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 I 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 utility of the 100th-98th richest percentile and center-left parties the utility of the 100th-95th richest percentile. The situation has worsened from the seventies when politicians represented, approximately, the median voter.

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

INTRODUCTION:

The financial crisis that had broke out in the USA in 2007 turned into a world wide economic disaster already 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.

The civil society of all OECD countries participated in a world-wide coordinated demonstration on 15th October 2011. Their activists claim that they are not enjoying real democratic systems. They complain that politicians do not follow the wishes of the majority but the dictates of an economic elite, and consider that democracy is excluding the remaining 99% of the population.

These movements are inspired by the work of several researchers (eg. Sirorta 2007, Taibbi 2010, George 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. Because of their relevance for this paper, I would like to highlight the work of two of those researchers: First, Colin Crouch, who claims in his book 'Post-democracy' (Crouch, 2004) that developed countries enjoy only pseudo-democratic regimes as they lack truly representative elections. Crouch considers 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 that favor the interests of the richest (Žižek 2009).

These books are not the only scholarly work that point oust current democratic

deficits. Scientific journals are full with papers about how interest groups can take advantages of a large variety of undemocratic channels in pursuit of their aims. 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 their 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 for the period 1990 -2007.

Another index that 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. The paper will try to show if parties in government satisfy the desires of the entire society or if they focus on the interest of the rich. It will also try to identify correlations between the level of representation and some macro-economic variables.

To do so, I 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. With it I can analyze how the interests of particular citizens are fulfilled by politicians. I will show how the policies implemented by different governments maximize the happiness the economic elite in 2009. Through extrapolation I can show also how politicians represented the median voter around the seventies.

The paper is organized as follows. First I describe the econometric model, its characteristics and the variables used. The results are presented in section 2 and they are discussed in section 3. At the end, I include a conclusion section that summarizes the paper.

SECTION 1: METHODOLOGY

1.1 Background Theory

The aim of this paper is to analyze the quality of representation of developed democracies. The econometric regression is inspired by 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 characterized in the set $X \subset \mathbb{R}$. And there is a number of i citizen-voters such that $i \in N$; each voter has a type z_i such that, $h: z_i \rightarrow \tau_i$, where h is a monotonic function and, 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 the policy selected by the party in government:

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

According to Downs all the political parties will converge to the preferred policy of the median voter and $x_k = x$.

1.2 Econometric model

The downsian model has been extended en many directions and it is the keystone of the econometric model of this paper. Concretely, the paper will try to identify the positions of the K parties in the X set. Here, z_i will be represented as income y_i, and we can assume the linear transformation $\tau_i = c \cdot y_i$, so:

$$u_i(y, x) = f(y_i) - (c \cdot y_i - x_k)^2$$

Now we can group the positions of the K parties in x_k in different ideology families:

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

and assign values for them:

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

So, we can estimate the previous model as:

$$H_{ict} = \beta_1 \cdot y_{ict} + \beta_2 \cdot y_{ict}^2 + \beta_3 \cdot ideo_{ct} + \beta_4 \cdot ideo_{ct}^2 + \beta_5 \cdot ideo_{ct} \cdot y_{ict} + \beta_6 \cdot ideo_{ct} \cdot y_{ict}^2 + \beta_7 \cdot ideo_{ct}^2 \cdot y_{ict} + \gamma \cdot M_{ict} + e_{ict}$$

where: H is the happiness of the individual, y is income of an individual, *ideo* is ideology of party in government, M is a set of controls, i,c and t are sub-indexes for individual, country and year.

We can imagine that richer individuals would be happier in general. That part of

the theoretical model will be estimated as $f(y_i)=\beta_1 \cdot y_{ict}+\beta_2 \cdot y_{ict}^2$.

On the other hand, the x_k will be estimated with the coefficients linked to $ideo^2 \cdot y$, $ideo \cdot y^2$ and $ideo \cdot y$. Concretely, by taking:

$$Political\,Happiness_{ict}=PH_{ict}=\beta_3 \cdot ideo_{ct}+\beta_4 \cdot ideo_{ct}^2+\beta_5 \cdot ideo_{ct} \cdot y_{ict}+\beta_6 \cdot ideo_{ct} \cdot y_{ict}^2+\beta_7 \cdot ideo_{ct}^2 \cdot y_{ict}$$

and solving:

$$y^{\star}(ideo): \frac{\partial PH}{\partial y}=0$$

Political parties will maximize the happiness of the individual with an income level equal to $y^{\star}$. Mathematically it will be:

$$y^{\star}(ideo)=-\frac{\beta_5+\beta_7 \cdot ideo}{2 \cdot \beta_6}$$

These y^* are the characterization of the political positions, x_k in our theoretical model. In case of $\beta_7=0$, then $x_k=x \qquad k \in K$.

I am not using dummy variables, for each ideological family. Instead I assume symmetry between right and left parties. This is a strong assumption that will be tested later on.

