Mar 2020 No.463

Equalizing Incomes in the Future: Why Structural Differences in Social Insurance Matter for Redistribution Preferences

Verena Fetscher

WORKING PAPER SERIES

Centre for Competitive Advantage in the Global Economy

Department of Economics

Economic and Social Research Council

Equalizing Incomes in the Future: Why Structural Differences in Social Insurance Matter for Redistribution Preferences

Verena Fetscher*

Abstract

Why is support for income redistribution among the rich higher in some Western European welfare states than in others? The argument I propose builds on structural differences in the social insurance design. Flat-rate systems provide social benefits in equal amounts to everyone in need, while earnings-related systems provide benefits in relation to previous earnings. These differences in the configuration of the welfare state historically go back to Bismarck and Beveridge and have implications for questions of distributive justice and fairness. If individual incomes have fair and unfair components, earnings-related systems maintain both components during periods of economic hardship, while flat-rate systems equalize fair and unfair income differences. With a combination of observational and experimental data, I show that average support for redistribution among the better-off is higher in earnings-related systems and participants in a laboratory experiment increase transfer shares in allocation problems which maintain given endowment differences.

Word count: 9,929

I am gratefull to David Rueda, Daniel Stegmueller, Dominik Duell, Vera Troeger, Nikolay Marinov, Daniel Mueller, Bastian Becker and seminar participants and discussants at APSA (August 31-September 03, 2017) EPSA (June 22-24, 2017), NYU CESS 10th Annual Experimental Political Science Conference (February 24-25, 2017), Fourth Annual Toronto Political Behaviour Workshop (November 11-12, 2016), the Behavioral Models of Politics Conference (May 12-14, 2016) and participants in various workshops at the University of Mannheim and Nuffield College. This work was supported by the University of Mannheim's Graduate School of Economic and Social Sciences funded by the German Research Foundation. I thank the SFB 884 at the University of Mannheim (funded by the German Research Foundation) for financial support to conduct laboratory experiments.

*University of Hamburg, verena.fetscher@uni-hamburg.de

Inequality is one of the defining challenges of our time and the question of who gets what and why once again entered center stage in the politics of the 21st century. The rising gap between the haves and the have-nots comes with grave societal implications. Recent research links inequality and economic insecurity to new electoral cleavages, including the rise of populism (Dal Bó et al. 2018; Algan et al. 2017; Guiso et al. 2017). Other research shows that inequality appears to manifest itself by reducing mobility across generations, leading to what is referred to as "The Great Gatsby curve" (Corak 2013). Inequality even influences how we are governed. By now, there is strong empirical evidence indicating a link between economic inequality and political influence. This research shows that the interests of the rich matter more for political decision-making than the interests of the poor (Schlozman, Brady, and Verba 2018; Gilens 2012; Bartels 2008; Gilens 2005). One key characteristic of democracy is equal government responsiveness to the preferences of all citizens (Dahl 1973). Economic inequality therefore threatens the very core of our democratic understanding. When asking what might be done about inequality it is then particularly the interests and preferences of those who are more influential in politics that need to be understood. The central question therefore is, why do the rich support redistribution?

The argument I propose in this article is that differences in the social insurance design help to explain variation in support for redistribution among the rich. Welfare states differ systematically in how they organize social insurance, and central differences go back to Beveridge and Bismarck. The Beveridgean welfare state builds on a principle of social solidarity. According to Beveridge (1942, 13f), "[s]ocial insurance should aim at guaranteeing the minimum income needed for subsistence." The rich and the poor receive the same total amount of benefits during periods of economic downturn, equalizing income differences in times of need. The Bismarckian welfare state, in contrast, "is commonly considered reactionary, Bonapartist and unsolidaristic" (Baldwin 1990, 61). It provides social benefits in proportion to previous earnings and thereby reflects existing market hierarchies during periods of economic hardship. I argue that these differences in the social insurance design matter because they have consequences for considerations of future

fairness. For example, a welfare state which maintains given income differences in the case of income loss also maintains fair and unfair income difference in future periods.

Furthermore, it is mostly the incomes of the rich that are affected by these differences in the social insurance design. The rich stand to lose more if they live in a welfare state which provides equal benefits to everyone in need as compared to one which provides benefits in proportion to previous earnings. But because supporting redistribution equates to demanding social insurance in a flat-rate system, as I will elaborate more thoroughly in the theoretical section of this article, they also stand to gain more *themselves* from supporting redistribution than they would in an earnings-related system. One of the standard explanations for redistribution preferences in the political economy literature, the social insurance model, builds on precisely this double-functioning of redistribution as social insurance for the future self. Here, the rich support higher levels of redistribution if they expect to be poor in the future (most influentially, Iversen and Soskice 2001; Moene and Wallerstein 2001; Varian 1980). Depending on their prospects of future income loss, the rich would then support higher levels of redistribution in flat-rate systems than in income stabilizing earnings-related systems. The fairness argument I propose will yield the exact opposite conclusion. I will derive the prediction that the rich support more redistribution if they expect to be rich in the future. By introducing fairness considerations, my argument also goes beyond previous institutional arguments which focus on an assessment of net benefits related to different configurations of the welfare state (Beramendi and Rehm 2016; Gingrich and Ansell 2012; Korpi and Palme 1998).

My theoretical framework builds on behavioral aspects that previous research has shown to be important for explaining redistribution preferences. One is other-regarding preferences and fairness considerations and the other one is future income expectations. The labor market affects both behavioral aspects by influencing the role that luck plays for determining individual incomes and by exposing individuals to risks of job loss. The welfare state responds to labor market dynamics and provides social insurance to protect individuals from these labor market risks. However, there are systematic differences in how the welfare state organizes social insurance. Structural differences in the social insurance

design have implications for the stability of given income inequality, and consequently determine the stability of fair and unfair income differences in the future. I expect people who are concerned about the well-being of others to respond to implications for future fairness as defined by the social insurance design. Support for redistribution then depends on the institutional arrangement of social insurance. The hypothesis I test in the empirical section of this article is that support for redistribution among the rich is, on average, higher in welfare states that maintain a given income distribution in future periods than in welfare states that equalize incomes between the rich and the poor during periods of economic hardship.

I combine observational and experimental approaches to empirically evaluate the stated hypothesis. For the observational analysis, I use calculations from the OECD tax-and-benefit calculator and compute an institutional indicator to measure central differences in the social policy design. Combined with data from the European Social Survey (ESS), I find that average support for redistribution among the rich is higher in income maintaining welfare states. In order to get better hold of the mechanism at play, I design modified decision-maker games which capture key aspects of the social insurance design. My experimental evidence confirms that transfer shares among other-regarding participants are higher in allocation problems which implement the earnings-related principle and maintain given endowment inequality in the case of loss. My empirical evidence suggests a general relationship between institutional structures and average support for redistribution among the rich and substantiates the argument that it is considerations of future fairness that help to explain this relationship.

The article makes four main contributions. First, it shows that social insurance differences help to understand why the rich support redistribution, and that this has to do with fairness implications of the social insurance design. Second, the argument contributes to the comparative political economy literature on redistribution preferences by systematically integrating other-regarding preferences, fairness considerations and institutional aspects. My argument therefore directly speaks to a more current literature in comparative political economy which incorporates other-regarding preferences into mod-

els for redistribution preferences (most notably, Rueda 2018; Dimick, Stegmueller, and Rueda 2016; Alesina and Giuliano 2011). Third, it provides empirical evidence based on a combination of observational and experimental analyses in order to better identify causal relationships. Finally, from the findings we can conclude that the interaction between institutions and preferences determines the leeway for government to tackle economic inequality.

Social insurance design and preferences for redistribution

In the sections to follow, I argue that the social insurance design has implications for fairness considerations, and that this matters for explaining redistribution preferences among the rich. I derive my argument in three steps. First, I introduce two key behavioral aspects relevant for my argument. One is other-regarding preferences and fairness considerations, the other one is future income expectations. Second, I propose that the labor market induces fair (merit) and unfair (luck) income differences and that it exposes individuals to a risk of future income loss. The welfare state mitigates labor market risks by providing benefits in the form of social insurance. In the third step, I explain how structural differences in the institutional arrangement of social insurance matter for questions of fairness. The important aspect relates to the stability of fair and unfair income differences during periods of economic hardship. I conclude that people respond to fairness consequences of the social insurance design and that this helps to explain why the rich in some welfare states support higher levels of redistribution than in others.

Other-regarding preferences, fairness considerations and future expectation

It is important first to introduce the behavioral elements I build on to derive this article's argument. One aspect is that other-regarding preferences matter for explaining support for redistribution. Experimental evidence, mainly from behavioral economics, suggests

that a large share of the population is concerned about the well-being of the worse-off (Engelmann and Strobel 2004; Andreoni and Miller 2002; Charness and Rabin 2002) and for equality (Bolton and Ockenfels 2000; Fehr and Schmidt 1999). Most important for the argument I propose, this research also shows that fairness considerations are important to understand other-regarding preferences. Cappelen et al. (2007) study fairness in complex allocation problems and find that people adhere to fairness ideals when deciding on how to share a produced outcome with others. Some people always keep everything to themselves (about 35% in the mentioned study), very much in line with the standard political economy assumption of materially self-interested agents, but many participants act in line with specific fairness ideals (see also Lefgren, Sims, and Stoddard 2016; Frohlich, Oppenheimer, and Kurki 2004; Konow 2000). It is therefore common practice in this literature by now to think of different distributional types (most influentially, Kerschbamer 2015; Cappelen et al. 2007; Fisman, Kariv, and Markovits 2007; Andreoni and Miller 2002), and to acknowledge that selfish types exist who are not concerned about the well-being of others and do not respond to fairness considerations in the first place. Fairness arguments therefore always only apply to the share of the population who shows concerns for fairness and, more generally, for the well-being of others.

Almås, Cappelen, and Tungodden (2019) recently find that fairness considerations travel well beyond the controlled environment of the laboratory and matter for understanding other-regarding behavior in the broader population[1]. Again, some people show little concern for fairness and do not redistribute at all (about 20% of the full sample). Nevertheless, this also means that most people are concerned about the well-being of others and respond to questions of fairness when making redistribution choices for other participants. In fact, the majority of the population in two countries, Norway and the United States, rejects inequalities arising from luck and factors that go beyond individual

[1]Connecting to a growing body of research investigating the composition of other-regarding preferences and social welfare concerns in the general population and confirming links to actual political behavior and support for redistribution proposals (Epper, Fehr, and Senn 2020; Kerschbamer and Müller 2020; Fisman, Jakiela, and Kariv 2017).

control (Almås, Cappelen, and Tungodden 2019, 24).

These behavioral findings very much speak to previous political economy research arguing for the importance of fairness in explaining redistribution preferences. Most notably, Alesina and Angeletos (2005) find, based on observational data, that people who belief that luck determines individual earnings are more likely to support left policies (see also Alesina and La Ferrara 2005a; Corneo and Grüner 2002; Fong 2001). However, while it is common in behavioral economics to take type-based differences into account when explaining redistribution preferences, the political economy literature mainly focuses on average effects (both in theory and empirical analyses). The idea that fairness concerns only matter to people who respond to fairness considerations and non-selfish motives in the first place has not been systematically integrated yet. Nonetheless, the distinction is crucial from a theoretical point of view. Arguing that it is the other-regarding rich who respond to considerations of fairness and take into account institutionally defined fairness implication is very different from arguing that the selfish rich become altruistic depending on the institutional arrangement of social insurance.

The other behavioral aspect I build on relates to future expectations. The notion that people take into account the risk of becoming unemployed when making redistribution decisions lies at the core of the social insurance model for redistribution preferences. In brief, the social insurance model assumes that people are only concerned about their own material well-being (building on the Meltzer-Richard model for redistribution preferences (Meltzer and Richard 1981)). The rich then support redistribution, if they expect to be poor themselves in the future (Alt and Iversen 2017; Rehm 2016, 2009; Mares 2003; Iversen and Soskice 2001; Moene and Wallerstein 2001; Sinn 1995). The main idea goes back to Varian (1980, 51), stating that public support for redistribution programs rests more on the social insurance aspect than on altruistic concerns for a more equal distribution of incomes. The importance of expected life-cycle income and prospects for upward or downward mobility on redistribution preferences outside the social insurance framework has most recently been confirmed by Rueda and Stegmueller (2019) (following Alesina and La Ferrara 2005b; Benabou and Ok 2001; Piketty 1995).

The theoretical framework I propose unites these two behavioral aspects and suggests that the other-regarding rich respond to considerations of fairness and take into account future income dynamics when making redistribution choices. The rich's expectations about stability in their own life-cycle income directly corresponds to the stability of the income distribution as a whole. I therefore propose that the rich not only take into account their own income trajectories, but also the implications their expectations have for the stability of given income differences. The general idea is simple. If the rich know that their own income is relatively stable over time, they also know that they will be better-off than the poor in future periods. Combining future income expectations with considerations of fairness, I then derive that the other-regarding rich support higher levels of redistribution if they expect to be rich in the future. I will elaborate on the importance of labor market dynamics and the welfare state in the next sections.

The labor market, fair and unfair inequality and risk exposure

Certain aspects of the labor market directly speak to the behavioral elements introduced in the previous section. One aspect is that labor market earnings result from effort and productivity on the one hand, and from factors that go beyond individual control on the other. Research on intergenerational mobility often holds the view that it is particularly Europeans who tend to believe that the economic system is unfair, and that family background, networks, and a rigid social class structure determine the distribution of incomes. Alesina, Stantcheva, and Teso (2018) most recently show that Americans are indeed more optimistic about intergenerational mobility than Europeans, and respondents who are more pessimistic about mobility also tend to favor more generous redistribution policies (see also Bénabou and Tirole 2006; Alesina and Glaeser 2004; Piketty 1995). The distinction between fair and unfair components in individual incomes therefore plays a crucial role for understanding preferences for redistribution. Furthermore, the study by Alesina, Stantcheva, and Teso (2018) also shows that respondents across very different European welfare states hold very similarly pessimistic views about intergenerational mobility and therefore the importance of unfair factors in determining labor market earnings

(the authors include France, Italy, Sweden, the United Kingdom). The view that parts of the income distribution result from unfair factors therefore appears to be widely shared among Europeans.

