

# Evolution over Time of the Determinants of Preferences for Redistribution and the Support for the Welfare State\*

EMMA M. IGLESIAS<sup>†</sup>      J. ATILANO PENA LÓPEZ<sup>‡</sup>      J. MANUEL SÁNCHEZ SANTOS<sup>§</sup>  
University of A Coruña      University of A Coruña      University of A Coruña

This version: February 2012

## Abstract

We analyze the evolution over time of the determinants of preferences for redistribution. Using country level data, Alesina and Angeletos (2005) show a strong and significant effect that societies that believe that individual efforts determine income will choose low redistribution policies and low taxes. They find a strong and positive significant effect between the belief that luck determines income on the probability of being leftist. This leftist political orientation is used as a proxy for favoring redistribution and government intervention. We test their same hypothesis, but we go further by finding out their evolution over time and checking if all regional beliefs are equally important when determining preferences for redistribution. We choose Spain for our study, where regions have important and relevant political and cultural differences. As another novel contribution, we argue about the relevance of regional beliefs, and therefore we introduce both *regional-fixed effects* and *belief-fixed effects*. We show in 1995 evidence of a strong right-wing group in Madrid. Moreover, we can identify a very strong and positive effect of the regional belief in Madrid that luck determines income on the probability of being leftist, being representative of the choice of tax and redistribution policies while aggregate belief is not relevant. One possible explanation is that Spanish regions have very heterogeneous beliefs and their own inherent problems and identities, and at aggregate level, it is not possible to uncover relationships that can explain attitudes towards redistribution policies and taxes. We also find that years of education in Spain have a negative impact on the probability of being left-wing and therefore, highly-educated individuals are more averse to redistribution and higher taxes; while race, marital status, age or gender are not relevant in Spain for that purpose. In 2007, we show that the determinants of the redistribution function in Spain have changed. Now we find evidence of a strong left-wing belief in Cataluña, while we cannot identify any regional belief that characterizes the preferences for redistribution. We find moderate evidence to support Alesina and Angeletos (2005) that an increase in aggregate belief in Spain that luck determines income increases the probability of being leftist, indicating more homogeneity of the Spanish beliefs in this period. Finally, income and age are now the variables that have stronger impact on the probability of being left-wing, while years of education is not relevant anymore.

**Key words:** Fairness; Redistribution; Income; Aggregate and Regional Beliefs; Welfare State. **JEL codes:** D31, E62, H2, P16.

---

\*We are very grateful to the MSU Intramural Research Grants Program for research support. The authors also acknowledge financial support by 10SEC100041PR from Xunta de Galicia.

<sup>†</sup>Address: Departamento de Economía Aplicada II. Facultad de Economía y Empresa. Universidad de A Coruña, Campus de Elviña. 15071. Spain. E-mail: emma.iglesias@udc.es.

<sup>‡</sup>Address: Departamento de Economía Aplicada I. Facultad de Economía y Empresa. Universidad de A Coruña, Campus de Elviña. 15071. Spain. E-mail: atilano@udc.es

<sup>§</sup>Address: Departamento de Economía Aplicada I. Facultad de Economía y Empresa. Universidad de A Coruña, Campus de Elviña. 15071. Spain. E-mail: santos67@udc.es

# 1 Introduction

Traditionally in Economics, models that explain preferences for redistribution are focused on the analysis of distribution in itself. Those individuals that by definition are not altruists and they maximize their individual utility, they will be more or less favorable to redistribution depending on the variance and kurtosis of income distribution before taxes, social costs of taxes and of the expected changes in income levels. However, those models are not able to explain the differences in preferences that we can observe about the policies that are applied in United States versus Europe in the last decade. The larger variance and kurtosis in the United States does not result in a higher propensity to redistribute (see Alesina (2001)), even when we incorporate the particular circumstances of their respective political systems (see Feld et al (2007)). Therefore, economic factors are not the only ones that determine the formation of this type of preferences.

Other approaches focus their explanations not only in the characteristics of income distribution but also in the social and cultural determinants of the process of preferences formation. Then, the initial hypothesis proposed by Hirschman and Rothschild (1973) and confirmed later by Alesina and La Ferrara (2005), highlights that expectations of social mobility are crucial to reduce the individuals will to redistribute. However, this explanation goes on being insufficient since those individuals that have improved in their social scale do not tend to show a reduction in their redistribution demand (see Alesina and Giuliano (2011)). On the other hand, contractualism tends to interpret redistribution policies as a demand for personal reassurances. However, experimental results show that risk aversion is very inferior to the rawlsian proposal of the maximin rule (see Beck (1994) and Cabrales et al (2012)).

In general, we can consider two extreme positions in relation to redistribution. *One* is contrary to any form of redistribution, i. e., in this case all individuals would be legitimate to own any form of income that is legally obtained. The *second one*, the rawlsian one, where all individuals are in favour to redistribute according to the established criteria under ignorance.

Without doubt, both approaches are linked to the existence of a justice idea, i.e., individual perceptions are based on a certain subjective point of view of what it is fair in terms of what they deserve (see Alesina and Giuliano (2011)). In more detail, the redistribution will is linked to the existence of randomness of income distribution that is not linked to effort, since lack of it is related to the explained primacy of effort. In this way, more equality due to lack seems more desirable than when it is derived from effort. Obviously, the formation of these type of beliefs can be very attached to personal history (see Piketty (1995)) or characteristics that are proper of cultures where individuals are more or less risk averse (see Alesina and Glaeser (2004), Benabou and Tirole (2005) and Rey-Biel et al (2011)).

In short, preferences would be reflecting on the one hand the equality level that is considered to be accepted, and on the other hand, the sympathy or influence in the individual utility of the perception of individuals welfare.

The “World Values Survey“ (WVS) is probably one of the most well known surveys that have been carried out to analyse in practice issues of social welfare. Examples of papers that have used this survey at aggregate level by considering countries as individual units are Guiso, Sapienza and Zingales (2003), (religion issues), Alesina and La Ferrara (2005) and Alesina and Angeletos (2005) (preferences for redistribution in relation to mean income, AA from now onwards), Fortin (2005) (gender role attitudes and work values on women’s labour-market outcomes), Blekesaune (2007) (public opinions towards welfare state policies), Landier, Thesmar and Thoenig (2008) (analyzing pro-capitalism issues) and Fischer (2008) (effects of competition in trust-generating effects).

The main objective of this paper is to extend the analysis of AA to a country as Spain, where *first*, regional characteristics are very relevant and *second*, we want to find the evolution of the determinants of preferences for redistribution over time. Recently, Alesina and Giuliano (2011) provide a literature review of what determines the preferences of individuals for redistribution, and among other issues, they confirm empirically facts such as in general,

in the USA, blacks, the less rich people, women (in the USA, women are more left-wing than men -see e.g. Alesina and La Ferrara (2005)-), the less educated people and left-wing people are more in favour of redistribution. More in detail, AA concluded that, by using data at country level, there is a strong and significant effect that those societies that believe that individual efforts determine income will choose low redistribution policies and low taxes. In order to support empirically their theory, they find a strong and positive significant effect between the belief that luck determines income on the probability of being leftist. More left-wing individuals are more pro-distribution. We test the same hypotheses as AA on fairness and preferences for redistribution, but our objective is to go further, and to find out if the relationship also holds at regional level in Spain and if all regional beliefs in all regions are equally important when determining redistribution and tax policies. We also want to find evidence if some regions have strong leftist beliefs or they are more right-wing. In order to do that, we introduce both *belief-fixed effects* (from the best of our knowledge, we believe that we are the first in the literature to introduce that) and *regional-fixed effects* (following García-Valiñas, Fernández-Llera and Torgler (2008)) in the analysis.

We can already find studies in the literature that consider the effects of values in specific countries at regional level supporting the relevance of regions versus countries in economic activities. For example, Torgler and García-Valiñas (2007) investigate the determinants of individuals' attitudes towards preventing environmental damage in Spain using data from the WVS and the "European Values Survey" (EVS) for the periods 1990, 1995 and 1999/2000. Using disaggregated data for Spanish regions, they find significant regional differences. García-Valiñas, Fernández-Llera and Torgler (2008) also analyze individuals' preferences for redistribution and they find that regional conditions affect citizens' preferences for income equality; however, they do not show any evidence about the consequences of that on redistribution and tax policies in Spain. From the best of our knowledge, there are no other papers in the literature that have analyzed this in Spain at regional level. Moreover, many studies have recognized the specific characteristics of some regions in Spain that would be covered if we consider data aggregated at national Spanish level. For example, Gardeazabal and Abadie (2003) and Aspachs-Bracons, Clots-Figueras, Costa-Font and Masella (2008) have studied the special cases of the Basque Country and of Cataluña, and the special characteristics that distinguish these regions from the rest of Spain. Most of the regions in Spain have their own inherent problems and identities, and that is why considering data at regional level allows to uncover many effects that otherwise would be hidden if we aggregate at national level. The effects of aggregation in time series are well-known in the literature (see e.g. Rossana and Seater (1995)). We want to analyze the consequences of aggregation from regional to country units when analyzing redistribution issues in Spain.

