Does Income Inequality Negatively Affect General Trust?

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GINI GROWING INEQUALITIES' IMPACTS

Does Income Inequality Negatively Affect General Trust?

Examining three potential problems with the inequality-trust hypothesis

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Abstract

Many studies on the consequences of income inequality find that where inequality is high, trust is low. There are, however, reasons to examine the relation between inequality and trust more closely. First, previous research does not differentiate between the effect of income inequality and that of national wealth. Furthermore, the underlying mechanism is often unclear. Finally, the association might be dependent on non-Western countries where income inequality is extremely high. In this paper, we evaluate whether there is a relation between income inequality and trust in a sample of Western developed economies when taking into account national wealth. Theoretically, we distinguish between stratification effects and perception effects of inequality. Empirically, besides actual income inequality and national wealth, we include a measurement of perceived inequality on the basis of individual level earnings estimations for stereotypical jobs. We find no significant effect of inequality on trust when taking into account national wealth, suggesting that in Western countries the amount of resources rather than its distribution explains trust.

Key words: trust, income inequality, perceived inequality, national wealth, comparative research.

1.   Introduction

Income inequality has been linked to many undesirable outcomes in societies. It has, for example, been argued that higher income inequality leads to higher levels of drug use, obesity, poorer educational performance, violence and lower mental health. (Wilkinson and Pickett, 2009; Huisman and Oldehinkel, 2009; Kawachi, et al., 1997; Neckerman and Torch 2007). Many of the studies that examine negative effects of income inequality presume that the effects of income inequality are mediated by a decrease in social trust (Wilkinson and Pickett, 2009). A negative effect of income inequality on social trust would therefore result in several undesirable outcomes. The central argument why inequality reduces trust is that as differences between people are larger, uncertainty increases and trust in other people subsequently goes down. In this paper, we discuss three potential problems with the current state of this hypothesis. In our analyses, we examine the consequences of dealing with these problems.

Recently, a number of studies have examined the relation between income inequality and generalized trust. Most of these studies found that -at least on the national level- where income inequality is high, generalized trust is low (Leigh 2006; Rothstein and Uslaner 2005; Jordahl 2007; Gustavsson and Jordahl2006; Uslaner and Brown 2005). Other studies show that generalized trust is not only dependent on the (national) level of income inequality, but also on individual factors, for example (and most notably) the degree to which someone is optimistic about their life chances (Uslaner 2002) and the degree to which someone is economically successful (Delhey and Newton 2003; Dohmen, Verbakel, and Kraaykamp 2010).

There are, however, reasons to further develop the hypothesis that income inequality affects trust negatively. First, previous studies do not sufficiently distinguish between effects of income inequality and effects of general wealth of a country. Modernization theory predicts that having more resources leads to higher trust (Delhey and Newton, 2005). Delhey and Newton (2005) find indeed that national wealth is a predictor of trust. However, most studies that examine the relation between inequality and trust either do not account for general wealth (e.g. Jordahl 2007) or use it as an instrumental variable, rather than a variable of substantive interest (Rothstein and Uslaner 2005, Uslaner and Brown, 2005)

A second problem with previous studies on the inequality-trust hypothesis is that, although the empirical results point to a negative association, the underlying mechanism is often unclear. Uslaner and Brown (2005) argue that when inequality is high, people at the top and the bottom of the income distribution will not perceive each other as facing a shared fate. Therefore, they will have less reason to trust people of different backgrounds. Furthermore, Uslaner and Brown (2005: 869) contend that "where inequality is high, people will be less likely to

believe that the future looks bright, and they will have even fewer reasons to believe that they are the masters of their own fate". In this example, inequality is expected to affect trust through perceptions of inequality.

On the other hand, societies that are highly stratified are more closed; it is therefore less likely that people from different strata meet each other, resulting in less trust. In this case, the actual distribution of resources, rather then how people perceive this distribution is expected to negatively affect trust. We label this stratification effects. A number of recent studies have argued that increasing income inequalities in Western societies increase social boundaries (Elgar and Aitken 2010; Wilkinson and Pickett 2009).

Hence, there seem to be two different mechanisms through which income inequality affects social trust: one that assumes trust to vary depending on the distribution of resources, and one that is rooted in the perception of inequality. We argue that research on the relation between income inequality and social trust benefits from a theoretical framework that actively differentiates between two mechanisms we label *stratification effects* and *perception effects*. We examine both mechanisms empirically.

The third improvement to the inequality-trust hypothesis is related to the sample of countries that are included in the empirical analysis. In some studies (e.g. Rohstein and Uslaner 2005), the negative effect of inequality seems to depend on a group of non-Western countries with high levels of inequality. It could be that unobserved cultural, political or social differences between non-Western and Western countries explain part of the difference in trust. If, for some reason, differences in inequality do not matter among relatively low inequality countries, the theory needs to account for this threshold effect.

We therefore test the inequality-trust hypothesis using two data sets containing Western industrialized countries. In doing so, we try to overcome the aforementioned three problems in the current literature. Firstly, we control for national wealth. Second, we differentiate between different mechanisms through which income inequality might affect social trust. Finally, we look at a culturally more homogenous sample of countries that nonetheless provides substantive variation in trust, as well as in inequality.

Our empirical contribution further lies in the measurement and analysis of both stratification and perception effects. Current research focuses on the income distribution in the form of a Gini-coefficient to measure inequality. As such, stratification and perception mechanisms are measured in one variable. Osberg and Smeeding (2006) have developed a measure of perceived inequality, but do not relate it to trust. To better account for both mechanisms, we include the measure of perceived inequality as proposed by Osberg and Smeeding (2006), as well as actual income inequality, to explain trust.

