The Status Quo and Perceptions of Fairness: How Income Inequality Influences Public Opinion[1]

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Abstract

This paper argues that public opinion regarding the acceptability and desirability of income differences is influenced by actual income inequality. When income differences are (perceived to be) high, the public thinks of larger inequalities of income as fair. This phenomenon exists because of two psychological processes that advantage existing social arrangements: status quo bias and the motivation to believe in a just world. The phenomenon is demonstrated in three experiments, which show that personal experiences of inequality as well as information regarding national-level income inequality can affect perceptions of fairness in income gaps. A fourth experiment shows that at least part of this effect is due to the motivation to believe in a just world. The results can help us explain the empirical puzzle of why higher income inequality across time and space does not systematically result in higher demands for redistribution.

This paper argues that attitudes toward income inequality are influenced by actual levels of income inequality, and that this endogeneity can help us understand some of the variation in attitudes toward income differences and government redistribution across time and place.

The study of attitudes toward income inequality can be characterized as a study of whether the glass is half full or half empty.[2] Do the poor and the middle class oppose economic inequality and/or support redistribution, as we would expect them to if they were acting in their economic self-interest? Or do the poor and the middle class act against their economic interests by not noticing, not caring about, or caring about something else than economic inequality? On the one hand, we know that the poor tend to be more in favor of redistribution than the rich are and that the poor are more likely to vote for left-wing parties (Gelman et al. 2008, Brooks et al. 2006); the glass is half full. Yet it is also true that income inequality does not reliably produce popular opposition to it, at least not to the extent that we would expect if citizens acted solely in their economic self-interest (Ladd and Bowman 1998, Kluegel and Smith 1986, Page and Jacobs 2009); the glass is half-empty. In cross-national comparisons, more unequal countries do not exhibit systematically higher popular opposition to inequality (Alesina and Glaeser 2004, Kenworthy and McCall 2008), and increasing inequality over time in the United States has not systematically resulted in increasing opposition to it (McCall 2013). This is the case even though most people do not benefit from increasing income inequality, the gains of which are concentrated at the very top of the income distribution (Atkinson, Piketty and Saez 2011). This paper is about better understanding why the glass is half empty: why do high and/or increasing levels of income inequality not result in increased popular opposition to income inequality?

The question is particularly topical right now, as income inequality in the United States has increased since the 1970's: incomes at the very top of the income distribution have soared, while median incomes have stagnated (Piketty and Saez 2006, McCall and Percheski 2010). While the financial crash of 2008 halted the increase, this seems to have been a temporary phenomenon: income inequality has

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[2] The simile is borrowed from Bartels (2008, p.148).

started increasing again in 2013 (Mishel and Finio 2013). The inequality of market incomes has also increased in European countries (Atkinson 2003). Increasing inequality has potentially serious political consequences: it may increase perceptions of social distance among the population (Lupu and Pontusson 2011), depress electoral participation (Solt 2010) or change the dynamics of the political process given that the wealthy have more influence over political outcomes than other citizens (Gilens 2012, Hacker and Pierson 2010) and appear to have different policy preferences (Page et al. 2013). Given such consequences, why do societies tolerate increasing levels of inequality?

In this paper, I argue that public ideas of what constitutes fair income inequality are influenced by actual inequality: when inequality changes, opinions regarding what is acceptable change *in the same direction*. I argue that the mechanisms behind this counter-intuitive finding are the human tendency to be biased in favor of the existing state of affairs (status quo bias) and the motivation to believe that the world around us is fair (belief in a just world/system justification). Following a brief summary of the current state of knowledge on attitudes toward inequality, the paper presents four experiments that explore the impact of income inequality on perceptions of fairness in income differences. A laboratory experiment shows that experiencing unequal payments causes individuals to recommend more unequal payments as fair. A survey experiment with American subjects shows that receiving information on the high levels of income inequality in the United States causes individuals to upward adjust their expectations for fair inequality but does not affect support for redistribution. A successful replication of this survey experiment in Sweden illustrates that the phenomenon is not confined to the American cultural and political environment. Finally, a further survey experiment with American subjects demonstrates that the motivation to believe in a just world plays a part in producing this phenomenon. Together, the experiments illustrate that there is a measurable human tendency to accept increases in inequality as fair and desirable, even in situations where the original levels of inequality were already thought of as problematic.

Attitudes toward inequality

The conjecture that the poor can be expected (or ought to) vote in favor of redistribution, because this is in their economic interest in an unequal society, is widespread in everyday and academic writings on politics. One of the most famous, simple and elegant formulations of this expectation is the Meltzer-Richard (1981) model, which predicts that higher inequality ought to lead to higher demands for redistribution. This straight-forward expectation is the most parsimonious model we have for explaining why 'the glass is half full' - why the poor prefer less inequality than the rich. Empirically, the straight-forward prediction of the Meltzer-Richard model tends not to describe the whole truth; there is considerably less opposition to inequality than we would expect based on material interest alone. While the poor (and the middle class) do prefer less inequality than the rich, their preferences also exhibit a lot of acceptance of existing inequality (Jost et al. 2003, Page and Jacobs 2009). When comparing the U.S. and countries in continental Europe, more unequal countries tend to exhibit *lower* levels of redistributive demands (Alesina and Glaeser 2004), and a cross-national study of 9 countries (Kenworthy and McCall 2008) has shown that actual levels of inequality do not predict preferences for redistribution. Looking more closely at attitudes toward deserved income inequality and demands for redistribution, cross-national survey data has repeatedly shown that while preferences for inequality (opinions on which income gaps are fair and deserved) are only imperfectly linked to demands for redistribution, they are strongly correlated with individual *perceptions* of inequality (Austen 2002, Gijsberts 2002, Kelley and Zagorski 2004, Osberg and Smeeding 2006). These data have so far not been able to tell us what the causal relationship between perceptions of inequality, ideas of what constitutes fair income differences, and demands for redistribution is; the experiments below directly address this question.

If the material self-interest motive is the predominant explanation for opposition to inequality (where such exists), the explanations for the absence of public dissatisfaction with inequality are more varied. Many of these explanations can be thought of as 'confounding variables' - factors that interfere with the otherwise expected formation of pro-redistribution attitudes. For example, Benabou and Tirole (2006) argue that beliefs in the possibility of upward social mobility decrease

demands for redistribution. Iversen and Soskice (2006) point to electoral systems as a possible intervening variable. The role of ethnic and racial heterogeneity, especially in the case where minorities are disproportionately poor, is frequently emphasized (Gilens 2000, Alesina and Glaeser 2004, Roemer et al. 2007, Donnelly 2012). However, substantial variation in redistributive attitudes (and policies) still remains to be explained (Stepan and Linz 2011). One strand of research now emphasizes cultural/ideological explanations for inequality preferences that are not explained by economic positions (Alesina and Giuliano 2009). Perceptions of deservingness and the role of luck in determining economic fortune do appear to be one of the variables that divide, for example, European and American attitudes toward economic differences.

Arguing that important variations in attitudes toward inequality originate in perceptions of deservingness, fairness and luck, is a relatively recent approach within the subfield of political economy, but not in political science as a whole. In 1959, Robert Lane argued that beliefs in merit and opportunity not only lead working class Americans to accept inequality but push them to actively fear equality (Lane, 1959). The belief that the system rewards merit implies that the well-off deserve their fortune; this belief dampens preferences for equality. Hochschild (1981) also emphasizes that, particularly in the economic domain (as compared to the social and the political domains), Americans harbor a widespread belief in the justifiability of differential returns. Perceptions of fairness and deservingness thus appear to strongly influence attitudes toward the justifiability of economic inequality, and can explain the lack of opposition to it.

