

The role of perceived economic inequality in the formation of political preferences

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Abstract

Economic inequality, i.e. income and wealth inequality, varies across time and space. Preferences for and concerns about economic inequality in particular and political preferences in general are remarkably independent of such variation in economic inequality. Empirically, the mechanisms linking economic inequality and political preferences are difficult to study since economic inequality as a macro-level phenomenon can influence individual political preferences in many ways. A typical assumption in theoretically and empirically studying the effects of economic inequality on the formation of political preferences is that individuals have full information about economic inequality. This assumption, while analytically helpful, is conceptually and empirically contested. I study the formation of political preferences under incomplete, potentially biased, information about inequality by considering perceived economic inequality as linking mechanism between economic inequality and political preferences.

Chapter 2 studies the relevance of inequality perceptions for the formation of preferences for redistribution and finds that inequality perceptions are strong predictors for preferences for redistribution. I further find that inequality perceptions are independent of actual levels of income inequality but dependent on individual socio-economic and ideological positions. Chapter 3 builds upon this argument but looks at perceptions of tax inequality rather than income inequality and its effects on preferences for taxation. It shows that individuals perceive tax rates for different income groups differently depending on their own income position. Preferred tax rates for different income groups, however, are rather similar across individual income positions. Chapters 2 and 3 indicate that there is heterogeneity in perceived inequalities and that these perceptions are relevant to the formation of political preferences. While these chapters use individual level observational data to study potential mechanisms correlationally, I apply a quasi-experimental design to test whether perceived inequality—modelled as experience of inequality—causally influences political preferences in chapter 4: Studying populist voting in Germany, I find that experiencing regional inequality can affect populist voting.

This dissertation presents empirical evidence that considering perceived inequal-

ities can help us to better understand why individual political preferences do not necessarily reflect levels and changes in economic inequality.

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Abbreviations

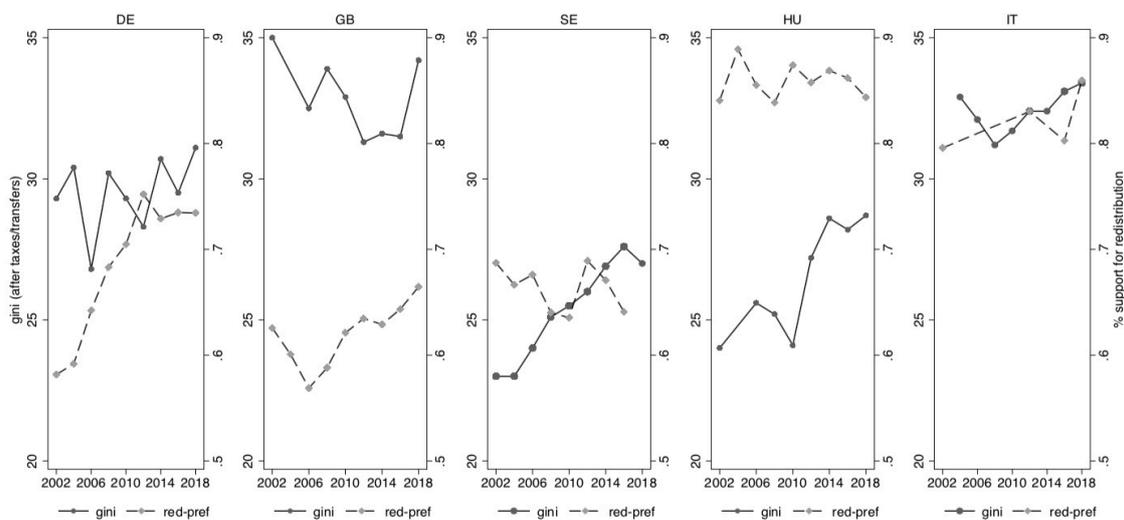
AME	Average marginal effect
AfD	<i>Alternative für Deutschland</i>
BVerfG	<i>Bundesverfassungsgericht</i> (Federal Constitutional Court)
CDU	<i>Christlich Demokratische Union Deutschlands</i>
CSU	<i>Christlich Soziale Union Deutschlands</i>
CI	Confidence interval
DV	Dependent variable
ESS	European Social Survey
EU	European Union
FDP	<i>Freie Demokratische Partei</i>
FE	Fixed effects
GDP	Gross Domestic Product
GG	<i>Grundgesetz</i> (basic law)
ISSP	International Social Survey Programme
IV	Instrumental variable
NSDAP	<i>Nationalsozialistische Deutsche Arbeiterpartei</i>
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
POLS	Pooled ordinary least squares
PUMA	<i>Plattform für Umfragen Methoden und empirische Analysen</i>
ppp	Purchasing power parities
SD	Standard deviation
SE	Standard error
SPD	<i>Sozialdemokratische Partei Deutschlands</i>
MR model	Meltzer/Richard model
GSOEP	German Socio-Economic Panel

Chapter 1

Introduction

Economic inequality, i.e. income and wealth inequality, varies across time and space. Since 1980, income inequality has increased in most countries (Alderson et al., 2005; Alvaredo et al., 2017; Milanovic, 2005; Piketty and Saez, 2014). In light of this empirical observation, a reasonable expectation would be that individuals living in democracies would perceive such trends, evaluate them and react to them politically. However, preferences for and concerns about economic inequality in particular and political preferences in general are remarkably independent of such variation in economic inequality (Hing et al., 2019; Mijs, 2019; Trump, 2018): Figure 1.1 shows the gini coefficient as a measure for income inequality on the left y-axis and the share of individuals supporting redistribution on the right y-axis across different European countries (Germany, Great Britain, Sweden, Hungary and Italy) and across time (2002-2018). While inequality levels as well as the dynamics of inequality vary across countries and time, this variation is remarkably independent of the variation in preferences for redistribution: Individuals living in countries with comparatively high income inequality such as Great Britain do, on average, not demand more redistribution. Nor are changes in income inequality within a country over time reflected in changing preferences for redistribution: In Germany, inequality as well as support for redistribution increased over time. In Hungary or Sweden, however, inequality increased while demand for redistribution remains stable over time. This observation poses the question on the ways in which economic inequality affects the formation of political preferences.

Figure 1.1: Income inequality and preference for redistribution by selected countries (DE, GB, SE, HU, IT) over time (2002-2016).



Note: N=62892 (pooled). Source: European Social Survey, Eurostat, World Bank. See appendix 5.3 for a detailed description of the data and operationalisation used for this figure.

There are different approaches to theoretically grasp the link between economic inequality and political preferences. Firstly, in standard economic models, such as the Meltzer-Richard model (MR model), economic inequality as a macro phenomenon does not affect political preferences beyond individual-level income maximization considerations (Downs, 1957; Meltzer and Richard, 1981). Such models have been extended by including other variables beyond individual income. Political preferences may depend upon further determinants such as mobility expectations or fairness norms (Alesina et al., 2018; Piketty, 1995; Shariff et al., 2016). These extensions, however, retain the underlying rationale of individual-level mechanisms: Inequality in itself is not relevant for the formation of political preferences. Secondly, another strand of literature suggests that individuals may use cultural heuristics and frames to evaluate and/or legitimize existing inequalities and changes in inequalities (Bénabou and Tirole, 2006; Evans et al., 1992; Heuer et al., 2020; Jost et al., 2004; Mijs, 2019; Osberg and Smeeding, 2006; Trump, 2018). For instance, high inequality may be legitimized by the belief in meritocracy. Thus, inequalities may not affect political preferences as individuals use heuristics and frames to make sense of inequalities (for an overview see Hing et al., 2019). Thirdly, economic inequality

may be relevant to individuals but economic inequality may be perceived differently by different individuals. Perceived economic inequalities may vary depending on socio-economic or ideological positions such as the own income position or political orientation (e.g. Bublitz, 2020; Cansunar, 2020; Duch and Stevenson, 2008; Sachweh, 2017; Verwiebe and Wegener, 2000; Wegener, 1987). These strands of literature are interlinked: the ways in which individuals legitimize and evaluate economic inequality and their own economic position is dependent not only on actual inequalities but also on perceived inequalities. Empirically, the mechanisms between economic inequality and political preferences are difficult to study since economic inequality as a macro level phenomenon can influence individual political preferences in diverse ways. As individual political preferences are subjective, the dimension of perceived economic inequality as linking mechanism becomes important.

My cumulative dissertation studies perceived economic inequality as linking mechanism between economic inequality and political preferences. To do so, I present three empirical studies. Each of these studies focuses on a different form of economic inequality: income inequality (chapter 2), tax inequality (chapter 3), and regional inequality (chapter 4) and conceptualizes political preferences differently: as preferences for redistribution (chapter 2), as preferences for taxation (chapter 3), and as voting behaviour as a revealed preferences¹ (chapter 4). This chapter presents the theoretical background and framework of this dissertation. In chapters 2, 3 and 4, the empirical studies are presented. Chapter 5 concludes and derives potential policy implications.

The chapters of my dissertation show that considering perceived inequalities—and thus, considering incomplete, potentially biased, information—is important for understanding the specific theoretical mechanisms, such as, for instance, self-interest, that link economic inequality and political preferences. Actively modelling

¹Studying voting behaviour is valuable as it has actual consequences for individuals as compared to political preferences individuals reveal in surveys. However, this comes with the drawback that it is not necessarily possible to infer the real beliefs of individuals (i.e. actual political preferences) from voting behaviour. I therefore study political preferences expressed in surveys (chapter 2 and 3) as well as voting behaviour (chapter 4).

such perceived economic inequalities can help us to better understand why levels and changes in economic inequalities do not necessarily influence levels and changes in individual political preferences. I exemplify this using self-interest as mechanism and show that the role of economic self-interest may be misestimated if perceived inequality is not taken into account. Correlational relationships between proxies for economic self-interest, such as income, and political preferences, such as preferences for redistribution, are often interpreted as evidence in favour of economic self-interest as mechanism. Yet not only political preferences are stratified along income positions but also perceptions. That is, it is difficult, in correlational designs, to assess whether stratification of political preferences along income positions is actually evidence for the importance of economic self-interest or a result of differences in perceptions (chapters 2 and 3). I offer an example of a quasi-experimental analysis to causally test the relevance of self-interest when linking perceived economic inequality—modelled as experienced inequality—to political preferences (chapter 4). This dissertation highlights the need for future research to study the ways in which individuals learn about economic contexts in general and economic inequality in particular and the ways in which these learning processes shape political preferences.

This chapter is structured as follows: In section 1.1, I give a general overview of the literature on economic inequality and political preferences. I start by summarizing the literature that studies the relevance of economic and ideological determinants in the formation of political preferences. In section 1.1.3, I then outline the literature that studies the role of perceived economic inequalities. In section 1.1.4, I develop my theoretical approach and argue that considering perceived economic inequalities can be helpful to learn about the underlying mechanisms that link economic inequality to political preferences. Section 1.2 summarises the individual empirical studies that constitute this dissertation.

1.1 Theoretical background: Linking economic inequality and political preferences

In the following, I review literature that studies the effect of economic inequality on different forms of political preferences. I do so by, firstly, summarizing the literature studying the role of economic self-interest and potential further factors beyond economic self-interest in the formation of political preferences. Secondly, I summarize the literature that studies the relevance of perceptions of economic inequality. I structure this literature along the ways in which perceptions of inequality is modelled: perceptions of one's own economic position as a point estimate within a distribution, perceptions of economic distributions, and experience of inequality as a third form of perceived economic inequality.

The empirical work on policy responsiveness shows that the link between political preferences and policy implementation is often ambiguous. Institutions, such as electoral systems, or voting patterns mediate the link between (aggregated) political preferences and actual distributional outcomes (Iversen and Soskice, 2006; Moene and Wallerstein, 2001; Persson and Tabellini, 2004; Rodden, 2010)². This dissertation focusses on the formation of political preferences. Whether and, if so, how these preferences translate into policies remains unanswered.

1.1.1 Economic self-interest

Standard economic models explaining political preferences usually consider economic self-interest as a key determinant for political preferences. The MR model³, for in-

²Iversen and Soskice (2006) argue for instance that the electoral system and the composition of governing coalitions structure redistribution and show that proportional representation systems redistribute more than majoritarian systems since centre-left governments dominate in the former system.

³The MR model considers political preferences as an implicit step in how individual income translates into government budget decisions by assuming that political preferences are formed by individual income only. While this model was initially designed to explain redistribution outcomes, it is widely used in social science literature as a workhorse model and starting point to derive hypotheses about political preferences in general and preferences for redistribution in particular (e.g. Dallinger, 2010; Iversen and Goplerud, 2018; Jaeger, 2013; Kenworthy and McCall, 2008;

stance, considers maximizing current income—and therefore self-centred, economic motives—as the main determinant of preferences for redistribution. It theorizes that individuals prefer a higher extent of redistribution if they expect to obtain a monetary net benefit. To model that, it assumes that economic self-interest is the sole determinant of the preference formation and that individuals know their own income position as well as its distance to the mean income: they are, at least to some degree, aware of their relative position within the income distribution.⁴ Consequently, individuals prefer higher levels of redistribution if their income is lower than the mean income. In a majority rule voting system, redistribution should then take place as long as the median income is lower than the mean income. Down's model of democracy ties in with the MR model (Downs, 1957). In this model, rationally acting, self-centred individuals maximise their expected utility by choosing a subjectively optimal future policy programme. To do so, the individual forms the so-called party differential. Within a two-party system, she weighs which party would bring her the greatest benefit. Thus, individual political preferences are understood as preferences revealed through voting for a specific party programme. Downs acknowledges that individual voters often have only incomplete information by introducing uncertainty with respect to, for instance, the policy actually chosen by the election winner. He models this using the concept of information costs. Gathering information is possible, for instance, by selecting and consuming media. This is costly and further produces opportunity costs as it consumes time. In acknowledging information problems, the model goes beyond the MR model, yet does not directly model the role of information about the economic status quo.

Empirical evidence for standard economic models, such as the MR model (Meltzer and Richard, 1981; Romer, 1975) or Down's model of democracy (Downs, 1957), while theoretically elegant, is mixed (for an overview see Kenworthy and McCall, 2008; Lewis-Beck and Stegmaier, 2018; McCarty and Pontusson, 2011). Despite

Rueda, 2017; Schmidt-Catran, 2016).

⁴Further, it assumes that income distributions are right skewed implying that the median income is smaller than the mean income. This is empirically true for all modern societies and therefore not further discussed.

various extensions and criticism, these models have remained the reference model for explaining political preferences in democracies to this day. These models usually have in common that they, firstly, consider economic self-interest as key driver and, secondly, do not directly consider incomplete information.

1.1.2 Beyond economic self-interest

Focussing on other theoretical approaches, partly due to lacking unambiguous empirical evidence for economic self-interest as the sole determinant of political preferences, a fruitful literature emerged which attempts to understand potential factors moderating the relationship between inequality and political preferences beyond economic self-interest: Past experience and future expectations, economic risk, institutions and norms, and other-regarding preferences as potential further factors are discussed separately in the following.

Past experience and future expectations. Broadening the self-interest argument, researchers have argued that not only current income, but also life-cycle income, (intergenerational) mobility or expectations or beliefs about mobility may affect individual political preferences. That is, this literature asks to what extent economic mobility (inter-personally and inter-generationally)—usually modelled as a function of mobility experiences or mobility expectations—affects political preferences (Alesina and La Ferrara, 2005; Benabou and Ok, 2001; Engelhardt and Wagener, 2014; Piketty, 1995). The underlying argument is that individuals are willing to accept inequality in exchange for (the belief in) social mobility. If an individual believes to become wealthy in the future, she may prefer to redistribute as little as possible today. The reverse mechanism also exists: Status threat or fear of (relative) deprivation can also influence the formation of individual political preferences (Engler and Weisstanner, 2020; Mitrea et al., 2020). Besides studying the role of individual experiences and perceptions, the economic voting literature further suggests that political preferences are dependent on general economic developments, such as GDP growth or unemployment rates either motivated by previous economic

trends or future expectations (Lewis-Beck and Stegmaier, 2018).

Economic risk. The welfare state not only redistributes interpersonally at a certain point in time but also ensures stability of individual situations over time. Social benefits and insurance schemes replace or at least cushion income losses. Exposure to economic risks (i.e. due to technological change or due to relative educational deprivation) may therefore increase demand for redistribution to insure against these (felt) risks (Iversen and Soskice, 2001; Rehm, 2009; Rehm et al., 2012; Thewissen and Rueda, 2019; Walter, 2017) or may foster economic dissatisfaction, which may translate in popular or nationalist voting (Colantone and Stanig, 2018a; Gingrich, 2019). Economic inequality may interact with economic risks.

Institutions and Norms. There is a rich sociological research tradition that focusses on institutional explanations to understand how institutional arrangements can shape not only political preferences but also patterns of solidarity within and across societies. Motivated by the seminal work of Esping-Andersen (1990), several empirical studies scrutinize to what extent distinct institutional configurations shape political preferences (Arts and Gelissen, 2001; Blekesaune and Quadagno, 2003; Dallinger, 2010; Hülle et al., 2018; Jaeger, 2006; Koos and Sachweh, 2019; Linos and West, 2003; Schmidt-Catran, 2016; Svallfors, 1997; Taylor-Gooby et al., 2020; Verwiebe and Wegener, 2000). These studies show that institutional configurations can create cultural and institutional frames such as the belief in meritocracy. These cultural frames may influence how individuals evaluate existing inequalities (e.g. Mijs, 2019; Osberg and Smeeding, 2006). Further, Trump (2018) shows that the status quo can also function as a frame and influence political preferences: she shows, using experimental data, that individuals who perceive relatively higher degrees of income inequality also have a preference for relatively higher levels of income inequality. Individuals orientate their preferences towards the (perceived) status quo of economic inequality⁵.

⁵This argument is derived from experimental literature on bounded rationality. It has repeatedly been shown that individuals tend (to like) to stick to the status quo (Kahneman et al., 1991).

Other-regarding preferences. Altruism as a potentially important driver for political preferences has gained increasing attention (Dimick et al., 2018; Rueda, 2017; Rueda and Pontusson, 2010). Altruism can be either seen as an individual characteristic (a personality trait) or as a contextual characteristic. While the former is usually assumed to be a rather stable characteristic, the latter is likely to be more context-dependent. Therefore, the latter puts forth the question: How does economic inequality link to altruistic behaviour? Are there certain forms of (in)equality which favour altruistic behaviour? For instance, individuals seem to act more altruistically if economically well off and seem to act more altruistically towards people who are (ethnically) similar to them (Magni, 2020; Rueda, 2017).

I summarize these potential mechanisms discussed in this section—namely, economic self-interest, past experience and future expectations, economic risk, institutions and norms, and other-regarding preferences—under the umbrella term *positions*. I do so as these mechanisms assume that individuals have specific (socio-)economic or ideological positions—such as political orientations, income positions, justice beliefs or future expectations—that influence the ways in which economic inequality affects their political preferences. Positions in the here used sense is thus not limited to actual positions individuals have but also represents experiences, beliefs and expectations.

While some studies operationalize beliefs and expectations about mobility, risk, or justice norms and therefore acknowledge the relevance of subjective evaluations, perceptions of inequality are often not explicitly taken into account. I therefore aim to contribute to that literature by showing what can be learned about potential mechanisms linking economic inequality and political preferences when considering perceived inequalities: I study the role of perceived economic inequalities in the formation of political preferences.

1.1.3 The relevance of perceived inequalities

In this dissertation⁶, I understand perceptions as descriptive evaluations. An example for such a descriptive evaluation would be a statement such as *'the top decile of the wealth distribution owns 60% of the overall wealth in Germany'*. I distinguish perceptions from beliefs and preferences. In contrast to perceptions, beliefs include value judgements. A belief about economic inequality would thus be a statement such as *'income differences are too large'*⁷. Preferences, in contrast, further reveal a leaning towards a specific alternative such as, for instance: *'I prefer smaller income differences between high incomes and low incomes than currently existent in Germany'*. I acknowledge that perceptions, understood as descriptive evaluations, are influenced by many factors such as beliefs and preferences individuals, among other factors. I thus acknowledge that the concepts beliefs, perceptions, and preferences are interrelated.

When it comes to investigating how macroeconomic phenomena in general and economic inequality in particular affect individual preferences, it is often assumed that individual perceptions of such macroeconomic phenomena are accurate (e.g. Corneo and Gruener, 2002; Lewis-Beck and Stegmaier, 2018; Schmidt-Catran, 2016); either due to considering the actual phenomenon as the theoretically relevant dimension or due to limitations in operationalizing perceptions. This procedure may be appropriate if the inference processes that form perceptions are not systematically biased.

While the economic voting literature⁸ acknowledges that individual economic perceptions are generally not perfect, it usually assumes that aggregated perceptions are rather accurate. That is, on average, a society has an accurate assessment

⁶The terms preferences, beliefs and perceptions are often used inconsistently in the literature cited here. I therefore define these terms for the context of my dissertation.

⁷Past research also interpreted this statement as perception (e.g. Kuhn, 2019).

⁸This literature argues that individuals evaluate economic conditions; if they are unsatisfied, they ascribe the responsibility for the economic situation to the incumbents and sanction them by not re-electing them (Downs, 1957; Duch et al., 2000; Duch and Stevenson, 2008; Lewis-Beck and Stegmaier, 2018).

of an economic measure such as the unemployment rate (Stevenson, 2001). I interpret perceptions as a result of a statistical inference problem by arguing that individual perceptions vary by the position an individual has within a distribution. If that is indeed the case, on average—if the number of observations is sufficiently large—individuals should have an accurate estimate since that would mean that perceptions are distributed along the 'objective measure'. Several studies raise doubts whether this is a reasonable assumption and show that information asymmetries are often not randomly distributed around the 'true' value (e.g. Cruces et al., 2013; Duch et al., 2000; Lupia, 1992). For instance, aggregated inequality perceptions at country level do not follow conventionally used measures of economic inequality such as the gini coefficient across countries (e.g. Brunori, 2017; Gimpelson and Treisman, 2017; Niehues, 2014; Norton and Ariely, 2011). This indicates that inequality perceptions are potentially systematically biased (Bobzien, 2020; Bublitz, 2020; Evans et al., 1992; Karadja et al., 2017; Osberg and Smeeding, 2006). Consequently, there is an increased awareness that economic phenomena may not always be perceived accurately and that perceptions and actualities may be distinct (Bartels, 2005; Duch et al., 2000; Engelhardt and Wagener, 2014; Gimpelson and Treisman, 2017; Kuziemko et al., 2015; Niehues, 2011; Stevenson, 2001; Trump, 2018; Wlezien et al., 1997). I suggest that perceived inequalities can be systematically biased by individual (socio-)economic and ideological positions: Individuals may form their perceptions of economic inequality, among other factors, based upon on economic self-interest, past experience and future expectations, economic risk, institutions and norms, and other-regarding preferences.

