

# Is Income Inequality Related to Tolerance for Inequality?

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**Abstract** Data from the International Social Survey Programme that includes individual respondents from 34 countries surveyed at four different times show that populations of countries with more actual income inequality also tolerate more income inequality, even after controlling for numerous individual- and country-level variables. Comparisons over time show that actual income inequality predicts later tolerance for income inequality, within 3–4 years, but earlier tolerance for income inequality does not predict later actual income inequality. These analyses therefore indicate that people adapt how much income inequality they tolerate to actual inequality. They contribute to a long-standing theoretical and empirical discussion about whether material structures influence or result from social norms.

**Keywords** Moral norms · Redistribution · Income distribution · Social policy · Income inequality · Social norms · Multilevel model

## Introduction

Do people tolerate more inequality when more factual income inequality exists? One might think that fair and actual inequality are unrelated, as income inequality follows functional needs, instead of what people think is fair. However, people might adjust their views about fair inequality to the inequality that they find to exist, so that views about fair inequality follow actual inequality after all. Even the opposite pathway is conceivable: More tolerance for inequality might contribute to a smaller welfare state, which leads to more actual inequality.

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In the following sections, I show that—along these three lines of reasoning, existing theories have variously suggested that fair and actual inequality are unrelated, that tolerance for inequality trails actual inequality, and that tolerance for inequality influences actual inequality. A review of the empirical research designed to address these questions reveals several problems in the analyses that so far preclude a proper test of the relationship between actual inequality and tolerance for inequality.

Using data from the International Social Survey Programme, I then test whether actual and tolerated inequality are positively related. I further test whether any positive association reflects people's tendency to adjust their acceptance of income inequality to actual income inequality, or for people's tolerance of inequality to influence actual inequality.

### **Are Fair and Actual Inequality Related?**

#### *Theories on the General Relationship Between Fair and Actual Inequality*

Functionalist theories do not expect a connection between fair and actual inequality. Instead, they explain income inequality from society's need to remunerate ostensibly more important positions with more money, so that qualified individuals get channeled where society needs them most (Davis & Moore, 1944). Functionalist theories even present fair inequality as antithetical to functional inequality. For example, Okun (1975: 47f.) argues that “[a]bstracting from the costs and the consequences, I would prefer more equality of income. [But] pursuing such a goal, society would forgo any opportunity to use material rewards as incentives to production. And that would lead to inefficiencies that would be harmful to the welfare of the majority.” In this sense, functionalist views conceptualize income inequality as resulting from functional needs of modern economies, so that actual inequality should be unrelated to what people see as fair inequality.

#### *Empirical Studies on the General Relationship Between Fair and Actual Inequality*

However, a broad literature argues that egalitarian social justice views have historically underpinned egalitarian welfare states and varieties of capitalism (Hall, 1999: 137; Dahrendorf, 1959: 67; Crouch, 1993: 296; Hall, 2001: 53; Schröder, 2009: 30ff.; 2013: 93). Empirical studies could show that indeed, people in more egalitarian welfare states also hold more egalitarian attitudes (Mau, 2003: 81ff.; Sachweh & Olafsdottir, 2012: 160; Liebig et al., 2004: 12). This literature therefore suggests that countries with more inequality have populations that tolerate more inequality.

However, empirical studies have yet to show convincingly that inequality is higher in countries with populations that tolerate more inequality. Osberg and Smeeding (2006: 463ff.) compare whether people tolerate more income inequality in countries where manufacturing workers have more unequal actual wages. However, they only compare seven countries, so they cannot show whether tolerated inequality is systematically linked to actual inequality for a large number

of countries. Castillo (2011a: 193) shows that people tolerate larger income differences in societies with higher actual inequality by using the International Social Survey Programme (ISSP) 1999. But because he only uses data from 1999, his results leave unclear whether inequality influences tolerated inequality, or whether tolerated inequality influences actual inequality (Castillo, 2011b: 334f.). Indeed, this is a contentious theoretical issue, which is not yet resolved through empirical studies.

## Does Inequality Lead to Tolerance for Inequality or Vice Versa?

### *Theories on the Direction of Influence Between Fair and Actual Inequality*

Theories in the tradition of materialism argue that actual inequality influences tolerance for inequality. Frequently going back to Karl Marx's dictum that "being determines consciousness" (Marx & Engels, 1846: 26f.), theories in this tradition argue that material conditions influence people's thinking about these conditions. Homans (1974: 249f.) summarized this view with the postulate that "what people say ought to be is determined in the long run and with some lag by what they find in fact to be the case." Lerner's (1982) Just World Theory similarly argues that people adapt their fairness views to what they find to be the case. His theory starts from the premise that people need to believe in a fair world. But as people cannot change a fundamentally unjust world, they instead redefine as fair what they perceive as given (also cf. Moore, 1978: 458f.; Bénabou & Tirole, 2006: 700; Willis, Rodríguez-Bailón, López-Rodríguez and García-Sánchez 2015: 495). Psychologists likewise argue that "any stable state of affairs tends to become accepted eventually, at least in the sense that alternatives to it no longer readily come to mind" (Kahneman, Knetsch and Thaler 1986: 730f.). John Jost's (cf. Jost et al., 2004) System Justification Theory argues that even those who suffer from inequality assert inequality as fair in order to justify their own disadvantaged situation. Researchers argue that such an adaptation of fairness views to "what is" can take place within a timeframe of 2 or 3 years (Kelley & Zagorski, 2005: 351f.).

However, other theories argue for the opposite pathway. Instead of suggesting that fairness views trail actual inequality, they suggest that inequality follows fairness views (Marshall, Swift, Routh and Burgoyne 1999: 360; Headey, 1991: 593). This argument is often connected to Weber (1978 [1920]: 252), who argued that ideas may not merely result from material structures, but indeed cause them. Studies in this tradition show that widely held views about "what ought to be" influence public policy (Page & Shapiro, 1983: 180; Burstein, 1998: 41; 2003: 36; Stimson, Mackuen and Erikson 1995: 543; Schröder & Vietze, 2017), which in turn influences inequality (Svallfors, 1997; Gilens, 2000; Brady, 2009; Kenworthy & McCall, 2007; Brady & Sosnaud, 2010). According to this reasoning, changing moral tolerance for inequality should influence actual inequality through social policy, with the literature suggesting a time lag as short as a year (Brooks & Manza, 2006: 482; 2007: 41, 123; Soroka & Wlezien, 2010: 123).