In this paper we want also to analyze the evolution over time of the determinants of preferences for redistribution. For example, Fatás (1997) argues that correlations within countries have been decreasing over time while cross-country correlations have increased, and we may expect changes over time also in the preferences for distribution function. In special, we analyze the Spanish case in two waves: 1995 and 2007. We also have access to data from the EVS for Spain in 1980, 1990 and 2000, but we cannot have all the variables available for the analysis in AA for these years in Spain and that is why we have not analyzed these periods.

The plan of the paper is as follows. In Section 2, we present the theoretical framework, the data and descriptive statistics. Section 3 contains the main results. Finally, Section 4 concludes. A definition of the variables that are used in the paper is given in Appendix 1, and all tables are collected in Appendix 2.

## 2 Framework, data and descriptive statistics

AA test the main assumption that individuals expect society to reward individual effort and hard work and the government to intervene and correct market outcomes to the extent that outcomes are driven by luck. Moreover, to find more support for our results, we also focus on the theoretical specification of García-Valiñas, Fernández-Llera and Torgler (2008) and Alesina and Giuliano (2011) by including the variables “preferences for income” and “preferences for redistribution” instead of only using the “probability of being leftist”. We provide now more details about the specifications that they use.

### 2.1 Being left on the political spectrum, preferences for income equality and preferences for government redistribution

First, we rely on the specification given in Table 2 in AA (page 964). They find a strong and positive relationship between the “belief that luck determines income” on the “probability of being leftist”. Their point estimate is in the range 0.541-0.607 (see Table 2 in AA (page 964)). AA do not include neither year fixed effects nor country fixed effects. One of the main novelties of our paper is that we show the relevance of *regional fixed effects* and *regional belief fixed effects* in Spain.

We also focus on the results in García-Valiñas, Fernández-Llera and Torgler (2008) that use, for 2000, the variable “preferences for income equality” (VAR17\* in our notation) instead of “being leftist” (i.e. DEP) as the dependent variable. We also consider the specification given in Table 7 in Alesina and Giuliano (2011), as a robustness check, for our extension of the model of AA to include *regional fixed effects* and *regional belief fixed effects* in Spain. Alesina and Giuliano (2011) use the variable “preferences for government redistribution” (VAR17 in our notation) as dependent variable. AA use the variable “being left on the political spectrum” as a proxy of the preferences for redistribution. We are interested in finding out if our results when using the AA specification about the determinants on ideological beliefs can also be translated into determinants in preferences of income equality and government redistribution in Spain.

### 2.2 Dataset and descriptive statistics

We have data for Spain for the waves of years 1980, 1990, 1995, 2000 and 2007<sup>1</sup>, corresponding to the most recent periods that are available nowadays in the EVS. However, we can only get all data we need to carry out the analysis of AA for 1995 and 2007 in Spain (see Appendix 1 for more details about the availability of the data and a list of all the variables we use) and that is why we only study those two years. In special, we do not have access to any of the variables for 1980, VAR5 in 1990 and VAR1 for the wave of 2000 in Spain.

Those individuals where at least one of the variables show a “no-answer” were removed from the sample. In 1995, we have originally 1211 individuals, and we are left with 433 individuals. For 2007, we start with a sample of 1200 individuals and after removing those individuals without answer, we are left with 899 individuals. Descriptive statistics of all variables are presented in Table 1 in 1995. Note that for example, VAR6 corresponds to 98.9% of white respondents in Spain that are white. This reflects that the population situation in Spain is very different than in the setting of AA, and it explains why for example in our case, variables such as VAR6 are not statistically relevant in our analysis when we introduce them into the model. Table 1 also shows the descriptive statistics for 2007. Note that VAR6 is not available in the EVS for Spain in 2007, but given the demographic structure of Spain (see for example Table 1a) where most population is white, we argue that this variable is not relevant for the Spanish setting. We show

---

<sup>1</sup>We have obtained all the data from the “European Values Survey” (EVS).

also descriptive statistics for the variables that we need to analyze the setting of García-Valiñas, Fernández-Llera and Torgler (2008) and Alesina and Giuliano (2011) in Table 1.

### 3 Empirical analysis and results

We provide now detailed results about the conclusions for we obtain for 1995 and 2007. It is important to note that we also estimated a panel data setting where time dummies were introduced as time fixed effects, and the results that are presented here for each of the waves (1995 and 2007) were robust to that.

#### 3.1 Year 1995

Table 2a shows the estimation results, by ordinary least squares (OLS), with t-statistics in parenthesis<sup>2</sup>. To confirm the robustness of our results, we consider the following specifications:

**MODEL 1:** It corresponds to Model 2 in AA (Table 2, page 964) for Spain without regional fixed effects.

**MODEL 2:** It corresponds to Model 3 in AA (Table 2, page 964) for Spain without regional fixed effects. We can see clearly how VAR2 is not statistically significant in Spain.

**MODEL 3:** It corresponds to Model 2 in AA (Table 2, page 964) for Spain with regional fixed effects.

From Models 1 and 2 and 3, we see how VAR1 does not show a statistically significant relationship with DEP, although the point estimates are very similar and robust. Also the point estimates of VAR4 and VAR5 (the ones that show statistically significant relationships) are very similar in both models. We test the null hypothesis that  $VAR16i$  with  $i = AR, MA, NA, PVAS$  is equal to zero jointly, and we obtain a p-value of 0.07. We also test the null hypothesis that  $VAR16i$  with  $i = MA, NA, PVAS$  is equal to zero jointly, and now the p-value equals 0.04 and we reject the null hypothesis at the 5% significance level. Therefore, from Models 1, 2 and 3 we conclude that Madrid, Navarra and País Vasco are the main regions to take into account in relation to the fixed effects.

**MODEL 4:** It corresponds to Model 2 in AA (Table 2, page 964) for Spain with regional fixed effects for Madrid, Navarra and Pais Vasco and where we remove those variables that are not statistically significant in Model 3.

In Model 4, we find that variables such as age group, sex and marital status are not relevant in Spain. City population, years of education and number of children are the most important issues. In Model 4, we can see how the signs of the point estimates of these three variables are the same for those variables that are in common with the results in AA (Table 2, page 964); with the only difference that again, VAR1 does not show a statistically significant relationship with DEP in our case. Moreover, we observe how in Madrid, Navarra and País Vasco there are statistically significant regional fixed effects showing that there were leftist beliefs in those regions that were stronger than in the rest of Spain in 1995.

We then proceed as in Model 1 in AA (Table 2, page 964) to remove VAR1 from the analysis in the following model.

**MODEL 5:** It corresponds to Model 1 in AA (Table 2, page 964) for Spain with regional fixed effects for Madrid, Navarra and Pais Vasco and where we remove those variables that are not statistically significant in Model 3.

---

<sup>2</sup>All results have been obtained using STATA 11.0.

Again, Model 5 shows the same signs for VAR4, VAR5 and VAR8 than in AA. Following Wooldridge (2008), we can create iteration effects (along the same lines as when we want to find out if return to education has changed over time) and we proceed to incorporate regional beliefs at disaggregated level for Madrid, Navarra and País Vasco, since they are the ones that show a statistical significant relationship in our Model 3.

**MODEL 6:** It corresponds to Model 2 in AA (Table 2, page 964) for Spain with regional fixed effects and with aggregate (i.e. VAR1) and regional beliefs (i.e. VAR1MA, VAR1NA and VAR1PVAS). We have created several variables that were not used in AA to introduce belief-fixed effects in the analysis: for example VAR1MA (the iteration effect of VAR1 with VAR16MA), VAR1NA (the iteration effect of VAR1 with VAR16NA) and VAR1PVAS (the iteration effect of VAR1 with VAR16PVAS) respectively.

Model 6 shows how the relationship of beliefs and the dependent variable only holds for the regional beliefs in Madrid, but not at aggregate level (i.e. VAR1) or the other two regional beliefs (in Navarra and País Vasco). In Model 6, again VAR1 is not statistically significant, but VAR1MA is strongly statistically significant and with the expected positive sign. We then proceed in Model 7 to remove again those variables that are not statistically significant in Model 6.