To measure economic inequalities, standard measures such as the Gini index or 80/20 ratios were developed and are widely accepted. When it comes to the question how to study perceptions, there is, however, less agreement on the operationalisation and measurement. I review three approaches to operationalize perceived inequality and structure this literature into a strand aiming to understand individual perceptions of one's own socio-economic position, a strand asking how individuals perceive overall economic inequality distributions, and a strand that conceptualizes perceived

inequality as experience of inequality.

Perceptions of one's own socio-economic position. This strand asks how *good* individuals are in assessing their own (relative) income position. That is, individuals are asked to report a point estimate. The theoretical mechanism proposed by this literature builds upon the self-interest argument and argues that political preferences are formed based on one's own perceived income position (Cansunar, 2020; Engelhardt and Wagener, 2018; Evans, 2004; Karadja et al., 2017). This literature therefore relaxes the full information assumption and explicitly accounts for the fact that perceptions are biased to test the self-interest argument. Several studies study this relationship by using experimental tools that allow to differentiate the impact of measures of actual and perceived inequality on demand for redistribution (e.g. Hvidberg et al., 2020; Karadja et al., 2017; Kuziemko et al., 2015). The experimental context allows to detect potential information asymmetries and to give individuals information so that they can update their perceptions. Most studies conclude that individuals react in the way the self-interest hypothesis would predict if information asymmetries were reduced: For instance, Cruces et al. (2013) show that individuals who overestimate their relative income position demand more redistribution when learning that they overestimated their own position. For the German case, Engelhardt and Wagener (2018) find that individuals adjust their preferences for redistribution once they learn that they are net contributors in the German tax-transfer system.

Perceptions of economic inequality. There is also research that studies the ways in which individuals perceive overall distributions of economic parameters to ask how accurate individuals do so and how that affects individuals. There is a long tradition in sociology to study fairness judgements relative to perceptions in the context of justice evaluations of earnings. This strand operationalizes perceived inequality by ratios calculated on the basis of perceived earnings for different occupations. These ratios can be compared to actual earnings ratios or desired earnings ratios (Jasso, 1978; Kuhn, 2011; Liebig et al., 2012; Wegener, 1987). Besides studying

perceptions of earnings, Norton and Ariely (2011) study perceptions and preferences for wealth distributions in the US by asking individuals to report their perceived and preferred share of wealth for different quintiles of the wealth distribution. This presupposes that the respondent can express her inequality perceptions in wealth shares. Another way of studying perceptions of economic inequality, is to use survey questions which use visual tools in demonstrating varying kinds of inequality. For instance, the ISSP includes a question that asks respondents to choose among five diagrams (see figure 2.3) the one that best represents their society. Answers can then either be treated as categorical or nominal data (Evans et al., 1992; Osberg and Smeeding, 2006) or inequality measures, such as the gini coefficient, can be derived from these diagrams (Bobzien, 2020; Gimpelson and Treisman, 2017; Niehues, 2014). This literature tends to conclude that individuals are not particularly good to assess economic inequalities. Further, there seem to be cultural or institutional differences that go beyond actual economic inequalities: Individuals in the US report comparatively low levels of inequality while individuals in post-communist countries tend to report comparatively higher levels of inequality (Evans et al., 1992; Niehues, 2014; Norton and Ariely, 2011).

Experience of economic inequality. Experiencing economic inequality, for instance, by (local) exposure, is a further channel to become informed about inequality (McCall et al., 2017; Sands and de Kadt, 2020). Lipps and Schraff (2020) argue that regional inequality is a highly visible and thus salient form of economic inequality, as it can be directly experienced through public infrastructure. This, in turn, may affect political preferences. Diermeier (2020) studies the relevance of experiencing regional economic inequality for the formation of political preferences by analysing the association between public local infrastructure in terms the distance to the next hospital or train station and populist voting in Germany. He shows that poorer public good provision coincides with higher AfD vote shares. This association, however, is less strong or absent in smaller, rural municipalities. This finding may be generalizable to other European countries: Linking the European Social Survey to information on regional funding for 123 EU regions, Schraff (2019) shows

that the likelihood to vote for Eurosceptic parties is higher if regional funding is insufficient. Sands and de Kadt (2020) show, by conducting a field experiment, that local exposure to local economic inequality increases support for wealth taxation. Winkler (2019) shows, that increases in regional inequality are associated with an increase in the likelihood to support politically extreme parties. This is in line with findings by Roth and Wohlfart (2018) who show that individuals who experience higher levels of inequality over their life course are less likely to support redistribution; this seems to be driven by individual fairness views. While these studies do not directly study the mechanisms in which experiencing inequality affects political preferences, experiencing inequality seems to affect the ways in which individuals perceive economic inequality. Experience of economic inequality may thus be a proxy for perceived economic inequality.

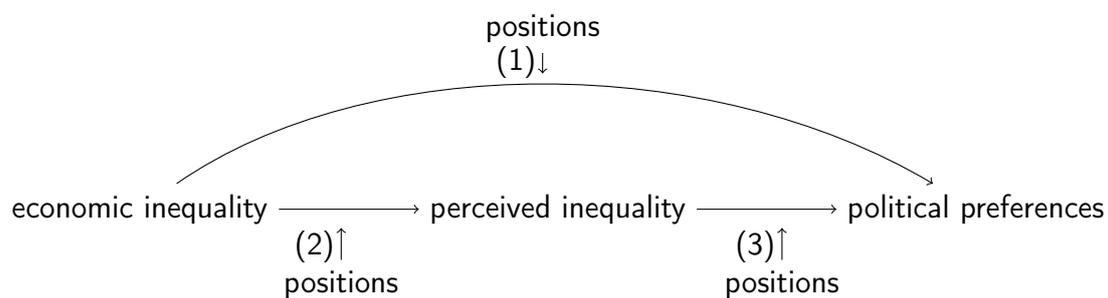
1.1.4 Theoretical framework: Perceived inequality as linking mechanism

This dissertation suggests that it may be valuable to study perceived inequalities as a mechanism linking economic inequality and political preferences. Figure 1.2 heuristically illustrates the theoretical argument. Economic inequality is one potential determinant of political preferences and the determinant of interest here. It is regularly researched how (socio-)economic and ideological *positions*⁹, such as income mobility or political orientation, moderate the relationship between economic inequality and political preferences (e.g. Burgoon et al., 2018; Dimick et al., 2018; Han, 2016; Schäfer and Schwander, 2019; Schmidt-Catran, 2016) (path (1) in figure 1.2). For instance, if an individual evaluates high levels of inequality as desirable, high economic inequality may not translate in demanding more redistribution. I argue that, beyond path (1), perceptions of economic inequality can function as a mediator: Depending on the information individuals have about economic inequal-

⁹Under the umbrella term *positions*, I summarize all determinants discussed in section 1.1.1 and 1.1.2: economic self-interest, past experience and future expectations, economic risk, institutions and norms, and other-regarding preferences.

ity, inequality may affect individual political preferences differently (e.g. Duch et al., 2000; Karadja et al., 2017; Niehues, 2014; Norton and Ariely, 2011). Both, the link between economic inequality and perceived inequality (path (2)) (e.g. Prior et al., 2015) as well as the link between perceived economic inequality and political preferences (path (3)) (e.g. Karadja et al., 2017) may be influenced by economic and/or ideological positions.

Figure 1.2: Theoretical mechanism: The role of perceived inequality.



Source: Own illustration.

While perceived inequality is likely to be influenced by actual economic inequality (path (2)), the relationship is far from straightforward. Information about inequality may be processed differently depending on individual political views or different information may be available depending on one's own (relative) income position. For instance, (social) media an individual is exposed to (or exposes herself to) may shape perceived inequalities. Further, the ways in which perceived inequality affects political preferences may also be moderated by socio-economic and ideological positions (Prior et al., 2015) (path (3)): depending on the political orientation or the income position an individual has, she may legitimize or evaluate inequalities differently. While newer research takes into account perceived inequalities, the role of individual economic and ideological positions in understanding how perceived inequality links to political preferences, is rarely studied. I contribute to the literature by doing so.

The question on how individuals form their perceptions of economic inequali-

ties (path (2)) is not the main focus of this dissertation. Media consumption and the formation of echo chambers (Barnes and Hicks, 2018), socio-economic clustering (Bavetta et al., 2019; Mijs, 2019), social comparison (Cansunar, 2020) or culture (Evans et al., 1992; Osberg and Smeeding, 2006) may influence perceptions of economic inequalities. While chapters 2 and 3 offer some insights on path (2), this dissertation primarily focusses on path (3). I follow the theoretical arguments suggested by past research linking economic inequality and political preferences which I summarized under the umbrella term *positions* (path (1)). I argue, however, that the ways in which economic and ideological positions moderate this relationship can only be understood based upon perceived rather than actual inequalities: I study the relevance of perceived inequalities to better understand the mechanisms that link economic inequality to political preferences.

1.2 A guide through the chapters

I focus on the role of potentially biased information about economic inequality, conceptualized as perceived economic inequality, to better understand the formation of political preferences, understood as preferences for redistribution, preferences for taxation, and voting behaviour as revealed preference. I exemplify this using self-interest as mechanism. I find that, while self-interest is relevant to individuals (chapter 4), the role of self-interest may be misestimated if perceived inequality is not taken into account (chapter 2 and 3). I do so by examining various sub-questions in three empirical studies with different methodological approaches. As there is only a limited number of possibilities to operationalise perceived inequality, I use different operationalisations in my three empirical studies. In chapters 2 and 3, I explore operationalisations of perceived income inequality and perceived tax inequality to study how these perceived inequalities relate to political preferences. These individual-level analyses give an indication of how a macro-condition such as inequality is perceived by individuals and how that affects individual political preferences. Using observational data comes with the drawback that it does not allow

for causal conclusions. In chapter 4, I therefore use a quasi-experimental approach. Here, I operationalise perceived inequality as experience of inequality and study how experiencing inequality affects voting behaviour. Table 1.1 gives an overview of the kind of economic inequality under consideration, the way it is operationalized and the political preference studied in the respective empirical study. In the following, I summarize the individual chapters.

Table 1.1: Overview of the individual empirical studies.

	inequality	operationalized as	political preference
Ch.2	income inequality	perception	preference for redistribution
Ch.3	taxation inequality	perception	preference for taxation
Ch.4	regional inequality	experience	voting behaviour (revealed preference)

Source: Own illustration.

In chapter 2, I study the determinants of perceived economic inequality as well as the relevance of such inequality perceptions for preferences for redistribution. I argue that inequality perceptions are by definition closely tied to the standard question for measuring preferences for redistribution, namely, *'whether it is the responsibility of the government to reduce income differences'*¹⁰: Individuals answer this question based upon their perception of the status quo. I test this by using two waves of the ISSP (1999 and 2009) for 22 European countries. Firstly, I show that inequality perceptions are systematically related to socio-economic factors as well as to ideological beliefs rather than to actual inequality. Secondly, I disaggregate the variance in inequality perceptions to a part which is explainable by ideological and socio-economic positions (the common individual level control variables for explaining preferences for redistribution) and an unexplained part. I show that the unexplained as well as the explained part of inequality perception variance is associated with preferences for redistribution. I argue that this finding makes considering

¹⁰This item or a similar item is included in almost all large surveys studying social and political preferences such as the German Socio-Economical Panel (SOEP), the European Social Survey (ESS), or the International Social Survey Programme (ISSP) and is used extensively to study preferences for redistribution (e.g. Alt and Iversen, 2017; Corneo and Gruener, 2002; Engelhardt and Wagener, 2014; Jaeger, 2013; Rehm, 2007; Schmidt-Catran, 2016).

inequality perceptions practically relevant since perceptions impact preferences for redistribution beyond the standard control variables for explaining preferences for redistribution. I conclude from these analysis that perceived inequalities are stratified along the same determinants as preferences for redistribution. That is, it is difficult to disentangle the relative importance of inequality perceptions and potential further determinants such as socio-economic determinants in a correlational research design: For instance, it is not possible to disentangle whether higher income is associated with lower demand for redistribution because individuals follow an optimization strategy or because they perceive lower levels of inequality due to their income position and thus demand less redistribution.

In chapter 3, Fabian Kalleitner and I attempt to gain a better understanding of the relationship between perceived tax inequality and its effects on preferred tax inequality. While economic self-interest seems to be relevant for the formation of preferences for taxation, research disagrees why and when individuals deviate from that paradigm of economic self-interest. We test the role of economic self-interest in the formation of preferences for taxation. Using the ISSP 2016, we find that individuals tend to favour lower tax rates for income groups closer to their own income. We then analyse whether this is driven by self-interest (that is, minimizing one's own tax burden) or by different perceptions of tax rates for different income levels (that is, different assessments of one's own tax burden in comparison to others). Using survey data from Austria, we show that individuals perceive tax rates for different income groups differently depending on their own income position. Preferred tax rates for different income groups, however, are rather similar across income positions. Our results suggest that individuals' ability to accurately estimate the structure of tax systems should not be overestimated. We argue that it is crucial to acknowledge that correlational relationships between proxies for economic self-interest and preferences for taxation do not necessarily provide evidence in favour of economic self-interest as mechanism if the heterogeneity in inequality perceptions is not considered.

Chapters 2 and 3 use observational individual-level data to study individual

responses to the macroeconomic condition of economic inequality by considering perceived inequality. I apply a quasi-experimental approach in chapter 4 to causally test whether experience of inequality affects political preferences. I use aggregated data at municipality level for Germany. This allows for a rigorous causal test whether and, if so, to what extent experience of economic inequality affects political preferences but comes with the limitation of testing the mechanism at municipality- rather than individual level. I analyse to what extent regional redistribution between municipalities—as a place-based policy that mitigates regional economic disparities—affects individual political preferences in terms of right-wing populist voting. I offer the mechanism that individuals are sensitive to changes in the financial situation of the municipality they live in: To articulate discontent (reward) with the financial situation, as a result from losing out on (benefiting from) regional redistribution, individuals (do not) vote for Germany’s right-wing populist party AfD. That is, I test whether individuals follow their economic self-interest by showing (dis)content if they are comparatively worse (better) off. To account for endogeneity, I instrument regional redistribution with an exogenous change in the official population measures as a result of the German census published in 2014. This change re-allocated financial means between municipalities. Analysing German federal election results of 2013 and 2017 and municipality-level data, I find that losing out on regional redistribution increases right-wing populist voting.¹¹ I conclude from this analysis that perceived inequality in terms of experience of inequality is a relevant dimension to individuals when forming their political preferences: When individuals believe to lose out from regional redistribution, they articulate discontent.

My empirical findings highlight the importance of considering and measuring the heterogeneous ways in which individuals perceive economic inequality in order to study the theoretical mechanisms that link economic inequality to political

¹¹Rueda and Stegmueller (2018) link voting behaviour to preferences for redistribution and show for the US that redistribution preferences are the decisive factor that makes voters more likely to vote for Democrats rather than for Republicans. Building on that finding, I interpret the aggregated vote share as a revealed preference reflecting a (dis)agreement with the status quo of the redistribution mechanism.

preferences. My contribution to the literature is thus both, methodological and theoretical: Methodologically, in order to avoid producing distorted empirical results, it is important to operationalize perceived inequalities to accurately assess the relevance of economic inequality as a macroeconomic phenomenon for individual political preferences. Theoretically, I exemplify, using self-interest as mechanism, that considering perceived economic inequalities can be helpful to understand the exact mechanisms that link economic inequality and political preferences. I argue that self-interest is a relevant mechanism linking economic inequality and political preferences. However, the importance of self-interest may be misestimated if perceived inequality is not taken into account as socio-economic conditions do not only form political preferences but also form inequality perceptions. This may also be relevant to other mechanisms beyond economic self-interest such as other-regarding preferences. Therefore, I conclude, in order to study the mechanisms that link economic inequality to political preferences, perceived inequality needs to be considered. Potential policy implications, derivable from this dissertation, are, firstly, to enable individuals to gather information about economic inequality if wished and, secondly, to create more inclusive and more equal economic environments to reduce economic and political polarisation.

Chapter 2

Polarized perceptions, polarized preferences?

Linking inequality and preferences for redistribution

Abstract

When studying the relationship between inequality and preferences for redistribution, it is often assumed—either implicitly or explicitly—that individuals are informed about actual levels of inequality. Newer research, however, challenges this assumption and shows that inequality perceptions differ from actual inequality. Empirically, these inequality perceptions are rather good predictors for preferences for redistribution. This paper argues that individuals answer the standard question for measuring preferences for redistribution based upon their inequality perceptions. I conduct a simple regression analysis based upon two waves of the ISSP (1999 and 2009) and show that (i) inequality perceptions are systematically linked to socio-economic variables as well as to ideological beliefs rather than to actual inequality. Then, I disaggregate the variance in inequality perceptions to a part which is explainable by socio-economic and ideological determinants (the common control variables for explaining preferences for redistribution) and an unexplained part. I show that (ii) the explained as well as the unexplained variance part is associated with preferences for redistribution. I argue that this finding makes considering inequality perceptions practically relevant since standard control variables do not fully account for variation in perceived inequality.

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2.1 Motivation

Some consequences of economic inequality depend upon public perceptions or public reactions to economic inequality. Preferences for redistribution are consequences of perceptual and evaluational aspects of inequality. When studying the relationship between inequality and preferences for redistribution, it is often assumed that individuals perceive the actual phenomenon¹ under consideration accurately. Empirically, individual inequality perceptions—either of the own positioning within a distribution or the overall assessment of the distribution—seem to be rather good predictors for preferences for redistribution: When perceiving high (low) levels of inequality, individuals tend to prefer higher (lower) levels of redistribution (e.g. Gimpelson and Treisman, 2017); when individuals position themselves lower (higher) on a social ladder, they also tend to prefer higher (lower) levels of redistribution (e.g. Engelhardt and Wagener, 2014,0; Karadja et al., 2017). The former means that individuals seem to be inequality-averse to a certain extent while the latter suggests that individuals seem to be self-centred to a certain extent. Both, however, seem to depend on the perception of inequality. This strong role of perceptions leads Engelhardt and Wagener (2014) to conclude that *'perceived inequalit[ies] [...] are good predictors of social policy, sometimes even better ones than objective, official or actual measures.'* (p.14). It remains, however, unexplained how perceptions are formed and why perceptions of inequality perform that well in explaining preferences for redistribution.

One way to understand inequality perceptions is to conceptualize them as an information problem: Individuals build perceptions using the information they have about the world; this is determined by socio-economic positions, initial beliefs, expectations, or feelings (e.g. Nyhan and Reifler, 2010). Generally, the literature on preferences for redistribution differentiates between economic, self-centred determinants and ideological determinants (e.g. Corneo and Gruener, 2002). I follow this differentiation and argue that not only preferences for redistribution but also

¹I refer to the empirically measured phenomenon as actual phenomenon. This is, of course, not free from error.

inequality perceptions are stratified along socio-economic and ideological determinants. Thus, I consider inequality perceptions as mediating variable between economic and ideological factors and preferences for redistribution. I argue that the design of the standard question for measuring preference for redistribution (see figure 2.2 for an example) motivates individuals to evaluate their preference relative to their inequality perception: inequality perceptions seem to be such a strong predictor since preferences for redistribution are based thereon.

In this vein, this paper contributes to the existing research on inequality perceptions and preferences for redistribution by offering a three-step argument: Firstly, in line with past research, I show that inequality perceptions are associated with preferences for redistribution arguing that this is due to the fact that individuals reveal their preference for redistribution relative to their perceived inequality. Secondly, in contrast to past research, I do not treat perceptions as exogenous; instead, I show that inequality perceptions are systematically stratified along socio-economic and ideological variables. Thirdly, I test and discuss the implications of these findings for measuring preferences for redistribution: If ideological and socio-economic variables (the common control variables for explaining redistributive preferences) fully explain inequality perceptions, then, by using these variables as controls, it is implicitly controlled for inequality perceptions. To test if this is the case, I disaggregate the overall variance in inequality perceptions in two parts: a part which is explainable by socio-economic and ideological determinants and an unexplained part. I show that the unexplained as well as the explained part of variance in inequality perceptions relates to preferences for redistribution. I argue that this finding makes considering inequality perceptions practically relevant for explaining preferences for redistribution since these perceptions are associated with preferences for redistribution beyond the standard control variables. The analysis is based upon the two latest waves of the International Social Survey Programme—Social Inequality Module (1999 and 2009) covering 22 European countries. I apply a cross-country perspective which allows to capture variation in actual inequality across countries.

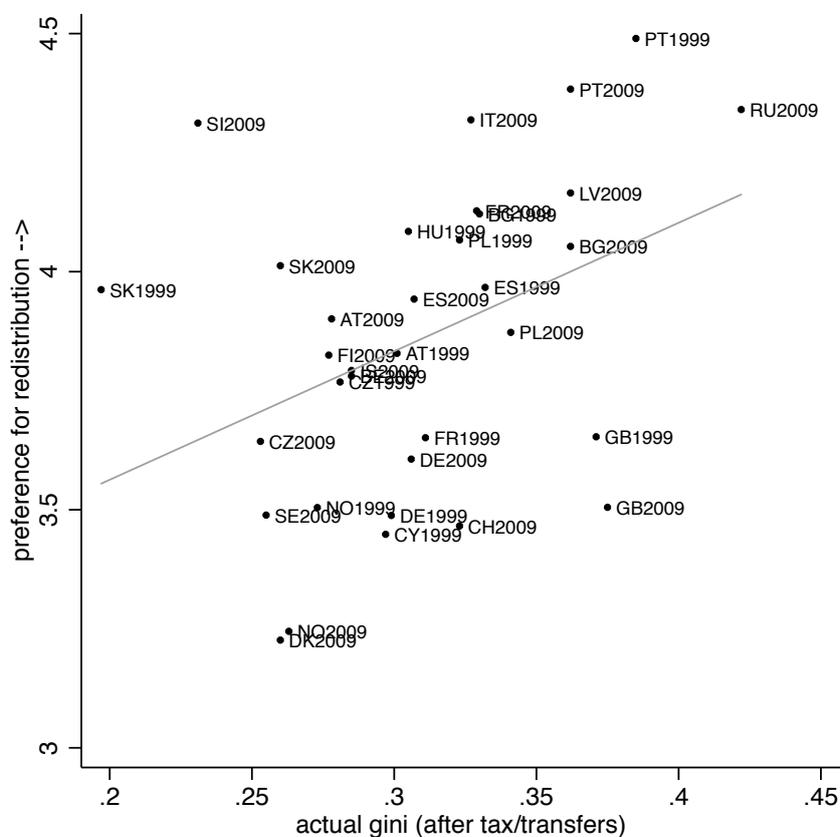
2.2 Theoretical background

2.2.1 Reviewing existing literature

The standard model developed by Meltzer and Richard (1981) to explain preferences for redistribution considers maximizing current income—and therefore self-centred, pecuniary motives—as main determinant. It assumes that individuals prefer a higher extent of redistribution if they expect to obtain a monetary net benefit. It assumes that (i) income distributions are right skewed implying that the median is smaller than the mean income and that (ii) individuals know their own income position and the distance to the mean income. It states that individuals prefer higher levels of redistribution if their income is lower than the mean income. In a majority rule voting system, redistribution should then take place as long as the median income is lower than the mean income. Consequently, individual redistributive preferences are based upon the effect of actual inequality, and more precisely, upon the difference between the one's own income and the average income. Most of the extensive research that investigates the determinants of redistributive preferences uses this model as starting point (for an overview see McCarty and Pontusson, 2011). In a cross-country perspective, this model suggests that higher levels of inequality are associated with higher demand for redistribution. Figure 2.1 plots the average demand for redistribution and the actual Gini of disposable incomes after taxes and transfers. The general trend in this scatter plot seems to be supportive of the median voter argument: higher levels of income inequality are associated with a higher country-average in demand for redistribution. It does, however, not explain the full variation ($R^2=.18$). Outstanding in terms of relative low demand for redistribution are Scandinavian countries such as Denmark or Norway with coincidentally low levels of inequality, but also Switzerland or Great-Britain with comparatively high levels of inequality.

