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Do Politicians Serve the One Percent?
Evidence in OECD Countries.

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Abstract

Present social movements, as "Occupy Wall Street" or the Spanish "Indignados", claim that politicians work for an economic elite, the 1%, that drives the world economic policies. In this paper we show through econometric analysis that these movements are accurate: politicians in OECD countries maximize the happiness of the economic elite. In 2009 center-right parties maximized the happiness of the 100th-98th richest percentile and center-left parties the 100th-95th richest percentile. The situation has evolved from the seventies when politicians represented, approximately, the median voter.

Keywords: *Democracy, representation, economic elite, political economy, Occupy Wall-Street.*

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INTRODUCTION:

The financial crisis which had broke out in the USA in 2007 turned into a world wide economic disaster by 2008. That year, thousands of citizens from Greece, Portugal and Iceland expressed their anger against politicians and their economic management. Three years later, and with the Arab spring in between, around 7 millions of Spanish “indignados” started a massive demonstration campaign. By September 2011, the outrage against politicians had already crossed the Atlantic and the “Occupy Wall-Street” movement claimed for a refunding of the economic and political system in the USA.

Civil society from all OECD countries participated in a world-wide coordinated demonstration on 15th October 2011. Their activists claimed that they are not enjoying real democratic systems. They complained that politicians do not follow the wishes of the majority but the dictates of an economic elite, and considered that their politicians were excluding the remaining 99% of the population.

These movements are inspired by the work of several researchers (eg. Sirorta 2007, Taibbi 2010, George 2011, or Stiglitzt 2011) who suggest that political parties in developed societies are not any longer a fair representation of the citizens' wills but an instrument of the rich. For instance, Colin Crouch claims in his book 'Post-democracy' (Crouch, 2004) that developed countries enjoy only pseudo-democratic regimes as they lack truly representative elections. Crouch considers that this evolution is due the relative impoverishment of the workforce and labor unions after the seventies as a main cause of this situation. Another researcher Slavov Žižek, suggests that ecological disasters are not the only occurrences that may be used to impose the rule of the economic elite, as theorized by Naomi Klein (Klein 2007). The economic crisis itself can be instrumented to set economic rules which favor the interests of the richest (Žižek 2009).

Economic journals are full with papers which explain how interest groups can take advantages of a large variety of undemocratic channels. Democratic deficits are linked with the action of lobbies (Fellini and Merlo 2003, or Baldwin and Robert-Nicoud, 2007.), media (Prat and Strömberg, 2011 or Edmond, 2011), public prosecution (Alt and Lassen, 2010 or Torija 2011), rent extraction (Dreher and Schneider, 2010. or Ferraz and Finan, 2011.), etc... Researches who have studied these aspects in depth found out that many of them directly affect OECD democracies.

On the other hand, several important research institutes share a totally different view. Freedom House (FH), National Center of Competence in Research (NNCR), Centre

for Systemic Peace (CSP), and the Worldwide Governance Indicators project (WGI) create annual indexes and reports about the democratic quality of the developed world. All their indexes use several panels of experts and statistical data, and they coincide on the strength and robustness of the democratic systems in all OECD countries.

For instance, according to FH “it is unlikely that Europe’s democratic standards will suffer serious setbacks in the wake of the ongoing debt crisis” (Freedom House 2012). NNCR similarly concludes in one of its reports: “Contrary to the contemporary political discourse, the results show that there is no evidence of an overall crisis or a decline in the quality of democracy” (Bühlmann, M. et al, 2011). From a quantitative point of view, they show an improvement in the quality of democratic representation of OECD countries during the period 1990 -2007.

Another index which has quantified the quality of developed democracies for a long period is Polit IV from CSP. The index has a 20 point scale and it has continually increased for OECD countries from 1981 till 2009, with the exception of Belgium that lost two points due to problems in forming a government. Finally, WGI finds slight decreases in both “Voice and Accounting” and “Goverment Effectivenes” indexes for the period 1996-2009 in OECD countries, but these reductions are statistically insignificant (Kaufmann, Kraay and Mastruzzi, 2009).

These examples illustrate the important divergences between several institutes, authors and citizens when talking about the quality of democracy. This paper aims to be a contribution to the debate.

Concretely, the paper will try to describe the level of representation of developed democracies and analyze the validity of the theories of Collin Crouch. The paper will study whether parties in government satisfy the desires of the majority of the society or if they focus on the interest of the rich. It shows the evolution of the political representation and it also discusses the correlations between the level of representation and the power of the working-class.

To do so, we will combine the information about happiness and income of individuals from the World Values Survey (World Values Survey 2009) and the The Mannheim Eurobarometer Trend File 1970-1999 (Schmitt. 2001) with the Potrafke's ideology index, which shows the ideology of a given government in a particular country (Potrafke, 2009). The final database covers 1981 to 2009 and uses more than 160,000 surveys on 24 rich OECD countries. Through econometric analysis, we can analyze how the interests of particular citizens are fulfilled by politicians. We will show how the policies

implemented by different governments evolved and how they maximize the happiness of the economic elite in 2009. Through extrapolation we can show also how politicians represented the median voter around the seventies.

The paper is organized as follows. First, we explain the theory of post-democracy and we synthesize the ideas of Acemoglu and Robinson (2006) who modeled it in economic terms. In section 2, we describe the econometric model, its characteristics and the variables used. The results are presented in section 3 and they are discussed in section 4. At the end, we include a conclusion section that summarizes the paper.

SECTION 1: THEORY

1.1 Post-democracy

Collin Crouch summarized in his book “Post-democracy” several years of research in Northern democracies. According to the author, the power of the working-class in rich countries has evolved in a parabolic way. After the Second World War their power was in a minimum, but workers started to gain power and representation during two or three decades reaching their peak in the seventies. By that time, they had managed to bring their political agendas to different governments. Those governments implemented Keynesian policies which robust the access of workers to public and private goods. The situation started to change in the seventies when the companies displaced the activities of manual workers to the periphery. Little by little, all governments shifted their policies to favor large transnational corporations. The labor unions were weakened and the power of workers declined.

The quality of democratic representation also evolved in a parabolic trajectory. In the seventies, different parties favored different individuals according to the party's ideological background, but this situation changed later. According to the author, politicians only represent the economic elite now-a-days. Therefore. elections certainly occur in rich countries but they lack real representation.

1.2 Modeling post-democracy

Acemoglu and Robinson wrote in their paper “Persistence of powers, elites and institutions” (Acemoglu and Robinson 2006), a mathematical model which fits with the theory exposed by Crouch. We will try to summarize the intuition behind this paper:

In their model there is a large number of worker-citizens and smaller group of elite-individuals. Both groups compete to establish economic institutions which might favor one

group or the other. The authors analyze the existence of a “captured democracy”, when democratic institutions are created but the economic elite is able to monitor them and impose their favorite set of economic institutions. Whether the elite is able to capture the democratic process is a bargaining process between their power, P^E, and the power of the worker-citizens, P^C. In their model the power of the elite is a positive function of the rents that they extract from the total national rent $P^E = f(R/Y)$ and the power of the workers is a positive function of their contributions to obtain political power $P^C = f(\theta)$. The democratic institutions would favor the economic elite when $P^E >> P^C$.

As we see, there are many similarities between this model and the ideas presented by Crouch: The possibility of existing unrepresentative democracies and the role of the power of the working-class. Both studies propose an interesting empirical question: the existence of political institutions which benefit the economic elite is correlated with the rents of this elite and the contributions of workers to the bargaining power.

Although Acemoglu and Robinson do not use their model to analyze the situation of rich countries, we will use their theoretical framework for empirical research in OECD countries. Namely, we will consider the percentage of national rents as wages and the percentage of workers in labor unions to measure the political power of elite and the contributions of workers to the political bargain. We will analyze whether these variables are correlated with the quality of representation in OECD democracies.

SECTION 2: METHODOLOGY

2.1 Estimation of political representation

The first step is to measure the quality of political representation. We will try to quantify the income level of the individual which different political parties are representing. Whether she is a rich individual, the median individual or a poor individual. The econometric regression is inspired in the traditional downsian model (Downs, 1957). Using the notation of Patty, Snyder, and Ting (2008):

Let be K political parties that must choose a policy x_k which they will implement if they are in power. x_k is characterized in the set of real numbers X.

There is a number N of i voters. Each voter has an income y_i and a favorite policy, $\tau_{i,}$ related to this income. The function h identifies this relation, $h(y_i) = \tau_i$. The set of τ_i is $T = X$.

The utility of the voters is given by a function of their income $f(y_i)$ and the distance between their preferred policy and x_k the policy selected by the party k in government:

$$u_i (\tau_i , x_k) = f(y_i) - \Omega_k \cdot (\tau_i - x_k)^2$$

Where Ω_k is a dummy variable which is equal to 1 if party k is in power and 0 otherwise. According to Downs, it may be the case that all the political parties will converge to the preferred policy of the median voter and $x_k = x$. The intuition of the model can be seen in the next graph:

<<GRAPH 1>>

2.2 Econometric model

The paper will try to identify the positions of the K parties in the X set. We start by grouping the positions of the K parties in different ideology families:

$$K = IDEO = \{ \text{Right, Center-Right, Center, Center-Left, Left} \}$$

Let's assume the linear transformation $\tau_i = d \cdot y_i$ and $f(y_i) = a \cdot y_i + b \cdot y^2_i$:

$$u_i (y_i , x_k) = a \cdot y_i + b \cdot y^2_i - \Omega_k \cdot (d \cdot y_i - x_k)^2$$

The aim is to find the level of y that maximizes the second part of the last part of the equation for the different K ideologies once they are in power. We define this level as y_k^*. Even if d and x_k are unobservable, it is still possible to compute y_k^* but first we have to estimate the function:

$$u_{i,c,t} = \beta_0 + \beta_1 \cdot y_{i,c,t} + \beta_2 \cdot y^2_{i,c,t} + \beta_{k,3} \cdot \Omega_k + \beta_{k,4} \cdot \Omega_k \cdot y_{i,c,t} + \beta_{k,5} \cdot \Omega_k \cdot y^2_{i,c,t} + \gamma \cdot M_{i,c,t} + e_{i,c,t}$$

where M is a set of controls e the error term, and the sub-indexes c and t account for country and time, respectively.