In the rest of this paper, I will posit that the inherent imprecision involved in translating concepts of 'desert' to specific numbers and income levels contributes to the ease with which we rationalize existing income differences. Given status quo bias and the motivation to think of our social system as fair, we look for alternative explanations to income inequalities than the (psychologically uncomfortable) conclusion that the social system is unfair. The inherent imprecision of 'desert' and the difficulty, in most cases, of directly observing whether 'hard work' has occurred make it easy for us to err on the side of accepting and rationalizing income inequalities. The social psychological mechanisms of status quo bias and belief in a

just world are used in this paper to better understand how beliefs of desert matter, and why we subconsciously prefer to assign inequalities to desert rather than to systemic inequalities. In the next section, I describe the psychology of status quo bias and just world beliefs in more detail, before turning to the experimental evidence.

The psychology of inequality

Social psychology has previously been used in studies of attitudes toward inequality, most prominently in analyses of ethnic and racial heterogeneity as moderators of redistributive demands (Gilens, 2000; Alesina and Glaeser 2004). More recently, psychological insights have also been brought into laboratory experiments regarding redistributive preferences. In traditional laboratory games designed to explore preferences for equality, the resources to be divided between the players have been bestowed randomly, with no incorporation of deservingness or 'earning' of the resources. However, when making real life redistributive decisions we take into account the origins of income and wealth, considering whether such benefits are justly deserved. In this spirit, Barber and English (2012) have shown that manipulation of the (perceived) desert of incomes significantly alters the outcomes in ultimatum games. Perceived desert also influences preferences for taxation and redistribution in more elaborate experimental settings (Durante and Putterman, 2009). Even individuals who do not benefit from inequality are more likely to acquiesce in and even prefer unequal distributions, if they perceive that the differential rewards are earned.

Here, I am interested in a related but distinct question. Rather than manipulating the legitimacy of the resources to be distributed, I am interested in manipulating the *distribution* itself. When the distribution is relatively unequal, does our tendency to attribute income differences to 'fair desert' lead us to accept this distribution as legitimate? Can inequality itself systematically change our perceptions of *how much* inequality is deserved? I argue that the answer to these questions is yes. The two main theoretical approaches I draw on are system justification theory and status quo bias.

System justification theory

In a now classic piece, Lerner and Miller (1978) argued that human beings are motivated to believe that the world is just. In order to navigate a complex and unpredictable social environment, we need to believe that the world around us is, at least to some extent, predictable and controllable. In a completely unpredictable world, co-ordinating actions with desired end goals and planning for the future would be pointless activities. In order to self-motivate, human beings thus need to believe that they exist in a world where consequences are deserved and predictable; in other words, humans need to believe the world is just. The evidence that Lerner and Miller brought to bear on this proposition was strictly inter-personal: they showed that when their subjects observed another person (a confederate) encounter misfortune, and the subjects were not in a place to help the confederate, they derogated the confederate's personality. This mental adjustment made the misfortune appear less arbitrary and more deserved, enabling the subjects to retain their belief in a just world (where individuals deserve what they receive). Initially, the framework of 'belief in a just world' predicted only that assessments of *individuals* changed as a function of misfortune occurring to them.

The concept of ‘belief in a just world’ was subsequently expanded by Jost and Banaji (1994) to apply to assessments of *the social world*. In this expansion, known as system justification theory, Jost and Banaji (1994, 2004) argue that one consequence of the motivation to believe in a just world is a defense of existing social arrangements, even when such justification occurs at a cost to oneself or one's social group. This motivation - to believe that the social world rewards individuals based on merit and hard work – has been shown to be important for individual abilities to plan for the future and delay gratification (Laurin et al. 2010a). System justification theory thus emphasizes that humans have a tendency to think of their social environment as fair and justified, and are motivated to retain this belief in the face of new information about their social system. This tendency is most pronounced when the system justification motive is activated: much research on system justification is centered on differences between individuals with high and low system justification tendencies, or between individuals in whom the system justification motive has (not) been activated (Kay et al. 2009).

The question of how much impact system justification tendencies as a whole have on societal-level processes is not yet well understood (Jost and Hunyady 2002). System justification theory has been used to explain adherence to social stereotypes (Jost and Banaji 2004), perceptions of discrimination (Hafer and Choma 2009) and policy attitudes on affirmative action (Phelan and Rudman 2011). To date, there has not been an exploration of whether system justification tendencies can also explain attitudes to economic or income inequality, but the evidence from these previous studies is consistent with the existence of such a link. Thus, based on a system justification motive, I hypothesize that individuals who perceive higher inequality in their social system also think of higher levels of inequality as fair.

Status quo bias

The concept of system justification is closely related to the concept of status quo bias. While system justification is conceptualized as a *motivational* force in human beings, status quo bias focuses on *cognitive mechanisms* that lead to similar outcomes. Status quo bias refers to the tendency of the human mind to prefer, and rate more positively, known stimuli than unknown ones (Eidelman and Crandall, 2009). For example, the mere exposure effect states that simply being exposed to a photo of a human face causes us to later rate the same face as more likeable than a previously unseen face (Zajonc 1968). Anchoring, the tendency to insufficiently adjust our numeric estimates from immediately available numbers, is another example of a status quo bias mechanism (LeBoeuf and Shafir, 2009). While the psychological mechanisms that produce a cognitive bias toward the status quo are different from the motivated reasoning mechanisms in system justification theory, they both lead to the same hypothesis: exposure to higher inequality will cause individuals to think of higher inequality as fair and desirable. In the remainder of this article, four experiments that test this hypothesis are presented and discussed.

Laboratory experiment: manipulating experiences of inequality

This laboratory experiment serves as a test of principle to show that levels of inequality influence attitudes toward inequality. The participants play a game with

randomly assigned inequality in rewards, and their recommended levels of reward inequality are then elicited. The laboratory setting was chosen as it provides the experimenter strong control over the environment and enables the manipulation of experiences of inequality. Since I am interested in the impact of inequality itself (and not the impact of economic self-interest) on distribution preferences, all participants are by design disadvantaged by inequality. I hypothesize that individuals who are randomly assigned to experience higher inequality of rewards will subsequently think of higher reward inequality as appropriate.

Method

Participants were recruited for a study that they believed was about experiences of competitive situations. When the participant arrived at the location of the experiment, they were told that there are two participants in the experiment, and that the participants will compete against each other (the 'other participant' was in fact a confederate of the researcher). The participants filled in a background survey that included only the Big Five personality measures, the Global Belief in a Just World scale (Lipkus 1991), the Social Dominance Orientation scale (Sidanius and Pratto 1999) and demographic variables including ideology and partisanship. The participants then 'competed' in a 4-minute anagram solving competition. The anagram competition included the randomly assigned treatment condition: a monetary prize, to be distributed between the winner and the loser of the challenge. In the 'unequal' condition, the winner was to get $9 and the loser was to get $1. In the 'equal' condition, the winner was to get $6 and the loser was to get $4. The researcher verbally pointed out the existence of a monetary prize in the competition; however, the exact dollar amount was only specified on the written instructions received by the participant prior to the anagram task. Both the researcher and the confederate were blind to the experimental condition until the debrief.

