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Income Inequality and Participation: A Comparison of 24 European Countries

Bram Lancee and Herman van de Werfhorst

GINI Discussion Paper 6
January 2011

GROWING INEQUALITIES' IMPACTS

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January 2011

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GINI GROWING INEQUALITIES' IMPACTS

Income Inequality and Participation

A Comparison of 24 European Countries

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26 January 2011
DP 6

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Abstract

Previous research suggests that where inequality is high, participation is low. Two arguments are generally put forward to explain this finding: First, inequality depresses participation because people have diverging statuses and therefore fewer opportunities to share common goals. Second, people may participate more in social and civic life when they have more resources to do so. However, up till now, these explanations have been lumped together in empirical analyses. Using EU-SILC data for 24 European countries, we analyse how inequality in different parts of the income distribution is related to civic, cultural and social participation. Results indicate that a substantial part of the impact of inequality manifests itself through resources at the individual and societal level. However, independent of resources, it is still the case that higher inequality magnifies the relationship between income and participation. This is in line with a view that inter-individual processes explain why inequality diminishes participation.

1. Introduction

Studies on the impact of inequality on a wide range of outcomes are increasingly of a multilevel nature. Undesirable outcomes such as crime, bad health, low social trust, and low levels of civic participation are seen as being dependent on individual (or household) income position and on the income inequality in a society (Uslaner and Brown 2005; Kawachi et al. 1997; Daly, Wilson and Vasdev 2001; Huisman and Oldehinkel 2009; Wilkinson and Pickett 2009; Rothstein and Uslaner 2005). One domain of life where inequality effects are found concerns participation in various social, political and cultural activities. Previous research suggests that in countries, states or neighbourhoods where inequality is high, trust and civic participation are low (Uslaner and Brown 2005; Alesina and La Ferrara 2000; Oliver 1999).

One of the explanations is that inequality depresses participation because certain conditions for social interaction are not met: people have competing statuses and therefore fewer opportunities to share common goals (Wilkinson and Pickett 2009). Moreover, with higher levels of inequality, differences between people are larger. As a consequence, people may feel powerless and they will opt out of civic and social engagement (Uslaner and Brown 2005). However, no previous study allows for the possibility of income and inequality to interact. This is likely to be the case. If inequality matters for participation, it can be expected that one's individual position in the income distribution has different implications for civic engagement under different regimes of inequality. That is, to be poor in an unequal society may be different from being poor in an equal society.

There is, however, another argument why participation differs across countries that is not accounted for in previous research on the participatory consequences of inequality. Apart from the sociological consequences of diverging statuses, people may participate more in social and civic life when they have more resources to do so. Essential in the resource (or 'neo-material', Lynch et al 2000) explanation of inequality effects is that equal societies not only have a more equal income distribution, but also provide all kinds of services more equally to members of society.

Previous studies do not separate these arguments empirically. To find out whether inequality affects outcomes through sociological processes or through the (individual or collective) resources that are available to individuals, we need to take account of resources more fully and more explicitly than we have thus far seen in the literature.

Most of the existing literature has examined a society's level of inequality using a single measurement, most often the Gini-coefficient. Such a measure informs us on the level of inequality in a society across the complete income distribution. However, the literature on economic inequality has demonstrated that trends in inequality,

and variations between countries, are very different in different parts of the income distribution (OECD 2008; Salverda, Nolan and Smeeding 2009). The rise in income inequality in the past 25 years has mostly been observed at the top-end of the distribution. With regard to below-median inequality, the trends are much less pronounced. Also country variations are more pronounced in the top-end of the income distribution.

The literature on the consequences of inequality has, however, not examined inequality in different parts of the distribution. If inequality increases, the density of the tails of the income distribution becomes larger. Such varying distributions could affect macro-level outcomes like the average participation in society, even if the effect of household income is invariant between countries. In addition to varying distributions, household income could have a differential effect across different distributions.

The contribution of this paper is hence threefold. First, we study the impact of different levels of inequality at the bottom and at the top of the distribution on participation. Second, we study whether the impact of household income on participation changes with different levels of inequality. Such a design allows us to disentangle cross-nationally varying income distributions from varying effects of income under different conditions of inequality. Third, we control for the availability of resources by including, besides individual resources, welfare state expenditure and its interaction with individual income. By doing so, we can disentangle the sociological mechanism from the resource explanation. Our empirical analyses are based on cross-national data from 24 member states of the European Union (EU-SILC), and we apply a multilevel framework to account for the clustering of people within countries.

2. Forms of participation

We identify three forms of participation: social, civic and cultural. Rather than to contribute to the conceptualisation and theoretical development of the concept of participation, our aim in this paper is to analyze the effect of income and income inequality on these three domains of participation. However, to make clear how we conceive these concepts, in this section we briefly describe the three forms.

Social participation can be described as the informal bonds between people, or as the extent to which people interact with their friends and family members (Spencer and Pahl 2006; Van der Meer, Scheepers and Grotenhuis 2009). Often, this is also classified as informal social capital because it refers to the resources that can be accessed through these relations (Lin 2001; Pichler and Wallace 2007). The main distinction with the other forms of participation that we identify is that it is based on informal, as opposed to formal or institutionalized ties. In the section measurement, we operationalize social participation as the frequency of interaction with friends and family.

Civic participation usually refers to involvement in and membership of organizations and activities that constitute 'civil society'. Since it involves ties that are embedded in an formally constituted organizations or activities, it is also labelled formal social capital (Pichler and Wallace 2007). Often, civic participation is referred to as involvement in voluntary associations (Putnam 2000; Hooghe and Stolle 2003; Curtis, Baer and Grabb 2001; Ruiter and De Graaf 2006; Schofer and Fourcade-Gourinchas 2001; Andersen, Curtis and Grabb 2006; Wilson 2000; Musick, Wilson and Bynum Jr 2000). It includes participation in organizations and/or activities of neighbourhood associations, charitable organizations, political parties or groups, professional associations, environmental or peace groups and alike.

The relevance of cultural participation can be traced back to the work on cultural capital of Bourdieu (1993). Ganzeboom (1989) describes cultural participation as a way of processing information. When people engage in cultural activities they process information. Depending on the complexity of the activity and the ability of the person, a certain amount of information is processed. In terms of measurement, it refers to engagement in cultural activities, like attending cinema, going to live performances, or visits to cultural sites (see also section 'data and measurement').

3. The relation between income inequality and participation

According to Uslaner and Brown (2005: 876), "[t]here are strong reasons to believe that high levels of inequality depress civic participation". Although not separated in their empirical analyses, they provide two arguments why this is the case: "The direct effect of inequality on participation arises when inequality of resources leads people in lower economic brackets to refrain from participating, either because they have fewer resources or because they believe that getting involved will be fruitless because the system is stacked against them." This section discusses those two arguments. First, we discuss what we will label the 'sociological' argument; second, we discuss the 'resource' argument.

Scholars who study the "contact hypothesis" (Allport 1979) contend that there are certain conditions that help social interaction to instigate attitudes like cooperativeness: equal status between citizens, opportunities for personal acquaintance, and opportunities for people to share common goals. The sociological argument stipulates that income inequality interferes with these conditions, resulting in less contact and participation in civic life.