We can imagine that richer individuals have more utility in general. That part of the theoretical model will be estimated with $f(y) = \beta_1 \cdot y_{i,c,t} + \beta_2 \cdot y^2_{i,c,t}$

We define the rest of the equation as PU_k. Namely, the utility provided by the party k when she is in power:

$$PU_k = \beta_{k,3} \cdot \Omega_k + \beta_{k,4} \cdot \Omega_k \cdot y_{i,c,t} + \beta_{k,5} \cdot \Omega_k \cdot y^2_{i,c,t}$$

In the database we have observations for Center-Right (CR), Center (C) and Center-Left. Therefore we could expand the previous function as:

$$PU_k = \beta_{CR,3} \cdot \Omega_{CR} + \beta_{CR,4} \cdot \Omega_{CR} \cdot y_{i,c,t} + \beta_{CR,5} \cdot \Omega_{CR} \cdot y^2_{i,c,t} +$$
$$\beta_{C,3} \cdot \Omega_C + \beta_{C,4} \cdot \Omega_C \cdot y_{i,c,t} + \beta_{C,5} \cdot \Omega c \cdot y^2_{i,c,t} +$$

$$\beta_{CL,3} \cdot \Omega_{CL} + \beta_{CL,4} \cdot \Omega_{CL} \cdot y_{i,c,t} + \beta_{CL,5} \cdot \Omega_{CL} \cdot y^2_{i,c,t} +$$

then, we can find the level of income that maximize each k = {CR, C, CL} political party by applying the first order condition to PU_k:

$$y_k^*: \partial PU_k / \partial y = 0$$

$$y_k^* = - \beta_{k,4} / (2 \cdot \beta_{k,5})$$

In this way we could identify the different y_k^*, which is the aim of the paper. Unfortunately, this procedure generates serious problems with the brant-test (see Section 2.4) and alternatives must be considered.

Concretely, to overcome this problem we have assigned numeric values for the different *K* ideologies. We have created a new variable called *ideo,* which is equal to one if Right parties are in government, two if Center-Right parties are in government, etc:

$$ideo = \{1,2,3,4,5\}$$

We have restated the previous model as:

$$u_i (y_i , x_k) = a \cdot y_i + b \cdot y^2_i - (ideo + ideo^2) \cdot (d \cdot y_i - x_k)^2$$

and we can estimate it:

$$u_{i,c,t} = \beta_0 + \beta_1 \cdot y_{i,c,t} + \beta_2 \cdot y^2_{i,c,t} + \beta_3 \cdot ideo_{ct} + \beta_4 \cdot ideo^2_{ct} + \beta_5 \cdot ideo_{ct}\, y_{i,c,t} + \beta_6 \cdot ideo_{ct} \cdot y^2_{i,c,t} + \beta_7 \cdot ideo^2_{ct} \cdot y_{i,c,t} + \gamma \cdot M_{i,c,t} + e_{i,c,t}$$

This econometric model will also identify the y_{ideo}^*. In order to help the reader with the understanding of the model, we will show a graphical representation of the role played by each variable:

<< GRAPH 2>>

We can see the function that links income with utility without political action *f(y)* and three possible parabolic lines for three different values of ideology. The *y**(*ideo*) are the values that maximize each different political party. Deliberately, we have omitted the variable $ideo^2 \cdot y^2$ but we will explain this decision later.

We estimate the values of y_{ideo}^*, first by defining the function PU_{ideo} as:

$$PU_{ideo} = \beta_3 \cdot ideo_{ct} + \beta_4 \cdot ideo^2_{ct} + \beta_5 \cdot ideo_{ct} \cdot y_{i,c,t} + \beta_6 \cdot ideo_{ct} \cdot y^2_{i,c,t} + \beta_7 \cdot ideo^2_{ct} \cdot y_{i,c,t}$$

and solving

$$y^*(ideo): \partial PU_{ideo} / \partial y = 0$$

we obtain:

$$y^*(ideo) = -(\beta_5 + \beta_7 \cdot ideo)/(2 \cdot \beta_6)$$

There are two important notes to this formulation. First, the inclusion of the variable $ideo^2$ in $u_i(y_i, x_k) = a \cdot y_i + b \cdot y^2_i - (ideo + ideo^2) \cdot (d \cdot y_i - x_k)^2$ is necessary in order to obtain different peaks for different ideologies. And second, it is important to notice that here the distance $y^*(ideo) - y^*(ideo+1) = \beta_7$ is constant for all values of *ideo*. We have called this assumption the symmetry-assumption and we have discussed it in detail later on.
Obviously, if $\beta_7 = 0$, then $y^*(ideo) = y^*$

We can extend the empirical model to analyze how y^* evolves across time, and due to the effect of other variables. Given:

$$F(y, ideo) = \beta_1 \cdot y_{i,c,t} + \beta_2 \cdot y^2_{i,c,t} + \beta_3 \cdot ideo_{ct} + \beta_4 \cdot ideo^2_{ct} + \beta_5 \cdot ideo_{ct}\, y_{i,c,t} + \beta_6 \cdot ideo_{ct} \cdot y^2_{i,c,t} + \beta_7 \cdot ideo^2_{ct} \cdot y_{i,c,t}$$

We will calculate:

$$u_{i,c,t} = F(y, ideo) + \delta \cdot t_{i,c,t} \cdot ideo_{ct} \cdot y_{i,c,t} + \eta \cdot P \cdot ideo_{ct} \cdot y_{i,c,t} + \gamma \cdot M_{i,c,t} + e_{i,c,t}$$

where: *t* is a year variable. *P* is a vector with values for the macro-economic variables of interest: The percentage of national rent paid as wages (*wagessh*), and participation in labor unions (*labor*).

We have also added other control variables that interact simultaneously with ideology and income, namely: Gini index (*gini*), GDP per capita (*gdp*), unemployment (*unemp*), turnout in the last elections (*turnout*), economic growth (*growth*), percentage of population with colleague education (*unieduc*). *M* will include the interactions between variables *t* and *P* with *ideo* and *income*.

The new y^* are defined by:

$$y^*(ideo) = -(\beta_5 + \beta_7 \cdot ideo_{c,t} + \delta \cdot t_{i,c,t} + \eta \cdot P)/(2 \cdot \beta_6)$$

Now, time (*t*) and the set of macro-economic variables (*P*) determine also the platform of the different parties when they are in government.

2.3 Independent Variables

The period of study goes from 1981 till 2009. There is a total of 24 OECD countries analyzed. Some countries have been surveyed twice and present around 2.000 observations (eg. New Zealand), and some of them have been surveyed ten times (eg. Great Britain). It is possible to find a list of years and when where they surveyed in the appendixes (APPENDIX 1).

Income is a key variable which is measured with different scales in both databases.

The most recurrent way of measuring income in both databases was using an 11-steps scale. Therefore, we have converted all the other scales to fit the 11-steps scale. If a given scale had *N* steps we have divided each *n* step between *N* and we have multiplied the result by 11. The final scale for the income variable is therefore in the interval (0,11]

Government ideology is measured with the Potrafke's ideology index. It is described as follows:

> "This index places the cabinet on a left-right scale with values between 1 and 5. It takes the value 1 if the share of governing right wing parties in terms of seats in the cabinet and in parliament is larger than 2/3, and 2 if it is between 1/3 and 2/3. The index is 3 if the share of center parties is 50%, or if the left wing and right wing parties form a coalition government that is not dominated by one side or the other. The index is symmetric and takes the values 4 and 5 if the left wing parties dominate." (Potrafke, 2009).

The databases do not have observations on the most extreme cases, 1 and 5. Only the values 2, 3 and 4 are present in the final data analyzed.

Other macro economic variables belonging to the vector *P* comes from the databases of World Bank, Eurostat and OECD.

The final analysis has +100.000 interviews for those regressions that consider only the World Values Survey (WVS) and +160.000 for those which use WVS with Schmitt 2011 in a merged database. A detailed summary of the variables can be found in the appendixes (APPENDIX 2).

2.4 Dependent variable: Level of Happiness.

There is a large literature dealing with the concept of utility and how to measure it. In the last decade psychologists and sociologist have proposed certain ways of obtaining a self-reported level of utility (Frey and Stutzer, 2002). There are two ways of measure indirectly utility, one is to ask people for their level of "happiness" and the other to ask for their level of "satisfaction with life".

Many authors presuppose that both measurements are identical (Gundelach and Kreiner, 2004). Others claim that the level of happiness is the correct way of measuring utility (Lane 2000), and consider satisfaction as the distance between aspirations and achievements (Campbell et al. 1976). The distance between aspirations and achievements may depend on the policies of former governments, and we are trying to estimate the

political position of present governments. Additionally, the number of observations containing the answer to the question about happiness are 50% more than the those containing the answer to the question about the level of satisfaction. Consequently, we consider the level of happiness as dependent variable. Therefore, the different values of y^* represent the happiness of which individuals are maximizing the politicians.

