

The Effects of Economic and Educational Inequality on Political Participation

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According to a widespread assumption, a high level of inequality in a society negatively affects political participation. In egalitarian societies the levels of social cohesion are higher which supposedly increases individuals' willingness to participate in political activities. Recently, a burgeoning literature empirically test this assumption using multilevel methods and propose that economic inequality indeed decrease participation (e.g. Solt 2008). However, previous research treat inequality as a homogenous phenomenon that measures of income distribution (Gini coefficients) sufficiently captures. Effects of other aspects of inequality—such as educational, health related, etc—on political participation has been neglected by previous research. This paper goes beyond previous research by separately studying the effects of two different forms of inequality: income inequality and educational inequality. Past studies have not tested the impact of educational inequality on political participation, instead they have only focused on the economic aspect of inequality. Using participation in elections as the dependent variable, multilevel logistic regression analyses are carried out on individual level data from 44 elections in 25 countries supplied by the Comparative Study of Electoral Systems. Results show that there are no significant main effects of neither educational nor economic inequality on political participation. However, by testing the cross level interaction between individual characteristics and inequality it is found that inequality has different effects across individuals with different levels of education and income. Surprisingly, the effects of educational inequality and economic inequality work in opposite directions. On the one hand, educational inequality has a positive effect on those with lowest education, i.e. it increases the probability of participation for those in the lowest stratum. On the other hand, the effect of economic inequality is negative and especially decreases the level of participation for individuals in highest income quintile. The paper thus challenges the conventional wisdom on how levels of inequalities affect political participation.

INTRODUCTION

Inequality at the national level has been shown to negatively affect as diverse phenomena as health (Wilkinson 1996; 1998)¹, crime (Wilkinson; Kawachi and Kennedy 1998; Hsieh and Pugh 1993), as well as trust (Uslaner and Brown 2005) and social capital (Kawachi, Levine, Miller, Lasch and Amick 1994; Kawachi et al. 1997; Mansyur et al. 2008; Putnam 1992). While epidemiological research on the impact of inequality on health has opened up a new sub-discipline (e.g. Wilkinson 2006; Wilkinson and Pickett 2006; Thorbecke and Charumulind 2002), political science research has until recently neglected to empirically evaluate the impact of inequality on relevant dependent variables such as political participation.

The effect of inequality on political participation has only recently been brought up as a matter of relevant theoretical importance in political science research (Brady 2004; Schlozman et al. 2004; Dahl 2006). A burgeoning literature deals with the impact of economic inequality on political participation (e.g. Solt 2008; Solt forthcoming; Anderson and Beramendi 2008). These studies all find a negative effect of inequality; the higher amount of inequality on the societal level, the lower level of electoral participation. This effect is proven valid across all groups in some studies (Solt forthcoming; Anderson and Beramendi 2008) while other studies find the impact of inequality valid only on those with lowest income (Solt 2008).

However, previous studies in political science on the effects of inequality on political participation is exclusively limited to the economic aspect of inequality. The effects of other forms of inequality on political participation remain largely untested. Since the impact of inequality on both the well being of societies and individuals is widely acknowledged (e.g. Wilkinson 2006) it is somewhat surprising that the effects on political participation of other aspects of inequality than economic remains in the black box. This paper aims at providing a more balanced picture of the effects of inequality on political participation by evaluating the impact of two different forms of inequality—economic inequality and educational inequality—on political participation. While economic inequality is the standard measure of state level inequality, there are no previous studies dealing with the effects of educational inequality on political participation. This article clarifies the different aspects of these two central forms of inequality and demonstrates

¹ A contrasting position is represented by Gravelle (1998a; 1998b) who argue that health related issues is affected mainly by individual characteristics and not contextual level inequality. See Jen, Jones, and Johnston (2009a; 2009b) for two recent empirical evaluations of this issue.

that they have very different effects on political participation. To evaluate the contextual effects of inequality multilevel techniques are used to analyse individual level data from 44 elections in 25 countries supplied by the Comparative Study of Elections Systems combined with data on contextual level factors.

According to a widespread argument inequality has several negative effects on the well being of citizens as well as on the quality of government and democracy. Among these effects it is frequently pointed out that inequality has a negative effect on political participation (cf. Dahl 2006, 85-86). As inequality increases, social cohesion decreases and a larger amount of people feel that they are marginalised and belong to the periphery of society. When individuals feel marginalised, it is more probable that they lack motivation to participate in political activities. This paper evaluates this assumption by addressing three interrelated questions: (1) what are the effects of inequality on political participation?, (2) does different aspects (educational and economic) of inequality have equivalent effects on political participation?, and (3) does the levels of inequality affect all citizens in the same way or are the effects of inequality more severe for those worse off?

This paper contributes to the discussion of how inequality affects political participation by investigating the effects of the two different forms of inequality on one specific form of political participation: individual level voting. Theoretically, the paper challenges the conventional wisdom on how levels of inequalities affect the political behaviour of citizens. Results show that there are no significant main effects of neither educational nor economic inequality on voting. However, by modelling the cross level interactions between the two different forms of inequalities and individual level characteristics it is found that the effects of inequality is conditional on individual characteristics. Surprisingly, the effects of educational inequality and economic inequality work in opposite directions. On the one hand, educational inequality has a positive effect on those with lowest education, i.e. it increases the probability of participation for those in the lowest stratum. On the other hand, the effect of economic inequality is negative and especially decreases the level of participation for individuals in highest income quintile. The paper thus challenges the conventional wisdom on how levels of inequalities affect political participation. The paper thus concludes that different aspects of inequality have different and contradictory impact on participation.

The paper will advance as follows. The next section clarifies the different aspects of educational and economic inequality. Thereafter the theoretical section discusses the hypotheses regarding the effects of inequality. Next, the modelling strategy, data, and the empirical analysis are presented. A concluding section deals with implications of the results for the discussion of how inequality affects political participation.