Wilkinson and Pickett (2009: 5) argue that "the scale of income differences has a powerful effect on how we relate to each other". According to Wilkinson and Pickett, with higher inequality there are more differences in status between individuals which results in status gaps. These gaps trigger status competition and this detriments a range of desirable outcomes, including participation. However, not only status competition triggers low trust. Societies with high levels of inequality are more stratified, resulting in larger differences between people. Differences between people in the social structure cause feelings of threat, anxiety and stress. Inequality promotes an air of bitterness and resentment, which manifest itself in less societal interaction. According to Uslaner and Brown (2005; Rothstein and Uslaner 2005), people will perceive that their views are not represented in the political system. As a consequence, people may feel powerless and they will opt out of civic engagement. Oxendine (2009: 6) states that "[i]n an atmosphere of economic stratification, the poor will feel degraded, will be envious and will continually covet the riches they lack". The central point in the sociological 'inter-individual' argument is hence that inequality depresses participation because certain conditions for social interaction are not met: people have diverging statuses, which results in status competition and feelings of anxiety. As a result, people have fewer opportunities to share common goals and for personal acquaintance.

However, besides the sociological consequences of income differences, resources theory argues that it is the availability of resources that determines participation. According to the resources argument (also known as the 'neo-material' theory, Lynch et al. 2000), resources are needed to achieve desirable outcomes. In the words of Lynch et al. (2000: 1202): "Under a neo-material interpretation, the effect of income inequality on health reflects a combination of negative exposures and lack of resources held by individuals, along with systematic underinvestment across a wide range of human, physical, health, and social infrastructure". In this view, the effect of inequality is not the sociological consequence of interpersonal processes, but an indicator of the (un)availability of resources.

Essential in the resource explanation of inequality effects is that equal societies not only have a more equal income distribution, but also provide all kinds of services more equally to members of society. Facilitated by higher tax revenues, governments in relatively equal societies make it easier for the poor to participate in various domains of life. For example, in more generous welfare states there may be more opportunities to receive subsidy for setting up associations and there may be subsidy on subscriptions, tickets or entrance fees. Moreover, welfare states provide an opportunity structure that facilitates the development of civic engagement. Evidence that in more extensive welfare states participation is higher is however mixed. There are indications that there is some variation in participation according to the degree of social expenditure or welfare state regimes (Kääriäinen and Lehtonen 2006; Van Oorschot and Arts 2005; Pichler and Wallace 2007), although other studies do not find any effect, or in the opposite direction (Van Oorschot and Finsveen 2009; Van der Meer, Scheepers and Grotenhuis 2009).

Based on these two arguments, one would expect that higher inequality results in less participation. Uslaner and Brown (2005: 870), although only including country-level variables, state that: "We know that the poor participate less, but a large gap between the rich and the poor may be just as important a depressor of participation as income levels." Alesina and La Ferrara (2000) apply multilevel analyses and analyze the relation between inequality in states in the US and forms of participation, while taking into account individual income. They find that more inequality (measured with the Gini coefficient) results in less participation. Although these findings refer to the US, there is no reason to expect this to be different in a cross-national comparison. We hence formulate our first hypothesis accordingly:

H1: Income inequality is negatively associated with participation, even when controlling for individual income.

None of the mentioned studies allows for the possibility of income and inequality to interact. This is likely to be the case. If inequality matters for participation, it can be expected that one's individual position in the income distribution matters as well. According to Major (2004), one of the consequences of inequality is that it alters what people feel they deserve, or are entitled to receive from social relationships. Therefore, under high inequality, the disadvantaged believe that they deserve lesser outcomes and, more importantly, behave accordingly. That is, to be poor in an unequal country is different from being poor in an equal country. Pichler and Wallace (2009) analyze for European countries the relation between class, inequality and formal and informal social capital. Pichler and Wallace (2009: 322) assume that "…where stratification is strongest, there will be less extensive networks, because these are likely to be limited to particular classes. Otherwise, the distance between classes is larger in more unequal countries". They indeed find that with higher levels of inequality differences across class in terms of social capital are larger.

Oxendine (2009: 7) focuses on affluent citizens in the US. She argues: "living among inequality should also fuel feelings of hostility by dampening opportunities for meaningful cross-class interaction". Oxendine indeed finds that wealthy citizens who live among economic equality exhibit higher levels of cross-cutting group involvement, more diverse personal friendships, and a stronger support for helping the poor. Conversely, Uslaner and Brown (2005: 876-877) state: "Where inequality is high, those people with fewer resources may feel powerless." Similarly, Pickett et al. (2005: 670) refer to '"the psychological stress of life near the bottom of a steeply hierarchical society".

As a result, we expect different levels of participation for somebody with a high income in a society with a high level of inequality, then for somebody with the same income in a more equal society. We argue that in countries where inequality is higher, participation is more likely to be determined by income. Conversely, in societies where income is distributed in a more equal manner, income is less important. This is formulated in hypothesis two.

H2: In countries where income inequality is larger, the association between income and participation is stronger.

However, since most studies have thus far used aggregate data (Uslaner and Brown 2005; Wilkinson 2005; Kawachi et al. 1997; Wilkinson and Pickett 2009), it has been impossible to disentangle the explanations referring to resources or to sociological processes. To find out whether the sociological factors related to inequality matter for participation, one needs to cancel out resource explanations relating to individual resources or collective resources by means of welfare state provision. Hence, to fully capture the impact of resources, one needs to include

state-level welfare provision in addition to household income. Furthermore, since inequality is related to gross domestic product (GDP), national income is important to control for. Given that high GDP-countries may have higher levels of participation due to the availability of resources (Lynch et al. 2000), we need to cancel out these effects to judge whether inequality is really associated with participation.

To the extent that (individual and collective) resources explain inequality effects, there should be no inequality effects on participation once we hold constant for household income, education, national income and welfare state expenditure. Thus, the effect as hypothesized in hypothesis 1 and 2 should disappear. If, on the other hand, there indeed is a sociological process influencing participation that is rooted in income differences between people, hypothesis 1 and 2 should hold, even when controlling for the availability of individual and collective resources, and their interaction effect. Hence, the sociological theory of inequality effects predicts that

H3: The effect of inequality, and the interaction effect of income and inequality on participation hold even when controlling for the availability of resources on the macro and micro level.

Previous studies on inequality point out that trends in and variations between countries in inequality are different from the bottom and the top of the income distribution (OECD 2008). To date, however, studies on the consequences of inequality have not implemented this finding. We argue that these differences matter and that the relation between inequality and participation is most pronounced for inequality at the bottom half of the income distribution. The sociological effect of diverging statuses is likely to be largest with respect to differences at the bottom. That is, poverty is more visible than wealth and it triggers stronger reactions. Inequality below the median income therefore results in fewer opportunities to cooperate and creates more stress than inequality above the median. This is formulated in hypothesis four:

H4: The relation between inequality and participation is more pronounced for inequality in the bottom half of the income distribution than in the top half.

4. Data and measurement

The empirical analyses are carried out with data from the 2006 wave of the European Union Study on Income and Living Conditions (EU-SILC). The EU-SILC is provided by Eurostat and contains the 27 member states of the European Union, plus Switzerland, Iceland, Norway and Turkey. For more information on the EU-SILC data, see Eurostat (2008). In 2006, a module was included on social networks and participation, which makes it possible to measure social participation. The sample consists of all people in the age of 25-65 years who were included in the module 'social participation'. Because not al social participation indicators were measured in all countries, the sample consists of about 137,000 individuals in 24 countries[1]. Since individuals are nested in countries and we want to explain cross-country variation we estimate random intercept models[2] (Snijders and Bosker 1999).