Lacking unambiguous empirical evidence for income and income inequality as sole determinant, a fruitful literature which attempts to understand the link between inequality and preferences for redistribution emerged. This literature theoretically dis-

Figure 2.1: Preferences for Redistribution and Income Inequality (Gini coefficients after taxes and transfers) by country-year.



Note: $R^2=.39$. Source: ISSP 1999 + 2009. $n=20455$.

cusses and empirically assesses mediating variables such as mobility beliefs² (Alesina and La Ferrara, 2005), economic risk (Rehm, 2009; Walter, 2017), electoral systems (Iversen and Soskice, 2006), ethnic heterogeneity (Alesina and Glaeser, 2006), or welfare regimes (Arts and Gelissen, 2001; Dallinger, 2010; Svallfors, 1997).

While these approaches challenge the assumption that solely economic, self-centred pecuniary motives determine preferences for redistribution, there is also research challenging the assumption that individuals are indeed aware of their own income position (relative to the mean income). This research focuses on the individual subjective positioning within a distribution. As people are not aware of the

²The underlying argument is that individuals are willing to accept inequality in exchange for (the belief in) social mobility.

full income distribution, one potential mechanism is that individuals extrapolate from their subjective social status and the similarity of the people around them to the whole society, biasing their perception of their social status towards the middle (Kelley and Zagorski, 2004; Wegener, 1987). Experimental studies show that individuals change their preferences for redistribution once they get information about their actual (relative) position (e.g. Cruces et al., 2013; Engelhardt and Wagener, 2014; Karadja et al., 2017; Kuziemko et al., 2015). For instance, Karadja et al. (2017) show that Swedes, on average, consider themselves to be poorer than they actually are. Informing a sub-sample about their actual income position within the income distribution based upon administrative data motivates them to demand less redistribution. This indicates that assuming full information about the own position within a distribution, as done in the median voter theorem, is a rather strong assumption. This literature challenges the assumption of full information. However, it is supportive of the self-interest argument: assuming to benefit from redistribution causes individuals to demand more redistribution.

Besides the recently increased attention on subjective evaluations of individual positions within a distribution, there is also a focus on studying individual assessments of overall (income) distributions. One approach is to study the perceptions (and legitimization) of occupational wages. Most studies doing so conclude that there is large variation in perceptions of occupational wages and that the extent of inequality is usually estimated relative to the position the respondent has (Kelley and Evans, 1993; Kelley and Zagorski, 2004; Osberg and Smeeding, 2006; Wegener, 1987). These studies suggest that inequality perceptions vary across individuals and that these perceptions affect fairness and legitimacy beliefs (Gijsberts, 2002; Kelley and Zagorski, 2004; Osberg and Smeeding, 2006). An alternative approach studies general perceptions of inequalities by asking individuals to assess their inequality perceptions graphically. These studies show that individuals tend to misperceive³ the overall level of economic inequality (Gimpelson and Treisman, 2017; Niehues,

³At least when comparing these inequality perceptions with standard measures of monetary inequality such as pre- or post-tax income Gini coefficients. I use this term since it is used by Engelhardt and Wagener (2018) and Gimpelson and Treisman (2017).

2014; Norton and Ariely, 2011). Gimpelson and Treisman (2017) conclude that '*[w]hatever the causes, the gap between perceptions and reality—or, at least, statisticians' best estimates of reality—is clear*' (p.51) and simultaneously point out that what causes perceptions of inequality remains unclear.

The literature is only at the beginning of exploring the interrelation between inequality perceptions and preferences for redistribution. Often, a direct link between measurements of a phenomenon (i.e. actual income inequality) and (social) policy preferences is made (cf. e.g. Alt and Iversen, 2017; Corneo and Gruener, 2002; Jaeger, 2006; Lupu and Pontusson, 2011; Rehm, 2007; Schmidt-Catran, 2016); either because of limitations in the measurement of perceptions or because of considering the actual object rather than the perceived object as theoretically relevant. The hitherto existing studies which focus on perceived measures indicate that it may be promising to explore perceptual aspects in more detail. I would like to embed this study within this research on perceptions of inequality by contributing to the questions (i) how inequality perceptions are formed and (ii) to what extent inequality perceptions relate to policy preferences.

2.2.2 The relevance of inequality perceptions

Looking at commonly used standard survey questions to elicit social policy preferences, these questions are formulated in a way that allows for an interpretation of eliciting the preference *relative* to the (I argue *perceived*) status quo.

The dependent variable *preference for redistribution* is usually measured by asking whether individuals consider '*it the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes.*'⁴ (e.g. ESS, ISSP, GSOEP). Respondents can answer this question by choosing one out of five categories ranging from *strongly agree* to *strongly disagree* (cf. Figure 2.2

⁴The exact formulation of the question varies across surveys. I use the wording of the ISSP as an example.

for the ISSP question as an example). It is possible—perhaps even likely—that individuals consider their perceptions of inequality as baseline to answer that question. The crucial question is: Would that be problematic? Assume a society in which all individuals are homogeneous with respect to the preference for the optimal outcome distribution after redistribution. That is, given a fixed level of inequality in that society, they all have the same preference for redistribution. They only differ with respect to their inequality perceptions; some individuals perceive high levels of inequality, others low (high) levels of inequality. If individuals are asked to elicit their preference for redistribution using this question and if they build their preference based upon their perception, a stratification of answers would be observable although individuals share the same redistributive preference by definition. Individuals who perceive relatively high (low) levels of inequality will demand more (less) redistribution—although the desired outcome distribution is identical to those who perceive comparatively low levels of inequality. Since this question is relative by nature, it is likely to be answered based upon inequality perceptions: Individuals simply think about inequalities they are surrounded by when answering that question and this information about inequality is often incomplete and varies from one individual to another.

I do not challenge the established theoretical mechanisms between inequality and preferences for redistribution but relax the assumption of full information about the level of inequality. Consider, for instance, the median voter theorem. Here, preferences are dependent on the status quo, namely, the own income position as well as the distance to the median income (Meltzer and Richard, 1981). As long as complete information is provided, the perception of a phenomenon is identical to the actual phenomenon under consideration. I argue that preferences for redistribution are dependent on perceptual aspects if the assumption of full information does not hold empirically. This is especially relevant if inequality perceptions are systematically influenced or biased. In line with past research, I consider socio-economic self-interest and ideological beliefs as two dimensions that shape preferences for redistribution (e.g. Corneo and Gruener, 2002; Linos and West, 2003) and argue that

Figure 2.2: Standard item to measure preferences for redistribution: ISSP 2009 as example.

Q6. To what extent do you agree or disagree with the following statements?
(Please tick one box on each line)

	Strongly agree	Agree	Neither agree nor disagree	Dis- Agree	Strongly disagree	Can't choose
b. [[GOV1: ABCD]] It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes.	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	<input type="checkbox"/> ₃	<input type="checkbox"/> ₄	<input type="checkbox"/> ₅	<input type="checkbox"/> ₈

Note: Source: ISSP (2009)—Social Inequality IV. Master Questionnaire.

these factors are also associated with inequality perceptions. The economic situation as well as initial, (ideological) preconceptions about the world influence the way individuals perceive inequalities (Bavetta et al., 2019). Potential mechanisms that stratify perceptions are political information (Iversen and Soskice, 2015), networks (Cruces et al., 2013), culture (Evans, 2004; Gijsberts, 2002)⁵ or psychological mechanisms such as the status quo bias (Trump, 2018). I do not attempt to claim that these dimensions do not have a direct effect on preferences for redistribution. However, I propose that there is an additional mediation effect through inequality perceptions for self-interest as well as for ideological beliefs. Given individual perceptions of inequalities are indeed relevant, which theoretical implications does that have for different, generally accepted, determinants of redistributive preferences? I discuss economic self-interest and ideological beliefs separately.

Economic self-interest. The basic mechanism to explain self-centred preferences for redistribution is that individuals support more redistribution if they consider themselves to benefit from it in pecuniary terms. I argue that there is also a second mechanism: perceptions are stratified along socio-economic factors since the

⁵These papers show that individuals living in post-socialist societies systematically perceive and legitimize inequality differently than individuals in capitalist societies. This hints to culture and institutions as further factors that shape perceptions and evaluations of inequality.

own position (i.e. educational or occupational position) structures the information individuals are provided with. Not only the position itself affects redistributive preferences but also the perception of the world due to that position. That is, given individuals have the same economic position and different inequality perceptions (due to e.g. different past experiences (Piketty, 1995)), they may report different preferences for redistribution. Under the assumption of full information one would predict that individuals being in the same position in an economic distribution, should demand the same level of redistribution. However, if their perceptions of the extent of inequality varies, this has implications for their perceived benefit and should translate in deviating preferences for redistribution: the impact of self interest should depend on the accuracy of the inequality perception.

Ideology. Besides economic factors, there is a large literature showing that preferences for redistribution are also influenced by ideological factors such as justice norms (Arts and Gelissen, 2001), social beliefs (Alesina and La Ferrara, 2005), or other-regarding preferences (Dimick et al., 2018). Here, I use political orientation as one possible proxy for ideology. Generally, more left-oriented individuals report to have higher levels of redistributive preferences. I argue, again, that there is an additional, mediating link through perceptions between political orientation and preferences for redistribution: left-oriented individuals may perceive higher levels of inequality since they consider inequality as a more salient issue and are more sensitive to inequality. This, in turn, translates into a higher preference for redistribution. Besides generally desiring more redistribution related to the political orientation, a mediating mechanism further affects preferences for redistribution: political orientation may also determine inequality perceptions.

2.2.3 Are perceptions also practically relevant?

Theoretical mechanisms linking inequality perceptions and preferences for redistribution were discussed. While this may be theoretically true, the subsequent question is whether this is of practical relevance for the empirical research aiming to explain

preferences for redistribution. To answer this question, I disaggregate the variance of the measure for perceived inequality in two parts: The first part covers the variance explainable by the usually applied explanatory variables in this research field⁶. The second part covers the variance not explainable by these variables. If only the explained part of inequality perceptions relates to redistributive preferences, there would be no need to care about inequality perceptions in the empirical analysis: Variation in inequality perceptions would be fully captured by the control variables. If the unexplained part, however, also relates to preferences for redistribution, it is not fully accounted for it.

$$I_{perc} = \underbrace{I_{perc}^{explained}}_{=I_{perc}^{econ} + I_{perc}^{ideology}} + I_{perc}^{unexplained} \quad (2.1)$$

Formula (1) demonstrates the variance disaggregation of inequality perceptions (I_{perc}) in an explained part ($I_{perc}^{explained}$), consisting of inequality perceptions explainable by socio-economic (I_{perc}^{econ}) and ideological factors ($I_{perc}^{ideology}$) and an unexplained, residual part ($I_{perc}^{unexplained}$).

2.3 Empirical analysis

In this section, the empirical strategy is explained, data and operationalization are presented, and descriptive as well as regression results are shown and discussed.

2.3.1 Data and method

After giving an overview of the data and the variables of interest, I conduct a regression analysis using observational data. I analyse the data descriptively and provide regression results using perceived inequality as dependent variable. This is the foundation for disaggregating the variance of perceived inequality in an explained and

⁶These are usually: age, age², education, occupation, income, gender, subjective status, belief in meritocracy, and political orientation (cf. e.g. Corneo and Gruener, 2002; Dallinger, 2010).

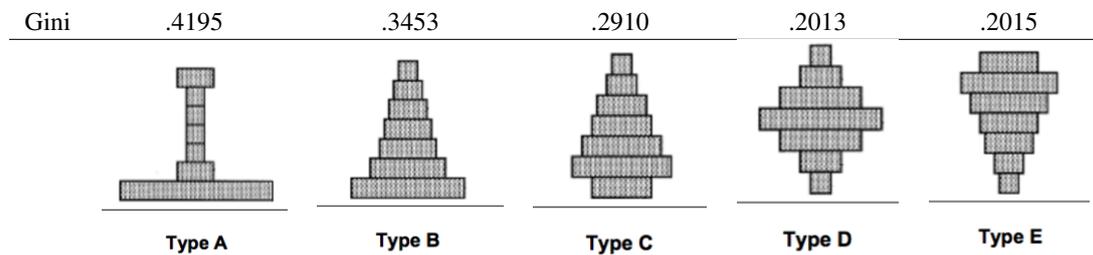
an unexplained part (as shown in formula 2.1). Then, I provide regression results on preferences for redistribution using the disaggregated variance parts of perceived inequality as explanatory variable. To sweep out unobserved heterogeneity between countries and time, fixed-effects for country-years are included.

As micro data, I use the International Social Survey Programme—Social Inequality III and IV which covers the years 1999 and 2009 (ISSP, 2002,0). I restrict my dataset to these two waves since these are the only modules that include the here analysed measure for perceived inequality. The ISSP is a cross-country longitudinal survey which covers most OECD countries. I focus on European countries. 22 European countries are considered for the analysis. The following countries are included AT, BE, BG, CH, CZ, CY, DE, DK, ES, FI, FR, GB, HU, IS, IT, LV, NO, PL, PT, SE, SI, SK. After giving an overview of the operationalization of the variables of interest, descriptives and regression results are shown and discussed.

Preference for redistribution. I use the agreement to the statement *'It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes.'* with possible answer of 1-*strongly disagree* to 5-*strongly agree* (recoded from original variable to simplify interpretation). This question can be considered as the most commonly used variable, especially in the literature aiming to explain cross-country variation in redistributive preferences. It has therefore been studied extensively. Furthermore, it is not only used in large-scale cross-country surveys using observational data but also in survey-experimental contexts (e.g. Engelhardt and Wagener, 2018; Karadja et al., 2017).

Inequality perception. Perceived inequality is operationalized by a question on how individuals perceive inequality in their country included in the ISSP III (1999) and IV (2009). Individuals can choose between different diagrams illustrated in figure 2.3. Respondents were asked to evaluate how they think their society looks today: *'These five diagrams show different types of society. Please [...] look at the diagrams and decide which you think best describes [country]. [...] What type of*

Figure 2.3: Calculated Gini coefficients [0;1] shown for master questionnaire ISSP 2009.



Note: Source: ISSP (2009)—Social Inequality IV. Master Questionnaire.

society is [country] today?. Possible response options are illustrated for the master questionnaire 2009 in figure 2.2 and range from a rather unequal society in diagram A to a society with relatively low inequalities in diagram E. From these diagrams, corresponding Gini-coefficients were calculated and are also presented in figure 2.3 (see appendix for a description and discussion of the calculation method). To the best of my knowledge, there are two papers applying this estimate for perceived inequality: Niehues (2014) and Gimpelson and Treisman (2017). They slightly differ in the way they calculate the Gini coefficients⁷. I follow the procedure of Gimpelson and Treisman (2017).

Individual level variables: economic self-Interest and ideology. At micro level, I consider political orientation measured as a self-evaluation on a left-right scale ranging from 1-left to 5-right as proxy for political ideology. I use subjective status assessment of the own positioning as proxy for economic self-interest. To do so, I include a variable in which individuals were asked to rank themselves on a hypothetical social hierarchy (1-low; 5-high). I interpret that as a point estimate an individual makes about the own position within a distribution. Thus, there is probably endogeneity between subjective status assessment and inequality percep-

⁷To test whether my results are driven by the assumptions made to calculate Gini coefficients, I conduct two robustness checks. (1) I exclude respondents who reported to perceive 'Type E' since only 2.95% of all respondents chose this diagram and the calculated gini coefficient is rather similar to the respective coefficient of 'Type D'; I yield approximately the same results. (2) Instead of using the perceived Gini as a continuous variable, I specify an ordered probit model to predict perceived inequality and treat the diagrams in figure 2.3 as categorical to predict preferences for redistribution. The estimated models, again, yield the same substantive conclusions. See appendix for results.

tions ($\text{corr}(\text{subj. status, perceived Gini}) = -.30, p < .001$) (see figure 5.3 and figure 5.4 for education as an alternative 'objective' measure). Further, I control for belief in meritocracy by constructing an index for the importance of exogenous (not self-alterable) factors for individual success (Roemer, 1998). I use three questions for that: A question on '*... how important is coming from a wealthy family?*', one on '*... how important is knowing the right people?*' for *getting ahead in society* and a third one measuring corruption asking '*To get all the way to the top in <country>, you have to be corrupt.*'. All three questions are summarized in an equally weighted index (Cronbach's $\alpha = 0.54$) with a range from 1 to 5 whereas a higher value represents believing in independence of these factors. I control for gender, age (18-65), education, and occupation. I summarize education to five groups: no formal education, lower than secondary education, secondary education completed, higher than secondary education, and university education completed. The employment status is summarized in six groups: full-time employed, lower or equal to part-time employed, not being in labour force (i.e. helping family members / housewife / disabled), unemployed, being in training (school, student, vocational), and retirement.

Country-level variables. The actual Gini coefficient of income after taxes and transfers obtained from the *all the Ginis* database (Milanovic, 2014) is considered in the analysis. This allows to test whether variation in actual inequality is associated with variation in perceived inequality. The gross domestic product (GDP p.c. on constant prices 2005, 1000\$ ppp) is used to control for the general standard of living within a country at time t . It is also controlled for the overall unemployment rate (Blekesaune, 2007) since this measure is regularly reported by the media and therefore publicly visible; it may therefore influence the extent of perceived inequality. The World Bank is used as data source.

2.3.2 Descriptives

Figure 2.4 (a) and (b) show the association between preference for redistribution (y-axis) and actual income inequality (post-tax) as well as perceived inequality (x-

axis). The first plot shows the averaged actual Gini coefficient⁸ over preferences for redistribution. Bivariately, higher levels of actual inequality are associated with higher preferences for redistribution. The second plot shows preferences for redistribution by perceived rather than actual inequality; a similar pattern is observable: Individuals who perceive higher levels of inequality also prefer more redistribution. I interpret this as evidence that higher reported demand for redistribution may be due to higher inequality perceptions rather than attributable to actual differences in preferences for distribution.

Next, I descriptively analyse to what extent inequality perceptions are stratified along self-reported subjective status. Figure 2.5 (a) and (b) show individual subjective status (on a 5-point ladder (1 'bottom' to 5 'top') (x-axis) by preference for redistribution and perceived inequality (y-axis). The expected pattern that a higher subjective status is associated with lower demand for redistribution is observable; the pattern for perceived inequality looks similar: the higher the subjective positioning, the lower the perceived inequality. I interpret that as an further indication that perceptions mediate the relationship between inequality and demand for redistribution. A similar pattern is observable for 'objective' measures of socio-economic status such as education (see figure 5.3).

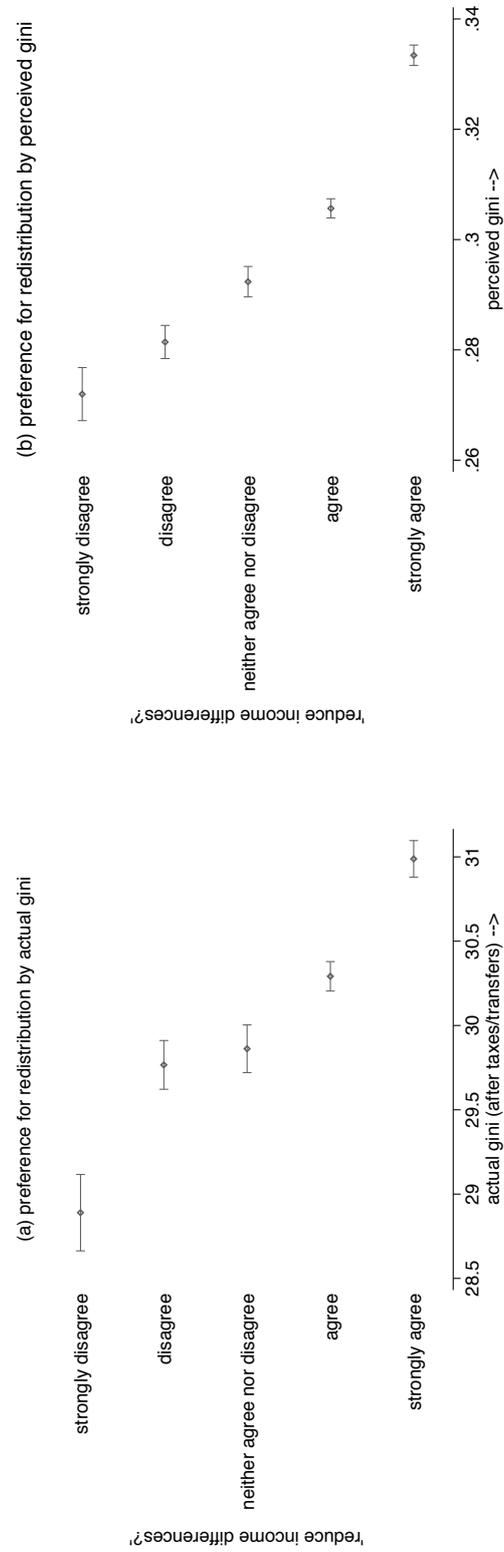
Generally, the descriptives are supportive of the theoretical argument: Preferences for redistribution and inequality perceptions follow similar patterns across socio-economic and ideological variables.