**MODEL 7:** It corresponds to Model 2 in AA (Table 2, page 964) for Spain with regional fixed effects for Madrid, Navarra and País Vasco, with aggregate (i.e. VAR1) and regional beliefs (i.e. VAR1MA, VAR1NA and VAR1PVAS), and where we remove those variables that are not statistically significant in Model 6.

All signs of the estimates in Model 7 are as expected. As in AA, we find a positive relationship between city population and being a left-wing individual. Years of education (VAR5) is also found to have a negative relationship with being left-wing. Also, the larger is the number of children (VAR8), more averse are individuals to redistribution and higher taxes. This is also found for the USA economy in for example Alesina and Giuliano (2011), where more educated people and with more children tend to be more averse to redistribution and higher taxes. However, opposite to AA, we do not find a statistically significant relationship between VAR1 and DEP at aggregate level, but we find it when we use regional beliefs in Madrid: i.e., we find a strong positive relationship of 0.478 when using regional beliefs. We proceed now to remove in Model 8 both VAR1 and the fixed effects in Model 7 since they are not statistically significant.

**MODEL 8:** It corresponds to Model 2 in AA (Table 2, page 964) for Spain with regional fixed effects for Madrid, with regional beliefs in Madrid (i.e. VAR1MA), and where we remove those variables that are not statistically significant in Model 6.

Finally, in Models 9 and 10 we remove VAR1 and VAR4 to check the robustness of our result that shows the strong positive relationship between regional beliefs in Madrid and DEP.

**MODEL 9:** It corresponds to Model 1 in AA (Table 2, page 964) for Spain with regional fixed effects for Madrid, with regional beliefs in Madrid (i.e. VAR1MA), and where we remove those variables that are not statistically significant in Model 8. We also remove VAR4 because it was not statistically significant in Model 7 to check the robustness of our result for the relationship between VAR1MA and DEP.

**MODEL 10:** It corresponds to Model 1 in AA (Table 2, page 964) for Spain with regional fixed effects for Madrid, with regional beliefs in Madrid (i.e. VAR1MA), and where we remove VAR8 from Model 9 since it was not statistically significant in Models 1, 3 and 6 to check the robustness of our result for the relationship between

VAR1MA and DEP. Note also that VAR5 (years of education) is consistently found to have a negative impact on the probability of being right-wing in Spain in all Models 1-10.

In summary, note that AA (Table 2, page 964) find at aggregate (country) level a strong and positive significant effect of VAR1 on DEP in the range of 0.541-0.607. In our case, in Table 2a, we do not find an effect in Spain of VAR1 at aggregate level in Spain on DEP (note that this result is robust in all Models 1-10 as it is shown in bold in Table 2), but, from the *regional belief effects*, we find a strong and significant effect of the belief in Madrid (i.e. VAR1MA) on DEP in the range of 0.359-0.478 (again, this result is robust in all Models 1-10 as it is shown in Table 2 in bold), i.e. a positive point estimate very similar (only slightly smaller) to the one of AA of 0.541-0.607 that is also strongly statistically significant. One possible explanation of our results is that Spanish regions have very different beliefs, and at aggregate level, it is not possible to uncover relationships that can explain the choice of redistribution policies and taxes. We find evidence that regional beliefs in Madrid are representative of the political orientation and the choice of tax and redistribution policies. Moreover, the *regional fixed effect* in Madrid indicates the relevance of a strong right-wing group in 1995 in that region (since the regional fixed in Madrid is estimated to be negative and highly statistically significant that ranges from -0.374 to -0.150). We can observe how in Madrid, Navarra and País Vasco there are statistically significant regional fixed effects that show that there were right wing beliefs in those regions that were stronger than in the rest of Spain in 1995. And the evidence in Madrid is even stronger than in Navarra and País Vasco in 1995. We also find very strong evidence that years of education in Spain have a negative impact on the probability of being left-wing and therefore, highly-educated individuals are clearly more averse to redistribution and higher taxes. Note that in all Models 1-10, VAR5 is always statistically significant and with a negative sign. However, variables such as race, marital status, age or gender are not relevant in Spain. Moreover, regional fixed effects exist very clearly in Madrid that are statistically significant with a negative estimated sign, supporting the hypothesis that those individuals living in Madrid are in favour of lower taxes in the redistribution policies.

AA use DEP as a proxy of preferences for redistribution. We show now the robustness of our results when we change our dependent variable from DEP to VAR17\* and VAR17. These variables were already used by García-Valiñas, Fernández-Llera and Torgler (2008) and Alesina and Giuliano (2011) to measure preferences for income equality and government redistribution respectively. We show the results in Table 3a. First we show the dependence between DEP, and VAR17\*, and also we show the robustness of our results when we replace DEP by VAR17\* in our previous model. We use the same variables as in Table 7 in Alesina and Giuliano (2011) and therefore we create a variable that measures years of education through attendance to high school (VAR21) and to college or more (VAR22). Results are shown in Table 3a.

We confirm a strong correlation that is statistically significant between DEP, VAR17\* and VAR17 in 1995. Regardless of the use of DEP, VAR17\* and VAR17 (i.e. common determinants in Spain in 1995 both for being leftist, preferences for income equality and government distribution), we confirm that years of education, basically at university level (VAR22) is the most important determinant to determine preferences of Spanish individuals for redistribution in 1995, (2) regional beliefs-fixed effects are relevant when using DEP although not with VAR17 and VAR17\*, although they have the same positive estimate as in AA and Alesina and Giuliano (2011) (3) regional fixed-effects are relevant for Madrid both when using DEP and VAR17, and they have the same sign: evidence of a strong right-wing group in Madrid in 1995.

The most important difference with AA is that VAR1, is found to have a positive effect in Spain both when using DEP and VAR17\* that is not statistically significant. With VAR17, the estimate is negative (as in AA and Alesina and Giuliano (2011)).

### 3.2 Year 2007

We show now the analysis for Spain in 2007. We will see how the situation in Spain is now more similar to the results given in AA although regional beliefs are still very relevant in Spain and therefore we argue that they must be introduced in the model of AA in Spain. We proceed with the same procedure as in the year 1995 and with the same 10 models. The results are given in Table 2b. We argue that we do not introduce VAR6 given the demographic structure in Spain (where most population is white). Note that now VAR3 (income) and the group age effects from VAR11 to VAR15 are the relevant ones in Spain and they have the expected sign as in AA. VAR5 (years of education) does not have the strong effect as in 1995.

In relation to the *regional fixed effects*, we identify a very strong left-wing group in Cataluña and some evidence in Galicia, Navarra and Castilla La Mancha. We see that in Model 3, and this result is robust in all models. In Model 3 we have tested the null hypothesis that  $\text{VAR16}_i$  with  $i = \text{CAT, CASLA, G, NA}$  is equal to zero jointly, and we obtain a p-value of 0.00, confirming the existence of these regional fixed effects. We argue that these regional fixed effects are needed to be incorporated to the model of AA in countries with characteristics as in Spain, where regions can be very heterogeneous from the socio-economic point of view.

The *regional fixed effect* in Cataluña indicates the relevance of a strong left-wing group in 2007 and this result is very robust in all the ten models that we consider. Not only the *regional fixed effect* in Cataluña is estimated to be positive (therefore, a strong left-wing belief is identified in this region in 2007), but also it is highly statistically significant. The positive estimate in Table 2b for the fixed effect ranges from 0.209 to 0.241. We also detect in some models the existence of a left-wing belief in Navarra and a right-wing belief in Castilla La Mancha and in Galicia in this period, although they are not as strong as in Cataluña.

We now find moderate evidence that aggregate belief in Spain has a positive relationship with the probability of being leftist in Spain, although the result is not that strong as in AA. There is therefore some evidence of more homogeneous beliefs in Spain in this period that allows to identify an aggregate belief in Spain. Moreover, *regional belief effects* are not statistically significant anymore when compared to the situation in 1995.

Finally, in relation to the geography/income and socio-demographic aspects that may affect individuals in Spain to increase their leftist attitudes, we do not find that years of education is the relevant determinant as it happened in 1995. In 2007, we find that income (VAR3) and age of individuals (VAR11 to VAR15) are the main determinants to contribute to the probability of individuals to be leftist. The estimated signs of those variables are the same as those reported in AA.

We show now the robustness of our results when we change our dependent variable from DEP to VAR17\* and VAR17. These variables were already used by García-Valiñas, Fernández-Llera and Torgler (2008) and Alesina and Giuliano (2011) to measure preferences for income equality and government redistribution respectively. The results are shown in Table 3b. First we show the dependence between DEP, and VAR17\*, and also we show the robustness of our results in the previous section when we replace DEP by VAR17\*. We use the same variables as in Table 7 in Alesina and Giuliano (2011) and therefore we create a variable that measures age (VAR19). The square of age is not statistically significant in any of the regressions in Table 3b.