Our aim is to empirically test the hypotheses derived from sociological and neo-material explanations of inequality effects. Although our approach allows for a much more detailed investigation of such explanations than previous research, it must be born in mind that the cross-sectional nature of the data does prohibit causal statements relating to inequality effects.

4.1. Inequality as the mean distance to the median income

We devise a novel method to measure income inequality at the societal level (based on the work of Checchi, Visser and Van de Werfhorst 2010). Usually, inequalities in different parts of the distribution are measured using 'p-ratios' of the difference in earnings of groups at different percentiles of the income distribution. For example, the ratio between the 90th percentile (P90) and the median (the 50th percentile, P50) informs us on inequality at the upper part of the distribution, and the ratio between P50 and P10 on inequality at the bottom. These p-ratios, however useful, have two disadvantages for our purposes. First, p-ratios share with most other measurements of inequality (including the Gini-coefficient) that it is a true macro-level variable that is not a direct aggregation of individual positions. Such macro-level indicators make us believe that inequality is 'out there' affecting citizens, but it disguises that macro-level inequality is ultimately a construct of a combination of individuals or households. Second, since the sizes (densities) of the tails are fixed, p-ratios tell us little about varying distributions. P10 always

1 For social participation, n1=25 since also data is available for Norway. We also estimated models omitting Norway, but results did not differ substantially.

2 As a first step, an empty model is estimated to check whether there is variation at the country level. This is indeed the case: the intra-class correlation (ICC) for social participation is .11, for cultural participation .08 and for civic participation.16. Second, to make sure that the variation is not due to individual characteristics only, we estimated a composition model including individual characteristics. The ICC's are .11, .09 and .18 respectively; indicating that there is sufficient variation to be explained by country level characteristics. Third, we tested whether the slope of individual income varies significantly across countries. This was the case for all three forms of participation ($p<.001$).

has 10 percent of the distribution to the left-hand side, and P90 always has 10 percent on the right-hand side. This is unfortunate, because with larger levels of inequality (i.e. higher P90/P50 or P50/P10 ratios) we cannot directly see that the sizes of the tails increase in density. As we aim to disentangle varying distributions from varying effects, we need a measurement that captures the relationship between measured inequality and the density of the tails.

The measurement of inequality below and above median incomes that we propose solves these two issues. First of all, the measure is a direct aggregation of household income positions, measured as the distance to the median as a proportion of the median (below and above median separately). Measured this way, inequality is directly a construct that results from a combination of individual households. Second, for this measure we can directly see that larger inequalities (i.e. larger average distances to the median income) are matched to larger densities at the tails of the income distribution. Our study validates this measurement by comparing it to the Gini-coefficient and to p-ratios, before we relate it to participation.

The Mean Distance to the Median Income (MDMI) is a macro indicator that reflects the mean 'distance' of a household income relative to the median household income in a respective country. To be able to compare between countries, this number is standardized by the median household income. The MDMI for a given country is calculated as follows (separately above and below the median, subscripts a and b):

$$MDMI_{a,b} = 1/n \sum \left(\left| \frac{H - medH}{medH} \right| \right) \quad (1)$$

Where: H = equivalized disposable household income (for each individual, and corrected for household non-response), medH = the median of a country's H, n = the number of individuals in the country/sample. In addition to separating measures of inequality below and above the median, we calculate an overall measure of inequality averaging the distance to the median (either below or above) for all individuals. Mathematically there is a strong similarity between the MDMI and the Gini coefficient, as the Gini coefficient basically represents a comparison of everyone with everyone else. Given that we set off each household income to the median, this is very similar. However, unlike the Gini coefficient, the MDMI can be calculated on two sides of the median separately.

In table 1, the MDMI is shown for the countries in the EU-SILC 2006. In the left panel, the MDMI consists of a simple country mean of the mean distance to the median income, ignoring whether the distance is above or below the median income. In the other two columns, the MDMI is computed separately for incomes above and below the (national) median income. The interpretation is that the value of .95 in table 1 for Portugal implies that the mean distance for people above the median income is almost one median income. Hence, people in Portugal with an income above the (Portuguese) median income on average almost earn twice the median income.

The value of the MDMI below the median of .34 means that people that have an income below the median, earn on average .66 times the median income (since the distance is on average .34*medH under the median income). Comparing these numbers with the UK, one can see that whereas inequality at the bottom of the distribution is the same for both countries, inequality at the top is larger in Portugal than in the UK.

Table 1. Mean distances to the median income

Country	MDMI	MDMI above the Median	MDMI below the Median	Median H
Austria	.37	.47	.27	17864.34
Belgium	.44	.55	.31	16404.24
Cyprus	.48	.65	.29	13374.45
Czech Republic	.38	.51	.22	4415.24
Germany	.44	.58	.29	16905.33
Denmark	.31	.38	.24	24434.81
Estonia	.53	.71	.31	3200.69
Spain	.51	.65	.36	10675.86
Finland	.42	.55	.28	18689.25
France	.42	.55	.29	16241.17
Greece	.58	.79	.36	9111.16
Hungary	.50	.67	.31	3694.24
Ireland	.60	.84	.30	17283.75
Iceland	.38	.51	.25	28716.67
Italy	.49	.63	.34	14560
Lithuania	.58	.78	.33	2361.9
Luxembourg	.48	.64	.33	28634.67
Latvia	.75	1.06	.36	2093.29
Netherlands	.35	.46	.24	18773
Poland	.50	.67	.35	3093.35
Portugal	.66	.95	.34	6824
Sweden	.32	.38	.27	18119.68
Slovenia	.35	.43	.25	9322.71
Slovakia	.43	.57	.26	3174.24
United Kingdom	.54	.72	.34	18584.02
Mean	.47	.62	.30	13005.85

To compare the MDMI with the Gini-coefficient, Figure 1a and 1b present plots of the 'simple' MDMI by the Gini-coefficient and by the P90/10 ratio (both derived from EU-SILC 2006[3]). The MDMI is almost identical to the Gini-coefficient and close to the P90/10 ratio. In Figure 2a and 2b, the MDMI above and below the median are plotted against the P90/50 and the P50/10. Finally, Table 2 provides the correlations between the MDMI and the regular measures of inequality. We conclude from these analyses that our measure strongly resembles existing

3 Like, the MDMI, the Gini coefficient is based on equivalized disposable household income (corrected for household non-response). The Gini that we calculate and the Gini as provided by Eurostat have a correlation of .95.

measures of income inequality. Given the advantages of examining inequality measured as distance below and above the median, we continue our analyses with these separated indicators.