The words in the anagram task were neutral with respect to inequality (e.g. 'rat', 'elbow', 'ocean'). The anagram task was designed to be challenging, and most participants reported that they experienced the task to be 'somewhat' to 'very' difficult. After the anagram task, participants filled in a second battery of Big Five questions while the researcher scored the task. The participants scored between 0 and

32 points on the anagram task (roughly equivalent to solving 0 to 12 anagrams), and the confederate always 'scored' 2 points more than the participant.[3] When the scores were announced, the participants were reminded that they would get the second-place award while the confederate would get the winner's award. They then filled in the final questionnaire of the experiment which was ostensibly about their experience of the competition. Included on the final questionnaire was a question on the fairness of the payment that the participant had received, and a question on how the participant herself would distribute the $10 between the competitors, were she to design the game. The participants were then asked whether they recalled what their monetary payment was going to be (manipulation check), asked for any suspicions regarding the purpose of the experiment, debriefed, and paid. They kept the money payment they had been promised during the experiment.

Participants

65 participants were recruited using the Psychology Department Study Pool of a large university in northeastern United States in February - May 2012. They completed the study for a cash payment of $5 (55 participants) or course credit (10 participants) plus the cash payment earned during the experiment. 12 participants were excluded from the analysis due to one or a combination of: guessing the purpose of the experiment, guessing that the confederate was not a true participant, and/or treatment failure (not remembering the payments of the winner and loser). Including these participants does not change the results of the experiment. The remaining 53 participants were a combination of college students and community members. Ages ranged from 15 to 56 (mean 30, median 24). 25 were female and 28 male. 55% of participants were White, 17% were African American, 11% were Hispanic, 13% were Asian and 2 participants self-identified as 'Other'. 26 participants were in the 'unequal' condition ($1-$9) and 28 in the 'equal' condition ($4-$6).

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[3] Except in the case of very low participant scores, 0-5 points, in which case the confederate 'scored' 1 point more than the participant.

Results

The main dependent variable was the amount of money the participant would award to the winner of the competition, were they to design the game. The amount of money awarded to the winner is used as a direct measure of how unequal the participant would make the payments, as the participants were constrained to divide exactly $10 between the winner and loser. The results are shown in Figure 1: participants in the condition where the winner got $6 would, on average, give the winner $6.15, while participants in the condition where the winner got $9 would, on average, give the winner $7.77. The difference is significant at $p < 0.001$. Individuals in the $9 condition report with a significantly ($p=0.02$) higher probability that their payment was not fair, and the average dollar amount allocated to the winner is below the $9 in the experimental condition. Despite this difference in perceived fairness, individuals in the unequal condition recommend that the allocation of money should be more unequal than individuals who had experienced a more equal division of resources.

This experiment demonstrates that existing inequality can have an impact on preferences for inequality. The effect in this experiment is present even though perceived fairness in the 'unequal' experimental condition is lower. In other words, even when people think of a situation as unfair, and want to reduce the unfairness (in this case, by not offering the winner a full $9), their attempt at equalizing the outcomes still 'falls short' of the answers they would have given had they been in a more equal environment to begin with. In other words, *even* when people perceive a situation as unfair and attempt to correct for that, they may not endorse a distribution that is as equal as the one endorsed by people who start out in a more equal status quo.

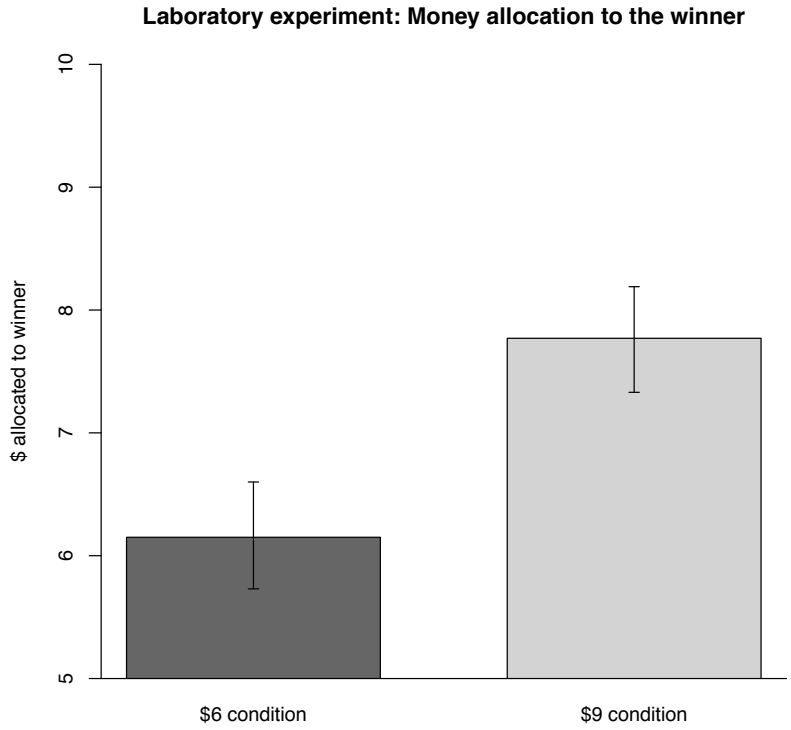

Figure 1: Laboratory experiment results. The bars represent the amount of money (out of $10) that the participants recommended as a fair allocation to the winner of an anagram competition. The 53 participants were randomly assigned to competitions where the winner got $9 or $6 respectively; the difference in subsequent recommendations is statistically significant at $p<0.001$.

Survey experiments: Attitudes toward income inequality

The laboratory experiment shows that it is possible for experienced inequality to impact preferences for inequality. However, the situation of the laboratory experiment is highly artificial: the 'income' under consideration is the pay from participating in a competition, and not income in the sense we usually mean when discussing income inequality. The two survey experiments below address this by asking people about their beliefs and preferences regarding real-life income inequality in the United States and Sweden, respectively. The hypothesis is that those who are informed that their society is more unequal than they previously believed will accept higher income inequality as desirable than people who do not receive this information.

Experiment 2: impact of information regarding inequality in the U.S.

The outcome variable in this survey experiment will be attitudes toward income inequality, and specifically the respondents' answers to the question of how large the income differences between different occupations ought to be. Inequality at the societal level is an abstract concept, and it can be difficult to formulate questions on inequality that are straight-forward and easy to understand for all respondents. With this in mind, I chose to use a set of questions on occupational earnings that has previously been used in the International Social Survey Project's (ISSP) Inequality Module and in the General Social Survey. The respondents are asked how much money they believe that a list of occupations makes in a year, after which they are asked how much they believe that these occupations *ought* to earn in a year. This provides estimates of the respondents' *perceived* level of income inequality and of their *ideal* level of income inequality.

The occupational groups used in this survey are: unskilled factory worker, skilled factory worker, owner of a small shop, a doctor in general practice, a member of the federal cabinet and a CEO of a large national corporation. To develop a uniform measure of perceived and ideal inequality, I use a justice index formalized by Jasso (1999, 2000), which has been previously used to analyze this question as asked in the ISSP (Austen 2002, Gijsberts 2002, Hadler 2005, Kelley and Evans 1993, Kelley and Zagorski 2004, Kenworthy and McCall 2008, Osberg and Smeeding 2006, Verwiebe and Wegener 2000). In this index, perceptions and preferences of inequality are captured as *log(income of high prestige occupations / income of low prestige occupations)*. Since I am focusing purely on perceptions of income inequality, without hypotheses regarding the relative prestige of occupations, I use the highest earning and lowest earning occupations, as defined by the respondent. For each respondent, then, the index of perceived and ideal income differences becomes *log(highest specified income / lowest specified income)*. This yields two indices for each person: a *perceived* income gap index, and an *ideal* income gap index. This log index is used for computing the statistical significance of my findings below; for ease of interpretation, the non-logged ratio of high to low incomes is provided in all figures. The intuitive interpretation of this non-logged ratio is simply "how many times more than the poorest occupation should the richest occupation earn?"