The model also assumes that the width of the parabola is equal for all ideologies, as it does not include a $ideo^2 \cdot y^2$, this assumption is supported by the data (see robustness checks)

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

$$F_1(\beta, y, ideo)=\beta_1 \cdot y_{ict}+\beta_2 \cdot y_{ict}^2+\beta_3 \cdot ideo_{ct}+\beta_4 \cdot ideo_{ct}^2+\beta_5 \cdot ideo_{ct} \cdot y_{ict}+\beta_6 \cdot ideo_{ct} \cdot y_{ict}^2+\beta_7 \cdot ideo_{ct}^2 \cdot y_{ict}$$

I will calculate

$$Happiness_{ict}=F_1(\beta, y, ideo)+\delta \cdot t_{ic} \cdot ideo_{ct} \cdot y_{itc}+\eta \cdot P_{ct} \cdot ideo_{ct} \cdot y_{ict}+\gamma \cdot M_{ict}+e_{ict}$$

where: t is a year variable. P is a vector with values for the macro-economic variables: Gini index (*gini*), GDP per capita (*gdp*), unemployment (*unemp*), turnout in the last elections (*turnout*), percentage of national rent paid as wages (*wagessh*), economic growth (*growth*),

percentage of population with colleague education (*unieduc*), and participation in labor unions (*labor*). M will include the interactions between variables t and P with *ideo* and *income*.

The new y^* are defined by:

$$y^{\star}(ideo, t, P) = -\frac{\beta_5 + \beta_7 \cdot ideo + \delta \cdot t + \eta \cdot P}{2 \cdot \beta_6}$$

Again, we can refer the different y^* *(ideo, t, P)* to the different x_k. Now, time and the set of macro-economic variables P, determine also the position of the different k parties when in government.

1.3 Variables description

The period of study goes from 1981 till 2009. There are 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).

The dependent variable will be the level of happiness of a given individual. This and other variables at the individual level come 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. Both databases are not completely identical and I had to carry some transformations. For instance both databases ask for the level of happiness, but 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 2, shows the distribution of these answers.

TABLE 2.

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

In order to handle this discrepancy I have carried out two sets of regressions. The first database has only the observations of the WVS, and a 4-steps measurement of happiness.

The second database 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 has a 3-steps measurement of happiness.

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

Macro-economic variables come from different sources. 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 considers +100.000 interviews for those regressions that consider only the WVS (happiness in a 4-step scale) and +160.000 for those that marges WVS with Schmitt, 2011 (happiness in a 3-step scale). A detailed summary of the variables can be found in the appendixes (APPENDIX 2).

1.4 Regressions

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

In the BASIC regressions, y^* are fixed. YEAR regressions include the variable $year \cdot income \cdot ideo$ that allows for changes of y^* over time. The COMP regression computes the interactions between y^* with time and the complete vector of macro-variables P. This regression will show how the position of y^* varies for different values of P. The numeric suffixes (ie. {3,4}) indicate the number of steps of happiness, the dependent variable.

Problems related with the parallel-line assumption (see below) 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, $unieduc \cdot ideo$, $unieduc \cdot income$, $labor \cdot income$ and $gini \cdot income$. In the appendixes (APPENDIX 3) it is possible to find the large list of controls used.

On the other hand, COMP-4 does 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, in order to obtain unbiased results and accurate errors. It is possible these characteristics in the appendixes (APPENDIX 3).

1.5 Main limitation: Parallel-line assumption:

The dependent variable is the happiness level. For instance, World Values Survey asks: "Taking all things together, would you say you are:". We can name the possible set of answers as *J*. Those answers are:

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

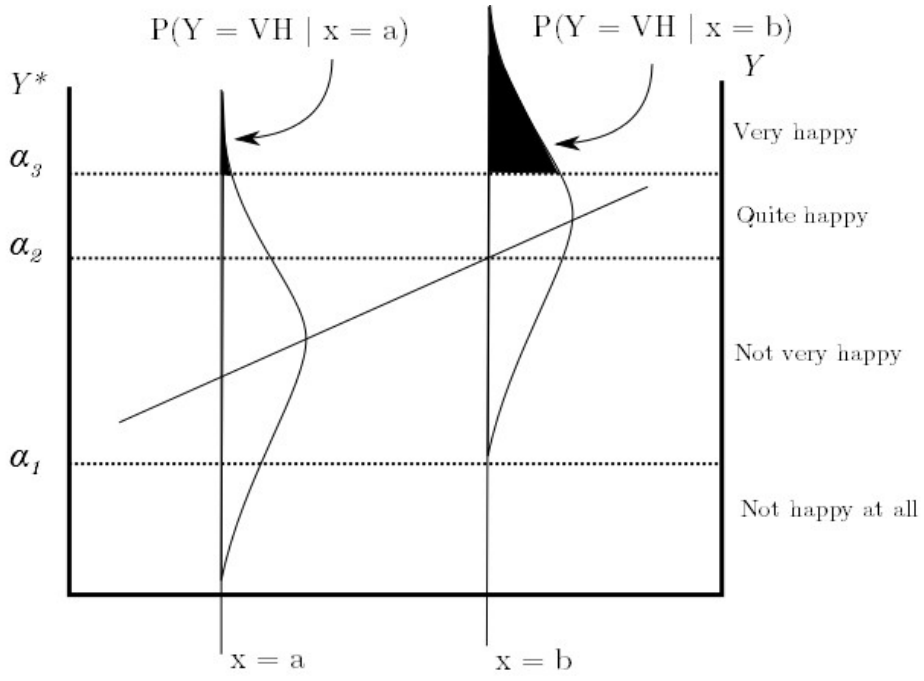
As the possible answers lack cardinality, it is necessary to treat them with ordinal models. The standard procedure is to calculate J -1 ordinary binomial models.:

