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Income distribution and political participation: a multilevel analysis

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Abstract An extensive theoretical and empirical literature already investigates the impact of income inequality on citizens' involvement in specific politically-oriented activities such as voting, membership of political groups, participation in political meetings, etc. In order to broaden still further the theoretical perspective on the connection between income inequality and citizens' political participation, this paper links the literature on inequality and political engagement with the one proposing a conceptualization of different forms of political participation. More specifically, this paper proposes a conceptual framework that analyzes how income inequality interacts with individuals' income position in explaining citizens' involvement in conventional and unconventional political activities. The core of the paper focuses on a multilevel mixed-effects empirical analysis carried out on survey data collected by the European Values Study project; its results support the hypothesis that income inequality significantly shapes the effect of household income in determining citizens' forms of political engagement.

Keywords Inequality · Conventional political participation · Unconventional political participation · Multilevel analysis

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1 Introduction

Since the mid-1980s income inequality has risen remarkably in most OECD countries (Stand and Rising 2011), with some differences between and within national contexts (Fredriksen 2012).

This increasing trend explains why a growing interest has been expressed by political scientists, sociologists and economists in studying the effects of economic inequality on many socially significant outcomes (Van de Werfhorst and Salverda 2012) such as self-reported values and work ethic (Corneo and Neher 2014), crime (Kelly 2000), population health (Lynch and Kaplan 1997; Kawachi et al. 1999), civic engagement (Costa and Kahn 2003), social trust (Gustavsson and Jordahl 2008) and happiness (Alesina et al. 2004).

A relevant part of this literature focuses on the consequences of economic inequality on electoral participation (Oliver 2001; Ansolabehere et al. 2003; Jaime Castillo 2009; Solt 2008, 2010) and provides different theoretical explanations of the link between country income distribution and voting. On the one hand, economic inequality has been theorized as negatively affecting electoral participation because it determines the marginalization of the poor resulting from their low expectations of the probability of influencing political outcomes (*relative power theory*—Schattschneider 1960; Goodin and Dryzek 1980) or from their lack of resources to be invested in political engagement (*resource theory*—Brady et al. 1995). On the other hand, scholars have theorized the existence of a positive correlation between economic inequality and electoral participation due to the conflict between the poor and the rich which arises from unequal income distribution (*conflict theory*—Meltzer and Richard 1981; Brady 2004).

Nevertheless, besides voting there are other actions that people carry out in order to take part in politics. Not surprisingly, scholars have also empirically analyzed the effects of economic inequality on citizens' memberships in political groups (Alesina and La Ferrara 2000), participation in political meetings, petitioning, working for a political party (Uslaner and Brown 2005; Dubrow et al. 2008) and political violence (Muller and Seligson 1987; Abbink et al. 2011; Baten and Mumme 2013). Unfortunately, the results provided by these studies are not univocal; some found income inequality to be inversely related to participation in political groups (Alesina and La Ferrara 2000), others found little support for a direct effect of inequality on participation in meetings, petitioning or work for political parties (Uslaner and Brown 2005). Even the association between economic inequality and political violence is not clear; Abbink et al. (2011) found a decline in violent conflicts due to inequality while an opposite result is provided by Muller and Seligson (1987) and by Baten and Mumme (2013).

Over the last 40 years citizens' political behavior has been widely analyzed by political scientists and the conceptualization of different forms of political participation has been proposed by a number of scholars. Among the wide-ranging literature on this topic (Berelson et al. 1954; Almond and Verba 1963; Verba et al. 1978; Dahl 1971; Verba and Nie 1972), the contribution by Barnes and Kaase (1979) is probably the most cited (Dekker et al. 1997). They proposed the distinction between conventional and unconventional forms of political participation, with the former category including all those activities that are structurally

embedded in the political system (Linssen et al. 2014; these activities include voting, party membership, etc.) and the latter consisting of those actions that—at least in the past (Topf 1995)—were considered as non-institutionalized (boycott, petitioning, etc.). Even if slightly reformulated, this classification has recently been adopted by contributions that investigate political participation in Europe (Marien et al. 2010; Hooghe and Marien 2013) and it is still considered as reflecting the forms of political participation that people actually perform (Marien 2008; Hooghe and Quintelier 2013a, b).

This classification is a useful tool to be adopted when studying the impact of economic inequality on political participation because it allows consideration of the effects of income distribution on broad categories of individual political engagement. Consequently, it helps to overcome the lack of generalization found in previous results that focused solely on some specific expressions of individuals' involvement in politics.

Therefore, the contribution of this paper consists in linking the literature on economic inequality and political participation with the conceptualization of different forms of political participation as developed by Barnes and Kaase (1979). In further detail, this paper aims to provide an answer to the following question: does economic inequality exert any influence on individuals' involvement in either conventional or unconventional forms of political participation?

In order to achieve this goal, this paper formulates hypotheses about how individuals' income interacts with national inequality in influencing personal involvement in different forms of political participation. The core of the paper consists of an empirical, multilevel analysis aimed at testing the validity of these hypotheses and based on cross-country micro-data provided by the European Values Study (EVS) and on macro-data from different sources.

The remainder of the paper is organized as follows; Sect. 2 is devoted to a brief review of the literature regarding forms of political participation and to the formulation of hypotheses about the link between economic inequality and individual conventional/unconventional political engagement; Sect. 3 presents the data used in the empirical analysis; Sect. 4 presents and discusses the empirical approach adopted; Sect. 5 presents the results. In Sect. 6 the robustness of these results is checked, while the final section is devoted to the conclusion.

2 Conventional and unconventional political participation and their link with economic inequality

Starting from the 1970s the conceptualization of the idea of political participation has been a highly debated topic among political scientists. Before that decade only voting and activities strictly related to institutional politics were considered as expressions of political engagement. This restrictive interpretation of political participation was partially widened (Teorell et al. 2007) by Verba and Nie (1972) according to whom political participation consists in all those legal activities "that are more or less directly aimed at influencing the selection of governmental personnel and/or the actions that they take" (Verba and Nie 1972, p. 2). Such a definition, very similar to the

one proposed, among others, by Milbrath and Goel (1977), still excluded passive forms of political participation, civil disobedience, political violence and all those actions not oriented towards governmental institutions (Conge 1988).

Verba et al. (1978) also focused on the relevance of those political activities that occur between elections "when citizens try to influence government decisions in relation to specific problems that concern them" (Verba et al. 1978, p. 47) and therefore helped to prepare for further analyses that seek a broader conceptualization of political participation (Ekman and Amna 2009).

Drawing on Verba et al. (1978), Marsh and Kaase (1979) recognized that political actions are private actions aimed at influencing, even indirectly, the political choices adopted at various levels of the political system. Their contribution was included in a seminal book edited by Barnes and Kaase (1979) where, for the first time, the roles of violence and protest as expressions of political actions were theorized and extensively discussed.

According to Barnes and Kaase (1979) political activities may be categorized according to their degree of institutionalization. On the one hand, participating in elections, discussing politics, contacting officials and/or parties are expressions of conventional political participation because they are "legally embedded activities aimed at directly influencing public officials" (Linssen et al. 2014, p. 4). On the other hand, actions such as signing petitions, attending demonstrations, strikes, boycotts or occupations of buildings "are not structurally embedded in the political system" (Linssen et al. 2014, p. 4) and, therefore, are expressions of unconventional political participation.

While more recent and wider definitions of political participation have been developed (Rush 1992; Brady 1999; Teorell et al. 2007) and while scholars wonder if it is time to formulate an updated definition of political participation (Fox 2013), the contribution by Barnes and Kaase (1979) still remains a reference point for the ongoing debate. Not surprisingly, the distinction between conventional and unconventional political participation is reproduced in the distinction between institutionalized and non-institutionalized political participation adopted by recent empirical papers that investigate political participation in Europe (Marien et al. 2010; Hooghe and Marien 2013; Hooghe and Quintelier 2013a, b). Completing the definition provided by Barnes and Kaase, Hooghe and Marien (2013) highlight that "institutionalized (*conventional*) forms of participation are defined and organized by members of the political élite (most notably political parties), while non-institutionalized (*unconventional*) forms of participation in practice are being used predominantly by non-élite actors, in order to challenge the political élite or to gain access to the political agenda" (Hooghe and Marien 2013, p. 5). According to this view, in the remainder of this paper conventional will be used as a synonym for institutionalized and unconventional will be used as a synonym for non-institutionalized.

Extending the theoretical framework developed by the *resource theory* (Brady et al. 1995) which was originally focused on electoral participation, income may be considered the most important individual-level determinant of political participation; all political activities are costly because resources (time, money, skills) must be invested in order to carry them out; accordingly, richer people have a higher chance of being involved in either conventional or unconventional political activities.