There are some problems when we use happiness as a dependent variable. Happiness is an emotional state which depends in several factors ranging from weather to health. The capacities of a government to influence happiness are limited but, as we will show, there is an impact of the political decisions of governments on the happiness of their citizens.

The level of happiness and other micro-level data are collected from World Values Survey (2009) and The Mannheim Eurobarometer Trend File 1970-1999 (Schmitt. 2001). The latest only includes information about individual's happiness for EU countries during the period 1981-1986. This may create a selection-bias problem and we have to take the results that includes the Eurobarometer with caution.

Additionally, both databases are not completely identical and we had to carry some transformations. For instance both databases ask for the level of happiness. Respondents could choose four different answers in the WVS: {“Very happy”, “Quiet Happy”, “Not very happy”, “Not happy at all”} and only three in Schmitt (2001) {“Very happy”, “Happy”, “Not happy”}. Table 1, shows the distribution of these answers.

<<Table 1>>

In order to handle this discrepancy we have carried out two sets of regressions. The first one only with the observations of the WVS, which measures happiness with has a 4-steps scale. The other one, combines WVS and Schmitt (2001). It considers “Not very happy” and “Not happy at all” from WVS as the answer “Not happy” in Schmitt (2001), therefore it measures happiness with a 3-steps scale.

Moreover, there are several problems related with the use of self-reported happiness. Concretely, World Values Survey asks: “Taking all things together, would you say you are:”. We can name the possible set of answers as J:

J = {“Very happy”, “Quiet Happy”, “Not very happy”, “Not happy at all”}.

As the possible answers lack cardinality, it is necessary to treat them with ordinal models. The standard procedure is to calculate J-1 ordinary binomial models.:

$$logit\,[P(Y \leq j\,|x)] = \alpha_j + \beta_j'x \qquad j = 1 \ldots J\text{-}1$$

If $\beta_j = \beta$ for all j, then we will have a continuous latent variable underlining Y (Agresti,

2000). We can denote that variable as *Y**. We show the relation between *Y* and *Y** in Graph 3 (adapted from Agresti, 2000.)

<<GRAPH 3>>

Obviously, only continuous variables can be derived. Therefore, $\beta_j = \beta$ is a necessary condition of the econometric model. We can test whether $\beta_j = \beta$ by implementing a Brant test (Brant, 1990). This requirement supposes, obviously, a strong limitation to the research.

The procedure to obtain an unbiased and differentiable set of variables has been the following: First we carried out an ordinal logistic regression, then we have performed the Brant test (Long and Freese 2001) and finally, in case of rejecting the null hypothesis of non-parallel lines, we have performed a ordinal general logit model with the weights and heteroskedasticity function indicated in the appendixes (APPENDIX 3).

2.5 Regressions

The result table shows six different regressions. They are labeled as BASIC-4, BASIC-3, YEAR-4, YEAR-3 , NOCO-4 COMP-4.

In the BASIC regressions, *y** are fixed. YEAR regressions include the variable *year·income·ideo* that allows for changes of *y** over time. The NOCO regression calculates the influence of labor union affiliation (*labor·income·ideo*) and percentage of rents payed as wages (*wagessh·income·ideo*) with *y**. It does not include other variable interacting with *income·ideo* which may work as controls. The COMP regression computes the interactions between *y** with time and the complete vector of macro-variables *P* = {(*gini*), (*gdp*), (*unemp*), (*turnout*), (*growth*), (*unieduc*)}. The numeric suffixes (ie. {3,4}) indicate the number of steps of happiness, the dependent variable.

Problems related with the parallel-line assumption arise when including all the controls. BASIC, and YEAR regressions do not have all of them, but the controls eliminated were all insignificant. These eliminated controls are: *unieduc,* and the interactions, *unieduc·ideo, unieduc·income, labor·income* and *gini·income*. In the appendixes (APPENDIX 3) it is possible to find the large list of controls used.

On the other hand, NOCO-4 and COMP-4 do not hold the parallel-line assumption for some key coefficients. The result table indicates which are those coefficients.

Finally, all the regressions have the same weighting and clustering specifications to

obtain unbiased results and accurate errors. It is possible these characteristics in the appendixes (APPENDIX 3).

SECTION 3: RESULTS

In this section, we present the regressions previously described, and a preliminary analysis of the results obtained. Here, we will just show which variables determine the position of *y**, indicating their coefficients, z-values and whether they violate the parallel-line assumption. We will denote *y* as "*income*", its interaction with the ideology index as "*income·ideo*", the interaction of income, ideology index and year variables as "*year·income·ideo*", etc...

3.1 Result table

<<Table 2>>

3.2 Analysis

With the previous table it is possible to analyze the evolution of *y** in the income scale. Recall that we will compute the *y** with:

$$y^*(ideo) = -(\beta_5 + \beta_7 \cdot ideo_{c,t} + \delta \cdot t_{i,c,t} + \eta \cdot P)/(2 \cdot \beta_6)$$

In general, a positive coefficient for δ or η will shift the *y** to the left on the income scale, towards the richer individuals, if *t* and *P* increase. For instance the coefficient of *year·income·ideo* is greater than 0 meaning that every year the *y** move to the left (i.e politicians maximize the happiness of richer individuals continually). Remember that variable income was computed in an eleven step scale. We have parametrized the distribution function of the variable *income* in order to extend the range to the infinite (APPENDIXES 7). In order to help the reader with the interpretation of coming results, we present here the distribution of income for BASIC-4, YEAR-4, NOCO.4 and COMP-4

<<GRAPH 4>>

This is the distribution function of the income-scale. For instance, when we mention

that the distance between Center-Left and Center-Rigt parties is 4,2 points, we should imagine these distance in the horizontal axis of the previous graph. With this in mind we can present here the results:

Result 1: There is not statistical difference on the individual that different political parties represent once in power, although in some regressions this difference is large.

The variable *income·ideo*^{2} is insignificant in 4 out of 6 regressions. Only NOCON-4 and COMP-4 show a significant coefficient. In those regressions the coefficient does not satisfy the parallel-line assumption, and we must take it with caution.

The other coefficients are statistically insignificant but in the case of the regressions BASIC-4 and YEAR-4 they are large. The distances between *y**'s in the different regressions are shown in the next table.

<<Table 3>>

Result2: Politicians have maximized the happiness of richer individuals during the period of study.

In both regressions the coefficient *year·income·ideo* is positive and significant. Each model shows a different evolution of *y**. Actually, the displacement is double for YEAR-4 than for YEAR-3.

<<Table 4>>

The difference may come due to the fact that the combined database (happiness in 3 steps) includes a large number of observations of Center Europe for the period 1981-1986. According to several scholars those countries followed a different democratic evolution than Japan, USA, Oceania or South Europe (Crouch 2004)

Result 3: Increases in the percentage of rents paid as wages and salaries, and the level of affiliation to labor unions are correlated with governments that maximize the happiness of poorer individuals.

We can calculate how an increase of 1% on the values of these variables shift the position of *y** for COMP-4. Countries where workers obtain a larger share of the national rent and countries present governments that maximize the happiness of the poorer. 1% of increase on these variables shifts more than one point the *y** in the income scale . From that perspective, changes on labor union affiliation are much moderated.

<<Table 5>>

We can also analyze how *y** changes with changes of one standard deviation of the

variables of interest. In that case we see how the change in the share of wages is also more important than the other.

SECTION 4: DISCUSSION.

4.1 Picturing democracy and representation.

Until this point we have described how politicians maximize the happiness of certain *y** individuals due to several factors. In this section we will illustrate the evolution of the political representation over time. Concretely, how the *y** for different parties over the period of study. It is important not only to know the evolution in the income scale but also in the income distribution function.

According to YEAR-3 and YEAR-4, politicians would maximize the happiness of the following income percentiles at the beginning and at the end of the period of study.

<<Table 6>>

As we can see, since the eighties there has been a lack of political representation. Furthermore, the data shows an extreme situation in 2009. Independently of the regression used we see how all political parties in power maximized the happiness of the richest individuals. In both regressions, we see how politicians maximize the happiness of the 95^{th} - 100^{th} richest percentile.

This fact has already been denounced by many authors, who have tried to explain the reasons of this evolution. Colin Crouch (2004) explained how the relative impoverishment of workers, and the weakness of labor unions favored the rise of post-democratic governments (ie. a government for and by the rich). The coefficients of *wagessh·income·ideo* and *labor·income·ideo* may stand for this idea. These coefficients show how societies with relative poorer workers (relative to capitalists) and weaker labor unions coincide with politicians that maximize the happiness of richer individuals.

Crouch also explained how developed societies come closest to democracy in its maximal sense after in the seventies. We cannot test this idea directly with the data as the databases analyze the period 1981-2009. In any case, we can extrapolate backwards the results obtained to the seventies to observe the positions of the different political parties.

Graph 5 and Graph 6 show the income percentiles that different political parties

have maximized during the period of study (1981-2009) and they also include an extrapolation (dashed in blue) till the moment that center governments represented the median voter[2].

<<Graph 5>>

<<Graph 6>>

As we can see, according to YEAR-3 and YEAR-4 the political situation in the seventies is extremely similar to the description made by Crouch (2004).

4.2 Limitations

Even if the paper is able to show the huge democratic deficits of developed countries, it fails in explaining the circumstances that have provoked this situation. It is true that the coefficients of the regression COMP-4 are compatible with the theses of some authors, but unfortunately, the coefficients just show correlation between y^* and macro variables, not the direction of the causality.