We confirm again a strong correlation that is statistically significant between DEP, VAR17\* and VAR17 in 2007. Regardless of the use of DEP, VAR17\* and VAR17 (i.e. common determinants in Spain in 2007 both for being leftist, preferences for income equality and government distribution), we confirm that (1) income (VAR3) is the most important determinant to determine preferences of Spanish individuals for redistribution in 2007, (2) regional beliefs-fixed effects are relevant both when using DEP and VAR17\* and they are only moderate relevant when using preferences for government redistribution and (3) regional fixed-effects are relevant for Cataluña, although they have opposite signs



when dealing with preferences for being leftist or preferences for income equality and government redistribution.

The most important difference with AA is that VAR1, is found to have a negative effect in Spain both when using VAR17\* and VAR17 that is statistically significant. With DEP, the estimate is positive (as in AA and Alesina and Giuliano (2011)) although not statistically significant.

## 4 Conclusions

This paper analyzes the evolution over time of the determinants of preferences for redistribution at regional level. AA concluded that, by using data at country level, there is a strong and significant effect that those societies that believe that individual efforts determine income will choose low redistribution policies and low taxes. In order to support empirically their evidence, they find a strong and positive significant effect between the belief that luck determines income on the probability of being leftist. We test the same hypotheses as AA on fairness and preferences for redistribution, but our objective is to go further, and to find out their evolution over time, and if all regional beliefs are equally important when determining redistribution and tax policies in Spain. As another novel contribution, we also want to find evidence if some regions have strong leftist beliefs or they are more right-wing. Therefore, we introduce both *belief-fixed effects* and *regional-fixed effects* in the analysis.

Our results show the existence of a structural change in the preferences formation for redistribution in Spain. In 1995, we provide evidence that one of the most important factors that determine political choices, understood these as proxies for redistribution preferences (but also over the equality and individual or governmental responsibility), is the level of studies (years of education). Alesina and Giuliano (2011) already show that the level of studies can act in an ambivalent way. In general, in those societies where this variable is a crucial factor in income differences, the level of education is linked to the possibilities of social improvement in a way that those individuals will present less preferences for redistribution (as in Spain in 1995). Later, once education levels have increased significantly in many segments of the population and it is more generalized, including the highest levels of education (as it happens in Spain in 2007), this variable starts to be less significant and that explains our results. On the other hand, the increase of educational levels in the population seems to be linked also to attitudes that are in favour to redistribution. Variables such as race, marital status, age or gender are not relevant in Spain in this period as explanatory variables.

Our results show in 1995 that only the luck-effort variable is significant in some of the regions. In special, it is a determinant variable in Madrid. The *regional fixed effect* in Madrid is estimated to be negative and highly statistically significant ranging from -0.374 to -0.150. Moreover, through the *regional belief effects*, we find a very strong and positive effect of the regional belief in Madrid that luck determines income on the probability of being leftist, being representative of the choice of tax and redistribution policies. We uncover a strong and significant effect of the belief in Madrid that luck determines income on the probability of being leftist in the range of 0.359-0.478; i.e. a positive point estimate very similar (only slightly smaller) to the one of AA at aggregate (country) level of 0.541-0.607, that is also statistically significant. This may be linked to the singular political situation of this region in Spain. In the definition of political orientation of Madrid, national issues are not determinant (since it is the capital of Spain), but economic and redistributive factors are more important. In this way, this may explain why variables such as preferences on equality and governmental and individual responsibilities are not statistically significant. We can also observe moderate evidence that Navarra and País Vasco have stronger right-wing beliefs than in the rest of Spain in 1995.

In 2007, our results present a crucial change versus 1995 in the determinants of the redistribution function in Spain. In this case the luck/effort variable is mildly statistically significant for all regions. The estimate ranges from ranges

from 0.209 to 0.241. Also, income and age are now the main determinants for political choice.

Along these lines, as a future line of research, we could study how this temporal evolution of redistribution preferences in Spain may be linked to the fast social changes that have happened from 1995 to 2007, both in terms of an increase in income level and in the incorporation of a great amount of immigrants (since 1980, the percentage of immigrants of the total population in Spain has increased from around 1.5% until more than 12% in 2010). In fact, there are many studies that show that altruism have many cultural and racial barriers: when we have a group of people that not only has low income but also belong to a racial or cultural minority, the majority of people tend to decrease their preferences for redistribution. In general, most of the individuals tend to feel more generous with those they feel closer culturally and racially (see Luttmer (2001), Fong and Luttmer (2009), Fong et al (2006), Akkoyunlu et al (2009) Alesina et al (2001) and Alesina and Glaeser (2004)).

## 5 Appendix 1

- The variables that are used by AA are given as follows: The dependent variable (**DEP**) corresponds to “Being left on the political spectrum”. It answers the question at the aggregate (all regions) level in Spain: “In political matters, people talk of left and right. How would you place your views on this scale, generally speaking?”. It is a variable that ranges from 1 to 10, 1 being the most leftist. Following AA, we classified leftist anyone in Spain who answered with a score of 5 or below. The dependent variable corresponds in the EVS for Spain to the references: **e033** in 1990, **V123** in 1995 and **V114** in 2007. The independent variables, following AA (Table 2) are: **VAR1**: “Individual belief that luck determines income”. It corresponds to the answer to the question: “In the long run, hard work usually brings a better life. Or, hard work does not generally bring success; it’s more a matter of luck and connections”. It is a variable that ranges from 1 to 10. Following AA, answers are recoded on a scale 0 to 1, with 1 indicating the strongest belief in luck. This variable is not available in the EMV for 2000, and this prevent us from showing the Spanish analysis in 2000. The dependent variable corresponds in the EVS for Spain to the references: **e040** in 1990, **V129** in 1995 and **V120** in 2007. **VAR2**: “Gini Index”. We obtain the Gini Index for the 17 Spanish regions in 1995 from Izquierdo and Lacuesta (2007). For 1990 and 2000 in Spain, VAR2 is available in Cañón, Málaga y Chaparro (2005). We decide in 2007 to take the values coming from Iglesias-Fernández, Llorente-Heras and Dueñas Fernández (2009) where the Gini index is disaggregated by gender. We weight those indexes with the average number of females/males of VAR9 in 2007 in Spain to construct the aggregate Gini index. **VAR3**: “Income”. The variable corresponds in the EVS for Spain to **x047** in 1990, **V227** in 1995 and **V253** in 2007. **VAR4**: “City Population”. The variable corresponds in the EVS for Spain to **x049** in 1990, **V232** in 1995 and **V255SC** in 2007. **VAR5**: “Years of education”. The variable corresponds in the EVS for Spain to **V217** in 1995 and **V238** in 2007. This variable is not available in Spain in 1990. **VAR6**: “White”. The variable corresponds in the EVS for Spain to **x051** in 1990, **V233** in 1995 and this variable is not available in the survey in 2007 for Spain. We argue that given the race structure in the Spain, since more than 98% of the Spanish population is white, this variable is not important in the Spanish case. **VAR7**: “Married”. The variable corresponds in the EVS for Spain to **x007** in 1990, **V89** in 1995 and **V55** in 2007. **VAR8**: “Number of Children”. The variable corresponds in the EVS for Spain to **x011** in 1990, **V90** in 1995 and **V56** in 2007. **VAR9**: “Female”. The variable corresponds in the EVS for Spain to **x001** in 1990, **V214** in 1995 and **V235** in 2007. **VAR10**: in AA it corresponds to “US resident”. In order to adapt it to the Spanish case, we have taken the answer to the question: “At which geographical group would you say that you belong to?”, with possible answers: (1) to the local entity/city where it lives, (2) to the regional area,

(3) Spain in general, (4) Europe, (5) the world. We argue that this gives a measure of how attached individuals feel with their local/regional area. Answers are recoded on a scale 0 to 1. The variable corresponds in the EVS for Spain to **g015** in 1990, **V203** in 1995 and **V211** in 2007. **VAR11**: “Age group 18-24”. The variable corresponds in the EVS for Spain to **x003** in 1990, **V216** in 1995 and **V237** in 2007. **VAR12**: “Age group 25-34”. The variable corresponds in the EVS for Spain to **x003** in 1990, **V216** in 1995 and **V237** in 2007. **VAR13**: “Age group 35-44”. The variable corresponds in the EVS for Spain to **x003** in 1990, **V216** in 1995 and **V237** in 2007. **VAR14**: “Age group 45-54”. The variable corresponds in the EVS for Spain to **x003** in 1990, **V216** in 1995 and **V237** in 2007. **VAR15**: “Age group 55-64”. The variable corresponds in the EVS for Spain to **x003** in 1990, **V216** in 1995 and **V237** in 2007. We incorporate a new variable that is not included in AA. **VAR16**: “Region where the survey was carried out” in Spain. This allows to introduce regional-fixed effects (for Spain). The variable corresponds in the EVS for Spain to **x048** in 1990, **V234** in 1995 and **V257** in 2007. We name: **VAR16 $i$**  with  $i = \text{AN, AR, AS, B, CAT, CANA, CANT, CASLE, CASLA, E, G, R, MA, MU, NA, PVAS, PVAL}$  to denote the fixed effects corresponding to Andalucía, Aragón, Asturias, Baleares, Cataluña, Canarias, Cantabria, Castilla-León, Castilla-La Mancha, Extremadura, Galicia, Rioja, Madrid, Murcia, Navarra, País Vasco and País Valenciano. We choose País Valenciano as our reference group. These regional fixed effects allow to support the hypothesis if some regions in Spain were more left or right-wing and if we find statistical evidence of that.