*Empirical Studies on the Direction of Influence Between Fair and Actual Inequality*

Empirical studies do not show whether fairness views seem to influence actual inequality or follow from it. The main reason for this is that existing studies focus on a variable that endogenizes fairness views and actual inequality. Notably, many studies look at whether people say that “too much” inequality exists in countries with high inequality (Hadler, 2005: 140; also cf. Cramer & Kaufman, 2010: 22). However, whether people say that “too much” inequality exists hides two interpretive problems. First, imagine that income inequality in a country increases by 10%, so that tolerance for inequality increases by 5%. People will then still be more likely to say that “too much” inequality exists now, because tolerance for inequality has not increased to the same degree as actual inequality. But this hides that fairness views did in fact follow actual inequality—if only imperfectly. Second, respondents are likely to think about their own country when responding whether “too much” inequality exists, which makes them likely to argue that there is not “too much” inequality in low-inequality countries such as Sweden, but that “too much” inequality exists in high-inequality countries such as Chile. This makes Chileans appear more egalitarian than Swedes, conveying the mistaken impression that people from low-inequality countries accept more inequality than people from high-inequality countries. Because questions about “too much” inequality endogenize actual and tolerated inequality into one variable, studies that use such questions cannot show whether inequality influences fairness views on inequality or vice versa. Other empirical studies infer that tolerance for income inequality adapts to actual inequality by showing that people tolerated more income inequality after communist countries became capitalist. However, these studies do not measure income inequality directly, but take the change from communism to capitalism as a proxy for increased income inequality (Gijsberts, 2002; Kelley & Zagorski, 2005). The problem with this reasoning is that with the change from communism to capitalism, many things changed simultaneously, so that one cannot be sure whether fairness views followed increased inequality, or some other factor that changed with the switch from communism to capitalism.

Due to these problems with existing scholarship, it is unclear how differences in actual inequality are correlated to tolerated inequality, and if they are, whether inequality influences tolerance for inequality or results from tolerance for inequality. Scholars mention this as a serious problem (Hadler, 2005: 131; Osberg & Smeeding, 2006: 468ff.; Castillo, 2011b: 334f.; Janmaat, 2013: 383). Indeed, this gap in knowledge is not a purely theoretical or academic problem, as it leaves a fundamental question unanswered, namely whether “how the world is” bears resemblance to how people want the world to be. Therefore, the purpose of this study is to test whether tolerance for inequality and actual inequality are related, and if so, whether tolerance for inequality follows actual inequality or vice versa.

## Data

### Measuring Tolerance for Income Inequality

I use data from the International Social Survey Programme (ISSP), which is a collaborative survey. National research agencies administer surveys independently in their country and then pool the responses from each country into one database. Data collection methods therefore differ among national agencies, but questions are comparable between countries and over time. In 1987, 1992, 1999 and 2009, the ISSP contained a “social inequality” module, which asked over 40,000 individuals from over 40 countries what a doctor in general practice, a chairman of a large national corporation, and an unskilled worker should earn.<sup>1</sup>

Researchers calculate tolerance for inequality by estimating what people say a doctor in general practice and a chairman of a large national corporation should earn, relative to what people say an unskilled worker should earn (cf. Headey, 1991; Gijssberts, 2002; Kelley & Zagorski, 2005: 331; Kelley & Evans, 1993; Marshall et al., 1999; Svallfors, 2006; Verwiebe & Wegener, 2000: 135f.; Castillo, 2011b 325; Willis et al., 2015: 494; also cf. Jasso, 1978: 1411; Jasso & Wegener, 1997: 409).<sup>2</sup> This measure (fair high wages divided by fair low wages) must then be logged, because, for example, an increase of 2–3 in tolerated income difference is more important (plus 50%) than an increase from, for example, 9 to 10 (plus 11%), even though both constitute an increment of 1 (Jasso, 1978; Jasso & Wegener, 1997; Verwiebe & Wegener, 2000; cf. Castillo, 2011a: 101; Kelley & Zagorski, 2005: 332).

Table 1 shows the number of observations, as well as the mean, standard deviation, minimum and maximum values for each variable. It indicates that 42,644 individuals have estimated what they see as fair income inequality. The mean estimated fair income inequality is 1.50. This value is logged for the reasons mentioned above. Logged values can be reconverted into non-logged values, by taking their so-called exponent ( $e^x$  or about  $2.718^x$ ). For the mean estimated fair income difference of 1.5, this amounts to  $2.718^{1.5} = 4.48$ , which means an average respondent accepts that the high-earning occupations earn 4.48 times of what they say an unskilled worker should earn. Note that logged values can turn negative when a respondent says that the wealthy occupations should earn less than an

<sup>1</sup> For general information on the ISSP, see the webpage <http://www.issp.org>. For information on the administration of the national surveys and their response rates, see Gendall (2011).

<sup>2</sup> The ISSP also asks about the fair wage for a cabinet minister. I do not use this “fair” wage estimate as an indicator of a typical high salary, as it would introduce a distinction between private and public sector employees. However, I repeated all analyses by measuring “fair high incomes” not by “(fair income chairman + fair income doctor)/2,” but by “(fair income chairman + fair income doctor + fair income minister)/3.” This does not change the results presented below. The ISSP also asks what a shop assistant should earn. I did not use this as a proxy for people’s estimate of a fair low wage, because the item does not exist in the ISSP 1987, which would make it impossible to compare the 1987-ISSP wave to later waves. However, where data are available, I repeated all analyses by calculating fair low incomes by “(fair income unskilled worker + income shop assistant)/2.” This also does not change the results below significantly. Additionally, what people say is a fair income for an unskilled worker and a shop assistant is highly correlated in the first place ( $r = 0.986$ ,  $p < 0.001$ ).

**Table 1** Descriptives for variables

Variables ISSP 2009	Obs	Mean	SD	Min	Max
Tolerated income difference 2009 (logged)	42,644	1.50	0.93	−6.66	11.74
Actual net income difference (Gini Solt 2013)	34	31.58	6.64	22.28	49.70
Political Rights (Freedom House 2013)	40	1.65	1.44	1	7
GDP PPP in 1000 \$ (Penn World Tables 2013)	40	26.22	12.98	3.38	56.10
Public soc. exp./GDP 2009 (OECD 2014)	28	22.47	5.95	9.40	32.10
Pers. inc. rel. to country-mean	31,369	1	3.69	0	530.53
Family inc. rel. to country-mean	36,174	1	1.27	0	70.12
Supervises others	32,366	0.29	0.45	0	1
Public sector job	42,644	0.18	0.38	0	1
Private sector job	42,644	0.45	0.50	0	1
Self-employed	42,644	0.13	0.34	0	1
Not working	39,547	0.39	0.49	0	1
Educational degree	42,400	2.92	1.43	0	5
Schooling years	38,977	12.21	3.86	1	25
Union member	39,548	0.42	0.49	0	1
Age	42,560	45.19	16.51	15	98
Female	42,623	0.53	0.50	0	1
Variables accumulated ISSP 1987, 1992, 1999, 2009	Obs	Mean	SD	Min	Max
Net income difference 2009 (Gini Solt 2013)	26	32.15	6.86	22.57	50.20
Net income difference 1999 (Gini Solt 2013)	25	31.51	7.50	23.20	51.36
Net income difference 1992 (Gini Solt 2013)	16	29.55	6.38	19.76	44.34
Net income difference 1987 (Gini Solt 2013)	8	28.42	4.02	22.70	33.63
Tolerated income difference 2009 (logged)	25,168	1.49	0.89	−6.66	13.30
Tolerated income difference 1999 (logged)	23,400	1.41	0.73	−4.52	8.52
Tolerated income difference 1992 (logged)	17,312	1.22	0.69	−3.32	6.23
Tolerated income difference 1987 (logged)	9765	1.18	0.65	−2.08	4.95