With the results obtained we could think that labor unions stop prevent the politicians from favoring the economic elite, but it could be that countries with politicians who favor the elite, create policies which weaken the labor unions. Similarly, it is possible that countries with relative rich working classes are able to keep healthy democracies, but it could also be that politicians who favor the richer take measures capable to worse the economic situation of workers. This paper describes effectively the lack of democratic levels but has its main limitation when trying to point out the causes of this situation.

We could understand better the direction of the causality by including newer waves of the World Values Survey. Unfortunately, larger databases are more likely to generate problems with the parallel-line assumption.

Finally, we would like to stress that both BASIC-3 and YEAR-3 present a very peculiar selection of countries surveyed. Whereas WVS tries to have a fair representation of the World, the data used from Schmitt (2011) considers only EU-12 countries for the

[2] We consider that a democracy has a representative government when center parties represent the median voter. A formal discussion is included in the appendixes (APPENDIXES 8)

period 1981-1986. This fact may generate the econometric differences shown in the result table. On top of that, WVS suffered an important manipulation of the dependent variable when we merged it with Schmitt (2011), as explained previously.

4.3 Robustness checks:

To sustain the validity of the previous results, we have carried out a long list of robustness checks. Here, we will explain in detail those three that we consider more important: The power of the polynomial, the lack of control for education levels, and the symmetry-assumption. The rest will be commented at the end of this subsection and shown in the appendixes (APPENDIXES 4).

4.3.1 Power of polynomial:

The regression assumes that utility function of a given individual is linked with a polynomial of power two, recall:

$$u_i (y_i , x_k) = a \cdot y_i + b \cdot y^2_i - (ideo + ideo^2) \cdot (d \cdot y_i - x_k)^2$$

and it is estimated with

$$PU_{ideo} = \beta_3 \cdot ideo_{ct} + \beta_4 \cdot ideo^2_{ct} + \beta_5 \cdot ideo_{ct} \cdot y_{i,c,t} + \beta_6 \cdot ideo_{ct} \cdot y^2_{i,c,t} + \beta_7 \cdot ideo^2_{ct} \cdot y_{i,c,t}$$

It is possible to argue that the polynomial has a higher power. This possibility has been analyzed by considering not only *income·ideo* and $income^2 \cdot ideo$, but also $income^3 \cdot ideo$ and $income^4 \cdot ideo$, in the BASIC3 and BASIC4 regressions.

As it can be seen in the appendixes (APPENDIX 5) these two variables are insignificant. The introduction of these variables creates also serious problems to full-fill the parallel-line assumption. On top of that, if we incorporate them in the analysis we would need to interact both time (*t*) and the macro-variables (*P*) with them, making the analysis unnecessary complicated. For all these reasons, we have decided not to include them in the final regressions.

4.3.2 Education

The final regressions do not include a control for educational levels. Unfortunately, the databases used do not provide educational information for all the individuals but only for around 60.000. It is possible to imagine that education influences income, happiness, and preferences for political parties. In order to measure the capacity of this variable to

change the results, we have carried out two regression only with the observations that include education information. The first one, EDUC, includes an education variable and the second one, NO-EDUC, does not.

As shown in appendixes (APPENDIXES 4) the introduction of measurements of education does not change the results.

4.3.3 Symmetry

The values given to center-right, center and center-left governments are 2,3 and 4, respectively. Therefore, the model assumes that the distance between center-left and center ideologies is equal to the distance between center and center-right. We call this consideration the symmetry-assumption. It is a strong assumption that may drive the results.

It is possible to break the symmetry-assumption by adding of subtracting points to the value given to the Center party. For instance, we can give the value 2.5 (-0.5) to Center and see if the regression fits better.

In order to analyze systematically the value of Center parties that fits better the model we have replicated the YEAR4 regression modifying the value of Center parties with a set of values. Those values are {-0.9, -0.75, -0.5, -0.25, -0.1, +0, +0.1, +0.25, +0.5, +0.75, +0.9}. We carried out an information criteria analysis and the model with the lowest value would be the best one. According to the information criteria analysis, the best fit occurs with Center having value 3 (+0), meaning that symmetry is preferred.

Even when using the other values for Center parties, the final coefficients does not change significantly. A summary of this check can be found in the appendixes (APPENDIX 6).

4.3.4 Other robustness checks:

We have also analyzed the possibility of a significant variable for $income^2 \cdot ideo^2$; the interactions between age, gender and income; between *ideo* and employment dummies; between *income* and employment dummies; the use of dummies for *ideo* values; we have also measured the ideology of the parliament not only by the ideology of the present party but also considering the ideology of the previous parties in government; we have split the database by years, and we have tried several heteroskedasticity functions, finally we have checked if the income distribution is homogeneous over time.

None of the the previous checks provided a better outcome for the regressions and we have discarded them. Nevertheless, it is possible to find a more detailed explanation on the appendixes (APPENDIXES 4).

SECTION 5: CONCLUSION.

The aim of this paper was to picture the quality of developed democracies and its evolution over time. The first novelty is the technique used. Although the theory about electoral competition and utility maximization of political parties was part of the literature since 1957, this is the first attempt to empirically measure the political representation of the individuals with different income levels using happiness surveys.

But without any doubt, the most important contribution of this paper are the results obtained. These results support the ideas of those authors who perceive serious deficits in present democratic systems and all of those that demonstrate on the streets shouting “They do not represent us”.

The results also show how countries with impoverished working classes have politicians that do not defend the interest of the many but the desires of the few. The paper also describes how politicians take into account the needs of poorer individuals in when the working class is stronger.

Unfortunately, and in spite of these correlations, we are not able to explain the circumstances that brought developed societies to the low democratic standards that they are suffering. Therefore, we have to rely on the theory previously exposed to understand the direction of the causality.

This paper leaves many questions unanswered, mainly: the potential differences between ideologies and the causality direction of the correlations or the role of other variables in determining y^*. This leaves the door open for further research. Fortunately, the continuity of the World Values Survey will create larger databases and more accurate results. Potentially, the use of IV methods that may help us to understand better some of the results obtained.

In the mean time, social groups are becoming more aware of the low quality of their democracies. This may help to change the direction of the results, bringing the levels of representation to those enjoyed in the seventies.

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APPENDIXES

APPENDIX 1.

Country and year observations for the two data-sets:

WVS. Happines in 4-steps scale

Austria: 1990, 1999, 2008
Australia: 1981, 1995, 2005
Belgium: 1981, 1990, 1999, 2009
Cananda: 1982, 1990, 2000, 2006
Swizerland: 1989, 1996, 2007, 2008
Germany: 1990, 1997, 1999, 2006, 2008
West-Germany: 1981
Denmark: 1981, 1989, 1999, 2008
Spain: 1981, 1990, 1995, 1999, 2000, 2007, 2008
Finland: 1990, 1996, 2000, 2005, 2009
France: 1981, 1990, 1999, 2006, 2008
Great Britain: 1981, 1990, 1998, 2006, 2009
Greece: 1999, 2008
Ireland: 1981, 1990, 1999, 2009
Iceland: 1984, 1990, 1999, 2009
Italy: 1990, 1999, 2005, 2009
Japan: 1981, 1990, 1995, 2000, 2005
Luxemburg: 1999, 2008
Netherlands: 1981, 1990, 1999, 2006, 2008
Norway: 1982, 1990, 1996, 2008
New Zealand: 1998, 2004
Portugal: 1990, 2008
Sweden: 1982, 1996, 1999, 2006, 2009
United States: 1982, 1990, 1999, 2006

WVS and Eurobarometer. Happines in 3-steps scale

Austria: 1990, 1999, 2008
Australia: 1981, 1995, 2005
Belgium: 1981, 1982, 1983, 1984, 1985, 1986 1990, 1999, 2009
Cananda: 1982, 1990, 2000, 2006
Swizerland: 1989, 1996, 2007, 2008
Germany: 1990, 1997, 1999, 2006, 2008
West-Germany: 1981, 1982, 1983, 1984, 1985, 1986
Denmark: 1981, 1982, 1983, 1984, 1985, 1986, 1989, 1999, 2008
Spain: 1981, 1985, 1986 1990, 1995, 1999, 2000, 2007, 2008
Finland: 1990, 1996, 2000, 2005, 2009
France: 1981, 1982, 1983, 1984, 1985, 1986, 1990, 1999, 2006, 2008
Great Britain: 1981, 1982, 1983, 1984, 1985, 1986, 1990, 1998, 2006, 2009
Greece: 1982, 1983, 1984, 1985, 1986 1999, 2008
Ireland: 1981, 1982, 1983, 1984, 1985, 1986 1990, 1999, 2009
Iceland: 1984, 1990, 1999, 2009
Italy: 1982, 1983, 1984, 1985, 1986 1990, 1999, 2005, 2009
Japan: 1981, 1990, 1995, 2000, 2005
Luxemburg: 1982, 1983, 1984, 1985, 1986 1999, 2008
Netherlands: 1981, 1982, 1983, 1984, 1985, 1986, 1990, 1999, 2006, 2008
Norway: 1982, 1990, 1996, 2008
New Zealand: 1998, 2004
Portugal: 1990, 2008
Sweden: 1982, 1996, 1999, 2006, 2009
United States: 1982, 1990, 1999, 2006

APPENDIX 2.

Variables description

<< SET OF TABLES 1>>

APPENDIX 4.

Extra robustness cheks.