2.   The inequality-trust hypothesis

Current research on the relation between income inequality and generalized social trust shows a widely shared theoretical prediction about the effect of income inequality on social trust: when income inequality rises, trust goes down (see for example (Leigh 2006; Rothstein and Uslaner 2005; Putnam 2007; Uslaner and Brown 2005; Jordahl 2007; Gustavsson and Jordahl 2006; Delhey and Newton 2005). Although there is consensus on the direction of the effect, the underlying mechanism is contested. In this section, we discuss three ways in which the theoretical mechanism about income inequality and social trust can be improved.

First, the inequality-trust hypothesis could benefit from distinguishing the consequences of the *distribution* of resources and consequences of the *amount* of resources that are available. Studies that focus on the relation between the amount of resources available and trust find that the availability of resources is closely related to general trust. For example, Ross et al. (2001) conclude that in neighbourhoods where resources are scarce, mistrust develops. Also on the national level, wealth is a predictor of trust. Delhey and Newton (2005: 312) explain this as follows: "Risk and trust are closely associated, and it has also been argued that the wealthier the society, and the more it meets basic material needs, the more its members are able to take risks by virtue of their trusting attitudes, while, at the same time, making it both less necessary and less rewarding to act in an untrustworthy manner". In other words, people in richer countries experience less risks and are therefore more likely to trust others.

Many previous studies that examine the relationship between income inequality and trust do not account for national wealth (e.g. Rothstein and Uslaner 2005; Jordahl 2007; Uslaner and Brown 2005; Dohmen, et al., 2010). Delhey and Newton (2005) include income inequality and national wealth, but not simultaneously in one model. Since poorer countries tend to have higher income inequality, not accounting for national income might bias the relation between inequality and trust.

There are, however, some studies that do include national wealth and income inequality simultaneously. Elgar and Airken (2010; see also Elgar 2010) include both per capita income and income inequality, and find that wealth predicts trust positively, inequality negatively. Alesina and La Ferrara (2002) examine the effect of heterogeneity on trust in the United States. Their unit of analysis is the metropolitan sampling area. They find a positive effect of community level income in trust when including the Gini-coefficient. In their final model, however, the Gini-

coefficient is no longer significant (and income is). These findings stress the importance of controlling for the *amount of available* resources when we examine the consequences of the *distribution* of resources.

A second improvement to the inequality-trust hypothesis can be made by actively distinguishing between the effects of actual income inequality and the effects of perception of income inequality. "Between a condition of objective inequality and the response of a disadvantaged person," Robert Dahl (1971, p. 95) has written, "lie the perceptions, evalua- tions, expectations—in short, the psyche—of the individual." Individual perceptions of in-equalities do not necessarily follow the pattern of actual inequalities (Osberg and Smeeding 2006). People do not know the entire income distribution. As a consequence, people evaluate this distribution based on the (imperfect) information that they have. Such information can come from various sources, be it the comparison of people's own living standards with others, media reports, politicians, or any other outlook into the distribution that they have. Therefore, perceived income levels and consequently perceived inequality measures, are likely to differ from actual income inequality. Perception effects of inequality thus occur due to individuals' *perception* of the income distribution. An example of a perception effect would be if a relatively poor individual in a highly unequal society believes that the economic distribution is based on unfair grounds and therefore mistrusts the rich, resulting in overall lower levels of trust.

People's perception of inequality can affect a number of conditions that are associated with social trust. A higher perceived inequality may lead people to identify less with people of other incomes, or create the idea that the income distribution or society as such is unfair. Furthermore, Wilkinson and Pickett (2009) suggest that ine-quality can lead to envy and jealousy of the less privileged. The perception of inequality can affect optimism about one's own chances to improve in society, which multiple studies (e.g. Delhey and Newton, 2001, Rothstein and Uslaner 2005) have shown to be of importance for trust. Finally, an increase in perceived income inequality might affect egalitarian values, which are closely connected to social trust (Uslaner, 2002, Gustavsson and Jordahl 2006).

The mechanism of *stratification effects* of inequality is that in more unequal societies, the distribution of resources becomes a more important explanation for social trust. An example of a stratification effect is that of a society where the rich and the poor live in different neighbourhoods, rarely meet each other and therefore have low trust in each other. Stratification effects hence imply larger distances between social groups, making contact less likely. For example, people with higher incomes live in different neighbourhoods (Letki 2008) and let their children go to different schools. Less social contact between rich and poor makes people trust other people from different income groups less and results in lower levels of generalized trust. Alesina and Ferrara (2000, 2002) ar-gue that economically more homogeneous communities have a higher level of social interactions leading to more

social capital and trust. They find indeed that, for the US, in communities where inequality is higher, participation is lower.

However, stratification effects are not limited to social contacts only. In more unequal societies, resources might also be more important because they are objectively an important factor in achieving a number of societal advances. For example, resources can be of importance in getting a job or feeling successful which have been found to influence social trust (Delhey and Newton, 2003). Stratification effects can also occur through more spurious mechanisms. For example, imagine a society where high incomes are associated with higher political influence. If income inequality in this society increases, political efficacy also increases. Political efficacy is widely assumed to have an endogenous relation with social trust (e.g. Newton 2007), so an increase in income inequality can -through an increase of inequality in political efficacy- ultimately result in inequality in generalized trust.