Indeed, although the rational choice approach theorizes a higher opportunity cost of participation for the wealthy, here budget constraints are choice-limiting (Brady et al. 1995). Therefore the following hypothesis may be formulated:

H1 The higher (lower) individual income is, the higher (lower) individual engagement in conventional and unconventional political activities is.

Nevertheless, this link between individual income and conventional/unconventional political participation may be supported or at least partially counterbalanced by the distribution of income in the country under analysis.

Indeed, according to the *relative power theory* (Schattschneider 1960; Goodin and Dryzek 1980), in countries characterized by an unequal distribution of income, political power tend to be concentrated in the hands of the richer; they constitute the political élite and therefore dictate their preferred issues in the political agenda and influence economic policies (Fumagalli and Narciso 2012). In these countries richer people are more likely to consider themselves as part of the governing élite since the income gap allows them to clearly distinguish privileged from non-privileged people. This makes them feel they have a chance to influence political outcomes. Therefore, where higher income inequality exists, the richer (poorer) the people, the more (less) they tend to be engaged in élite-driven political activities. According to Hooghe and Marien (2013) these activities correspond to the above mentioned conventional (institutionalized) ones.

Of course, this hypothesis does not apply to countries characterized by low income inequality. In these countries the distinction between the rich and the poor is less clear. Therefore one may assume that the stabilization of a political élite is less probable; it follows that, compared with countries where high income inequality is reported, richer people have a smaller incentive to be involved in conventional political activities.

To summarize, we would say that income inequality makes the positive link between personal income and conventional political participation stronger. According to this reasoning, the following hypothesis may be formulated:

H2 The higher (lower) income inequality is, the higher (lower) richer people's involvement in conventional political participation is.

There are some reasons to believe that things work in a different way for unconventional political participation. As in the case of conventional political activities, following the *resources theory* we assume that personal income has a positive effect on unconventional political participation. Furthermore, we also assume that this positive effect of personal income on unconventional (non-institutionalized) political participation varies according to a country's income inequality. Nevertheless, the effect of income inequality is different from that which we hypothesize for conventional political participation.

Indeed, where income inequality is higher, richer people are more likely to consider themselves as part of the governing élite; therefore they have no incentive to be involved in élite challenging political activities. Given Hooghe and Marien's (2013) definition of unconventional political participation, it follows that in highly unequal societies richer people should show a lower involvement in unconventional

political activities. In countries where income inequality is lower, instead, the identification of the élite is less clear-cut. This implies that richer people do not systematically recognize themselves as being part of the élite; it follows that, compared with countries where income distribution is more unequal, richer people are more involved in unconventional political activities.

Hence we may formulate the third hypothesis accordingly:

H3 The higher (lower) income inequality is, the lower (higher) richer people's involvement in unconventional political participation is.

The reason for this hypothesis might be easily understood by focusing on the attributes of this mode of political participation. Unconventional participation is risky, as it includes illegal forms of political engagement and even violence. This exposes those who partake in such activities to both social costs and opportunity costs. Both these types of cost are presumably higher for those who are part of the élite and reside in less equal countries. Indeed, when the élite group is narrower, social norms are usually stricter and diverse behaviors are easier to detect; this explains why social costs should be particularly great for élite members who reside in unequal countries and who decide to carry out unconventional political activities in unequal contexts. Moreover, in unequal countries the risk of losing a position of privilege is more substantial, since the difference between élite and non-élite is wider. This explains why the opportunity cost of carrying out unconventional political activities is higher for élite members in an unequal society.

An empirical test of H1, H2 and H3 is provided in the following sections.

3 Data

The empirical test is based on an analysis of individual and country-level variables. Individual data are from the EVS which is a large scale survey that focuses on a wide range of topics and is carried out among European countries. This analysis uses data from the 4th wave of the EVS, which includes observations collected between 2008 and 2010. The original dataset includes 67,786 observations collected in 47 countries. Missing country-level data lead us to drop three countries (Northern Cyprus, Northern Ireland and Kosovo) and missing individual-level data lead us to drop all observation on Iceland as well as many individual observations in other countries. The analysis will be performed with a step-by-step approach, meaning that covariates are included in subsequent models. As covariates are included the number of missing observations increases, to the point that the number of observations in the last model will be 29,703. Individual data are weighted by using the sample weights provided by the EVS dataset. The sources of country-level data are from the World Bank and the CIA World Factbook 2008 and 2009.

3.1 Dependent variables

The construction of a dependent variable that measures conventional and unconventional political participation did, at first, represent a challenge for this

analysis. The EVS database contains several questions about individuals' involvement in a number of political activities; they are listed in Table 1. Part of these questions focus on conventional political participation: "would you vote at a general election tomorrow" ("no" = 1, "yes" = 2), "are you a member of a political party or group" ("no" = 1, "yes" = 2), "how often do you discuss of political matters" ("never" = 1, "occasionally" = 2, "frequently" = 3); other questions, instead, focus on unconventional political actions: "now I'd like you to look at this card. I'm going to read out some different forms of political action that people can take, and I'd like you to tell me, for each one, whether you have actually done any of these things, whether you might do it or would never, under any circumstances, do it" ("would never do" = 1, "might do" = 2, "have done" = 3); the quoted forms of participation are: "signing a petition", "joining in boycotts", "attending lawful demonstrations", "joining unofficial strikes", "occupying building/factories". Table 2 provides summary statistics for all these variables.

Following Marien (2008) and Hooghe and Quintelier (2013a, b) the information provided by all these questions is aggregated performing a single multidimensional analysis based on individual answers. Differently from Marien (2008) and Hooghe and Quintelier (2013a, b), however, here a Non-Linear Principal Component Analysis (NLPCA—Gifi 1990) is performed, with optimal scaling quantification of the categorical data applied (Ercolano and Gaeta 2012).

Like PCA, NLPCA is a multidimensional statistical method that allows the identification of relations between variables by extracting a lower number of latent factors that summarize them. However, differently from PCA, this method takes into account the discrete scale of the original variables, yielding more accurate results; to go into greater detail, category quantifications are calculated in order to maximize the overall variance accounted for by the transformed variables.

Table 1 EVS questions considered in order to measure political participation

Question	Sub-questions	Options
"Now I'd like you to look at this card. I'm going to read out some different forms of political action that people can take, and I'd like you to tell me, for each one, whether you have actually done any of these things, whether you might do it or would never, under any circumstances, do it"	"Signing a petition"	
	"Joining Boycotts"	
	"Attending lawful demonstration"	"Would never do"
	"Joining unofficial strikes"	"Might do"
	"Occupying buildings/factories"	"Have done"
"How often do you discuss about politics with friends?"	–	"Never"
		"Occasionally"
		"Frequently"
"Would you vote at a general election tomorrow?"	–	"Yes"
		"No"
"Do you belong to political parties/groups?"	–	"Yes"
		"No"

Table 2 Summary statistics for the variables presented in Table 1

Var. label	Var. description	Mean	SD	Min	Max
PETITION	Signing a petition	2.00	0.82	1	3
BOYCOTTS	Joining boycotts	1.51	0.66	1	3
DEMONSTRATION	Attending lawful demonstration	1.72	0.75	1	3
UNOFF_STRIKE	Joining unofficial strikes	1.30	0.55	1	3
OCCUPY	Occupy buildings/factories	1.16	0.43	1	3
DISCUSSPOLITICS	How often discuss politics	1.85	0.64	1	3
BELONG_POLITICALPARTY	Belong to political parties/groups	0.05	0.21	1	2
VOTE	Would you vote at a general election tomorrow	1.80	0.41	1	2

Political participation is stratified, and it is more likely for those who are engaged in conventional ways to undertake different modes of involvement. To take into account this association we use promax rotation, a method that allows the factors of the NLPCA Principal Component Analysis to be correlated. Following the Kaiser criterion, only latent factors with an eigenvalue larger than 1 have been considered (Kaiser 1960); as shown in the scree plot the results show two significant latent variables (Fig. 1).