Variable i$income^2 ideo^2$

This variable would allow the parabolas of different parties to have different width. Political utility would de defined as:

$$PU_{ideo} = \beta_3 \cdot ideo_{ct} + \beta_4 \cdot ideo^2_{ct} + \beta_5 \cdot ideo_{ct}\, y_{i,c,t} + \beta_6 \cdot ideo_{ct} \cdot y^2_{i,c,t} + \beta_7 \cdot ideo^2_{ct} \cdot y_{i,c,t}$$

and then:

$$y^*(ideo) = -(\beta_5 + \beta_7 \cdot ideo)/(2(\beta_6 + \beta_8 \cdot ideo))$$

This variable is insignificant, breaks the parallel-line assumption and makes the analysis much complicated, as more interactions are required.

Interactions of age and gender with income.

These interaction variables are insignificant, and they are not included.

Interactions of employment and *ideo*

These interaction variables are insignificant, and they are not included.

Interactions of employment and *income*

Most of these interaction variables are mainly insignificant and BIC analysis suggest not to add them.

Variable $year \cdot income \cdot ideo^2$

We have checked whether the distance between political parties varies across time. The results suggest that it is not the case.

If we add the variable *year·income·ideo*^{2} to YEAR, and COMP regressions, we see how it is insignificant.

Time lags

We have also considered the possibility that previous political actions may influence present happiness. It can be that decision taken by previous governments have a strong effect in present happiness, or that the measurements of current governments need a time to affect individual happiness.

To control for that we have created a new variable *ideom3* that is the average of the ideology in government of the year of the survey and the previous two years. We have substituted the different interactions of the old variable *ideo* with the new *ideo3m* and we can see how the fit of the regression is clearly inferior.

Notice also that only 1/4 of the values of *ideo* change.

Use of dummy variables for ideology

Another suggestion has been to substitute the *ideo* variables for dummy variables for each of the ideologies. We have created the variables *ideo1 ideo2 ideo3*, and we have proceed as usual. The outcome violates strongly the parallel-line assumption. The only advantage that could be obtain with this procedure is the plausibility of relaxing the symmetric assumption, but even the analysis described on the paper shows that the assumption must be maintained.

YEAR split ups.

It may be interesting to analyse if *year·income·ideo* varies across time. Namely, if the speed of movement of the peaks varies during the time of the sample. We Have analyse the YEAR-4 regression by incorporating a variable *year·income·ideo·h1997* . *h1997* is equal to 0 if the year was equal or below to 1997 and equal to the year if the year was higher than 1997 (half of the observations are influenced by this variable).

It make sense to use only the original WVS as Eurobarometer has a very concrete set of countries analized for the period 1981-1986.

The coefficient of *year·income·ideo·h1997* is insignificant.

Heteroskedasticity function

We have tried other forms of heteroskedasticity. We tried to include *gdp*, *gini*, and *income·ideo* do to their capacities of highly influence the results. Other functions have been rejected due to their requirements of computational power. All the coefficients of these variables are insignificant when in the heteroskedasticity function.

Distribution of income

Here is the mean and the median for *income* in a year basis. As we see there are not time-tendencies.

<<Table 7>>

Education

Similarities of results when taking into account educational levels

<<Table 8>>

APPENDIX 5.

Detail: size of polynomial

Comparison between BASIC regression and the same regression with the inclusion of *income*^{3}*ideo* and *income*^{4}*ideo,* labeled as EXTEND*.*

<<Table 9>>

APPENDIX 6.

Detail: Symmetry-assumption

The values that determine the *y** on the YEAR regression are: *income·ideo*, *income·ideo2*, $income^{2,}ideo$ and *year·income·ideo*. Here we show the coefficients for these variables for different values of Center. The IC analysis for each regression is also shown.

<<SET OF TABLES 2>>

The following graph summarizes the BIC analysis for different values of Center parties.

<<Graph 7>>

APPENDIX 7.

Distribution function of income

We have modified slightly the distribution functions of income, to go beyond the 11th step of the income scale. For doing so, we have standardized the distribution function of income to a negative binomial distribution that takes into account its mean and overdispersion. These two parameters are fore each database:

<<Table 10>>

Following graph shows that distribution function for the two databases (happiness in a 3-step and 4-step scale)

<<Graph8>>

APPENDIX 8.

Democratic representation

The aim of this paper is to analyze the quality of representation of developed democracies. We will briefly establish a normative benchmark describing how should be a good representative democracy. The purpose of this appendix will not be to describe the logic of real electoral process, or the possibilities of a political party to win given certain conditions. Instead, we will describe a normative ideal view of how political parties should behave in a truly representative democracy.

In an ideal democracy: “elections are not just a race that some win at the expense of others, but a way of participating in the creation of the representative body” (Urbanati and Warren 2008). In fact, John Stuart Mill, one of the fathers of the liberal democratic thought, considered that an optimal democratic system is such that “every opinion which exists in the constituencies obtains its fair share of voices in the representation” (Mill 1861).

We can model these ideal views in our model, recall:

Let be K political parties that must choose a policy x_k characterized in the set X. And there is a number N of i citizen-voters, each voter has a type z_i such that $h(z_i) = \tau_i$, where τ_i represents the preferred policy of i. The set of τ_i is $T = X$.

The utility of the voters is given by a function of their type $f(z_i)$ and the distance between their preferred policy and x_k the policy selected by the party in government:

$$u_i (\tau_i , x_k) = f(z_i) - (\tau_i - x_k)^2$$

Let now consider that τ_i has a density function $g(\tau_i)$, and a distribution function $G(\tau_i)$.

We can consider the weighted i individual as:

$$w_i (\tau_i , x_k) = g(\tau_i)/(f(z_i) - (\tau_i - x_k)^2)$$

The mathematical problem to locale optimally x_k , by maximizing the social welfare function W_i, the sum of the w_i weighted individuals:

This problems are well known in the economic literature since the work of Hotelling (1929). The general solution can be found in (Revelle, Marks & Liebman 1970). Concretely, to obtain a fair and efficient representation, the positions must divide $G(\tau_i)$. in $K + 1$ equal parts. The position of x_k in T is, therefore:

$$x_k (T, K) = G^{-1}(2k -1 /2K)$$

where $G^{-1}(\tau_i)$ is the inverse of the distribution function $G(\tau_i)$.

We can tabulate the position of center-left, center and center-right[3] parties for different values of *K*.

<<Table 11>>

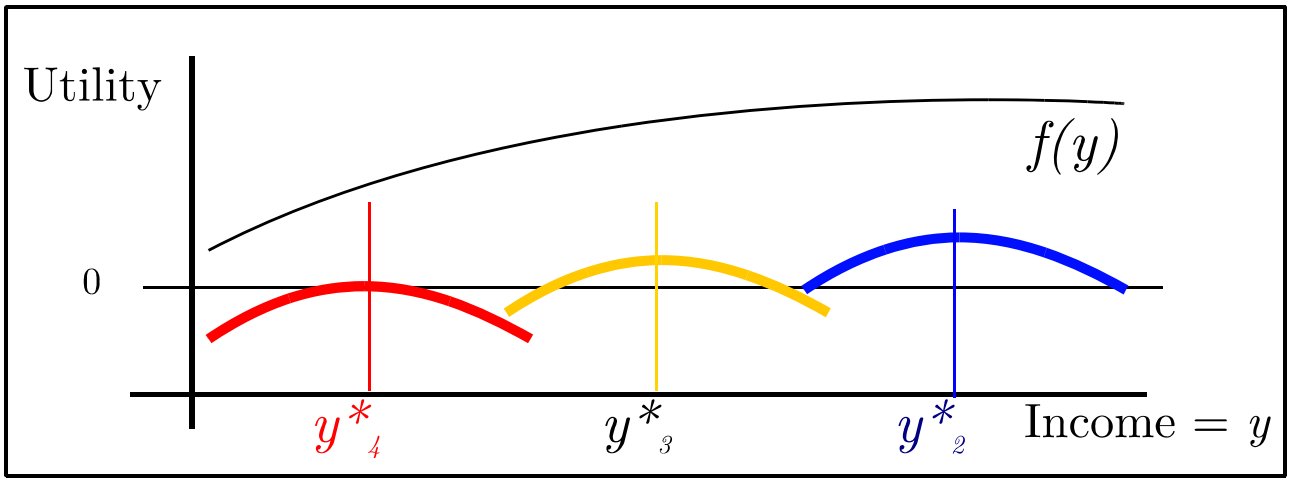
As we can see the best way of measuring whether there is a good level of representation is to analyze whether center parties maximize the utility of the median voter (0,5).