unskilled worker. For example, the minimum value for tolerated inequality in the ISSP 2009 is  $-6.66$ , which is the natural logarithm of the smallest logged value someone gave for fair income inequality. It means that someone wanted the high-earning occupations to only earn  $2.718^{-6.66} = 0.00126$ , or 0.126%, of what an unskilled worker should earn, which is the most extreme case in the entire dataset of 42,644 individuals.

### Measuring Actual Inequality

The second variable of interest is actual inequality, measured by the Gini of equivalized (square root scale) household disposable incomes from the Standardized World Income Inequality Database (SWIID, Solt, 2013). Simply put, the Gini

measures how unequally incomes are distributed in a society, with 0 indicating absolute equality (no income differences), 1 indicating absolute inequality (one person has everything) and numbers in between indicating what share of incomes has to be redistributed to get to inequality. This means a Gini of 0.3 indicates that 30% of all incomes have to be redistributed from the rich to the poor to get to a perfect equality of incomes, while a Gini of 0.5 indicates that half of all incomes have to be redistributed to reach total equality. To make the Gini interpretable in this way, I scale it from 0 to 100. I focus on net, instead of gross income inequality, because people perceive—and thus can be influenced by—disposable incomes. In addition, social policy has more control over net rather than gross incomes, so tolerance for inequality can influence net incomes more than gross incomes. However, I have repeated all regressions using gross income inequality as dependent and independent variable, and the results remain essentially the same (all calculations are available upon request). Table 1 shows that merging the ISSP 2009 with the Standardized World Income Inequality Database yields inequality data for 34 different countries. In an average country, a Gini of 31.58 exists; countries typically deviate from this by 6.64 points, and while the country with the lowest inequality has a Gini index of 22.28 (Norway), the country with the highest inequality has a Gini of 49.70 (Chile). As a more detailed depiction of inequality and tolerance for inequality, see Appendix Fig. 4, which shows how actual and tolerated income inequality have developed in each country over time. The task then is to understand whether and how differences in inequality are correlated to differences in tolerated inequality.

## Control Variables

Country-level variables could confound the link between tolerated and actual inequality and therefore need to be controlled. First, more democratic countries may reduce actual inequality, and they may have populations that accept more inequality (cf. Kelley & Zagorski, 2005; Willis et al., 2015). I therefore include the relative degree of political freedom that exists in a country as defined by the NGO Freedom House as a control variable.<sup>3</sup> Populations of richer countries may tolerate more income inequality for three reasons. The poor may be relatively well off (Beck, 1983), people might be post-materialistic (Inglehart, 1977) and the poor might see inequality as a sign of better times to come (Hirschman & Rothschild, 1973). I therefore control for a country's GDP (in purchasing power parity per capita), taken from the Penn World Tables (cf. Heston et al., 2012). Last, the relationship between actual and morally tolerated inequality could also be confounded by the welfare state, as countries with larger welfare states may tolerate less income inequality and have less factual income inequality. Therefore, I control for public social expenditure, taken from the OECD Social Expenditure Database (SOCX 2014).

<sup>3</sup> I have also used the polity2 variable of the Polity IV dataset, which similarly measures how democratic a country is (for details, cf. Marshall, Jaggers and Gurr 2011: 16f.), but results are very similar. I therefore use Freedom House data, as it covers more countries.

I also control for the standard individual-level variables of age and sex. In addition, I control for an individual's social position and thus for self-interest in inequality, by using categorical variables for whether someone supervises others at work, works in the public or private sector, is self-employed, or not in employment. The regressions also control for personal and family income (divided through the square root of household members), as richer households are more likely to profit from inequality. Because the ISSP expresses personal and family income in country-specific values, each respondent's income is standardized relative to the country's mean income. In the ISSP 2009 data, I also control for individual years of schooling, educational qualification and trade union membership. These variables are widely accepted to control for self-interest in inequality (Hadler, 2005: 145; Kelley & Zagorski, 2005: 325; Svallfors, 2006: 74f.; Castillo, 2011a).

I first use data from the ISSP 2009 to check the relationship between factual inequality and tolerance of inequality for the 25 countries for which all control variables are available. I then use data from the ISSP 1987, 1992, 1999 and 2009 to show how fair and factual inequality are related over time. This merged data set has the advantage of providing data from different time points. However, it has the disadvantage that fewer control variables exist. Table 1 shows descriptives for all variables from the first version of the ISSP 2009 and then from the cumulated ISSP 1987, 1992, 1999, 2009.

## Results

### Cross-Sectional Results, ISSP 2009

Table 2 shows whether a link between actual and morally tolerated inequality exists in the ISSP 2009 data, for those 14,577 individuals nested in 25 countries,<sup>4</sup> for which all control variables exist.<sup>5</sup> The constant of Model 1 is 4.092. Since all variables are mean-centered, this indicates that people in a country with average inequality argue that a chairman of a large national corporation and a doctor should earn 4.09 times the salary of an unskilled worker. Every effect size can be interpreted as a percentage change that is centered around 1. For example, the effect size of 1.047 of the Gini in Model 1 indicates that people tolerate 4.7% more income inequality, when living in a country whose Gini is one point higher than that of another country. In other words, tolerated inequality is multiplied by 1.047 for every one-unit increase in the Gini. Thus, in a country whose Gini is one point above the average Gini of all countries, people would accept an inequality between low- and high-earning wages of  $4.092 \times 1.047 = 4.28$ . In a country with a Gini two points

<sup>4</sup> These are Australia, Austria, Belgium, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Italy, Japan, Norway, Poland, Portugal, Slovakia, Slovenia, South Korea, Sweden, Switzerland, Turkey, the UK and the USA.

<sup>5</sup> I have computed all regressions using maximum likelihood and restricted maximum likelihood models. The AIC for maximum likelihood models consistently outperformed restricted maximum likelihood models, so I use maximum likelihood models throughout, which is also appropriate due to the relatively large sample size.