As Table 3 reports, the first one is characterized by high loadings for the non-institutionalized modes of political involvement (signing a petition, joining boycotts, attending lawful demonstrations, joining unofficial strikes, occupying buildings/factories), while the second one is characterized by the institutionalized types of political participation (discussing politics, belonging to a political party, voting). Unquestionably, the theoretical distinction between conventional and unconventional participation finds validation in this empirical analysis. The score of

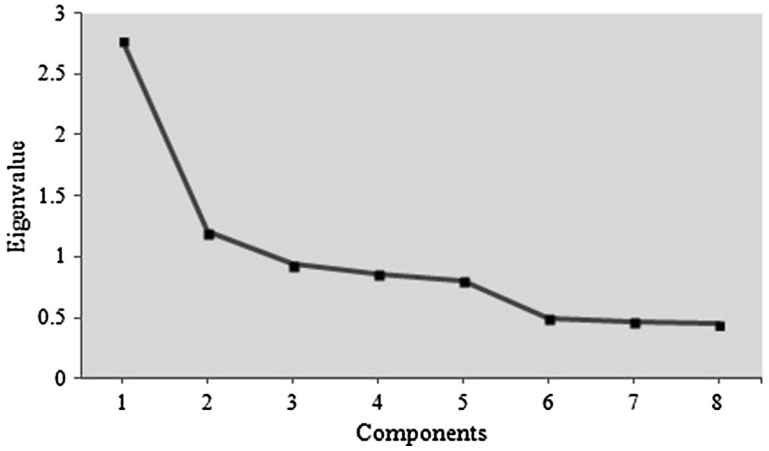

Fig. 1 Scree plot of eigenvalues calculated through PCA

Table 3 Factor loadings calculated through a non-linear PCA carried out on the variables presented in Table 1

Var. label	Factor 1	Factor 2
PETITION	0.620	0.240
BOYCOTTS	0.770	0.092
DEMONSTRATION	0.729	0.184
UNOFF_STRIKE	0.815	−0.191
OCCUPY	0.749	−0.260
DISCUSSPOLITICS	0.104	0.643
BELONG_POLITICALPARTY	−0.026	0.531
VOTE	−0.141	0.643

each observation on these two latent factors represents the individual level of involvement in non-institutionalized and institutionalized political activities respectively. Figures 2 and 3 show for each country a box plot representing individual scores for unconventional and conventional participation respectively. These scores are a continuous variable ranging from −1.25 to 2.34 for unconventional political participation and from −2.27 to 3.30 for conventional political participation. To make the analysis clearer, the scores will be scaled in order to obtain a 1–10 index of conventional and unconventional participation respectively. The two indexes will then be used as dependent variables in the subsequent regression analyses. Some robustness checks concerning the building of these indicators are provided in Sect. 6.

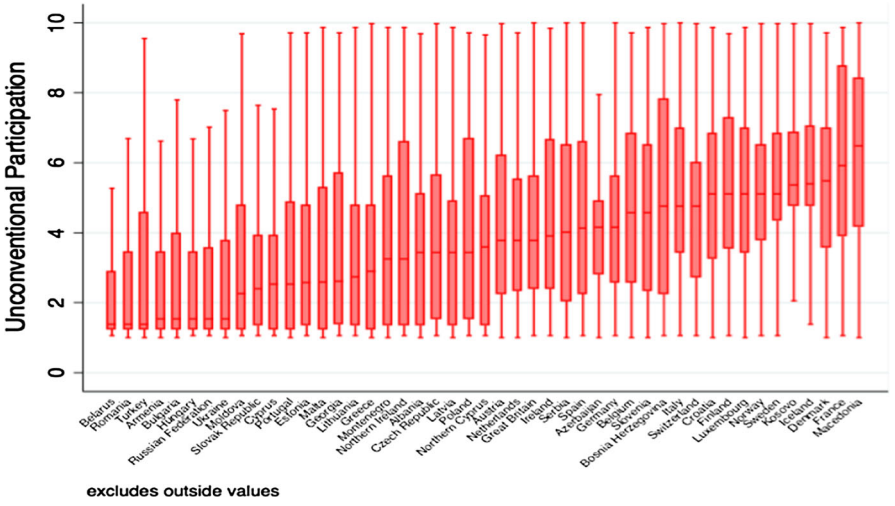

Fig. 2 *Box plots* representing the scores reported by countries for the variable UNCONVENTIONAL

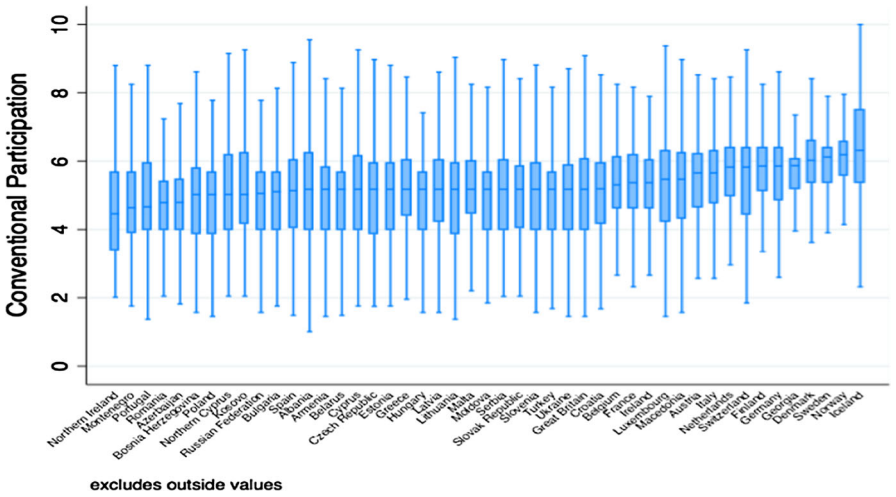

Fig. 3 *Box plots* representing the scores reported by countries for the variable CONVENTIONAL

3.2 Covariates

Is political participation affected by citizens' income and by country income inequality?

To answer this question, this work includes as its main explanatory variables respondents' household income and income inequality measured at country-level.

In the EVS data, household income is measured in purchasing power parity; it is included among the covariates together with its squared value which allows us to check for non-linear effects of income on political participation. Inequality is measured using the Gini index data provided by the CIA World Factbook; 2008 and 2009 data were used depending on the year in which the interview was conducted by the EVS staff. As displayed in Table 4, in the sample considered Sweden reports the lowest value for the Gini index (23) while Turkey shows the highest (43.6). In order to make the analysis more comprehensible, the Gini index continuous values were categorized. The lowest tertile of the observed values was recoded as 1 (this tertile was labeled LowGINI), the middle tertile values was recoded as 2 (MidGINI) and the last tertile was recoded as 3 (HighGINI). As this way of proceeding creates artificially large gaps between countries the analysis was repeated using a 5-class and a 7-class recoding and using the original Gini index. This robustness check is presented and discussed in Sect. 6.

A number of other individual and country-level variables are controlled for. The individual-level controls can be sorted into demographic and socio-political attributes.

Education, age and gender are acknowledged to be powerful predictors of personal engagement, as well as features of the city of residence. Education is measured with a three-level scale (1 = lower, 2 = middle, 3 = upper); age is included among regressors together with its squared in order to control for non-linear effects; one dummy variable identifies females while the size of town where

Table 4 Gini, GDP per capita and Post-Socialist dummy for the countries under examination

Country	Gini index	Gini recoded	Post-socialist	GDP per capita
Albania	26.7	1	Yes	4422.692
Azerbaijan	36.5	3	Yes	5574.604
Austria	26	1	No	49,679.13
Armenia	41	3	Yes	3916.738
Belgium	28	1	No	43,834.08
Bosnia Herzegovina	26.2	1	Yes	4802.467
Bulgaria	31.6	2	Yes	6916.846
Belarus	29.7	2	Yes	6377.36
Croatia	29	2	Yes	15,694.08
Cyprus	29	2	No	31,928.4
Czech Republic	26	1	Yes	21,707.79
Denmark	24	1	No	62,596.48
Estonia	34	3	Yes	17,786.05
Finland	29.5	2	No	44,837.69
France	28	1	No	43,991.72
Georgia	40.4	3	Yes	2919.69
Germany	28	1	No	44,132.06
Greece	33	2	No	30,536.45
Hungary	28	1	Yes	15,364.68
Ireland	32	2	No	58,810.92
Italy	32	2	No	35,724.41
Latvia	37.7	3	Yes	15,463.66
Lithuania	36	3	Yes	14,832.69
Luxembourg	26	1	No	112,028.6
Malta	28	1	No	20,895.78
Moldova	33.2	3	Yes	1695.973
Montenegro	30	2	Yes	7335.897
Netherlands	30.9	2	No	52,951.06
Norway	28	1	No	95,189.87
Poland	36	3	Yes	13,886.47
Portugal	38	3	No	23,860.69
Romania	31	2	Yes	9949.355
Russian Fed.	41	3	Yes	11,699.68
Serbia	30	2	Yes	6497.843
Slovak Republic	26	1	Yes	18,201.27
Slovenia	24	1	Yes	26,989.65
Spain	32	2	No	34,674.17
Sweden	23	1	No	43,639.55
Switzerland	33.7	3	No	68,555.37
Turkey	43.6	3	No	8626.398
Ukraine	31	2	Yes	3891.038

Table 4 continued

Country	Gini index	Gini recoded	Post-socialist	GDP per capita
Macedonia	39	3	Yes	4433.857
Great Britain	34	3	No	35,454.95

N = 43

Source for Gini: CIA World Factbook

Source for GDP per capita: World Bank

the interview was conducted is measured by an eight-level scale (1 for town with fewer than 2000 inhabitants, 8 for 500,000 or more).