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

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^*. I show the relation between Y and Y^* in graph 1 (Adapted from Agresti, 2000.)

GRAPH 1

Relationship between the latent variable Y^* and Y.



Obviously, only continuous variables can be derived. Therefore, $\beta_j=\beta$ is a necessary requirement 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 in order to obtain an unbiased and differentiable set of variables has been the following. First I carried out an ordinal logistic regression, then I have performed the Brant test (Long and Freese 2001) and finally, in case of rejecting the null hypothesis of non-parallel lines, I have performed a ordinal general logit model with the weights and heteroskedasticity function indicated in the appendixes (APPENDIX 3).

SECTION 2: RESULTS

In this section, I present the regressions previously described, and a first analysis of the results obtained. I will just show the variables that determine the position of y^*, indicating their coefficients, z-values and whether they violate the parallel-line assumption. I will denote y as "*income*", its interaction with the ideology index as "$income \cdot ideo$", the interaction of income, ideology index and year variables as "$year \cdot income \cdot ideo$", etc...

2.1 Result table

Table 3.
Results table

	BASIC-4	**BASIC-3**	**YEAR-4**	**YEAR-3**	**COMP-4**
$income \cdot ideo$	1,08	1,11	1,05	1,09	2,02
	(0,94)	(1,27)	(0,57)	(1,03)	(3,59)***
$income \cdot ideo^2$	0,99	0,993	0,991	0,991	0,964 ††
	(-0,77)	(-0,52)	(-0,70)	(-0,76)	(-2,88)***
$income^2 \cdot ideo$	0,998	0,993	0,998	0,994	0,998
	(-0,97)	(-2,36)**	(-0,80)	(-2,00)**	(-0,76)

year · income · ideo			1,0013	1,0017	1,0003
			(2,16)**	(2,96)***	(0,27)
wagessh · income · ideo					0,598
					(-3,26)***
growth · income · ideo					0,630†
					(-1,99)**
labor · income · ideo					0,946
					(-1,67)*
gdp · income · ideo					0,979
					(-1,50)
unemp · income · ideo					0,795
					(-1,29)
gini · income · ideo					0,857
					(-0,78)
turnout · income · ideo					0,949
					(-0,70)
unieduc · income · ideo					1,024
					(0,42)
R^2	0,14	0,16	0,14	0,16	0,14
N. Observations	103984	161339	103984	161339	103984

Note: Coefficients denote the probabilities of being happier for an increase of 1 point of a given variable. A Number above 1 means that the happiness is positively correlated with the variable. The opposite works for values 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; * p < .10 for two-tailed tests.

2.2 Analysis

With the previous table it is possible to analyze the movements of y^* in the income scale. In general, a coefficient above one will shift the y^* to the left on the income scale, towards the richer individuals. For instance the coefficient of *year · income · ideo* is greater

than 1 meaning that every year the y^* move to the left (i.e politicians maximize the utility of richer individuals). Recall that originally the income scale belongs to the interval (0,11].

In order to compute the total effect of different variables, I will subtract 1 to the coefficient obtained in the table and calculate y^* with:

$$y^*(ideo, t, P) = -\frac{\beta_5 + \beta_7 \cdot ideo + \delta_1 \cdot t + \eta \cdot P}{2 \cdot \beta_6}$$

Result 1: There is not statistical difference on the individual that different political parties represent once in power. Some regressions show an economic difference.

The variable $income \cdot ideo^2$ is insignificant in 4 out of 5 regressions. Only COMP-4 shows a significant coefficient. In that regression 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 economically significant. The distances between y^*'s in the different regressions are shown in table 4

Table 4.

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

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

In both regressions the coefficient $year \cdot income \cdot ideo$ is positive and significant. Each model shows a different displacements of y^*. This displacement is double for YEAR-4 than for YEAR-3.

Table 5.