TWO ASPECTS OF INEQUALITY – ECONOMIC AND EDUCATIONAL

In the literature, inequality is most often interpreted as homogenous phenomenon which a single indicator—the Gini coefficient—reliably capture (cf. Pontusson and Rueda 2009, 319). In order to better understand the connective mechanisms between inequality and political participation it is important to theoretically and analytically separate different aspects of inequality from each other. What then is the crucial and relevant differences between the two forms of inequality? To understand how educational and economic inequality affects individual electoral participation we first need to understand the causal mechanisms that triggers the individual level effects of education and income. The individual level effects of income and education on political participation are well documented in the literature, although there is no consensus on exactly *how* income and education affects political participation. It should first be noted that the effects of education and income to some extent might be overlapping and the exact causal mechanisms through which education affects political participation are disputed in the literature. Verba, Schlozman and Brady (1995) emphasise three main factors influencing participation: resources, psychological engagement and recruitment via networks. As for resources three kinds are central: time, money and civic skills. While income obviously provides money, education is conventionally considered to affect political participation due to the fact that it increases individual's cognitive capabilities and skills (e.g. Verba, Schlozman and Brady 1995).

To put it simply educational inequality is first and foremost a measure of the distribution of civic skills whereas economic inequality is mainly a measure of to what extent the basic material resources (such as income) is justly distributed. Moreover, both income and education has been argued to positively affect individuals social network positions that in turn affects political participation via recruitment in social networks (e.g. Goodin and Dryzek 1980; Nie, Junn and Stehlik-Barry 1996). As regards recruitment however, education has been proved to be a more solid predictor of network centrality than income (Nie, Junn and Stehlik-Barry 1996). This is

due to the fact that social networks are actually formed within the educational institutions as well as that education successfully predicts ones future networks position. When it comes to psychological engagement studies have also showed that education is a core factor in political socialisation process which is shaping social group identity (e.g. Stubager 2009; Stubager 2008).

In sum, education might affect participation through both civic skills, network centrality and psychological engagements. Income affects participation since it provides basic resources and promotes social status. Hence, the effects are to some extent overlapping since both factors, for example, affect social status. In extension, both income inequality and education inequality are proxies for the scale of social differentiation and both aspects are likely to affect social cohesion. However, what is interesting at this point is the genuine aspects of income and education that are not overlapping. Drawing on the individual level mechanisms we find that what distinguishes the two forms of inequalities is that educational inequality is a proxy for the distribution of civic skills while economic inequality measures the distribution of basic resources. These two basic aspects of inequality might in turn affect the social distance in society.

Previous research has argued that both economic inequality as well as educational inequality negatively affects trust (Green and Preston 2001) which in turn might decrease political participation. Social differentiation depending on educational inequality and income inequality are however, distinctly different things. Let us make a thought experiment to illustrate this point. First, consider a society, A, which is perfectly equal concerning education but has a high level of income inequality. Secondly, consider a society, B, which has perfect equality as for income but has a high level of educational inequality. Which one of these would have the largest amount of social cohesion? How would the different levels of inequality in these societies affect the level of participation? In A everyone has the same civic skills, the social distance between individuals and social network is small and different educational lengths has not produced education based group identities. However, the living standard and income of people would be very unequal. In B, on the other hand, everyone would have the same income but skills would be very differently distributed. Moreover, the social distance depending on education would be severe and the different levels of education would probably shape different education based group conciseness. Yet, it is an open question how these forms of inequality respectively affect political participa-

tion. For that reason, the specific effects of the two aspects of inequality on participation will be treated exploratively as an issue that should be settled empirically.

THEORY

Four hypotheses concerning the impact on inequality on electoral participation are tested: a) inequality has no effects on voting since what matters is merely individual characteristics and not contextual factors, b) the level of inequality has a negative effect on voting since low levels of social cohesion produces lack of motivation to participate in politics, and c) the level of inequality positively affects voting since there are more conflicts in unequal societies which enhance political activity. In addition, the paper sets out to investigate d) whether inequality affects all citizens in the same way or if effects of inequality are only proven valid on some cluster of citizens. To be more precise, the last question deals with whether, for example, those worse off (those with lowest income and lowest education) are especially affected by the level of inequality.

THE NULL HYPOTHESIS: INEQUALITY HAS NO EFFECT ON POLITICAL PARTICIPATION

According to one important standpoint political participation are affected mainly by individual characteristics and contextual factors have very small or no impact (see for example Jones 2005 for an introduction to this debate). This view has traditionally been predominant in the debate and is manifested in, for example, the so-called socioeconomic status model (SES) (e.g. Milbrath 1965). The point of departure is that an individual's social position can successfully be predicted by characteristics such as education, income and occupation. Social position in turn affect political participation; individuals with higher socioeconomic status participate to a larger extent in political activities (see for example Leighley 1995 for a literature survey). However, the SES model does not give any predictions on the effects of contextual factors such as the levels of inequality. Factors such as where one lives and overall societal characteristics is, according to this line of thought, considered to be less important than the individual characteristics (cf. Leighley 1995, 185-6).² Even though it now exist more theoretically sophisticated developments of the SES model, most importantly the civic voluntarism model put forward by Verba, Schloz-

² However, the positive relationship between socioeconomic status and political participation is not confirmed in all countries (e.g. Gallego 2010).

man and Brady (1995), they still do not say much on what to expect in terms of contextual influences of for example inequality. Consequently, drawing on this field of research the effects of education and income at the individual level are supposed to be the same irrespective of the level of inequality in society. Hence, the first hypothesis to be tested is:

H₀: Inequality has no impact on political participation.