Figure 1 a and 1b. MDMI by GINI and the MDMI by the p9010 ratio

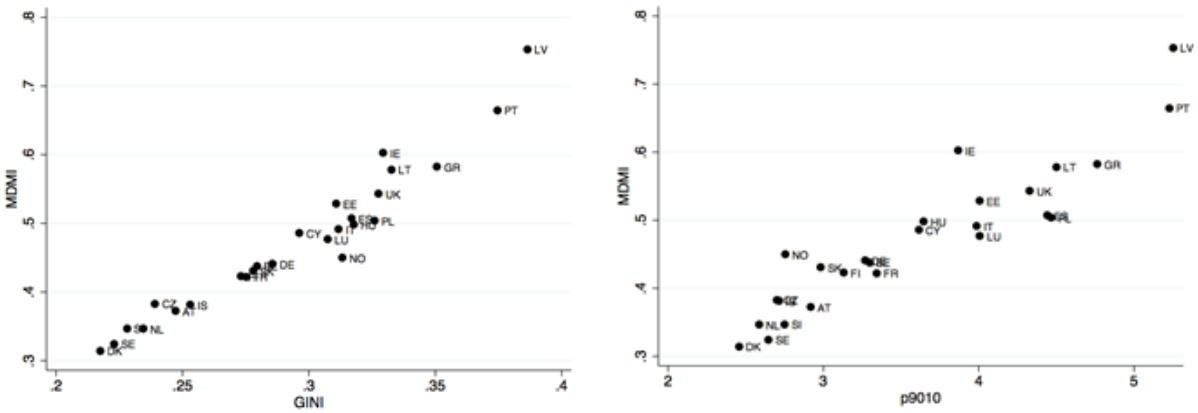


Figure 2a and 2b. MDMI above and below the median income by the P50/10 and by the P90/50 ratio

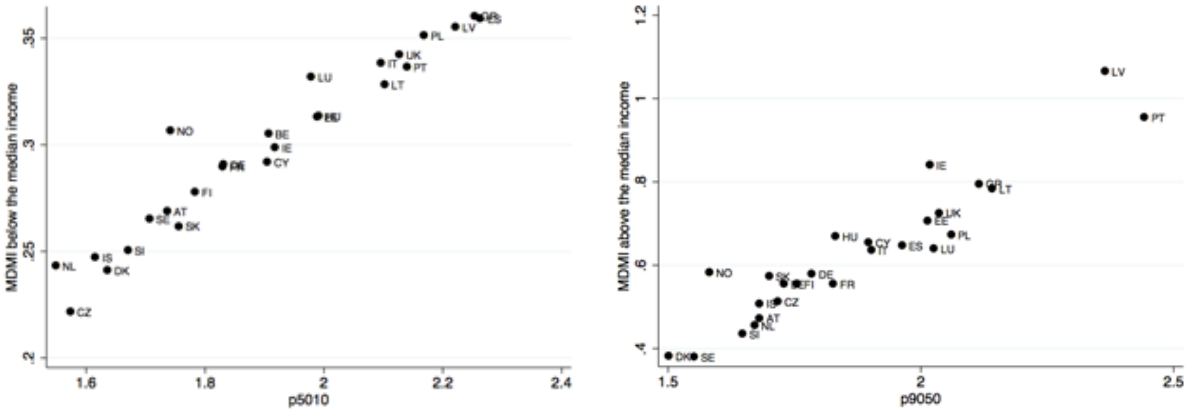


Table 2. Bivariate correlations between country level variables

	MDMI	MDMI above the median	MDMI below the median	GINI	P5010	P9050
MDMI	1					
MDMI above	.996	1				
MDMI below	.7932	.7488	1			
GINI	.9646	.9526	.8835	1		
P50/10	.8272	.7869	.9683	.8777	1	
P90/50	.9324	.9365	.7793	.8968	.8357	1

Note: (n=25; for all p< .001)

4.2. Independent variables

As a measure of income inequality we include the MDMI calculated below and above the median income. Our measure of individual income is the equivalized disposable household income of an individual, standardized by the median income of the respective country[4]. By standardizing income, it is better comparable across countries.

Since the EU-SILC is a household sample, there are people in the sample that belong to the same household (mostly partners, plus some children that live at home). Such a sampling design violates the assumption of independence of errors and can therefore bias the estimates. To account for this, we randomly drew one household member from each household and estimated the models with this reduced sample[5].

4.3. Dependent variables

Social participation. Respondents are asked about the frequency of contact and the frequency of getting together with relatives and friends (four items on a six point scale, ranging from 'does not have' friends/family to 'daily', Cronbach's alpha =.70). The frequency of getting together refers to how often the respondent usually 'gets together' with friends/relatives during a usual year. The frequency of contact refers to the frequency with which the respondent is usually in contact with friends/family, during a usual year, by telephone, letter, fax, e-mail, sms. Only friends and family outside the household of the respondent are considered.

Civic participation. For the measurement of civic participation, five items are used that ask for people's participation in certain activities during the last twelve months (yes/no). First, an item about participation in activities of neighbourhood associations, environmental organisations, civil right groups, peace groups and alike. Second, and item about participation in voluntary activities. It is asked if the respondent, during the last twelve months, participated in the unpaid work of charitable organisations, groups or clubs. It includes unpaid charitable work for churches, religious groups and humanitarian organisations (attending holy masses or similar religious acts is not included). Third, an item about participation in activities of recreational groups or organisations. Respondents are asked if, during the last twelve months, they participated in recreational/leisure activities arranged by a club, association or similar. It can be sport groups, hobby associations, or leisure clubs. The fourth item refers to participation in activities of political parties, political associations or trade unions (Participating in formal strikes/demonstrations is not included). The fifth item refers to participation in activities related to professional associations

4 Individual income = $\left(\frac{H - medH}{medH}\right)$, where H and medH are the same as in equation 1.

5 We also estimated all models with the full sample. Results are similar. However, a few interactions appear significant. Since we do not know whether this result is due to the clustering or due to the larger sample size, we decided to take the more conservative estimate.

(Receiving training organised by such association is excluded). For all five items, attending meetings connected with these activities are included. Following Ruiter and De Graaf (2006; but see also Curtis, Grabb and Baer 1992), these items are combined in a dummy variable, assigning the value one to respondents who participated in the last twelve months in one or more of the activities mentioned, and zero to respondents who did not participate in any of the activities.

Cultural participation. Three items are used that ask for people's participation in cultural activities during the last twelve months (none, 1-3 times, 4-6 times, 7-12 times, more than 12). First, the number of visits to cultural sites (historical monuments, museums, art galleries or archaeological sites). Second, the number of times going to live performances (any live performance, whether it was performed by professionals or amateurs. Live performances include plays, concerts, operas, ballet and dance performances. Visits to live sport events are not included). Third, the number of times going to the cinema. Since (unlike with civic participation) the answering categories of these items contain multiple and ordinal categories referring to attendance frequency, the three items are summed and taken together as a scale (Cronbach's alpha =.69).

4.4. Control variables

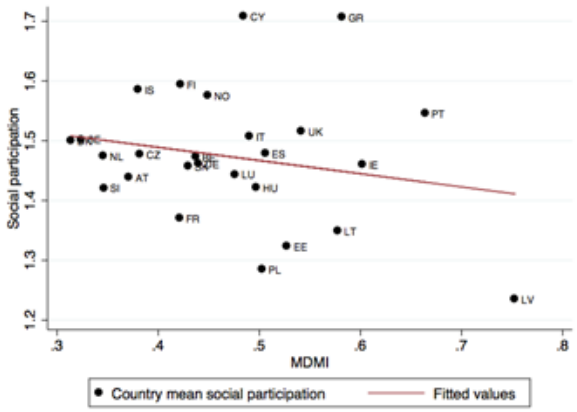
We control for the following individual socio-demographics: gender, age (and squared), marital status, educational attainment (with a slightly collapsed version of the ISCED scale), and labour market status (either full time, part-time, unemployed, or not on the labour market). Since differences in participation can be expected between rural and urban domiciles (Ziersch et al. 2009), we include the degree of urbanization of the domicile of the respondent (thinly, moderately or densely populated area). On the country level, we include GDP per capita in purchasing power standards (derived from Eurostat). For the measurement of social expenditure, we include the total amount of social expenditure as a percentage of the GDP (averaged for each country over the years 2002-2005), provided by Eurostat. Table 3 presents the descriptive statistics.