The other labor market aspect relevant for the argument I propose is risk exposure. Labor market risk is important in the social insurance model because it exposes people to the prospect of being poor in the future. And because people are concerned about their material well-being, they want to insure against labor market risks. Risk exposure, however, also speaks to considerations of fairness. One key factor for the development of the modern welfare state was the demand for socioeconomic security (for example, Flora and Heidenheimer 1981). Social insurance evolved as a response to new risks that had emerged in modern industrialized societies, and its purpose was to reduce the role of chance in determining individual incomes (see Rosanvallon 2013). Risk still plays a key role in the current knowledge economy and risk exposure is, at least to some extent, beyond individual control (one can think of changes in the occupational structure due to automation, robotisation, and technological progress, or economic recessions such as the 2008 financial crisis). The labor market then exposes individuals to a risk of income loss and thereby eliminating both fair income differences resulting from individual effort and productivity (merit), and unfair income differences relating to factors that go beyond individual control (luck).

Once these aspects of the labor market are taken into account, it follows that fairness has a time dimension. The question of whether income inequality can be considered fair is to be assessed not only in the present and with regard to the importance of unfair factors in a given distribution of incomes, but also with regard to the stability of fair and unfair income differences in future periods. Welfare states differ systematically in how they respond to future fairness, and the main differences result from the institutional arrangement of the social insurance design. I present my argument on the importance of the governing principle of social insurance on redistribution preferences in the next section.

The social insurance design and future fairness

The welfare state has historically played a crucial role in distributing incomes between the rich and the poor (redistribution) and in insuring workers against risks inherent to the workplace (social insurance) (Flora and Heidenheimer 1981; Titmuss 1974). While redistribution reduces income inequality at a given point in time, social insurance stabilizes individual incomes over the life-cycle and thereby influences the stability of the income distribution as a whole over time. In brief, redistribution speaks to present fairness and the elimination of unfair components in a given income distribution while social insurance responds to future fairness and the stability of fair and unfair income components during periods of economic hardship.

Welfare states differ in how they organize the provision of social insurance and this has implications for future fairness. Welfare states in the Beveridgean tradition build on the idea of social solidarity and provide social benefits in equal amount to everyone. Social insurance is governed by a flat-rate principle, and the poor and the unemployed receive the same total amount of benefits. Fair and unfair income differences are therefore eliminated if chance exposes people to income losses. The Bismarckian welfare state, in contrast, emphasizes income stabilization. For example, it provides benefits in proportion to previous earnings if people lose their employment. Social insurance is governed by a earnings-related principle. The rich maintain their income position during out-of-work periods, and a given distribution of incomes is maintained even if the employed poor and the rich lose their current incomes due to labor market risks (see Baldwin 1990 for a summary on these different understandings of the welfare state).

The direct implication is that welfare states following the Bismarckian tradition of providing earnings-related benefits maintain fair and unfair income differences in the case of income loss. Welfare states providing flat-rate benefits in the Beveridgean tradition, in contrast, equalize given income differences between the rich and the poor during periods of economic hardship. I propose that the other-regarding rich respond to these institutionally determined implications for future fairness. People who consider parts of a given income distribution unfair support redistribution if the social insurance system maintains given

income inequality over time. If it is indeed the case that people are concerned about the well-being of others and respond to considerations of fairness (as behavioral research has shown), the empirical expectation is that average support for redistribution among the rich is higher in earnings-related systems than in flat-rate systems.

Another implication, mostly relevant for relating my argument to previous literature, follows from the interplay of redistribution and social insurance. In a flat-rate system, social insurance is fully redistributive and demanding social insurance implies support for rich-to-poor redistribution. In an earnings-related system, in contrast, benefits are provided in proportion to previous earnings and the unemployed rich are still better off than the poor. Redistribution operates independently of social insurance and demanding redistribution is different from demanding social insurance (see Casamatta, Cremer, and Pestieau 2000 for a formal approach). Following the logic of the social insurance model (Iversen and Soskice 2001; Moene and Wallerstein 2001; Varian 1980), support for redistribution among the rich should then be low in welfare states following the Bismarckian tradition of earnings-related benefits where redistribution provides no social insurance. In the following empirical part, I will show that the opposite is the case. Observational data indicates that average support for redistribution among the rich is higher in income-maintaining systems. My experimental evidence reveals the same patterns. Participants in a laboratory experiment increase transfer shares to another poorer participant if unfair endowment differences are maintained in the case of loss.

Combining observational and experimental approaches

In the empirical part, I test the hypothesis that average support for redistribution among the rich is higher in earnings-related systems than in flat-rate systems. I implement a two-step approach and combine an observational analysis with a strict experimental test of the proposed mechanism. This approach is an attempt to tackle two major issues related to an observational analysis in this context. One issue is that social benefit rules are defined on the country level. Fairness considerations related to the social insurance design therefore vary on the country level, and support for redistribution among the rich

needs to be compared between different welfare states. Cross-country comparisons then inspire well-known problems of endogeneity. Institutions themselves are likely to be the result of the prevalent preferences and beliefs of a given society (e.g. Hall and Taylor 1996). To add further problems, people may adapt their behavior to a given tax and benefit structure or sort based on their preferred welfare state, creating other sources of endogeneity (e.g. Gruber and Saez 2002 on behavioral responses). The second issue lies in isolating the fairness mechanism. One problem here is that the redistribution and social insurance objective of the welfare state always intersect to some degree (even though this is less the case in earnings-related than in flat-rate systems). This makes it difficult to cleanly isolate other-regarding preferences and fairness considerations from selfish motives. Barber, Beramendi, and Wibbels (2013) show that people appear to be unable to distinguish between insurance and redistribution if both mechanisms appear together, and Durante, Putterman, and van der Weele, Joël (2014) find that the insurance motive influences decision-making, but so do concerns for fairness and social preferences. The other problem is that fairness arguments strictly speak to people who care about fairness. Observational data therefore allows me to test for the average effect of the social insurance design on redistribution preferences, but it does not allow me to systematically test whether it is indeed the other-regarding rich who respond to fairness considerations.

Experimental methods help to bypass causality related issues by providing a controlled environment in which people make observable decision that have monetary consequences (Morton and Williams 2010 on experimental political science). I modify a within-subject dictator game and measure the effect of structural differences in the social insurance design on redistribution decisions. Participants in the role of the dictator never gain themselves from the allocations they make to another participant. Redistribution therefore serves no social insurance purposes. Additionally, individuals do not switch roles and each allocation problem is independent of previous decisions. This is to ensure that people do not play on reciprocity as another form of social insurance.

Experiments also provide means to differentiate between selfish and other-regarding individuals. Participants who always keep their endowments to themselves maximize

their own material well-being and are of a selfish type. Fairness arguments only apply to other-regarding participants. I therefore differentiate between selfish and other-regarding participants. My focus lies on how other-regarding participants respond to institutionally defined implications for future fairness. Additionally, endowments in my experiments are based on luck. Previous research has shown that people support higher levels of redistribution if they believe luck is the source of given income differences. I therefore measure redistribution choices in an environment where people know that luck *is* the source of inequality. Yet, I will show that transfer decisions depend on the stability of these unfair endowment differences.

The flip side of my argument is that people demand social insurance if fair income differences are equalized. However, one contribution I make with this article is precisely the link I generate between observational and experimental approaches. Empirical evidence for the social insurance model normally rests on the assumption that the standard indicator for measuring redistribution preferences also captures demand for social insurance (most recently, Alt and Iversen 2017). I circumvent this double-functioning in theory by proposing that the social insurance effect of demanding redistribution is smallest in those welfare states in which I expect to find highest support for redistribution. However, this means that my focus in the observational analysis lies on the redistribution side of the argument. In order to provide an as-clear-as-possible match between observational and experimental approaches, I will therefore only focus on support for redistribution in the experimental analysis.

Finally, I anchor experimental parameters in empirically relevant values to further improve the match between the observational and the experimental part of my analysis. It is important to note that participants in my laboratory experiments will be mainly undergraduate students. The clear advantage here is that students have little previous exposure with labor market dynamics. In addition to the abstract language I use to describe the allocation problems in the experiment, this serves as an additional means to guarantee that people respond to the logic of the allocation problems, rather than to previous experience which is likely to vary strongly across people.

Observational analysis

In the observational analysis, I first show that there is substantial variation in support for redistribution across advanced European welfare states. I then construct a benefit concentration indicator to measure differences in the institutional arrangement of social insurance across European welfare states. The main part of the observational analysis reveals a substantial link between support for redistribution among the better-off parts of society and differences in the social insurance design. Average support for redistribution among the rich is higher in earnings-related systems which maintain given income differences in the case of income loss.

Data

Survey data comes from the European Social Survey (ESS). ESS data includes measures for redistribution preferences and for individual income. The analysis covers 15 advanced Western European welfare states: Austria, Belgium, Denmark, Germany, France, Finland, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and Great Britain. I draw data from 7 rounds, covering the time period from 2002 to 2014[2]. Missing data is addressed with multiple imputation (King et al. 2001). Each imputed data set contains 184,292 observations. More information are given in Section A.1 in the supplementary information.

Preferences for redistribution

I use the most commonly used indicator for redistribution preferences from previous studies included in the ESS (e.g. Rueda and Stegmueller 2016, see also Alt and Iversen 2017 for a comparable measure). The survey question asks respondents whether they agree or disagree to the statement that the government should take measures to reduce differences in income levels. The item is measured on a 5-point strongly agree to strongly

[2]See Table A.1 in Section A.2 in the supplementary information for an overview of the survey years included in the analysis.

disagree scale. I reverse the scale to ease interpretation. High values correspond to strong agreement. I measure support for redistribution preferences among respondents who earn more than the mean income in each country. Specifications of the income indicator can be found in Section A.3 in the supplementary information.

61% of respondents who earn more than the average earner in each country respectively either agree or strongly agree with the statement that government should take measures to reduce income differences (support redistribution). Only 21% disagree or strongly disagree with the same statement (oppose redistribution). Average levels of support vary strongly across the 15 European countries.

Figure 1: Support for redistribution across advanced European welfare states (above mean earners, 2002-2014).

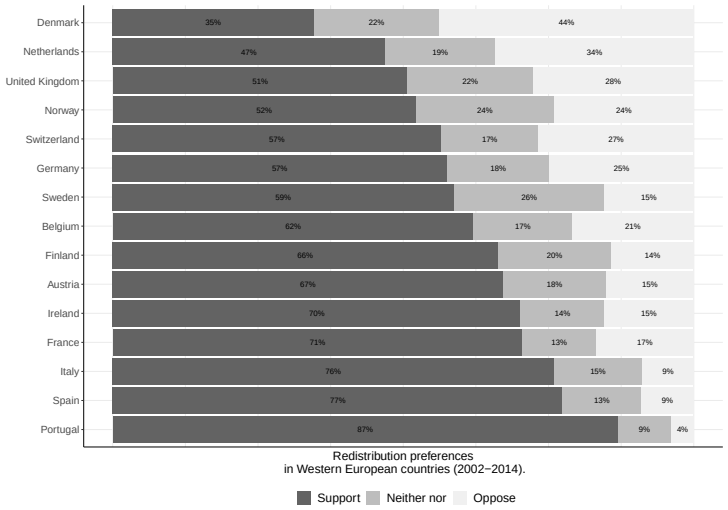


Figure 1 reveals stark variation in support for redistribution across advanced European welfare states among those who earn more than the mean income, averaged for the time period 2002 to 2014 (values are averages of five multiply imputed data sets). Average support for redistribution is low in countries like Denmark or the United Kingdom, and high in France or in Portugal.

Benefit concentration indicator

I compute a benefit concentration indicator in order to measure structural differences in the social insurance design. The indicator captures whether countries more closely follow

the earnings-related or the flat-rate principle in the provision of social benefits (for a similar approach, see Beramendi and Stegmueller 2019; Beramendi and Rehm 2016). Data comes from the Benefits and Wages series of the OECD, which quantifies complicated interactions of tax and benefit systems for different family types and labor market situations[3]. The tax-benefit calculator applies these rules to a range of prototypical income earners and allows for comparisons of how tax liabilities and benefit entitlements affect the disposable income of individuals and families in different labor market circumstances. I extract information on social benefits made available if a person becomes unemployed and calculate the proportion of previous income that is being replaced (unemployment replacement rate) over different levels of in-work income within countries and within similar in-work income between countries[4].

In order to measure structural differences, I plot replacement rates against rank-ordered income groups and compute an indicator for benefit concentration (Beramendi and Stegmueller 2019; Beramendi and Rehm 2016; Kakwani 1977). Calculation details are in Section B.2 in the supplementary information[5]. If social benefits follow a flat-rate principle, those at the top of the income ladder receive lower replacement rates than those at the bottom. In an earnings-related systems, replacement rates are constant over the income ladder. Higher values in the concentration coefficient indicate that social benefits are handed out in good accordance with the flat-rate principle.

[3] `http://www.oecd.org/social/benefits-and-wages.htm`

[4] Previous research shows that attitudes towards the welfare state seem to be most affected by temporally proximate shocks (Hacker, Rehm, and Schlesinger 2013).

[5] Figure B.3 in Section B.1 summarizes differences in net replacement rates for the average earner (AW), an income earner with half the average wage (AW 50%) and an income earner with twice the average wage (AW 200%) separately for each family type. I average over the years 2002-2014. Data comes from `http://www.oecd.org/social/benefits-and-wages.htm`. Results obtained from the OECD tax-benefit models, as well as any errors in their use and interpretation, are the sole responsibility of the user, not of the OECD.

Figure 2: Benefit concentration indicator across countries.