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

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

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 political behavior than Japan, USA, Oceania or South Europe (Crouch 2004)

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

We can calculate how an increase of 1% on the values of these variables shift the position of y^*. Countries where workers obtain a larger share of the national rent and countries in growing economies present governments that maximize the utility of the poorer, to the ration 1 point in the income scale for each 1% of increase of these variables. From that perspective the changes on labor union affiliation are much moderated.

Table 6.

Correlations between y^* and statistically significant variables

	Increase of 1%	**Increase 1 st. dev.**
Wages share (wagessh)	-1,17	-6,28
Growth (growth)	-1,07	-3,18
Affiliation to Labor Unions (labor)	-0,15	-3,4

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 much more important than the other two.

It is important to remember that the coefficient *growth · income · ideo* violates the parallel-line assumption.

Result 4: The coefficient linked with GDP per capita is not statistically significant, but economically significant. It shows how richer societies have politicians that maximize the utility of poorer individuals.

Although the coefficient of *gdp · income · ideo* is not statistically significant, changes in one standard deviation on GDP are correlated with larger changes on y^* than those link with changes on affiliation to labor unions and economic growth.

In a quantitative perspective, an increase of one standard deviation of the GDP per capita is correlated with an y^* 5,2 points lower. In other words, richer countries have politicians that satisfy the utility of poorer individuals.

Result 5: Unemployment rate, gini index, turnout in the last elections, and population with a higher degree are not correlated with the position of y^*.

If we repeat the previous analysis with those variables the results are not statistically nor economically significant. The level of unemployment, country inequality, turnout of elections and percentage of population with higher education does not seem to change y^*

Table 7.

Correlations between y^* and statistically insignificant variables

	Increase of 1%	**Increase 1 st. dev.**
Unemployment (unemp)	-0,6	-2,23
Gini index (gini)	-0,41	-1,71
Turnout last elections (turnout)	-0,15	-1,58
Pop. with higher degree (unieduc)	0,07	1,34

SECTION 3: DISCUSSION.

3.1 Picturing democracy and representation.

Until this point I have described how politicians maximize the utility of certain y^* individuals due to several factors. In this section I will illustrate to which income percentile correspond the different y^*. It is important not obly to know the movement in the income scale but also in the income distribution function. The income distribution functions can be found in the appendixes (APPENDIX 7).

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

Table 8.

Percentiles represented by politicians of different.

		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

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 kind of politicians maximize the utility of the richest individuals. In both regressions, we see how politicians maximize the utility of the 95^{th} - 100^{th} richest percentile.

This fact has already been denounced by many authors. They have tried to explain the reasons of this situation. Two of these authors have pointed out reasons that fit with the results:

Slavov Žižec (2009) claimed that crisis are used by politicians to reinforce the

position of the economic elites. As we have seen the coefficient for $growth \cdot income \cdot ideo$ is significant below one. Meaning that politicians maximize the utility of richer individuals under economic crisis.

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 $wagessh \cdot income \cdot ideo$ and $labor \cdot income \cdot ideo$ 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 utility of richer individuals.

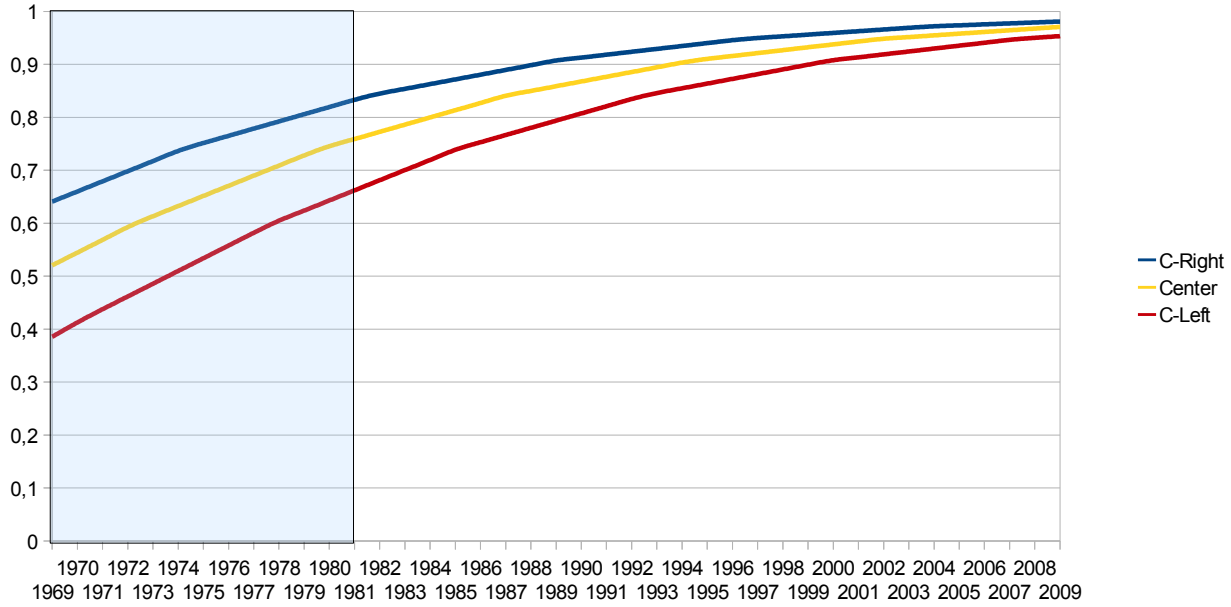
Crouch also explained how developed societies come closest to democracy in its maximal sense after the World War II and before the eighties. We can not test this idea directly with the data as the databases analyze the period 1981-2009. In any case, we can extrapolate backwards the results obtained to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