Based on correlational data from the ISSP, it is the case that almost all respondents underestimate the true extent of income inequality in the United States (Trump 2012, Osberg and Smeeding 2006, see also Norton and Ariely 2010 for a similar observation with respect to wealth inequality). This finding is replicated in my survey sample: 93% of respondents guessed that income differences between occupational groups are smaller than they truly are. From the point of view of experimental design, this is fortunate: no deception is required to create a treatment that tells individuals that income inequality is higher than they think it is. My treatment, thus, is simply a presentation of factually correct income data.

Participants and method

407 U.S. participants were recruited on Mechanical Turk in August 2012 to answer an "Opinion survey".[4] The mean age of participants was 30, 63% were female, 55% had a college degree or higher, 77% were Caucasian, and 20% self-identified as Republican. One half of my sample (203 participants) was the control group: they answered some basic demographic questions and the scale on belief in a just world (Lipkus 1991), followed by the questions on perceived and ideal income inequality. The remaining half of the sample (204 participants) received information regarding current income inequalities in the U.S. (see Supplemental Information for an image of the information treatment). This information was inserted immediately

[4] For a discussion of Mechanical Turk as a subject pool, particularly its suitability as an alternative to other convenience samples, see Berinsky et al. (2002) and Buhrmeister et al. (2011). There have been recent concerns regarding non-naïveté (Chandler et al. 2013) and misrepresentation (Shapiro et al. 2013) on Mechanical Turk; these are concerns that are worth taking seriously. In the case of the experiments presented here, no common or recurring psychological aptitude tests were administered, and I never allow "repeat participation" by a MTurk worker ID in more than one of my experiments, even in the case of separate research questions. Misrepresentation or demand effects are a concern on MTurk; however, in this particular study, which is clearly about income inequality (and where the researcher's account is visibly associated with a large institution with a liberal reputation), the demand effect is likely to be in the direction of encouraging respondents to exhibit more opposition to inequality, rather than more (particularly in the information treatment condition). Insofar as there is a demand effect at work here, it is thus likely to be in the opposite direction to my hypotheses.

after the participants gave their guesses for existing income inequality, and immediately before they gave their responses for how large income inequality *ought* to be. All respondents also indicated their occupation, their annual income, and answered six political attitude questions, including a question on whether it is the responsibility of the government to reduce income differences.[5]

Results and discussion

The results of the survey experiment are summarized in Figure 2 and Table 1. The outcome variable depicted in Figure 2 is a simple ratio measure of ideal income inequality (highest recommended income/lowest recommended income). After receiving the information treatment, the preferred level of income inequality rises from 9 to 14.3 - a 50% increase from control group preferences. The information that income inequality is higher than previously thought (and preferred) thus caused an *upward adjustment* in estimates of how much income inequality is desirable. This result is robust to the inclusion of relevant covariates; see Models 1 and 2 in Table 1. As can be seen in Model 2, covariates have expected effects: Republican partisans prefer higher income inequality than other participants, as do participants with higher levels of belief in a just world. The treatment effect is not limited to a partisan subgroup of participants: both Democrats and Republicans come to prefer higher income inequality after receiving the information treatment (see Supplemental Information for the statistical analysis). Perceptions of income inequality also predict preferences for income inequality, even in the presence of other control variables; this finding echoes the conclusions of previous correlational studies of the determinants of preferences for income inequality (Gijsberts 2002, Kelley and Zagorski 2004, Austen 2002). The fact that the information treatment, which increases perceptions of income inequality, also increases preferred inequality suggests that the correlation between perceptions and preferences has a causal element in the direction from perceptions to

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[5] The six political attitude questions were: 'How often do you trust the government in Washington to do what is right?', 'Differences in income in America are too large.', 'Large differences in income are necessary for America's prosperity.', 'It is the responsibility of the government to reduce the differences in income between people with high incomes and people with low incomes.', 'The rich pay too much in taxes.' and 'The government has a responsibility to help the poor.'

preferences.[6]

It is important to note that while preferences regarding inequality move up in response to the information treatment, almost no respondents completely accept the actual level of income inequality as justified.[7] Just as most respondents initially underestimate the true level of income inequality, most also prefer a reduction in inequality even after receiving the information treatment. This tendency is consistent with the observation that not all inequalities are always thought of as justified, and that resistance to inequalities exists in the political world. Rather than showing that *all* inequality is automatically accepted, my argument here is more modest: increased inequality increases, on average, our perception of how much inequality is acceptable.

The upward adjustment in respondents' opinions regarding acceptable income inequality is a step removed from direct policy attitudes. Indeed, it is possible that the upward adjustment of inequality preferences is overwhelmed by an increase in demands for redistributive policies, designed to reach this new (albeit updated) preference for inequality. After all, a plausible hypothetical link between increasing income inequality and increasing demands for redistribution is that, as people are made aware of inequality, they start demanding that the government do something about it. In order to test for this impact of the information treatment, the respondents were asked a number of policy attitude questions at the end of the survey. The degree of agreement with the statement 'It is the responsibility of the government to reduce the differences in income between the rich and the poor' is shown by experimental condition in the second panel of Figure 2, and in Models 3 and 4 in Table 1. As the analysis shows, there are no significant differences by treatment condition. Predictably, both partisanship and degree of belief in a just world influence redistributive preferences in expected directions. Essentially identical null results are

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[6] This does not rule out the existence of reverse causality: for example, a motivated perception mechanism may result in a causal direction from preferences to perceptions. The experiments in this paper do not speak to the existence of this causal direction.

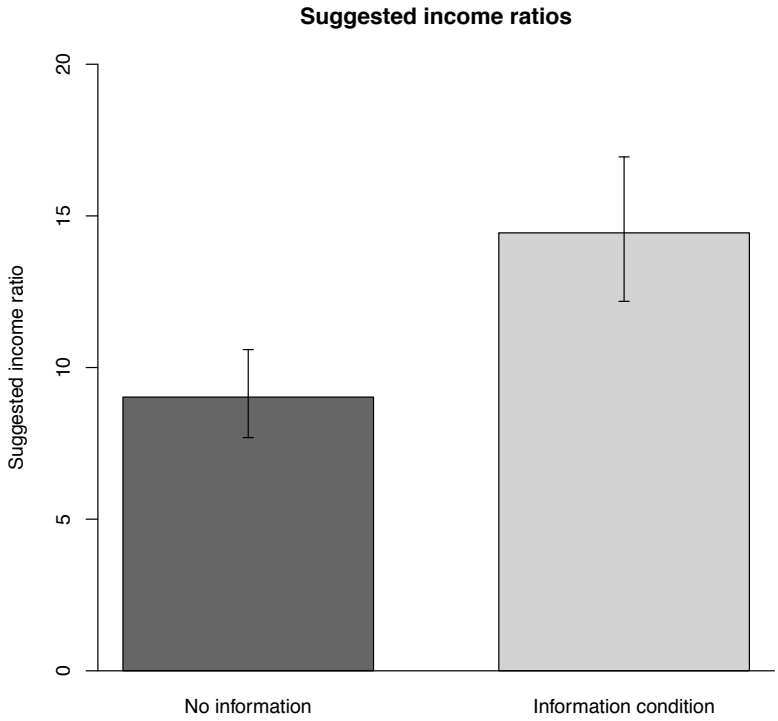
[7] 1 person out of 203 in the control group thought that their perceived level of inequality was ideal or lower than ideal, and 2 people out of 204 in the treatment group thought that their perceived level of inequality was ideal or lower than ideal.

found with the related propositions ‘Differences of income in America are too large’ and ‘Large differences in income are necessary for America's prosperity’.