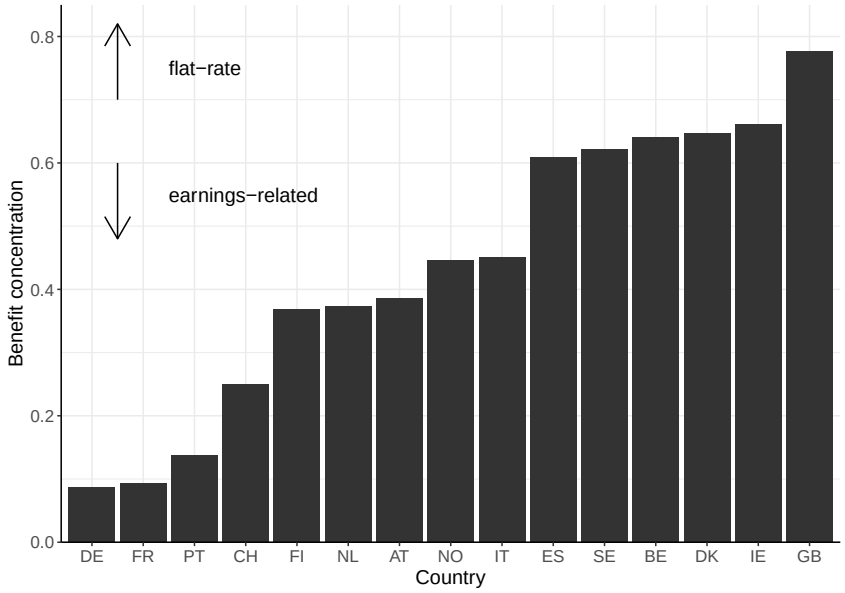


Figure 2 illustrates the calculated values of the benefit concentration indicator for each country, averaged over the time period 2002-2014 and over both prototypical family types (single, no children, and married with two children and the spouse earning 67% of the average wage). Higher values indicate better approximation of the flat-rate principle, meaning, the rich and the poor receive the same total amount of benefits if unemployed, irrespective of their previous earnings[6].

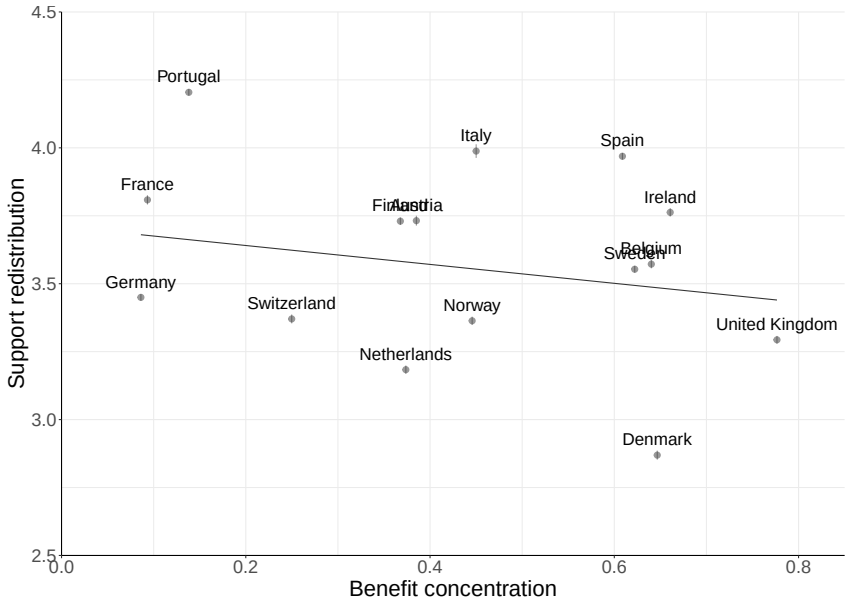
It is important to note that there is a large literature on welfare state regimes with a comparable goal of categorizing countries into different regime types. These approaches normally take into account various aspects of the welfare state, with the institutional arrangement of social insurance (flat-rate or earnings-related) being only one among many indicators (most influentially, Korpi and Palme 1998; Esping-Andersen 1990). The welfare state literature however falls short in assessing expected outcomes of a given policy for different income groups (Scruggs and Allan 2006, for example, focus on the situation of the average earner in the welfare-state decommodification index). The indicator I offer

[6]I provide further information on the underlying data in Section B in the supplementary information. Figure B.4 in Section B.2 shows values of the benefit concentration indicator for each family type separately. I also discuss possible limitations of this approach in Section B.3.

focuses on one specific policy (unemployment insurance) only, but captures implications of this policy across a range of incomes. It then reveals information on the stability of a given income distribution during periods of unemployment.

Benefit concentration and preferences for redistribution

Figure 3: Average support for redistribution and benefit concentration (above mean earners, 2002-2014).



Note. Computation based on one full data set, sampled without replacement from the five multiply imputed data sets.

Figure 3 depicts the bivariate relationship between preferences for redistribution and differences in the institutional arrangement of social insurance across European welfare states. Average support is plotted for respondents who earn more than the average earner in each country over the full range of the benefit concentration indicator and summarized over the years 2002 to 2014. Here I find a clear pattern, average support declines if benefits become more concentrated towards the poor (as it is the case in flat-rate systems). In other words, support for redistribution declines if income differences are equalized during periods of economic hardship.

Table 1: Linear regression: Support for redistribution and benefit concentration

	(1)	(2)	(3)	(4)
Intercept	3.64^{***}	2.23^{***}	4.07^{***}	4.08^{***}
	(0.08)	(0.22)	(0.38)	(0.39)
Benefit concentration	-0.45^{**}	-0.31^{**}	-0.33^{***}	-0.34^{***}
	(0.17)	(0.11)	(0.09)	(0.10)
Occu. unemployment risk		7.69^{***}	6.67^{***}	6.63^{***}
		(1.05)	(0.93)	(0.95)
Gini (disposable income)		0.03^{***}	0.02^{*}	0.02^{*}
		(0.01)	(0.01)	(0.01)
Immigration		0.00	0.01	0.01
		(0.00)	(0.00)	(0.00)
Support redistribution (sd)			-1.34^{***}	-1.35^{***}
			(0.24)	(0.25)
Year fixed-effects	no	no	no	yes
Observations	94	94	94	94
Adjusted R^2	0.06	0.62	0.72	0.71

Note: Estimations are based on one fully imputed data frame.

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

I provide a basic linear regression in Table 1. Models 1-4 strongly support the hypothesis that support for redistribution depends on the institutional arrangement of social insurance. The macro-level relationship indicates that average support for redistribution among those who earn more than the average earner is lower in countries more closely following the flat-rate principle (measured in high benefit concentration). The relationship holds when controlling for average risk exposure (occupational unemployment risk among above-average earners), levels of inequality (gini), and immigration (foreign-born population) (Model 2). I further control for the standard deviation in support for redistribution in a country to account for variance in support for redistribution across countries (Model 3), and include year fixed-effects (Model 4)[7].

I employ an experimental approach in order to capture whether behavioral regularities

[7]The variance in the main explanatory variable (benefit concentration indicator) is defined on the country-level. There is no systematic variation within countries. Time-invariant and rarely changing variables make the use of country-fixed effects impractical (Plümper and Troeger 2007). I do account for variance in support for redistribution within countries by including the standard deviation on the right hand side of the equation.

on the individual level support the observed macro-level relationship, and whether it is indeed considerations of future fairness that help to explain this relationship.

Experimental Analysis

In order to test the theoretical argument in this article more thoroughly, I designed an allocation game and ran ten sessions in two laboratories. 174 people participated in the experiment, from which I collected a total of 2,784 observations. Participants were students at the University of Mannheim and the University of Heidelberg. One session hosted between 12 and 22 subjects and lasted for 45 to 60 minutes. Participants earned between 6 and 20 Euros, with an average of 10 Euros. We used ORSEE to invite students to take part in the study (Greiner 2015). The experiment was programmed in the experimental software z-Tree (Fischbacher 2007).

Experimental design

The main part of the experiment consists of an allocation game. The allocation game is based on a modified within-subject dictator game with lotteries. Initial endowments are defined by luck and are either high (rich decision-maker) or low (poor recipient) and decision-makers never benefit themselves from their redistribution choices. Endowments are subject to lotteries, which induce risk of loss (high or low). In the case of loss, social benefits replace parts of the initial endowment. Replacement rates are either high or low and, in some cases, vary for decision-maker and recipient (high for the recipient and low for the decision-maker, or vice versa). Further manipulations are the absolute level of endowment (high or low) and the level of endowment inequality (high or low).

Based on these four modifications, I generate 16 unique allocation problems. Decision-makers decide for each problem whether they want to transfer shares of their endowment to the recipient. One allocation problem, for example, combines high absolute endowment and low inequality with high risk exposure and high replacement for the recipient but low replacement for the decision-maker (allocation problem 9 in Table 2), another allocation

problem is very similar but both, the decision-maker and the recipient receive high replacement in the case of loss (allocation problem 8 in Table 2). Allocation problems therefore capture key differences in the social insurance design, and the transfers that decision-makers make under different constellations of the allocation problems allow for inference on the importance of future fairness. In addition, variation in absolute endowments and endowment inequality allow me to test the importance of the social insurance design vis-a-vis differences in individual well-being or differences in expected inequality. I thereby generate allocation problems that control for alternative mechanisms that previous research has shown to be important for redistribution choices (e.g. Fehr and Schmidt 1999 on inequity aversion and Dimick, Stegmueller, and Rueda 2016 on income-dependent altruism).

I anchor the parameters for each allocation problem in empirical values observed across Western European countries. This is to guarantee a close match between the observational and the experimental approach. High replacement covers 80% of the initial endowment and approximates replacement rates for a married couple with two children in France with an earning of 200 percent of the average earner. Low replacement covers 20% and approximates the UK for a single income earner with no children. Risk exposure is either 20% in high risk problems or 2.5% in low risk problems. This captures differences across Europe. Germany has an unemployment rate of about 2.5%, and Greece about 20% for first stage tertiary education in 2013 (data comes from the International Labor Organization (ILO)). In the case of high absolute endowments and low levels of inequality, the decision-maker receives 8,100 Tokens and the recipient receives 1,300 Tokens. These endowments differences approximate the 5 to 95 income percentile difference in Germany for first stage tertiary education in 2013. In order to test for the importance of absolute endowment levels (other-regarding preferences may depend on individual well-being), some allocation problems provide low levels of absolute endowments. Low levels are half the amount of the high endowment (4,050 Tokens for the decision-maker and 650 Tokens for the recipient). In order to manipulate the level of inequality, I increase the endowment of the decision-maker by 50 percent in some of the high endowment situations. This leaves the

poor with 1,300 Tokens and the rich with 12,150 Tokens, and approximates the rounded 5 to 99 income percentile difference in Germany (first stage tertiary education in 2013).

Table 2: Experimental design.

AP	Endowment		Risk		Replacement Rate		Expected Endowment	
	R	D	R	D	R	D	R	D
1	650	4050	.2	.2	.2	.8	546	3888
2					.8	.8	624	3888
3			-	-	-		650	4050
4	1300	8100	.025	.025	.2	.2	1274	7938
5					.8	.8	1293.5	8059.5
6			.2	.2	.2	.2	1092	6804
7					.2	.8	1092	7776
8					.8	.8	1248	7776
9					.8	.2	1248	6804
10			-	-			1300	8100
15			.2	.025	.2	.8	1092	8059.5
11	1300	12150	.2	.2	.2	.2	1092	10206
12					.2	.8	1092	11664
13					.8	.2	1248	10206
14			-	-			1300	12150
16			.2	.025	.2	.2	1092	11907

Note: AP refers to allocation problem, R refers to Recipient and D refers to decision-maker.

Table 2 contains parameter constellation for each allocation problem in the experiment. Each decision-maker makes a transfer decision for each of the 16 allocation problems. Participants in the recipient role indicate preferences while decision-makers make their decision, but do not influence the outcome. Situations are presented in random order and differ across laboratory sessions.

Decision-makers do not influence the stability of their own endowment with the allocation decisions they make, and recipients receive the transferred amount for certain. For example, the decision-maker receives 8,100 Tokens and the recipient receives 1,300 Tokens. Both are exposed to a risk of 20% of losing their endowment. If they lose their endowment, they receive 80% of their initial endowment. For the decision-maker, this means 6,480 Tokens, for the recipient, it means 1,040 Tokens (the expected endowment is 7,776 Tokens and 1,248 Tokens for decision-maker and respondent respectively). If the

decision-maker decides to transfer 30% of his or her endowment to the recipient, he or she keeps 5,670 Tokens. With a risk of 20%, she loses her remaining endowment and receives a replacement of 80%. This means, he or she receives 4,536 Tokens. The recipient, in contrast, receives the transferred amount for certain. In this specific example, this means that after the transfer decision, the recipient has an endowment of 3,730 Tokens. In the case of loss, he or she receives a replacement of 1,040 Tokens from the initial endowment plus 2,430 Tokens in transfers (3,470 Tokens in total).

In each of the 16 allocation problems, the decision-maker's endowment after loss is higher than the recipient's endowment before loss (before transfer decisions are made)[8]. The decision-makers are never as poor as the recipients. One randomly chosen outcome of one of the 16 redistribution decisions contribute to final payments. I describe the experimental procedure at length in Section D.1 in the supplementary information.

Analyzing Experimental Results

The hypothesis I test in this section is that transfer shares are, on average, higher in earnings-related as compared to flat-rate allocation problems. The analysis is based on participants who are in the role of the decision-maker (recipients are not monetarily incentivized) and who reveal other-regarding preferences. I show that other-regarding participants increase their transfer shares in situations which maintain given endowment differences (capturing the earnings-related principle).

I construct the main variable of interest, the extent to which transfers reduce inequality in endowments. The equalizing impact of given transfer shares are smaller if endowment inequality is high. The following analysis is therefore based on weighted transfer shares. A transfer share of 100% equalizes endowments.

[8]Instructions are in Section D.2 in the supplementary information.