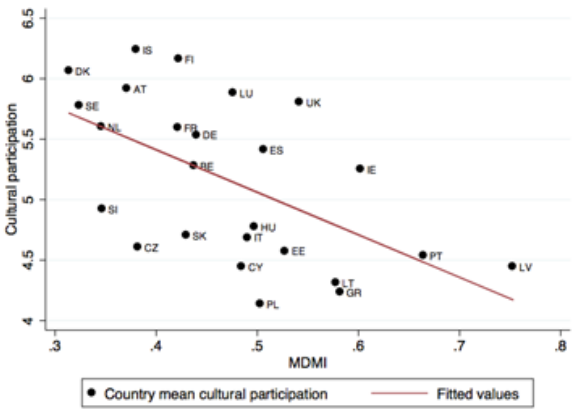
Table 3. Descriptive statistics independent variables

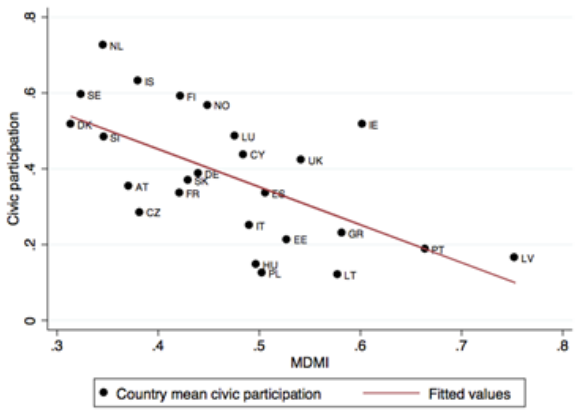
	Mean	Range		SD
		Min	Max	
Individual Income	0.23	-21.57	141.35	1.07
MDMI above the median	0.63	0.38	1.06	0.13
MDMI below the median	0.31	0.22	0.36	0.04
GDP per capita	103.04	52	272	38.68
Social expenditure (as % GDP)	23.7	12.53	31.13	5.18
Age	45.58	25	65	11.28
	Percentage			
Female	54	0	1	
Working fulltime	58	0	1	
Working part-time	1	0	1	
Unemployed	6	0	1	
Not on the labour market	26	0	1	
Lower secondary education and below	27	0	1	
Upper secondary education	43	0	1	
Post-secondary and tertiary education	3	0	1	
Never married	24	0	1	
Married	59	0	1	
Separated/Divorced	12	0	1	
Widowed	5	0	1	
Densely populated	43	0	1	
Moderately populated	23	0	1	
Thinly populated	34	0	1	

Source: EU-SILC 2006, Eurostat

Figures 3a-c. The MDMI by the country average of social, civic and cultural participation







5. Results

In Figures 3a-c, the three forms of participation are plotted against the overall MDMI. Like we would expect based on previous research, there is a negative association: higher levels of inequality correspond with lower levels of participation. However, these are just simple bivariate plots, not taking into account the variation in individual income and other variables, and not taking into account the availability of resources on the country level.

In tables 4 to 6, multilevel models are estimated for each of the three forms of participation. Models 1 and 2 of table 3 show that inequality does not have a significant effect on social participation (controlled for social expenditure and GDP). Income does have a strong effect. Importantly, models 3 and 4 show that the effect of income is magnified in more unequal societies. Hence, in more unequal societies, the difference between low-income and high-income households is larger than in more equal societies. Put differently, macro-level inequality does have negative repercussions on social participation, but primarily by enlarging differences in participation between income groups. This is true both for macro-level inequality above the median and below the median.

Models 5 and 6 add the interaction term between income and social expenditure, thereby controlling for the resource explanations relating to egalitarian services provision in equal societies. The interaction term has a significant effect on social participation. Social expenditure diminishes the influence of income on participation, which is in line with the neo-materialist theory of inequality effects. Compared to models 3 and 4, there is a substantial reduction of the interaction effect between income and inequality, but it remains significant. So, even though part of the inequality effect on social participation runs through the availability of resources, it is still the case that the income effect on social participation is larger in more unequal societies. This supports the view that resources only explain part of the impact of inequality on social participation, which leaves room for alternative, inter-individual, sociological explanations why undesirable outcomes are more often encountered in more unequal societies.

Table 4. Multilevel regression predicting social participation; n1=25, n2= 140,873

	m1		m2		m3		m4		m5		m6	
	b	se	b	se	b	se	b	se	b	se	b	se
Individual income	.017***	(.001)	.017***	(.001)	-.031***	(.004)	-.062***	(.008)	.046***	(.008)	.014	(.009)
MDMI above median	.016	(.155)			-.009	(.155)			.004	(.156)		
MDMI below median			-.156	(.532)			-.218	(.533)			-.202	(.536)
MDMI above median*income					.074***	(.006)			.030***	(.007)		
MDMI below median*income							.253***	(.025)			.187***	(.025)
Social expenditure*income									-.002***	(.000)	-.002***	(.000)
Social expenditure	.006	(.005)	.006	(.004)	.006	(.005)	.006	(.004)	.007	(.005)	.007	(.004)
GDP per capita	.000	(.000)	.000	(.000)	.000	(.000)	.000	(.000)	.000	(.000)	.000	(.000)
Individual level control variables												
Female	.056***	(.002)	.056***	(.002)	.056***	(.002)	.056***	(.002)	.056***	(.002)	.056***	(.002)
Age	-.026***	(.001)	-.026***	(.001)	-.026***	(.001)	-.026***	(.001)	-.026***	(.001)	-.026***	(.001)
Age squared	.000***	(.000)	.000***	(.000)	.000***	(.000)	.000***	(.000)	.000***	(.000)	.000***	(.000)
Never married	-.032***	(.002)	-.032***	(.002)	-.032***	(.002)	-.032***	(.002)	-.032***	(.002)	-.032***	(.002)
Married	ref.		ref.		ref.		ref.		ref.		ref.	
Separated	-.007	(.006)	-.007	(.006)	-.007	(.006)	-.007	(.006)	-.007	(.006)	-.006	(.006)
Widowed	.013***	(.004)	.014***	(.004)	.014***	(.004)	.014***	(.004)	.015***	(.004)	.015***	(.004)
Divorced	-.008**	(.003)	-.008**	(.003)	-.008**	(.003)	-.009**	(.003)	-.008**	(.003)	-.008**	(.003)
Densely populated	ref.		ref.		ref.		ref.		ref.		ref.	
Moderately populated	.010***	(.002)	.010***	(.002)	.011***	(.002)	.011***	(.002)	.011***	(.002)	.011***	(.002)
Thinly populated	.008***	(.002)	.008***	(.002)	.009***	(.002)	.009***	(.002)	.010***	(.002)	.011***	(.002)
Not on the labour market	ref.		ref.		ref.		ref.		ref.		ref.	
Working fulltime	.049***	(.002)	.049***	(.002)	.049***	(.002)	.048***	(.002)	.048***	(.002)	.048***	(.002)
Working part-time	.041***	(.003)	.041***	(.003)	.041***	(.003)	.041***	(.003)	.041***	(.003)	.041***	(.003)
Unemployed	-.020***	(.004)	-.020***	(.004)	-.020***	(.004)	-.020***	(.004)	-.019***	(.004)	-.019***	(.004)
Lower secondary education and below	ref.		ref.		ref.		ref.		ref.		ref.	
Upper secondary education	.050***	(.002)	.050***	(.002)	.049***	(.002)	.049***	(.002)	.050***	(.002)	.050***	(.002)
Post-secondary and tertiary	.058***	(.002)	.058***	(.002)	.057***	(.002)	.057***	(.002)	.058***	(.002)	.057***	(.002)
Constant	1.839***	(.181)	1.910***	(.204)	1.851***	(.182)	1.927***	(.204)	1.825***	(.183)	1.898***	(.206)
Log-likelihood	-34842.7		-34842.7		-34758.6		-34790.1		-34695.1		-34677.0	
$\sigma^2 u_{ij}$	.010		.010		.010		.010		.011		.011	
$\sigma^2 e_{ij}$	.096		.096		.096		.096		.096		.096	
Intra-class correlation	.099		.098		.099		.099		.100		.100	