Whether an individual is in the workforce and whether she has a regular job is considered to influence the level of individual political involvement. Therefore job status, measured by one dummy for being out of the labor force (1 = student or retired or housewife) and one for being unemployed, is also included among controls. Another control is marital status; the effect of this variable is ambiguous since married people could have less free time to spend on political activities even if previous analyses show that husbands and wives remind each other to vote (Brady et al. 1995).

Socio-political attributes are undoubtedly strong determinants of individual political participation. For this reason variables for political self-positioning (self-placement on a 1–10 scale, with 1 being "right" and 10 being "left"), confidence in Parliament (1–4 scale, 1 being "none at all" and 4 being "a great deal") and attitudes towards redistribution (self-placement on a 1–10 scale, with 1 being "There should be greater incentives for individual effort" and 10 being "Incomes should be made more equal") are included among the covariates. Religious groups' activities may supply their members with civic skills that could ease civic engagement, therefore a dummy for members of religious groups is included; by contrast, individuals that rely a lot on the family are shown to participate less. In order to control for this effect, this analysis includes among the covariates an index of salience of family connections which was built, following Alesina and Giuliano (2011), by performing a PCA on selected questions about parents' responsibilities, respect and love for parents and importance of family in life.

Of course, the context also has a significant influence on individuals' involvement in political activities. Hence the present empirical investigation also considers country-level controls. GDP per capita is included since it is expected that a wealthier context boosts political participation by making more resources available. Furthermore, to take into account the fact that socialism could have influenced individual attitudes towards institutions (Alesina and Schuendeln 2005) a dummy expressing whether the country where interviews were realized has a socialist past or not is also included.

Country-level and individual variables are presented in Tables 4 and 5 respectively. In these table descriptive statistics are also reported.

Table 5 Descriptive statistics (individual-level variables)

Var. label	Description	Mean	SD	Min	Max	Median	Source
HHINCOME	Household income × 1000 in PPP	1.21	1.27	0.01	14.73	1.21	EVS
AGE	Age	46.53	17.79	15	108	46.53	EVS
SEX	1 if female	0.55	0.50	0	1	0.55	EVS
EDUCATION	Education (1 = low, 2 = middle, 3 = high)	1.94	0.73	1	3	1.94	EVS
MARRIED	1 if married	0.56	0.50	0	1	0.56	EVS
OUTOFLABOR	1 if out of the labor force	0.37	0.48	0	1	0.37	EVS
UNEMPLOYED	1 if unemployed	0.10	0.30	0	1	0.10	EVS
BELONGRELIGIOUS	1 if member of religious groups/associations	0.10	0.30	0	1	0.10	EVS
FAMILYTIES	PCA score on salience of family connections (the higher the score the higher the salience)	0.00	1.00	−4.61	0.79	0.00	Elaboration on EVS
RIGHTLEFT	Political self-positioning (1 = extreme right; 10 = extreme left)	5.61	2.24	1	10	5.61	EVS
REDISTRIBUTION	Preference for redistribution (1 = unequal incomes are an incentive to individual efforts; 10 = income should be made more equal)	5.68	2.91	1	10	5.68	EVS
CONFINPARLIAMENT	Confidence in Parliament (1 = no confidence; 4 = great confidence)	2.25	0.86	1	4	2.25	EVS
SIZEOFTOWN	Population of town where interview was conducted (1 = under 2000; 8 = 500,000 and more)	4.37	2.46	1	8	5	EVS

4 Methodology

A methodological issue in analyzing macro determinants of political participation is that individuals are grouped into countries. To correctly estimate the effects of the variables of interest then, it is necessary to control for individual determinants while taking into consideration that individuals, who constitute the first level of analysis (level-1), are nested into countries which represent the broader level of analysis (level-2). Hence, the empirical strategy has to be appropriate for the multilevel structure of the data.

Hierarchical mixed effects models are the best option to deal with these data since they allow unexplained heterogeneity at country level to be accounted for while fitting the regression at the individual level. At the same time, they allow the inclusion of country-level covariates in the analysis.

Unlike most of the literature on political participation, here the dependent variables are continuous, thus allowing for the use of a linear model.

To be as accurate as possible, this analysis will proceed with a step-by-step approach, which will provide the opportunity of meticulously investigating the different effects of the covariates at different levels. Furthermore, the analysis will be carried out in four steps which are extensively presented in great detail in the following section.

4.1 Analytical approach

To check if a substantial amount of variance is explained by differences between countries, the analysis will start with a random effects ANOVA that may be written as follows

$$y_{ij} = \beta_{0j} + \varepsilon_{ij}$$

where

$$\beta_{0j} = \beta_0 + \upsilon_{0j}$$

where y_{ij} is the score of the ith individual in country j for the conventional or the unconventional political participation variable (which are labeled CONVENTIONAL and UNCONVENTIONAL respectively); β_{0j} is the intercept that varies across countries with β_0 being the mean across all individuals and all the considered countries. Dealing with a two-level model means having two error terms; ε_{ij} is the level-1 error term and shows how much each individual's level of political participation differs from the mean observed in the country where he or she resides; instead, the level-2 error term, which is υ_{0j}, shows the deviation from the grand mean for each country j.

In the second step of the analysis individual-level covariates will be included in the model; this allows to test H1 presented in Sect. 2. At a later step also the country-level variables will be considered. The model with both level-1 and level-2 variables is

$$y_{ij} = \beta_{0j} + \beta_1 HHINCOME_{ij} + \beta_2 X_{ij} + \varepsilon_{ij}$$

where

$$\beta_{0j} = \beta_0 + \beta_3 GDP_j + \beta_4 CatGINI_j + \beta_5 POSTSOCIALIST_j + \upsilon_{0j}$$

X_{ij} is a vector of level-1 controls, $HHINCOME_{ij}$ is household income, GDP_j is countries' GDP per capita, $CatGINI_j$ is countries' level of income inequality and $POSTSOCIALIST_j$ is a dummy equal to 1 if the country j experienced a socialist regime. β_{0j} can be substituted to obtain a single equation:

$$\begin{aligned} y_{ij} = {} & \beta_{0j} + \beta_1 HHINCOME_{ij} + \beta_2 X_{ij} + \beta_3 GDP_j + \beta_4 CatGINI_j \\ & + \beta_5 POSTSOCIALIST_j + \varepsilon_{ij} + \upsilon_{0j} \end{aligned}$$

The final model includes a cross-level interaction between household income and country Gini level. To account for the between-countries variation of the effect of household income on political participation, the model will include a random term on its coefficient. As with the random intercepts, in each country the effect of household income is allowed to have a different slope. The coefficient for $HHINCOME_{ij}$ will be composed of a fixed part (β_1), namely the average slope of income on participation, and a random part (υ_{1j}), that is the difference from the average slope for each country j. Therefore the model becomes

$$y_{ij} = \beta_{0j} + \beta_{1j} HHINCOME_{ij} + \beta_2 X_{ij} + \beta_6 CatGINI_j * HHINCOME_{ij} + \varepsilon_{ij}$$

where

$$\begin{aligned} \beta_{0j} &= \beta_0 + \beta_3 GDP_j + \beta_4 CatGINI_j + \beta_5 POSTSOCIALIST_j + \upsilon_{0j} \\ \beta_{1j} &= \beta_1 + \upsilon_{1j}. \end{aligned}$$

In the latter model the random part includes $\upsilon_{0j} + \upsilon_{1j} HHINCOME_{ij}$, so there is a random intercept and a random slope on household income. As in the case of random intercepts, here υ_{1j} accounts for the deviation of the effect of income; however, here this effect is not a parallel shift of the intercepts but a variation of the slope of the effect of individual income for each country.