HYPOTHESIS ONE: INEQUALITY NEGATIVELY AFFECTS POLITICAL PARTICIPATION

As mentioned in the introduction, inequality has been proved to have a negative effect on several indicators on the well being of citizens and societies (see e.g. Neckerman and Torche 2007 and Thorbecke and Charumilind 2002 for extensive research overviews). What is the causal mechanism that can explain the impact of inequality? Wilsonson (2006, 712) claim that income inequality “serves as a proxy for the scale of social class differentiation in a society”. In societies with low levels of social class differentiation, the quality of social relations are simply better. In an equal society more people experience that they are closer to the centre of society. On the other hand, inequality makes a larger amount of people feel that they are marginalised and belong to the periphery. Inequality breaks down trust and that in turn makes citizens less motivated to engage in politics. When one does not feel marginalized, it is more probable that one is motivated to participate in political activities. To illustrate this point Rothstein and Uslaner (2005, 4) argue that “optimism for the future (which is one key determinant of social trust) makes less sense when there is more economic inequality. People at the bottom of the income distribution will be less sanguine that they too share in society’s bounty.”

Thus, it is hypothesised that high levels of equality on the societal level positively affects individual’s subjective sense of political efficacy. However, it is not only those worse off in society that are supposed to be affected by levels of inequality. High levels of inequality might negatively affect the level of social capital on people with high status as well, and thus alienate them more from the rest of society too. As a consequence inequality might not only affect the level of political participation among those worse off but might generally decrease participation among citizens in all groups in society. Hence:

H₁: Inequality has a negative impact on political participation.

HYPOTHESIS TWO: INEQUALITY POSITIVELY AFFECT POLITICAL PARTICIPATION

Inequality might also be hypothesised to increase political participation. According to the so-called conflict theory, inequality increases disagreement on political issues between the worse off and the better off in society. As a consequence of the increased political conflicts in unequal societies, political motivation will grow among citizens. The argument rests on the assumption that citizens will simply be more motivated to engage in politics when societies are highly politically polarised and more are at stake in political decisions (see e.g. Solt forthcoming, Brady 2004). Thorbecke and Charumilind (2002, 1485) points out that “income inequality is regarded as the crucial factor leading to social conflict, and political instability”. Political conflicts might produce a larger amount of political activity since those worse off are keen to get active in politics to raise their level of material standards and well being. At the same time, the wealthier people in unequal societies might be more politically active to defend their privileged position.

The argument presented above makes perfect sense when the economic aspect of inequality is considered; conflict over unevenly distributed resources increases political activity. However, it is not clear whether educational inequality has the same effect. It is though reasonable to assume that educational inequality might positively affect participation to, but perhaps through another mechanism. In societies with a high level of educational inequality civic skills are unevenly distributed³ and that might shape strong education based group consciousness. That kind of inequality might translate into sharp conflicts not over resources but over values. Stubager (2008; 2009) has for example shown that social stratification based on education produces social cleavages on the authoritarian-libertarian dimension. If the political debate intensifies by intense discussion of these issues it might increase political participation. If it exists political parties that might exploit this political discussion it might also give rise to increased levels of voter turnout. In other words, educational inequality means that there is large difference in the distribution of civic skills, which give rise to intensified political discussion on the authoritarian-libertarian dimension and in turn brings increased political participation. To sum up, both educational ine-

³ Gröndlund and Milner (2006) show that education has a stronger effect on political knowledge in unequal societies while political knowledge is less contingent on education in egalitarian societies. Hence, drawing on this, individuals' with low levels of education would be more knowledgeable and thus participate to a larger extent in egalitarian societies compared to in unequal societies.

quality and economic inequality might increase political participation but through different causal mechanisms. Hence the third hypothesis to be tested is:

H₂: Inequality has a positive impact on political participation.

THE CROSS LEVEL INTERACTION HYPOTHESIS: THE EFFECT OF INEQUALITY IS CONDITIONAL ON INDIVIDUAL CHARACTERISTICS

According to another standpoint in the debate, effects of individual characteristics are conditional on contextual factors such as the level of inequality. A critique against the conventional view that resources affect participation is that the indicators of resources is most often considered as if they were absolute goods. However, proponents of relative effects on participation argue that different levels of education or income might signal different status at different times and at different places. Hence, it is incorrect to expect that there should be a constant effect of specific educations or absolute income levels irrespective of the contexts. For example, one individual's education might matter to the extent that other people possess education (e.g. Goodin and Dryzek 1980; Hirsch 1978; Nie et al. 1996). As Goodin and Dryzek (1980, 278) point out:

“In political markets just as in economic ones, relative resources decide the outcome. Whoever is willing and able to commit most resources to any particular contest of wills naturally proves victorious. This, in turn, determines the relative rationality of various people entering the political contest.”

According to this model, those who are worse off in society will be especially vulnerable to high levels of inequality. Put differently, those who are worse off economically might participate even less when there is a larger distance to those with higher income. This line of thought is strengthened by recent research claiming that low social status negatively affects individuals' well being and causes relative deprivation (e.g. Marmot 2004; Wilkinson 2005). The important point to grasp here is that it is not the fact that those worse off have a lower living standard per se, but rather the fact that the subordinate social status position itself negatively affects their level of well being.

Although the worse off in society might very well be most affected by inequality, the effect might work in both directions (inequality might both increase or decrease participation). Those worse off might feel more alienated from the rest of society when there is a large amount of inequality and thus they participate to a lower extent. This argument is backed up by a vast amount of literature showing that income inequality is closely related to the level of relative deprivation. Yitzhaki (1979) proved that the Gini coefficient is a quantification of level of relative deprivation. This result has later been confirmed by, among others, Kakwani (1984), Chakravarty et al. (1995) as well as Hey and Lambert (1980). Relative deprivation might reduce individuals' subjective feeling of political efficacy and thus makes them less inclined to participate in politics. However, at this point it is important to keep in mind the difference between the contextual and individual level effects. The level of inequality is of course constant for all individuals in a given area. According to H1 the level of inequality decrease the participation of individuals in all groups in society due to generally lower levels of social cohesion. This is not what the relative deprivation hypothesis predicts. Relative deprivation is depending on the individuals social status and the distance between different social status position. For that reason relative deprivation should be understood as the interaction between inequality at the contextual level and the individual's position in the hierarchy (cf. Neckerman and Torche 2007, 349).