*Source: EU-SILC 2006, Eurostat; * p<0.05, ** p<0.01, *** p<0.001 (two-tailed tests).*

Table 5. Multilevel regression predicting cultural participation; n1=24, n2= 138,950

	m1		m2		m3		m4		m5		m6	
	b	se	b	se	b	se	b	se	b	se	b	se
Individual income	.352***	(.006)	.352***	(.006)	.340***	(.025)	-.019	(.050)	.504***	(.051)	.047	(.059)
MDMI above median	-.840	(.554)			-.846	(.554)			-.819	(.555)		
MDMI below median			-3.423	(1.876)			-3.715*	(1.874)			-3.701*	(1.874)
MDMI above median*income					.018	(.037)			-.075	(.045)		
MDMI below median*income							1.196***	(.159)			1.139***	(.161)
Social expenditure*income									-.004***	(.001)	-.002*	(.001)
Social expenditure	.040*	(.017)	.046**	(.015)	.040*	(.017)	.046**	(.015)	.041*	(.017)	.047**	(.015)
GDP per capita	.007***	(.002)	.007***	(.002)	.007***	(.002)	.007***	(.002)	.007***	(.002)	.007***	(.002)
Individual level control variables												
Female	.275***	(.012)	.275***	(.012)	.275***	(.012)	.274***	(.012)	.275***	(.012)	.274***	(.012)
Age	-.099***	(.004)	-.099***	(.004)	-.099***	(.004)	-.099***	(.004)	-.099***	(.004)	-.099***	(.004)
Age squared	.001***	(.000)	.001***	(.000)	.001***	(.000)	.001***	(.000)	.001***	(.000)	.001***	(.000)
Never married	.415***	(.014)	.415***	(.014)	.415***	(.014)	.414***	(.014)	.415***	(.014)	.414***	(.014)
Married	ref.		ref.		ref.		ref.		ref.		ref.	
Separated	.075	(.039)	.074	(.039)	.075	(.039)	.078*	(.039)	.075	(.039)	.078*	(.039)
Widowed	.031	(.026)	.031	(.026)	.031	(.026)	.033	(.026)	.033	(.026)	.034	(.026)
Divorced	.194***	(.019)	.194***	(.019)	.194***	(.019)	.191***	(.019)	.195***	(.019)	.191***	(.019)
Densely populated	ref.		ref.		ref.		ref.		ref.		ref.	
Moderately populated	-.288***	(.014)	-.288***	(.014)	-.288***	(.015)	-.288***	(.014)	-.287***	(.015)	-.287***	(.015)
Thinly populated	-.526***	(.014)	-.526***	(.014)	-.526***	(.014)	-.523***	(.014)	-.523***	(.014)	-.522***	(.014)
Not on the labour market	ref.		ref.		ref.		ref.		ref.		ref.	
Working fulltime	.399***	(.015)	.399***	(.015)	.400***	(.015)	.399***	(.015)	.398***	(.015)	.398***	(.015)
Working part-time	.377***	(.021)	.377***	(.021)	.377***	(.021)	.377***	(.021)	.376***	(.021)	.377***	(.021)
Unemployed	-.163***	(.025)	-.163***	(.025)	-.163***	(.025)	-.159***	(.025)	-.162***	(.025)	-.159***	(.025)
Lower secondary education and below	ref.		ref.		ref.		ref.		ref.		ref.	
Upper secondary education	.803***	(.015)	.803***	(.015)	.803***	(.015)	.798***	(.015)	.805***	(.015)	.798***	(.015)
Post-secondary and tertiary	1.958***	(.016)	1.958***	(.016)	1.958***	(.016)	1.951***	(.016)	1.958***	(.016)	1.951***	(.016)
Constant	5.087***	(.655)	5.415***	(.726)	5.090***	(.655)	5.496***	(.725)	5.034***	(.655)	5.471***	(.725)
Log-likelihood	-293795.9		-293795.5		-293795.8		-293767.2		-293789.1		-293765.2	
$\sigma^2 u_{ij}$	.134		.129		.134		.129		.134		.129	
$\sigma^2 e_{ij}$	4.015		4.015		4.015		4.013		4.015		4.013	
Intra-class correlation	.032		.031		.032		.031		.032		.031	

*Source: EU-SILC 2006, Eurostat; * p<0.05, ** p<0.01, *** p<0.001 (two-tailed tests).*

Table 6. Multilevel logit regression predicting civic participation; n1=24, n2= 136,780