2.3.3 Regression analysis

I conduct two simple regression analyses including country-year fixed effects to control for unobserved heterogeneity across countries and years. The first two models of table 2.1 explore the determinants of inequality perceptions. Models (3) to (9) show specifications with preferences for redistribution as outcome variable.

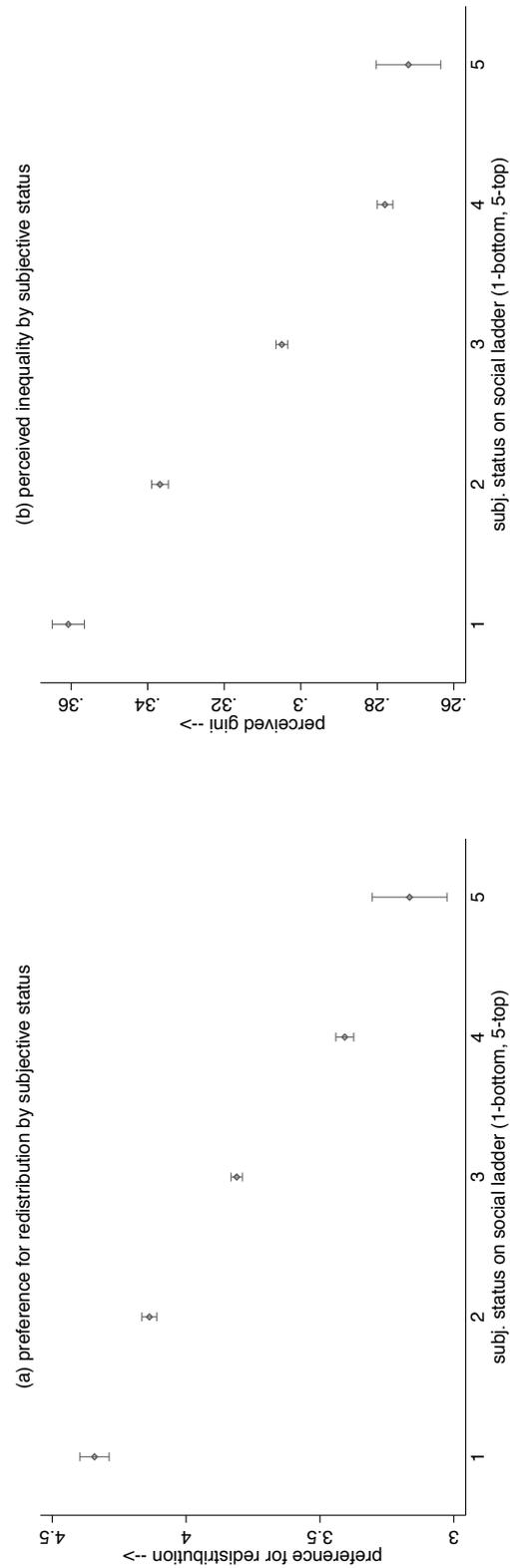
⁸Variation across the categories in actual inequality is only estimable due to cross-country-variation: In countries with higher levels of inequality, individuals report on average a higher preference for redistribution.

Figure 2.4: Preference for redistribution by perceived (a) and actual Gini's (b).



Note: Source: ISSP 1999 + 2009. n=20455. 95% ci.

Figure 2.5: Preferences for redistribution (a) and perceived Gini (b) by subjective status.



Note: Source: ISSP 1999 + 2009. n=20455. 95% ci.

Models (1) and (2) in table 2.1 predict perceived inequality (I_{perc}). The actual Gini coefficient (after taxes/transfers) is not statistically associated with perceived inequality (model (1)). This could either mean that this is not the relevant measure of inequality for individual inequality perceptions or that actual inequality is not relevant to explain inequality perceptions. This insignificant effect remains when further macro-economic variables (GDP p.c. and unemployment rate) are added. In model (2), the variation across country-years is fully swept out due to the inclusion of country-year dummies. The own subjective positioning matters for the perception of inequality: Individuals considering themselves to be in the next higher status group perceive, on average, a Gini coefficient which is 1.15 points lower. Higher educated individuals perceive on average lower levels of inequality and females perceive higher levels of inequality than males—*ceteris paribus*. For political orientation, the expected pattern is observable: the more right-oriented individuals are, the less inequality they perceive. Further, believing in meritocracy is negatively associated with perceiving inequality. In general, inequality perceptions seem to be stratified along socio-economic (education, subj. status) and ideological (belief in meritocracy, polit. orientation) factors; these perceptions appear to be hardly influenced by macroeconomic conditions such as unemployment rate or the Gini coefficient. This indicates that the individual position within a society is crucial for the perception of inequality.

Now, I turn to models (3) to (8) which show different specifications for predicting preferences for redistribution (red_{pref}). Model (3) only includes micro-level control variables and country-year dummies. In model (4) the perceived Gini is added. The coefficients for some micro-level controls such as subjective status or belief in meritocracy decrease indicating a mediating mechanism: the perceived Gini captures small parts of effects of the independent variables. Model (5) includes unemployment rate, GDP p.c., and the actual Gini of disposable income; it does not include country-year-dummies. When not controlling for time, the coefficient for GDP is significant. When considering the time effect, all three macro-variables are

insignificant and the coefficients rather small in size. In Model (6), I include the disaggregated variance in perceived inequality in an explained part ($I_{explained}^{perc}$) and the residual part ($I_{unexplained}^{perc}$) based upon the estimation of model (2); however, I include Gini, unemployment rate, GDP p.c., and a time dummy instead of country-years in that regression. Both variance parts are significantly associated ($p < .001$) with preferences for redistribution. In order to be able to compare the coefficients, I report the standardised coefficients for the disaggregated measures of perceived inequality: The standardised coefficient for $I_{unexplained}^{perc}$ is .09 and for $I_{explained}^{perc}$ is .44. That is, the explained part has a five times stronger association with preferences for redistribution; the residual part, however, does have a comparatively small, but significant, association.

I showed that inequality perceptions are associated with preferences for redistribution. In a next step, I ask if inequality perceptions can help us to understand established mechanisms in a more nuanced way. I demonstrate that using two well established mechanisms in the literature: self-interest and ideology. I include interaction effects between perceived inequality and subjective status (model (7)) (self-interest) and between inequality perceptions and political orientation (model (8)) (ideology). I allow individuals to have different inequality perceptions (rather than assuming full information) and ask: does the self-interest argument and the ideology argument still hold? If the self-interest argument holds, I would expect to see that, given the same inequality perception, individuals with a higher self-reported subjective position should have a lower preference for redistribution since they on average would expect to be less likely to profit from redistribution. This interaction of model (7) is graphically visualized in figure 2.6 (left): With an increase in perceived inequality, preferences for redistribution increase for every subjective status group. This is in line with the self-interest argument. However, the level of the effect differs by subjective status and these level-differences slightly diminish with an increase in the perceived Gini. I repeat this interaction using political orientation. Given the same perceived level of inequality: do individuals prefer different levels of redistribution depending on their political orientation? Figure 2.6 (right) shows

Table 2.1: Regression on perceived inequality (I_{perc}) and preference for redistribution (red_{pref}).

	I_{perc} (1)	I_{perc} (2)	red_{pref} (3)	red_{pref} (4)	red_{pref} (5)	red_{pref} (6)	red_{pref} (7)	red_{pref} (8)
	$\hat{\beta}/se$	$\hat{\beta}/se$	$\hat{\beta}/se$	$\hat{\beta}/se$	$\hat{\beta}/se$	$\hat{\beta}/se$	$\hat{\beta}/se$	$\hat{\beta}/se$
I_{perc}				0.02***	0.02***		0.004	-0.01*
$I_{unexplained\ perc}$		0.00		0.00			0.00	0.01
$I_{explained\ perc}$				0.01***				
				0.00				
				0.13***				
				0.03				
$I_{perc} \times subj.\ status$							0.004*	
							0.00	
$I_{perc} \times political\ orient.$								0.01***
								0.00
belief in meritocracy		-0.33***	-0.10***	-0.09***	-0.08*	-0.06***	-0.09***	-0.09***
		0.08	0.02	0.02	0.03	0.02	0.02	0.02
pol. o. (1-left,5-right)		-0.38***	-0.20***	-0.19***	-0.19***	-0.14***	-0.19***	-0.48***
		0.09	0.03	0.03	0.03	0.03	0.03	0.07
subj.status (1-low,5-top)		-1.15***	-0.18***	-0.16***	-0.18***	0.03	-0.29***	-0.16***
		0.08	0.02	0.02	0.02	0.05	0.05	0.02
constant	21.34*	33.19***	4.85***	4.35***	4.41***	0.26	4.71***	5.16***
	7.80	0.82	0.17	0.15	0.42	1.02	0.25	0.24
N	20455	20455	21568	20455	20455	20455	20455	20455
country-year FE	no	yes	yes	yes	no	yes	yes	yes
R ²	0.037	0.307	0.179	0.190	0.157	0.192	0.190	0.194

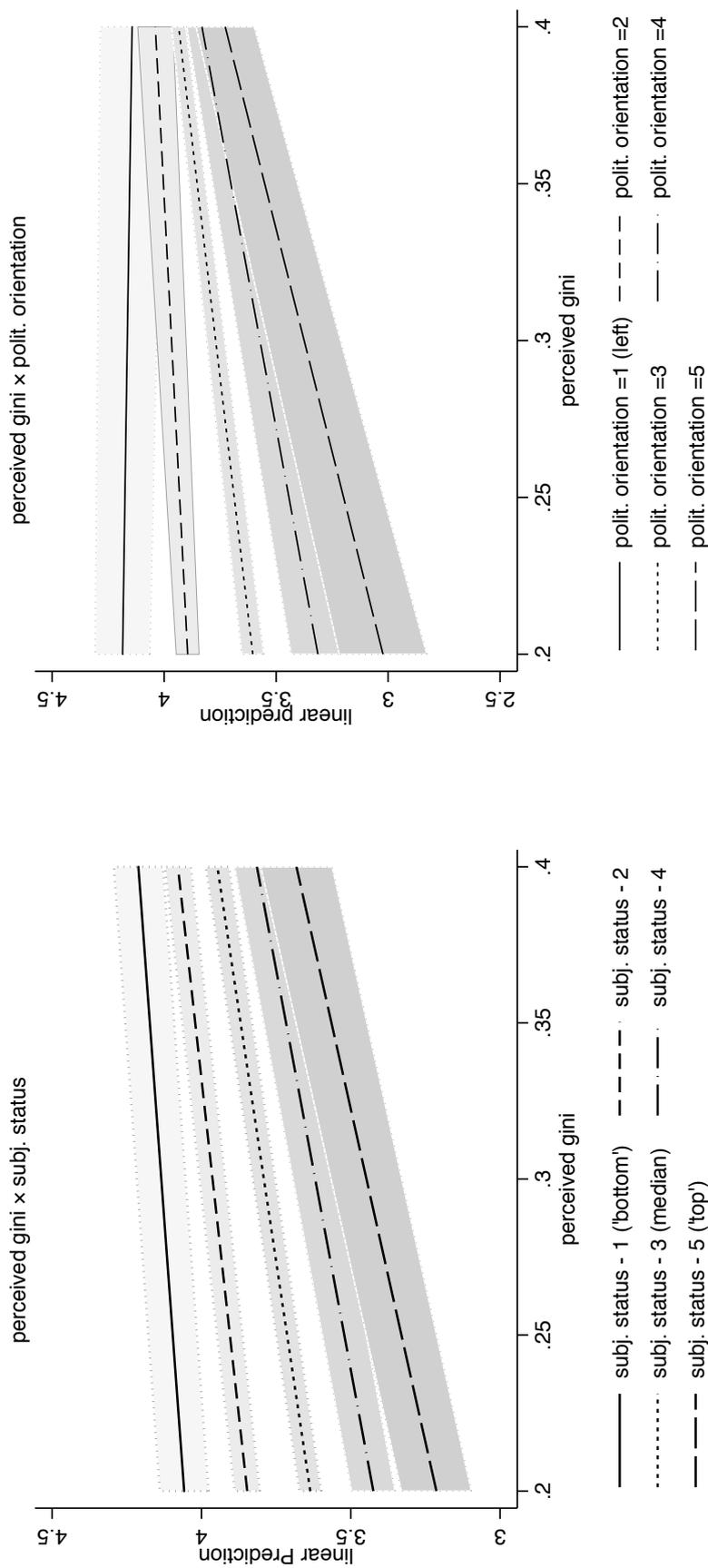
Note: * $p < .05$, ** $p < .01$, *** $p < .001$. standard-errors clustered on country-level. $\hat{\beta}$'s for age, age², employment status, education, gender and macro-level variables not shown. See table 5.1 for full table.

that the link between inequality perceptions and preferences for redistribution is linked to political orientation. Left-oriented individuals prefer higher levels of redistribution given the same inequality perception and right-oriented individuals prefer comparatively lower levels. This is especially pronounced for low levels of perceived inequality and diminishes with an increase in inequality perception: ideological political differences are especially pronounced when perceived inequality is low. Figure 2.6 shows that the self-interest as well as the ideology-argument holds when relaxing the assumption of full information about inequality and allowing individuals to perceive inequality differently with respect to their subjective status assessment and their political orientation. This shows that it is likely that the theoretical mechanisms such as ideology that link inequality to preferences for redistribution are based upon inequality perceptions.

2.4 Discussion

This paper investigated the role of inequality perceptions in understanding the formation of preferences for redistribution. It provides evidence that individuals answer the standard question for redistributive preferences based upon their inequality perception: The more (less) inequality perceived, the more (less) an individual wants to redistribute—*ceteris paribus*. I showed that inequality perceptions are stratified along socio-economic as well as ideological determinants. Based upon these findings, I suggested that if all variation in inequality perceptions is captured by the usually considered control variables, there is no practical need to operationalize inequality perceptions in order to analyse preferences for redistribution. To test this, I disaggregated the variance of inequality perceptions in a variance part explained by usual control variables (socio-economic and ideological factors) for redistributive preferences and the residual, unexplained part. The analysis revealed that both variance parts relate to preferences for redistribution. This finding makes considering inequality perceptions practically relevant for analysing preferences for redistribution since standard control variables do not fully account for variation in perceived inequality.

Figure 2.6: Marginal effects of perceived Gini \times subj. status (left) / political orientation (right) on the preference for redistribution.



Note: N=20455. Source: ISSP 1999 + 2009.

This analysis is not free of caveats and problems. Methodologically, the simple regression specification invites for criticism. One of the most worrying methodological problems is endogeneity stemming from unobserved heterogeneity and / or reverse causality. The data and the chosen model specifications do not allow for eliminating endogeneity problems. For instance, individuals may have certain preferences for redistribution which shape the way they perceive inequalities or their inequality perceptions may affect their political orientation. To disentangle those mechanisms, future research should think of (quasi-)experimental settings to test the causal relationship(s) between inequality perceptions and redistributive preferences. Since this analysis is based upon a correlational analysis of observational data, there is no direct way to explicitly test for causation. A remaining possibility to offer a possible causal mechanism is to present a theoretical sound argument. I hope to have done so.

Unfortunately, data on perceptions are rather rare—especially in a cross-country perspective. This makes it hard to find *good* ways to test the role of inequality perceptions in the formation of policy preferences. The possibility that respondents' intuitions about inequality is actually good but badly elicited by the poll is one of the most severe methodological shortcomings in the here used operationalization of perceived inequality. Further, it is unknown about what kind of inequality individuals think when answering that question. It may be that income inequality (post-tax) is simply not the phenomenon individuals think about when answering the questions about their inequality perception. Future research should therefore try to develop *better* measures of inequality perceptions.

My findings indicate that inequality perceptions are associated with preferences for redistribution. As an outlook on how inequality perceptions can help us to understand theoretical mechanisms, I used interaction effects visualized in Figure 6 between a proxy for self-interest and for ideology and inequality perceptions. I did not challenge established theoretical mechanisms in the literature but argued that self-interest and ideology arguments are based on inequality perceptions rather than

actual inequality due to incomplete information. I showed that the information an individual has about inequality is relevant to the formation of policy preferences. This finding suggests that it may be helpful to focus not only on differences in policy preferences but also on differences in perceptions of the status quo in order to identify dissent. Future research should focus on developing strategies which allow for sound causality tests to disentangle the relationship between perceived inequality and preferences for redistribution.

Chapter 3

Taxed fairly? How differences in perception shape attitudes towards taxation

Abstract

The legitimacy of the welfare state is partly dependent on the acceptance of its policies including taxation policies. While economic self-interest seems to be relevant for the formation of preferences for taxation, research disagrees why and when individuals deviate from that paradigm. We study the role of perceptions to better understand the link between economic self-interest and taxation preferences. Using the ISSP 2016, we show that individuals tend to favour lower tax rates for income levels closer to their own income position. We then analyse whether this is driven by self-interest (that is, minimizing one's own tax burden) or by different perceptions of tax rates for different income levels (that is, different assessments of one's own tax burden in comparison to others). Using survey data from Austria, we show that individuals perceive tax rates for different income levels differently depending on their own income position. Preferred tax rates for different income levels, however, are rather similar across income positions. This indicates that correlational relationships between proxies for economic self-interest, such as income, and preferences for taxation do not necessarily provide evidence in favour of economic self-interest as mechanism if heterogeneity in inequality perceptions is not considered.

3.1 Motivation

The legitimacy of the welfare state is partly based on the acceptance of prevailing welfare state policies. Analysing individual preferences towards the welfare state is one way of evaluating the level of acceptance of such policies. In doing that, social

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scientists mainly focused on analysing spending preferences. This literature aims to understand general preferences for redistribution to mitigate differences in market incomes (Rueda, 2017; Schmidt-Catran, 2016) and preferences towards specific target groups or modes of redistribution such as unemployment insurance or pension politics (Arts and Gelissen, 2001; Naumann et al., 2016; Rehm, 2007). However, there are a variety of ways to achieve identical revenue targets and redistributive outcomes from a fiscal policy perspective. Welfare spending preferences and taxation preferences are interrelated: one source of legitimacy of welfare state spending is the evaluating the financing structure of the welfare state as fair. Conflicts about who pays seem to be as crucial as conflicts about who benefits. This study contributes to this discussion by asking *'who gives'* to rather than *'who gains'* from the welfare state (Beramendi and Rehm, 2016): We analyse the ways in which individuals form their preferences of taxation.

The role of economic self-interest in the formation of preferences for welfare state preferences in general and preferences for redistribution and taxation in particular has repeatedly been studied. While many studies suggest that economic self-interest is an important determinant for preferences for taxation, it appears that the importance varies by institutional and economic context (e.g. Berens and Gelepithis, 2019; Corneo and Gruener, 2002; Hennighausen and Heinemann, 2015; Hing et al., 2019; Rehm et al., 2012). It is however noticeable that economic self-interest as mechanism is rarely tested directly: Often, correlates between income—as a proxy for economic self-interest—and political preferences—such as preferences for redistribution—are taken as evidence in line of a rational choice interpretation (e.g. Corneo and Gruener, 2002; Hennighausen and Heinemann, 2015). Yet, alternative explanations on why high income individuals prefer comparatively lower levels of redistribution are also possible.

In the context of studying determinants of preferences for redistribution, studies have shown that analysing individual perceptions is crucial to understand situations when rising levels of inequality do not result in an increased demand for redistribu-

tion (Bobzien, 2020; Cansunar, 2020; Cruces et al., 2013). Considering individual perceptions is thus essential to understand how individuals form their political preferences. That is, one difficulty in studying preferences for taxation is that it is commonly unknown how well individuals are informed about the current tax system. For instance, two individuals can have the same preference for a high tax rate for top incomes. But if one individual perceives the current tax rate as already high and the other individual perceives the current tax rate as low, they will report different taxation preferences: The former would like to stick to the status quo while the latter would like to increase taxation for top incomes. The importance of economic self-interest as well as the importance of alternative explanations can only be accurately studied if individual perceptions are considered. This is particularly relevant for the research of taxation preferences in general and the research on the link between economic self-interest and taxation preferences in particular since most studies to date rely on measures that focus on preferences for taxation relative to the status quo rather than measuring absolute tax levels.

Following this line of argumentation, we argue that individual preferences for taxation are partially dependent upon perceptions of the status quo in taxation. Subsequently, this raises two questions: How are tax perceptions framed? And, do preferences for taxation reflect actual differences in preferences for taxation or do they reflect differences in perceptions? We suggest that perceived tax rates are systematically dependent on relative income positions as individuals form their perceptions, among other factors, based on their own economic position (e.g. Bavetta et al., 2019; Bobzien, 2020). Thus, preferences resulting from one's own economic position may not reflect systematic concerns to maximize one's own income but may reflect differences in perception who bears the majority of the tax burden.

We develop a theoretical argument on how tax perceptions are biased based on one's own income position and how such perceptions are relevant for preferences for taxation. Individuals form perceptions about their own tax contribution by using heuristics since they do not have full information about the distribution of tax

burdens. Following the well documented mechanisms that individuals tend to overestimate their relative contribution in joint tasks and tend to anchor estimates in perceptions of their own contribution, we suggest that individuals overestimate their own contribution to the tax revenue relative to others. To test this proposed argument, we analyse tax preferences for different income levels. We then disentangle perceptions of and preferences for taxation. This allows us to analyse the relevance of economic self-interest in the context of taxation preferences by acknowledging heterogeneity in perceptions of current tax rates. We do this in two steps. Firstly, we apply a cross-country perspective: Using the ISSP 2016, we test whether individuals prefer lower levels of taxation for income levels objectively or subjectively closer to their own income. This allows us to analyse income maximizing preferences for taxation in a wide array of countries. It, however, does not allow us to disentangle preferences based on self-interest from differences in perceptions. Thus, secondly, we study whether these net-income-maximizing preferences for taxation result from actual differences in tax preferences for different levels or from different perceptions of the status quo. To test this empirically, we asked respondents in Austria to declare the perceived tax rate as well as the as fair considered tax rate for several income levels; this data enables us to not only measure preferences for tax rates but also perceived tax rates.

This paper is structured as follows: Section 3.2 reviews existing literature and develops our theoretical argument on the role of perceptions in the formation of taxation preferences. In section 3.3, we analyse ISSP 2016 and present a cross-country analysis after describing the data and method. Based on these findings, we use survey data from Austria to study the relative importance of perceived tax rates for preferences for taxation in 3.4. Section 3.5 concludes.