Participants reveal other-regarding preferences

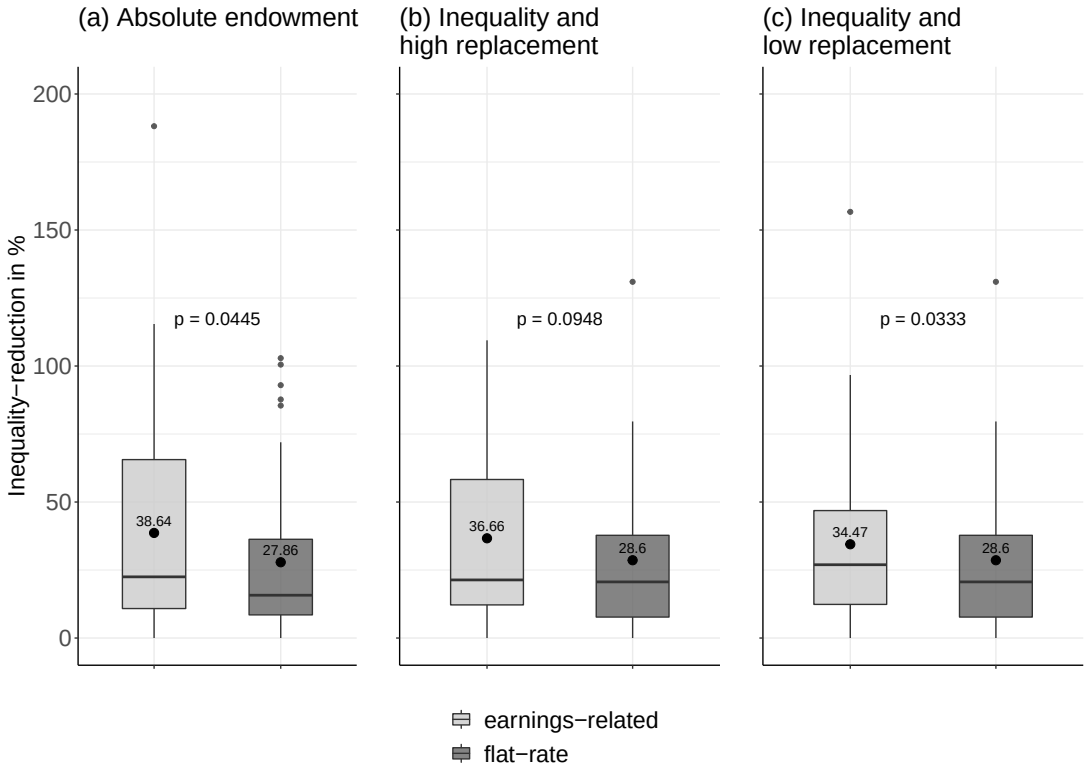
Decision-makers reduce inequality on average by 23.18% (median=16.11, mean=23.18, sd=24.83). Figure D.9 in Section D.6 in the supplementary information illustrates variation in averages across participants. 37 out of 87 participants transfer zero in at least 5 of the 16 allocation problems. 28 of those participants transfer zero amounts in at least half of the decisions, and 19 participants transfer nothing to the recipient in all allocation problems. I categorize those 37 participants who transfer nothing in at least 5 out of 16 decision allocation problems as selfish (inequality-reduction in %: median=0, mean=5.56, sd=11.36). The majority of participants (about 60%) reveals other-regarding preferences. 50 participants transfer shares of their endowment to the poorer recipients (inequality-reduction in %: median=31.76, mean=36.22, sd=24.06). The main conclusion I draw in this section is that a majority of subjects violates the material self-interest assumption and reveals other-regarding preferences.

The social insurance design matters for redistribution decisions

In the following, I analyze the effect of differences in the social insurance design and show that considerations future fairness influence transfer shares. I show that responses to the social insurance principle are not an artefact driven by more general considerations of, for example, inequality aversion or individual well-being. I analyze differences in transfer shares with nonparametric methods in order to avoid assumptions about probability distributions (Keele, McConnaughy, and White 2012).

Figure 4 provides three comparisons with two allocation problems respectively. Each comparison is based on one allocation problem capturing the earnings-related principle (benefits are proportional to endowments) and another allocation problem capturing the flat-rate principle (equal benefits for decision-maker and recipient). Comparison (a) controls for differences in relative well-being (measured in higher absolute endowments), and Comparison (b) and Comparison (c) control for differences in expected inequality. Additionally, these comparisons vary the level of replacement rates in the earnings-related situation. In brief, transfer shares are substantially higher in the earnings-related situa-

Figure 4: Effect of social insurance principle on transfers.



tions. Nonparametric exact Wilcoxon-Pratt signed-rank tests for paired samples confirms that these differences are different from zero and statistically significant [9].

Comparison (a) in Figure 4 isolates the governing principle of social insurance from changes in absolute endowments. One could argue that fairness considerations depend on the relative well-being of the decision-makers (Dimick, Stegmueller, and Rueda (2016) argue for income-dependent altruism). Comparison (a) does not support this argument. Mean transfers are about 11 percentage points higher in situations that follow the earnings-related principle (allocation problem 2 in Table 2) but provide low absolute endowments for decision-makers (mean transfers are 39%) than in situations that follow the flat-rate principle (allocation problem 9 in Table 2) but provide high absolute endowments for decision-makers (mean transfers are 28 %). However, inequality in expected endowments (taking into account risk and replacement) is higher in the earnings-related situation. Concerns for future fairness and inequality aversion then lead to similar behav-

[9]All p-values are based on two-sided test statistics. One of the comparisons only reaches the 0.10 level of statistical significance.

ioral implications. In Comparisons (b) and (c) I isolate these two behavioral explanations.

Comparison (b) in Figure 4 isolates concerns for future fairness from inequality aversion. Inequality in expected endowments is lower in the earnings-related situation (recipient expects 1248 Tokens, decision-maker expects 7776 Tokens) than in the flat-rate situation (recipient expects 1248 Tokens, decision-maker expects 10206 Tokens). Nevertheless, participants are more concerned about inequality in the earnings-related situation. Mean transfers are about 8 percentage point higher in the earnings-related situations (allocation problem 8 in Table 2, mean transfers are 37%) than in the flat-rate situation (allocation problem 13 in Table 2, mean transfers are 29%). Future fairness therefore seems to be more important to understand redistribution choices than inequality aversion more generally. However, these differences are only weakly statistically significant (on a 0.10 level).

Finally, Comparison (c) in Figure 4 is similar to Comparison (b) but provides low replacement rates in the earnings-related situation (20% of previous endowment). Decision-makers therefore stand to lose more personally in the earnings-related situation in Comparison (c) compared to the earnings-related situation in Comparison (b). Again, inequality in expected endowments is lower in the earnings-related situation (recipient expects 1092 Tokens, decision-maker expects 6804 Tokens) than in the flat-rate situation (recipient expects 1248 Tokens, decision-maker expects 10206 Tokens). Additionally, similar to Comparison (a), the decision-maker's absolute endowment is lower (8100 Tokens) in the earnings-related situation than in the flat-rate situation (12150 Tokens). Mean transfers are about 6 percentage points higher in the earnings-related situation (allocation problem 6 in Table 2, mean transfers are more than 34%), than in the flat-rate situation (allocation problem 13 in Table 2, mean transfers are less than 29%).

I replicate the same set of comparisons for participants which I had categorized as being selfish. Figure D.10 in Section D.7 in the supplementary information reports the results. Average transfers are always close to zero, and participants do not respond to considerations of future fairness. While my experimental evidence then supports the argument I make for the importance of future fairness, and substantiates the observational

pattern I find, it also reveals that fairness arguments indeed apply to those participants who are concerned about the well-being of others in the first place. My results then have implications for previous fairness arguments in the political economy literature. Rather than focusing on average effects, it is important to systematically include type-based differences, both in theory and in empirical analyses.

Discussion

Income inequality is on the rise, even in the advanced European welfare states. Policy makers in many countries are seeking for solutions to distribute the benefits of economic growth more equally. The task is a thorny one. If politicians propose policies that go against the interests of the rich, a group that turns out to be politically more important than the poor (Becher and Stegmueller 2019; Schlozman, Verba, and Brady 2012; Bartels 2008; Gilens 2005; Verba, Schlozman, and Brady 1995), they might be playing with their own political survival. Additionally, if conflict over redistribution policies leads to socioeconomic class-conflict, society as a whole would be negatively affected. In sum, if something is to be done about income inequality, we need a better understanding of what drives support for redistribution. This article has established that institutional differences in social insurance are an important determinant for redistribution preferences. It provides observational and experimental evidence showing that the rich support higher levels of redistribution if fair and unfair income differences are maintained in future periods (as is the case in earnings-related systems).

Future research needs to focus more on the role of union membership and voluntary state-subsidized schemes. The UK and Sweden have an almost similar benefit concentration coefficient. Yet, in Sweden, many workers are members of unions which provide them with an additional earnings-related component in case of unemployment. De facto replacement rates therefore differ from the purely government focused indicator that I apply. Another important point fur future research is the basis of entitlement (Korpi and Palme 1998). In universal social policy programs, entitlement is based on criteria such as citizenship, whereas targeted social policy programs assess an individual's need

and means. Rothstein (1998, 221) argues that "(t)here is simply no possibility of combining means-testing with the principle of equal concern and respect(...)". Means-testing involves other discussions on deservingness and therefore closely relate to questions of fairness. Finally, my benefit concentration indicator is based on unemployment insurance. This is only one policy of the welfare state targeting income stability. Additional policies such as employment protection and active labor market policies need to be taken into consideration when assessing the stability individual incomes, and, consequently, the over-time equalization of the income distribution (see e.g. Rueda 2007, 2005).

References

Alesina, Alberto, and George-Marios Angeletos. 2005. "Fairness and Redistribution". *American Economic Review* 95 (4): 960–980.

Alesina, Alberto, and Paola Giuliano. 2011. *Preferences for Redistribution*. Vol. 1. Handbook of Social Economics. Elsevier.

Alesina, Alberto, and Edward L. Glaeser. 2004. *Fighting Poverty in the US and Europe: A World of Difference*. Oxford: Oxford University Press.

Alesina, Alberto, and Eliana La Ferrara. 2005a. "Ethnic Diversity and Economic Performance". *Journal of Economic Literature* 43 (3): 762–800.

— . 2005b. "Preferences for Redistribution in the Land of Opportunities". *Journal of Public Economics* 89 (5-6): 897–931.

Alesina, Alberto, Stefanie Stantcheva, and Edoardo Teso. 2018. "Intergenerational Mobility and Preferences for Redistribution". *American Economic Review* 108 (2): 521–54.

Algan, Yann, et al. 2017. "The European Trust Crisis and the Rise of Populism". *Brookings Papers on Economic Activity* 2017 (2): 309–400.

Almås, Ingvild, Alexander W. Cappelen, and Bertil Tungodden. 2019. "Cutthroat Capitalism versus Cuddly Socialism: Are Americans More Meritocratic and Efficiency-Seeking than Scandinavians?" *Journal of Political Economy* ().

Alt, James, and Torben Iversen. 2017. "Inequality, Labor Market Segmentation, and Preferences for Redistribution". *American Journal of Political Science* 61 (1): 21–36.

Andreoni, James, and John Miller. 2002. "Giving According to GARP: An Experimental Test of the Consistency of Preferences for Altruism". *Econometrica* 70 (2): 737–753.

Baldwin, Peter. 1990. *The Politics of Social Solidarity: Class Bases of the European Welfare State 1875–1975*. Cambridge: Cambridge University Press.

Barber, Benjamin, Pablo Beramendi, and Erik Wibbels. 2013. "The Behavioral Foundations of Social Politics: Evidence from Surveys and a Laboratory Democracy". *Comparative Political Studies* 46 (10): 1155–1189.

Bartels, Larry M. 2008. *Unequal Democracy: The Political Economy of the New Gilded Age*. Princeton, N.J. and Woodstock: Princeton University Press.

Becher, Michael, and Daniel Stegmueller. 2019. "Labor Unions and Unequal Representation". *Working Paper*.

Benabou, R., and E. A. Ok. 2001. "Social Mobility and the Demand for Redistribution: The Poum Hypothesis". *The Quarterly Journal of Economics* 116 (2): 447–487.

Bénabou, Roland, and Jean Tirole. 2006. "Incentives and Prosocial Behavior". *American Economic Review* 96 (5): 1652–1678.

Beramendi, Pablo, and Philipp Rehm. 2016. "Who Gives, Who Gains? Progressivity and Preferences". *Comparative Political Studies* 49 (4): 529–563.

Beramendi, Pablo, and Daniel Stegmueller. 2019. "Tax Progressivity and Redistribution", no. Working Paper.

Beveridge, William. 1942. *Social Insurance and Allied Services*. New York: Macmillan Company, New York.

Bolton, Gary E., and Axel Ockenfels. 2000. "ERC: A Theory of Equity, Reciprocity, and Competition". *American Economic Review* 90 (1): 166–193.

Cappelen, Alexander W., et al. 2007. "The Pluralism of Fairness Ideals: An Experimental Approach". *American Economic Review* 97 (3): 818–827.

Casamatta, Georges, Helmuth Cremer, and Pierre Pestieau. 2000. "The Political Economy of Social Security". *Scandinavian Journal of Economics* 102 (3): 503–522.

Charness, G., and M. Rabin. 2002. "Understanding Social Preferences with Simple Tests". *The Quarterly Journal of Economics* 117 (3): 817–869.

Corak, Miles. 2013. "Income Inequality, Equality of Opportunity, and Intergenerational Mobility". *Journal of Economic Perspectives* 27 (3): 79–102.

Corneo, Giacomo, and Hans Peter Grüner. 2002. "Individual Preferences for Political Redistribution". *Journal of Public Economics* 83 (1): 83–107.

Dahl, Robert Alan. 1973. *Polyarchy: Participation and Opposition*. Yale University Press.

Dal Bó, Ernesto, et al. 2018. "Economic Losers and Political Winners: Sweden's Radical Right". *Working Paper*.

Dimick, Matthew, Daniel Stegmueller, and David Rueda. 2016. "The Altruistic Rich? Inequality and Other-Regarding Preferences for Redistribution". *Quarterly Journal of Political Science* 11 (4): 385–439.

Durante, Ruben, Louis Putterman, and van der Weele, Joël. 2014. "Preferences for Redistribution and Perception of Fairness: An Experimental Study". *Journal of the European Economic Association* 12 (4): 1059–1086.

Engelmann, Dirk, and Martin Strobel. 2004. "Inequality Aversion, Efficiency, and Maximin Preferences in Simple Distribution Experiments". *American Economic Review* 94 (4): 857–869.

Epper, Thomas, Ernst Fehr, and Julien Senn. 2020. "Other-Regarding Preferences and Redistributive Politics". *University of Zurich, Department of Economics, Working Paper*, no. 339.

Esping-Andersen, Gota. 1990. *The Three Worlds of Welfare Capitalism*. Cambridge: Polity Press.

Fehr, Ernst, and Klaus M. Schmidt. 1999. "A Theory of Fairness, Competition, and Cooperation". *The Quarterly Journal of Economics* 114 (3): 817–868.

Ferrarini, Tommy, et al. 2013. "Social Citizenship Rights and Social Insurance Replacement Rate Validity: Pitfalls and Possibilities". *Journal of European Public Policy* 20 (9): 1251–1266.