[3] We consider center-left and center-right to the immediate inferior and superior *k* parties to the median of *K*

TABLES AND FIGURES

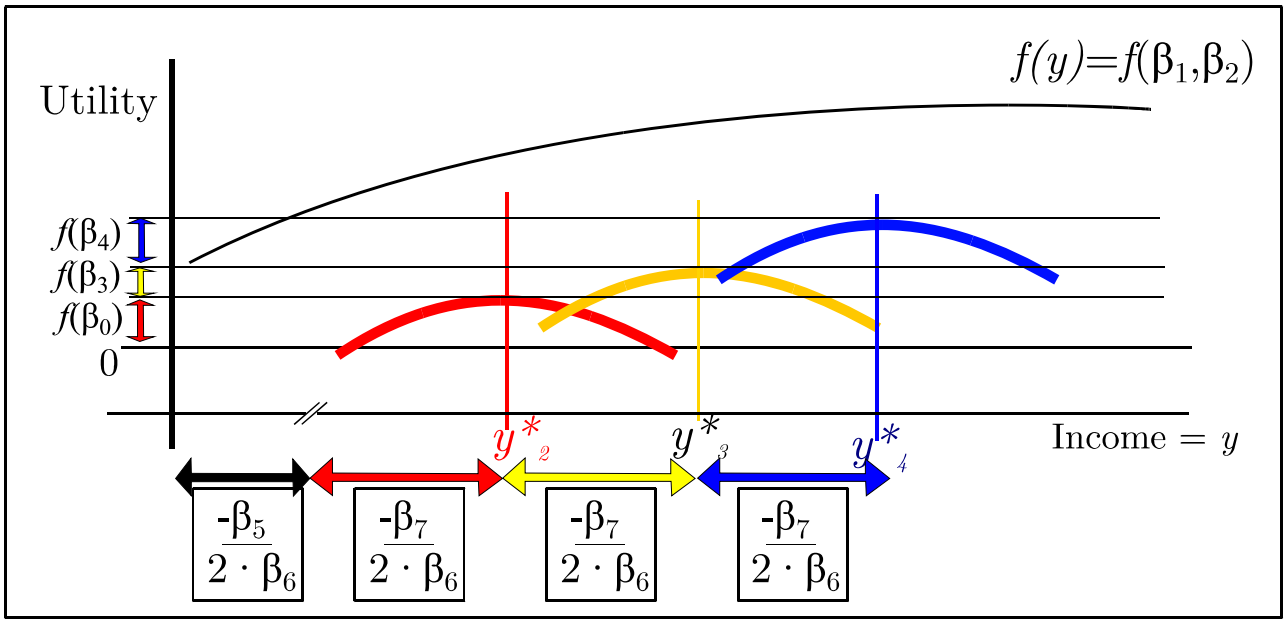
GRAPH 1

Downs model visually



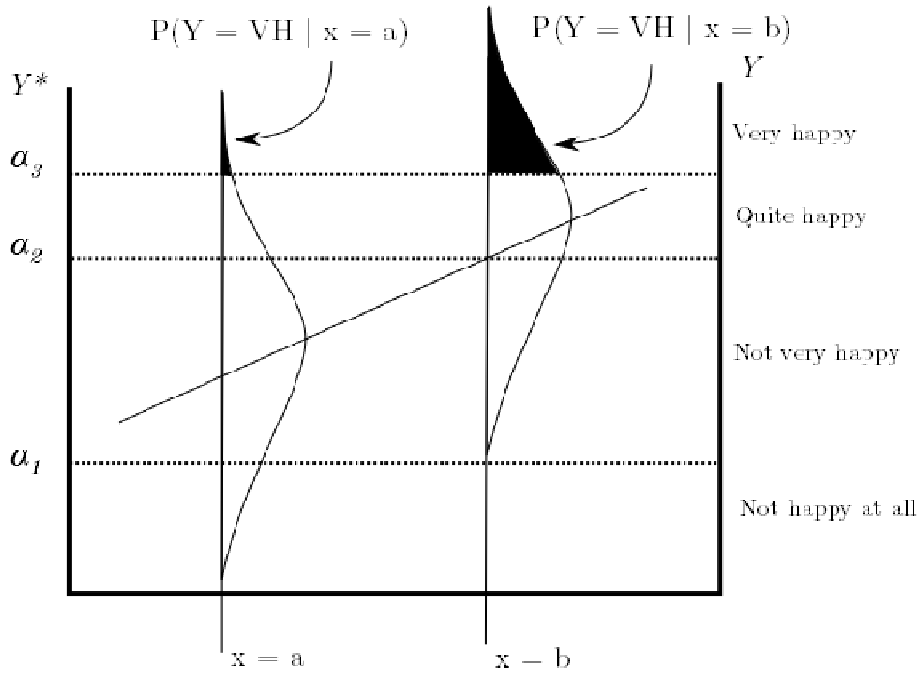
GRAPH 2

Explaining the econometric model



<<GRAPH 3>>

Relationship between the latent variable *Y** and *Y.*



<<Table 1.>>

Distribution of happiness for WVS and Eurobarometer

WVS 4-Step scale			**Eurobar. 3-Step scale**		
	Freq.	Percent		Freq.	Percent
Very happy	33530	30,98	Vary Happy	13170	22,78
Quite happy	63852	59	Happy	33578	58,09
Not very happy	9448	8,73	Not Happy	11055	22,78
Not happy at all	1393	1,29			
TOTAL	108220	100	TOTAL	57803	100

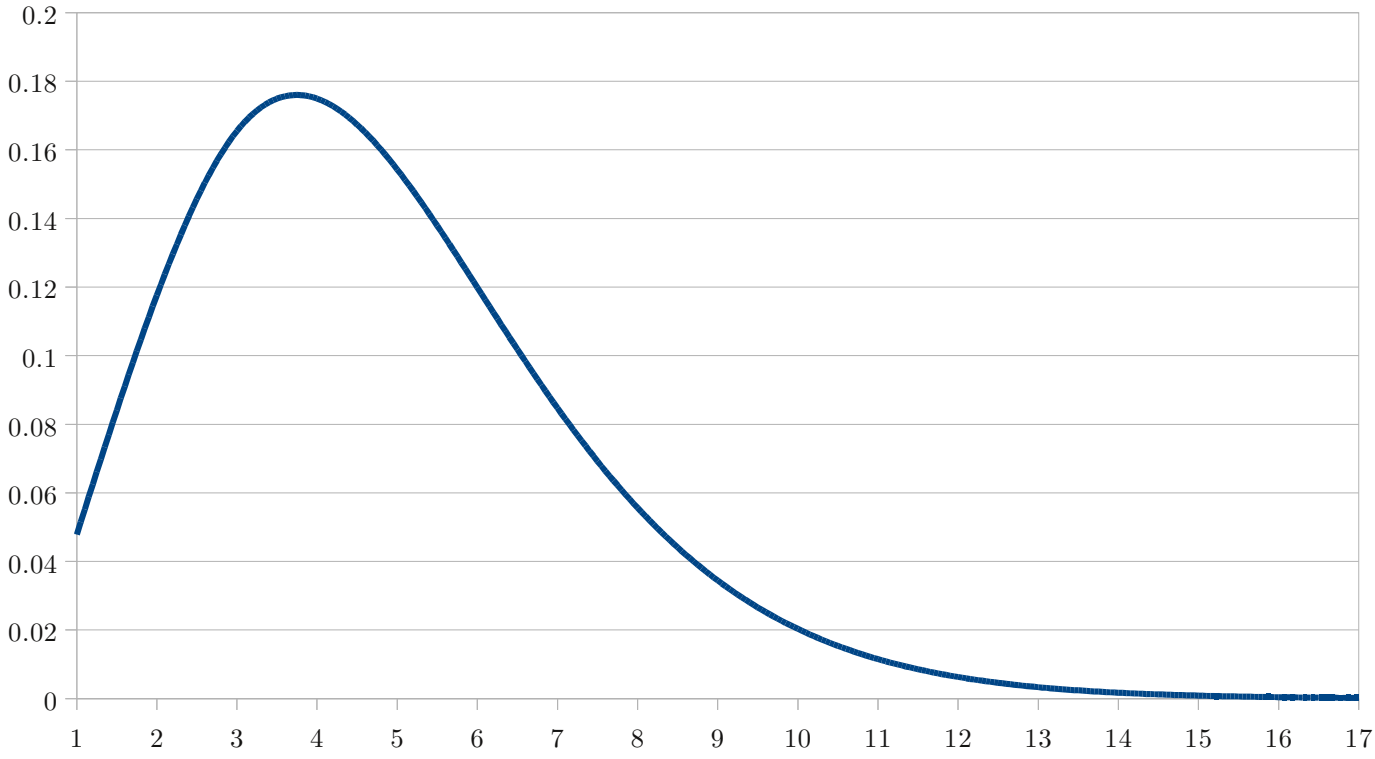
<<Table 2>>
Results table
Ordinal generalized logistic model. Dependent variable: Level of Happiness.

	BASIC-4	**BASIC-3**	**YEAR-4**	**YEAR-3**	**NOCO-4**	**COMP-4**
income·ideo	0,08 (0,94)	0,11 (1,27)	0,05 (0,57)	0,09 (1,03)	0,52 † (3,02)***	1,02 (3,59)***
income·ideo^2	-0,01 (-0,77)	-0,007 (-0,52)	-0,009 (-0,70)	-0,009 (-0,76)	-0,028 †† (-2,45)**	-0,046 †† (-2,88)***
income^2*·ideo*	-0,002 (-0,97)	-0,007 (-2,36)**	-0,002 (-0,80)	-0,006 (-2,00)**	-0,002 (-0,89)	-0,002 (-0,76)
year·income·ideo			0,0013 (2,16)**	0,0017 (2,96)***	0 (-0,03)	0,0003 (0,27)
wagessh·income·ideo					-0,413 (-2,41)**	-0,402 (-3,26)***
labor·income·ideo					-0,03 (-1,16)	-0,054 (-1,67)*
Controls interacting with *income·ideo*	NO	NO	NO	NO	NO	YES
R^2	0,14	0,16	0,14	0,16	0,14	0,14
N. Observations	103984	161339	103984	161339	103984	103984

Note: Coefficients denote the probabilities of being happier for an increase of 1 point of a given variable. Coefficients are followed by †† if the brant test is significant at a 1%, and † if it is significant at a 5% (violation of parallel-line regression). z values are included under the coefficients in parenthesis, *** p< .01; ** p < .05; * p < .10 for two-tailed tests.