- We need also to incorporate the following variables to analyze the model of Alesina and Giuliano (2011, Table 7) and García-Valiñas, Fernández-Llera and Torgler (2008): **VAR17**: Preferences for redistribution. The variable corresponds in the EVS for Spain to **e037** in 1990, **V127** in 1995 and **V118** in 2007. Since in the EVS this variable takes values 1-10 (opposite to 1-5 in Alesina and Giuliano (2011)), we rescale the variable, as in AA for DEP, from 0 to 1, and we set 1 when the individual answered 5 or below. **VAR17\***: Incomes more equal. Variable used in García-Valiñas, Fernández-Llera and Torgler (2008) as a measure of preferences for redistribution. The variable corresponds in the EVS for Spain to **e035** in 1990, **V125** in 1995 and **V116** in 2007. **VAR18**: Fairness. The variable corresponds in the EVS for Spain to **a168** in 1990, **V27** in 1995 and **V47** in 2007. This variable also takes values 1-10 in the EVS in 2007. We set a value equal to 2 when the variable takes values 5 or below, and 1 otherwise, as in Alesina and Giuliano (2011). **VAR19**: Age. The variable corresponds in the EVS for Spain to **x003** in 1990, **V216** in 1995 and **V237** in 2007. **VAR20**: Unemployment. The variable corresponds in the EVS for Spain to **x028** in 1990, **V220** in 1995 and **V241** in 2007. **VAR21**: High School. The variable corresponds in the EVS for Spain **V217** in 1995 and **V238** in 2007. This variable is not available in Spain in 1990. **VAR22**: College and more. The variable corresponds in the EVS for Spain to **V217** in 1995 and **V238** in 2007. This variable is not available in Spain in 1990.

## 6 Appendix 2: Tables

Table 1: Descriptive statistics for Spain from the EVS in 1995 and 2007. SD denotes standard deviation

Variables	1995		2007	
	Mean	SD	Mean	SD
<b>Preferences for government redistribution</b>				
VAR17	0.642	0.480	0.681	0.466
<b>Preferences for income equality</b>				
VAR17*	0.467	0.499	0.443	0.497
<b>Being left on the political spectrum</b>				
DEP	0.704	0.457	0.735	0.441
<b>Aggregate belief</b>				
VAR1	0.431	0.275	0.419	0.210
<b>Geography / income</b>				
VAR2	0.311	0.030	0.244	0.014
VAR3	3.942	1.907	4.610	1.637
VAR4	5.379	2.229	3.909	2.050
<b>Socio-demography</b>				
VAR5	3.804	2.465	4.674	2.242
VAR6	0.989	0.107	–	–
VAR7	0.861	0.346	0.612	0.488
VAR8	2.552	1.446	1.493	1.391
VAR9	0.485	0.500	0.492	0.500
VAR10	0.398	0.237	0.415	0.145
VAR11	0.300	0.171	0.117	0.321
VAR12	0.152	0.360	0.182	0.386
VAR13	0.243	0.429	0.209	0.407
VAR14	0.173	0.379	0.170	0.376
VAR15	0.206	0.405	0.121	0.327
VAR19	–	–	45.956	17.866
VAR21	0.097	0.296	–	–
VAR22	0.151	0.358	–	–

Table 1: Descriptive statistics for Spain from the EVS in 1995 and 2007. SD denotes standard deviation

(continuation)

	1995		2007	
<b>Variables</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Regional fixed effects</b>				
VAR16AN	0.178	0.383	0.155	0.362
VAR16AR	0.028	0.164	0.026	0.158
VAR16AS	0.030	0.171	0.029	0.168
VAR16B	0.028	0.164	0.022	0.148
VAR16CAT	0.111	0.314	0.162	0.369
VAR16CANA	0.044	0.205	0.021	0.144
VAR16CANT	0.012	0.107	0.007	0.082
VAR16CASLE	0.067	0.250	0.068	0.252
VAR16CASLA	0.039	0.194	0.046	0.209
VAR16E	0.028	0.164	0.018	0.132
VAR16G	0.095	0.293	0.071	0.257
VAR16R	0.007	0.083	0.007	0.082
VAR16MA	0.148	0.355	0.154	0.361
VAR16MU	0.035	0.183	0.031	0.174
VAR16NA	0.019	0.135	0.011	0.105
VAR16PVAS	0.021	0.143	0.053	0.225
<b>Regional belief fixed effects</b>				
VAR1MA	0.064	0.194	–	–
VAR1NA	0.007	0.058	0.006	0.058
VAR1PVAS	0.009	0.068	–	–
VAR1G	–	–	0.035	0.133
VAR1CAT	–	–	0.076	0.194
VAR1CASLA	–	–	0.015	0.079

Table 2a: The effect of the belief that luck determines income on individual political orientation in Spain in 1995

<b>Dependent variable: Being left on the political spectrum</b>					
<b>Models</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Aggregate belief</b>					
VAR1	<b>-0.033 (-0.41)</b>	<b>-0.033 (-0.41)</b>	<b>-0.010 (-0.12)</b>	<b>-0.010 (-0.12)</b>	—
<b>Geography / income</b>					
VAR2	—	0.318 (0.41)	—	—	—
VAR3	-0.013 (-0.94)	-0.012 (-0.87)	-0.001 (-0.07)	—	—
VAR4	0.020 (1.92)*	0.020 (1.91)*	0.018 (1.72)*	0.021 (2.10)**	0.021 (2.10)**
<b>Socio-demography</b>					
VAR5	<b>-0.032 (-2.88)***</b>	<b>-0.033 (-2.90)***</b>	<b>-0.031 (-2.68)***</b>	<b>-0.026 (-2.81)***</b>	<b>-0.026 (-2.82)***</b>
VAR6	-0.112 (-0.55)	-0.124 (-0.60)	-0.088 (-0.41)	—	—
VAR7	-0.038 (-0.57)	-0.038 (-0.57)	-0.049 (-0.73)	—	—
VAR8	-0.019 (-1.10)	-0.018 (-1.05)	-0.018 (-1.05)	-0.030 (-1.98)**	-0.030 (-2.00)**
VAR9	-0.057 (-1.26)	-0.058 (-1.27)	-0.042 (-0.91)	—	—
VAR10	0.051 (0.53)	0.046 (0.47)	0.041 (0.40)	—	—
VAR11	0.013 (0.09)	0.014 (0.10)	-0.068 (-0.48)	—	—
VAR12	0.069 (0.83)	0.067 (0.80)	0.038 (0.45)	—	—
VAR13	0.118 (1.64)	0.116 (1.60)	0.074 (1.00)	—	—
VAR14	-0.032 (-0.42)	-0.035 (-0.47)	-0.046 (-0.62)	—	—
VAR15	0.011 (0.15)	0.008 (0.11)	-0.023 (-0.33)	—	—
<b>Constant</b>	0.950 (4.15)***	0.862 (2.77)***	0.958 (3.96)***	0.807 (9.86)***	0.803 (10.74)***
<b>R-squared</b>	0.05	0.05	0.09	0.05	0.07

Note: We report OLS estimates with t-statistics in parenthesis (\* significant at 10 percent; \*\* significant at 5 percent and \*\*\* significant at 1 percent). As in AA, Probit and Logit also give similar results than OLS.