	m1		m2		m3		m4		m5		m6	
	b	se	b	se	b	se	b	se	b	se	b	se
Individual income	.196***	(.008)	.196***	(.008)	.205***	(.036)	-.111	(.064)	.465***	(.068)	.017	(.079)
MDMI above median	-1.891*	(.822)			-1.886*	(.822)			-1.835*	(.826)		
MDMI below median			-9.402***	(2.485)			-9.664***	(2.477)			-9.635***	(2.482)
MDMI above median*income					-.013	(.051)			-.148*	(.059)		
MDMI below median*income							.969***	(.201)			.859***	(.207)
Social expenditure*income									-.007***	(.002)	-.004**	(.001)
Social expenditure	.019	(.025)	.028	(.020)	.019	(.025)	.028	(.020)	.022	(.025)	.030	(.020)
GDP per capita	.009***	(.003)	.010***	(.002)	.009***	(.003)	.010***	(.002)	.009***	(.003)	.010***	(.002)
Individual level control variables												
Female	-.218***	(.013)	-.218***	(.013)	-.218***	(.013)	-.218***	(.013)	-.218***	(.013)	-.218***	(.013)
Age	.010*	(.005)	.010*	(.005)	.010*	(.005)	.010*	(.005)	.011*	(.005)	.011*	(.005)
Age squared	.000	(.000)	.000	(.000)	.000	(.000)	-.000	(.000)	-.000	(.000)	-.000	(.000)
Never married	-.057***	(.017)	-.057***	(.017)	-.057***	(.017)	-.058***	(.017)	-.057***	(.017)	-.058***	(.017)
Married	ref.		ref.		ref.		ref.		ref.		ref.	
Separated	-.032	(.045)	-.032	(.045)	-.032	(.045)	-.032	(.045)	-.033	(.045)	-.032	(.045)
Widowed	.039	(.032)	.039	(.032)	.039	(.032)	.039	(.032)	.039	(.032)	.040	(.032)
Divorced	-.042	(.023)	-.042	(.023)	-.041	(.023)	-.047*	(.023)	-.040	(.023)	-.047*	(.023)
Densely populated	ref.		ref.		ref.		ref.		ref.		ref.	
Moderately populated	.108***	(.017)	.108***	(.017)	.108***	(.017)	.108***	(.017)	.109***	(.017)	.109***	(.017)
Thinly populated	.210***	(.016)	.210***	(.016)	.210***	(.016)	.210***	(.016)	.213***	(.016)	.212***	(.016)
Not on the labour market	ref.		ref.		ref.		ref.		ref.		ref.	
Working fulltime	.268***	(.018)	.268***	(.018)	.268***	(.018)	.271***	(.018)	.267***	(.018)	.271***	(.018)
Working part-time	.265***	(.024)	.265***	(.024)	.265***	(.024)	.267***	(.024)	.264***	(.024)	.267***	(.024)
Unemployed	-.222***	(.032)	-.222***	(.032)	-.222***	(.032)	-.221***	(.032)	-.222***	(.032)	-.221***	(.032)
Lower secondary education and below	ref.		ref.		ref.		ref.		ref.		ref.	
Upper secondary education	.522***	(.018)	.522***	(.018)	.522***	(.018)	.519***	(.018)	.525***	(.018)	.521***	(.018)
Post-secondary and tertiary	1.093***	(.019)	1.093***	(.019)	1.093***	(.019)	1.091***	(.019)	1.096***	(.019)	1.093***	(.019)
Constant	-2.072*	(.973)	-.735	(.967)	-2.075*	(.974)	-.661	(.964)	-2.191*	(.978)	-.721	(.966)
Log-likelihood	-76634.4		-76631.1		-76634.3		-76619.8		-76624.3		-76615.9	
$\sigma^2 u_{ij}$	.295		.226		.295		.22444		.298		.225	
Intra-class correlation	.082		.064		.082		.064		.083		.064	

*Source: EU-SILC 2006, Eurostat; * p<0.05, ** p<0.01, *** p<0.001 (two-tailed tests).*

Table 5 shows the results on cultural participation. Household income has a strong effect on cultural participation, alongside other individual variables (in particular education). Although the main effects of macro-level inequality are not significant, the direction of the effects point to lower levels of cultural participation in more unequal societies. Moreover, when omitting social expenditure, both inequality above and below the median appear significant (not shown here), indicating that the relation between inequality and cultural participation is mainly due to the distribution of resources. Model 3 shows that relation between income and cultural participation is not affected by income inequality at the top-end of the distribution. Model 4, however, indicates that cultural participation is less stratified by household income in societies with a more equal distribution of below-median earnings. In other words, the positive effect of more equality below the median on cultural participation (positive main effect) is particularly found for low-income households (negative interaction effect). Models 5 and 6, which control for the differential effect of income depending on the level of social expenditure, show that both interaction terms between inequality and income are significant. Model 6 confirms the findings of model 4, meaning that the higher levels of cultural participation in egalitarian income distributions particularly concerns low-income households. Importantly, this effect apparently holds after controlling for varying income effects across countries with different levels of social expenditure, suggesting that sociological explanations for inequality effects may not be too far off the mark.

Table 6 shows the same models for civic participation, a concept that has often been used in discussions on the 'decline of social capital' in modern western societies (e.g. Putnam 2000; Curtis et al. 1992; Ruiter and De Graaf 2006). Here we see most clearly the negative impact of macro-level inequality on participation. In model 1 it is clear that, besides individual resources (income, education), more inequality at the top is associated with a lower likelihood to be active in a voluntary organization. Model 2 shows the same for below-median inequality; societies with a relatively small average distance to the median income (thus: low level of inequality) have higher participation rates than countries with larger average distances between household income and the country median income. Model 3 shows that the depressing effect of above-median inequality on participation is invariant across income groups. Or, in other words, the association between income and civic participation is not dependent on the level of above-median income inequality. Model 4 shows something different. The positive effect of below-median equality on civic participation is stronger for low-income households than for high-income households.

Models 5 and 6 control for the varying impact of income across countries with different levels of social expenditure. In model 5 the negative interaction effect illustrates that, surprisingly, in more unequal societies, the effect of household income gets smaller. Model 6 shows that the interaction effect of model 4 remains of similar

size, and significant. Thus, taking account of the services provision in egalitarian welfare states, it is still the case that more unequal societies have larger variations across income groups in civic participation.

The results of models 3 and 4 are graphically displayed in figures 4-6. The figures show the association (and corresponding standard errors) between income on participation for the observed range of the moderator variables (following Brambor, Clark and Golder 2006). In figure 4a, it shows that the effect of income on social participation steeply increases with higher levels of inequality above the country median income, and that this effect is positively and significant for all levels of inequality. Figure 4b presents the same for inequality below the median. Where the distance to the median is smallest, the effect of income is not significantly related to social participation. With higher levels of inequality below the median, the effect of income is ever larger. In figure 5, this is done for cultural participation: the association between income and cultural participation is positive and significant, and stronger for higher levels of inequality below the median. Figure 6 shows how one standard deviation increase in income affects the probability to participate in one of the civic associations across the observed range of inequality below the median income (with all covariates set to either the mean or median). The effect of income on civic participation is significantly positive and larger for higher levels of inequality, although the slope levels off for the highest levels of inequality.

Figure 4a and 4b. The effect of income on social participation for observed values of MDMI above and below the median income

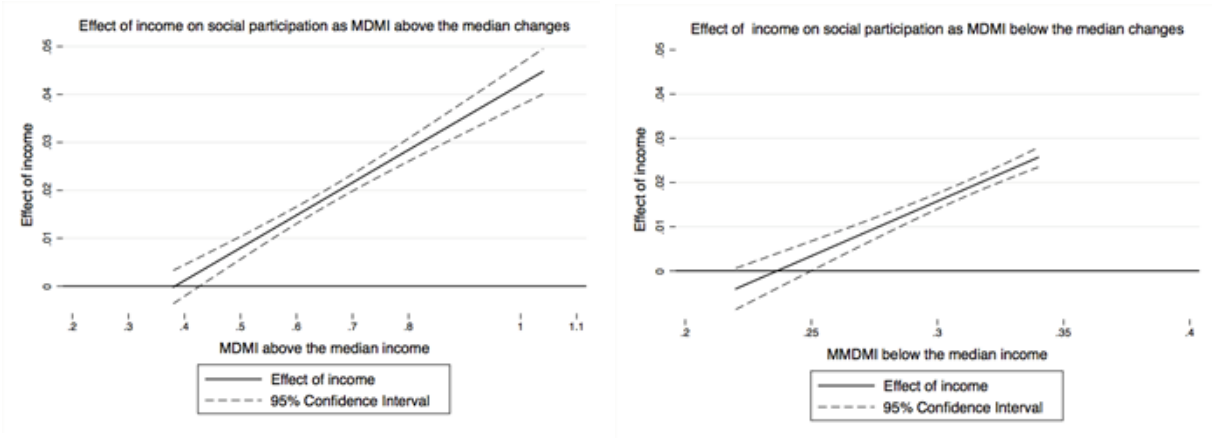


Figure 5. The effect of income on cultural participation for observed values of MDMI below the median income