Graph 2 and Graph 3 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[1].

1 I 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)

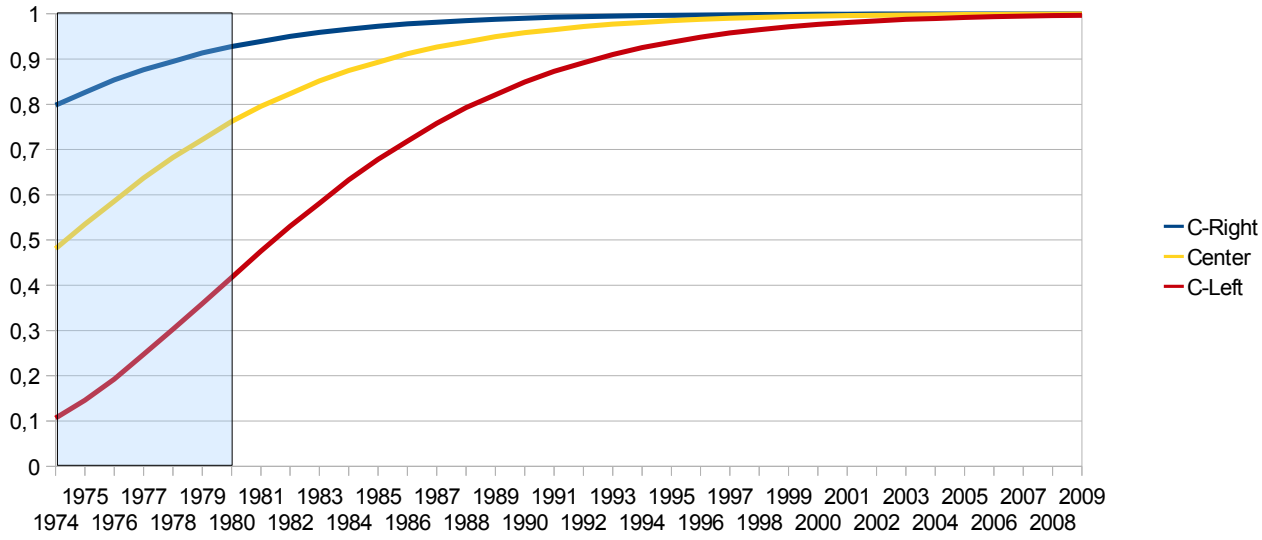
Graph 2.

Percentile represented by different political options according to YEAR-3



Graph 3.

Percentile represented by different political options according to YEAR-4



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

3.2 Limitations

Even if the paper is able to show the huge democratic deficits of developed societies, 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 crises are used by politicians to favor the economic elite, but it could be that countries grow faster when their politicians do not work just for this elite. Similarly, it is possible that countries with strong 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 relative 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.

Inclusion of more data and newer waves of the World Values Survey may help us to better understand which factors are creating the lack of representation. Unfortunately, larger databases are more likely to generate problems with the parallel-line assumption.

Finally, I 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 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, as explained previously.

3.3 Robustness checks:

To sustain the validity of the previous results, I have carried out a long list of

robustness checks. Here, I will explain in detail those three that I 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).

3.3.1 Power of polynomial:

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

$$u_i(y,x)=f(y_i)-(c\cdot y_i-x_k)^2$$

and it is estimated with

$$Political\,Happiness_{ict}=PH_{ict}=\beta_4\cdot ideo_{ct}\cdot y_{ict}+\beta_5\cdot ideo_{ct}\cdot y_{ict}^2+\beta_6\cdot ideo_{ct}^2\cdot y_{ict}$$

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

As it can be seen in the appendixes (APPENDIX 5) these two variables are insignificant at a 5% and they borderline the significance at a 10%. The introduction of these variables creates 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 and P variables with them, making the analysis unnecessary complicated. For all these reasons, I have decided not to include them in the final regressions.

3.3.2 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, I have carried out two regression 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.

3.3.3 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. I 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 I have replicated the YEAR 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}. I 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), it is said that the 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).

3.3.4 Other robustness checks:

I 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; I 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; I have split the database by years, and I have tried several heteroskedasticity functions, finally I have checked if the income distribution is homogeneous over time.