Moreover, one could also assume that inequality has positive effects only in some groups in society. For example, large amount of inequality might produce discontent especially among those worse off and thus motivate them especially to participate to bring political change. To be more precise, no matter if increased conflicts in society due to high levels of inequality regard conflicts of material resources of values it might increase participation. Hence:

H₃: Inequality has different impact across different groups in society.

At this point we have no reason to believe that effect of educational inequality are different from economic inequality. However, the paper will test if the educational inequality effect is equivalent to the economic inequality effect or do we gain any additional knowledge by also adding educational inequality to the model? The literature on effects of inequality do seldom address the question of whether different aspects of inequality have different effects. To some extent it is reasonable to expect that the effects are overlapping. However, in this respect two differences between the two aspects of inequality needs to be taken into account. First, educational inequal-

ity is a proxy for the inequality in skills while economic inequality is a proxy for the distribution of basic resources. Second, to the extent that inequality increases political conflicts it is reasonable to expect that economic inequality causes conflicts over distribution of resources whereas educational inequality causes conflicts over values. The fact that educational inequality causes conflicts over values is due to the fact the citizens in society have very different skills to take part in political activities and that the political socialisation process in education causes group consciousness with different shared values.

PREVIOUS RESEARCH

What conclusions can be drawn from existing research on these issues? While the effects of inequality on political participation has for long been considered an interesting issue (cf. Dahl 1971) few empirical studies have been carried out. The reason to this is that until recently there has been both a lack of sufficient data and available accurate statistical techniques. To model the effects of inequality one needs individual level data with comparable measures of equality from a sufficiently large number of different contexts with variation in the levels of participation. It is only during recent years such data have become available. In addition, multilevel techniques that can separately model contextual and individual level effects need to be employed to this kind of research question (Jones et al. 1992) and that has only fairly recently been widely available to researchers. Early research in the field only operated on the contextual level trying to draw inference from contextual levels of inequality on contextual mean levels of political participation. That kind of procedures are potentially flawed and are not able to control for individual factors and cannot model cross level interaction effects. In an early contribution to the debate Mahler (2002) examined the relationship between subnational region level inequality and levels of turnout. Mahler found that inequality decreases turnout at the regional level. Mahler's study is interesting since it goes beyond the conventional national measures of inequality and evaluates the inequality at the subnational level. However, since the units of analysis is at the contextual level that kind of research design cannot give whether inequality has a general negative effect or if some groups are especially affected by inequality. Using the contextual level as unit of analyses also opens up for potential ecological fallacies; i.e. drawing false conclusion of individual behaviour on the basis of contextual data (cf. Robinson 1950).

However, a handful of studies use proper modelling strategies and employ data that is up to task of estimating the effects of inequality on participation. Solt (2008) uses multilevel modelling to evaluate the effects of economic inequality on political interest, political discussion and electoral participation in 23 countries. Solt present convincing evidence that economic inequality has negative effects on the political engagement, especially on those economically worse off. Solt's study is important since it is the first one which accurately models the contextual effect of inequality in several countries on individual level dependent variables. Anderson and Beramendi (2008) employ a rather similar design to evaluate the effect of state level inequality on electoral participation in 18 OECD countries. Anderson and Beramendi also find a negative effect of inequality on political participation. However, contrary to Solt's findings their results indicate that inequality has a similar negative effect across individuals with different levels of income. While Solt's study confirm the relative deprivation hypothesis - those worse off are especially negatively affected by inequality - Anderson and Beramendi's study confirm the hypothesis that inequality has a general negative effect on political participation among everyone, i.e. it is similar for persons across all income groups. More recently Solt (forthcoming) has continued his research by examining the effects of inequality at the state level in 144 gubernational elections using multilevel modelling. In this study results echo with the findings of Anderson and Beramendi; inequality decreases participation across all income quintiles and do not affect individuals' in some groups more than others. To sum up, the few existing studies on this topic all show that inequality has negative effects on participation—either across all groups in society or especially on those worse off economically.⁴ Moreover, all previous studies of inequality and political participation treat inequality as a homogenous phenomenon that can adequately be measured by the amount of economic inequality. The effects of other aspects of inequality than economic has not been taken into account by previous research.

DATA AND METHODS

Individual level data comes from the Comparative Study of Electoral Systems (module 1 and 2), which serves as base for the empirical analyses. The countries and the county-years are presented in table 1. The fact that individuals are clustered within different election contexts within different countries violates one of the general assumptions in OLS regression—that the

⁴ Also see Blakely et al. (2001) who examine the relationship between US state level voting and socioeconomic inequality. They find no significant relationship between income inequality and voting inequality.

residuals are uncorrelated with each other. Employing a modelling strategy that not takes the clustered structure of the data into account would produce inaccurate standard errors (e.g. Goldstein 1995; Hox 2002; Snijders and Bosker 1999; Gelman and Hill 2007). For that reason, a multilevel regression model is employed in which the nested three level structure – individuals (i), within elections contexts (j), within countries (k) – is explicitly modelled.⁵ The inequality levels are hence modelled at the election context level. Unfortunately the number of variables on political participation is limited and in this paper the analysis is restricted to the impact on one single dependent variable: voting in the general elections (coded 1 for voting and 0 for non-voting). Logistic multilevel regression are used since the dependent variable is dichotomous.⁶

At the individual level, the following control variables – which previous research repeatedly has shown to have a substantial impact on political participation (e.g. Verba, Schlozman and Brady 1995)—are included in the analysis: age, age squared, years of education⁷ and household income⁸ as well as dummy variables for sex, marital status, employment status and household income.