According to stratification effects, an increase in income inequality is accompanied with an increase of the importance of income as a social stratifier. According to the 'neo-material' theory, (Lynch et al. 2000), resources are needed to achieve desirable outcomes. In the words of Lynch et al. (2000): "Under a neo-material interpretation, the effect of income inequality […] 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 on trust occurs because of a disparity in the availability of resources.

In summary, the inequality-trust hypothesis needs to be formulated in such a way that it is clear whether inequality is predicted to affect trust via stratification effects or effects of perceived inequality. Perceived inequality effects imply that an increase in income inequality results in an increase of people's perception of the degree of income inequality, which subsequently has a depressing effect on trust. In contrast to the stratification hypothesis, it is not the *actual* distribution of resources that affects trust, but the extent to which the distribution is *perceived* to be skewed.

A third problem with the inequality-trust hypothesis is that the association might be dependent on influential outliers that are substantively different. For example, Rothstein and Uslaner (2005) present a scatter plot of their sample (replicated in figure 1). The negative association between inequality and trust seems to be particularly driven by a few countries where the Gini-coefficient is higher than 0.40. Furthermore, there seem to be two distinct groups of countries, suggesting that these countries might represent different populations.

Figure 1) Bivariate analysis of income inequality and trust (replication of Uslaner and Rohstein, 2005)
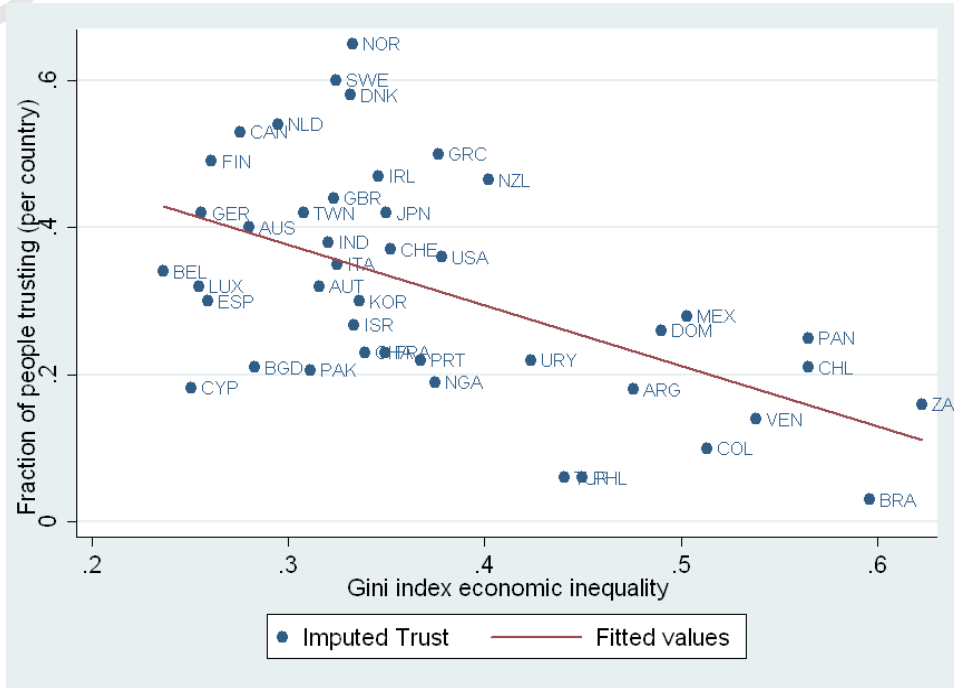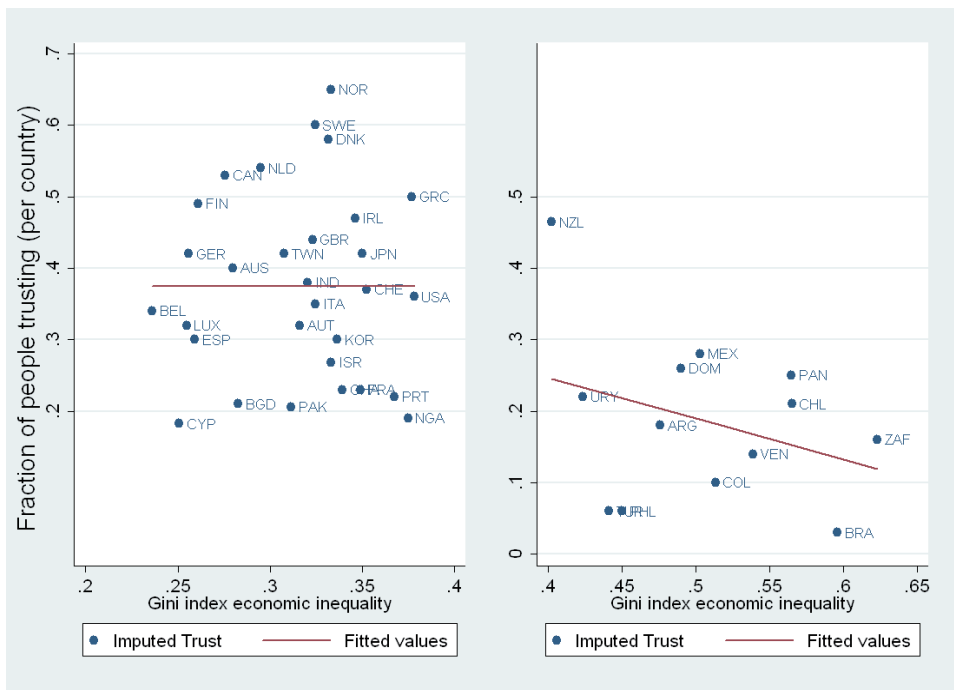