Table 2a: The effect of the belief that luck determines income on individual political orientation in Spain in 1995

(continuation)

Dependent variable: Being left on the political spectrum					
Models	6	7	8	9	10
<b>Aggregate belief</b>					
VAR1	<b>-0.099 (-1.04)</b>	<b>-0.074 (-0.85)</b>	<b>-0.078 (-0.90)</b>	—	—
<b>Geography / income</b>					
VAR2	—	—	—	—	—
VAR3	-0.005 (-0.30)	—	—	—	—
VAR4	0.014 (1.24)	0.017 (1.69)*	0.021 (2.04)**	—	—
<b>Socio-demography</b>					
VAR5	<b>-0.030 (-2.64)***</b>	<b>-0.026 (-2.76)***</b>	<b>-0.028 (-2.99)***</b>	<b>-0.023 (-2.56)**</b>	<b>-0.020 (-2.24)**</b>
VAR6	-0.107 (-0.50)	—	—	—	—
VAR7	-0.058 (-0.86)	—	—	—	—
VAR8	-0.018 (-1.02)	-0.030 (-1.99)**	-0.030 (-1.95)*	-0.029 (-1.90)*	—
VAR9	-0.053 (-1.14)	—	—	—	—
VAR10	0.060 (0.60)	—	—	—	—
VAR11	-0.067 (-0.47)	—	—	—	—
VAR12	0.054 (0.63)	—	—	—	—
VAR13	0.090 (1.21)	—	—	—	—
VAR14	-0.040 (-0.54)	—	—	—	—
VAR15	-0.020 (-0.28)	—	—	—	—
<b>Constant</b>	1.061 (4.33)***	0.854 (10.03)***	0.827 (9.72)***	0.884 (14.53)***	0.797 (19.80)***
<b>R-squared</b>	0.03	0.07	0.05	0.04	0.03

Note: We report OLS estimates with t-statistics in parenthesis (\* significant at 10 percent; \*\* significant at 5 percent and \*\*\* significant at 1 percent). As in AA, Probit and Logit also give similar results than OLS.

Table 2a: The effect of the belief that luck determines income on individual political orientation in Spain in 1995

(continuation)

Dependent variable: Being left on the political spectrum					
Models	1	2	3	4	5
<b>Regional fixed effects</b>					
VAR16AN	—	—	-0.004 (-0.05)	—	—
VAR16AR	—	—	-0.245 (-1.66)*	—	—
VAR16AS	—	—	0.043 (0.30)	—	—
VAR16B	—	—	-0.063 (-0.43)	—	—
VAR16CAT	—	—	0.024 (0.25)	—	—
VAR16CANA	—	—	-0.031 (-0.25)	—	—
VAR16CANT	—	—	-0.220 (-1.02)	—	—
VAR16CASLE	—	—	-0.082 (-0.76)	—	—
VAR16CASLA	—	—	-0.070 (-0.52)	—	—
VAR16E	—	—	0.075 (0.50)	—	—
VAR16G	—	—	0.004 (0.04)	—	—
VAR16R	—	—	-0.074 (-0.25)	—	—
VAR16MA	—	—	<b>-0.163 (-1.82)*</b>	<b>-0.150 (-2.44)**</b>	<b>-0.151 (-2.44)**</b>
VAR16MU	—	—	-0.162 (-1.20)	—	—
VAR16NA	—	—	-0.329 (-1.85)*	-0.314 (-1.96)*	-0.314 (-1.96)*
VAR16PVAS	—	—	-0.390 (-2.33)**	-0.385 (-2.55)**	-0.385 (-2.56)**
<b>Regional belief fixed effects</b>					
VAR1MA	—	—	—	—	—
VAR1NA	—	—	—	—	—
VAR1PVAS	—	—	—	—	—

Note: We report OLS estimates with t-statistics in parenthesis (\* significant at 10 percent; \*\* significant at 5 percent and \*\*\* significant at 1 percent). As in AA, Probit and Logit also give similar results than OLS.



Table 2a: The effect of the belief that luck determines income on individual political orientation in Spain in 1995

(continuation)

Dependent variable: Being left on the political spectrum					
Models	6	7	8	9	10
<b>Regional fixed effects</b>					
VAR16AN	-0.014 (-0.17)	—	—	—	—
VAR16AR	-0.256 (-1.74)*	—	—	—	—
VAR16AS	0.025 (0.17)	—	—	—	—
VAR16B	-0.083 (-0.56)	—	—	—	—
VAR16CAT	0.002 (0.02)	—	—	—	—
VAR16CANA	-0.030 (-0.24)	—	—	—	—
VAR16CANT	-0.217 (-1.01)	—	—	—	—
VAR16CASLE	-0.094 (-0.87)	—	—	—	—
VAR16CASLA	-0.090 (-0.68)	—	—	—	—
VAR16E	0.056 (0.38)	—	—	—	—
VAR16G	-0.013 (-0.13)	—	—	—	—
VAR16R	-0.053 (-0.18)	—	—	—	—
VAR16MA	<b>-0.374 (-2.87)***</b>	<b>-0.317 (-2.95)***</b>	<b>-0.298 (-2.76)***</b>	<b>-0.278 (-2.72)***</b>	<b>-0.267 (-2.62)***</b>
VAR16MU	-0.172 (-1.28)	—	—	—	—
VAR16NA	-0.391 (-0.84)	-0.320 (-0.71)	—	—	—
VAR16PVAS	-0.193 (-0.54)	-0.195 (-0.57)	—	—	—
<b>Regional belief fixed effects</b>					
VAR1MA	<b>0.478 (2.23)**</b>	<b>0.392 (1.91)*</b>	<b>0.383 (1.85)*</b>	<b>0.371 (2.00)**</b>	<b>0.359 (1.93)*</b>
VAR1NA	0.125 (0.12)	-0.002 (-0.00)	—	—	—
VAR1PVAS	-0.483 (-0.65)	-0.456 (-0.63)	—	—	—

Note: We report OLS estimates with t-statistics in parenthesis (\* significant at 10 percent; \*\* significant at 5 percent and \*\*\* significant at 1 percent). As in AA, Probit and Logit also give similar results than OLS.

Table 2b: The effect of the belief that luck determines income on individual political orientation in Spain in 2007

Dependent variable: Being left on the political spectrum					
Models	1	2	3	4	5
<b>Aggregate belief</b>					
VAR1	<b>0.126 (1.83)*</b>	<b>0.121 (1.75)*</b>	<b>0.050 (0.72)</b>	<b>0.070 (1.03)</b>	—
<b>Geography / income</b>					
VAR2	—	-1.299 (-1.21)	—	—	—
VAR3	<b>-0.044 (-4.40)***</b>	<b>-0.045 (-4.48)***</b>	<b>-0.053 (-5.11)***</b>	<b>-0.049 (-5.32)***</b>	<b>-0.048 (-5.30)***</b>
VAR4	-0.004 (-0.60)	-0.003 (-0.47)	-0.002 (-0.23)	—	—
<b>Socio-demography</b>					
VAR5	0.012 (1.55)	0.012 (1.49)	0.011 (1.39)	—	—
VAR6	—	—	—	—	—
VAR7	0.012 (0.36)	0.016 (0.46)	0.016 (0.46)	—	—
VAR8	-0.018 (-1.36)	-0.019 (-1.40)	-0.019 (-1.40)	—	—
VAR9	0.032 (1.10)	0.032 (1.11)	0.025 (0.89)	—	—
VAR10	-0.230 (-2.30)**	-0.220 (-2.18)	-0.160 (-1.55)	—	—
VAR11	<b>0.204 (3.25)***</b>	<b>0.205 (3.28)***</b>	<b>0.208 (3.36)***</b>	<b>0.259 (4.92)***</b>	<b>0.260 (4.93)***</b>
VAR12	<b>0.173 (3.22)***</b>	<b>0.174 (3.23)***</b>	<b>0.214 (4.00)***</b>	<b>0.261 (5.62)***</b>	<b>0.263 (5.67)***</b>
VAR13	<b>0.128 (2.56)**</b>	<b>0.126 (2.52)**</b>	<b>0.126 (2.56)**</b>	<b>0.160 (3.54)***</b>	<b>0.162 (3.59)***</b>
VAR14	<b>0.124 (2.48)**</b>	<b>0.123 (2.46)**</b>	<b>0.126 (2.57)***</b>	<b>0.146 (3.08)***</b>	<b>0.148 (3.11)***</b>
VAR15	<b>0.146 (2.73)***</b>	<b>0.145 (2.72)***</b>	<b>0.156 (3.00)***</b>	<b>0.162 (3.17)***</b>	<b>0.163 (3.19)***</b>
<b>Constant</b>	0.825 (9.82)***	1.141 (4.15)***	0.810 (8.68)***	0.759 (14.05)***	0.785 (16.41)***
<b>R-squared</b>	0.06	0.06	0.13	0.11	0.11

Note: We report OLS estimates with t-statistics in parenthesis (\* significant at 10 percent; \*\* significant at 5 percent and \*\*\* significant at 1 percent). As in AA, Probit and Logit also give similar results than OLS.