As for the contextual level independent variables a number of variables from different sources was merged to the CSES dataset. We begin with the two main independent variables: economic and educational inequality. Gini coefficients that measure economic inequality were primarily

⁵ When interpreting the variance at the election context level one should keep in mind that the dataset do not include data from several election context in all countries (countries-years within countries varies from 1 to 3). However, estimating a two level model (individuals in countries) with dummy variables for second and third elections do not significantly alter the results as for the inequality variables.

⁶ Results are produced by the STATA command GLLAMM, see Rabe-Hesketh and Skrondah (2008)

⁷ Individual education is measured on a seven graded scale: 0: none, 1: incomplete primary, 2: primary completed, 3: incomplete secondary, 4: secondary completed, 5: post-secondary trade / vocational school, 6: university undergraduate degree incomplete, 7: university undergraduate degree completed.

⁸ Household income is measured as the quintile appropriate to the respondent. 1: Lowest household income quintile, 5: Highest household income quintile.

taken from the Luxembourg Income Study 2007.⁹ A Gini coefficient may in theory vary from 0 to 1. The value 0 represents full equality in income distribution whereas 1 represents a society with an utmost unequal distribution of income (i.e. every person/household has a unique level of income).

Furthermore, data on educational inequality come from Vinod, Yan and Xibo (2001).¹⁰ The education Gini coefficients are measured equivalently to the economic Gini's; 0 represents full equality whereas 1 represents inequality. The educational Ginis are available for every five-year from 1960 to 2000. The latest available Gini from before each survey was conducted was used for every country-year.

The values of the educational and economic Gini's used for every country-year is presented in table 1. As for educational inequality the measure ranges from .14 (Norway 2002) to .39 (Italy 2006), whereas economic inequality ranges from .212 (Denmark 1998) to .49 (Mexico 2004). The correlation between the two inequality measures in the sample is 0.51. As we can clearly see the differences between the countries with the highest and lowest levels of inequality are relatively small, .247 for economic inequality and .273 for educational inequality. Hence, this study sets out a rather hard test for the hypotheses on inequality effects; do even these relative small differences in levels of inequality matter for political participation?

⁹ Luxembourg Income Study. 2009. Available via <http://www.lisproject.org/key-figures/kf-workbook.xls>. For a small number of countries in the dataset there is no data from the Luxembourg Income Study available. For that reason, the dataset was complemented with data on Gini's from additional sources. For Iceland data from the the European Union Statistics on Income and Living Conditions (EU-SILC) 2004 was used. For Japan we used the 1998 data from Shirahase 2001, Survey of People's Living Conditions. For Korea we used data from 1998 from the Cheong 2005, Korean Household Panel Study. For New Zealand we used data from 1996 and 2002 from the Perry 2005, Household Economic Survey. For Portugal data from 2001 comes from European Commission 2005, European Community Household Panel Survey and data from 2005 comes from European Commission 2008, The European Union Statistics on Income and Living Conditions (EU-SILC). All these measures are available from the United Nations University Uni-Wider, World Institute for Development Economics Research. The dataset is available on http://www.wider.unu.edu/research/Database/en_GB/wiid/. Except for Japan, Uni-Wider rates all the Gini's used here as quality 1 (good quality) on a scale from 1 to 3. The Gini measure from Japan is rated 2. Gini coefficients from exactly the same years as the surveys were used whenever available. When Gini's from the current year was absent the latest available Gini before the current year of survey was used. I regard this as a minor problem since we know from previous studies that levels of inequality remain relatively stable over time (Rothstein and Uslaner 2005).

¹⁰ I would like to thank Yan Wang for kind permission to use the data on educational inequality. The data comes from an updated version of the dataset for the paper Thomas, Vinod, Yan Wang, Xibo Fan, 2001. "Measuring Education Inequality: Gini Coefficients of Education for 140 countries, 1960-2000", World Bank Policy Research Working Papers 2525, and later published in Journal of Education Planning and Administration, vol 17 (1) January 2003, p. 5-33.

In addition, the analyses include a number of contextual level control variables.¹¹ First, the countries absolute economic income levels are measured by GDP per capita.¹² Secondly, the mean district magnitude of the parliament is included since higher district magnitudes have been shown to increase political participation.¹³ Thirdly, a control for the effective number of electoral parties was included since this has shown to have a substantial negative effect on political participation.¹⁴ Fourth, a control for parliamentarism was included since parliamentary system have been shown to produce higher levels of political participation than presidential.¹⁵ Moreover, we include dummy variables for federalism¹⁶, bicameralism¹⁷ and compulsory voting¹⁸. Finally a control variable is also included for union density¹⁹.

RESULTS

To begin with, a varying intercept only model with separate error terms for each level is estimated as to see whether the variance at the country level and election context level are significant and multilevel modelling therefore is needed. Model 1 shows that both the variance at the country level as well as the election context level is statistically significant. However, in the proceeding analysis we will not primarily use multilevel modelling as a mean to handle this ‘nuisance’ but rather to treat the dependence as an interesting phenomenon that needs to be

¹¹ Most of these contextual level variables can be found in Samanni, Marcus, Jan Teorell, Staffan Kumlin & Bo Rothstein. 2008. The QoG Social Policy Dataset, version 4Nov08. University of Gothenburg: The Quality of Government Institute, <http://www.qog.pol.gu.se>.

¹² Source: IMF – World Economic Outlook, 2007. <http://imf.org/external/ns/cs.aspx?id=28>

¹³ Source: ACE Project and DPI, 2005. Available in Bargsted 2007, Code Book Complementary Macro Level Data for CSES Module 1 & 2 Countries.