Figure 2) Bivariate analysis of inequality and trust for countries with high and low income inequality (sample as in Figure 1)

There are two reasons why this is problematic for the argument that income inequality has a negative effect on social trust. Firstly, it could be that more unequal countries are essentially different from the rest of the countries in the sample. For example, all Latin American countries are clustered on the right hand side of the graph. One could think of other reasons besides income inequality that might explain low trust in Latin America. Culturally, for example, Latin American countries are substantively different from the rest of the sample (Oyserman and Lee

2008). The Latin American countries are also among the poorest in the sample. The correlation between income inequality and national wealth (measured in GDP per capita PPP) in the sample is relatively high at 0.49 (p<0.01).

Secondly, inequality might have an effect after surpassing a certain threshold, rather than linearly decreasing trust. In figure 2, we fit a separate line for countries below and above a Gini-coefficient of 0.40. Even though there is substantial variation in trust and inequality among the more equal countries, the differences in inequality do not seem to explain the variation in trust. In highly unequal countries, however, we do find a negative association between income inequality and trust. While this approach obviously tortures the data, it does illustrate that among the relatively equal countries, income inequality does not seem to be an important predictor of trust.

Even in the case that one does not believe that there are omitted variables that explain low trust levels in the more unequal countries, the absence of an effect of inequality among 30 countries with relatively low inequality warrants a further examination of the inequality-trust hypothesis. If income inequality has a negative effect on social trust, one would also expect to see a negative relation in a sample of Western countries. It is hence the question whether every level of income inequality is negatively associated with trust, or whether income inequality is only relevant for social trust once passing a threshold. The former means that inequality has a linear effect on trust, while the latter implies that only after breaching a threshold, inequality is relevant for general trust. In our analyses, we test whether there is an effect in a sample of culturally relatively homogenous countries; Western industrialized societies.

3.   Data and Measurement

3.1.   Sample

We test the inequality-trust hypothesis drawing on two datasets. First, we make use of the International Social Survey Program (ISSP) and estimate multi-level models that contain measures of actual income inequality, perceived income inequality and general wealth. These data provide a good test for the inequality-trust hypothesis, because the ISSP allows us to distinguish between effects of perceived and actual income inequality. The effect of income inequality might be dependent on countries where income inequality is extremely high, or on a sample containing countries that are not culturally homogeneous. To enable a test of the inequality-trust hypothesis in a homogenous sample, we exclude non-Western countries from the analysis. After harmonizing and cleaning the data and keeping only the respondents with all necessary information, our final sample consists of 18,119 individuals, nested in 20 countries.

Even though we tried to create a homogenous sample of countries out of the ISSP, one can still argue that it is not culturally homogenous enough. We therefore also estimate models using data from the European Social Survey 2002 (the 2002 wave is closest in time to the ISSP survey). In the ESS, trust is measured on a 10-point scale, allowing for an examination of differences in levels of trust due to income inequality, or wealth in a country. As only European countries are included, this survey provides a more homogenous sample but nonetheless contains substantial variation in both trust and income inequality. Country-average scores on the trust-measure range from 3,64 to 6,99. Furthermore, a null-model shows that 13,7% of the variation in trust-scores resides at the country-level. If the inequality-trust hypothesis holds, inequality explains part of this country-based variation. After harmonizing and cleaning the data and keeping only the respondents with all necessary information, this sample consists of 38.871 respondents from 21 countries[1]. Unfortunately, we cannot include perceptions of inequality, since the overlap with the countries that are also included in the ISSP is too small.

Ideally, one would model the relation between trust and both actual and perceived inequality cross-nationally over several time points. There is, however, to our knowledge, no longitudinal measure of perceived inequality available. We therefore examine the association cross-nationally at one point in time. This cross-national perspec-

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1   We opted to leave Israel out, as it is not a European country. However, including Israel does not change the results. Furthermore, we imputed some values to allow us to include as many European countries as possible. The income inequality score of Swiss is not available in Eurostat, so we predicted it on the basis of a regression of Eurostat inequality measures on an inequality measure from the CIA World Factbook (2011). Finally, education levels are unavailable in Austria, so they are predicted on the basis of years of education. Leaving out (pair wise or simultaneously) these countries with imputed values does not change the direction or significance of any of our results.

tive necessitates us to be cautious about making claims about causality. Therefore, we interpret our empirical models primarily as associations.[2]