3.2 Theoretical background: Economic self-interest, fairness and perceptions

We review the literature on the formation of preferences for redistribution and taxation. Thereby, we focus on the role of economic self-interest, perceptions and fairness judgements. We show exemplarily—using an item of the ISSP that measures tax preferences—the potential importance of considering perceptions. Thereafter, we derive our theoretical argument as well as testable hypotheses.

The role of economic self-interest. The literature on preferences for redistribution emphasizes the importance of economic self-interest in shaping preferences for redistribution (Meltzer and Richard, 1981). While there is an extensive literature that studies individual preferences towards public spending in terms of preferences for redistribution (e.g. Alt and Iversen, 2017; Naumann et al., 2016), individual preferences for public revenue generated by public taxes is less frequently examined. Similar to the literature that studies preferences for redistribution, the literature studying preferences for taxation usually starts by considering economic self-interest as main driver. As it is empirically unclear in which contexts and to what extent individuals act self-interested, a rich literature emerged which aimed to disassemble this question and to uncover additional explanations (Hing et al., 2019). The narrow understanding of economic self-interest, often modelled as myopic maximization of personal income, was broadened as researchers started to consider inter-temporal motives such as expected future income and future uncertainty (Piketty, 1995; Rehm, 2007). The list of potential drivers of preferences was further expended by acknowledging the role of fairness norms (Fehr and Schmidt, 1999), institutional configurations (Arts and Gelissen, 2001; Iversen and Soskice, 2015), other-regarding preferences (Dimick et al., 2018), or political beliefs (Barnes, 2015; Edlund, 2003). Recently, studies have also shown that some of these factors do not only explain general preferences for redistribution but are also crucial for taxation preferences. For instance, Roosma et al. (2016) study individual determinants for progressive taxation in a cross-country perspective finding that class position, po-

litical affiliation, education and institutional trust shape preferences for progressive taxation. In line with these findings, Hennighausen and Heinemann (2015) study individual determinants of preferences for progressive taxation in Germany and show that not only economic self-interest but also other-regarding preferences and fairness concerns shape individual support for progressive taxation.

The rich institutionalist literature on preferences for redistribution suggests that individuals consider the ways in which redistribution takes place when forming their preferences about who should contribute (Korpi and Palme, 1998). Berens and Gelepithis (2019), for instance, argue that individuals with mean incomes should favour progressive taxation if benefits provided by the welfare state are less targeted to the poor. The intuition is that average and high income earners would be more receptive to progressive taxation in welfare states in which benefits are less targeted at the poor since the benefits being funded are more likely to benefit themselves in such contexts. They show that institutional characteristics about the ways in which redistributing mechanisms are structured, rather than actual changes in inequality, shape tax preferences. In line with this argumentation, Beramendi and Rehm (2016) argue that in a tax system with low progressivity and an overlap between tax contributors and benefit recipients, redistributive conflicts become simply less salient. Besides the structure of the tax system, general perceptions of the quality of the government seem also play a role: Svallfors (2013) studies individual preferences towards higher taxation and finds that perceptions of the quality of government have a strong influence on attitudes to taxes and spending, meaning that individuals who perceive institutions as fair favour comparatively higher taxes and spending. Changes in the economic context can further affect taxation preferences: Limberg (2020) studies as well as Garcia-Muniesa (2019) how the economic crisis affected preferences for progressive taxation. While Limberg (2020) finds that preferences for progressive taxation especially increased in countries which were comparatively strongly hit by the financial crisis, Garcia-Muniesa (2019) shows that there is heterogeneity among individuals: especially individuals who self-identify as centre/right and those generally concerned about the economic situation demand more progres-

sive taxation.

Most empirical studies generally conclude that self-interest matters to a certain extent but depends on the institutional, cultural and economic context. These contextual effects may further be heterogeneous across individuals. However, most of these studies do not test whether people are aware of their income position or of macro level changes in inequality or the taxation system. Thus, they provide only indirect, correlational evidence that self-interest matters. The question on the exact mechanisms in which individual (economic) conditions influence political preferences remains unanswered.

The role of perceptions and fairness considerations. There has been a growing awareness that individuals often have inaccurate and presumably biased information about inequality and taxation. At the same time, individuals seem to use this, often inaccurate, information as a basis for the formation of political preferences (e.g. Bublitz, 2020; Engelhardt and Wagener, 2018; Karadja et al., 2017; Kuziemko et al., 2015). When it comes to the question how individuals form their preferences for taxation, considering heterogeneous information bases individuals have about taxation may be crucial. There is a long tradition in the fairness literature that studies fairness considerations relative to baseline perceptions individuals have (Jasso, 1978; Wegener, 1987). When individuals judge a circumstance to be fair or unfair they often do so on the basis of a perceived status quo. The relevance of the information basis for the formation of not only fairness judgements but also political preferences has been recognized by past research: For instance, Hennighausen and Heinemann (2015) acknowledge the importance of considering heterogeneity in information when studying preferences for taxation, they only approximate information by including education and interest in politics as control variables. Other studies use experimental designs to study the role of perceptions (Cruces et al., 2013; Karadja et al., 2017). They show that information is an important determinant for preferences for taxation: Boudreau and MacKenzie (2018) show for the US that information treatments about inequality can increase support for progressive income

taxation under certain conditions. Kuziemko et al. (2015) and Fernández-Albertos and Kuo (2018) using relative income positions as treatment, find evidence pointing in the same direction. Fernández-Albertos and Kuo (2018) show that if individuals are informed that their actual income position is higher than believed, they prefer less progressive taxation. Cansunar (2020) shows that, in order to understand tax preferences, it is crucial to understand with which income group individuals self-identify. She further shows that individuals are more inclined to support progressive taxation if they overestimate the earnings of the rich. These studies highlights the importance of acknowledging that individual preferences are formed on the basis of individually perceptions such as their perceived relative position in the income distribution. We build upon these studies and directly consider incomplete information. While the role of perceptions in terms of perceptions of relative income positions is widely acknowledged, we still lack research on the question how differences in perceptions of tax rates affect preferences for taxation. Therefore, this paper studies the role of individual perceptions about the status quo in taxation. In contrast to past research, we do not focus on information about one's own (relative) income position (Cruces et al., 2013; Engelhardt and Wagener, 2018), but on information about tax rates.

We exemplify the importance of information using items on taxation preferences included in the ISSP 2016 (ISSP, 2016). To measure individual tax preferences the ISSP uses three questions framed '*Generally, how would you describe taxes in [country] today ... For those with high/middle/low incomes, are taxes... much too high / too high / about right / too low / much too low?*'. This measures taxation preferences for high, middle, and low incomes. One advantage of this measurement for taxation preferences is that people are asked to assess whether certain income groups are currently taxed too high or too low. Thus, the measures allow to assess whether individuals prefer higher or lower tax rates relative to the status quo. This measurement strategy carries the risk that individuals may answer this question on the basis of different perceptions of current tax rates. Thus, the question confounds variation in preferences with variation in perceptions. This can easily be seen using

an example from the ISSP. Considering two respondents with the same preferences for taxing high incomes (e.g. 30%) they may nevertheless report different answers to the question whether taxes are too high or too low depending on their perceived current tax levels of high incomes: If the former respondent may believe that high incomes are taxed with 20%, and the latter respondent may believe that high incomes are taxed with 30%, the former will report that taxes are too high, the latter not. One difficulty in studying the preferences for taxation is that it is commonly unknown how well individuals are informed about the current tax system: Respondents may have the same preference for taxing high incomes (e.g. 30%) but may report different answers to the question whether taxes are too high or too low: One respondent may believe that high incomes are taxed with 20% but considers 30% as fair, another respondent may believe that high incomes are taxed with 30% and also considers 30% as fair. The former will report that taxes are too high, the latter not. While it initially appears that the first respondent prefers higher taxes for high incomes than the latter, this is solely a result of different perceptions about the current state of taxation. These differences in perceptions result in the fact that respondents report different tax preferences. Taxation preferences, in the here used operationalisation, are based on perceptions of the present tax system. This is one of the few survey questions on tax preferences in large internationally comparative survey programmes. The last couple of years, this question has been in the centre of several analyses (Barnes, 2015; Berens and Gelepithis, 2019; Dodson, 2017; Roosma et al., 2016; Sumino, 2016). The relative nature of this question, however, is seldom acknowledged. We argue, that it is crucial to disentangle perceptions and preferences to test self-interest as mechanism. If perceptions of as well as preferences for taxation dependent on income, not considering perceptions results in a biased estimate for the effect of income on preferences for taxation as perceptions mediate the relationship.

Most of the empirical studies that consider incomplete information to test economic self-interest as mechanism conclude that individuals are only poorly informed about their own income position and tend to adjust their political preferences once

they get information about their actual position (Engelhardt and Wagener, 2018; Karadja et al., 2017). We follow this theoretical idea and test whether perceptions of tax rates allow to better understand the importance of economic self-interest in the formation of tax preferences. We argue that perceptions of tax rates are systematically biased depending on one's own income. The general idea is that individuals are exposed to varying information depending on the economic context they are exposed to. We propose that acquiring information is costly leading individuals to consider not all available information. Individuals may then use heuristics for statistical inferences which may lead to biases (Cruces et al., 2013; Kahneman et al., 1982; Pedersen and Mutz, 2019). Thus, the question arises how individuals form perceptions about tax rates and, hence, estimates about the distribution of the 'tax burden'.

To answer this question, we rely on theoretical insights from research in social and cognitive psychology that has a long tradition in investigating how individuals form beliefs about fair or unfair shares of burdens (for instance, between team members, spouses, or colleagues) and how individuals estimate relative contributions. Since the seminal work of Ross and Sicoly (1979), it has repeatedly been shown that individuals tend to overestimate their relative contribution to joint tasks in various domains (*egocentric bias*) (Brawley, 1984; Deutsch et al., 1993; Gilovich et al., 2000; Herz et al., 2020; Kruger and Savitsky, 2009). Applying these insights to the context of taxation, we argue that individuals conceive tax rates as contributions to the state budget made by different income classes. We expect individuals to overestimate the relative contribution (in terms of tax rates) of their own income position due to an egocentric bias. We further argue that individuals tend to anchor estimates in their perception of their own contribution and insufficiently adjust for differences when judging other tax rates (*anchoring and adjustment bias*) (Epley et al., 2004; Tversky and Kahneman, 1974). In line with these expectations, the literature has already shown that the egocentric bias can explain distributive justice judgements, independently of considerations for equity and self-interest (Burrus and Mattern, 2010). The literature also suggests that this bias tends to increase with group sizes

(Schroeder et al., 2016).

We hypothesize that individuals tax rates for specific income levels are increasingly evaluated as comparatively too high compared to other tax rates the closer the income is to one's own income position. This reflects what we would expect to find given self-interest is relevant to individuals. However, this may be driven by overestimating one's own tax rate relative to tax rates of other incomes rather than by actually preferring to tax specific incomes at higher rates. That is, we suggest that individuals overestimate their own tax burden relative to others. As individuals overestimate their own tax contribution, not considering perceived tax rates may lead to overestimating the importance of self-interest for the formation of taxation preferences.

Following the economic self-interest argument, we test whether individuals tend to minimize their own tax burden by, at the same time, acknowledging and modelling that individuals have incomplete and presumably biased information about tax rates of different income levels. We do *not* conceptualize perceptions by the question on how *good* people are in estimating average tax rates. Rather, we ask how individuals compare themselves to the perceived status quo of others. That is, the accuracy of the information individuals have is not evaluated. We do not have this ambition, as it is unfortunately unclear what kind of taxes individuals are thinking of and whether this varies across individuals. The reference variable is unknown¹.

3.3 Empirical cross-country analysis using the ISSP 2016

This section starts by presenting cross-country evidence on preferences for taxation using the ISSP 2016 to study whether individuals are more likely to evaluate tax

¹It is, however, reasonable to assume that individuals have more accurate perceptions of tax rates for incomes closer to their own income.

rates for income classes closer to their own income as too high. Next, we analyse survey data from Austria as this data allows us to differentiate between perceived tax rates and fair tax rates. Thus, we can disaggregate the effect of income on perceived and preferred tax rates. Each subsection starts by outlining the data, operationalisations and method used. Thereafter, we present and discuss our empirical results.

3.3.1 Method and data

We test whether individuals favour lower taxation for their own income group relative to other income groups in a cross-country perspective using the *ISSP 2016 - Role of Government module* (ISSP, 2018). We use this module since it is temporally closest to our second dataset. We restrict our sample to European countries. The following countries are included: BE, CZ, DK, FI, FR, DE, HU, IS, LV, LT, NO, SK, SI, ES, SE, CH, GB. We thus have three observations for each individual. We employ listwise deletion. For all models, we cluster standard-errors at individual-level.

Dependent variables: preferences for taxation of different income levels. In the cross-country perspective, we ask whether individuals believe that their income group pays too high taxes relative to other income groups. We operationalize that using three questions: *Generally, how would you describe taxes in [country] today ... (We mean all taxes together, including national insurance, income tax, VAT and all the rest.) For those with high/middle/low incomes, are taxes... much too high / too high / about right / too low / much too low?* This enables us to measure taxation preferences for low, middle, and high incomes. Answer categories are numbered in ascending order from 1 - *much too high* to 5 - *much too low*. Thus, a higher value means that a respondent thinks that this income group should be taxed more heavily. We recode the variables for readability and set the middle category to 0 (*about right*) so that -2 represents *much too high* and 2 *much too low*. To the best of our knowledge, most papers using these variables as dependent variable

derive a variable indicating whether a respondent favours progressive taxation from these variables (Barnes, 2015; Berens and Gelepithis, 2019). We treat them as three separate items. We reshape the data from a wide format to a long format so that taxation preferences for low, middle, and high incomes are nested within individuals. For all models, we cluster standard-errors at individual-level.

Variables of interest: One’s own income position. Following the literature suggesting that one’s own perceived status position might be more important for taxation preferences than actual earnings (e.g. Cansunar, 2020), we differentiate between two different operationalisations of one’s own income position. Firstly, we use the *objective income position* and operationalize that by using the respondent’s equivalenced household income². To achieve a comparative measure across all countries, we collapse the country-specific income items in the ISSP into country-specific deciles. Secondly, we use the *subjective social status position* utilizing a question in the ISSP that asked respondents to position themselves on a social ladder ranging from 1-bottom to 10-top. The correlation for income deciles and subjective status position is 0.27 ($p < .001$, $N = 13\,201$).

Controls. To account for potential confounding, we include several individual characteristics that may be associated with the own income position as well as with preferences for taxation. Employment status is summarized in six groups: full-time employed, lower or equal to part-time employed, not being in labour force (i.e. helping family members / housewife / disabled), unemployed, being in training (school, student, vocational), and retirement. A dummy for self-identified sex is included. Further, individuals have in general different knowledge about the tax system, we approximate this heterogeneity by education. Education is operationalized in years of education. We further control for individuals general taste towards taxation by including the average value across all three dependent variables as control. The

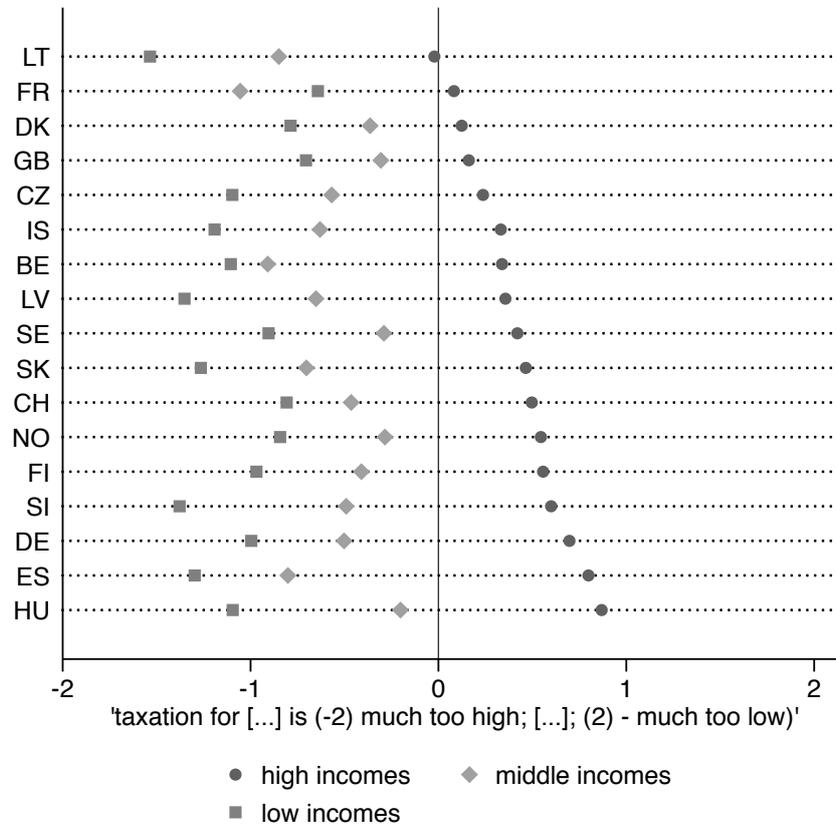
²We use equivalenced household income as this most closely reflects the actual income available for livelihood. It is reasonable to assume that individuals use this measure to assess their tax burden. Using personal income instead of equivalenced household income yields approximately the same results.

intuition is that some individuals may *generally* consider taxation to be too low or too high. We are, however, not interested in general ideas about the size of generated tax revenue. We are rather interested in the relative distribution of these tax burdens across different groups. Further, we account for institutional and economic heterogeneity across countries by adding country-dummies to our analysis.

3.3.2 Results

Figure 3.1 shows the averaged preferences for taxing low, middle and high incomes by country for 2016. Countries are sorted in ascending order by preferences for taxing high incomes. Lithuania (LT) reports the weakest preference and Estonia and Hungary reports the strongest preference for taxing high incomes more strongly. In all countries, except Lithuania, individuals believe that taxes for high incomes are too low whereas tax rates for low and middle incomes are perceived to be too high. This is easily detectable as the black dots have the largest values on the x-axis for all countries. In all countries, except France, individuals, on average, also consider taxation for middle income to be comparatively more too high relative to tax rates for low incomes. This indicates that individuals across countries demand on average stronger progressivity relative to their perceived country's status quo. In the following, we consider such cross-country variation by including country-fixed effects in the regressions but do not study potential explanations for such cross-country patterns.

Figure 3.1: Preferences for taxing different income levels (high/middle/low incomes) across countries.



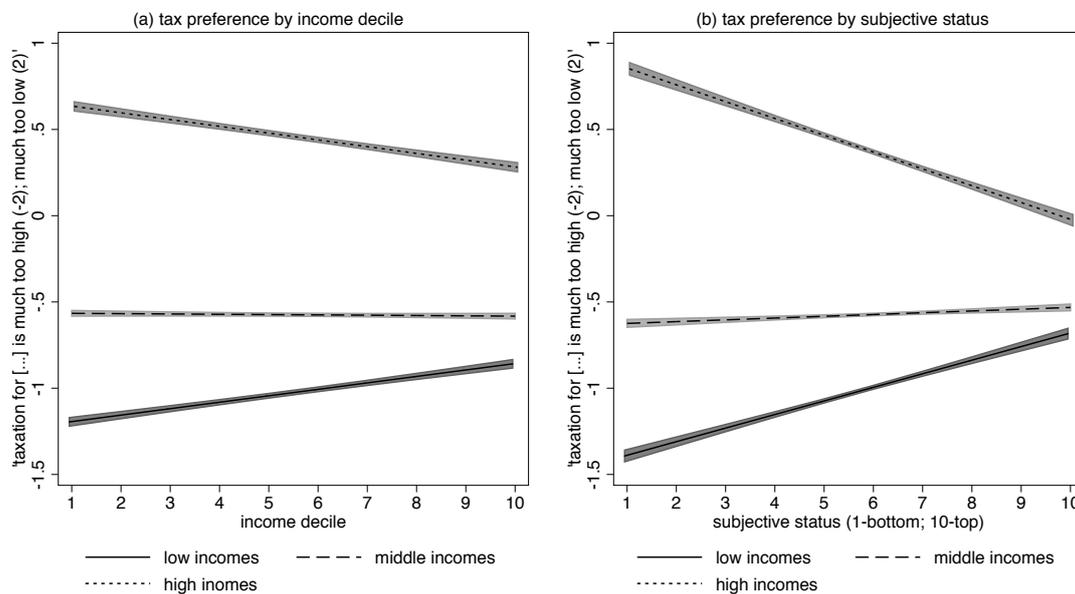
Note: N=13201. Weighted by age and sex. Source: ISSP 2016. Own calculations.

We expect tax rates for low, middle and high incomes to be increasingly evaluated as comparatively too high compared to other tax rates the closer the income group is to one’s own income position. We specify simple linear regressions³. Figure 3.2 shows preferences for lower, equal or higher taxation for low, middle, and high incomes by (a) income decile and (b) subjective social status. Across all income deciles and subjective status positions, individuals consider, on average, taxation for high incomes as too low while taxes for middle incomes and especially taxes for low incomes are considered too high. Looking at figure 3.2 (a), we also observe that increasing income is associated with being less likely to consider taxation for high incomes as much too low ($p < .001$). Further, increasing income is associ-

³For a non-linear specification, see 5.9.

ated with decreasingly reporting that taxation for low incomes is (much) too high ($p < .001$). Comparable patterns are observable when looking at subjective status rather than self-reported income (see 3.2 (b)). These findings thus show that the higher (lower) the income, the more (less) likely are respondents to think that high incomes are taxed too high and the higher (lower) the income, the less (more) likely are respondents to think that low incomes are taxed too low. For taxation preferences of middle incomes, we do not find statistically significant differences across income deciles or subjective status positions. This is evidence in favour of the self-interest argument as individuals tend to prefer to tax income levels closer to their own income less strongly. However, the relative nature of the ISSP questions does not allow us to study the role of heterogeneity of information about tax rates. We therefore turn to survey data from Austria to study the relevance of tax perceptions.

Figure 3.2: Taxation preference for different evaluated income levels by income group (a) and subj. status group (b).



Note: 95% CI. All countries. N=13201 (38510). Controlled for age, income decile, education, occupational status, gender, general tax preference as well as country-dummies. Weighted by age and gender. See appendix, table 5.5 for the regression table. Source: ISSP 2016. Own calculations.