In conclusion, while the information treatment successfully caused respondents to upward revise their estimates for how large income differences are acceptable, it did not have any discernible impact on their attitudes toward the necessity of government redistribution or even on whether differences of income in America are too large. As discussed above, the psychological mechanisms of status quo bias and motivated belief in a just world are two theories that provide explanations for why this result occurs. However, one alternative explanation may be that this phenomenon, rather than stemming from universal psychological mechanisms, is particular to the American ethos (broadly understood as a widespread belief in the American dream, i.e. that individuals who work hard can make it and by corollary, individuals who have made it deserve their fortune). The following two experiments put these alternative explanations to the test: replicating the survey experiment in Sweden shows that the phenomenon is not uniquely American, and manipulating the motivation to believe in a just world illustrates its causal role in producing the mental adjustment to higher inequality.

Dependent variable:	**Inequality preference**				**Support for redistribution**			
	Model 1		Model 2		Model 3		Model 4	
	Coef	*S.E.*	*Coef*	*S.E.*	*Coef*	*S.E.*	*Coef*	*S.E.*
Information treatment	**0.47**	0.12	**0.52**	0.11	0.18	0.12	0.12	0.11
Belief in Just World scale			**0.18**	0.07			**-0.28**	0.07
Partisan identity: Republican			**0.44**	0.15			**-1.1**	0.15
Perception of inequality (log)			**0.23**	0.03			-0.01	0.03
Intercept	**2.20**	0.08	**0.70**	0.27	**3.04**	0.09	**4.25**	0.28
N	407		403		406		402	
Adjusted R^2	0.03		0.17		0.003		0.20	

Table 1. Results of survey experiment with American sample. The information treatment presents participants with information on actual income inequality in the U.S., informing the participant that inequality is higher than they previously thought. Inequality preference is measured as log(highest suggested income/lowest suggested income). Support for redistribution is measured on a 1-5 scale where 5 indicates stronger support.



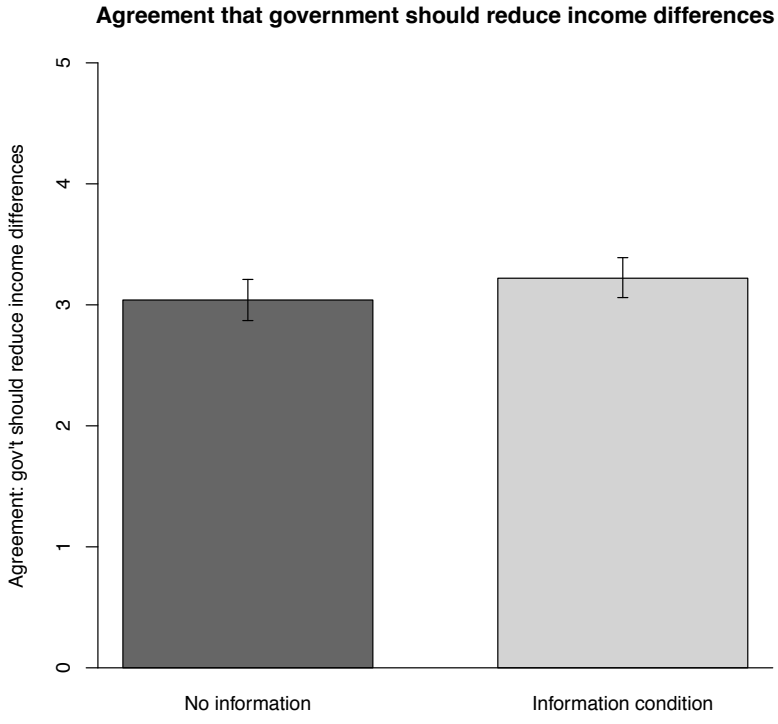


Figure 2. Results of survey experiment with American sample. The top panel shows preferred ratios of income inequality between the highest and lowest paid occupations (see text for list of occupations) by information treatment condition. The values are predicted values based on Model 1 in Table 1. The bottom panel represents support for redistribution by experimental condition; values are predicted from Model 3 in Table 1.

Experiment 3: impact of information regarding inequality in Sweden

Experiment 3 is a replication of Experiment 2, carried out in Sweden. Beyond the usual value of a direct replication, the change of political environment to Sweden also serves as an indirect mechanism check. If the results of Experiment 2 were due to a uniquely American ethos, we would not expect to find the same result in Sweden, a country with an extensive welfare state, higher taxation and lower income inequality than the U.S. (Esping-Andersen 1990, Osberg 2003). Swedish citizens are more in favor of government redistribution than are Americans (Svallfors 2004), and recommend lower income inequalities as ideal in the type of income questions that are used in this experiment (Svallfors 1997). Finally, Swedes are more likely than Americans to believe that luck determines a person's income (Alesina and Angeletos 2002). In other words, if American exceptionalism in attitudes toward luck vs. desert in determining an individual's income is wholly responsible for the information effect found in Experiment 2, the results should not be replicable in Sweden. On the other hand, if the phenomenon that produced the effect is a human universal, as the theories of status quo bias and system justification suggest, then the different political environment may attenuate but will not entirely remove the impact of the status quo on inequality preferences.

Methods and participants

The experimental set-up is a direct replication of Experiment 2, albeit with a modified information treatment that gave participants correct information on income inequalities in Sweden. Income inequality in Sweden is lower than in the United States (see Supplemental Information), but just like in the American sample, most Swedes underestimate the extent of inequality in their country; 6 out of 250 participants, or 2.4% guessed that income inequality was as high or higher than the true values. It follows that the information treatment in this experiment serves the same function as in Experiment 2: it informs participants that inequality is higher than they previously believed.

250 participants were recruited in Sweden in July-August 2013. The participants were recruited from a combination of a psychology study pool at a Swedish university (90 participants; the study pool does not include undergraduates majoring in psychology) and the online study pool "Studentkaninen" (240 participants).[8] All participants took the survey online and received a lottery ticket (approx. value $5) for their participation. The participants ranged in age from 19 to 59 (mean age 26, median age 24), and 60% were female. 47% had a university education. 41% of the participants reported voting for a left-wing party in the last general elections; 27% reported voting for a right-wing party. The participants all lived in urban areas; the vast majority lived in the greater Stockholm area (including Uppsala). During the experiment, participants only answered demographic questions, filled in the Global Belief in Just World scale, and answered the questions on perceived and preferred income inequalities followed by four political opinion questions.[9]

Results

The replication was successful, and the results of the experiment are presented in Figure 3 and Table 2. Receiving information regarding actual income inequality in Sweden moves the participants' mean recommended income ratio from 3.0 to 3.6 – a 20% increase that is statistically significant at the 95% confidence level. This increase occurs even though the Swedish participants recommend much lower income differences as ideal and are more in favor of government redistribution than the American participants in Experiment 2. Further replicating the findings of Experiment 2, the information treatment has no impact on the Swedes' support of

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[8] The online study pool at www.studentkaninen.se is run by researchers affiliated with Karolinska University, and is primarily used to recruit participants for clinical and psychological studies. The site is open to the public and anyone can sign up as a participant.