3.2. ISSP

Dependent variable. In the ISSP, generalized trust is measured by the standard survey item "Generally speaking, would you say that people can be trusted or that you can't be too careful in dealing with people", with the following answer categories: "you almost always can't be too careful in dealing with people" (15%), "you usually can't be too careful"(39%), "people usually can be trusted"(41%), "people almost always can be trusted (5%)". Since the variable primarily differentiates between having and not having trust, we recoded it into a dichotomous variable with the value one representing 'people usually/almost always can be trusted' and value zero indicating 'you almost always/ usually can't be too careful in dealing with people"[3]. Although there is much literature on (sub-) dimensions of trust, this item is a standard measure to measure generalized trust. Furthermore, as Nannestad (2008) notes in a review on social trust, the measure correlates significantly on an national level with outcomes that are expected to be related to social trust, such as wallet-return (Bjørnskov 2006) corruption (Uslaner 2002) and violent crime (Lederman, Loayza, and Menendez 2002).
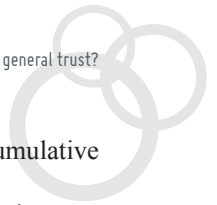
Independent variables. Actual income inequality is measured with the Gini-coefficient in 1998, provided by Galbraight and Kum (2005). This is the same inequality measure that is used by Uslaner and Brown (2005). Perceived inequality is measured with a set of items from the ISSP 1999. In this questionnaire, people were asked to estimate the actual incomes of nine relatively normal and cross-nationally comparable occupations (skilled factory worker, doctor in general practice, chairman of a large corporation, a lawyer, a shop assistant the owner-manager of a large factory, a judge in the countries highest court and a cabinet minister in the national government). Following Osberg and Smeeding (2006), we use the answers of these questions to construct a Gini-coefficient of perceived inequality. We use the Gini-coefficient formula provided by Brown (1994) to calculate a Gini-coefficient of perceived income inequality for each individual (equation 1).

$$Gini = 1 - \sum_{k=n-1} (X_{k+1} - X_k)(Y_{k+1} + Y_k)$$

1)

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2   With the limited amount of countries (12) that were available we did examine changes in inequality perception between 1992 and 1999. In five out of 12 countries, the perception of inequality has decreased, where it has increased in the other 7 countries. Due to the unavailability of a trust-measure around 1992, we are unable to assess if the changes in inequality perception have gone hand in hand with the changes in social trust.

3   Alternatively, to account for the ordering of the answering categories one could estimate an ordered logit model. However, the proportional odds assumption is violated, most likely to the skewed distribution of the answering categories. Given the clear cut-off point between having and not having trust, we prefer a logit model to an ordered logit or a linear model.

In this formula, G Xk refers to the n-1 cumulative proportion of the population and Yk to the n-1 cumulative proportion of income belonging to that cumulative proportion of the population. While these nine occupations are relatively comparable between the nations in our sample, they do not reflect the entire workforce in each country. This restriction is, however, not expected to lead to systematic bias (see, for a more detailed discussion on the measure Osberg and Smeeding 2006).[4]

We matched the individual perceptions to the ISSP 1998 wave. We realize that the proposed mechanism of perception effects presumes the perception of income inequality to precede social trust in time. However, we expect the perception of income inequality to be relatively robust and not to change much over the course of one year. Moreover, the variation that one analyses in cross-sectional analysis is across-countries.

The variation in the perception of income inequality within countries is relatively low. Therefore, following Osberg and Smeeding (2006), we aggregate the individual perceptions of income inequality on the national level. The advantage is that the perception measure is a simple country mean that serves as a contextual variable, like the actual Gini-coefficient. We label the variable *perceived inequality*. *General wealth* is measured by GDP per capita (purchasing power parity), as provided by the World Fact Book (CIA, 2011). Table 1 shows descriptive statistics for the entire sample of both the dependent and independent variables.

Control variables. On the individual level, we include age, age squared, dummies for educational attainment, years of education, a dummy for not being in the labour force, a dummy for unemployment, marital status and religiosity. Because individual income data is missing for large parts in both the ISSP and the ESS, we present models without controlling for it. However, we estimated models that do control for income and the results are identical to the results presented in this article.

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4 We only include people that estimated earnings for at least seven out of nine occupations. For the individuals that respectively had one or two missing values respectively, we used an adjusted formula, as to reflect the restraint that the proportion of the population is equal for each occupation. We were unable to find any systemic bias in missing values on the basis of ascribed characteristics. Furthermore, we replicated our models with a restriction of only including perceptions of people who listed all nine occupations and the results were almost identical.

Table 1) Descriptive statistics of (in)dependent variables for the ISSP-sample

Country	Country code	Actual income inequality	Perceived income inequality	GDP per capita (in 1000$)	Fraction of people trusting
Australia	AUS	0,3822	0,39	22	0,64
Germany	GER	0,3474	0,38	26,1	0,42
Great Brittain	GBR	0,3586	0,46	24,9	0,5
United States	USA	0,3821	0,46	33	0,53
Austria	AUS	0,3592	0,43	26,6	0,52
Hungary	HUN	0,3976	0,47	4,7	0,35
Norway	NOR	0,3355	0,3	35,4	0,81
Sweden	SWE	0,2869	0,34	28,6	0,7
Slovenia	SLO	0,3461	0,44	10,9	0,17
Poland	POL	0,3776	0,53	4,3	0,23
Bulgaria	BUL	0,4102	0,39	1,6	0,24
New Zealand	NWZ	0,3894	0,39	15,1	0,57
Canada	CAN	0,3717	0,42	21,4	0,58
Israel	ISL	0,422	0,45	17	0,29
Japan	JAP	0,4171	0,47	34,3	0,33
Latvia	LTV	0,4035	0,54	3	0,21
Slovak Republic	SKR	0,367	0,29	3,8	0,16
France	FRA	0,3625	0,48	24,8	0,22
Cyprus	CYP	0,397	0,37	14	0,16
Portugal	POR	0,3955	0,42	12	0,2

Source: ISSP 1998 and 1999.

3.3. European Social Survey

Dependent variable. In the ESS, social trust is measured by the following question "Using this card, generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people? Please tell me on a score of 0 to 10, where 0 means you can't be too careful and 10 means that most people can be trusted." Compared to the ISSP-question, this variable gives respondents a broader scale to place themselves on. Therefore, we can interpret this variable more as measuring levels of trust, rather than measuring whether people trust others or not.