Table 2b: The effect of the belief that luck determines income on individual political orientation in Spain in 2007

(continuation)

Dependent variable: Being left on the political spectrum					
Models	6	7	8	9	10
<b>Aggregate belief</b>					
VAR1	<b>0.067 (0.82)</b>	<b>0.084 (1.23)</b>	<b>0.076 (1.11)</b>	–	–
<b>Geography / income</b>					
VAR2	–	–	–	–	–
VAR3	<b>-0.053 (-5.10)***</b>	<b>-0.038 (-4.18)***</b>	<b>-0.039 (-4.35)***</b>	<b>-0.038 (-4.17)***</b>	<b>-0.039 (-4.33)***</b>
VAR4	-0.002 (-0.26)	–	–	–	–
<b>Socio-demography</b>					
VAR5	0.011 (1.39)	–	–	–	–
VAR6	–	–	–	–	–
VAR7	0.019 (0.53)	–	–	–	–
VAR8	-0.019 (-1.42)	–	–	–	–
VAR9	0.027 (0.93)	–	–	–	–
VAR10	-0.159 (-1.54)	-0.210 (-2.14)**	–	-0.209 (-2.08)**	–
VAR11	<b>0.207 (3.34)***</b>	<b>0.258 (4.85)***</b>	<b>0.257 (4.82)***</b>	<b>0.259 (4.86)***</b>	<b>0.258 (4.83)***</b>
VAR12	<b>0.215 (4.00)***</b>	<b>0.235 (5.05)***</b>	<b>0.235 (5.04)***</b>	<b>0.239 (5.12)***</b>	<b>0.238 (5.11)***</b>
VAR13	<b>0.124 (2.50)**</b>	<b>0.163 (3.58)***</b>	<b>0.160 (3.52)***</b>	<b>0.166 (3.65)***</b>	<b>0.163 (3.58)***</b>
VAR14	<b>0.124 (2.52)**</b>	<b>0.139 (2.91)***</b>	<b>0.140 (2.92)***</b>	<b>0.141 (2.94)***</b>	<b>0.142 (2.96)***</b>
VAR15	<b>0.155 (2.97)***</b>	<b>0.154 (2.97)***</b>	<b>0.156 (3.00)***</b>	<b>0.155 (3.00)***</b>	<b>0.157 (3.03)***</b>
<b>Constant</b>	0.803 (8.46)***	0.775 (12.05)***	0.698 (13.07)***	0.804 (13.44)***	0.726 (15.52)***
<b>R-squared</b>	0.13	0.09	0.08	0.07	0.09

Note: We report OLS estimates with t-statistics in parenthesis (\* significant at 10 percent; \*\* significant at 5 percent and \*\*\* significant at 1 percent). As in AA, Probit and Logit also give similar results than OLS.

Table 2b: The effect of the belief that luck determines income on individual political orientation in Spain in 2007

(continuation)

Dependent variable: Being left on the political spectrum					
Models	1	2	3	4	5
<b>Regional fixed effects</b>					
VAR16AN	—	—	0.040 (0.73)	—	—
VAR16AR	—	—	-0.095 (-0.97)*	—	—
VAR16AS	—	—	0.133 (1.45)	—	—
VAR16B	—	—	0.135 (1.30)	—	—
VAR16CAT	—	—	<b>0.235 (4.33)***</b>	<b>0.209 (5.41)***</b>	<b>0.214 (5.56)***</b>
VAR16CANA	—	—	0.095 (0.89)	—	—
VAR16CANT	—	—	-0.178 (-1.00)	—	—
VAR16CASLE	—	—	0.069 (1.01)	—	—
VAR16CASLA	—	—	-0.181 (-2.32)**	-0.219 (-3.22)***	-0.224 (-3.30)***
VAR16E	—	—	0.033 (0.29)	—	—
VAR16G	—	—	-0.137 (-1.96)**	-0.184 (-3.24)***	-0.178 (-3.15)***
VAR16R	—	—	-0.004 (-0.02)	—	—
VAR16MA	—	—	0.024 (0.43)	—	—
VAR16MU	—	—	-0.140 (-1.56)	—	—
VAR16NA	—	—	0.386 (2.74)***	0.364 (2.69)***	0.374 (2.77)***
VAR16PVAS	—	—	0.105 (1.43)	—	—
<b>Regional belief fixed effects</b>					
VAR1CAT	—	—	—	—	—
VAR1CASLA	—	—	—	—	—
VAR1G	—	—	—	—	—
VAR1NA	—	—	—	—	—

Note: We report OLS estimates with t-statistics in parenthesis (\* significant at 10 percent; \*\* significant at 5 percent and \*\*\* significant at 1 percent). As in AA, Probit and Logit also give similar results than OLS.

Table 2b: The effect of the belief that luck determines income on individual political orientation in Spain in 2007  
(continuation)

Dependent variable: Being left on the political spectrum					
Models	6	7	8	9	10
<b>Regional fixed effects</b>					
VAR16AN	0.039 (0.71)	—	—	—	—
VAR16AR	-0.095 (-0.98)	—	—	—	—
VAR16AS	0.132 (1.43)	—	—	—	—
VAR16B	0.133 (1.27)	—	—	—	—
VAR16CAT	<b>0.241 (2.50)**</b>	<b>0.228 (5.91)***</b>	<b>0.230 (5.94)***</b>	<b>0.233 (6.07)***</b>	<b>0.234 (6.09)***</b>
VAR16CANA	0.096 (0.89)	—	—	—	—
VAR16CANT	-0.177 (-1.00)	—	—	—	—
VAR16CASLE	0.070 (1.01)	—	—	—	—
VAR16CASLA	-0.170 (-1.16)	—	—	—	—
VAR16E	0.034 (0.29)	—	—	—	—
VAR16G	0.001 (0.01)	—	—	—	—
VAR16R	-0.001 (-0.01)	—	—	—	—
VAR16MA	0.023 (0.41)	—	—	—	—
VAR16MU	-0.138 (-1.53)	—	—	—	—
VAR16NA	0.563 (0.61)	—	—	—	—
VAR16PVAS	0.104 (1.41)	—	—	—	—
<b>Regional belief fixed effects</b>					
VAR1CAT	-0.016 (-0.09)	—	—	—	—
VAR1CASLA	-0.033 (-0.09)	—	—	—	—
VAR1G	-0.288 (-0.82)	—	—	—	—
VAR1NA	-0.325 (-0.20)	—	—	—	—

Note: We report OLS estimates with t-statistics in parenthesis (\* significant at 10 percent; \*\* significant at 5 percent and \*\*\* significant at 1 percent). As in AA, Probit and Logit also give similar results than OLS.

Table 3a: The effect of the belief that luck determines income on being left on the political spectrum (DEP), income distribution (VAR17\*) and government distribution (VAR17) in Spain in 1995

Dependent variable						
Models	VAR17	VAR17*	VAR17	DEP	VAR17	VAR17*
VAR17*	–	–	<b>0.193</b> <b>(5.13)***</b>	–	–	–
VAR17	–	–	–	–	–	–
DEP	<b>0.078</b> <b>(1.86)*</b>	<b>0.370</b> <b>(10.11)***</b>	–	–	–	–
<b>Aggregate belief</b>						
VAR1	–	–	–	<b>0.003</b> <b>(0.65)</b>	<b>-0.012</b> <b>(-2.84)***</b>	<b>0.005</b> <b>(1.21)</b>
<b>Socio-demography</b>						
VAR21	–	–	–	<b>0.105</b> <b>(1.71)*</b>	<b>-0.036</b> <b>(-0.56)</b>	<b>-0.137</b> <b>(-2.04)</b>
VAR22	–	–	–	<b>-0.086</b> <b>(-1.68)*</b>	<b>-0.113</b> <b>(-2.10)**</b>	<b>-0.239</b> <b>(-4.28)**</b>
<b>Regional belief fixed effects</b>						
VAR16MA	–	–	–	<b>-0.276</b> <b>(-3.06)***</b>	<b>-0.167</b> <b>(-1.75)*</b>	<b>-0.075</b> <b>(-0.76)</b>
VAR1MA	–	–	–	<b>0.034</b> <b>(2.17)**</b>	<b>0.015</b> <b>(0.89)</b>	<b>0.015</b> <b>(0.94)</b>
<b>Constant</b>	0.587 <b>(16.63)***</b>	0.369 <b>(10.11)***</b>	0.552 <b>(21.49)***</b>	0.715 <b>(24.89)***</b>	0.733 <b>(24.16)***</b>	0.492 <b>(15.69)***</b>
<b>R-squared</b>	0.005	0.016	0.040	0.029	0.026	0.038

Note: We report OLS estimates with t-statistics in parenthesis (\* significant at 10 percent; \*\* significant at 5 percent and \*\*\* significant at 1 percent). As in AA, Probit and Logit also give similar results than OLS.