¹⁴ As source we use the variable on effective number of electoral parties in Bargsted which is calculated using the Laakso and Taagepera (1979) formula.

¹⁵ Presidential and semi-presidential systems are coded as 0 while parliamentary systems are coded as 1. Source: Santo, Moreira, Freire, Lobo and Magalhães (2005) CSES Module 1 and Module 2 Macro Booklet. <http://www.cses.org/download/contributions/contributions.htm>

¹⁶ Original Source: Watts 1999. Data and additional information available in Bargsted 2007.

¹⁷ Original Source: Inter-Parliamentary Union and Golder, 2005. Data and additional information available in Bargsted 2007.

¹⁸ Original source: IDEA International - Voter Turnout. Data and additional information available in Bargsted 2007.

¹⁹ Original source: Franzese 1998, 2002. Participation Inequality and Transfers Database. http://www-personal.umich.edu/~franzese/T&T_FullDataSet.XLS. Data and additional information available in Samanni, Marcus, Jan Teorell, Staffan Kumlin & Bo Rothstein. 2008. The QoG Social Policy Dataset, version 4Nov08. University of Gothenburg: The Quality of Government Institute, <http://www.qog.pol.gu.se>.

explained. In the next step we add the individual level variables and contextual level control variables (without the main independent variables: the inequality measures). As expected model 2 shows that both income and education at the individual level has a significant positive effect on voting.

Model 3 and 4 separately introduces the main effects of income inequality and educational inequality. Apparently, neither the contextual measures of income inequality or educational inequality have any significant effects on voting.²⁰ In other words, results show that neither H1 nor H2 is supported. It is important to note that model 3 posits that the effect of inequality is the same for individuals in all income and education groups. Hence, model 3 cannot be used to test H3, whether inequality has different effects across groups with high and low levels of education and income.

Even if there is no general effect of inequality it could still be the case that inequality has significant effects on the probability of voting for some group of individuals; are those worse off in society negatively affected by the level of inequality? Cross-level interactions will be included between individual level income and education and the respective inequality variables: household income \times income inequality and individual level education \times educational inequality. Model 5 and 6 respectively includes these two cross-level interactions. Interestingly, both cross-level interaction terms in model 5 and 6 are statistically significant. This indicates that the effect of income inequality is different for individuals with different levels of income as well as that the effect of educational inequality is different for individuals with different levels of education.²¹

However, reporting results from models including interaction effects needs to be done carefully and are often not accurately modelled and interpreted (e.g. Brambor et al. 1006). The problem is even more severe when dealing with logistic regression compared to OLS. When dealing with interaction effects in logistic models it is not enough to only study the regression coefficient of the interaction term to get a grip of the relationship since the logistic coefficients are not directly

²⁰ Neither are the effects of educational inequality nor economic inequality significant when both variables are incorporated into the same model

²¹ Theoretically it would be more accurate to include random coefficients for education and income to evaluate whether effects of these variables actually varies between contexts. However, models presented here do not include random coefficients due to the small number of units at the highest level.

interpretable. To actually test whether levels of inequality have different impact on individuals in some groups than others, one could not merely examine the signs, values and significance of the coefficient of the interaction term in the regression output (Norton, Wang and Ai 2004; Ai and Norton 2003). Hence, one needs to provide intuitively interpretable estimates such as predicted values or marginal effects rather than the mere coefficients (Kam and Franzese 2007).

To facilitate the interpretation of the cross level interactions figure 1 and 2 provides predicted probabilities of electoral participation for different levels of contextual inequality calculated on the basis of model 5 and 6 respectively. Predicted values are plotted for different levels of economic inequality across individuals with highest and lowest levels of income in figure 1 and for different levels of educational inequality across individuals with different levels of education in figure 2.²² The figures show predicted values across different levels of the main independent variables holding all other variables fixed at their means. Presented in the figures is thus the plotted values for the sample population average values. In addition to the exposition of the responses, the figures also shows simulation based confidence intervals of the predicted values.²³ Confidence intervals are at the 95 per cent level calculated using empirical Bayes simulation (1000 repetitions).

We begin with discussing the predicted values from the economic inequality model presented in figure 1. As inequality increases the predicted levels of voting decreases for individuals in all groups. However, the slope is steeper for individuals with high levels of education. Surprisingly, economic inequality has a specifically negative effect for those with highest levels of income. Under conditions of high levels of economic inequality there are very little difference in probability of voting when comparing the lowest income quintile and the highest income quintile. We can also see that the confidence intervals are mostly overlapping and separate from each other only when inequality is about 0.3. Figure 2 presents predicted values for educational inequality across groups with different educations. Surprisingly, educational inequality positively influence voting among those with low levels of education. Furthermore, the gap between the two groups are substantial, the predicted value for the high education individuals is about 0.92 whereas it is just about .7 for the low education group. Under conditions of high levels of inequality however, the predicted probability of voting for the low education group has

²² Predicted probabilities are calculated with the GLLAMM post estimation command GLLAPRED in STATA11.

²³ Simulation based confidence intervals were calculated using the ci_marg_mu command in STATA11.

increased to about 0.8. It is also important to note that the level of inequality does not at all affect individuals with high levels of education. The high educated individuals show regularly high levels of voting irrespective of the level of political participation.

To sum up, results support the cross level interaction hypothesis H3; inequality affects individuals in different groups to different extent. Moreover, the two different aspects of inequality under study have different effects on voting. While economic inequality decreases the level of participation for those with highest income, educational inequality increases the probability of participation for individuals with lowest level of inequality.