[9] The political opinion questions were: 'How often do you trust politicians?', 'Income differences in Sweden are too large', 'Large differences in income are necessary for America's prosperity.', and 'It is the responsibility of the government to reduce the differences in income between people with high incomes and people with low incomes.'

government redistribution, as the bottom panel of Figure 3 and Models 3 and 4 in Table 2 illustrate.

Discussion

The successful replication, first and foremost, increases confidence that the findings of Experiment 2 were not obtained by chance or were in some other way a feature of the peculiarities of the convenience sample obtained through Mechanical Turk. Further, this replication shows that the mechanism by which expectations for fair inequality change is not solely the function of an American ethos. The point estimate for the size of the treatment effects is substantially smaller in the Swedish sample; there are several possible explanations for why this may be. It is possible that a different political and ideological background reduces the impact of this information: Swedes may be less likely to attribute high incomes to individual merit. This interpretation is supported by the fact that the Swedish participants scored lower on the Belief in Just World scale than the American participants. On a scale from 1 to 6, where higher numbers indicate a stronger belief that the world is just, the mean Swedish score was 2.82 while the mean American score was 3.24. However, it is also the case that the factual inequality to which participants were exposed was substantially smaller in the Swedish case (the CEO's of the largest Swedish companies make 48 times the salary of an average unskilled factory worker; in the American experimental information treatment, this ratio was 480). In light of this difference, a status quo bias mechanism (in particular, anchoring) predicts that the lower inequality in Swedish numbers would lead to smaller 'adjusted' estimates of ideal inequality. This may explain the lower impact of these numbers on final estimates. In other words, there are several plausible reasons for the lower information effect in the Swedish sample, and this experiment cannot distinguish between these explanations. The experiment does show that the process by which individuals adjust their expectations for desirable inequality is present in two very different socio-political environments. The question of which mechanisms are at work is now further explored in Experiment 4.

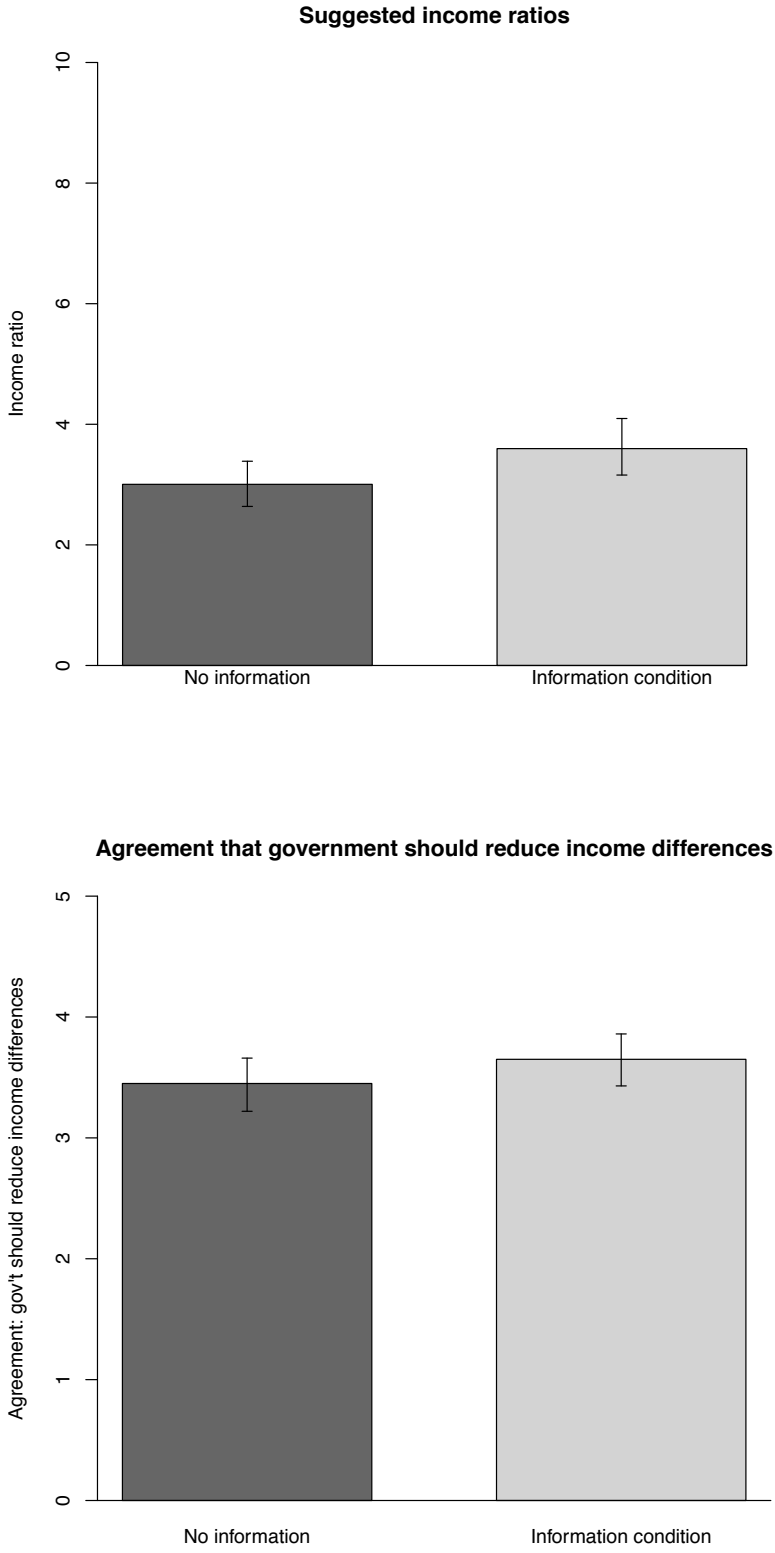

Figure 3. Results of survey experiment with Swedish sample. The top panel shows preferred ratios of income inequality between the highest and lowest paid occupations (see text for list of occupations) by information treatment condition. The values are predicted values based on Model 1 in Table 2. The bottom panel represents support for redistribution by experimental condition; values are predicted from Model 3 in Table 2.

Dependent variable:	**Inequality preference**				**Support for redistribution**			
	Model 1		Model 2		Model 3		Model 4	
	Coef	*S.E.*	*Coef*	*S.E.*	*Coef*	*S.E.*	*Coef*	*S.E.*
Information treatment	**0.19**	0.09	**0.24**	0.08	0.21	0.16	0.22	0.14
Belief in Just World scale			**0.19**	0.06			**-0.35**	0.10
Last vote: right-wing party			**0.26**	0.10			**-0.97**	0.17
Perception of inequality (log)			**0.38**	0.05			-0.03	0.08
Intercept	**1.09**	0.07	-0.15	0.19	**3.44**	0.11	**4.74**	0.34
N	249		240		249		240	
Adjusted R^2	0.01		0.26		0.003		0.21	

Table 2: Results of survey experiment with Swedish sample. The information treatment presents participants with information on actual income inequality in Sweden, informing the participant that inequality is higher than they previously thought. Inequality preference is measured as log(highest suggested income/lowest suggested income). Support for redistribution is measured on a 1-5 scale where 5 indicates stronger support.