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

SECTION 4: CONCLUSION.

The aim of this paper was to picture the quality of developed democracies. 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.

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 that "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 growing economies and when the working class is stronger.

Unfortunately, and in spite of these correlations, I am not able to explain the circumstances that brought developed societies to the low democratic standards that they are suffering.

This paper leaves many questions unanswered: the causality direction of the correlations, the potential differences between ideologies or the role of GDP per capita in determining y^*. This leaves the door open for further research. Fortunately, the continuity of the World Values Survey will permit larger databases and more accurate results, as well as 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.

REFERENCES:

Agresti, A. 2000. Categorical data analysis. In: *Wiley Series in Probability and Statistics, 2nd ed.*

Alt, J. E & Lassen, D. D., 2010. Enforcement and Public Corruption: Evidence from US States, *EPRU Working Paper Series 2010-08, Economic Policy Research Unit (EPRU), University of Copenhagen. Department of Economics.*

Baldwin, R. E. and Robert-Nicoud, F. 2007. "Entry and Asymmetric Lobbying: Why Governments Pick Losers, *Journal of the European Economic Association, MIT Press, vol. 5(5), pages 1064-1093, 09.*

Brant, R., 1990, Assessing Proportionality in the Proportional Odds Model for Ordinal Logistic Regression, *Biometrics, 35, 1171—1178.*

Bühlmann, M., Merkel, W., Müller, L., Giebler, H. & Wessels, B., 2011. Democracy Barometer. Methodology. *Aarau: Zentrum für Demokratie.*

Crouch, C., 2004. Post-Democracy. *Cambridge: Polity Press.*

Dreher, A. & Schneider, F., 2010. Corruption and the shadow economy: an empirical analysis. *Public Choice, Springer, vol. 144(1), pages 215-238, July.*

Downs, A. 1957: An Economic Theory of Democracy, *Harper and Row, New York (1957).*

Edmond, C. 2011. Information Manipulation, Coordination, and Regime Change, *NBER Working Papers 17395, National Bureau of Economic Research, Inc.*

Felli, L & Merlo, A. 2003. Endogenous Lobbying, *STICERD - Theoretical Economics Paper Series 448, Suntory and Toyota International Centres for Economics and Related Disciplines, LSE.*

Ferraz, C. & Finan, F., 2011. Electoral Accountability and Corruption: Evidence from the Audits of Local Governments, *American Economic Review, American Economic Association, vol. 101(4), pages 1274-1311, June.*

Freedom House. 2012. Freedom in the World: The Arab Uprisings and Their Global Repercussions Selected data from Freedom House's annual survey of political rights and civil liberties. *New York: Freedom House.*

George, S., 2011. Whose Crisis, Whose Future? Towards a Greener, Fairer, Richer World. *Cambridge: Polity Press*

Kaufmann, D., Kraay, A. & Mastruzzi, M., 2009 Governance Matters VIII: Aggregate and Individual Governance Indicators, 1996-2008 (June 29, 2009). *World Bank Policy Research Working Paper No. 4978. Available at SSRN: http://ssrn.com/abstract=1424591*

Klein, N., 2007. The Shock Doctrine: The Rise of Disaster Capitalism. *Toronto:Knopf Canada.*

Long, J. S. & Freese, J. 2001. Regression Models for Categorical Dependent Variables Using Stata. *Stata Press, 2001.*

Potrafke, N., 2009. Did globalization restrict partisan politics? An empirical evaluation of social expenditures in a panel of OECD countries, *Public Choice, Springer, vol. 140(1), pages 105-124, July.*

Prat, A. & Strömberg, D., 2011. The Political Economy of Mass Media, *CEPR Discussion Papers 8246, C.E.P.R. Discussion Papers.*

Revelle, C., Marks, D. & Liebman, J. C., 1970 An Analysis of Private and Public Sector Location Models. *Management Science , Vol. 16, No. 11, Theory Series (Jul., 1970), pp. 692-707*

Evi, S. & Schmitt, H., 2001. The Mannheim Eurobarometer Trend File, 1970–99. *Archived at ICPSR: http://dx.doi.org/10.3886/ICPSR03384*

Sirorta D, 2007. Hostile Takeover: How Big Money And Corruption Conquered Our Government--And How We Take It. *Ed: Three Rivers Press. ISBN-10: 0307237354*

Taibbi, M., 2010. Griftopia: Bubble Machines, Vampire Squids, and the Long Con That Is Breaking America. *Spiegel and Grau, New York.*

Torija Jiménez, P. E., 2011. Stories on corruption. How media and prosecutors influence elections, *Marco Fanno Working Papers 0140, Dipartimento di Scienze Economiche Marco Fanno.*

Patty, J. W., Snyder, Y. & Ting, M. M., 2008. Two's a Company, Three's An Equilibrium: Strategic Voting and Multicandidate Elections. *Mimeo, Harvard University.*

Urbinati, N, & Mark W., 2008. The concept of representation in democratic theory. *The Annual Review of Political Science 11: 387-412.*

World Values Survey 1981-2008 OFFICIAL AGGREGATE v.20090901, 2009. *World Values Survey Association (www.worldvaluessurvey.org). Aggregate File Producer: ASEP/JDS, Madrid.*

Žižek, S. 2009 (2009): First as Tragedy, Then as Farce, *London: Verso.*

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, a986 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

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

APPENDIX 3.
Controls, weights, clusters and heteroskedasticity function

The function includes several specifications to make it accurate and unbiased.