CONCLUSION

This paper aims at evaluating the impact of two aspects of inequality—educational and economic inequality—on electoral political participation. By providing the first analysis of the impact of the educational aspect of inequality on participation the paper aims at deepening our understanding on how inequality affects political participation. Theoretically the paper moves beyond past research by discussing the possible effects of both the economic and educational aspect of inequality. Moreover, the paper provide the surprising finding that different aspects of inequality have different effects on participation. The the aspects of inequality has contradictory effects on participation and suggest these effects operate through different causal mechanisms. Results show that there is no general effect of educational inequality nor income inequality on voting. However, when adding cross level interaction it is found that the effect of inequality is conditional on individual levels of education and income. As for economic inequality, this paper confirm previous findings that inequality decreases participation (cf. Solt 2008; Solt forthcoming; Anderson and Beramendi 2008). High levels of income inequality negatively affect the probabilities of voting, especially among individuals within the highest income quintile. The results for educational inequality is somewhat more unexpected. The level of educational inequality has a positive effect on individuals with low education. Yet people with higher socioeconomic status are relatively unaffected by levels of educational inequality. Hence, different forms of inequality have different effects on political participation.

Drawing on past research on inequality, the negative effect of economic inequality on political participation is most likely due to a lack of societal cohesion in societies with high levels of

economic inequality. In societies with high levels of economic inequality individuals with high income vote to a larger extent than in unequal societies, probably because high income individuals in low inequality societies feel stronger ties to the rest of society. The contrasting effect of educational inequality can be explained by recent research on how educational inequalities produce social cleavages along the authoritarian-libertarian dimensions. Education-based group identity has been proved to reinforce the conflicts on the authoritarian-libertarian dimension. Thus, educational inequality might cause increased political value conflicts which in turn affect electoral participation. However, whether this is the case depends both on whether there is a demand for such politics among the voters and whether there is a political party that supplies a reasonable alternative. The fact that those with low education in societies with low levels of educational inequality do not vote to such large extent might be that there does not exist any political parties that represent their opinions. From electoral research we know that individuals with low education more often vote for populist parties emphasising authoritarian values. A hypothesis for further research to test is that such parties have emerged in countries with high levels of educational inequality whereas they are not established in countries with low levels of educational inequality. The growth of populist parties in countries with high educational inequality might explain the higher levels of voter turnout under conditions of high educational inequality.

To conclude, this paper shows that inequality is a much more complex phenomenon than previous research has acknowledged. While the paper strengthens the view that inequality affect political participation, it also brings evidence that the relationship is more complicated than what is most often assumed. Different aspects of inequality affect participation in contradictory ways and operate through different causal mechanism. Most importantly, the effects of inequality is not always negative. Rather, results indicate that educational inequality might produce value conflicts that in turn increase electoral participation.

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Appendix A. Measures of inequality for the countries in the dataset

Country	Year	Income Inequality	Educational Inequality
Australia	1996	.308	.211
Australia	2004	.312	.209
Belgium	1999	.25	.288
Canada	1997	.291	.174
Canada	2004	.318	.166
Czech Republic	1996	.259	.193
Czech Republic	2002	.259	.198
Denmark	1998	.218	.243
Finland	2003	.246	.225
France	2002	.278	.334
Germany	1998	.273	.273
Germany	2002	.275	.274
Hungary	1998	.323	.247
Hungary	2002	.292	.243
Iceland	1999	.24	.283
Iceland	2003	.24	.279
Ireland	2002	.313	.242
Italy	2006	.333	.391
Japan	2004	.319	.236
Korea, South	2004	.372	.236
Mexico	1997	.477	.373
Mexico	2000	.491	.358
Mexico	2003	.471	.358
Netherlands	1998	.231	.254
Netherlands	2002	.231	.249
New Zealand	1996	.341	.222
New Zealand	2002	.339	.213
Norway	1997	.238	.145
Norway	2001	.25	.144
Poland	1997	.318	.146
Poland	2001	.289	.15
Portugal	2002	.371	.361
Portugal	2005	.38	.361
Spain	1996	.353	.35
Spain	2000	.336	.347
Spain	2004	.336	.35
Sweden	1998	.221	.186
Sweden	2002	.252	.181
Switzerland	1999	.28	.25
Switzerland	2003	.274	.245
United Kingdom	1997	.344	.276
United Kingdom	2005	.345	.27
United States	1996	.355	.159
United States	2004	.372	.161

Table 1. Multilevel logistic models, effects on voting

	<i>Model 1: Random intercept only model</i>	<i>Model 2: Introducing Control Variables</i>
FIXED PART:		
<i>Individual level variables:</i>		
Household income		.126*** (.010)
Education		.219*** (.009)
Gender (male)		.058** (.024)
Age		.073*** (.004)
Age ² /100		-.045*** (.004)
Married		.261*** (.027)
<i>Elections context level variables:</i>		
GDP / Capita		.000 (.000)
Union density		.019*** (.007)
Effective number of electoral parties		-.264*** (.091)
Mean district magnitude		.012*** (.004)
<i>Country level variables:</i>		
Compulsory voting		1.305*** (.316)
Bicameralism		-.119 (.323)
Federalism		.482* (.289)
Parliamentarism		.915*** (.3)
Constant	1.919*** (.173)	-.231*** (.474)
RANDOM PART:		
Variance, country level	.521**	.048***
Variance, election level	.360***	.342***
Number of Countries	25	25
Number of Elections	44	44
Number of Individuals	62663	62663
BIC (Bayesian Information Criteria)	48837.23	46201.5

Comment: p<.10 ** p<.05 *** p<.01. Source: CSES round 1 and 2. Logistic coefficients and standard errors in parantheses.