Experiment 4: The role of motivated belief in a just world

The three experiments presented so far have demonstrated that when (perceptions of) inequality change, expectations for what constitutes fair inequality also change in the same direction. The main theoretical mechanisms that have been proposed for this effect are status quo bias and motivated belief in a just world. It is likely that both elements of human psychology are at play in producing the adjustment effect. However, while cold cognitive mechanisms are not dependent on socio-political environments, the same cannot be said for motivated beliefs in a just world. It is one of the predictions of system justification theory that the political and social environment can increase or decrease the strength of the motivation to believe in a just world; applied to the question of income inequalities, this implies that the extent to which public opinion adjusts to and comes to accept income inequalities as justified may depend on the political environment. Because of this prediction, it becomes important to explore whether motivated thinking is at work in producing the results presented here. Experiment 4 directly tests whether motivated belief in a just world influences adaptations to income inequality by experimentally manipulating the strength of the system justification motivation. The hypothesis will be that, following exposure to the information treatment, experimentally increasing the motivation to believe that the world is just will further increase preferences for inequality (beyond the already demonstrated information treatment effect).

Manipulating the system justification motivation

It is known that the system justification motivation (the motivation to think of existing social systems as fair in order to avoid compromising the general belief in a just world) varies not only across individuals, but also has situational determinants. Jost and Hunyady (2002, p.111) argue that system justifying tendencies provide a "palliative function in that they reduce anxiety, guilt, dissonance, discomfort, and uncertainty". The particular discomforts that are reduced by engaging in system justification are feelings that the world is unfair or feelings of low personal control over valued individual outcomes. As such, system justification has been shown to be activated under conditions of: "(a) system threat, (b) system dependence, (c) system inescapability, and (d) low personal control" (Kay and Friesen 2011, p.360).

These situational determinants of the motivation to justify the system can be experimentally manipulated (see Kay et al. 2009 for an overview of experiments in this framework). The experimental manipulations used in this literature are designed to temporarily increase the system justification motivation and in this experiment I use a pre-existing experimental treatment taken from this literature. The treatment is a paragraph of text that manipulates perceptions of the inescapability of the social system; for previous uses of this experimental treatment see Kay et al. (2009) and Laurin et al. (2010b). The full text of the treatment and control paragraphs is included in the Supplemental Information accompanying this article. This paragraph tells participants that it will become harder to escape their social system (by emigrating from the United States). This information makes participants feel more dependent on their social system, and it is expected that the resulting psychological discomfort will increase their motivation to believe that this system is fair. This effect can be broadly referred to as a 'system threat' effect; below I will follow convention and refer to the treatment as a 'system threat treatment'. Note that, importantly for this experiment, the paragraph does not mention economic inequality; thus, it should not impact preferences for income differences *other* than through the system justification motivation. I hypothesize that, in the presence of information on income inequality, participants with an experimentally increased system justification motivation will accept higher income inequality than will participants who read a neutral control paragraph.

Methods

This experiment is a replication of Experiment 2, with the added condition of reading either a system threat treatment or control paragraph, where the treatment paragraph (described above) is designed to temporarily increase the participant's motivation to believe the world is just. The experimental design thus has a 2 (information about income inequalities) x 2 (system justification manipulation) set-up. Below, the terms "control" and "treatment" condition will refer to the type of paragraph read by the participant (and not whether or not the participant saw the information treatment), unless otherwise specified.

Participants:

597 participants were recruited Amazon's Mechanical Turk in July 2013. 9 participants were excluded from the sample due to giving nonsensical answers. The mean age of the remaining 589 respondents was 30 years, with a median of 27 and a range from 19 to 74. 37% were female, 56% had a college degree, and 61% identified as Democrats (including independents who lean Democrat) while 20% identified as Republicans (including independents who lean Republican). 71% self-identified as Caucasian, 13% as Asian and 7% as African American. On the Belief in Just World Scale, which ranges from 1-6, the mean response was 3.36 and the median response was 3.38.

Results:

The results are presented in Table 3. Across the whole sample, individuals who read the system threat paragraph endorsed higher income inequality as ideal; this is shown in Models 1 and 2 in Table 3. Adding an interaction effect reveals that the impact of the threat paragraph occurs entirely among people who were exposed to information regarding income inequality; this relationship is illustrated in Figure 4. Because the treatment paragraph makes no mention of income inequality, the only theoretical explanation for these results is the following sequence: a) the paragraph successfully increased participants' motivation to justify their social system as fair, b)

the presentation of income inequality data then presented a salient feature of the participants' society, and c) the participants proceeded to interpret this income inequality as more fair than they would have done in the control condition. Therefore, at least part of the phenomenon by which individuals adjust their expectations for fair income differences in the face of increasing inequality occurs because of the human motivation to believe that the world is fair.

In addition to providing evidence in favor of the system justification mechanism, the results of this experiment have potential implications for studying the relationship between national political events and the formation of public opinion. The topics that are discussed in typical system justification manipulations include not only possibilities for migration but also the degree to which individual outcomes depend on the social system and the presence of outside threats to the political system. These topics are not directly about inequality, but they are profoundly political and may readily be discussed on the front pages of national newspapers - possibly alongside reports about historically high levels of CEO pay. In light of these findings it is interesting to consider whether the presence or absence of outside threats to the nation can modify reactions to domestic developments such as increasing income inequality; this and other questions on the role of system justification in public opinion formation may provide interesting future research agendas.

Conclusion

Variations in public attitudes toward income inequality are only incompletely understood, but we do know that increases in inequality do not systematically result in demands for redistribution. With the support of four experiments, I have argued that one impediment to the (expected) formation of redistributive attitudes is that when income inequality increases, the public adjusts its perception of what is fair in income differences *in the same direction*.