Table 6 Summary of models

		Random part
Model null	$UNCONVENTIONAL_{ij} = \beta_{0j} + \varepsilon_{ij}$	$\beta_{0j} = \beta_0 + \upsilon_{0j}$
Model level 1	$UNCONVENTIONAL_{ij} = \beta_{0j} + \beta_1 HHINCOME_{ij} + \beta_2 X_{ij} + \varepsilon_{ij}$	$\beta_{0j} = \beta_0 + \upsilon_{0j}$
Model 2	$UNCONVENTIONAL_{ij} = \beta_{0j} + \beta_1 HHINCOME_{ij} + \beta_2 X_{ij} + \beta_3 GDP_j + \beta_4 CatGINI_j + \beta_5 POSTSOCIALIST_j + \varepsilon_{ij}$	$\beta_{0j} = \beta_0 + \upsilon_{0j}$
Model R. slope	$UNCONVENTIONAL_{ij} = \beta_{0j} + \beta_1 HHINCOME_{ij} + \beta_2 X_{ij} + \beta_3 GDP_j + \beta_4 CatGINI_j + \beta_5 POSTSOCIALIST_j + \varepsilon_{ij}$	$\beta_{0j} = \beta_0 + \upsilon_{0j}$ $\beta_{1j} = \beta_1 + \upsilon_{1j}$
Model interaction	$UNCONVENTIONAL_{ij} = \beta_{0j} + \beta_{1j} HHINCOME_{ij} + \beta_2 X_{ij} + \beta_3 GDP_j + \beta_4 GINI_j + \beta_5 POSTSOCIALIST_j + \beta_5 CatGINI_j * HHINCOME_{ij} + \varepsilon_{ij}$	$\beta_{0j} = \beta_0 + \upsilon_{0j}$ $\beta_{1j} = \beta_1 + \upsilon_{1j}$

Table 6 reports a summary of the models.

5 Results

The comment of the results will follow the outline presented in the previous section. The results from the ANOVA model will be commented in the Null Model section, individual and country determinants of participation will be discussed in Level 1 Model and Level 2 Model sections respectively; finally, the section entitled Interaction Model will focus on the empirical test of hypotheses H2 and H3.

5.1 Null model

Random intercepts ANOVA may be used in order to assess whether the variance of the dependent variables explained by the differences among countries justifies a multilevel approach. The intra-class correlation (ICC) is the ratio of the variance explained by the difference among the countries (random part) on the total variance (random and fixed part).

The results reported in the first column of Table 7 show ICC = 0.146 for UNCONVENTIONAL and ICC = 0.087 for CONVENTIONAL. This means that a sizable amount of the variation in the dependent variables is explained by differences among countries; therefore a multilevel analysis is recommended.

5.2 Level 1 model

The first Hypothesis (H1) theorizes a positive impact of individual income on both conventional and unconventional political participation; level 1 model tests this hypothesis at the individual level but also checks for unexplained heterogeneity at a country level by allowing a different intercept for each considered country.

Including level-1 covariates allows to ascertain how much of the correlation between groups is explained by personal characteristics; moreover, the resulting coefficients are not biased by between-countries differences.

Looking at the results presented in the second column of Table 7, the analysis validates H1, since the coefficient reported for household income (HHINCOME) is positive and significant for both unconventional and conventional political participation. It has been disputed that a higher income may be related to more free time (Brady et al. 1995), however being wealthy is certainly related to higher civic virtues and therefore to higher levels of political involvement (de Blasio and Nuzzo 2010). Squared household income ($HHINCOME^2$) is included to check whether a nonlinear relation between income and political participation does exist. The coefficient calculated for this variable is negative and significant for both modes of political participation, meaning that the positive effect of income is marginally decreasing. Coefficients estimated for control variables are listed in Table 8.

Table 7 Main results obtained through multilevel mixed effects regression analyses

	Null model		Level 1		Level 2	
	UNCONVENTIONAL	CONVENTIONAL	UNCONVENTIONAL	CONVENTIONAL	UNCONVENTIONAL	CONVENTIONAL
HHINCOME			0.146***	0.0885***	0.152***	0.0816***
			(3.12)	(3.30)	(3.20)	(2.94)
$HHINCOME^2$			−0.0160***	−0.00638**	−0.0168***	−0.00592*
			(−2.99)	(−2.11)	(−3.13)	(−1.90)
MidGINI * HHINCOME						
HighGINI * HHINCOME						
MidGINI					−0.346	−0.0538
					(−1.15)	(−0.65)
HighGINI					−0.263	−0.0690
					(−0.89)	(−0.69)
GDP					0.00000802*	0.00000220
					(1.70)	(1.07)
POSTSOCIALIST					−0.444	−0.218***
					(−1.45)	(−2.64)
Intercept	4.125***	5.193***	3.370***	3.570***	3.615***	3.719***
	(28.59)	(81.53)	(17.90)	(27.55)	(8.87)	(23.08)
var(intercept)	0.952	0.185***	0.803	0.0918***	0.570**	0.0510***
	(−0.31)	(−7.27)	(−1.20)	(−8.46)	(−1.99)	(−12.29)
var(residual)	5.551***	1.945***	4.791***	1.648***	4.799***	1.631***
	(46.66)	(19.93)	(41.26)	(14.94)	(40.60)	(14.54)
var(hhincome)	No	No	No	No	No	No
Random slope	No	No	No	No	No	No

Table 7 continued

	Null model		Level 1		Level 2	
	UNCONVENTIONAL	CONVENTIONAL	UNCONVENTIONAL	CONVENTIONAL	UNCONVENTIONAL	CONVENTIONAL
Individual variables	No	No	Yes	Yes	Yes	Yes
N	51,518	51,518	30,444	30,444	29,703	29,703
ICC	0.146	0.0867	0.143	0.0528	0.106	0.0303
−2LL	−116,966.1	−90,034.2	−67,187.9	−50,914.1	−65,592.0	−49,521.5

	Random slope		Interaction	
	UNCONVENTIONAL	CONVENTIONAL	UNCONVENTIONAL	CONVENTIONAL
HHINCOME	0.152***	0.0797***	0.223***	0.0979***
	(3.11)	(2.80)	(3.60)	(3.10)
$HHINCOME^2$	−0.0189***	−0.00652**	−0.0185***	−0.00646**
	(−3.11)	(−1.97)	(−2.99)	(−1.99)
MidGINI * HHINCOME			−0.0842	−0.0506*
			(−1.57)	(−1.77)
HighGINI * HHINCOME			−0.165***	−0.00717
			(−3.10)	(−0.31)
MidGINI	−0.265	−0.0232	−0.232	0.0113
	(−0.86)	(−0.25)	(−0.75)	(0.11)
HighGINI	−0.146	−0.0748	−0.0858	−0.0660
	(−0.49)	(−0.69)	(−0.29)	(−0.57)
GDP	0.00000776	0.00000151	0.00000780	0.00000155
	(1.35)	(0.64)	(1.38)	(0.65)
POSTSOCIALIST	−0.454	−0.234**	−0.453	−0.235**
	(−1.37)	(−2.51)	(−1.37)	(−2.53)

Table 7 continued

	Random slope		Interaction	
	UNCONVENTIONAL	CONVENTIONAL	UNCONVENTIONAL	CONVENTIONAL
Intercept	3.563***	3.746***	3.535***	3.731***
	(8.21)	(21.56)	(8.23)	(21.32)
var(intercept)	0.596*	0.0577***	0.595*	0.0570***
	(−1.91)	(−12.11)	(−1.92)	(−12.15)
var(residual)	4.785***	1.628***	4.785***	1.628***
	(40.23)	(14.43)	(40.23)	(14.43)
var(hhincome)	0.0165***	0.00212***	0.0116***	0.00176***
	(−6.78)	(−9.57)	(−7.70)	(−11.56)
Random slope	Yes	Yes	Yes	Yes
Individual variables	Yes	Yes	Yes	Yes
N	29,703	29,703	29,703	29,703
ICC	0.114	0.0354	0.113	0.0348
−2LL	−65,573.8	−49,511.3	−65,569.6	−49,508.8

Coefficients and t statistics (in parentheses)

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table 8 Results for individual-level covariates obtained through the Level 1 model

	UNCONV	CONV
REDISTRIBUTION = 1	−0.213**	0.0336
	(−2.24)	(0.96)
REDISTRIBUTION = 2	−0.175*	0.0330
	(−1.90)	(0.72)
REDISTRIBUTION = 3	−0.166**	0.0634
	(−2.49)	(1.49)
REDISTRIBUTION = 4	−0.0255	0.0577
	(−0.35)	(1.33)
REDISTRIBUTION = 5	0.00318	0.0206
	(0.05)	(0.71)
REDISTRIBUTION = 6	Base value	Base value
	(·)	(·)
REDISTRIBUTION = 7	0.0480	−0.00982
	(0.71)	(−0.29)
REDISTRIBUTION = 8	0.0788	−0.000217
	(1.10)	(−0.01)
REDISTRIBUTION = 9	0.0551	−0.0157
	(0.62)	(−0.33)
REDISTRIBUTION = 10	0.0696	0.00656
	(0.88)	(0.17)
RIGHTLEFT = 1	0.357***	0.480***
	(3.12)	(8.05)
RIGHTLEFT = 2	0.126	0.454***
	(1.10)	(6.88)
RIGHTLEFT = 3	0.0873	0.349***
	(1.14)	(7.97)
RIGHTLEFT = 4	0.0553	0.250***
	(0.82)	(6.07)
RIGHTLEFT = 5	−0.0825*	0.126***
	(−1.65)	(3.20)
RIGHTLEFT = 6	Base value	Base value
	(·)	(·)
RIGHTLEFT = 7	0.445***	0.295***
	(5.31)	(7.24)
RIGHTLEFT = 8	0.960***	0.402***
	(10.10)	(9.55)
RIGHTLEFT = 9	0.967***	0.475***
	(5.42)	(11.08)
RIGHTLEFT = 10	0.586***	0.500***
	(3.65)	(9.79)
CONFINPARLIAMENT = 1	Base value	Base value
	(·)	(·)