<<GRAPH 4>>

Density function of income in WVS database



<<Table 3>>

Distance between Center-left and Center-right parties

	BASIC-4	**YEAR-4**	**BASIC-3**	**YEAR-3**
Distance between CL and CR	4,2	4,7	0,8	1,5

<<Table 4>>

Shift of y^* for the period of study (1981-2009)

	YEAR-4	**YEAR-3**
Displacement of y^*	9,3	4,1

<<Table 5>>

Correlations between *y** and statistically significant variables

	Increase of 1%	**Increase 1 st. dev.**
Wages share (wagessh)	-1,17	-6,28
Affiliation to Labor Unions (labor)	-0,15	-3,4

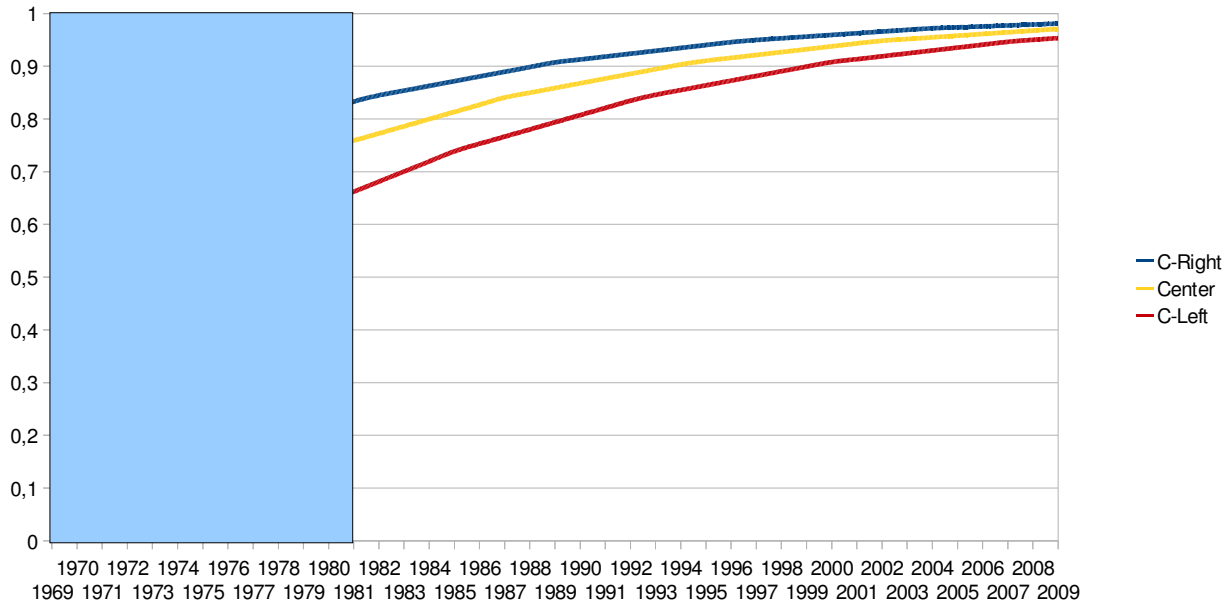
<<Table 6>>

Percentiles represented by politicians of different ideologies.

		Center-Right	**Center**	**Center-Left**
YEAR-3	1981	0,83	0,76	0,66
	2009	0,98	0,97	0,95
YEAR-4	1981	0,94	0,80	0,48
	2009	1	1	1

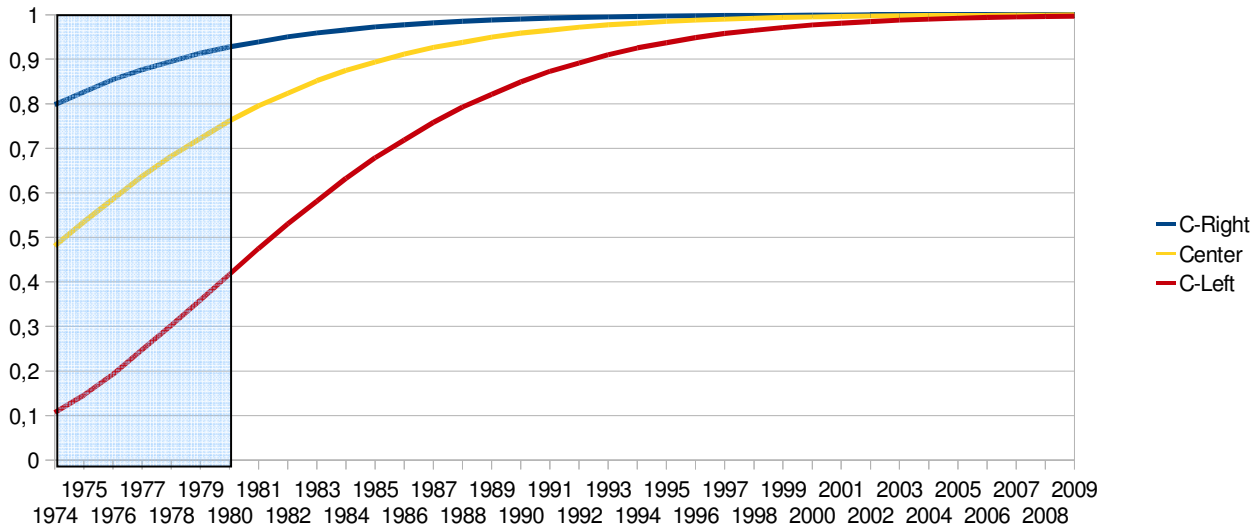
<<Graph 5.>>

Percentile represented by different political options according to YEAR-3



<<Graph 6>>

Percentile represented by different political options according to YEAR-4



<< SET OF TABLES 1>>

Variable description

Main variables from WVS 4-Step data-set

Variable	Obs	Mean	Std. Dev.	Min	Max
income	108223	5.32804	2.518458	.8333333	11
parl	107184	2.878293	.8290044	2	4
gdp	108223	2.857797	.8294909	1.3	7.38
wagessh	108223	.5951313	.053495	.459	.723
turnout	108223	.7804567	.1067069	.4225	.9575
growth	108223	.0205479	.0295204	-.084	.099
labor	108223	.3639272	.2166133	.076	.93
unemp	108223	.0750684	.0372259	.02	.227
gini	108223	.2949596	.0412372	.2	.39
unieduc	108223	.4986948	.194867	.105	.919

	income	parl	gdp	wagessh	turnout
income	1.0000				
parl	-0.0039	1.0000			
gdp	0.0627	0.0369	1.0000		
wagessh	0.0251	-0.0767	-0.4516	1.0000	
turnout	0.0006	-0.0428	0.0006	-0.2073	1.0000
growth	-0.0955	0.1005	-0.0505	-0.0862	-0.1348
labor	0.0696	-0.0270	0.0074	-0.1314	0.2492
unemp	-0.0956	0.1977	-0.4129	0.0695	0.0626
gini	-0.0345	0.0379	-0.1539	0.0640	-0.1791
unieduc	-0.0159	0.0335	0.2587	-0.2849	-0.0499

	growth	labor	unemp	gini	unieduc
growth	1.0000				
labor	-0.0585	1.0000			
unemp	-0.0354	-0.2017	1.0000		
gini	-0.0137	-0.6469	0.3487	1.0000	
unieduc	-0.1869	0.0451	0.0073	0.0749	1.0000

Main variables from WVS and Eurobarometer, 3-Step data-set

Variable	Obs	Mean	Std. Dev.	Min	Max
income	166360	5.277903	2.53724	.8333333	11
parl	166360	2.827212	.8397685	2	4

<<Table 7>>

Year mean and median of income for 4-Steps database

Year	mean income	median income	difference
1981	6,17	6	0,17
1982	5,3	6	-0,7
1984	6,04	5	1,04
1989	5,02	6	-0,98
1990	4,7	5	-0,3
1995	5,03	5	0,03
1996	5,31	5	0,31
1997	4,77	5	-0,23
1998	5,98	6	-0,02
1999	5,12	5	0,12
2000	4,66	4	0,66
2004	6,46	7	-0,54
2005	5,08	5	0,08
2006	4,82	5	-0,18
2007	5,18	5	0,18
2008	4,14	4,16	-0,02
2009	5,91	5,83	0,08

<< Table 8>>

	EDUC	**NO-EDUC**
incomeideo	1,32 (2,59)***	1,34 (2,69)***
incomeideo^2	0,966 (-2,46)**	0,965 (-2,58)**
income^2*ideo*	0,993 (-1,72)*	0,994 (-1,67)*
yearincomeideo	1 (0,38)	1 (0,17)
N. Observations	65431	65431
R^2	0,15	0,15

Note: Coefficients denote the probabilities of being happier for an increase of 1 point of a given variable. Numbers above 1 means that the happiness is positively correlated with the variable. The opposite works for values below 1. z values are included under the coefficients in parenthesis, *** p< .01; ** p < .05; * p < .10 for two-tailed tests.