1) Controls:

    1. The regression includes as controls: country dummies, martial status dummies, employment status dummies.
    2. Age, age squared, gender and their interactions with the ideology of the party in power (*parl*)
    3. Variables on P vector: *gini*, *gdp* (gdp per capita), *growth* (economic growth), *turnout* (turnout in the last elections), *unieduc* (% of people with colleage education), *labor* (% of people in labor unions), *wagessh* (% of rents paid as wages).
    4. The interactions between P and *parl,* and *income.*
    5. *year* (year variable), its interaction with *parl*, with *income* and with *parl2*
    6. *gdp* per capita, its interaction with *income* and the resulting variable to the power of two (*gdp2income2*) in order to measure not only the relative but the total income level.

2) Weights

    1. The observations are weighted according to the world values survey indications.
    2. Additionally I have given to every country the same weight, independently of their number of observations. It may be the case that the probability of being selected for the survey depend on factors capable to influence the regressions.

This method eliminates this possibility.

3) Clusters

   1. Clustering is usually recommendable. Here I have clustered by year and country of survey. In total ca. 100 clusters for BASIC-4, YEAR-4, COMP-4 and ca. 150 for BASIC-3 and YEAR-3. Each cluster has around 1.000 observations. This fit the theory of clustering (large number and same size). It would be possible to eliminate the clusters but form my perspective the results would be inferior

4) Heteroskedasticity function.

   1. ML requires, in order to avoid biased results, the inclusion of the correct heteroskedasticity function. Here I have included *income, age* and *parl* variables, being highly significant, and therefore required for obtaining unbiased results.

   2. Errors are robust.

APPENDIX 4.

Extra robustness cheks.

Variable $income^2 ideo^2$

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

$$PH_{ict}=\beta_3\cdot ideo_{ct}+\beta_4\cdot ideo_{ct}^2+\beta_5\cdot ideo_{ct}\cdot y_i+\beta_6\cdot ideo_{ct}\cdot y_{ict}^2+\beta_7\cdot ideo_{ct}^2\cdot y+\beta_8 ideo_{ct}^2\cdot y^2$$

and the y^*

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

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*

These interaction variables are mainly insignificant and BIC analysis suggest not to add them.

Variable $yearincomeideo^2$

I 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 $yearincomeideo^2$ to YEAR, and COMPLETE regressions, we see how it is insignificant.

Time lags

I 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 utility, or that the measurements of current governments need a time to affect individual happiness.

To control for that I 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. I have substituted the different interactions of the old variable *ideo* with the new *ideo3m* and I 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. I have created the variables *ideo1 ideo2 ideo3*, and I 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 *yearincomeideo* varies across time. Namely, if the speed of movement of the peaks varies during the time of the sample. I Have analyse the YEAR-4 regression by incorporating a variable *yearincomeideoh1997* that 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 *yearincomeideoh1997* is insignificant.

Heteroskedasticity function

I have tried other forms of heteroskedasticity. I tried to include *gdp*, *gini*, and *incomeideo* 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

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

Education

Similarities of results when taking into account educational levels

	EDUC	NO-EDUC
incomeideo	1,32 (2,59)***	1,34 (2,69)***
$incomeideo^2$	0,966 (-2,46)**	0,965 (-2,58)**
$income^2ideo$	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.

APPENDIX 5.

Detail: size of polynomial

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

	BASIC-4	**BASIC-3**	**EXTEND-4**	**EXTEND-3**
incomeideo	1,08	1,11	0,964††	0,884†
	(0,94)	(1,27)	(-0,32)	(-0,82)
$incomeideo^2$	0,99	0,993	0,981††	0,985
	(-0,77)	(-0,52)	(-1,37)	(1,07)
$income^2ideo$	0,998	0,993	1,06	1,096†
	(-0,97)	(-2,36)**	(-1,74)*	(1,60)
$income^3ideo$			0,992	0,987†
			(1,68)*	(-1,66)*
$income^4ideo$			1,0004	1,0006†
			(1,63)	(-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; * p < .10 for two-tailed tests.