3.4 Empirical within-country analysis using survey data from Austria (2018)

The question on preferences for taxation for different income levels, as surveyed in the ISSP 2016, asks individuals to assess whether certain income levels are currently taxed too high or too low. The question thus makes it possible to measure whether individuals prefer to tax specific income levels more or less than at present. This, however, carries the risk that individuals may answer this question on the basis of different perceptions of current taxes. To disentangle the role of perceptions and preferences, we analyse Austrian survey data that asked respondents directly about their perceived tax rates and about tax rates they consider as fair. In the following, we first describe the data and continue by presenting our analyses.

3.4.1 Method and data

The empirical analysis for Austria is based on data from a web survey fielded in Austria in fall 2018. The module was part of the PUMA survey VI and administered by the Austrian federal statistics agency. The sample was partly drawn from the federal household register ($N_1=976$) and from an online panel run by the government agency for public statistics in Austria ($N_2=976$) (PUMA, 2019). A total of 1088 (response rate: 55.7%) individuals completed the survey⁴. Results of our analysis, however, are robust across different treatment group inclusions. These are half of the respondents. Since the data includes extensive data of people on the sampling list, we partly compensate for non-response error by weighting the data. All estimations discussed in the results section include these weights, but the unweighted results are substantively similar. Data is weighted by gender, age, highest

⁴The survey also included experimental elements. Among other treatments, it included a treatment that informed individuals about their relative income position within the income distribution. As this treatment may affect how individuals perceive and evaluate tax rates, we add a binary variable indicating whether an individual received an income treatment. Further, the survey included a treatment informing individuals about actual taxation levels for different income levels. Individuals who received the taxation treatment are excluded (for detailed information see Kalleitner, 2021).

completed level of education and urbanization of home town. We reshape the data from the wide format to a long format in which the dependent variables (perceptions and preferences for four different income levels) are nested within individuals. All models include standard-errors clustered at individual-level.

Dependent variables: perceived and fair tax rates. Respondents are asked to declare their perceived tax rates for the 20th, 40th, 60th, and 80th percentile of Austria's gross income distribution. The question was formulated as follows: *'How much do you estimate a person with the following average total monthly gross income⁵ pays in taxes and contributions? By this we mean income taxes, capital income taxes as well as social security contributions and consumption taxes (such as value added tax).'* Respondents are then asked to estimate a numerical value: *A person with an income of [1200 / 2200 / 3200 / 6000]€ pays [...] % in taxes and contributions.* After having answered this question, individuals are asked: *What percentage of gross monthly income in taxes and contributions would you consider fair?* [own translations, see figure 5.5 and 5.7 for original text in German].

Variables of interest: One's own income position. We again differentiate between two different operationalisations of one's own income position. Firstly, we use the *objective income position*. Personal income was measured using 22 income categories. The respondents had to report their total gross income per month (which is commonly known in Austria). 0.6% of the respondents failed to provide an income and were excluded from the analysis. We avoid directly asking respondents their income in an open-ended response, as this could result in higher measurement error, as well as a higher probability of non-response. We use the midpoints of the closed intervals as scores for those categories. The midpoint of the open-ended top category is extrapolated from the next-to-last category using a formula based on the Pareto curve (Hout, 2004). For instance, if a respondent reports to fall in the income category 1650-1800€, we assign 1725€ as income to that respondent.

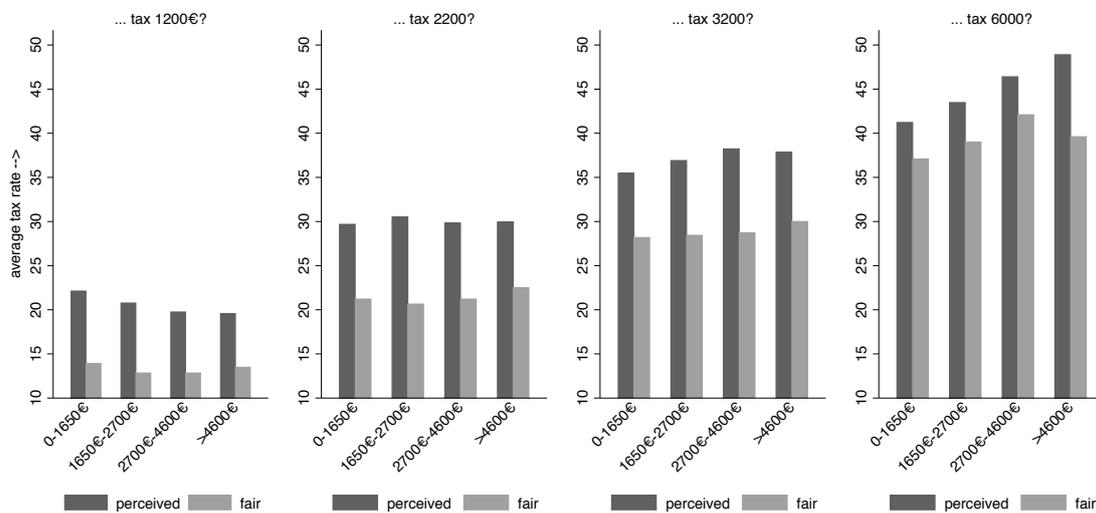
⁵Additional information given to the respondent: *'The person receives this salary 12 times a year. The 13th and 14th monthly salary are already included in this amount.'*

We use this variable in 1000€. Secondly, we use *subjective social status position*. Similar to the ISSP question, this item asks respondents to report their subjective social status on a imaginary social ladder from 1-bottom to 10-top. The correlation between personal gross income and subjective social status is 0.33 ($p < .001$) ($N = 531$).

Controls. We control for socio-economic characteristics that may be affected with income as well as with perceived and preferred tax rates. A variable for sex (ref. male) is added. We control for education level by differentiating between primary, vocational, secondary and university education. We further control for employment status: whether an individual is employed, in education, retired, or unemployed/out of labour force.

3.4.2 Results

Figure 3.3: Average perceived and fair tax rate for different income levels [1200€/2200€/3200€/6000€] by respondent’s income.



Note: $N = 531$. Source: PUMA (2019). Own calculations.

Figure 3.3 shows perceived and fair average tax rates for different incomes. Across all income groups⁶, the tax rate considered fair is always lower than the perceived

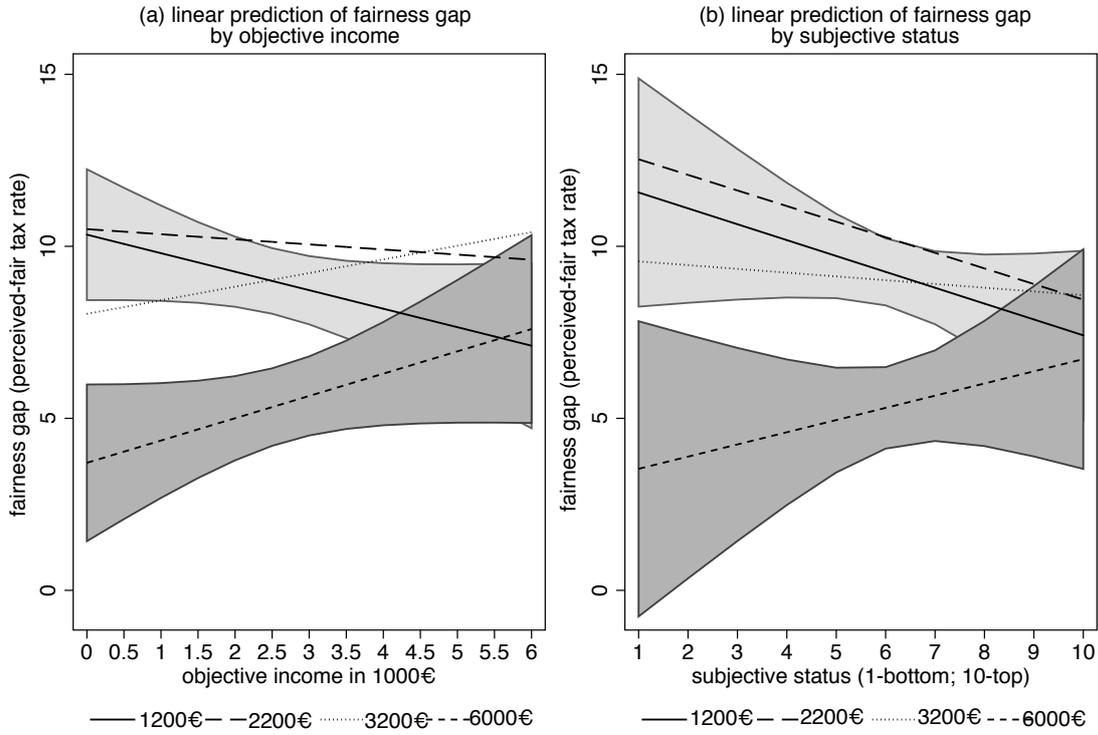
⁶We collapse the income categories in four income groups for this figure for readability. The bandwidth of these groups correspond to the incomes most closely to the four incomes of which

tax rate. All income groups perceive the current tax system as progressive. Further, progressivity of tax rates is considered as fair across all income groups. In general, individuals appear to consider a structure of the tax system as fair which is similar to the one they perceive. Though they would like to see approximately 10-15 percentage points lower taxes for every income group. We also see that perceived tax rates vary across individual income groups while fair tax rates are more stable across income groups. Additionally, it is interesting to observe, that individuals always perceive the tax rate of their own income group to be higher than individuals of other income groups perceive it. For instance, individuals falling in the lowest income group estimate the tax rate for an income 1200€ as to be around 22% while individuals of other income groups estimate the tax rate to be a bit lower. Individuals falling in the highest income group, estimate the tax rate for incomes of 6000€ to be around 47% while individuals of other income groups estimate it to be lower. Not only perceptions, but also the difference between the perceived and the as fair considered tax rate follows this pattern. As we are interested in the role of perceptions in evaluating tax rates, we now study the difference between the perceived and the as fair evaluated tax rate. In figure 3.3, the fairness gap is simply the difference between the perceived (dark grey) and considered fair (light grey) bars for each income category. We call this difference the *fairness gap*⁷.

respondents evaluated the tax rates.

⁷A larger positive value means that the perceived tax rate is much larger than the fair tax rate. That is, a larger value represents a higher difference between the perceived and fair rate. Thus, the higher the fairness gap, the more unfairness does an individual feel.

Figure 3.4: Fairness gaps for different evaluated income levels by (a) objective income and (b) subjective status.



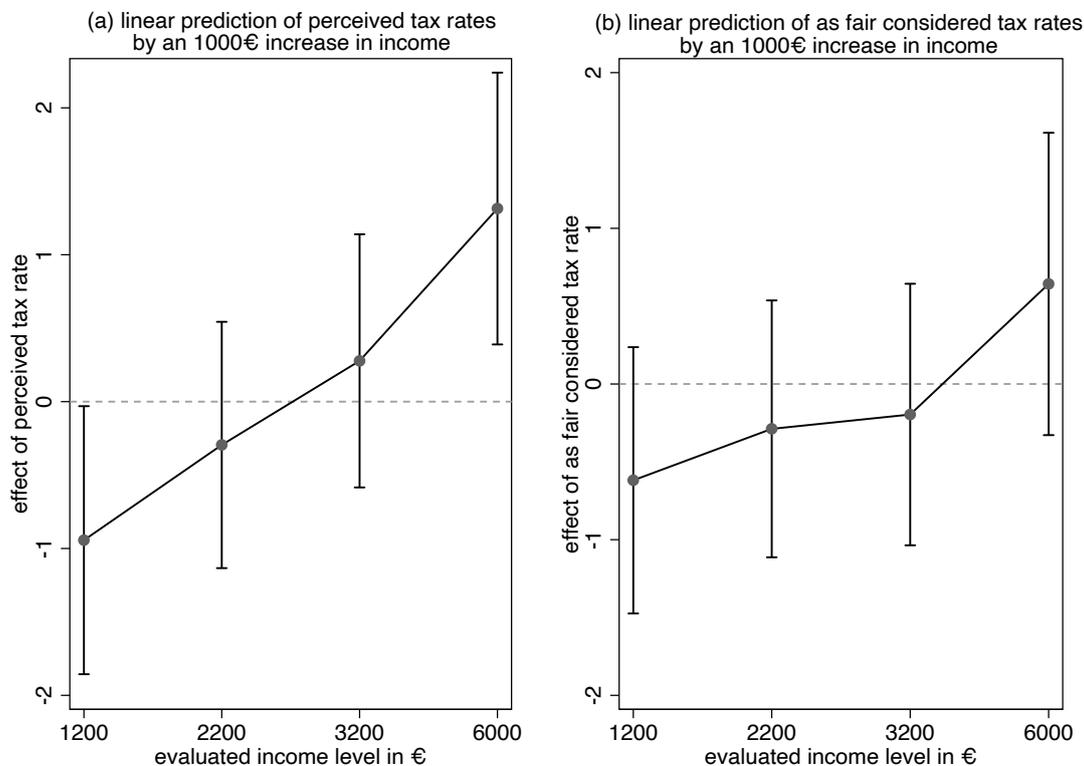
Note: 95% CI (clustered at individual level). CIs not shown for evaluated tax rate for 2200€ and 3200€ for readability. See appendix, table 5.6 for the regression table. Source: PUMA (2019). Own calculations.

Figure 3.4 (a) shows the predicted fairness gap—defined as perceived minus fair tax rate—for four different evaluated income levels by the objective income category a respondent falls into⁸. For readability, confidence intervals for the two income levels in the middle, for which respondents evaluated tax rates, are not shown. With increasing income, individuals perceive a higher fairness gap for the tax rate of an income of 6000€ while they report a lower tax gap for the lowest income category of 1200€. Figure 3.4 (b) has the same structure, yet shows fairness gaps by subjective status rather than income decile. The pattern is a bit less pronounced but similar to the pattern visible in figure 3.4 (a). In both figures, the effects for the middle income categories are more ambivalent.

⁸Figure 3.4 is based on linear regression models. See figure 5.8 for a non-linear prediction.

Our regression analyses suggest that high (low) income individuals are more likely to perceive comparatively higher fairness gaps for high (low) incomes than for low (high) incomes. This would be in line with the economic self-interest argument. It remains unanswered whether this is driven by differences in preferences for tax rates or differences in perceived tax rates. To study the relative importance of perceptions for preferences for taxation, figure 3.5 reports average marginal effects for the different income groups on (a) perceived tax rates and (b) fair tax rates. These figures show the average marginal effect of an increase in income by 1000€ on (a) perceived tax rates and (b) fair tax rates. If individuals evaluate the lowest income level (1200€), the perceived tax rate decreases with income ($p < .05$). If individuals evaluate the highest income level (6000€), we observe the reversed effect: Increases in income are associated with increasingly perceiving higher tax rates ($p < .05$). Differences in fairness gaps between different income groups are driven by perceived tax rates rather than by fair tax evaluations.

Figure 3.5: Average marginal effects of an income change in 1000€ on (a) perceived tax rates and (b) as fair considered tax rates by evaluated income level.



Note: 95% CI. CIs clustered at individual level. Source: PUMA (2019). Own calculations.

While the effect of income on fair tax rates also increases over income groups (see figure 3.5 (b)), the effect is insignificant. That is, variation in reported fairness gaps between the highest and lowest income groups can be primarily explained by differences in perceived tax rates rather than differences in fair tax rates. We interpret this finding as evidence that differences in preferences for taxation are partially driven by differences in information, and thus, differences in perceptions: Differences in preferences for taxation, as observable in the the PUMA data as well as in the ISSP data, may be partially driven by differences in perceptions.

3.5 Conclusion

This paper studied individual preferences to the question *'who gives'* to rather than *'who gains'* from the welfare state (Beramendi and Rehm, 2016). We observe in both datasets that individuals almost always favour higher tax rates for income levels farer away from their own income. This provides evidence for the importance of economic self-interest in the formation of taxation preferences. Using survey data from Austria, we are able to partially uncover the underlying mechanisms using correlational regression analyses. We find that individuals report a larger (smaller) fairness gap for high income levels, the higher (lower) their own income is. By analysing the effects of income on perceived and fair tax rates separately, we show, that this effect is mainly driven by differences in perceptions rather than fairness evaluations.

This study contributes to a growing literature focussing on the importance of perceptions when studying theoretical mechanisms that link economic context to individual-level preferences (Bobzien, 2020; Karadja et al., 2017; Petersen et al., 2011). Our contribution to this literature is threefold: Firstly, methodologically, we show that operationalizing and measuring perceptions of tax rates is important to accurately measure preferences for taxation. Secondly, theoretically, we argue that perceived tax rates are important drivers for taxation preferences as individuals use psychological heuristics to form such perceptions. These heuristics lead individuals to overestimate their own tax contributions. Thirdly, empirically, we find that preferences for taxation are dependent on perceived tax rates rather than fair tax rates. In sum, our study shows the importance of considering perceived tax rates when studying preferences for taxation from an methodological, theoretical and empirical perspective. We interpret our results as an indication that understanding how individuals perceive welfare state policies is important for understanding how individuals form political preferences.

This study is not free from caveats. While our analysis acknowledges the role of

perceptions when testing the relevance of economic self-interest, we only report correlational evidence. (Quasi-)experimental designs to study the role of information about tax rates in the formation of preferences for taxation would be valuable as past research mainly studied the role of information about the own (relative) income position (Cruces et al., 2013; Engelhardt and Wagener, 2014; Karadja et al., 2017). Methodologically, a worrying concern is the operationalisation of tax preferences in the respective datasets. The ISSP asks for general preferences towards different income levels while the PUMA data surveyed in Austria asks for tax rates that individuals consider as fair rather than for general tax preferences. It is thus likely that the relative importance of fairness norms is larger for revealing fair tax rates rather than for revealing general taxation preferences. We believe, we can mitigate this problem by controlling for different variables that operationalise self-interest. It remains, however, difficult to directly compare the dependent variables. This is related to the more general problem of precise measurement of tax rates. In the ISSP items on tax rates, taxes are very broadly defined. The PUMA items give a clear definition of what the respondents should include. It remains, however, unknown what individuals actually think of when asked about tax rates: How accurate can individuals assess the value added tax they pay per month? Do individuals conceptually differentiate between taxes and social security contributions? Do they know what capital income taxes are and how capital income is taxed? Do individuals differentiate between average and marginal tax rates? It would be interesting to study the ways in which individuals perceive different forms of taxation. A similar problem applies to the very general formulation of taxation preferences for high, middle and low incomes in the ISSP: Individuals may think about very different income levels when thinking about high, middle and low incomes. The PUMA data advances on this problem as it asks for taxation preferences for specific income levels.

Considering those limitations, our analysis shows that preferences for taxation are only comparable between individuals if the information basis individuals have is considered. Thus, we argue it is crucial to acknowledge that correlational relationships between proxies for economic self-interest and preferences for taxation do

not necessarily provide evidence in favour of economic self-interest as mechanism. Thus, our results confirm the notion that the perceived structure of the tax systems is important for preferences for taxation (Barnes, 2015; Berens and Gelepithis, 2019; Limberg, 2020). However, our results also suggest that individuals' ability to accurately estimate the structure of tax systems should not be overestimated. Not considering the heterogeneity of perceptions can result in inaccurately estimating (and possibly overestimating) differences in taxation preferences between individuals. Future research should try to theoretically assess and empirically test economic self-interest as mechanism more directly. We believe that considering heterogeneous perceptions of individuals may help to uncover when and why individuals act based upon economic self-interest.

Chapter 4

Right here? Regional redistribution and right-wing populist voting in Germany

Abstract

Governments have a variety of means to moderate the diverse ways in which economic changes affect societies. This paper tests whether regional redistribution, as a place-based policy that mitigates regional economic disparities, affects right-wing populist voting. I propose the mechanism that individuals are sensitive to changes in the financial situation of the municipality they live in. To articulate discontent (reward) with the financial situation, as a result from losing out on (benefiting from) regional redistribution, individuals (do not) vote for Germany's right-wing populist party AfD. To account for endogeneity, I instrument regional redistribution with an exogenous change in the official population measures as a result of the German census published in 2014. This change re-allocated financial means between municipalities. Analysing German federal election results of 2013 and 2017, I provide evidence that losing out on regional redistribution increases right-wing populist voting.

4.1 Motivation

The rise of populism across Europe and the Globe has fuelled the search for potential explanatory patterns. One of these explanatory patterns is the increasingly unequal distribution of economic gains across individuals, households, and regions that produce *losers of modernization* (Betz, 1994; Mudde, 2010; Rodrik, 2018). Economic inequalities provoked by trade openness (Antràs et al., 2016; Autor et al., 2018;

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Colantone and Stanig, 2018b; Hays et al., 2019), educational differences (Guiso et al., 2018), labour market institutions (Abou-Chadi and Kurer, 2019; Algan et al., 2018; Vlandas and Halikiopoulou, 2019), housing costs (Adler and Ansell, 2020), technological change (Gingrich, 2019) or austerity (Becker et al., 2017; Fetzer, 2019) can foster the feeling of exclusion in modern economies and can motivate individuals to vote for right-wing populist parties. Appropriate redistribution policies aimed at compensating the losers of modernization may be one strategy to counteract the support for populist parties (Antràs et al., 2016; Colantone and Stanig, 2018b). This paper empirically tests whether regional redistribution as compensation policy with the aim of mitigating differences between regions affects right-wing populist voting in Germany.

Methodologically, it is difficult to study this relationship since regions which benefit from regional redistribution share further characteristics that potentially confound this relationship such as lower tax revenues, an older population, or comparatively high unemployment rates (see figure 5.11). To account for such endogeneity concerns, I instrument regional redistribution: I interpret the German census in 2011 as an exogenous change to the redistribution mechanisms between municipalities. The census population estimate was 1.8% lower than the population estimate based on civil registries: Germany 'missed' overall 1.5 million inhabitants.¹ There was variation in the extent to which municipalities had to adjust their population measures: some municipalities such as Bonn or Flensburg had to adjust their population measures downwards, others, such as Augsburg, upwards. Regional redistribution is partially determined by population measures. The census thus reallocated financial assignments between municipalities. I use this census-induced exogenous shock to the official population measures as instrument to analyse whether regional redistribution influences individual voting behaviour. I test whether those municipalities who 'lost' ('won') inhabitants, and therefore experienced lower (higher) financial assignments as a result of regional redistribution, display a higher (lower) vote share

¹It is unknown whether the census results are closer to the *true* population measure than the updated registry population estimates since the *true* population measure is unknown.

of the right-wing populist party *Alternative fuer Deutschland (AfD)*.

The structure of the paper is as follows: Section 2 reviews existing research on the question of how economic contexts link to right-wing populist voting and develops the theoretical argument. Section 3 describes the data used and discusses the statistical approach. In section 4, I show and discuss descriptives as well as regression results using an instrumental variable-fixed effects approach. Section 5 concludes.