Fischbacher, Urs. 2007. "Z-Tree: Zurich Toolbox for Ready-Made Economic Experiments". *Experimental Economics* 10 (2): 171–178.

Fisman, Raymond, Pamela Jakiela, and Shachar Kariv. 2017. "Distributional Preferences and Political Behavior". *Journal of Public Economics* 155:1–10.

Fisman, Raymond, Shachar Kariv, and Daniel Markovits. 2007. "Individual Preferences for Giving". *American Economic Review* 97 (5): 1858–1876.

Flora, Peter, and Arnold Joseph Heidenheimer. 1981. *The Development of Welfare States in Europe and America*. Transaction Publishers.

Fong, Christina. 2001. "Social Preferences, Self-Interest, and the Demand for Redistribution". *Journal of Public Economics* 82 (2): 225–246.

Frohlich, Norman, Joe Oppenheimer, and Anja Kurki. 2004. "Modeling Other-Regarding Preferences and an Experimental Test". *Public Choice* 119 (1-2): 91–117.

Gilens, Martin. 2012. *Affluence and Influence: Economic Inequality and Political Power in America*. Princeton, N.J: Princeton University Press and New York : Russell Sage Foundation.

— . 2005. "Inequality and Democratic Responsiveness". *Public Opinion Quarterly* 69 (5): 778–796.

Gingrich, Jane, and Ben Ansell. 2012. "Preferences in Context: Micro Preferences, Macro Contexts, and the Demand for Social Policy". *Comparative Political Studies* 45 (12): 1624–1654.

Greiner, Ben. 2015. "Subject Pool Recruitment Procedures: Organizing Experiments with ORSEE". *Journal of the Economic Science Association* 1 (1): 114–125.

Gruber, Jon, and Emmanuel Saez. 2002. "The Elasticity of Taxable Income: Evidence and Implications". *Journal of Public Economics* 84 (1): 1–32.

Guiso, Luigi, et al. 2017. "Populism: Demand and Supply". *Working Paper*.

Hacker, Jacob S., Philipp Rehm, and Mark Schlesinger. 2013. "The Insecure American: Economic Experiences, Financial Worries, and Policy Attitudes". *Perspectives on Politics* 11 (01): 23–49.

Hall, Peter A, and Rosemary CR Taylor. 1996. "Political Science and the Three New Institutionalisms". *Political Studies* 44 (5): 936–957.

Holt, Charles A, and Susan K Laury. 2002. "Risk Aversion and Incentive Effects". *American economic review* 92 (5): 1644–1655.

Honaker, James, and Gary King. 2010. "What to Do about Missing Values in Time-series Cross-section Data". *American journal of political science* 54 (2): 561–581.

Hout, Michael. 2004. *Getting the Most out of the GSS Income Measures*. National Opinion Research Center Chicago.

Iversen, Torben, and David Soskice. 2001. "An Asset Theory of Social Policy Preferences". *American Political Science Review* 95 (4): 875–893.

Kakwani, Nanak C. 1977. "Measurement of Tax Progressivity: An International Comparison". *The Economic Journal* 87 (345): 71–80.

Keele, Luke, Corrine McConnaughy, and Ismail White. 2012. "Strengthening the Experimenter's Toolbox: Statistical Estimation of Internal Validity". *American Journal of Political Science* 56 (2): 484–499.

Kerschbamer, Rudolf. 2015. "The Geometry of Distributional Preferences and a Non-Parametric Identification Approach: The Equality Equivalence Test". *European Economic Review* 76 (): 85–103.

Kerschbamer, Rudolf, and Daniel Müller. 2020. "Social Preferences and Political Attitudes: An Online Experiment on a Large Heterogeneous Sample". *Journal of Public Economics* 182:104076.

King, Gary, et al. 2001. "Analyzing Incomplete Political Science Data: An Alternative Algorithm for Multiple Imputation". *American Political Science Review* 95 (1): 49–69.

Konow, James. 2000. "Fair Shares: Accountability and Cognitive Dissonance in Allocation Decisions". *American Economic Review* 90 (4): 1072–1091.

Kopczuk, Wojciech, Emmanuel Saez, and Jae Song. 2010. "Earnings Inequality and Mobility in the United States: Evidence from Social Security Data since 1937". *The Quarterly Journal of Economics* 125 (1): 91–128.

Korpi, Walter, and Joakim Palme. 1998. "The Paradox of Redistribution and Strategies of Equality: Welfare State Institutions, Inequality, and Poverty in the Western Countries". *American Sociological Review* 63 (5): 661–687.

Lefgren, Lars J., David P. Sims, and Olga B. Stoddard. 2016. "Effort, Luck, and Voting for Redistribution". *Journal of Public Economics* 143 (): 89–97.

Mares, Isabela. 2003. *The Politics of Social Risk: Business and Welfare State Development*. Cambridge Studies in Comparative Politics. Cambridge, UK and New York: Cambridge University Press.

Meltzer, Allan H., and Scott F. Richard. 1981. "A Rational Theory of the Size of Government". *Journal of Political Economy* 89 (5): 914.

Moene, Karl O., and Michael Wallerstein. 2001. "Inequality, Social Insurance, and Redistribution". *American Political Science Review* 95 (4): 859–874.

Morton, Rebecca B, and Kenneth C Williams. 2010. *Experimental Political Science and the Study of Causality: From Nature to the Lab*. Cambridge University Press.

Piketty, Thomas. 1995. "Social Mobility and Redistributive Politics". *The Quarterly Journal of Economics* 110 (3): 551–584.

Plümper, Thomas, and Vera E. Troeger. 2007. "Efficient Estimation of Time-Invariant and Rarely Changing Variables in Finite Sample Panel Analyses with Unit Fixed Effects". *Political Analysis* 15 (2): 124–139.

Rehm, Philipp. 2016. *Risk Inequality and Welfare States: Social Policy Preferences, Development, and Dynamics*. Cambridge University Press.

— . 2009. "Risks and Redistribution an Individual-Level Analysis". *Comparative Political Studies* 42 (7): 855–881.

— . 2011. "Social Policy by Popular Demand". *World Politics* 63 (02): 271–299.

Rosanvallon, Pierre. 2013. *The Society of Equals*. Cambridge, Massachusetts : Harvard University Press.

Rothstein, Bo. 1998. *Just Institutions Matter: The Moral and Political Logic of the Universal Welfare State*. Cambridge: Cambridge University Press.

Rubin, Donald B. 1987. *Multiple Imputation for Nonresponse in Surveys* [**inlang**eng]. Wiley Series in Probability and Mathematical Statistics Applied Probability and Statistics. New York, NY [u.a.: Wiley.

Rueda, David. 2018. "Food Comes First, Then Morals: Redistribution Preferences, Parochial Altruism, and Immigration in Western Europe". *The Journal of Politics* 80 (1): 225–239.

— . 2005. "Insider–Outsider Politics in Industrialized Democracies: The Challenge to Social Democratic Parties". *American Political Science Review* 99 (1): 61–74.

— . 2007. *Social Democracy inside out: Partisanship and Labor Market Policy in Industrialized Democracies*. Oxford and New York: Oxford University Press.

Rueda, David, and Daniel Stegmueller. 2016. "The Externalities of Inequality: Fear of Crime and Preferences for Redistribution in Western Europe". *American Journal of Political Science* 60 (2): 472–489.

— . 2019. *Who Wants What?: Redistribution Preferences in Comparative Perspective*. Cambridge Studies in Comparative Politics. Cambridge: Cambridge University Press.

Schlozman, Kay Lehman, Henry E Brady, and Sidney Verba. 2018. *Unequal and Unrepresented: Political Inequality and the People's Voice in the New Gilded Age*. Princeton University Press.

Schlozman, Kay Lehman, Sidney Verba, and Henry E. Brady. 2012. *The Unheavenly Chorus: Unequal Political Voice and the Broken Promise of American Democracy*. Princeton and Oxford: Princeton University Press.

Scruggs, Lyle, and James Allan. 2006. "Welfare-State Decommodification in 18 OECD Countries: A Replication and Revision". *Journal of European Social Policy* 16 (1): 55–72.

Sinn, Hans-Werner. 1995. "A Theory of the Welfare State". *The Scandinavian Journal of Economics* 97 (4): 495–526.

Titmuss, Richard. 1974. *Social Policy*. London: Allen & Unwin.

Varian, Hal R. 1980. "Redistributive Taxation as Social Insurance". *Journal of Public Economics* 14 (1): 49–68.

Verba, Sidney, Kay Lehman Schlozman, and Henry E Brady. 1995. *Voice and Equality: Civic Voluntarism in American Politics*. Harvard University Press.

Supplementary information to: "Equalizing Incomes in the Future: Why Structural Differences in Social Insurance Matter for Redistribution Preferences"

Contents

A Observational Data

A.1 Multiple imputation

I use multiple imputation to address missing values in the survey data. Multiple imputation allows to generate full data sets and to estimate conservative standard errors which reflect uncertainty due to missing data (Rubin 1987). For each missing cell, I impute five

values. This procedure generates five complete (imputed) data sets (Honaker and King 2010; King et al. 2001). Observed values are the same across these data sets. Imputed values are drawn from multivariate normal distributions conditional on observed values. I perform all analysis on each of the five data sets. My models are then averaged and adjust standard errors to reflect uncertainty of the imputed values (Rubin 1987). Table C.4 provides summary statistics for imputed data and the raw data with listwise deletion. Differences between the two approaches are small.

The assumption for multiple imputation is that data is missing at random. This means that missingness is due to observed values but not to unobserved values. I include additional covariates in the imputation model which will not be part of the analysis in order to better predict missing values. In order to better predict individual income, I include the following covariates: the number of children living in the household, satisfaction with one's current income, one's subjective health, life satisfaction, and political ideology (following Rueda and Stegmueller 2016)[10].

A.2 Country and year overview

Table A.1: Countries and years included in the analysis.

Country	ESS round						
AT	2002	2004	2006				2014
BE	2002	2004	2006	2008	2010	2012	2014
CH	2002	2004	2006	2008	2010	2012	2014
DE	2002	2004	2006	2008	2010	2012	2014
DK	2002	2004	2006	2008	2010	2012	2014
ES	2002	2004	2006	2008	2010	2012	2014
FI	2002	2004	2006	2008	2010	2012	2014
FR		2004	2006	2008	2010	2012	2014
GB	2002	2004	2006	2008	2010	2012	2014
IE		2004		2008	2010	2012	2014
IT	2002	2004				2012	
NL	2002	2004	2006	2008	2010	2012	2014
NO	2002	2004	2006	2008	2010	2012	2014
PT	2002	2004	2006	2008		2012	2014
SE	2002	2004	2006	2008	2010	2012	2014

Table A.1 reports country and ESS round (year) included in the analysis.

[10]I do not impute values for redistribution age and gender. I delete rows with missing values in these variables before multiple imputation.

A.3 Relative income

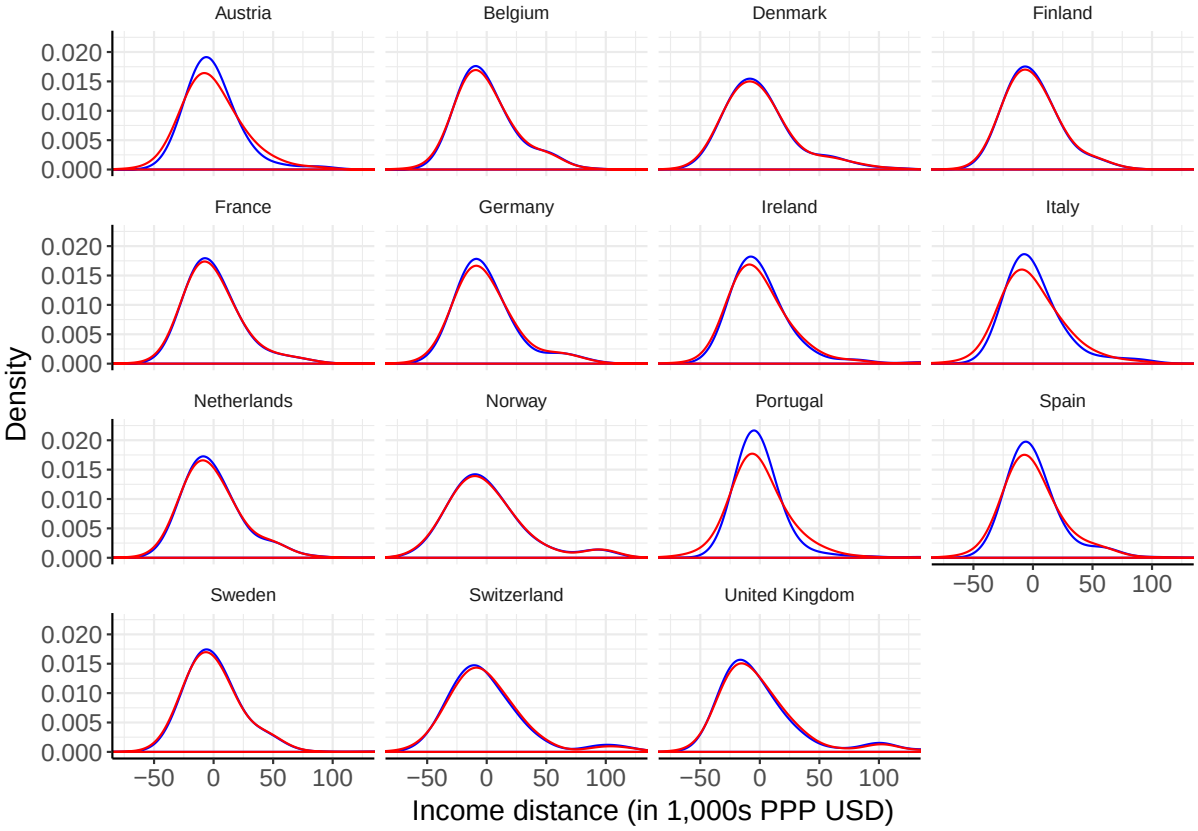
The ESS measures income by asking individuals to place their household's total income, after tax and compulsory deductions, from all sources on a card with income giving yearly, monthly, or weekly figures. The surveys from 2002-2006 use cards with 12 intervals which are equal for every country. The 2008-2014 surveys use 10 income bands. Intervals are based on deciles of the actual household income range in the given country. The median is in the top of the fifth decile and serves as reference point to calculate the ten deciles.