Table 8 continued

	UNCONV	CONV
CONFINPARLIAMENT = 2	−0.0505	0.175***
	(−1.00)	(5.67)
CONFINPARLIAMENT = 3	−0.0871	0.339***
	(−1.01)	(9.37)
CONFINPARLIAMENT = 4	−0.117	0.340***
	(−0.94)	(4.97)
AGE	0.0429***	0.0363***
	(6.81)	(8.47)
AGE^2	−0.000632***	−0.000305***
	(−9.50)	(−6.81)
FAMILYTIES	−0.176***	0.0158
	(−7.54)	(1.37)
HHINCOME	0.197***	0.405***
	(2.91)	(7.28)
HHINCOME2	−0.261***	0.0646***
	(−8.01)	(3.40)
BELONGRELIGIOUS	−0.503***	−0.248***
	(−12.07)	(−8.45)
MARRIED	−0.0591	0.0580**
	(−1.13)	(1.96)
SEX	−0.000545	−0.150***
	(−0.01)	(−4.36)
OUTOFLABOR	−0.0505	0.175***
	(−1.00)	(5.67)
UNEMPLOYED	−0.0871	0.339***
	(−1.01)	(9.37)
EDUCATION = 1	Base value	Base value
	(·)	(·)
EDUCATION = 2	0.440***	0.319***
	(6.69)	(10.99)
EDUCATION = 3	0.751***	0.613***
	(9.36)	(21.24)
Continues on other column		
SIZEOFTOWN = 1	Base value	Base value
	(·)	(·)
SIZEOFTOWN = 2	0.0609	0.0175
	(0.65)	(0.48)
SIZEOFTOWN = 3	0.139*	0.0125
	(1.74)	(0.30)
SIZEOFTOWN = 4	0.0793	−0.0299
	(0.93)	(−0.70)

Table 8 continued

	UNCONV	CONV
SIZEOFTOWN = 5	0.162**	0.0516
	(2.06)	(1.14)
SIZEOFTOWN = 6	0.191**	0.0188
	(2.13)	(0.43)
SIZEOFTOWN = 7	0.353***	0.0540
	(4.78)	(1.27)
SIZEOFTOWN = 8	0.485***	0.0453
	(4.76)	(0.77)
Intercept	3.370***	3.570***
	(17.90)	(27.55)
var(intercept)	0.803	0.0918***
	(−1.20)	(−8.46)
var(residual)	4.791***	1.648***
	(41.26)	(14.94)
N	30,444	30,444
ICC	0.143	0.0528
−2LL	−67,187.9	−50,914.1

Coefficients and t statistics (in parentheses)

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

5.3 Level 2 model

Individuals live in a context that shapes how they make their decisions. For this reason a complete analysis of the determinants of political participation cannot ignore contextual features. As already highlighted, this model includes three country-level covariates: Gini index recoded, GDP per capita and a post-Socialist dummy. Results are reported in the third column of Table 7. Inequality does not seem to affect conventional and unconventional political participation. Indeed, the coefficients of MidGINI and HighGINI are negative but not significant. Higher GDP may denote higher resources to be invested in political involvement, but this positive correlation is significant only for unconventional participation, and only at the 10 % level. The influence of a post-Socialist past has the expected negative sign, as it may be presumed that a shorter democratic experience could affect the level of citizen participation in general; in any case, this result is significant only for conventional participation. The results of Level 1 model do hold after the inclusion of level-2 covariates.

5.4 Random slope model

Dealing with a hierarchical model with random intercepts implies the assumption that the effects of individual variables do not change across countries. This assumption may seem too restrictive when a wide variety of countries with different

characteristics is analyzed, especially if it is maintained that the effect of household income may vary depending on the distribution of wealth and on the relative individual income position. In order to address this problem, the random slope model allows the slope on household income to vary by including a random part in its coefficient. An independent covariance structure is used, hence covariance between the random slope and the random intercepts is zero and each random effect has a different variance.

Looking at the results reported in the fourth column of Table 7, the variance component on income is significant at 1 % for both models, meaning that the effect of household income varies considerably between countries; furthermore, the higher log-likelihood calculated for both of the models corroborates that this approach fits better to the data.

The results are essentially unaltered from the previous models. Gini level seems to have no effect at all for both conventional and unconventional political participation, while having a Socialist past is still significant and negative only for conventional participation. GDP becomes not significant in explaining unconventional participation. This suggests that the variation in the level of participation due to the country's level of wealth may be absorbed by the newly included error term on income. That means that the salience of the GDP is weakened by allowing the individual income to have different slopes across different countries, which is not surprising since the mean of household income for each country is expected to be closely related to that country's per capita GDP.

5.5 Interaction model

Up to this moment, country-level effects have been considered to be detached from individual-level features. This way of proceeding can be misleading because elements from the two levels of analysis come into play jointly, as could be the case for the level of inequality index and household wealth. In order to test H2 and H3 it is crucial to consider the combined effect of these two covariates. Therefore, the last model keeps both the random parts (on the intercepts and on household income) and includes an interaction term between Gini level and household income. As Brambor et al. (2005) point out the interpretation of interaction terms always requires particular attention. Indeed, the coefficient resulting from a regression cannot be interpreted as an unconditional linear effect, but has to be examined in more detail. The best option is to plot the conditional effects on a figure containing the relevant values for the interacted variables.

The last column of Table 7 shows the coefficients calculated for this model, while Figs. 4 and 5 show the marginal effects of a HighGINI on CONVENTIONAL and UNCONVENTIONAL at different levels of household income, using LowGINI as the base category.

Finally, Fig. 6 shows the fixed part prediction for UNCONVENTIONAL for LowGINI and HighGINI at different levels of household income. The same plot for conventional political participation is omitted as the results show a non significant effect for HighGINI.

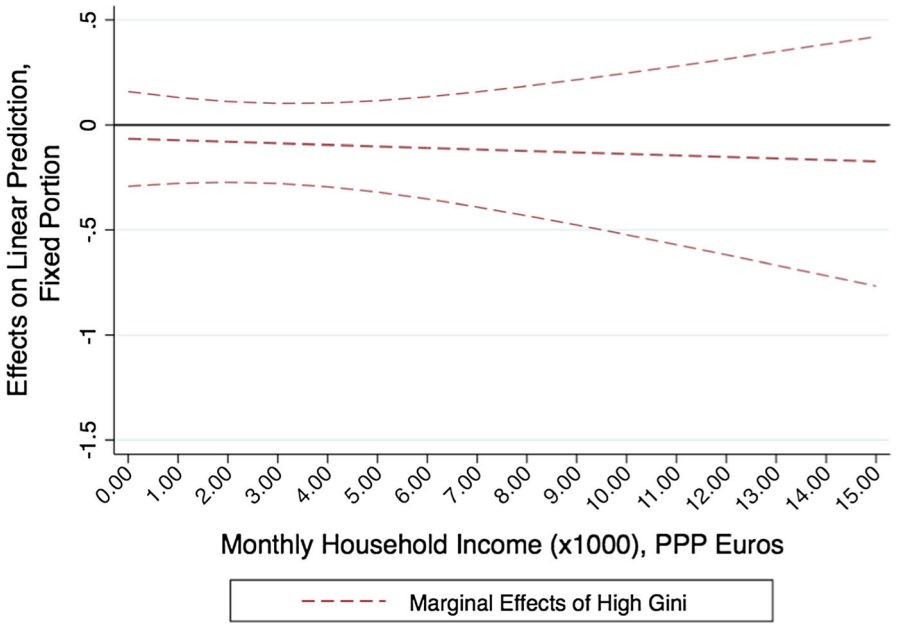

Fig. 4 Marginal effects of HighGINI on CONVENTIONAL at different levels of household income. 95 % CIs reported

One important point is that the interaction is between a continuous and a categorical variable. The effect of this interaction is not represented by a shift of the intercept in less equal countries but by a variation on the slope. This effect, combined with the non-linear negative effect of household income, provides another interesting insight into the impact of inequality on political participation; participation has an inverse U-shape on income, because for each unit of additional income the degree of involvement increases (HHINCOME is positive) at a decreasing rate ($HHINCOME^2$ is negative).