4.2 Linking economic context to right-wing populist voting

This section reviews related literature on right-wing populist voting and outlines the hypothesized theoretical mechanism.

One approach to thinking about the emergence of populism is to differentiate between the demand side and the supply side of populism (Golder, 2016; Rodrik, 2018). Supply side analyses focus on how structural factors such as electoral rules, party competition, media landscape, political cleavages or party organisation influence populist voting (Golder, 2016). Demand-side analyses focus on determinants that generate demand for populist parties; these determinants can be cultural or economic (Mudde and Rovira Kaltwasser, 2018). By analysing voting for a right-wing populist party, I study the demand side of populism. While the supply side is equally important, I argue for the German context that there was only one larger populist party during the period. This was the right-wing populist party AfD.

Demand-side determinants for populist voting are often times discussed along the two (competing) hypotheses arguing for culture as key mechanism (e.g. Inglehart and Norris, 2017) and economic aspects respectively as key mechanism (e.g. Guiso et al., 2018). While these two hypotheses are empirically likely to be interwoven

(Gidron and Hall, 2017; Hochschild, 2016), it is theoretically useful to differentiate between them. Advocates of the former hypothesis emphasize nationalist motives or xenophobia as main drivers for an increased popularity of populist parties². This is often related to the hypothesis that felt threats to one's own culture or potential identity losses function as drivers for populist voting. Advocates of the latter stress aspects of the own or the contextual economic situation (Hawkins et al., 2017; Rydgren, 2007). I embed my study in the latter hypothesis—without denying the relevance of the former and the interdependence of these two hypotheses.

The role of economic context. Globalisation and other forms of economic change alter domestic economic structures (Autor et al., 2018; Dauth et al., 2017). Such place-based economic changes potentially originate in political and social outcomes such as success of right-wing populist parties. There are attempts to study how structural changes in the social and economic order fuelled the rise of populism (Betz, 1994; Kriesi, 2014). Increasing trade openness as one dimension of globalization is one such structural change. Antràs et al. (2016) show that trade openness raises aggregate income and increases income inequality at the same time. In a quest to identify how economic developments such as increased trade openness causally effects voting behaviour, researchers started to study the political and economic consequences of exogenous economic shocks. One of such research strands focus on the potential effects of trade openness as a consequence of globalization. Interpreting imports from China as import shocks, it is asked how these shocks affect economic outcomes such as local labour market participation in the US (Autor et al., 2013) and Europe (Dauth et al., 2014) and political outcomes such as voting behaviour (Autor et al., 2018; Colantone and Stanig, 2018b; Dippel et al., 2015). Hays et al. (2019) combine individual and regional data and show that people exposed to import shocks have a more negative attitude towards the cultural and economic impact of immigration. This partially aligns their political preferences with right-wing parties. However, the authors also show that these concerns seem to be more

²For instance, Matakos et al. (2019) show that the sole exposure to refugees can foster right-wing voting behaviour.

of a socio-cultural than of economic nature. Voters respond to trade-related social change, which seems to be intensifying existing anti-immigrant sentiment. Other research focusses on the role of automation. For instance, Gingrich (2019) studies voter reactions to automation by looking at institutional heterogeneities across countries: Using the ISSP, she provides observational evidence that the link between labour market institutions and individual political behaviour is complex; she concludes that simply compensating those who are considered as left behind may not be sufficient. An additional channel that links economic context and populist voting studies local wealth accumulation. For instance, Adler and Ansell (2020) argue that local wealth inequality—measured in housing prices—is a potential channel driving populist voting. Studying the German context, correlational analyses find that unemployment rates and education levels are only weakly associated with voting for the AfD while an aging population is associated with higher AfD voteshares in East-Germany (Franz et al., 2018; Hansen and Olsen, 2019; Schwander and Manow, 2017). Furthermore, Franz et al. (2018) show that the AfD finds more support in rural areas with ageing populations.

Regions are not unalterably exposed to economic developments. Rather, they can react to such developments politically and socially. Whether, and in which ways, these policy responses affect societies is also analyzed. Albanese et al. (2019) study regional redistribution across Italian municipalities using a regression discontinuity design. They find that EU-injected financial transfers change local political preferences: higher transfers can reduce vote shares of populist parties. Studying a far-right party, Galofré-vilà et al. (2017) analyse whether austerity measures imposed by the German chancellor Bruening in order to endure the consequences of the global economic crisis impacted the electoral outcomes of the Nazi party NSDAP between 1930 and 1933³. They exploit the fact that austerity measures (tax increases as well as spending cuts) varied across districts and estimate effects on district level in Germany. They show that stricter austerity measures are positively linked to an

³The most common explanations for the rise of the NSDAP are the consequences of the Versailles Treaty as well as high unemployment rates.

increased vote share for the NSDAP⁴. Similar in design, but different in content, Fetzner (2019) exploits variation in the exposure to welfare reforms between regions in the UK from 2000 until the 2016 European Union referendum. He shows that exposure to austerity is associated with political dissatisfaction and correlates with leave votes in the respective referendum. Becker et al. (2017) show that a higher share of leave votes in the referendum is linked to fiscal cuts and migration. This is especially pronounced in regions with comparatively low socio-economic characteristics. One explanation for this pattern may be that individuals living in such regions have less opportunities due to e.g. lower skill levels to adopt to economic changes. Also studying the Brexit, Carreras (2019) links regional and individual level explanations arguing that regional economic losses result in more risk-averse behaviour which made individuals more likely to vote in favour of Brexit in the referendum. Diermeier (2020) analyses the success of the AfD in the 2017 German federal elections and the 2019 European elections at municipal level. He shows that poorer public good provision coincides with higher AfD vote shares. This association, however, is less strong or absent in smaller, rural municipalities.

Generally, the empirical analyses suggest that economic contexts and structural changes in the economy affect voting behaviour in general and populist voting in particular. The question of the role of governments as a moderating variable is of particular interest as governments are not mere observers; they can rather use a variety of measures to influence and shape the effects of economic change on individuals, households and regions. (Colantone and Stanig, 2018b, p.8) for instance conclude that *'[a]ppropriate redistribution policies are needed in order to compensate those categories of people, and those local communities, that have been bearing most of the adjustment costs in developed countries.'* I test whether this policy implication holds empirically.

Felt regional deprivation as mechanism linking economic context to

⁴By citing this study, I do not aim to equate the NSDAP with populist parties such as the German AfD.

right-wing populist voting. Governments have a variety of policy instruments to moderate the diverse ways in which economic changes affect societies. One of such instruments is the of provision funding to municipalities as a place-based policy that may improve regional living conditions. Considering economic contexts as a crucial motive in voting behaviour, I theoretically argue that individuals are sensitive to the financial situation of and the living conditions offered by the municipality they live in. A lack of financial resources in municipalities—visible to individuals due to weak infrastructure and public good provision—can make individuals feel economically outpaced and deprived. I understand regional deprivation as having done economically less well relative to other regions. As underlying psychological mechanism I suggest that unsatisfied expectations of regional living conditions can foster frustration and political distrust which in turn impacts voting behaviour (Bélanger, 2017): Opening hours of the local municipal council, the provision of kindergartens and hospitals or a functioning refuse collection system are directly felt by local residents. If such conditions and services do not hold up to the expectations of individuals, they may respond with frustration and political distrust. This perceived regional deprivation may translate in support for right-wing populist parties to articulate discontent with regional living conditions. A decrease (increase) in financial assignments received by a municipality motivates individuals to vote for (against) a right-wing populist parties to signal dissatisfaction (satisfaction).⁵

Right-wing, populist parties are in such a context particularly appealing since they offer a rather generic promise of protection for those who consider themselves losers of modernization. Rodrik (2018) for instance show that protectionism is the favoured response of individuals to labour market shocks. In comparatively generous welfare states—such as Germany—the demand for exclusion of a particular group in response to the transnational globalisation of money, goods and people is particularly likely (Manow, 2018; Rodrik, 2018).

⁵Alternatively, one could argue that individuals do not respond with voting for a challenger party (*voice*) but rather with abstaining from vote (*exit*) (Bélanger, 2017; Hirschman, 1970). Following this argument, I study turnout as alternative outcome. See table 5.10.

Beyond the importance of the economic context, individual traits may also affect voting behaviour and may interact with economic contexts. Recent research suggests that there is heterogeneity in how individuals react to changes in their environment depending on individual characteristics such as education or employment status (Ahlquist et al., 2020; De Vries and Giger, 2014; Häusermann et al., 2018; Marx and Nguyen, 2016). Besides heterogeneity in the reaction to economic contexts between individuals, individual characteristics such as one's own economic situation and felt economic (in)security can also influence voting behaviour directly (Algan et al., 2018; Feldman, 1982). In this paper, I use aggregated individual level data at municipality level. I can control for regional variation in individual characteristics. I am, however, neither able to directly test an individual-level mechanism nor to test for heterogeneous effects across individuals.

Studying the link between regional redistribution and AfD vote share in a correlational design is difficult since endogeneity potentially confounds that relationship. One potential source of endogeneity is an omitted variable bias: Municipalities with lower tax revenues—which reflects lower financial power of a municipality—benefit to a greater extent from redistribution. Further, net-receiving municipalities have on average higher unemployment rates. Low prosperity and high unemployment are, however, also potential drivers of populism. By instrumenting the financial assignments, I account for these factors as well as for other potential (unknown) sources of endogeneity. In other words, I offer a rigorous test at the regional level as to whether regional redistribution affects voting behaviour.

4.3 Statistical approach

This section gives an overview of the empirical approach. Firstly, I describe the data used as well as the statistical approach. Secondly, I map out the institutional structure of Germany and the procedure of the census 2011 and discuss whether it is plausible to consider the census results as an instrument for the financial assignments

of municipalities.

4.3.1 Data and variables

In the following empirical analysis, I use the election results in the German federal elections in 2013 and in 2017 aggregated at municipal level. This data is provided by the federal election office (Bundeswahlleiter, 2013; Bundeswahlleiter, 2017). This allows a more detailed analysis compared to previous research which mostly analysed aggregated district data which is less well suited to reflect the high diversity of municipalities (e.g. Franz et al., 2018; Schwander and Manow, 2017). The use of official election results has the advantage—compared to survey data—of not being potentially biased, but to reflect the actual election results (e.g. Schwander and Manow, 2017). I exclude postal voting districts from my analysis. I link this election data to the *wegweiser-kommune.de* data provided by Bertelsmann Stiftung (2018) which contains harmonized information on the demographics and the financial situation of German municipalities⁶. The dataset covers municipalities with more than 5000 inhabitants only. Thus, my analysis is restricted to around 3000 larger municipalities (Germany has around 11 000 municipalities overall)⁷. The *wegweiser-kommune.de* data covers more than 89,6% of the German population (Bertelsmann Stiftung, 2020). Germany consists of 16 federal states. Three of them, namely, Berlin, Bremen, and Hamburg, are so-called city states and do not have a comparable mechanism to redistribute financial resources between districts. I therefore exclude them. Further, I exclude Rhineland-Palatinate and Schleswig-Holstein as they reformed their redistribution mechanism during the period under consideration. Some municipalities were subject to territorial reforms during the period under consideration. I also exclude these municipalities. For missing values on the variables under considerations, I impute lagged values of one or two years if available. For

⁶This data is aggregated at the level of associations of municipalities for some federal states: for Rheinland-Pfalz, it is aggregated at *Verbandsgemeindeebene* and for Sachsen-Anhalt and Niedersachsen it is aggregated at *Samtgemeindeebene*.

⁷Considering only comparatively large municipalities implies the disadvantage that the generalizability of the results is limited and only valid for this sub-population of comparatively larger municipalities. At the same time, however, it also allows to exclude spill-over concerns: The dismantling of public infrastructure can be less important for the individual if she can easily switch to neighbouring communities. This is less likely in larger municipalities.

missing values that remain after imputation, I employ listwise deletion.

Outcome. The dependent variable $\ln(\text{AfD-vote share})$ is the natural logarithm of the vote share of the AfD (*Zweitstimme*) in the election years 2013 and 2017.⁸ I take the natural logarithm since the distribution is right-skewed. Small changes in the independent variable can thus be approximately interpreted as %-changes in the dependent variable.

Instrumented variable: general financial assignments p.c. (so-called *Schlüsselzuweisungen*). Regional redistribution takes place through general financial assignments made to municipalities by federal states. These assignments are not allocated for specific purposes and can be used by municipalities as they wish. The amount of general financial assignments a municipality receives is determined by balancing the financial strength (tax revenues) against the financial need of a municipality (number of inhabitants). For the pre-census period, I use the last year in which the *wegweiser-kommune.de* data was not adjusted to the census data which is 2010. The post-census period is 2016 to ensure that the financial assignments have actually been received by the municipalities before the election year 2017.

Instrument: census-induced change in population measure. I use the census-induced changes in the population measure as instrument. I approximate that as a linear relationship between changes in the population measures and financial assignments. As these assignments further depend upon the financial strength (tax revenues) of a municipality, I control for financial strength in the first stage. Imagine two municipalities of equal size that both 'lost' the same amount of inhabitants; to what extent these 'losses' translate in changes in the financial assignments depends on the financial strength of a municipality: A financially strong munic-

⁸In German federal elections, each voter has two votes following the principle of personalized proportional representation. The first vote (*Erststimme*) ensures that each electoral district is represented by at least one representative, the second vote (*Zweitstimme*) is the relevant measure for the allocation of seats in the German parliament. I use the vote share based on the *Zweitstimme* only; this share is calculated based on valid *Zweitstimmen* divided by the total number of valid votes.

pality may not experience any change in the financial assignments if the strength outweighs the need. To take this into account, I include the relevant tax revenues in the first stage as control variables. The link between population measures and financial assignments is complex as, for instance, populous municipalities are disproportionately favoured (*Einwohnerveredelung*) and varies across federal states. I do not claim to accurately rebuild the redistribution mechanisms. I try to offer an empirical approximation by modelling the most important determinants which are similar across federal states.

Controls. Since I am looking at within-municipality variation, it is important to control for general changes in the socio-demographic and economic structure within each municipality. This should sweep out concerns that the relationship between the instrumented variable and the dependent variable is driven by time-varying confounders. I therefore control for general tax revenues p.c., business-, real estate- and income tax revenues p.c., municipal debt p.c., and investment assignments p.c.; all in nominal 100€. To account for changes in the socio-demographic structure, I control for: the net population change in % since 2011, the share of the population older than 65, voter turnout and the share of inhabitants receiving unemployment benefits (ALG II). In 2015, Germany decided to accommodate a large number of refugees. This decision was controversial and is a possible further cause for the electoral success of the AfD: It is often argued that the increasing number of refugees has led to increased competition for public goods such as sports facilities and/or fuelled xenophobia within the German population helping the AfD to win votes. I operationalize the refugee influx as the share of registered refugees living in a municipality provided by the Federal Office for Migration and Refugees. Further, I include a time dummy to control for general time trends (Murtazashvili and Wooldridge, 2008).

I estimate the following equation:

$$\begin{aligned}
& (\ln(AfD_{it}) - \overline{\ln(AfD_i)}) \\
&= \beta_1(\text{assignments}_{it} - \overline{\text{assignments}_i}) \\
&+ \beta_2(\text{controls}_{it} - \overline{\text{controls}_i}) + (\varepsilon_{it} - \bar{\varepsilon}_i) \\
&\quad \rightarrow \ln(\ddot{AfD}_{it}) \\
&= \beta_0 + \beta_1\ddot{\text{assignments}}_{it} + \beta_2\ddot{\text{controls}}_{it} + \ddot{\varepsilon}_{it}
\end{aligned} \tag{4.1}$$

i indexes municipalities, t the pre-census period (t_0) and post-census period (t_1). $\ln(AfD_{it})$ is the natural logarithm of the AfD vote share, assignments_{it} denotes the general financial assignments to municipality i at time t . controls_{it} is a vector of controls and ε_{it} the error term. I specify fixed-effects models to sweep out time-constant unobserved heterogeneity between municipalities.

To resolve potential endogeneity concerns, I use the census-induced changes in the population measures as instrument. Thus, the first stage regression is:

$$\begin{aligned}
& \ddot{\text{assignments}}_{it} \\
&= \gamma_1(\text{pop}_{it}^{\text{adj.}} \times \ddot{\text{federalstate}}) \\
&+ \gamma_2(\text{controls}_{it} \times \ddot{\text{federalstate}}) + \ddot{\mu}_{it}
\end{aligned} \tag{4.2}$$

$\text{pop}_{it}^{\text{adj.}}$ is the census-induced change in the official population measures. μ_{it} the error term. Since the weighting of the population measure for the financial assignments varies across federal states, I include them as interaction terms. controls_{it} is a vector of tax revenues which are relevant to the regional redistribution mechanism, namely: real estate tax revenue, income tax revenue and business tax revenue. Since the weighting of these taxes also varies across federal states (and these weightings, in turn, determine the financial assignments), I also include them as interaction terms.

4.3.2 The German context

Germany is structured in 16 federal states. Each federal state consists of districts, so-called *Kreise*. Each of these districts, in turn, consists of municipalities.

German municipalities. German municipalities have (partial) tax revenues and receive financial assignments. A fixed share of income tax revenues and value added tax revenues (these are both federal taxes) is allocated to municipalities. Municipalities have tax sovereignty over local consumption and expense taxes, property taxes, and business taxes. Further, they may receive federal state revenues (Art. 106, Abs 6 GG, 1949). Municipalities have compulsory duties they have to provide and voluntary duties they can provide. This is regulated by federal law and state law e.g. for North Rhine-Westphalia Nordrhein-Westfalen, 1952, (Art. 3 Abs.1). The compulsory duties comprise: providing a registration system, waste removal, fire protection, maintenance of kindergarten, cemeteries, sewerage disposal, street cleaning as well as energy and water supply in some federal states. Voluntary duties comprise: (i) economic activities such as markets, fairs, or public transportation, (ii) cultural duties such as music- and community education centres, libraries, museums, theatres, or sports facilities and (iii) social/health-related activities such as poor relief, care for the elderly, or hospital maintenance (Nordrhein-Westfalen, 1950, Art. 78).

Regional redistribution mechanisms ('Kommunaler Finanzausgleich'). The federal states are obliged to ensure local autonomy of municipalities (BVerfG, a; GG, 1949, Art. 28, Absatz 2) and are therefore obliged to endow municipalities with sufficient financial resources. In practice, this is fulfilled by the regional redistribution mechanism within federal states which equalizes financial endowments between municipalities. This (i) ensures that municipalities can comply their administrative tasks and (ii) aims to reduce differences in financial endowments between municipalities⁹. Generally, the redistributed amount is the (weighted) difference between

⁹Besides redistributing between municipalities on federal level, Germany also redistributes between federal states in Germany (Laenderfinanzausgleich). This federal compensation mechanism

fiscal needs (determined by the number of inhabitants) and fiscal capacity (determined by the tax revenue) of each municipality. If the fiscal needs exceed the tax revenues, a municipality receives financial support through the municipal financial compensation mechanism. Although the federal states are obliged to redistribute between municipalities, the detailed legal framework is specific to the federal state legislation. I account for that by using only within-municipality variation and to allow for federal-state specific slopes in the first stage regression.

Germany's right-wing party AfD. The German political landscape—in contrast to most other European countries (Arzheimer, 2015)¹⁰—did not include a right-wing populist party represented in the national parliament until the Alternative fuer Deutschland (AfD) party entered the national parliament in 2017 as the largest opposition party. Since 2013, Germany has been governed by a grand coalition of conservatives and social democrats. The German right-wing populist party AfD was founded in 2013 and was eligible to participate in the German federal election in fall 2013. In the 2013 federal election, the AfD barely missed the 5%-threshold to enter the German parliament, receiving 4.7% of the votes. Since 2013, the AfD entered all German state parliaments and, in 2017, also entered the German parliament receiving 12.6% of all votes. Currently, the AfD is the main opposition party in the German parliament. Initially founded as a liberal-conservative party focussing mainly on the European debt crisis, the party pivoted to national-conservative positions after the founder, Bernd Lucke, left the party in 2015. However, Eurosceptic and national-conservative stances have been part of the AfD's identity and programmatic stance ever since. In the public discourse the party was exposed to accusations of being a right-wring populist party from the very beginning (Berbair et al., 2015; Goerres et al., 2018).

is based on article 72 and article 107 (GG, 1949) which state that there is a legal obligation to equalize living conditions within Germany. However, the federal redistribution mechanism is much smaller in financial scope and much less important for municipalities and is determined with a time delay.

¹⁰In the German parliament, the following parties were represented in either of the two legislative periods under considerations: The conservative parties CDU/CSU, the social-democratic party SPD, the green party Die Gruenen, the leftist party Die Linke, and the liberal party FDP, and the right-wing, populist party AfD.

4.3.3 Census 2011 as an instrumental variable

The German census executed in 2011 was the first census since 1987 in West-Germany and the first census in East-Germany since 1981. In the interim, population measures were merely based on civil registry at municipality level (for a detailed overview see Scholz and Kreyenfeld, 2016). To execute the census, a new census law was adopted in accordance with standards formulated by the European Union (EU, 2008). Due to data protection concerns within the German population and a decision of the federal constitutional court in 1983 (BVerfG, a), the German government had to re-examine if there are statistical methods available to avoid conducting a full census and decided that this was indeed the case. Instead of a full census, two different procedures were applied. Decisive for the question which procedure was applied in which municipality was the official population size of a municipality. (1) In municipalities with less than 10 000 inhabitants, the number of inhabitants was estimated based on civil registries. (2) For municipalities with more than 10000 inhabitants, this procedure was complemented by household surveys with randomly selected households. The decision to apply two different procedures was based on a small-scale test census in 2001. The final results were published in May 2014 (Statistische Ämter des Bundes und der Länder, 2015). Effectively, the results of the census led to an adjusted decrease in the official German population measure by 1.8% compared to the civil registries.

Table 4.1: Timeline of the census: data collection and implementation.

2011: 09/05-31/07	census data collection
2013: 31/05	first census results published
2013: 22/09	German federal election (pre-shock)
2014: 28/05	final census results are published
2014-2016	implementation of the census results
2014/2015	~833 municipalities take legal action against the census results
2017: 24/09	German federal election (post-shock)
2018: 09/09	federal constitutional court decision: census was constitutional

Source: Own illustration.