The theoretical concept I am interested in is the distance to the mean income in a given country. I therefore follow previous authors (e.g. Rueda and Stegmueller 2016) and create a comparable income measure based on the following procedure. As described in the introduction, I first transform income bands into their midpoints (e.g. Hout 2004). Category J in the survey years 2002-2006, for example, ranges from EUR 18,000 to EUR 36,000. This comprises to EUR 27,000. I do the same for the 2008-2012 survey years, while taking into account country and year variation in the income bands. Second, I impute the top-income category by assuming that the upper tail of the income distribution follows a Pareto distribution (Kopczuk, Saez, and Song 2010). Third, I convert a country's currency into PPP-adjusted constant 2005 U.S. dollars. Finally, I calculate the distance between an individual's income and the mean income for a given country in a given year (Figure A.1 in Section A.4 in the supplementary information shows the distribution of income distances across countries)[11].

[11]Incomes are aggregated over all 7 waves of the ESS. The focus of the analysis will be on the effect of distances to the country-year mean on support for redistribution.

A.4 Distribution of income distance

Figure A.1: Distribution of income distance.



Kernel density estimates (Gaussian kernel, band width 14). Blue line shows raw data, red line imputed data.

Figure A.1 plots the income distribution across the 15 European countries in the study. Kernel density estimated smooth over income categories. The bandwidth is fixed at 14. Blue lines show the density of the raw data before imputation, red lines show the density of the imputed income data. I average over the years 2002-2014.

A.5 Calculation of unemployment risk

The formula to obtain the occupational unemployment rate is:

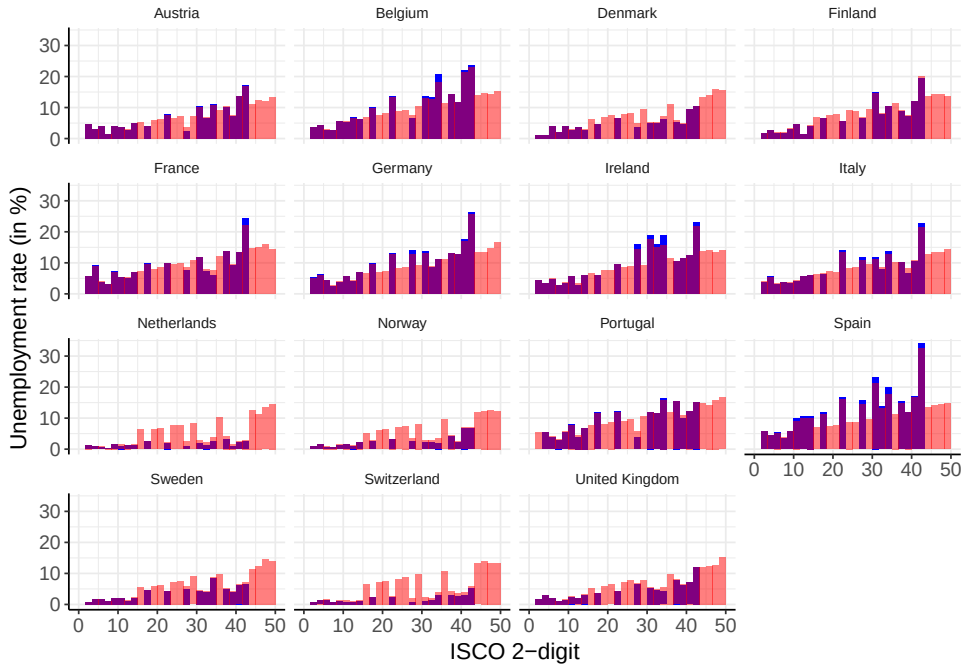
$$OUR_j = \frac{\text{\# unemployed in occupation j}}{\text{\# unemployed in occupation j+ \# employed in occupation j}} * 100. \quad (1)$$

For further information on the calculation approach, see Rehm (2011). Rueda (2018) provide further information on the calculation of their indicator. Note that the procedure of relying on self-reported occupation bears several limitations. Subjects may be without employment or have entered retirement at the time of the survey. However, I do not

impose restrictions on the calculation of the unemployment rate in order to capture a respondent's experienced risk exposure when being in employment.

A.6 Distribution of unemployment risk

Figure A.2: Distribution of unemployment risk over 2-digit ISCO.



Note: Blue bars show raw data, red bars imputed data.

Figure A.2 plots the distribution of unemployment risk by 2-digit ISCO categories in the 15 Western European countries. Blue bars report unemployment risk in listwise deleted data, red lines report unemployment risk in the imputed income data. Values are averages over the years 2002-2014.

B Social Insurance Design

The benefit concentration indicator is calculated on the basis of unemployment net replacement rates. Replacement rates capture the ratio of net income while out-of-work divided by net income while in-work. Out-of-work income encompasses unemployment benefit entitlement paid as unemployment insurance benefits, but also unemployment assistance, social assistance, family benefits and lone-parent benefits, housing benefits, child-raising allowance paid to parents assuming childcare responsibilities for their own children and employment-conditional benefits, as well as personal income tax and employees' social security contributions.

The OECD tax-benefit calculator includes complex policy rules across countries. It allows to compute the amount of benefits a person is entitled to when out-of-work in a given country and a given year. The calculator simulates out-of-work income for different family types and earnings levels. Earnings levels are represented in percentage of the average earner, and range from 50% of the average earner's wage to 200% of the average earner's wage. Calculations are provided for family incomes in-work and out-of-work conditions.

Unemployment insurance entitlement depends on a multitude of socio-economic circumstances. The calculation of net replacement rates therefore hinges on a set of assumptions about the prototypical income earner. The standard assumption for the unemployment insurance calculations is that 1) the benefit recipient is 40 years old and has been continuously full-time employed, 2) has contributed to the unemployment insurance fund since the age of 18, 3) where insurance is voluntary (some Nordic countries), the individual has contributed to the fund, and 4) the individual falls into the standard unemployment insurance system. The representative individual in the calculation model is virtually always entitled to receive the unemployment benefit. Benefits are often based on previous earnings. The assumption is that the individual has earned the same amount of income over whatever period the assessment for the benefit is based upon[12].

I proceed in two steps. First, I employ the tax-benefit calculator to compute replacement rates for a range of incomes in the 15 European countries included in this study. Second, I use the information on replacement rates to generate the benefit concentration indicator. The benefit concentration indicator reveals information on the social insurance principle for different countries. It aggregates differences in the distribution of replacement rates across the income span into a macro measure.

B.1 Replacement rates

I calculate net replacement rates for two prototypical family types: a single earner with no children and a married couple with two children (aged four and six) and the spouse earning 67% of the average earner. I calculate replacement rates for a representative individual in each family type for an income range from 50% of the average wage (50% AW) to 200% (200% AW) of the average wage by 1% steps. I repeat the same procedure for each year and each country included in the ESS.

Figure B.3 reports replacement rates for three income groups, averaged over the time period 2002-2014 in 2-year steps. The average earner (AW), a representative earner who earns half the wage of the average earner (AW 50%), and a representative earner with

[12]For further information, consult `http://www.oecd.org/social/benefits-and-wages.htm`.

twice the wage of the average earner (AW 200%). Benefit calculations depend on the specific family situation. I provide calculations for two representative cases, a married couple with two children and the spouse earning 67% of the average earner, and a single person with no children.

Figure B.3: Replacement rates. Two prototypical family types, across Western European countries, calculated for 50% AW, AW, 200% AW respectively.

(a) Married, two children, spouse 67%. (b) Single, no children.

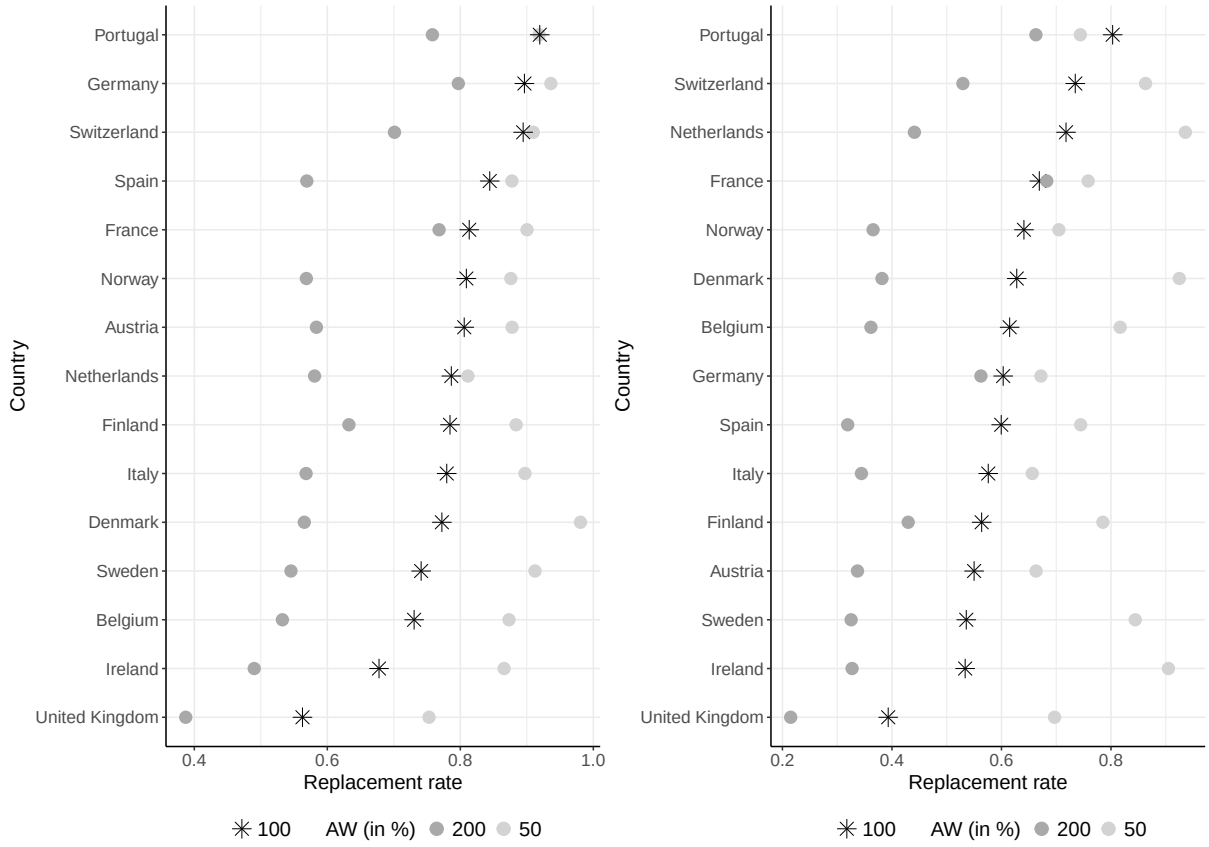


Figure B.3 shows that 1) The level of replacement rates varies widely across countries for all income groups, 2) differences in replacement rates for each income group within the countries vary strongly, and 3) variation in replacement rates is higher among high-income earners (200% AW) (from 39% to 80% for married couples, and 22% to 68% for single persons), than among low income earners (50% AW),(from 75% to 98% for married, and 66% to 94% for single persons).

Table B.2: Married couple, 2 children, gross earning spouse 67% of AW.

	min	mean	max
AW 50%	0.75	0.88	0.98
AW 100%	0.56	0.79	0.92
AW 200%	0.39	0.60	0.80

Table B.3: Single person, no children.

	min	mean	max
AW 50%	0.66	0.78	0.94
AW 100%	0.39	0.61	0.80
AW 200%	0.22	0.42	0.68

Table B.2 and Table B.3 report variation in replacement rates between low-income earners and high-income earners.

B.2 Benefit concentration indicator

The benefit concentration indicator aggregates differences in the distribution of replacement rates across the income range within countries. The indicator is calculated as follows. I split the income range into low-income earners (AW 50% to AW 75%) and high-income earners (AW 175% to AW 200%). For each income group, I sum the share of benefits received against a 45-degree line and apply the Trapezoidal rule captured in the following formula:

$$\Delta x = \frac{b-a}{2} \tag{2}$$

$$A_i = \frac{\Delta x}{2}(f(x_{i-1}) + f(x_i)) \tag{3}$$

To calculate the area under the curve for low-income earners, I set b equal to 75% of the average wage (AW) and a equal to AW 50%. For high-income earners, I set b equal to AW 200% and a equal to AW 175%. I use the average replacement rate in the respective country for $f(x)$ to calculate the area under the curve if the system was perfectly proportional, and the realized replacement rate for $f(x)$ to calculate realized benefit systems. By subtracting A for the proportional case from A for the realized case, I get a measure for positive or negative distortion for the respective group. This procedure is similar to the computation of the Gini coefficient. In order to compute the benefit concentration coefficient, however, I subtract the distortion of the low-income group from the distortion of the high-income group. This gives me an approximation of the social insurance principle. Higher values indicate stronger conformity with the flat-rate principle, values that get close to 0 indicate a stronger conformity with the earnings-related principle.

The benefit concentration indicator therefore reveals information on whether benefits follow a flat-rate principle (in which everyone receives the same net benefit and replacement rates are declining when previous earnings increase), or a earnings-related principle (benefits are proportional to previous earnings). The focus is on structural differences within a given range of incomes, rather than on differences in the minimum level of ben-

efits that are provided in the event of loss[13].

Figure B.4: Benefit concentration indicator across Western European countries.