**Table 2** Link between actual and tolerated inequality in 2009

	(1)	(2)	(3)
Tolerated income difference			
Country-level variables			
Gini net	1.047*** (5.11)	1.049*** (5.07)	1.049*** (5.04)
Political rights		1.399** (2.65)	1.354* (2.35)
GDP		0.999 (−0.28)	0.995 (−0.96)
Public social expenditure		0.995 (−0.50)	0.997 (−0.34)
Individual-level variables			
Age			1.009*** (16.68)
Female			0.888*** (−9.42)
Supervises others			1.073*** (5.15)
Public sector job			1.023 (0.99)
Private sector job			1.092*** (4.12)
Self-employed			1.105*** (3.72)
Not working			1.028 (1.53)
Family inc.			1.024*** (3.77)
Pers. inc.			1.010 (1.60)
Schooling years			1.008** (3.07)
Educational degree			1.060*** (8.00)
Union member			0.995 (−0.37)
Gross income differences	1.199 (1.63)	1.149 (1.21)	1.189 (1.48)
Constant	4.092*** (16.72)	3.661*** (14.79)	2.581*** (10.06)
Level 2 (country) SD	0.248*** (−9.67)	0.219*** (−10.52)	0.222*** (−10.40)
Level 1 (individual) SD	0.746*** (−49.92)	0.746*** (−49.92)	0.725*** (−54.91)
ICC country	0.100	0.079	0.086
Observations Level 2	25	25	25
Observations Level 1	14,577	14,577	14,577

Coefficients centered around 1

t Statistics in parentheses

+  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ 

above the mean, accepted inequality would be  $4.092 \times 1.047^2 = 4.49$  and so on. Model 1 only contains one control variable: Since ISSP surveys in some countries and years ask about fair *net* incomes, while others ask about fair *gross* incomes, a dummy variable controls for this, taking a value of 1 if people have been asked about gross inequality and of 0 if people have been asked about net income inequality. The positive effect of the control variable suggests that people accept more gross, compared to net income inequality. That the control variable is statistically insignificant indicates that whether people have been asked about net or gross income inequality does not influence strongly how much inequality they accept. Model 1 also indicates that a typical country deviates by 0.248 from the

average tolerated level of inequality of 4.092. Within countries, an individual's tolerance for inequality typically deviates from another person's tolerance by 0.746. The intraclass coefficient therefore indicates that 10% of the variation in tolerated inequality is between countries, while the remaining 90% of variation in tolerated inequality is between individuals.

Model 2 controls for the most important social, political and economic macrovariables: public social expenditure, political rights and GDP. Public social expenditure can confound the relationship, because tolerance for income differences might lead to a smaller welfare state, which promotes inequality. People may also accept more income inequality when they have more political rights. In addition, people in poorer countries may tolerate more inequality, so that GDP could be an intervening variable (Hirschman & Rothschild, 1973). While Model 2 shows that more political rights are indeed correlated with more tolerance for inequality, it also indicates, however, that the link between actual and tolerated inequality is almost unchanged when holding political rights, GDP and public social expenditure constant. Notably, a country whose Gini is 1 point above that of a country with the same political rights, GDP and public social expenditure exhibits 4.9% more tolerance for income inequality.

Model 3 additionally controls for individual-level variables, which also leaves the link between inequality and tolerated virtually unchanged.<sup>6</sup> Model 3 also shows that people tolerate more income inequality when they are older, male, supervise others, work in the private sector, are self-employed, have more family income, years of schooling and more education. In regressions not shown here, I have standardized all variables to have a mean of 0 and a standard deviation of 1. This shows that in countries where inequality is one standard deviation higher, tolerated inequality is 35% of a standard deviation higher, which indicates a very strong link between inequality and tolerance for inequality. To show how strong the substantive effect of Model 3 is, Appendix Fig. 3 visualizes its effect size, showing how much inequality people tolerate, based on the actual inequality in the different countries.<sup>7</sup> The predicted effect sizes show that people in a low-inequality country (such as Norway with a Gini of 22.2) would accept that the two high-income occupations earn about three times as much as an unskilled worker. However, in a country with a high degree of inequality (such as Chile with a Gini of 49.7), people tolerate that the rich occupations earn about 11 times of what they say an unskilled worker should earn—even if all differences in countries except inequality are controlled (see the control variables of Table 2, Model 3). Thus, countries with higher actual inequality have populations that tolerate almost four times as much inequality as the populations from low-inequality countries tolerate.

In separate regressions, I have controlled for Esping-Andersen's (1990) welfare regimes, as people in liberal welfare states may experience and tolerate more inequality, while people in social democratic welfare regimes may experience and

<sup>6</sup> I have checked all variables for multicollinearity and virtually all of them are correlated below  $r = 0.3$ .

<sup>7</sup> Note that most figures have logged y-scales, as the "fair income variable" is logged for the reasons mentioned in the data section. Taking the geometric mean of non-logged values yields essentially similar results, while circumventing a logged scale. But the logged scale is more appropriate for the reasons mentioned in the data section.

tolerate less inequality.<sup>8</sup> The effects of welfare regimes indeed point in this direction, but the correlation exists even after controlling for welfare regimes: Countries with more inequality also tolerate more inequality, irrespective of their welfare regime. I have also calculated inequality from the ISSP itself, measured as the earnings of the top 25% versus the bottom 25% in each ISSP survey. This measure of inequality also correlates with tolerated inequality, so the results do not depend on measuring inequality a certain way. I have also rerun Models 1 and 2 with all available cases, instead of only those for which all controls exist. In these models, actual inequality still correlates with accepted inequality. The results also do not depend on including any particular country. They remain the same in 25 separate regressions, each of which excludes one country. Thus, among a variety of specifications, countries with higher inequality also have populations that tolerate more inequality.

The following section tests this between-country relationship with other ISSP waves and then checks which way the influence seems to run, by looking at variation within countries over time. Because separate calculations have shown that the link between actual and tolerated inequality is weakest before including control variables, the following sections estimate the link between fair and actual inequality without extensive controls.