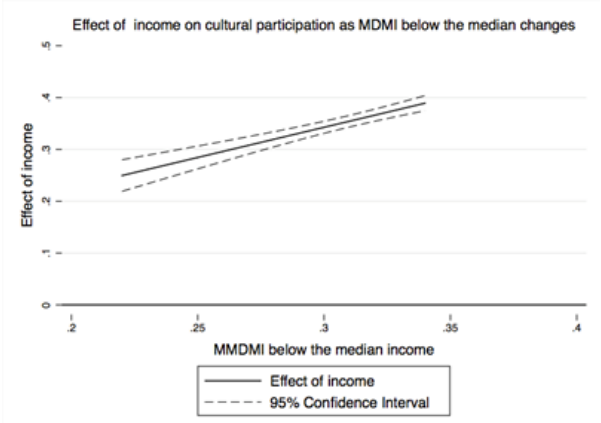
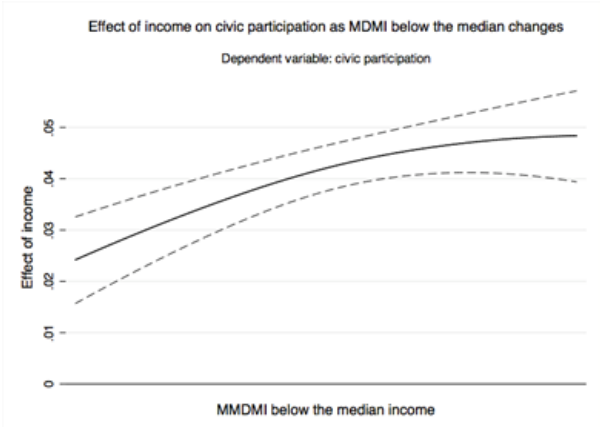


Figure 6. The effect of income on civic participation for observed values of MDMI below the median income



6. Conclusion

In this paper, we examined whether and why income inequality in a society is negatively related to various forms of participation. We were particularly interested in examining different theoretical explanations for a relationship between inequality and participation (or other undesirable outcomes, for that matter). Thus far, studies have mostly relied on aggregate data that showed that higher levels of inequality are related to lower levels of social trust, bad health, higher crime rates, and lower levels of participation.

However, this relationship can be explained by two different theories, which are impossible to test with aggregate data. First, income inequality can affect these outcomes through sociological processes of status differences and related levels of stress (Wilkinson 2005; Wilkinson & Pickett 2009). In more unequal societies, the poor abstain from participation, show lower levels of generalized trust, develop bad health, and are more often involved in criminal activities, because they are more distressed by their disadvantaged position than they would have been if society would have been more egalitarian. Second, inequality is related to bad outcomes such as low levels of participation, because of the resources that people have available to them (Lynch et al. 2000). Such resources come in different forms, both at the individual and collective level. At the individual level, income and education provide relevant resources for a number of outcomes, including participation (Gesthuizen, Van der Meer and Scheepers 2008; Pichler and Wallace 2009). In more unequal societies, the poor have fewer resources, so their participation is negatively affected in comparison to lower income groups in more equal societies. At the country level, resources include GDP and the extent to which the state provides welfare to its citizens (Van Oorschot and Arts 2005). Both these aspects are related to the level of inequality in a country. The 'neo-material' theory of inequality effects argues that more equal societies provide many services to its citizens that eliminate obstacles to participation and good health (Lynch et al. 2000).

None of the existing studies have seriously disentangled these different mechanisms. We have done so by looking at resources in great detail, by including household income, education, GDP per capita, and social expenditure as a percentage of GDP. To the extent that these micro-level and macro-level resources explain why inequality is related to participation, there should be no differential effect of household income on participation across different levels of income inequality. However, our results showed that, after controlling extensively for resources by including interaction terms between household income and social expenditure, income effects on participation are magnified in more unequal societies. Low-income household members participate less in voluntary organizations and social life than high-income household members, and this difference gets larger in more unequal societies.

This finding is not the result of lower income groups being more able to participate through extensive welfare provision, higher GDP, or a relatively higher individual income. Moreover, under conditions of high inequality, all forms of participation that we identify are more affected by individual income. It is therefore not the case that when inequality is higher, the poor shift to forms of participation that require fewer resources, like contacts with friends.

To further examine how inter-individual processes explain part of the negative effects of inequality, it would be desirable to include information on how exactly income inequality translates into status competition and higher levels of stress. For example, it was not possible to include variables that capture the extent to which inequality is perceived as such (Osberg and Smeeding 2006).

To conclude, although resources are important to explain participation, there seems to be support for the theory that resources are not fully able to explain inequality effects on participation. In addition to the material or neo-material theory that explains inequality effects in terms of resources, we found support for the idea that inequality affects people of different income levels differently through non-material, inter-individual processes.

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Information on the GINI project

Aims

The core objective of GINI is to deliver important new answers to questions of great interest to European societies: What are the social, cultural and political impacts that increasing inequalities in income, wealth and education may have? For the answers, GINI combines an interdisciplinary analysis that draws on economics, sociology, political science and health studies, with improved methodologies, uniform measurement, wide country coverage, a clear policy dimension and broad dissemination.

Methodologically, GINI aims to:

- exploit differences between and within 29 countries in inequality levels and trends for understanding the impacts and teasing out implications for policy and institutions,
- elaborate on the effects of both individual distributional positions and aggregate inequalities, and
- allow for feedback from impacts to inequality in a two-way causality approach.

The project operates in a framework of policy-oriented debate and international comparisons across all EU countries (except Cyprus and Malta), the USA, Japan, Canada and Australia.

Inequality Impacts and Analysis

Social impacts of inequality include educational access and achievement, individual employment opportunities and labour market behaviour, household joblessness, living standards and deprivation, family and household formation/breakdown, housing and intergenerational social mobility, individual health and life expectancy, and social cohesion versus polarisation. Underlying long-term trends, the economic cycle and the current financial and economic crisis will be incorporated. Politico-cultural impacts investigated are: Do increasing income/educational inequalities widen cultural and political 'distances', alienating people from politics, globalisation and European integration? Do they affect individuals' participation and general social trust? Is acceptance of inequality and policies of redistribution affected by inequality itself? What effects do political systems (coalitions/winner-takes-all) have? Finally, it focuses on costs and benefi ts of policies limiting income inequality and its effi ciency for mitigating other inequalities (health, housing, education and opportunity), and addresses the question what contributions policy making itself may have made to the growth of inequalities.

Support and Activities

The project receives EU research support to the amount of Euro 2.7 million. The work will result in four main reports and a final report, some 70 discussion papers and 29 country reports. The start of the project is 1 February 2010 for a three-year period. Detailed information can be found on the website.

www.gini-research.org

GINI GROWING INEQUALITIES' IMPACTS

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