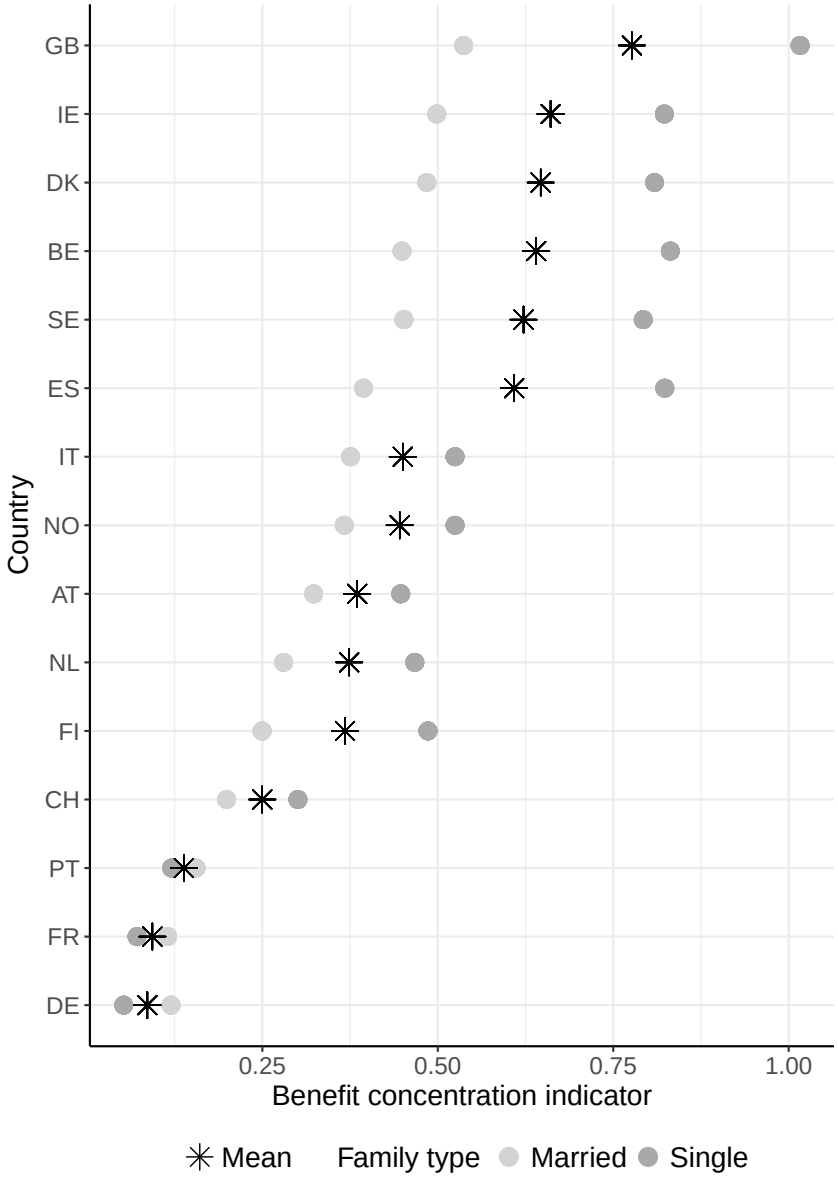


Figure B.4 reports the benefit concentration indicator for the two family types (averaged over the years 2002-2014)[14].

[13]This could arguably be an alternative measure on a society's understanding of the role of circumstances and choices in individual incomes.

[14]Patterns for the aggregated indicator are in the main text.

B.3 Caveats

I use the benefit concentration indicator as an approximated measure for structural differences in the governing principle of social insurance. The focus is on unemployment benefit entitlement as an approximation for future income equalization given uniform labor market risk exposure. The approach comes with several limitations. I briefly discuss two major caveats. First, the focus on unemployment benefits ignores the institutional structure of other social policy programs and components of the welfare state, such as sickness benefits and old-age pensions, labor market protection, and active labor market policies. Unemployment benefits are only one program which influences the stability of individual income positions over time. Second, calculations are based on one prototypical individual with a given age and a complete employment history. It therefore ignores differences in the bases of entitlement and the payment period (unemployed individuals in Germany, for example, receive earnings-related benefits in the first period of unemployment, but receive social assistance, which essentially means flat-rate benefits, if they are long-term unemployed). Changes in the assumptions about the prototypical earner can have very different implications across the countries (e.g. benefits in Sweden are flat-rate if an individual is not contributing to a voluntary fund)[15].

C Observational analysis

C.1 Descriptive statistics

Table C.4: Descriptive statistics. Means, standard deviations, and percentages.

	Imputed		**Listwise**	
Continuous	Mean	SD	Mean	SD
Redistribution	3.75	1.05	3.73	1.06
Income [1,000 PPP USD]	36.66	28.32	37.41	28.26
Income distance	-0.00	27.15	0.52	26.97
Occupational unemployment [in %]	0.07	0.06	0.06	0.06
Benefit concentration	0.43	0.23	0.43	0.23
Gini(disposable income)	28.59	3.42	28.17	3.30
Immigration	11.69	4.93	11.56	4.94

[a] Variable has imputed missing values. Income (1,000s PPP USD): 18.69%, Unemployment risk: 17.32%.
[b] Share of the foreign born population.
Imputed statistics are based on the combined multiple imputed data sets.

[15] see Ferrarini et al. 2013 for a discussion on alternative computations of social insurance replacement rates.

Table C.4 provides summary statistics of the variables included in the analysis. I compare between the combined imputed data and listwise deletion. Differences are minor. The following analyses are based on the five combined imputed data sets.

D Experimental Section

D.1 Experimental procedure

Each session begins with familiarizing students with the instructions. It then proceeds with the following three parts. Part one is the allocation game. Subjects are randomly assigned to the role of the decision-maker or recipient and go through 16 rounds of allocation decisions. Part two is a standard risk elicitation task based on Holt and Laury (2002). Finally, the experiment ends with a short survey in part three.

Before entering part one of the experiment, subjects go through the instructions individually on their screens[16]. In addition, instructions are provided in print[17]. Instructions on the screens introduce visualizations of the decision situations[18]. An abstract language is used, so that participants do not find themselves in a labor market situation with unemployment risk and social insurance provision. Differences in the institutional arrangement of the social insurance principle are not mentioned. Euros are converted to the experimental currency Tokens, with 1,000 Tokens corresponding to 1 Euro.

Part one is structured as follows. A coin flip divides subjects into decision-maker and recipient. Subjects are informed about their role and stay in the same role throughout the first part of the experiment. Each participant goes through a testing round which does not influence final payoffs. At the end of the testing round, subjects are encouraged to ask questions to resolve ambiguities in the decision tasks. A sequence of 16 allocation problems follows. The sequence of these problems follows a random order for each session. In each round of the sequence, the specific allocation problem is illustrated on the first screen. On the next screen, decision-makers make a transfer decision by moving a slider. Subjects must move the slider at least once before entering the next screen. Recipients indicate their preferred level of transfers at the same time on a similar looking screen. The next screen visualizes possible outcomes after the realization of the lottery. At this point subjects are allowed to move back and adjust their decision or preference. After

[16]There is no strategic interaction in the experiment. Instructions are introduced before subjects enter their roles. Thus, all instructions are common information. Going through the instructions individually allows subjects to determine their own pace.

[17]Instructions are in Section D.2.

[18]Screens are in Section D.3.

subjects make their decision in the respective situation, the computer realizes the lottery by drawing a random number. For example, if the risk of loss is 20%, subjects keep their endowment if the random number is anything below 80, but lose it if it is between 80 and 100. Subjects see the outcome of the lottery visualized on their screens. The next allocation problem follows. A decision-maker is randomly matched with an anonymous recipient in each allocation problem. One outcome of part one is chosen randomly for each subject and adds to the final payment. Allocation problems are independent and outcomes from one allocation problem are not transferred to another one[19].

After finishing part one, subjects read instructions for part two on their screens. Part two elicits risk preferences based on Holt and Laury (2002) choice sets between more and less risky lotteries. One random decision is realized and adds to final payments.

The experiment ends with a questionnaire. Subjects answer questions on socio-demographics, and specific questions about the experiment[20]. Final payoffs are calculated based on outcomes in part one and part two of the experiment. In addition, each subject receives a show-up fee of 4 Euros. The experimenter hands out payments discretely. The experiment ends.

D.2 Instructions

Welcome!

This is an experiment on decision-making. Your responses to different decision situations influence your final payment. Your decisions, or the decisions by other participants, influence one part of your final payoff, luck influences the other part. You receive your payment in cash at the end of the experiment.

Payments are handed out anonymously. Other participants will neither learn about your payoff nor about your responses to the decision situations.

We ask you to carefully read the following instructions in order to be able to correctly evaluate the following decision-situations, and the potential gains in each situation.

Please do not communicate with other participants during the experiment. Raise your hand if you have any questions. Please remain seated until the end of the experiment.

During the experiment, we report your potential gains in Tokens. At the end of the experiment, we convert Tokens to Euros.

[19]The 16 allocation problems neither simulate a life-cycle, nor do they allow to accumulate wealth. The life-cycle argument is reduced to the before and after lottery outcome in each situation.

[20]The questionnaire and summary statistics are in Section D.4, and in Table D.5 in Section D.5 respectively.

General

You will face various decision situations during the course of this experiment. Some of these situations include risk. Risk is presented in terms of lotteries. The outcome of each decision situation is therefore determined by your own decision, or the decision of another participant, and, in some cases, by lotteries. The computer draws a random number in order to realize a lottery. The computer draw determines whether or not you receive the amount that is attached to the lottery.

The experiment consists of two parts and a short survey. We now introduce you to the first part.

Part One

1. **Decision-making**
   In the first part of the experiment, we divide you randomly into groups of two participants. You will face 16 decision situations. One participants takes the role of the decision-maker, the other participant takes the role of the recipient. Each situation asks the decision-maker to divide a given amount of Tokens between themselves and the other participant. The total amount of Tokens varies across decision-situations. The decision-maker always receives a higher amount of Tokens than the recipient. They decide whether they want to make transfers to the recipient, and, if so, how high the transfers should be. This means that the decision-maker can equalize given differences in the amount of Tokens that each participant receives. These shares determine the payments at the end of the experiment. In other words, the decision-makers influences differences in payments.

2. **Lotteries**
   Some situations expose your share of the total amount to lotteries. This is independent of your role in the decision-making process. Lotteries induce risk to your share. You may lose parts of your share of the total amount. You are hit by a shock. The probability for a shock varies across decision-situations. Probabilities for decision-maker and recipient are independent of each other.

3. **Protection**
   Your share of the total amount is protected against the risk of a shock. The protection replaces parts of your share in the case that you are hit by a shock. For example, 80 percent of your share may be protected. This means, if you are hit by a shock, you still receive 80 percent of your share of the total amount in the given decision situation. Your protection is independent of the protection that the other participant receives.

Lotteries and Protection

Let us combine lotteries and protection. One situation could look as follows. The decision-maker receives a given amount of Tokens, let us say 6,000 Tokens. 20 percent of this amount are protected against a shock. The probability for the shock is 2.5 percent. If the shock hits, the decision-maker receives a replacement of 1,200 Tokens, as defined by the protection. Put differently, 20 percent of the share are safe. The decision-maker keeps the full amount of 6,000 Tokens with a probability of 97.5 percent.

The recipient receives a smaller amount, let us say 1,000 Tokens. 80 percent of this amount are protected against a shock. The probability for the shock is 20 percent. If the shock hits, the recipient receives a replacement of 800 Tokens (80 percent of the share are safe). The recipient keeps the full amount of 1,000 Tokens with a probability of 80 percent.

Total Amount

Put together, each decision situation in this experiment is defined by the components 1) total amount of Tokens, 2) decision-maker and recipient shares of this amount, 3) probability for a shock, 4) the protection that defines the rate of replacement in the case of a shock. The figure on the screen illustrates the constellation of the total amount in a given situation.

Without a shock, the decision-maker receives the dark green and the light green parts of the total amount. The recipient receives the dark blue and the light blue parts. In the case of a shock, the decision-maker loses the light green part and keeps the dark green part. If the recipient is hit by a shock as well, he or she loses the light blue part and keep the dark blue part. Each part is marked with the amount of Tokens attached to it and the probability of loss. The dark parts are always marked as "safe".

Decision Situation

Another screen illustrates all possible outcomes of a given situations. Subsequently, the decision-maker decides whether he or she wants to make transfers to the recipient, and how high these transfers should be. Transfers are made with a slider. The slider updates the composition of the total amount.

The probability of a shock and the corresponding protection are independent of the transfer decision and are applied to the share of the total amount that the decision-maker holds after the transfer decision. The probability of a shock does not change for the recipient. However, the transferred amount is added to the safe part of the respective share of the total amount.

While decision-makers take their transfer decision, recipients use the slider to indicate their preferred distribution of the total amount. This has no impact on the outcome of a

situation. Only the transfer decision of the decision-maker influences the distribution of the total amount and, therewith, the payments at the end of the experiment.

Lottery Realization

The computer draws a random number between 1 and 100 and realizes the lottery for decision-maker and recipient. Consider the following example. You are in the role of the decision-maker and receive 6,000 Tokens. With a probability of 2.5 percent you lose 80 percent of your share and receive 1,200 Tokens. If the computer draws the number 2.5 or smaller, you lose, otherwise (computer draws a number larger than 2.5), you win and keep your share of 6,000 Tokens.

The screen illustrates a situation in which the recipient is hit by a shock. This correspondents to Outcome C on the outcome screen. The protection replaces 80 percent of the share. The decision-maker is not hit by the shock and keeps the total share.

Roles

The computer flips a fair coin which decides whether you are in the role of the decision-maker or in the role of the recipient. You keep the same role during the whole experiment. The groups (decision-maker and recipient) are randomly assigned after each decision situation.

If you are in the role of the decision-maker, you will see a green batch on the right upper corner of your screen. Otherwise, you will see a blue batch instead.

Payments

Payments for decision-makers are defined by 1) the share of the total amount in a randomly chosen decision situation, after the transfer decision and after the realization of the lottery, 2) the outcome of a randomly chosen situation from the second part of the experiment, and 3) the participation fee.

The same holds for the recipient but with the difference that only the decision-maker influences the share of the total amount in 1).

We now begin with a practice round. The practice round has no impact on your final payments. Please raise your hand if you have any questions. We come to your place.

Instructions for the second part appear on your screen after the first part is completed.

You will know your role for the first part of the experiment after clicking "next". You stay in the same role after the practice round.

D.3 Screens

Figure D.5: Screen situation.