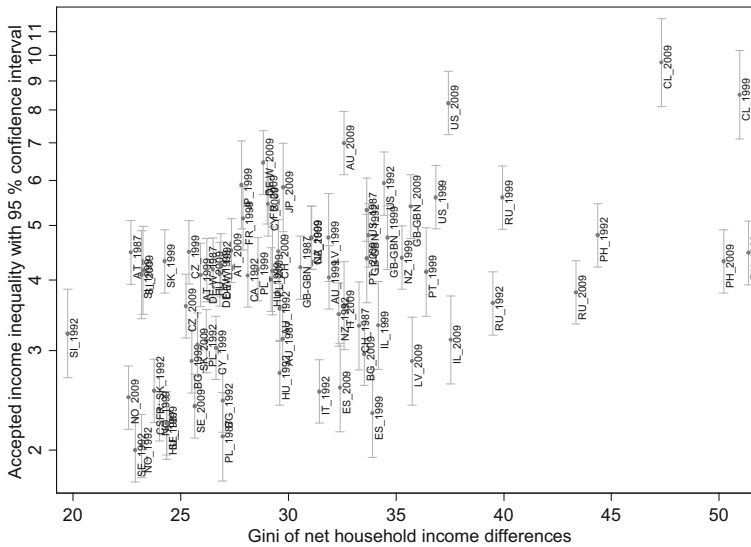
### Repeated Cross-Sectional Results 1987, 1992, 1999, 2009

By plotting the inequality that the populations of different countries accepted at each ISSP wave against the inequality that actually existed at each ISSP wave, the cumulated ISSP can show whether the above connection between inequality and tolerated inequality also exists in the ISSP surveys of 1987, 1992 and 1999 and thus at different points in time. Figure 1 visualizes with 95% CI how much inequality people in the different countries and waves accepted, relative to how much actual inequality existed.

Figure 1 indicates that even though individuals in each country differ in their views on fair inequality (see the 95% confidence bars around each country), countries with more actual inequality also tend to have populations that tolerate more inequality. The bivariate correlation between a country's factual and average accepted inequality is very high ( $r = 0.47$ ,  $p < 0.001$ ,  $n = 75$ ). This means that  $0.47^2 = 22\%$  of the variation in inequality can be explained (statistically) through the variation of tolerated inequality, and vice versa.

Models 1–4 in Table 3 show the relationship between fair and factual inequality for each ISSP wave. Model 1 repeats the results from the ISSP 2009 for 34 countries. The data from these additional countries do not use the same set of control variables, but can therefore use data from more countries. Model 1 shows that in 2009, populations accept 2% more income inequality (multiplication by 1.02) when they live in a country whose Gini is one point higher than that of other countries in 2009. Models 2, 3 and 4 show the same between-country link of actual

<sup>8</sup> I have classified Denmark, Finland, Norway and Sweden as social democratic; Austria, Belgium, France, Germany and Italy are conservative; Australia, the UK and the USA are liberal; Chile, the Czech Republic, Estonia, Hungary, Iceland, Japan, Poland, Portugal, Slovakia, Slovenia, South Korea, Switzerland and Turkey are classified as a fourth category of unclear cases.



**Fig. 1** Scatterplot, actual and tolerated income inequality (95% CI for individual differences)

and tolerated inequality for 1999, 1992 and 1987, respectively. They indicate that countries whose Gini is one point higher than that of other countries have populations that tolerate 2.1–4.1% more inequality—depending on the ISSP wave. The effect in 1987 is only statistically significant at the 10% level, as it is based on only eight countries, since a different number of countries participated in the ISSP at each time point.

Finally, Model 5 uses data from all ISSP waves, nesting people in countries (level 3) and country-years (level 2), with individuals at level 1—the dominant approach when multiple countries and years with individual non-repeated observations exist (Bryan & Jenkins, 2013: 1; Fairbrother, 2014: 123). In addition to being a multilevel model, Model 5 is also a “hybrid” or “between-within” model (see the first documentation of these models in Mundlak, 1978; the textbook explanation in Allison, 2009: 23ff.; for tests and applications, see Fairbrother, 2014: 124; Bell & Jones, 2015; Schmidt-Catran, 2016; Schröder, 2016). This means it splits the variation of inequality in a between- and a within-country component, which are, respectively, “(1) a cross-unit component that explains the cross-sectional variation between cases, and (2) a longitudinal component that explains the over-time variation within cases” (Kaufman, 1993: 483). In this case, the between-country effect measures how much inequality each country has over all measured points in time and therefore shows whether countries that have more inequality than other countries over all points in time also have a population that tolerates more inequality than the populations of other countries tolerate on average over all points in time. The within-country effect uses a variable that measures whether, at each point in time, a country has more inequality than it has on average over all points in time. This shows whether years with more inequality than a typical year in a country are

**Table 3** Relationship between actual and tolerated inequality over time

	(1) 2009	(2) 1999	(3) 1992	(4) 1987	(5) All waves
<b>Tolerated income difference</b>					
Gini net (between-country effect)	1.020* (2.34)	1.021** (2.85)	1.037*** (3.61)	1.041+ (1.77)	1.025** (3.25)
Gini net (within-country effect)					1.025+ (1.74)
Gross instead of net income differences	1.150 (1.22)	0.983 (−0.14)	0.700 (−1.38)	1.562* (2.26)	1.060 (0.62)
Constant	3.622*** (14.35)	4.162*** (14.28)	4.587*** (6.12)	2.466*** (5.34)	1.731* (2.10)
Level 3 (country) SD					0.227*** (−8.10)
Level 2 (country/year in Model 5) SD	0.318*** (−9.38)	0.259*** (−9.48)	0.227*** (−8.32)	0.232*** (−5.81)	0.694*** (−141.97)
Level 1 (individual) SD	0.749*** (−74.46)	0.667*** (−87.64)	0.624*** (−87.72)	0.555*** (−82.24)	0.204*** (−15.16)
ICC 2	0.15	0.13	0.12	0.15	0.16
ICC 3					0.09
Observations Level 2	34	25	16	8	28
Observations Level 1	33,293	23,400	17,312	9765	75,645

Coefficients centered around 1

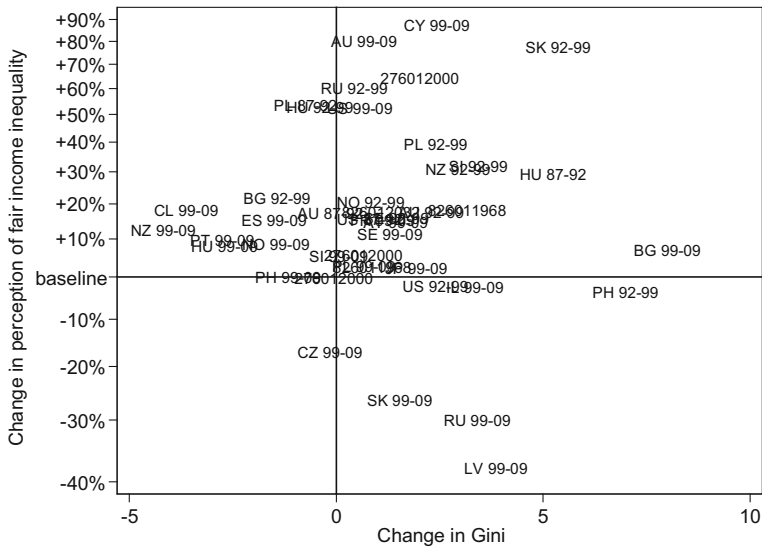
*t* Statistics in parentheses

+  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

years when the population of a country also tolerates more inequality than during a typical year (Mundlak, 1978; Allison, 2009: 23ff.; Fairbrother, 2014: 124). Distinguishing these two sources of variation therefore shows how inequality and tolerated inequality are related 1) between countries, irrespective of change in countries over time, and 2) within countries over time, irrespective of differences between countries.<sup>9</sup>

Substantively, the *between*-country effect of Model 5 shows that populations indeed tolerate 2.5% more inequality over all points in time when they live in a country where the Gini is one point higher over all ISSP waves than what it is in a typical country. The *within*-country effect shows that the population of the same country tolerates 2.5% more inequality in those years where the actual Gini in its country is one point higher than during an average ISSP wave in the same country.