Table 2. Multilevel logistic models, effects of inequality on voting

	<i>Model 3: Effects of Income Inequality</i>	<i>Model 4: Effects of Educational Inequality</i>
FIXED PART:		
<i>Main independent variables:</i>		
Income Inequality	-2.879 (3.021)	
Educational Inequality		.154 (1.766)
<i>Individual level variables:</i>		
Household income	.126*** (010)	.126*** (010.)
Education	.219*** (009.)	.219*** (.009)
Gender (male)	.058** (.024)	.058** (024.)
Age	.073*** (004.)	.073*** (.004)
Age ² /100	-.045*** (.004)	-.045*** (004.)
Married	.261*** (.027)	.261*** (027.)
<i>Elections context level variables:</i>		
GDP / Capita	.000 (.000)	.000 (000.)
Union density	.016** (.007)	.019*** (007.)
Effective number of electoral parties	-.313*** (.103)	-.263*** (.092)
Mean district magnitude	.012*** (.004)	.012*** (004.)
<i>Country level variables:</i>		
Compulsory voting	1.445*** (.340)	1.29*** (360.)
Bicameralism	-.174 (.340)	-.109 (.339)
Federalism	.524* (.285)	.479** (.291)
Parliamentarism	.836*** (301.)	.912*** (302.)
Constant	-.975 (.1483)	-2.361*** (.746)
RANDOM PART:		
Variance, country level	.02	.047
Variance, election level	.362***	.343***
Number of Countries	25	25
Number of Elections	44	44
Number of Individuals	62663	62663
BIC (Bayesian Information Criteria)	46211.68	46212.54

Comment: p<.10 ** p<.05 *** p<.01. Source: CSES round 1 and 2. Logistic coefficients and standard errors in parantheses.

Table 3. Multilevel logistic models, effects of cross-level interactions including inequality on voting

	<i>Model 5: Interaction between Income Inequality and Household Inco- me</i>	<i>Model 6: Interaction between Educational Inequality and Individual Education</i>
FIXED PART:		
<i>Main independent variables:</i>		
Household income	-1.159 (3.047)	.129*** (.010)
Income Inequality	.331*** (.047)	
Income Inequality X Household income	-.648*** (.144)	
Educational Inequality		2.434*** (1.799)
Individual Education	.224*** (.009)	.379*** (.027)
Educational Inequality X Ind. Education		-.632*** (.099)
<i>Individual level variables:</i>		
Gender (male)	.058** (.024)	.061** (.024)
Age	.071*** (.004)	.070*** (.004)
Age ² /100	-.043*** (.004)	-.042*** (.004)
Married	.251*** (.027)	.251*** (.027)
<i>Elections context level variables:</i>		
GDP / Capita	000. (.000)	000. (.000)
Union density	.016*** (.007)	.019*** (.007)
Effective number of electoral parties	-.313*** (.103)	-.256*** (.092)
Mean district magnitude	.012*** (.004)	.012*** (.004)
<i>Country level variables:</i>		
Compulsory voting	1.45*** (.340)	1.30*** (.360)
Bicameralism	-.174 (.318)	-.101*** (.339)
Federalism	.524* (.285)	.446 (.291)
Parliamentarism	.836*** (.301)	.933*** (.301)
Constant	-1.493*** (1.488)	-2.915*** (.750)
RANDOM PART:		
σ^2_{v0} (between countries)	.02	.045
σ^2_{u0} (between elections)	.362***	.354***
Number of Countries	25	25
Number of Elections	44	44
Number of Individuals	62663	62663
BIC (Bayesian Information Criteria)	46202.46	46182.92

Comment: p<.10 ** p<.05 *** p<.01. Source: CSES round 1 and 2. Logistic coefficients and standard errors in parantheses.

Figure 1. probability of voting by economic inequality and income

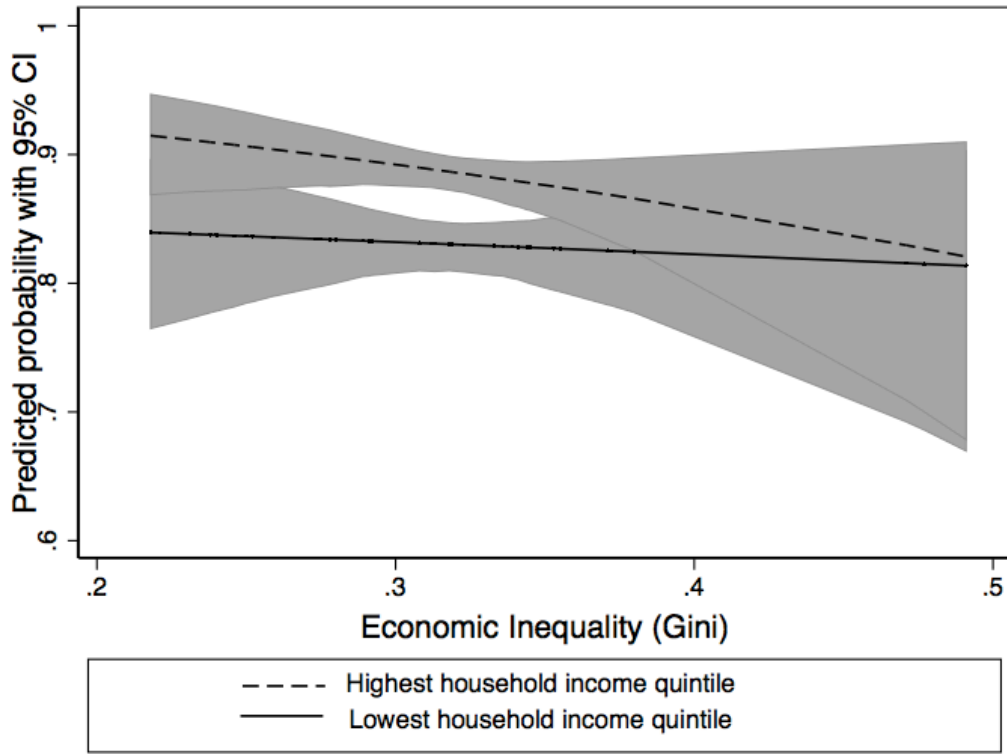


Figure 2. Probability of voting by educational inequality and education