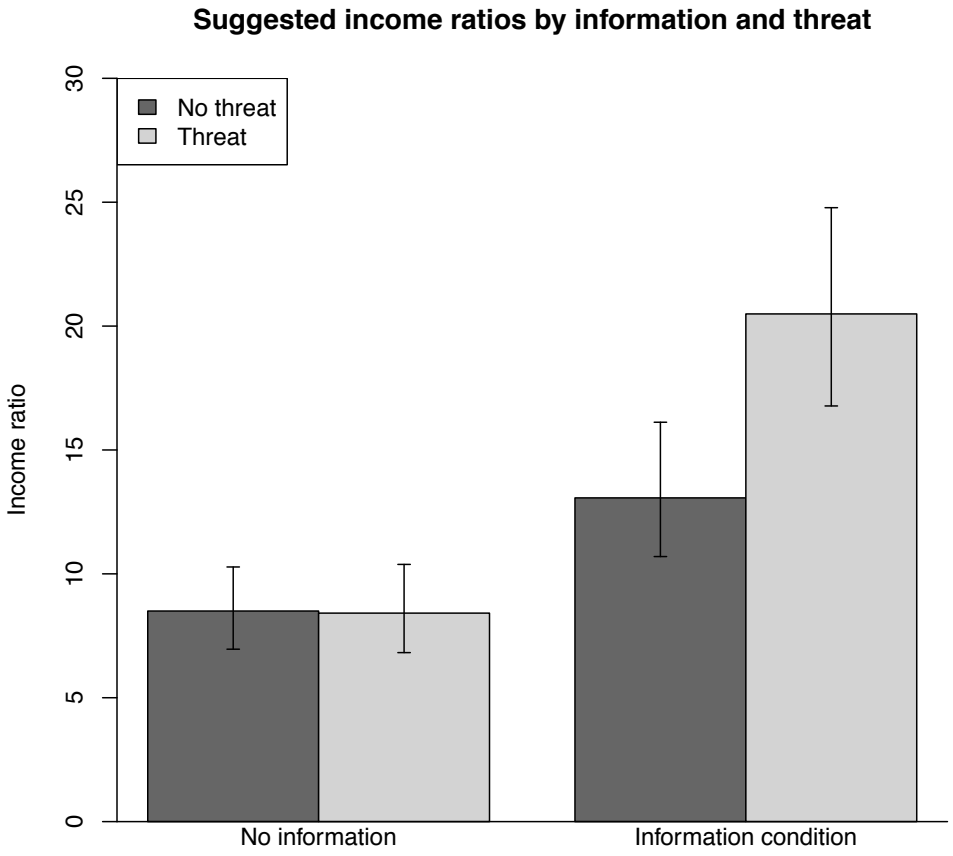

Figure 4. Results of survey experiment with an experimental manipulation of the system justification motive (threat). The figure shows preferred ratios of income inequality between the highest and lowest paid occupations (see text for list of occupations) by information and threat treatments. The values are predicted values based on Model 3 in Table 3.

Dependent variable:	Inequality preference							
	Model 1		Model 2		Model 3		Model 4	
	Coef	*S.E.*	*Coef*	*S.E.*	*Coef*	*S.E.*	*Coef*	*S.E.*
Information treatment	**0.66**	0.10	**0.71**	0.10	**0.44**	0.15	**0.52**	0.14
Threat (System inescapability)	**0.22**	0.10	**0.24**	0.10	-0.01	0.15	0.04	0.14
Threat*Information					**0.45**	0.21	**0.39**	0.19
Belief in Just World scale			**0.24**	0.06			**0.24**	0.06
Partisan identity: Republican			**0.29**	0.12			**0.29**	0.12
Perception of inequality (log)			**0.24**	0.03			**0.24**	0.03
Intercept	**2.03**	0.09	0.24	0.25	**2.14**	0.10	0.35	0.25
N	589		582		589		582	
Adjusted R^2	0.07		0.19		0.08		0.19	

Table 3: Results of survey experiment with system justification manipulation. The information treatment presents participants with information on actual income inequality in the United States, informing the participant that inequality is higher than they previously thought. The system inescapability treatment increases the motivation to justify the social system. Inequality preference is measured as log(highest suggested income/lowest suggested income).

In a laboratory experiment, I showed that participants took their cues for appropriate levels of inequality from the experimental set-up: participants who took part in a game with relatively unequal rewards subsequently suggested a more unequal reward distribution as fair. In two survey experiments, carried out in the United States and Sweden, I replicated this finding using real-life income inequality as a referent. When participants were given the information that income inequality in their country was higher than they believed it to be, they upward revised their suggestions for acceptable levels of income inequality. Despite changed appraisals regarding the acceptable range of income differences, there was no change in the respondents' opinions on whether it is the government's responsibility to reduce income differences or even whether income differences in their country are too large. I argue that these results are indicative of a motivated reasoning process whereby individuals ascribe unexpectedly high income differences to individual desert in a (subconscious) effort to maintain their pre-existing level of belief in the fairness of their social system. The fourth experiment directly tested this mechanism by experimentally manipulating the system justification motive and showed that when the motive is artificially activated, people react to information on income differences by adjusting their fairness expectations up further than when the motive has not been activated.

These findings can help us make sense of some of the variation between times and places when it comes to public acceptance of income inequality. Cross-nationally, it tends to be the case that more unequal countries exhibit more support for inequality - and if inequality generates its own support, this is not surprising. How strong this effect is - for example, whether these effects persist over time or are eradicated soon after leaving the laboratory/survey environment is one important remaining question that should be addressed by future research. A related research question that deserves future attention is the role of communications and presentation of data in the creation of this effect (all experiments in this paper have presented earnings information in a non-partisan way). If *all* information regarding the currently high levels of income inequality causes the public to support higher wage gaps as fair, the findings ought to give pause to left-wing organizations that seek to change minds regarding the acceptability of inequality by providing information to the public. If, on the other hand, there are important differences in how this information is received

depending on source and presentation, then exploring the nature of such variation will be important for better understanding the over-time development of acquiescence as well as resistance to income inequality.

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Supplemental Information

Supplemental Information I.

The information treatments provided to participants in the survey experiments.

Experiment 2:

Occupation	Mean annual salary in 2010
Chairman of a large national corporation	$11,400,000
Member of the cabinet in the federal government	$199,700
Doctor in general practice	$173,860
Owner of small shop	$74,580
Skilled factory worker	$33,770
Unskilled factory worker	$24,240
Sources: Bureau of Labor Statistics, AFL-CIO, Payscale.com	

Experiment 3:

Yrke	Genomsnittlig månadslön (SEK)
VD av ett stort nationellt företag	1 100 000
Riksdagsledamot	58 300
Läkare	57 400
Ägare av en liten butik	31 300
Yrkesutbildad fabriksarbetare	26 300
Ej yrkesutbildad fabriksarbetare	22 900

Uppgifterna gäller 2011 och kommer från Statistiska Centralbyrån samt LO.

Experiment 4:

Occupation	Average annual salary in 2012
Chairman of a large national corporation	$15,100,000
Member of the cabinet in the federal government	$199,700
Doctor in general practice	$180,850
Owner of small shop	$94,180
Skilled factory worker	$34,500
Unskilled factory worker	$24,620
Sources: Bureau of Labor Statistics, U.S. Executive Schedule, Equilar.Inc	

Supplemental Information II.

Additional analysis of Experiment 2: adding an interaction variable between the information treatment and partisan identity reveals that both Democrats and Republicans upward adjust their perceptions of fair income inequalities after receiving the information treatment. There sample has only 20% Republicans, which increases the uncertainty of the estimates, even as point estimates remain the same for both partisan groups.

Dependent variable:	**Inequality preference**			
	Model 1		Model 2	
	Coef	*S.E.*	*Coef*	*S.E.*
Information treatment	**0.43**	0.13	**0.44**	0.12
Partisan identity: Republican	0.39	0.20	0.23	0.19
Information*Republican	0.42	0.29	0.45	0.28
Belief in Just World scale			**0.18**	0.07
Perception of inequality (log)			**0.23**	0.03
Intercept	**2.11**	0.09	**0.73**	0.27
N	402		402	
Adjusted R^2	0.07		0.17	

Table S1. Results of survey experiment with American sample: interaction with partisan identity. The information treatment presents participants with information on actual income inequality in the U.S., informing the participant that inequality is higher than they previously thought. Inequality preference is measured as log(highest suggested income/lowest suggested income). Support for redistribution is measured on a 1-5 scale where 5 indicates stronger support.

Supplemental Information III.

Treatment [control] paragraph used in Experiment 4 to experimentally increase the motivation to believe the world is just.

"Since the 1950's, a group at Harvard University, in Cambridge, has been using current political and international trends to predict patterns of population movements. Recent reports by this group of experts have indicated that people who wish to move out of the United States will find it increasingly difficult [easy] to do so, in the coming years. Thus, even if the number of Americans wishing to leave and settle elsewhere remains constant, we should expect a significant slow-down [increase] over the next few years in terms of those who actually are able to do so."