<sup>9</sup> Note that the ISSP is not an individual-level panel dataset. One can make it a country-level panel dataset, however, as countries have participated in more than one wave. I therefore pool data on the country-level and use multilevel regressions that cluster people in both countries and years.



**Fig. 2** Changes in inequality and changes in tolerance for inequality

The between-country and within-country effect have the same substantive strength, but the within-country effect is only statistically significant at the 10% level, which is logical, as it is based on a maximum of four ISSP waves in each country, while the between-country effect can draw on the comparison of 28 countries. Thus, people accept more inequality when they live in a country with more long-run inequality than other countries (between-country effect). In addition, people also seem to accept more inequality in those years where more inequality exists in their country than what exists during an average year (within-country effect). This shows that inequality is higher where and when tolerated inequality is higher. However, it does not show whether inequality seems to influence tolerance for inequality, or whether, conversely, tolerance for inequality seems to influence actual inequality. The following section therefore disentangles the two effects by looking at changes in inequality and tolerated inequality over time.

### Change Over Time

That countries have participated in more than one ISSP wave makes it possible to show whether changes in factual inequality and tolerated inequality are related over time. Appendix Fig. 4 shows the descriptive data behind this, plotting the development of net income inequality and tolerated inequality for each country that has data for multiple time points.<sup>10</sup> It is hard to discern an overall trend in

<sup>10</sup> Appendix Fig. 2 shows the inequality that an average respondent in each country and year tolerates. Note that the scale is adjusted for each country, as changes within countries over time are more important than differences between countries. Also, note that Appendix Fig. 2 does not use logged y-scales, because this would have made it impossible to display all graphs in one figure. However, results look virtually the same when using a logged scale.

Appendix Fig. 4, only that in most countries, income inequality increased, while it seems that in many, but not all countries, moral tolerance for income inequality grew as well. Figure 2 visualizes this, by plotting how actual and tolerated income inequality changed within each country from one ISSP wave to the next. On the x-axis, Fig. 2 shows how the Gini changed. On the y-axis, Fig. 2 shows how tolerated inequality changed from one ISSP wave to the next.<sup>11</sup>

As most cases are found in the upper right corner, it seems that, in most countries, actual inequality increased from one wave to the next, while moral tolerance for inequality increased as well. Contrary to this, the empty lower left quadrant indicates that there was no country where both actual inequality and tolerance for inequality decreased. Changes in Latvia, Russia, Slovakia and the Czech Republic from 1999 to 2009 are in the lower right quadrant, which means that inequality increased, while tolerance for inequality decreased. This is possibly a backlash against increasing inequality and tolerance for inequality, which these countries experienced in the 1990s (Kelley & Zagorski, 2005). In a fourth group of countries, in the upper left quadrant, inequality declined, while tolerance for inequality grew moderately. Thus, in most countries, from 1987 to 1992, from 1992 to 1999 and from 1999 to 2009, actual inequality increased, while tolerated inequality increased as well. However, Fig. 2 also shows that there are exceptions to this, which leaves the question open whether factual and fair inequality are significantly correlated within countries over time, and if so, whether prior changes in actual inequality seem to explain changing tolerance for inequality, or whether, conversely, prior changes in tolerated inequality seem to explain changing actual inequality within countries. Model 5 of Table 3 already indicated that this within-country correlation exists and that substantively, it is as strong as the between-country correlation. It showed that the population of a country accepts 2.5% more income inequality in those years when the Gini is 1 point higher than what is typical for that country.

However, it is possible that inequality and tolerance for inequality influence each other with a time lag, because people might need time to adapt their tolerance for inequality to actual inequality, or because tolerated inequality may take time to influence actual inequality through the welfare state or another mechanism. Linear fixed effects regressions that pool data on the country level can show whether, within each country, prior inequality is related to later tolerance for inequality, or whether the opposite is true, namely that prior tolerance for inequality is related to later actual inequality. Given that fixed effects regressions control for unobserved time-constant heterogeneity between countries, control variables are less necessary than in cross-sectional regressions (Schmidt-Catran, 2014: 3). The preceding sections have shown that the link between inequality and fair inequality is most conservatively estimated without control variables. The regressions in Table 4 therefore only control for a linear time trend that might stand behind both changes in inequality and tolerated inequality. All regressions use those 39 observations, for which views on fair inequality, as well as data on earlier and later actual inequality,

<sup>11</sup> Note that the y-axis is again log-scaled. In this case, this makes sense because a change from 10 to 20% more tolerance for inequality is more consequential than, for example, a change from 80 to 90%, although both constitute an increment of 10.

**Table 4** Fixed effects link between income inequality and tolerated inequality over different time lags

	(1) Lag 4	(2) Lag 3	(3) Lag 2	(4) Lag 1	(5) Lead 1	(6) Lead 2	(7) Lead 3	(8) Lead 4
Gini net	1.019* (2.53)	1.029* (2.28)	1.022 <sup>+</sup> (1.88)	1.015 (0.28)	1.001 (0.01)	0.992 (-0.16)	0.985 (-0.32)	0.985 (-0.23)
Year	1.012 (0.95)	1.006 (0.55)	1.011 (1.08)	1.019 (1.06)	1.026 <sup>+</sup> (1.92)	1.027* (2.23)	1.025 <sup>+</sup> (1.79)	1.025 <sup>+</sup> (1.89)
Constant	0.000 (-0.90)	0.000 (-0.49)	0.000 (-1.02)	0.000 (-1.03)	0.000 <sup>+</sup> (-1.87)	0.000 <sup>+</sup> (-2.18)	0.000 (-1.74)	0.000 <sup>+</sup> (-1.83)
Observations	39	39	39	39	39	39	39	39
$r^2$ Within	0.66	0.71	0.62	0.51	0.49	0.50	0.51	0.50
$r^2$ Between	0.32	0.32	0.33	0.38	0.15	0.03	0.14	0.13
$r^2$ Overall	0.39	0.40	0.39	0.40	0.13	0.00	0.05	0.05
Rho	0.85	0.87	0.84	0.80	0.84	0.86	0.89	0.89

Coefficients centered around 1

 $t$  Statistics in parentheses+  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$



exist.<sup>12</sup> The first model, “Lag 4” shows whether inequality seems to influence tolerated inequality 4 years later. As mentioned, it does so by correlating the tolerated inequality of a given ISSP survey-year, to the actual inequality that existed 4 years before (“lagged inequality”). In turn, the last Model 8 “Lead 4” does the opposite: It shows whether current tolerance for inequality is related to inequality 4 years later (“lead” inequality). Models with a lag or lead of 3, 2, 1 do the same with 3, 2 and 1 years of separation between actual inequality and tolerated inequality.