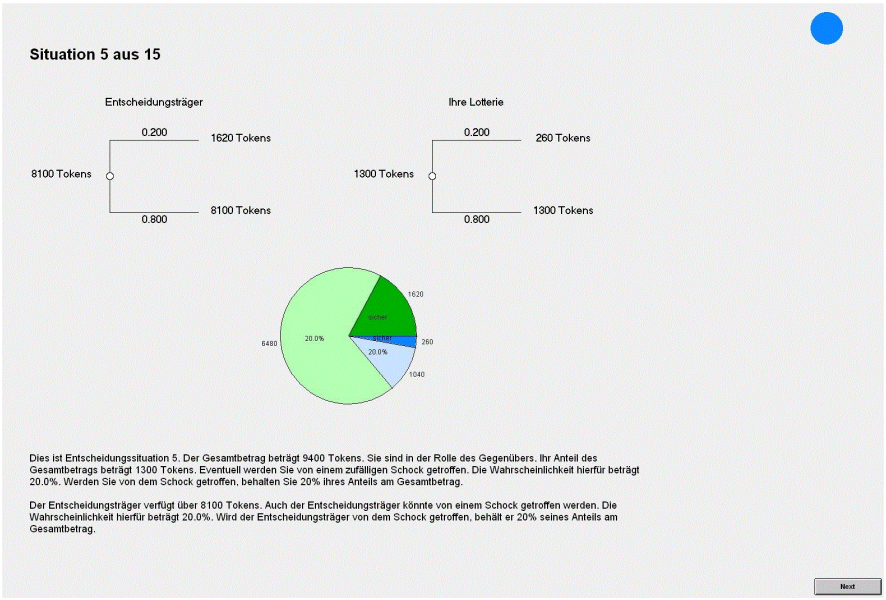


Figure D.6: Screen outcomes.

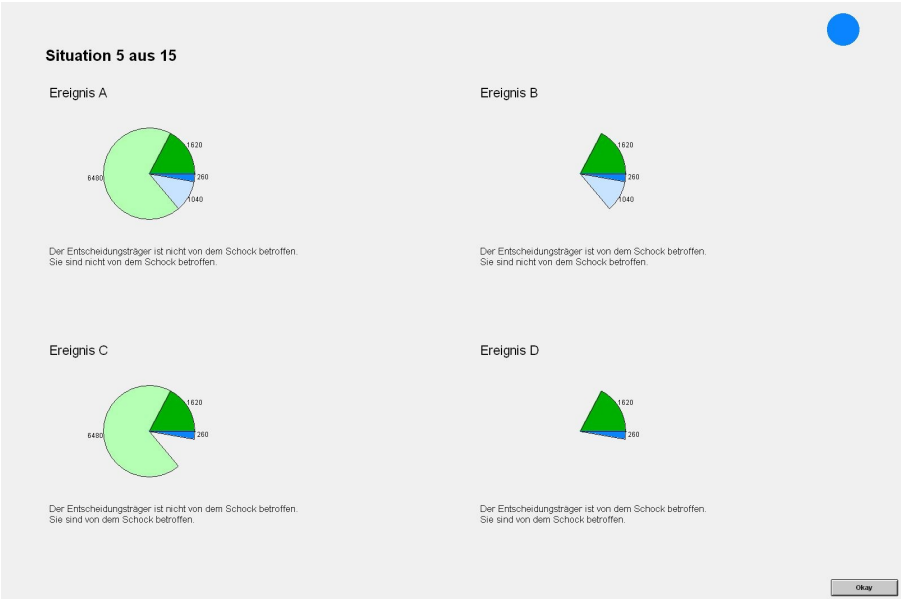


Figure D.7: Screen decision.

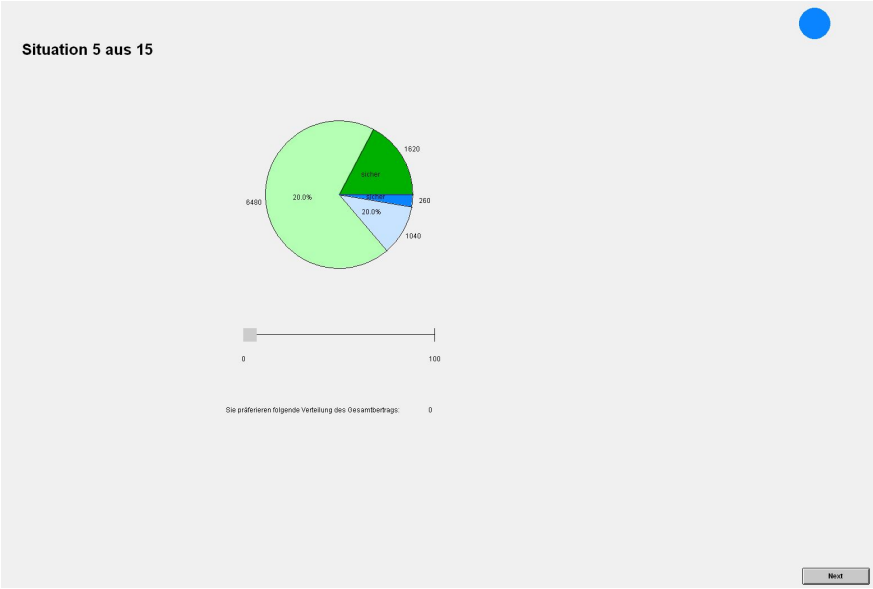
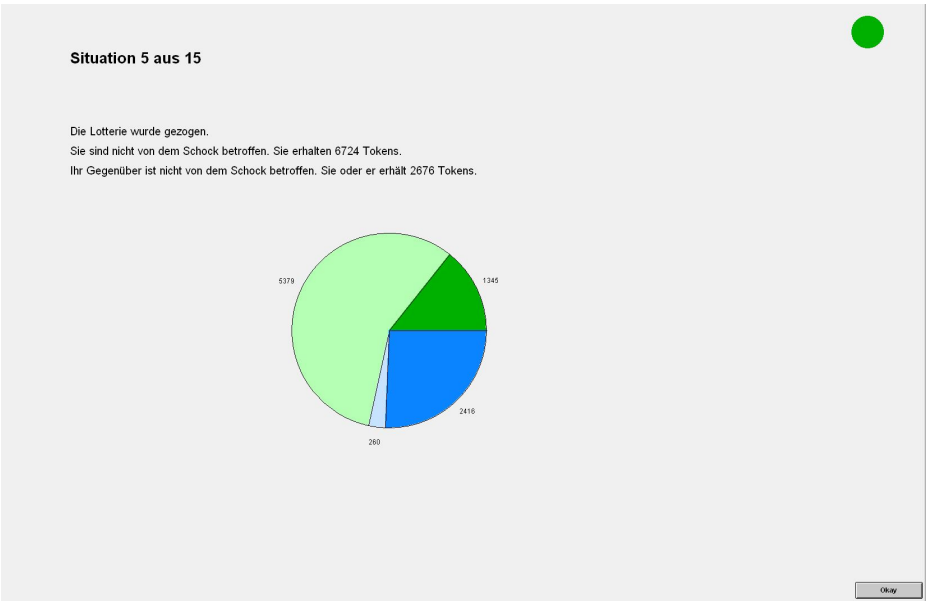


Figure D.8: Screen lottery draw.



Graph D.5 to Graph D.8 show the screenshots for one specific situation in the allocation game. Screens in the decision-making phase look the same for decision-makers and recipients. Outcomes are based on decision-maker allocation decisions[21].

[21]The screens I illustrate here show one of the 16 allocation problems in Table 2 in the main text.

D.4 Survey questions

The post-experiment questionnaire included the following questions. Participants were informed that they could skip any question that they did not wish to answer.

1. How old are you? (free text)
2. What is your major subject? (free text)
3. What is your sex? (2 nominal choices)
4. Are you member of a religious community? (yes/no)
5. If yes, which one? (free text)
6. Which of the descriptions comes closest to how you feel about your family's income nowadays? (5 point scale)
7. How interested would you say you are in politics? (4 point scale)
8. In politics people sometimes talk of "left" and "right", where would you place yourself on this scale, where 0 means left and 10 means right? (10 point scale)
9. Which party would you vote for if the parliamentary election was this Sunday? (free text)
10. Now thinking about the government in Berlin, how satisfied are you with the way it is doing its job? (10 point scale)
11. To what extent do you agree with the statement that the government should take measures to reduce differences in income levels? (5 point scale)
12. How important is it to you that every person in the world should be treated equally, and that everyone should have equal opportunities in life? (7 point scale)
13. How important is it to you to be very successful, and that people recognize your achievements? (7 point scale)
14. Thinking about the experiment again, how easy was it for you to understand the instructions? (10 point scale)
15. If you could participate again, would you make changes in your overall transfer decisions? (5 point scale)
16. Why would you make changes? (free text)

D.5 Descriptive statistics experiment

Table D.5: Descriptive statistics. Means, standard deviations, and percentages.

Continuous	N	Min	Max	Mean	SD
Age	170	18.00	59.00	22.73	4.56
Family income	170	1.00	5.00	2.35	0.87
Redistribution	170	1.00	5.00	2.44	0.98
Interested in politics	170	1.00	4.00	2.06	0.83
Leftright	171	1.00	10.00	5.30	1.71
Instructions	173	1.00	9.00	2.88	2.10
Make changes in transfer decisions	174	1.00	6.00	4.97	1.23
Number of clicks (transfer decision)	174	1.00	46.00	4.04	3.84
Dichotomous	N		%		
Female	174		53		
Member religious community	172		49		

Table D.5 contains information on socioeconomic background for all participants, as well as political attitudes and experiment-specific questions.

D.6 Average transfers

Figure D.9: Average transfers by subject.

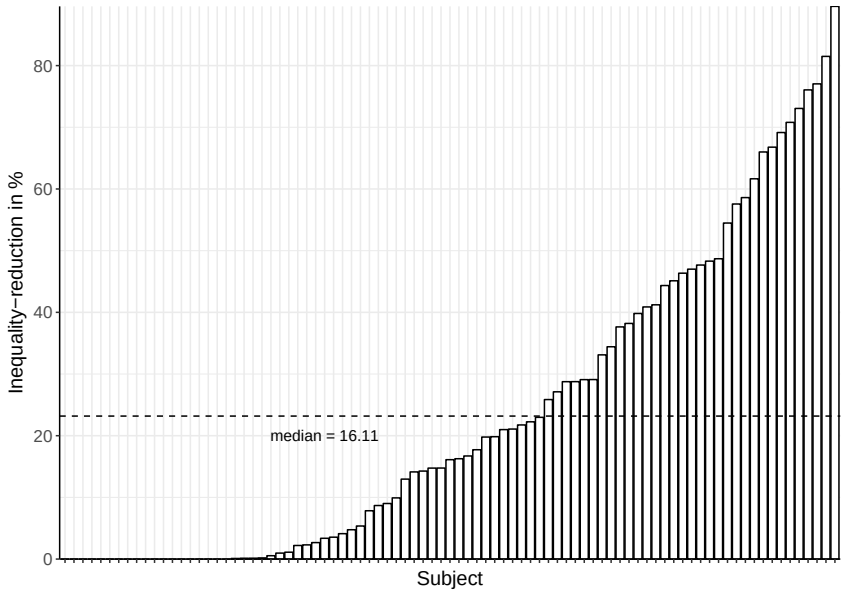


Figure D.9 illustrates average transfers across subjects.

D.7 Social insurance principle and selfish participants

Figure D.10: Effect of social insurance principle on transfers among selfish participants.

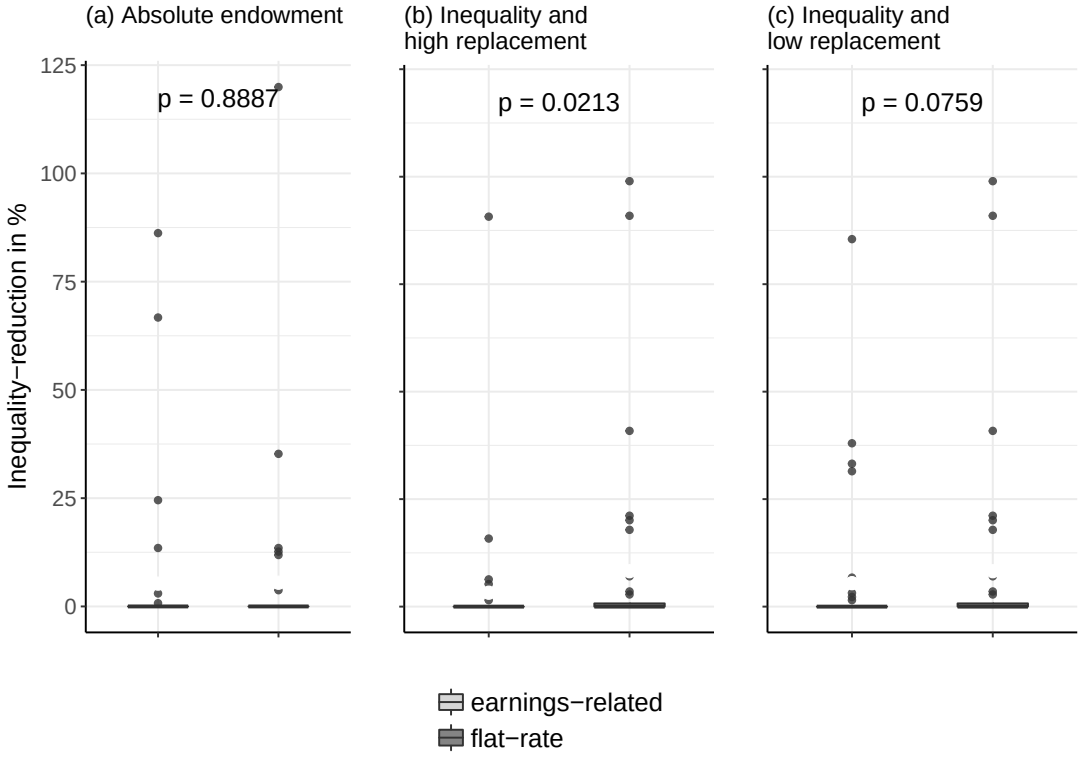


Figure D.10 replicates Figure 4 from the main article but for those 37 participants which I categorize into selfish types. Two important patterns can be detected. First, average transfers are close to zero in all six allocation problems. And second, transfer shares in Comparison (b) and Comparison (c) are higher in the flat-rate relative to the earnings-related situations. These differences are statistically significantly different from zero, but driven by only a few observations. One rational for the reversed relationship is that transfers to the recipient increase welfare gains (recipients get the transferred units for sure). For now, I conclude with the findings from the main analysis and focus on the majority of 50 other-regarding participants.