Independent variables. Actual income inequality is measured by the Gini-coefficient in 2002, derived from Eurostat (2011). National wealth is measured by GDP per capita, derived from the World Fact Book (CIA, 2011). Table 2 shows descriptive statistics for the sample on the dependent and independent variables.

Control variables. On the individual level, we mimic the controls from the ISSP-models as much as possible, by including age, age squared, a dummy for being on the labour force, a dummy for unemployment, dummies for educational attainment and religiosity.

3.4.   Empirical strategy

In order to examine the effect of perceived inequality and actual income inequality, we present a series of multilevel logistic models based on the ISSP data. Subsequently, we present a series of multilevel linear models based on the ESS data. These models provide for an even more harmonious sample of countries. All models include the aforementioned control variables, but we only present the variables that are relevant for our hypothesis.

Table 2) Descriptive statistics for (in)dependent variables for the ESS-sample

COUNTRY	ACTUAL INCOME INEQUALITY*	NATIONAL WEALTH **	GENERAL TRUST (1–10) ***
AUSTRIA	24	25,7	5,07
BELGIUM	28	24,4	4,86
CZECH REPUBLIC	25	7,4	4,28
DENMARK	22	32,4	7,01
FINLAND	26	25,5	6,47
GERMANY	25	24,5	4,62
GREAT BRITTAIN	35	26,5	5,05
GREECE	33	12,3	3,64
HUNGARY	24	6,6	4,05
IRELAND	29	31,2	5,46
ITALY	29	21,3	4,55
LUXEMBOURG	27	51	5,24
NETHERLANDS	27	27,1	5,71
NORWAY	26,6	41,9	6,60
POLAND	30	5,2	3,72
PORTUGAL	37	12,3	3,99
SLOVENIA	22	11,2	3,98
SPAIN	31	16,6	4,87
SWEDEN	23	27,3	6,09

Gini-coefficient in 2002, from Eurostat (2011)
* *GDP per capita, in 1000$ from CIA (2011)*
** *Country average for the analytical sample, from European Social Survey*

4.   Results

First, we look at the models for the ISSP-data. In order to examine the overlap in perceived inequality with actual inequality, we inspect its association. Figure 3 shows a scatter plot (with an added linear fit) of actual income inequality and perceived income inequality. The correlation of .442, (p=0.06) corresponds to roughly 20% shared variance of these two variables. While the association is positive and in the theoretically expected direction, it leaves a lot of unexplained variation. Furthermore, apart from a group of countries that lies relatively close to the linear fit, we find a few outliers in Norway, Slovak Republic, where the perceived income inequality is lower than expected on the basis of the actual income inequality and in Poland and Latvia, where the perceived income inequality is higher than expected. We therefore conclude that, although actual income inequality and perceived income inequality correlate, they cannot be seen as empirically identical. This indicates that, besides theoretically, people's perception of income inequality is empirically different from actual income inequality.
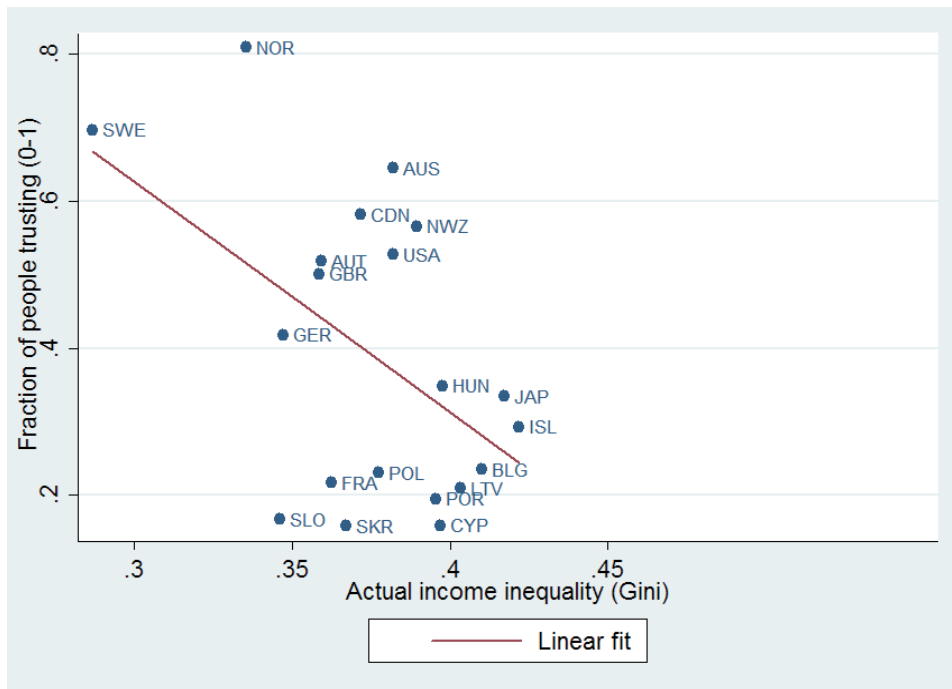
There is reason to be careful in the interpretation of this low correlation. First of all, it is based on a small number of countries (20). Furthermore, while our measure of actual income inequality is based on the entire labour force, our measure of perceived inequality is based on nine occupations only. We opt, however, to not only attribute the low correlation to the imperfect nature of the measures. Our interpretation is grounded on both our theoretical argument as well as on previous works with the measure of perceived inequality (most notably, Osberg and Smeeding, 2006).