Regressing one variable on the other with time lags of 1–4 years shows that people accept more inequality when actual inequality in their country was higher 4–3 years ago (Model 1 “Lag 4” and Model 2 “Lag 3”). Substantively, Model 2 with a lag of 3 years shows that people accept 2.9% more inequality (multiplication by an effect size of 1.029), when the Gini 3 years ago was 1 point above a country’s long average inequality. Conversely, moral tolerance for inequality does not predict inequality in the next 4 years (Models 5–8). This suggests that actual inequality influences how much inequality people tolerate, but how much inequality people tolerate does not influence actual inequality—at least not within the next 4 years. Additional regressions with standardized variables (not shown here), indicate that when inequality is one standard deviation higher than what it usually is in a country, people’s tolerance for inequality is 60% of a standard deviation higher three years later. This suggests that when inequality increases, 60% of this gets “absorbed” by people’s increased tolerance for inequality, while only the remaining 40% may spark moral outrage against inequality. The high  $r^2$ -within of Model 2 suggests a similarly strong link. To make the regressions comparable, all calculations are constrained to operate with the same number of 39 country-years, for which all data are available. However, results remain the same when each regression uses all available cases. The results also do not depend on including any particular country. I have excluded each country in turn, but prior inequality still correlates with future tolerance of inequality, while tolerance for inequality does not correlate with future actual inequality, regardless of which country is excluded.

To test whether it is indeed inequality that influences tolerance for inequality, and not vice versa, one can also check whether a country’s inequality in one wave of the ISSP predicts tolerated inequality in the next ISSP wave, or whether conversely, last wave’s tolerated inequality predicts next wave’s actual inequality. Doing so (not shown here, results can be furnished upon request) confirms the results from Table 4. When the Gini in a country is one point higher than what it usually is, people in the same country accept 4.5% more inequality in the next ISSP wave. However, the opposite is not true: When the country of a population accepts more income inequality than what it usually accepts, this has no influence on the actual inequality that exists in the next ISSP wave in the same country.

<sup>12</sup> For the following cases, there are measures of inequality for four years before and after a single time point: Australia (1992, 1999), Austria (1999), Bulgaria (1992, 1999), Chile (1999), Cyprus (1999), Czech Republic (1999), France (1999), Germany (1992, 1999), Hungary (1992, 1999), Israel (1999), Italy (1992, 1999), Japan (1999), Latvia (1999), New Zealand (1992, 1999), Norway (1992, 1999), Philippines (1992, 1999), Poland (1992, 1999), Portugal (1999), Russian Federation (1992, 1999), Slovak Republic (1992, 1999), Slovenia (1992, 1999), Spain (1999), Sweden (1992, 1999), the UK (1992, 1999) and the USA (1992, 1999).

**Table 5** Does tolerated inequality adapt to prior or current actual inequality?

	(1)	(2)	(3)
Tolerated income inequality			
Current Gini (variation within country)	1.006 (0.29)		1.015 (0.74)
Prior Gini (variation within country)		1.046* (2.21)	1.048* (2.33)
Long-term average Gini (variation between countries)	1.022** (2.61)	1.021** (2.60)	1.021** (2.61)
Gross instead of net income difference	1.009 (0.08)	1.039 (0.34)	1.042 (0.36)
Constant	4.089*** (13.58)	4.101*** (14.24)	4.058*** (13.99)
Level 3 (country) SD			
Constant	0.221*** (−6.00)	0.225*** (−6.57)	0.228*** (−6.67)
Level 2 (year) SD			
Constant	0.204*** (−9.47)	0.186*** (−10.10)	0.183*** (−10.21)
Level 1 (individual) SD			
Constant	0.740*** (−89.86)	0.740*** (−89.86)	0.740*** (−89.86)
ICC 2	0.14	0.13	0.13
ICC 3	0.07	0.08	0.08
Observations Level 2	45	45	45
Observations Level 1	44,747	44,747	44,747

Coefficients centered around 1

*t* Statistics in parentheses+  $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ 

All regressions so far suggest that countries with more inequality over all ISSP waves also have populations that accept more inequality over all ISSP waves. But the causal arrow only seems to point in one direction. Populations seem to adapt their views about fair inequality to prior actual inequality, while what people see as fair inequality does not seem to influence actual inequality. A last test can measure this lagged within-relationship (one variable following the other with a time lag) by using multilevel models, which take account of within-country, individually heterogeneous views on fair inequality. The disadvantage of a multilevel model (and the reason it was not used in Table 4) is that it only allows lagging in one direction. Tolerated inequality cannot be lagged, as it is an individual-level variable, and the dataset is not an individual-level panel.<sup>13</sup> Inequality can be lagged however, as it is a country-level variable, and the dataset is a country-level panel. Multilevel models can therefore only show how prior inequality influences later tolerance for inequality, not vice versa. However, the prior sections have shown that this is the only direction of influence that seems to occur in the first place. Table 5 therefore

<sup>13</sup> I could lag average tolerated inequality of the last wave in each country. But then neither inequality, nor lagged tolerated inequality would vary between individuals of a country and ISSP wave. It would then make no sense to use a multilevel regression.

shows how actual inequality influences tolerated inequality by using three different models.

As in all prior models, the between effects of Models 1, 2 and 3 in Table 5 replicate the finding that countries with more long-run inequality also tolerate more inequality. In addition, the within-effect of Model 1 shows that when more inequality exists than what usually exists in a country, people do not accept more inequality in the *same* ISSP wave than they usually accept in this country. Model 2 of Table 5 shows, however, that people *do* accept 4.6% more inequality in the *next* wave of the ISSP, when the Gini in the current wave of the ISSP is one point higher. The last Model 3 puts past and present inequality in competition to explain tolerated inequality. It again shows that people accept 4.8% more income inequality when the Gini in the prior ISSP wave is 1 point higher than the country's long-run average inequality, while the inequality of the *current* ISSP wave does not influence tolerated inequality in the same ISSP wave. Thus, people accept more inequality when past actual inequality is higher, not when current inequality is higher. This again suggests that people adapt their views about fair inequality to conform to actual inequality.

