cut points for intervals into which a particular observation falls. Hence, the dependent variable  $y$  is ordinal and  $\alpha_j$  are treated as parameters to be estimated.

**Set of Probabilities** The full set of probabilities of the possible outcomes is the following:

$$\Pr[y_i = j|x] = F(\alpha_j - x'_i\beta) - F(\alpha_{j-1} - x'_i\beta) \quad (5)$$

for all  $j$ , assuming that  $\alpha_0 = -\infty$  and  $\alpha_J = +\infty$ , where  $F$  is the cumulative distribution function for error term.

**Maximum Likelihood Estimator** The usual estimator for this type of model is the Maximum Likelihood estimator. The log-likelihood for the model is:

$$\log L = \sum_{i=1}^N \sum_{j=1}^J y_{ij} \log[F(\alpha_j - x'_i\beta) - F(\alpha_{j-1} - x'_i\beta)] \quad (6)$$

maximized with respect to  $\beta, \alpha_1, \alpha_2, \dots, \alpha_{J-1}$ .

**Ordered Probit / Logit Model** From this, the Ordered Probit model (Aitchison and Silvey, 1957; Amemiya, 1981; Winship and Mare, 1984) simply assumes that the cumulative distribution function is a standard Normal (with the scale normalization  $\sigma = 1$ ):

$$\varepsilon_i \sim N(0, 1) \quad (7)$$

Hence, the  $F$  becomes  $\Phi$  in equations (3) and (4), with:

$$\Phi(\varepsilon) = \frac{e^{-\frac{\varepsilon^2}{2}}}{\sqrt{2\pi}} \quad (8)$$

And the Ordered Logit model assumes that the cumulative distribution function is Logistic:

$$\varepsilon_i \sim G\left(0, \frac{\pi^2}{3}\right) \quad (9)$$

Hence, the  $F$  becomes  $\Lambda$  in equations (3) and (4), with:

$$\Lambda(\varepsilon) = \frac{1}{1 + e^{-\varepsilon}} \quad (10)$$

In our study, we preferably use ordered logit than ordered probit estimation techniques. Indeed, ordered logit estimates allow to compute odds ratios that ease the interpretation of coefficients.

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