APPENDIX 6.
Detail: Symmetry-assumption

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

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

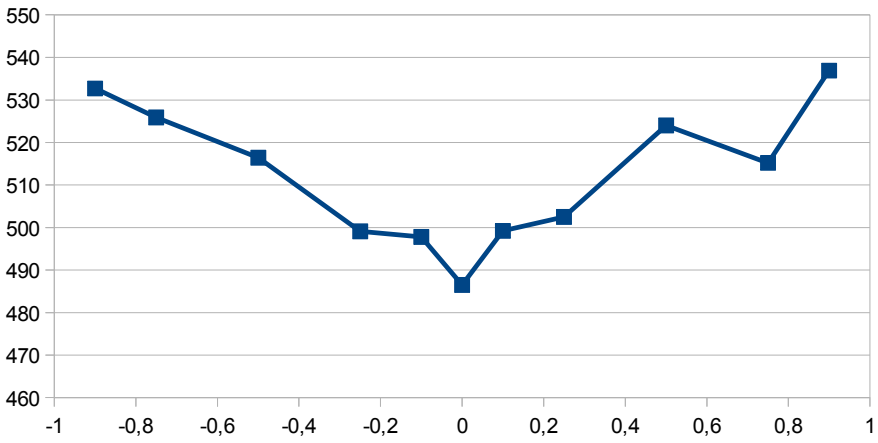
Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	103984	-107871.7	-93312.85	77	186779.7	187515.2

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

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

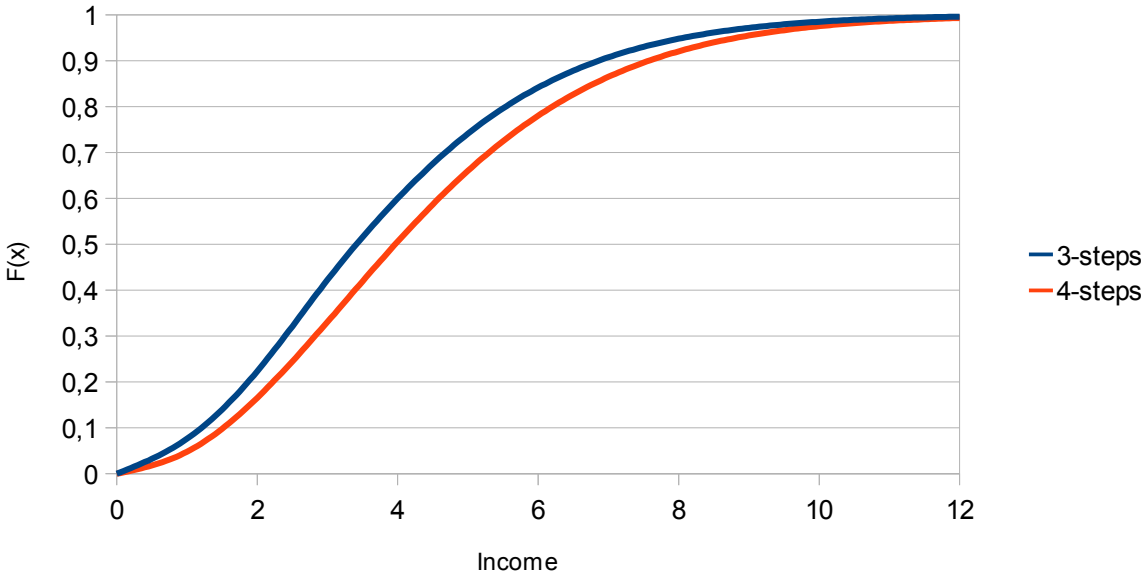


APPENDIX 7.
Distribution function of income

I have modified slightly the distribution functions of income, to go beyond the 11^{th} step of the income scale. For doing so, I 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:

	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

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



APPENDIX 8.

Democratic representation

The aim of this paper is to analyze the quality of representation of developed democracies. I 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, I 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 $X \subset \mathbb{R}$. And there is a number of i citizen-voters such that $i \in N$; each voter has a type z_i such that, $h: z_i \rightarrow \tau_i$, where h is a monotonic function and, where τ_i represents the preferred policy of i. The set of τ_i is $T = X$.

Let now consider that the utility of the voters is given by a function of their type $f(z_i)$ and the distance between their preferred policy and not the party in government. Let x be the policy selected by the closest political party:

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

Let now consider that τ_i has a density function $g(\tau_i)$, and a distribution function $G(\tau_i) \in [0,1]$.

We can consider the weighted i individual as:

$$w_i(\tau, x) = g(\tau_i) \cdot (f(z_i) - (\tau_i - x)^2)$$

The mathematical problem to locale optimally x_k, by maximizing the social welfare function:

$$W_i = \sum_{i=1}^{N} w_i(\tau, x)$$

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:

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

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[2] parties for different values of K.

Table 1.

Normative positions of political parties in $G(\tau_i) \in [0,1]$

	***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

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).

2 I consider center-left and center-right to the immediate inferior and superior k parties to the median of K