The between-country connection, which has showed up regardless of specifications, is robust evidence that countries with more inequality also tolerate more inequality. A within-country over-time connection also shows up repeatedly, but only in one direction: When income inequality is higher in a country, people in the same country tolerate more inequality within 3–4 years. The result is that the actual inequality of an ISSP wave predicts how much inequality people accept in the next ISSP wave. However, prior tolerance for inequality never predicts later actual inequality. This is strong evidence that actual inequality increases tolerance for inequality, but not vice versa.

## Discussion

It is a serious gap in scholarship that we do not know how actual and tolerated income inequality are related (Hadler, 2005: 131; Osberg & Smeeding, 2006: 468ff.; Castillo, 2011b: 334f.; Janmaat, 2013: 383). The empirical results of this study show that people tolerate more income inequality in countries with more actual inequality. Concretely, people in low-inequality countries tolerate that a doctor and a chairman earn about three times of what an unskilled worker should earn, whereas people in otherwise-similar high-inequality countries accept analogous income differences of 11–1. This means that high-inequality countries accept almost four times more income inequality than otherwise-similar low-inequality countries. This between-country link of inequality and tolerated inequality exists since we have data in 1987, and it seems to come about because what people see as fair inequality follows actual inequality. Regardless of what I tried, I could not find the opposite link: Actual inequality does not seem to follow what people see as fair.

These results strongly suggest that people adapt their fairness views to the status quo, but the status quo does not adapt to people's fairness views. This supports materialistic theories, which argue that “being determines consciousness” (Marx & Engels, 1846: 26f.), so that “what people say ought to be is determined in the long

run and with some lag by what they find in fact to be the case” (Homans, 1974: 249f.; also cf. Lerner, 1982; Moore, 1978: 458f.; Bénabou & Tirole, 2006: 700; Kahneman et al., 1986: 730f.). It discredits social policy responsiveness theories, which argue that commonly held social justice views influence income inequality through social policy (cf. Weber, 1978 [1920]: 252; Marshall et al., 1999: 360; Headey, 1991: 593; Brooks & Manza, 2006, 2007; Soroka & Wlezien, 2010).

The central finding of this paper, that people accept more income inequality when actual inequality is higher, not only contributes to existing theories, but also explains a number of empirical findings. First, it explains why welfare states that permit more actual inequality have populations that tolerate more inequality (Mau, 2003: 81ff.; Sachweh & Olafsdottir, 2012: 160; Liebig et al., 2004: 12). It suggests that people get used to the inequality that they see in their welfare regime and then support it as a normative ideal. Second, to the degree that such adaptation occurs, this study also showed why people are unlikely to argue that too much inequality exists—namely because they seem to get used to inequality (cf. Hadler, 2005: 150; also cf. Cramer & Kaufman, 2010: 22). Third, that fairness views partially adapt to actual inequality within 3–4 years also explains why inequality does not generally increase demands for redistribution (Meltzer & Richard, 1981; for affirmative findings, cf. Finseraas, 2009; for dismissive findings, cf. Kenworthy & McCall, 2007; Schmidt-Catran, 2016: 21f.). Concretely, the findings shows that about 60% of every increase in inequality gets “absorbed” by increased tolerance for inequality within 3 years. When people get used to inequality, it will not prompt them to ask for more redistribution. More broadly speaking, that fairness views adapt to increasing inequality may be the reason why increasing inequality is not met with more resistance.

However, that inequality seems to influence what people see as fair does not mean that economic inequality has a deterministic character (also cf. Castillo, 2011b: 335). First, this is because actual inequality does not *fully* predict what people see as fair. Instead, the results indicate that people adapt to inequality imperfectly. Notably, 40% of each increase in inequality does not seem to translate into more tolerance for inequality. Therefore, although income inequality increased in most countries, tolerance for income inequality followed in some, but not in all countries. Second, the results of this study do not give material structures a deterministic quality because they only rely on data from 1987 to 2009. Views on fair inequality may simply need more time to influence social policy and inequality (cf. Chauvel & Schröder, 2017). By using longer periods than the four ISSP waves currently available, future research can show whether fairness views influence inequality over longer time gaps. An open research question in this respect is whether even the poor welcome increasing inequality at first, hoping that as some move ahead, they will be next, while when inequality persists, the poor start to lose that hope (Hirschman & Rothschild, 1973). If this were the case, then increased inequality should lead to highly increased tolerance for inequality at first, but some of this tolerance should dissipate over time. This study did not have enough ISSP waves to test such a complicated mechanism. But this possibility is suggested by Fig. 2 and Appendix Fig. 4, which show that tolerance for inequality increased after the fall of the Iron Curtain in East European countries, while tolerance for inequality decreased after about 10 years of prolonged inequality.

Last, this study could only show correlations on the macrolevel. Experiments can show which individual mechanisms stand behind the documented links. It is possible that individual views on fair inequality depend on whether media portray inequality as fair. Another intriguing question is whether the *perception* of inequality is a “buffer” between actual and tolerated inequality. Notably, when actual inequality is higher, people may not perceive the actual degree of inequality, but perceive less inequality than exists (Norton & Ariely, 2011).

Generally, the central finding of this study, that people seem to adapt their normative views about inequality to actual inequality, calls for research that shows *under which conditions* people adapt their fairness views to actual inequality; and even though this study did not find that fairness views on inequality influence actual inequality, it poses the question whether such a link can be found using longer time frames or different conditions.

### Compliance with Ethical Standards

**Conflict of interest** The author declares that he has no conflict of interest.

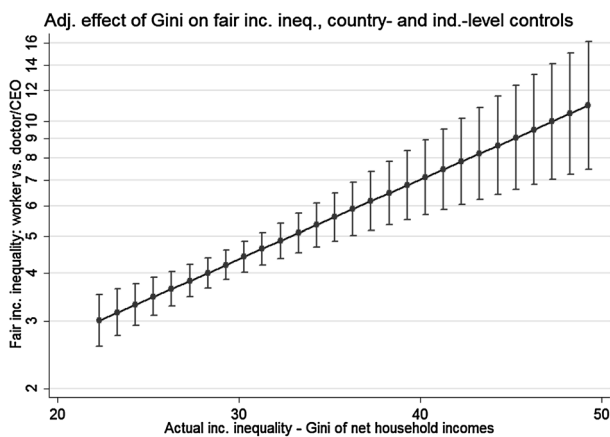
**Ethical Approval** This article does not contain any studies with human participants or animals performed by any of the authors.

## Appendix

See Fig. 3.

Visualization of effect size is based on Model 3 of Table 2, which is based on 25 countries with 14,577 individuals.

See Fig. 4.



**Fig. 3** Link between Gini and tolerance for income inequality, effect sizes of Table 1, Model 3



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