<<Table 9>>

	BASIC-4	**BASIC-3**	**EXTEND-4**	**EXTEND-3**
incomeideo	1,08 (0,94)	1,11 (1,27)	0,964†† (-0,32)	0,884† (-0,82)
incomeideo^2	0,99 (-0,77)	0,993 (-0,52)	0,981†† (-1,37)	0,985 (1,07)
income^2*ideo*	0,998 (-0,97)	0,993 (-2,36)*	1,06 (-1,74)	1,096† (1,60)
income^3*ideo*			0,992 (1,68)	0,987† (-1,66)
income^4*ideo*			1,0004 (1,63)	1,0006† (-1,66)
R^2	0,14	0,16	0,14	0,16
Numer observations	103984	161339	103984	161339

Note: Coefficients denote the probabilities of being happier for an increase of 1 point of a given variable. Numbers above 1 means that the happiness is positively correlated with the variable. The opposite works for number below 1. Coefficients are followed by †† if the brant test is significant at a 1%, and † if it is significant at a 5% (violation of parallel-line regression). z values are included under the coefficients in parenthesis, ** p< .01; * p < .05

<<SET OF TABLES 2>>

happy	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]

CENTER = 2.10

income~2p210	.9516794	.0786595	-0.60	0.549	.8093494	1.119039
in~eideop210	1.342796	.6725581	0.59	0.556	.5031229	3.58382
income2i~210	.9984047	.0022656	-0.70	0.482	.9939741	1.002855
yearbinc~210	1.000867	.0005153	1.68	0.093	.999857	1.001877

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	103984	-107871.7	-93310.07	79	186778.1	187532.7

CENTER = 2.25

income~2p225	.9788476	.0337164	-0.62	0.535	.9149459	1.047212
in~eideop225	1.133709	.2407508	0.59	0.555	.7477275	1.718937
income2i~225	.9983132	.0023294	-0.72	0.469	.9937582	1.002889
yearbinc~225	1.000936	.0005307	1.77	0.077	.9998969	1.001977

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	103984	-107871.7	-93306.63	79	186771.3	187525.9

CENTER = 2.50

income~2p250	.9877473	.0187821	-0.65	0.517	.9516126	1.025254
in~eideop250	1.072829	.1296506	0.58	0.561	.846571	1.359558
income2i~250	.9981869	.0024033	-0.75	0.451	.9934876	1.002908
yearbinc~250	1.001057	.0005548	1.91	0.057	.9999697	1.002144

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	103984	-107871.7	-93301.9	79	186761.8	187516.4

CENTER = 2.75

income~2p275	.9902346	.0143443	-0.68	0.498	.9625156	1.018752
in~eideop275	1.055535	.0994767	0.57	0.566	.8775117	1.269674
income2i~275	.9981029	.0024278	-0.78	0.435	.9933558	1.002873
yearbinc~275	1.001175	.000576	2.04	0.041	1.000046	1.002304

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	103984	-107871.7	-93299	78	186754	187499.1

CENTER = 2.90

income~2p290	.9907808	.0132516	-0.69	0.489	.9651455	1.017097
in~eideop290	1.051218	.0920663	0.57	0.568	.8854093	1.248077
income2i~290	.9980764	.0024166	-0.80	0.426	.9933512	1.002824
yearbinc~290	1.001241	.0005869	2.12	0.034	1.000092	1.002392

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	103984	-107871.7	-93298.38	78	186752.8	187497.8

CENTER = 3,00 => SYMMETRY

income~2p300	.9909014	.0129289	-0.70	0.484	.9658824	1.016568
in~eideop300	1.049885	.0897204	0.57	0.569	.8879737	1.241318
income2i~300	.9980685	.0023986	-0.80	0.421	.9933785	1.002781
yearbinc~300	1.001283	.0005932	2.16	0.030	1.000121	1.002446

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	103984	-107871.7	-93298.5	77	186751	187486.5

CENTER = 3.10

income~2p310	.9908518	.0128906	-0.71	0.480	.965906	1.016442
in~eideop310	1.049639	.0891445	0.57	0.568	.8886864	1.239742
income2i~310	.9980683	.0023725	-0.81	0.416	.9934292	1.002729
yearbinc~310	1.001321	.0005985	2.21	0.027	1.000149	1.002495

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	103984	-107871.7	-93299.06	78	186754.1	187499.2

CENTER = 3.25

income~2p325	.9904371	.0133984	-0.71	0.478	.9645218	1.017049
in~eideop325	1.051484	.0918205	0.57	0.565	.8860781	1.247768
income2i~325	.9980806	.00232	-0.83	0.408	.9935437	1.002638
yearbinc~325	1.001372	.0006046	2.27	0.023	1.000188	1.002558

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	103984	-107871.7	-93300.74	78	186757.5	187502.5

CENTER = 3.50

income~2p350	.9883592	.0164796	-0.70	0.483	.9565819	1.021192
in~eideop350	1.063733	.1109697	0.59	0.554	.8670306	1.305061
income2i~350	.9981276	.0022044	-0.85	0.396	.9938163	1.002458
yearbinc~350	1.001434	.0006085	2.36	0.018	1.000243	1.002628

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	103984	-107871.7	-93305.68	79	186769.4	187524

CENTER = 3.75

income~2p375	.9808984	.0280855	-0.67	0.501	.9273678	1.037519
in~eideop375	1.112504	.1929596	0.61	0.539	.791888	1.562929
income2i~375	.9981996	.0020661	-0.87	0.384	.9941582	1.002257
yearbinc~375	1.001467	.0006041	2.43	0.015	1.000283	1.002651

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	103984	-107871.7	-93312.85	77	186779.7	187515.2

CENTER = 3.90

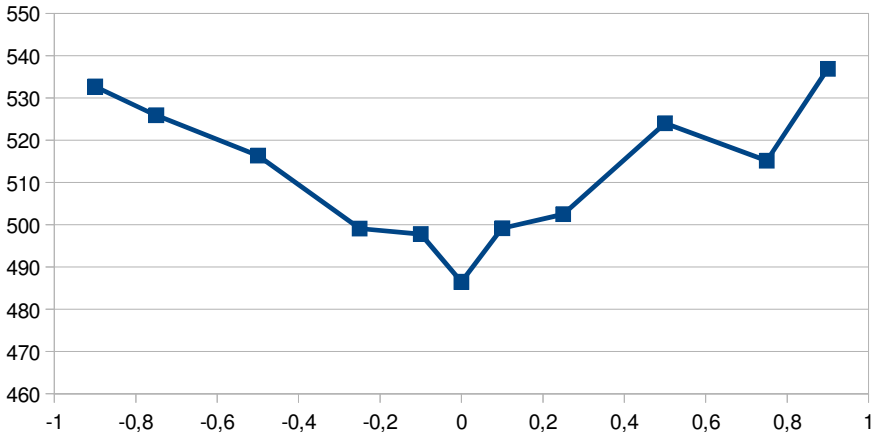
income~2p390	.9578551	.0636841	-0.65	0.517	.8408272	1.091171
in~ eideop390	1.282828	.5115315	0.62	0.532	.5871499	2.802771
income2i~390	.9982508	.001978	-0.88	0.377	.9943816	1.002135
yearbinc~390	1.001471	.0005976	2.46	0.014	1.0003	1.002643

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	103984	-107871.7	-93317.91	78	186791.8	187536.9

<<Graph 7>>

Information-Criteria Analysis for the symmetry-assumption.

BIC value minus 187.000



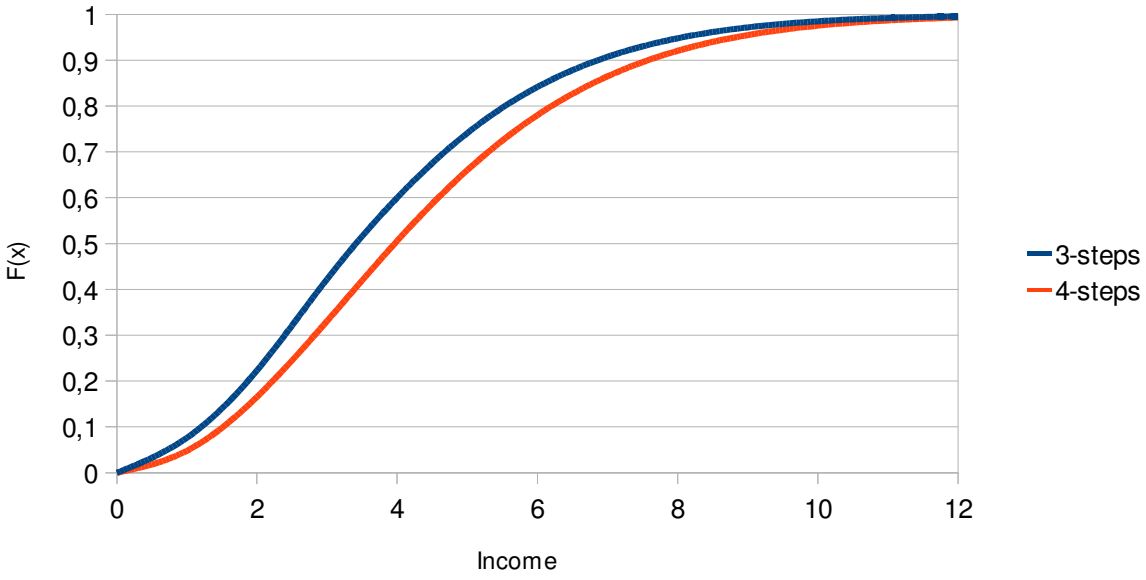
<<Table 10>>

Income distribution for the two databases

	Distribution function	
Income	**3 - Steps**	**4 - Steps**
1	0,07617	0,04785
2	0,22326	0,16546
3	0,42248	0,33098
4	0,60000	0,50594
5	0,74123	0,66025
6	0,84165	0,78013
7	0,90746	0,86487
8	0,94796	0,92053
9	0,97167	0,95499
10	0,98501	0,97533
11	0,99225	0,98686
12	0,99608	0,99318
13	0,99805	0,99653
14	0,99905	0,99827
15	0,99954	0,99916
16	0,99978	0,99959
17	0,99990	0,99980
18	0,99990	0,99990

<<Graph8>>

Income distribution functions for the two databases



<<Table 11>>

Normative positions of political parties in $G(\tau_i)$

	***K* =2**	***K* = 3**	***K* = 4**	***K* = 5**
Center - Left	0,25	0,16	0,37	0,3
Center	--	0,5	--	0,5
Center - Right	0,75	0,83	0,63	0,7