Table 3b: The effect of the belief that luck determines income on being left on the political spectrum (DEP), income distribution (VAR17\*) and government distribution (VAR17) in Spain in 2007

Dependent variable						
Models	VAR17	VAR17*	VAR17	DEP	VAR17	VAR17*
VAR17*	–	–	<b>0.370</b> <b>(13.00)***</b>	–	–	–
VAR17	–	–	–	–	–	–
DEP	<b>0.058</b> <b>(1.68)*</b>	<b>0.068</b> <b>(1.85)*</b>	–	–	–	–
<b>Aggregate belief</b>						
VAR1	–	–	–	0.005 (0.69)	-0.058 (-7.52)***	-0.046 (-5.34)***
<b>Geography / income</b>						
VAR3	–	–	–	<b>-0.044</b> <b>(-5.07)***</b>	<b>-0.043</b> <b>(-4.68)***</b>	<b>-0.044</b> <b>(-4.44)***</b>
<b>Socio-demography</b>						
VAR19	–	–	–	<b>-0.004</b> <b>(-5.53)***</b>	<b>-0.001</b> <b>(-0.89)</b>	<b>0.001</b> <b>(0.96)</b>
VAR19 squared	–	–	–	–	–	–
<b>Regional belief fixed effects</b>						
VAR16CAT	–	–	–	<b>0.212</b> <b>(2.44)**</b>	<b>-0.234</b> <b>(-2.58)**</b>	<b>-0.279</b> <b>(-2.86)***</b>
VAR1CAT	–	–	–	<b>0.005</b> <b>(0.30)</b>	<b>0.033</b> <b>(1.84)*</b>	<b>0.030</b> <b>(1.52)</b>
<b>Constant</b>	0.639 (21.63)***	0.394 (12.51)***	0.517 (27.24)***	1.078 (15.67)***	1.169 (16.29)***	0.814 (10.53)***
<b>R-squared</b>	0.003	0.004	0.156	0.07	0.09	0.07

Note: We report OLS estimates with t-statistics in parenthesis (\* significant at 10 percent; \*\* significant at 5 percent and \*\*\* significant at 1 percent). As in AA, Probit and Logit also give similar results than OLS.

## 7 References

- Akkoyunlu, S., I. Neustadt, and P. Zweifel (2009), Why Does the Amount of Income Redistribution Differ between United States and Europe? *The Janus Face of Switzerland. SOI Working Paper No. 0810*, University of Zurich, Socioeconomic Institute.
- Alesina, A. (2001), The Political Economy of the Budget Surplus in the United States: Response, *Journal of Economic Perspectives*, American Economic Association 15, 4, 221-221.

- Alesina, A. and G.-M. Angeletos (2005), Fairness and Redistribution, *The American Economic Review* 95, 4, 960-980.
- Alesina, A. and E. Glaeser (2004), *Fighting Poverty in the US and Europe*, Oxford University Press.
- Alesina, A., E. Glaeser and B. Sacerdote (2001), Why Doesn't the United States Have a European-Style Welfare State?, *Brooking Papers on Economic Activity* 2, 187-277.
- Alesina, A. and E. La Ferrara (2005), Preferences for Redistribution in the Land of Opportunities, *Journal of Public Economics* 89, 5-6, 897-931.
- Alesina, A. and P. Giuliano (2011), Preferences for Redistribution, in A. Bisin and J. Benhabib (eds.) *Handbook of Social Economics*, North Holland, Ch.4, 93-132.
- Aspachs-Bracons, O., I. Clots-Figueras, J. Costa-Font and P. Masella (2008), Compulsory Language Educational Policies and Identity Formation, *Journal of the European Economic Association* 6, 2-3, 434-444.
- Beck, J. (1994), An Experimental Test of Preferences for the Distribution of Income and Individual Risk Aversion, *Eastern Economic Journal* 20, 2, 131-145.
- Bénabou, R. and J. Tirole (2005), Belief in a Just World and Redistributive Politics, *CEPR Discussion Papers 4952*, *C.E.P.R. Discussion Papers*.
- Blekesaune, M. (2007), Economic Conditions and Public Attitudes to Welfare Policies, *European Sociological Review* 23, 3, 393-403.
- Cabrales, A., R. Nagel and J. V. Rodríguez-Mora (2012), It is Hobbes, Not Rousseau: An Experiment in Social Insurance, *Experimental Economics*, forthcoming.
- Cañón, L. A., A. J. Málaga y F. P. Chaparro (2005), Desigualdad y Bienestar en la Distribución Intraterritorial de la Renta, 1973-2000, *Working Paper Series, P. T. N.o 6/05*, *Papeles de Trabajo del Instituto de Estudios Fiscales*.
- Fatás, A. (1997), EMU: countries or regions? Lessons from the EMS experience, *European Economic Review* 41, 3-5, 743-751.
- Feld, L. P., J. A. Fischer and G. Kirchgaessner (2007), The Effect of Direct democratic Institutions on Income Redistribution: Evidence for Switzerland, *Working Paper Series in Economics and Finance* 689, Stockholm School of Economics.
- Fischer, J. A. V. (2008), Is Competition Good for Trust? Cross-Country Evidence using Micro-Data, *Economics Letters* 100, 56-59.
- Fong, C., S. Bowles and H. Gintis (2006), Strong Reciprocity and the Welfare State, *Handbook of the Economics of Giving, Altruism and Reciprocity*, Vol. 2, Ch. 23, Elsevier.
- Fong, C. M., and E.F.P. Luttmer (2009), What Determines Giving to Hurricane Katrina Victims? Experimental Evidence on Racial Group Loyalty, *American Economic Journal: Applied Economics* 1, 64-87.
- Fortin, N. M. (2005), Gender Role Attitudes and the Labour-Market Outcomes of Women Across OECD Countries, *Oxford Review of Economic Policy* 21, 3, 416-438.



- García-Valiñas, M. A., R. Fernández-Llera and B. Torgler (2008), More Income Equality or Not? An Empirical Analysis of Individuals' Preferences for Redistribution, *Discussion Paper and Working Paper Series #226*. Queensland University of Technology, School of Economics and Finance.
- Gardeazabal, J. and A. Abadie (2003), The Economic Costs of Conflict: A Case Study of the Basque Country, *American Economic Review* 93, 1, 113-132.
- Guiso, L., P. Sapienza and L. Zingales (2003), People's Opium? Religion and Economic Attitudes, *Journal of Monetary Economics* 50, 225-282.
- Hirschman, A. O. and M. Rothschild (1973), The Changing Tolerance for Income Inequality in the Course of Economic Development, *The Quarterly Journal of Economics* 87, 4, 544-566.
- Iglesias-Fernández, C., R. Llorente-Heras and D. Dueñas-Fernández (2009), La Segregación Laboral for Razón de Género en España: In Análisis Regional, *VIII Jornadas de Economía Laboral*.
- Izquierdo, M. and A. Lacuesta (2007), Wage Inequality in Spain, Recent Developments, *Working Paper Series, No 781*, European Central Bank.
- Landier, A., D. Thesmar and M. Thoenig (2008), Investigating Capitalism Aversion, *Economic Policy* 23, 7, 465-497.
- Luttmer, E. F. P. (2001), Group Loyalty and Taste for Redistribution, *Quarterly Journal of Economics* 109, 3, 500-528.
- Piketty, T. (1995), Social Mobility and Redistributive Politics, *The Quarterly Journal of Economics* 110, 3, 551-84.
- Rey-Biel, P., R. Sheremeta and N. Uler (2011), (Bad) Luck or (Lack of) Effort?: Comparing Social Sharing Norms between US and Europe, *Barcelona GSE Working Papers Series n.584*
- Rossana, R. J. and J. J. Seater (1995), Temporal Aggregation and Economic Time Series, *Journal of Business and Economic Statistics* 13, 4, 441-451.
- Torgler, B. and M. A. García-Valiñas (2007), The Determinants of Individuals' Attitudes towards Preventing Environmental Damage, *Ecological Economics* 63, 536-552.
- Wooldridge, Jeffrey M. (2008), *Introductory Econometrics: A Modern Approach*, 4th Edition, South-Western College.