The results show that for conventional participation the combined effects of high inequality at different levels of income are not statistically distinguishable from zero. There are two possible explanations for this result: one is the lack of variation in the dependent variable. Indeed, most of the variance of the scores of conventional participation is already explained by level-1 and level-2 models. Another plausible explanation is that being richer does not sizably increase the degree of conventional political involvement in countries where the income distribution is uneven with respect to more equal countries; according to this explanation, H2 is not confirmed by the empirical analysis since it demonstrates that the effect of household income on citizens' conventional political participation does not depend on the level of inequality of the country of residence. The interaction MidGINI * HHINCOME shows a negative sign and significance at 10 %. This outcome is quite surprising and is not coherent with the conceptual framework adopted; however this result does not hold in the robustness tests presented in the following sections.

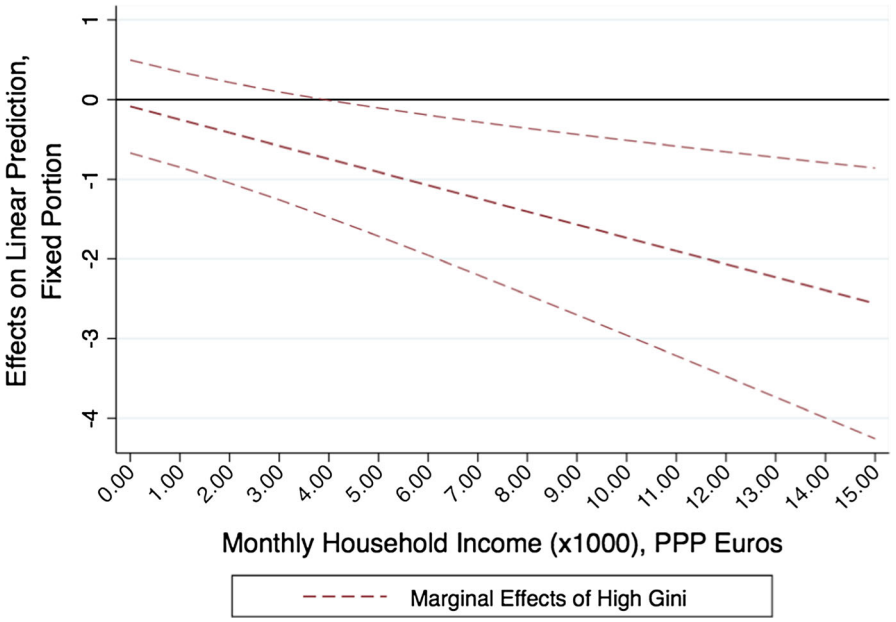

Fig. 5 Marginal effects of HighGINI on UNCONVENTIONAL at different levels of household income. 95 % CIs reported

As for what concerns unconventional political participation, the results show that the effect of HighGINI with respect to LowGINI is not different from zero up to a certain level of household income, then it becomes negative and significant at 5 %. According to this result, higher inequality sizably mitigates the positive effect of individual income on unconventional (non-institutionalized) participation. This result confirms H3 presented in Sect. 2.

6 Robustness checks

6.1 Building of dependent variables

Until this point, the empirical analysis has been carried out by using dependent variables resulting from a non-linear PCA conducted on a set of variables which measure citizens' involvement in a wide range of political activities.

PCA is a widely used multivariate technique which is commonly used to investigate complex phenomena. "The goal of principal components analysis is to reveal how different variables change in relation to each other and how they are associated. This is achieved by transforming correlated variables into a new set of uncorrelated variables using a covariance matrix or its standardized form—the correlation matrix" (OECD 2008, p. 26). The transformation of the original variables can be carried out in different ways; the results shown so far were obtained

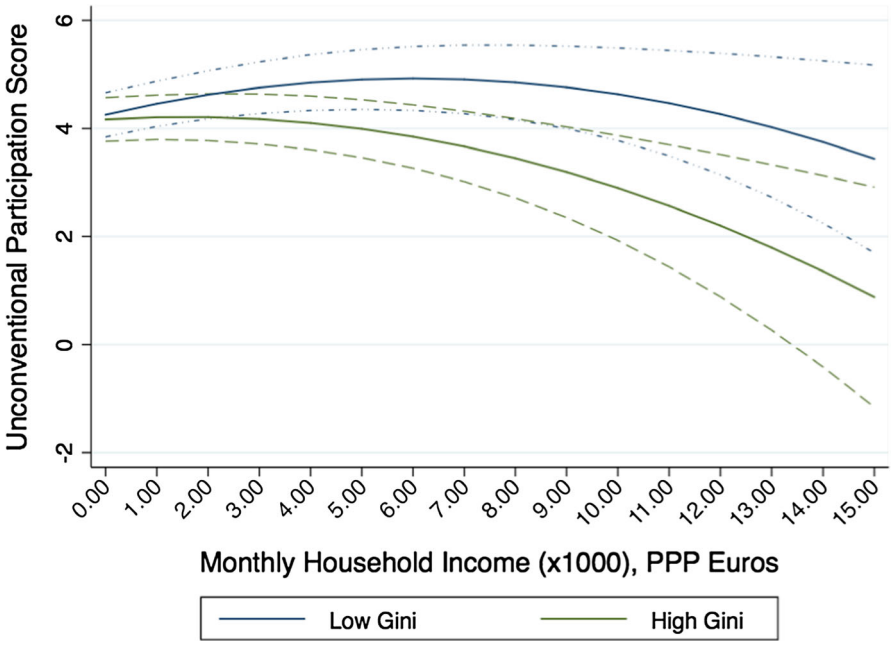

Fig. 6 Predicted values of UNCONVENTIONAL at different levels of household income. 95 % CIs reported

by using a non-linear transformation, which allows the incorporation of nominal and ordinal variables. In any event, the existing literature also provides linear methods of extraction and, therefore, one may wonder to what degree the results reported until now are driven by the non-linear way of extracting the latent factors that was adopted.

Furthermore, it is a standardized practice to perform factor rotation to enhance the interpretability of PCA results (OECD 2008). Indeed, factors can be conceived as axes along which variables can be plotted. Rotations of these axes are meant to maximize the loading of the variables on one factor. Factor axes can be rotated by ensuring that they remain independent (orthogonal rotation) or by allowing them to be correlated (non-orthogonal or oblique rotation). Political participation is supposed to be stratified, in other words it is more likely that those who join in political engagement partake in many ways, both institutionalized and non-institutionalized. This is the reason why results shown so far were obtained by using an oblique rotation technique, named promax rotation, which preserves the hypothesized correlation between the modes of participation.

One may also wonder to what degree results are driven by the implementation of this specific rotation technique.

Hence, in order to check the robustness of our results to alternative methods of calculation of the two indexes of conventional and unconventional political participation, these indexes were recomputed in three different ways: linear PCA

with promax rotation, non-linear PCA with oblimin rotation and linear PCA with oblimin rotation. When these alternative indexes were used as dependent variables in our regressions, findings achieved in the original analysis were strongly confirmed. These additional results are not reported for reasons of space but are available upon request.

PCA offers a number of major advantages; however, it does blend the outcomes of the underlying variables. Therefore, for the sake of completeness this section also provides regression analyses which use as alternative dependent variables those that were used to perform PCA, namely those that measure citizens' engagement in specific modes of political participation.

This, however, has to be done with consideration of some caveats. First and foremost, PCA indicators take into account what can be called degree of participation in single forms of engagement. Indeed most of the EVS questions give a potential participation option ("I might do") that captures the chance of becoming politically active. This information can be considered a nuance, but often circumstances are critical in pushing someone towards different forms of engagement, so the aptitude for participating is not trivial. Second, PCA-computed indicators are not only empirically robust, as proven in this section, but also theoretically robust, since PCA results corroborate the overviewed distinction between institutionalized and non-institutionalized political participation. Third, PCA indicators are continuous, easing the empirical analysis.

Table 9 reports the results for the key covariates obtained through a set of multilevel logit regressions which were performed by using as dependent variables those that measure citizens' engagement in specific modes of political participation: PETITION, BOYCOTTS, DEMONSTRATION, UNOFF_STRIKE, OCCUPY, DISCUSSPOLITICS, BELONG_POLITICALPARTY, VOTE. All these variables were recoded to 0 if that type of participation did not take place and 1 otherwise.