Figure 3) Perceived income inequality versus actual income inequality

Graphs 4a-c show a preliminary insight in the association between inequality, wealth and trust. The percentage of people trusting in a country (Y-axis) is plotted against actual income inequality, perceived income inequality and national wealth (X-axis). Actual income inequality correlates significantly negative with trust (-.50; p=0.03), indicating that people in more unequal countries are less likely to trust others. The correlation for perceived inequality is smaller (-.37), indicating that countries in which people perceive more inequality are less trusting, but the coefficient is not significant at the five percent level (p= .10). General wealth correlates rather strong with trust (.67; p<.01) indicating that people in richer countries are more likely to have general trust. This is, however, a bivariate picture only. To further analyse the relationship between inequality and trust, we estimate a number of multivariate multilevel models.

Figures 4a, 4b and 4c) Fraction of people trusting versus actual income inequality, perceived income inequality and national wealth
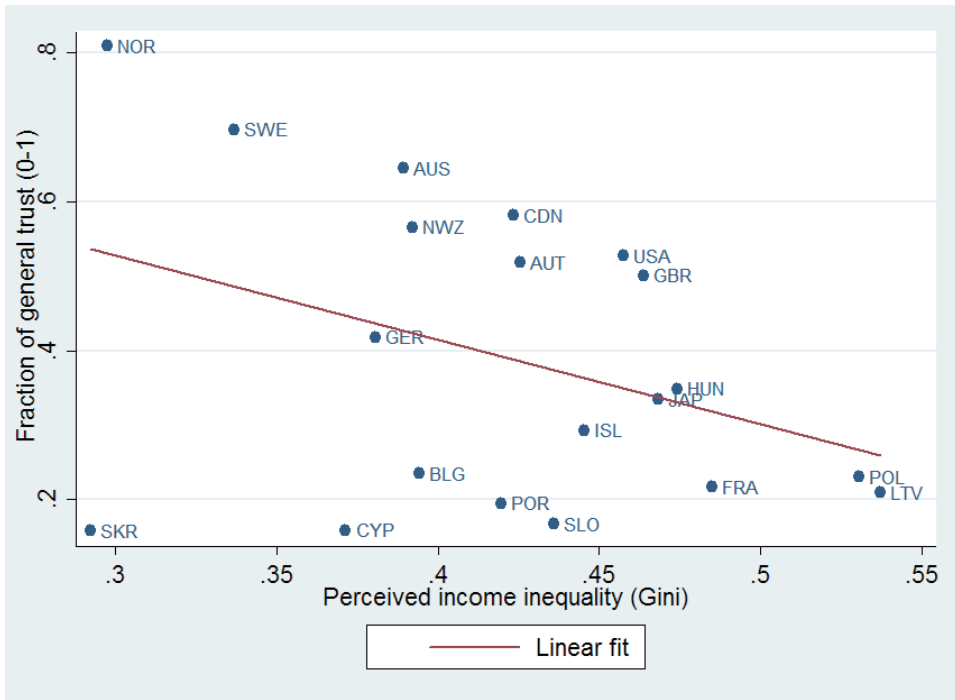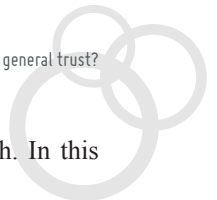
Table 3) Multilevel logistic regression predicting the likelihood of trusting (ISSP)

	MODEL 1 B (SE)	MODEL 2 B (SE)	MODEL 3 B (SE)	MODEL 4 B (SE)	MODEL 5 B (SE)	MODEL 6 B (SE)
ACTUAL INCOME INEQUALITY	−14.467** (5.492)		−12.451* (6.034)	−8.296 (4.894)		−6.544 (5.254)
PERCEIVED INCOME INEQUALITY		−4.823 (2.860)	−2.188 (2.894)		3.137 (2.242)	−1.957 (2.359)
GENERAL WEALTH				.045** (.014)	.050*** (.013)	.044** (.014)
INDIVIDUAL LEVEL CONTROL VARIABLES	X	X	X	X	X	X
LOG−LIKELIHOOD	−10 431	−10 433	−10 431	−10 427	−10 428	−10 427
RHO	.150	.172	.146	.105	.109	.101
NUMBER OF COUNTRIES	20	20	20	20	20	20
NUMBER OF INDIVIDUALS	18 119	18 119	18 119	18 119	18 119	18 119

Source: ISSP 1998 and 1999

Table 3 presents the estimates based on the ISSP data. The first two models estimate the effect of actual income inequality and perceived income inequality, without controlling for national wealth. In model 1, the coefficient of inequality is negative and significant, indicating that, ceteris paribus, people in more unequal countries are less likely to have social trust. Model 2 shows a negative association between degrees of perceived inequality and the likelihood of trusting, but the effect is not significant. There is therefore no indication in the multi-variate models that people in countries where more inequality is perceived are more likely to trust others.

Model 3 simultaneously includes actual and perceived inequality. In this model, only the effect of actual income inequality is statistically significant. This is preliminary evidence that actual, rather than perceived income inequality seems to be associated with general trust in Western countries. Up until model 3, the findings are in line with the inequality-trust hypothesis. As one of the problems with the inequality-trust hypothesis is that the effect of income inequality might be spurious because general wealth is not controlled for, we are primarily interested in the models that include it. Models 4 and 5 do exactly that. In model 4, the coefficient of actual income inequality is estimated while controlling for general wealth. Income inequality is not significant anymore. It seems that in Western countries, once we control for general wealth, income inequality is associated with general trust.