Figure 7 offers a brief overview of the impact of inequality on the different forms of political participation. It shows for each of the different dependent variables the marginal effects of HighGINI with respect to LowGINI at different levels of household income. The effects are significant and negative for PETITION and BOYCOTTS, while for DEMONSTRATION marginal effects have a negative sign but do not reach significance at 10 %. The marginal effects on UNOFF_STRIKE and OCCUPY are really close to zero, hence it could be argued that previous aggregate results are driven by PETITION, BOYCOTTS and to some extent by DEMONSTRATION. Results for institutionalized forms of political participation are more heterogeneous: higher inequality has a positive and significant effect on DISCUSSPOLITICS at low levels of income, while at higher level of income the effect is not significant; BELONG_POLITICALPARTY it is not affected by high inequality, while the effect on VOTE are negative and significant up to a level of income between 5 and 6. These results shed light on single forms of individual engagement that may lead to the aggregate results. However, a comparison between the two types of analysis has to be done carefully, as they differ substantially in their features. Furthermore, the non-linearity of the latter analysis suggests an in-depth analysis for all the forms of engagement, which goes beyond the scope of present work.

Table 9 Main results obtained through multilevel logistic mixed effects regression analyses

	PETITION	BOYCOTTS	DEMONSTRATION	UNOFF_ STRIKE	OCCUPY	DISCUSSPOLITICS	BELONG_ POLITICALPARTY	VOTE
HHINCOME	0.268***	0.212***	0.105**	0.159**	−0.113	0.134***	0.129**	0.109*
	(6.61)	(4.55)	(2.31)	(2.24)	(−1.41)	(3.26)	(2.22)	(1.89)
$HHINCOME^2$	−0.0203***	−0.0166***	−0.00744	−0.0171**	0.0150	−0.00580	−0.00602	−0.000267
	(−5.00)	(−2.86)	(−1.64)	(−2.05)	(1.61)	(−1.33)	(−0.90)	(−0.05)
MidGINI * HHINCOME	−0.0739*	−0.0307	−0.0119	0.0666	0.0142	−0.0931**	−0.0647	−0.0658
	(−1.65)	(−0.89)	(−0.24)	(1.08)	(0.22)	(−2.22)	(−1.44)	(−0.93)
HighGINI * HHINCOME	−0.121**	−0.152***	−0.0915	−0.0748	−0.0600	−0.0424	0.00607	−0.0867
	(−2.37)	(−3.69)	(−1.61)	(−1.04)	(−0.75)	(−0.98)	(0.12)	(−1.20)
MidGINI	−0.436*	−0.196	0.102	−0.0346	−0.180	0.199	0.496**	−0.0784
	(−1.78)	(−0.70)	(0.48)	(−0.10)	(−0.44)	(1.05)	(2.03)	(−0.41)
HighGINI	−0.248	0.143	0.0304	0.221	−0.0866	0.464**	−0.0174	−0.277
	(−0.98)	(0.50)	(0.14)	(0.59)	(−0.20)	(2.38)	(−0.07)	(−1.43)
Individual covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ICC	0.102	0.122	0.0774	0.185	0.211	0.0591	0.0879	0.0606
−2LL	−17,932.5	−9808.5	−14,982.7	−6390.6	−3531.1	−14,676.2	−6662.0	−13,097.7

Coefficients and t statistics (in parentheses)

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

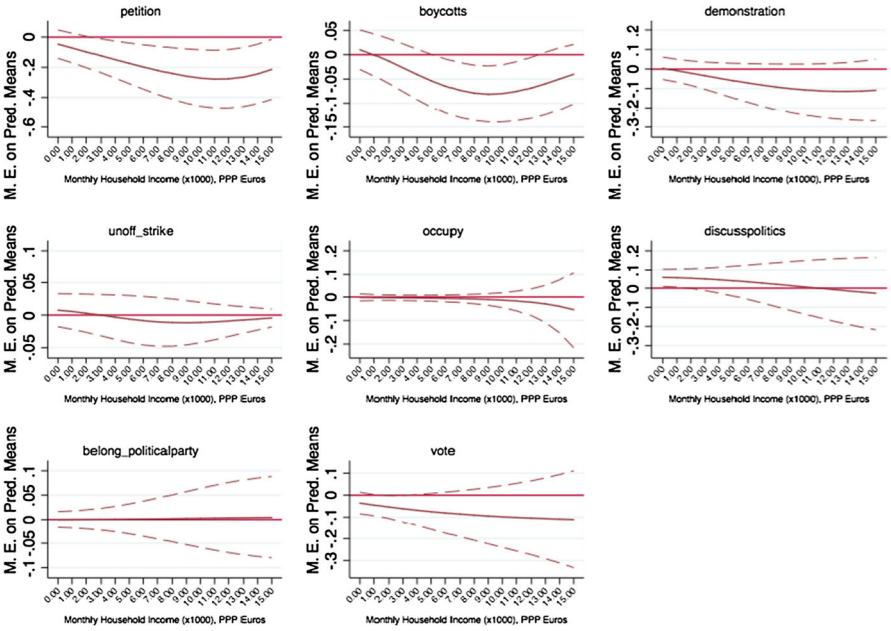

Fig. 7 Marginal effects of HighGINI at different levels of household income for different forms of individual participation. 95 % CIs reported

6.2 Gini codification

In the regression analyses presented so far the main variable of interest, Gini index, has been included among covariates after being recoded into three different classes. This choice was adopted since the interpretation of interactions between two continuous variables raises some difficulties (Jaccard and Turrisi 2003).

However, in order to check the robustness of the results presented in Sect. 5, the analysis has been repeated using two different codifications of the Gini index, in five and seven classes respectively.

These additional empirical elaborations are not shown in order to save space but are available upon request to authors. Concerning conventional political participation, the ambiguous result obtained in the original analysis for the median class of inequality does not hold anymore in these new regressions while the other results achieved through the analyses presented in previous sections are confirmed. As for what concerns unconventional political participation, the robustness checks confirm that a discrete change of Gini class with respect to the lowest one has a negative effect on unconventional political participation. This effect is significant for people above a certain level of income and its magnitude increases with wealth. In particular, this effect is found to be statistically significant for higher Gini classes (class 5 in the 5-class classification; classes 6 and 7 in the 7-class classification).

Finally, in order to verify that the results are not driven by the choice of clustering countries in classes of inequality, an analysis based on the use of the

continuous Gini index has also been realized. Again, findings obtained through this additional analysis are not reported in order to save space. They are consistent, however, with previous results and show that an increase of Gini index has negative and significant effect on unconventional participation, that this effect is significant for people above a certain level of income and that its magnitude increases with wealth.

7 Conclusion

This paper links the literature on economic inequality and political participation with the conceptualization of different forms of political participation carried out by political scientists. Following Barnes and Kaase (1979) this work distinguishes between conventional and unconventional political participation and investigates how citizens' income interacts with their respective country's income inequality in influencing personal political involvement.

According to previous contributions, individuals' involvement in both conventional and unconventional political participation is positively affected by individual income since political activities are costly and require the investment of private resources such as money, skills, etc. However, the present analysis hypothesizes that economic inequality, although not having any direct effect on political involvement, strengthens the positive effect of income on conventional political participation and weakens the positive effect of income on unconventional political participation.

This hypothesis relies on the idea that unequal societies are characterized by the presence of a governing élite; therefore, in these contexts richer people, who are presumably part of the élite, are more likely to be involved in conventional political activities. Unconventional political participation, instead, is élite challenging; therefore, in unequal societies richer people have less incentive in partaking in such activities.

The multilevel mixed effects empirical analysis carried out on European micro-data which is provided by this paper confirms that individual income has a positive and significant effect on both conventional and unconventional forms of political participation. This effect is found to be non-linear. Furthermore, the econometric results confirm that income negatively and significantly interacts with inequality in explaining unconventional political participation while, when looking at individuals' involvement in conventional political activities, income does not significantly interact with inequality.

Besides the investigation of economic inequality impact on forms of political participation, this paper provides two additional contributions.

First, it proposes an original way of measuring individual involvement in conventional and unconventional political activities; improving the methodology proposed by Marien (2008) and Hooghe and Quintelier (2013a, b), the analysis relies on an empirical approach based on non-linear principal component analysis (NLPCA) that allows the calculation of a continuous indicator of individuals' conventional and unconventional political participation. The calculation of the two

indicators allows the validation of the academic distinction between conventional and unconventional participation.

Second, the empirical section provides an analysis of a wide set of individual-level and country-level variables correlated with the two forms of political participation. Therefore, the results also provide useful insights into identifying the profile of those who participate in politics through conventional and unconventional means.

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