Model 5 estimates the effect of perceived income inequality, while controlling for general wealth. In this model, perceived income inequality is not statistically significant, indicating that, once we take general wealth into account, the aggregate level of perceived inequality in a country is not associated with the likelihood of general trust. Model 6 includes all macro-level variables simultaneously. Neither actual nor perceived inequality is significant, while general wealth is. These findings indicate that, using data from the ISSP, once we control for general wealth, both types of inequality do not seem to matter much for trust in Western countries.

Table 4 shows the estimates for similar models using data form the European Social Survey. In model 1, there is no significant effect of income inequality on social trust. Once again, our primary interest lies in a model in which control for general wealth (model 2). In model 2, income inequality is neither statistically significant. We do, however, observe a significant positive effect of general wealth, indicating that people in richer countries have higher levels of trust. One might argue that the absence of the inequality effects is due to the ordinal nature of the variable, as the standard measure of trust is often measured as a dichotomous variable. Analyses on dichotomous versions (with different thresholds of trusting) of the dependent variable, however, mimic the results in table 4.

To summarize, the models using ESS data are in line with the findings based on the ISSP: in Western industrialized countries, once we control for general wealth actual income inequality does not seem to be associated with the likelihood, or the level of trusting.

One reason that we do not find support for the inequality-trust hypothesis in both our samples might be that there are influential outliers. That is, although we analysed a sample of relatively homogenous western industrialized countries, there could be influential cases that bias the relation between inequality and trust. To check for potential influential cases, we followed the procedure as suggested by Van der Meer, Te Grotenhuis and Pelzer (2010). We calculated the DFBETAS and compare them with the threshold value of $2/\sqrt{n_x}$. In the ISSP and ESS we find a few influential cases. However, excluding them from the sample, either individually or pair wise, does not affect the direction or significance of the relevant independent variables Our conclusions are therefore not dependent on influential cases.

5.   Discussion

In this paper, we have argued that there are three pitfalls to the argument that income inequality decreases so-cial trust. First, the literature often does not distinguish between effects of the distribution of resources (inequality effects) and effects of the availability of resources (wealth effects), while these are theoretically and empirically different. Second, we argued that the mechanism is often unclear. We introduced a distinction between two mecha-nisms as to how inequality might affect trust: through effects of *stratification* and through effects of *perceived inequality*. Last, the effect of inequality that is found in previous studies might be dependent on the case selection. The inequality-trust hypothesis might only hold for very high levels of income inequality.

To test our argument empirically, we estimated two series of models predicting general trust in Western industrialized countries. Using data from the ISSP, we introduced a measurement of perceived inequality. This data consists of individual estimates of stereotypical job earnings. A comparison of the resulting perceived inequality index with the widely applied Gini-coefficient for actual income inequality in 20 countries indicated that both in-dices measure substantively different concepts. Bivariate analyses replicate previous findings in research on social trust. With regards to both *actual* and *perceived income inequality,* we initially found support for the theoretical claims. Both types of inequalities are negatively associated with individual likelihood to trust others. Furthermore, countries that are richer are more trusting.

We have argued, however, that in order to rule out rival explanations one needs to simultaneously test these ar-guments. Although we find substantive between country-variation in the likelihood of trusting, once we control for national wealth, both actual and perceived inequality do not seem to explain trust. An additional analysis, taking an even more homogenous sample of European countries (using data from the European Social Survey), yielded the same results: while there is substantive country-variation in levels of trust, once we control for national wealth, actual income inequality does not explain this variation.

The presented findings challenge the often-made claim that there is a negative linear effect of income inequality on general trust. When we examine Western industrialized countries, neither an explanation that distin-guishes between types of inequality effects, nor an explanation that lumps all inequality effects together seems to be able to explain individual levels of trust This suggests that in Western industrialized countries arguments based on national wealth are more apt to explain variation in general trust. We found a significant positive association between national wealth and the likelihood to trust people, with and without controlling for both types of income inequality. It seems therefore that studies on trust in Western countries might do well to focus more on national

wealth, rather than on income inequality as an important explanation for trust. People in richer countries experience less (economic) risks and therefore trust other people more than people in poorer countries.

One should, however, be cautious in concluding that income inequality does not matter at all for general trust. It is important to stress that in this study, we specifically looked at Western industrialized countries, with relatively low levels of income inequality. Our results do not rule out the possibility that, after surpassing a threshold, inequality becomes a significant predictor of social trust. Furthermore, in countries with different cultural characteristics, income inequality might be of different importance. There are some other limitations to this study. For example, we relied on an aggregated measure of inequality perception, where an individual-level measure could have provided additional information. Furthermore, in this study we have only examined cross-national data. As such, we cannot rule out potential reverse causality. In order to fully reject the argument about inequalities detrimental effects on social trust (both trough stratification as well as perception effects) we would need longitudinal data on both the dependent variable (generalized trust) and the three independent variables (perceived and actual income inequality and national wealth).

Future research on income inequality and trust would benefit from further developing the theoretical arguments that constitute the mechanism between inequality and trust. At this point, for research on trust in Western industrialized countries, it might be more fruitful to further develop theory about national wealth, and more specifically develop hypotheses about the presence of economic risks in society. Such hypotheses cannot only be tested easier, but (more importantly) might be more apt in explaining trust.

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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 benefits of policies limiting income inequality and its efficiency 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.

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GINI GROWING INEQUALITIES' IMPACTS