Temporal order. It is subject to the respective federal legislation from which point in time onwards the census results are used for the municipal financial compensation. Thus, the implementation of the census results varied across federal states. Most states, such as Saxony or Bavaria started to base their calculations for the municipal budgets on the census results from 2014 onwards. The census measures were thus implemented after the general elections in 2013. In general, the census population estimates became the basis for the municipal financial compensation mechanism in all federal states between 2014 and 2016. They were thus implemented in all federal states by the general elections in 2017 (see table 4.1).

I use the census-induced changes in the population measures as an instrument. To use that as instrument, two assumptions must be met: (i) instrument exogeneity ($\text{corr}(Z_i, e_i) = 0$) and (ii) instrument relevance ($\text{corr}(Z_i, x_i) \neq 0$) (Angrist and Pischke, 2008; Sovey and Green, 2011; Wooldridge, 2001). Firstly, I discuss the exogeneity assumption by asking why the registry-based statistics differ from the census results. Secondly, I discuss the relevance: did these deviations actually matter for municipalities?

(i) Instrument exogeneity: Why are the registry-based statistics different from the census results?

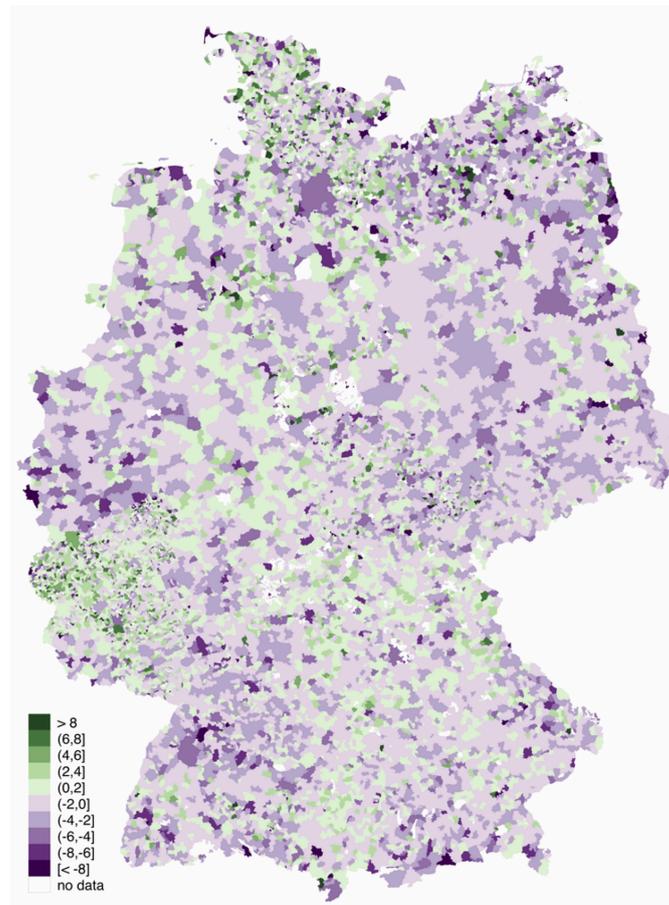
There are four main reasons to explain differences between the registry-based measures and the census measures: (1) moving abroad, (2) not-registering, (3) random sampling error, and (4) incentives to overestimate the population. In the following, I discuss these reasons. Exogeneity would be unrealistic to assume if the census-induced population change were linked to any other feature of a municipality that might be related to voting patterns.

First, the census results are biased if individuals *move abroad and do not de-register*. Birth, death, and moving within the country are rather accurately reported in Germany. However, if people move abroad and they do not de-register, they re-

main in the population registry. There is no reason to believe that moving abroad and not de-registering is endogenous to my estimates. Second, *not registering* biases the census results. Besides the legal obligation to register, there are incentives not to register. For instance, residents may want to avoid residence taxes (for second homes). Municipalities have autonomy over residence taxation. Especially larger cities and city states tend to have secondary residence taxes. If tax avoidance is the main mechanism for not-registering, I would expect to observe higher levels of not-registered inhabitants in larger cities. Larger cities are, however, usually also more progressive and more reluctant towards populist parties. If this biases my results, I expect it to make my estimates more conservative. Third, the census is not free from random (sampling) error. The legal objective for the standard error was $se < .05$. The empirical standard error was, however, higher ($(\bar{se}) = .057$) (Statistische Ämter des Bundes und der Länder, 2015). The *true* population measure remains unknown. It is indeed possible that the registry-based measures are closer to the true population measure than the census. The city of Regensburg in Bavaria was one of the cities that filed a suit against the census results. This was dismissed in a judgement by the administrative court of Bavaria arguing that *'the complainant [= the city of Regensburg] does not have a legal right for an accurate, error-free population survey since this is effectively impossible'* (Verwaltungsgericht Regensburg, 2015, p. 45, own translation). Subsequently, the Constitutional Court argued that the determination of the true number of inhabitants is not required simply for the reason that no practically feasible statistical procedure can offer a guarantee for this (BVerfG, b): There is no reason to believe that the census estimates are actually better than the civil registers. This reason is by definition exogenous. Fourth, municipalities have *incentives* to overestimate their number of inhabitants in order to benefit from regional redistribution mechanisms. However, these incentives are identical for all municipalities within federal states.

Figure 4.1 visualizes the differences between the census- and the registry-based population measures. The greener a municipality is, the more inhabitants it 'won'. The more violet a municipality is, the more inhabitants it 'lost'. It stands out that

Figure 4.1: Deviations between registry-based and census population estimates at municipality level (green = census reported more inhabitants than municipality).



Source: Zensus2011; German Federal Agency for Cartography and Geodesy.

especially the South-West as well as the North gained inhabitants on average while most other areas lost inhabitants on average. This indicates that there is regional heterogeneity in civil registries. For the purpose of my study, this is unproblematic since I look at within-municipality changes sweeping out time-constant heterogeneity such as heterogeneity in the quality of institutions across federal states.

(ii) Instrument relevance: Did the deviation matter for municipalities?

Despite the question under which circumstances the census measures differ from the registry measures, the census measures had direct financial consequences for the municipalities, albeit in various degrees. Around 850 municipalities took legal actions to challenge the census results (Statistische Ämter des Bundes und der Län-

der, 2020). Concerns about the data collection method and execution are the main reason for taking legal action against census results. The financial consequences for municipalities were not large in scale but noticeable. The city of Saarlouis in Southern Germany, for instance, estimated to have around 37000 inhabitants in 2011. According to the census, however, Saarlouis had only 34500 inhabitants resulting in a decrease in the official number of inhabitants by around 2500. Due to the census, the municipality receives 245000€ less per year from the regional redistribution mechanism. That represents a 20%-decrease as compared to the past year. This equals the annual budget of the community education center *Volkshochschule* of Saarlouis (Schwentker, 2013). These are also the expenses that are most likely to be cut first as it is not mandatory for the municipalities to provide such offers. It can therefore be assumed that financial cuts due to the census were directly felt by individuals.

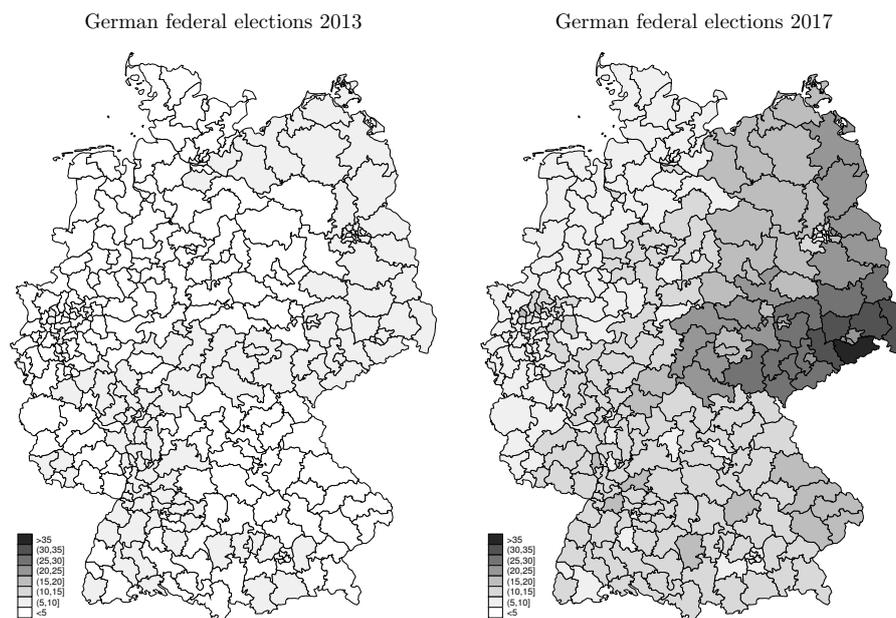
4.4 Empirical analysis

I interpret the census-induced change in the population measures, published in 2014, as an exogenous shock which (re)allocated financial assignments between municipalities. The level of analysis is the municipality level. I compare the German federal elections 2013 and 2017. I do not consider earlier federal elections since the election 2013 was the first federal election the party AfD participated in.

4.4.1 Descriptive statistics

Figure 4.2 shows the geographical distribution of AfD vote shares (*Zweitstimme*) at electoral district level ($n=299$) comparing 2013 (left) with 2017 (right). The maps show that the AfD won votes in basically every single electoral district between 2013 and 2017: in 2017, the overall map is darker. The AfD is especially strong in the East of Germany as well as in some parts of Bavaria. Figure 4.3 shows the change in AfD vote share between 2013 and 2017 (x-axis) at municipality level as

Figure 4.2: AfD vote share in % by electoral district in 2013 and 2017



Source: Bundeswahlleiter; n=299. own calculations.

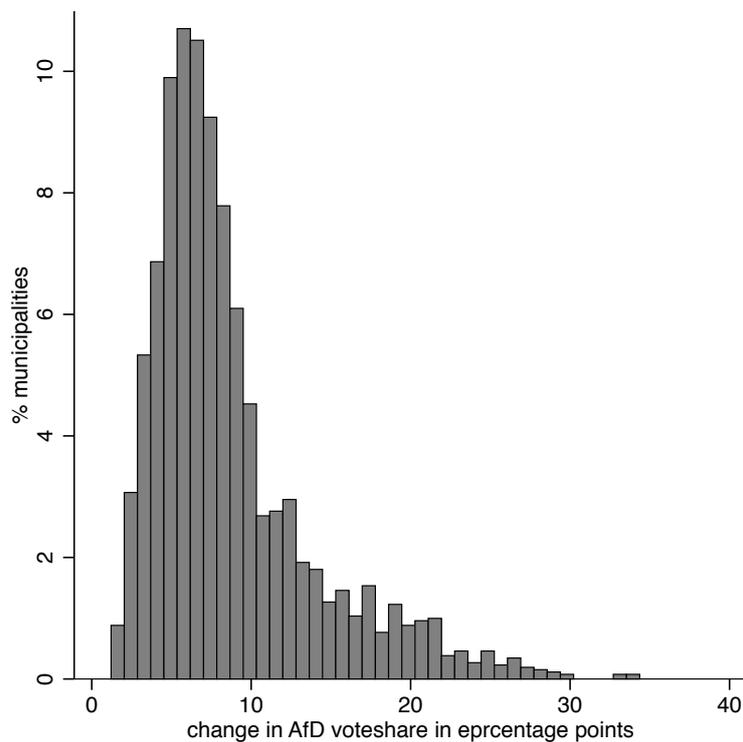
histogram. On the y-axis, the share of municipalities with the respective AfD vote share is shown. The natural logarithm of the changes in the AfD vote share is the dependent variable I study. In some municipalities, the AfD gained nearly no votes or even lost votes, in some municipalities, the AfD gained over 20% indicating an increase in regional political polarization. In this sub-sample, the AfD won on average 8.7%- points in vote share¹¹; but these gains were regionally unequally distributed.

General financial assignments p.c. in 100€ made to a municipality is the instrumented variable. Figure 4 shows the changes in the financial assignments between 2013 and 2017. These changes are approximately normally distributed with a mean of 57.91€ and a standard deviation of 109€¹².

¹¹Overall, the AfD won on average 7.9%- points in vote share. See figure 5.10 for the same figure as figure 3 including all German municipalities.

¹²The distribution in figure 4.4 has a positive mean; this may be surprising. There was an increase in the overall (re)distributed nominal amount. Thus, most municipalities received higher general financial assignments p.c.; the census simply redistributed the financial assignments between municipalities within federal states.

Figure 4.3: Change in AfD vote share from 2013 to 2017 by municipality.



Note: N=2608. Source: Bundeswahlleiter; own calculations. See figure 5.10 for this figure including all German municipalities.

4.4.2 IV-Fixed effects

I estimate IV-fixed effects models at municipality level. Using fixed effects models allows for eliminating time-constant unobserved heterogeneity such as variation in the legal framework of the regional redistribution mechanisms. Thus, I only look at the within-municipality-variation between 2013 and 2017. For all models, the standard errors are clustered at municipality-level.

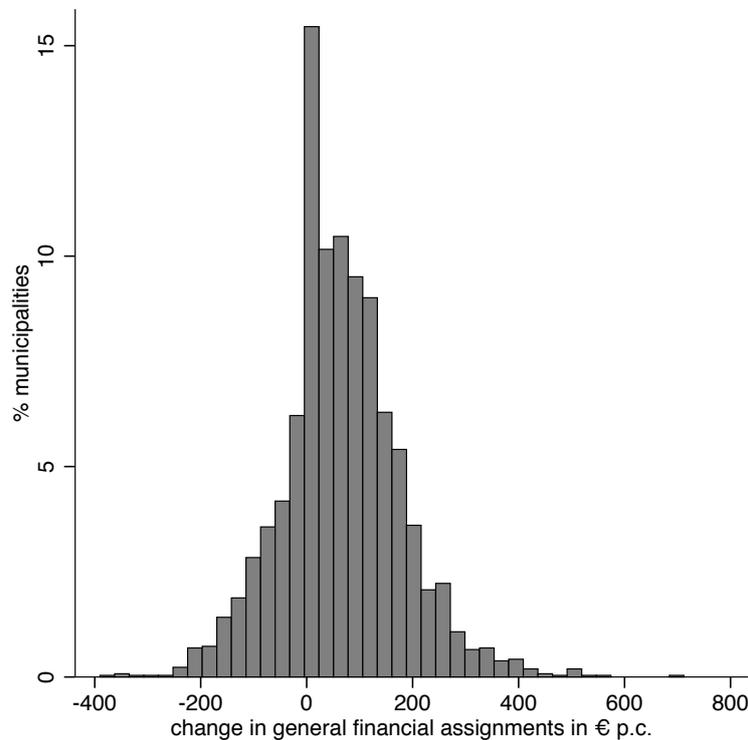
Table 4.2 shows different model specifications. Model (1) shows a simple pooled OLS regression. In that specification, financial assignments are positively linked to $\ln(\text{AfD})$. This non-intuitive correlation that benefiting from regional redistribution is positivity linked to AfD voteshare is the motivation to think about a design to soundly test the relationship. This relationship is likely to be confounded by characteristics shared by municipalities that benefit from regional redistribution such as age

Table 4.2: POLS-, FE- & IV-FE-regression on $\ln(\text{Afd})$.

estimation	POLS		FE		FE		IV-FE		IV-FE	
	$\ln(\text{Afd})$ (1)	$\ln(\text{Afd})$ (2)	$\ln(\text{Afd})$ (3)	$\ln(\text{Afd})$ (4)	$\ln(\text{Afd})$ (3)	$\ln(\text{Afd})$ (4)	$\ln(\text{Afd})$ (4)	$\ln(\text{Afd})$ (5)	$\ln(\text{Afd})$ (4)	$\ln(\text{Afd})$ (5)
	b/se									
general assignments p.c. in 100€	0.01	-0.03***	-0.01*	-0.09***	-0.01*	-0.09***	-0.09***	-0.05***	-0.09***	-0.05***
population since 2011 in %	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01
	-0.01***	-0.03***	-0.01***	-0.02***	-0.01***	-0.02***	-0.02***	-0.01***	-0.01***	-0.01***
year dummy 2017 (ref. 2013)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.14***	0.18***	0.20***	0.18***	0.20***	0.18***	0.18***	0.20***	0.18***	0.20***
controls	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
	yes	no	yes	no	yes	no	no	yes	no	yes
N	5216	5216	5216	5216	5216	5216	5216	5216	5216	5216
N (municipalities)		2608	2608	2608	2608	2608	2608	2608	2608	2608
Cragg-Donald Wald F	-	-	-	-	-	-	17.38	30.46	17.38	30.46

Note: Controls not shown. Model (1) further includes federal state-year dummies. See table 5.9 for full model. * $p < .05$, ** $p < .01$, *** $p < .001$. standard-errors clustered at municipality-level.

Figure 4.4: Change in general financial assignments p.c..



Note: N=2608. Source: wegweiser-kommune.de; own calculations.

structure or economic prosperity (see figure 5.11). In the following, I therefore focus on changes over time rather than levels to study the dynamic process of how regional redistribution affects voting behaviour. Models (2) and (3) are fixed effects models, including only within-municipality-variation. Changes in financial assignments p.c. are negatively associated with the dependent variable. If controls for demographics and financial measures are added, the effect size decreases and loses levels of significance (model (3)). The general population change since 2011 negatively affects AfD vote share: Municipalities that lose inhabitants experience an increase in AfD vote share. This effect is visible in all specifications. In model (4), financial assignments are instrumented by the census-induced changes in the population measure and this model is extended by control variables in model (5). Controls are added to test whether the instrumental variable estimate is robust across different specifications and to sweep out alternative explanatory patterns. The instrumented effect decreases in size but remains significant ($p < .001$): An 100€-decrease in financial

assignments p.c. is associated with an increase of AfD vote share by approx. 5% (model (5)).

To contextualize the estimated instrumented effect, I describe the municipality Viernheim in Southern Germany exemplary. Viernheim experienced an increase in AfD turnout by nearly 10 percentage points from 5.7% in 2013 to 15.2% in 2017. Following the estimate in model (5), this increase had been 5% lower if the yearly general financial assignments p.c. were increased by 100€: The increase would have been only 9.03 rather than 9.5 percentage points. To be able to evaluate this result, the question arises whether an increase in the financial assignments by 100€ is actually considerable. The median of the general financial assignments p.c. in the sample in the pre-census period is 189€. An increase by 100€ is approximately an increase in financial assignments by 50% for a median municipality. It may also be helpful to compare that with general tax revenues: The median general tax revenue p.c. is 769€ in the pre-census period. That is, an increase by 100€ is also equivalent to an increase in general tax revenues by approximately 13%. I interpret the estimated effect size of -0.05 as considerable, but not large. I therefore interpret this result as an indication that regional redistribution can reduce populist voting to a certain extent.

My analysis suggests that changes in the economic context are relevant to individuals and influences their voting behaviour. This is in line with previous analyses studying the impact of economic contexts on political preferences (Adler and Ansell, 2020; Becker et al., 2017; Fetzner, 2019; Galofré-vilà et al., 2017). However—bearing the effect size in mind—regional redistribution as one mechanism in which economic context affects populist voting can only be part of the overall picture which points to further economic and cultural determinants as drivers for right-wing populist voting beyond regional redistribution.

4.5 Discussion

This paper studied whether regional redistribution can counteract right-wing populist voting. I used a census-induced exogenous change to the official population measures of German municipalities to study the effect of regional redistribution on populist voting. Since regional redistribution is dependent on population measures, these census-induced changes had financial consequences for municipalities. The results indicate that there is a small, statistically significant effect of regional redistribution on voting for the German right-wing populist party AfD: AfD vote shares decrease (increase) with benefiting (losing) from regional redistribution.

I make a dynamic argument by studying the effects of *changes* in regional redistribution on changes of right-wing populist voting. Analysing *levels* is no less important for understanding the exact mechanisms at work and essential for a comprehensive understanding. This study thus joins a range of analyses that show that economic contexts are relevant to understanding populist voting (Colantone and Stanig, 2018a; Fetzer, 2019; Hays et al., 2019). My analysis suggests that government decisions play a crucial role in the mechanism of cushioning the effects of economic change on political outcomes: Governments have a variety of means to mitigate economic distributional consequences resulting from economic changes such as globalization or technological change. They can use those means to compensate individuals for increased insecurities and to counteract potential political dissatisfaction of individuals: Economic causes of populist voting are neither purely exogenous nor inevitable.

While I show that regional redistribution affects AfD vote shares, I do not test the underlying theoretical mechanism. Using an instrumental variable design allows to soundly assess the link between regional redistribution and populist voting. The empirical analysis is at aggregate level. As a result, it is not possible to exclude the possibility of an ecological fallacy, as it remains unknown whether the observed aggregate phenomena are derived from corresponding intra-individual be-

haviour (changes): The actual individual-level mechanism at work remains untested; it may be that voters want to express grievance with the current economic situation or it may be that experiencing financial losses leads individuals to anticipate future losses. Diermeier (2020) shows that higher AfD vote shares are associated with weaker public services in Germany—albeit in varying degrees depending on the size of the municipality. It provides evidence that experiencing a weak public infrastructure is relevant to individual voting decisions and is thus evidence in favour of the here offered theoretical mechanism that individuals are sensitive to the financial situation of their municipality which, in turn, influences voting for right-wing populist parties. Alabrese et al. (2019) show for the UK with respect to the EU referendum that there seems to be no ecological fallacy at regional level with respect to socio-demographics such as age or education: Older age, low educational attainment and further socio-demographic variables are positively associated with voting for leave. This remains to be tested for the German context. Future research is needed to systematically assess the theoretical mechanisms that link regional inequality to right-wing populist voting.

The core of the analysis is the usage of the census-induced change in the population measure as instrument. One concern that may constrain the validity of the instrument is the implementation of the census results. The census results were implemented in the regional redistribution mechanism from 2014 onwards. Municipal bureaucracy usually adapts rather slowly to financial changes. Accordingly, there was only a short period of time in which the changes caused by the census could actually be felt by inhabitants and these changes were comparatively small. Observing that individuals still react to such comparatively small changes in financial resources indicates that individuals are sensitive to their regional financial situation.

A further concern of this analysis is the question of generalizability. Testing a mechanism in a rather specific setting, as done here, comes at the cost that it is difficult to generalize these results. Instrumental variable estimation identifies the local average treatment effect. That is, the analysis only applies to a subset of municipal-

ities for which the census-induced population change actually had an effect on the financial assignments (cf. Sovey and Green, 2011). The generalizability is especially limited by the fact that the sample studied here only entails comparatively large municipalities in Germany. It may be the case that economic factors are especially important to voters living in larger municipalities while voters living in smaller municipalities are more likely to base voting decisions on cultural determinants.

Taking into account these caveats, the findings of this study suggest that regional redistribution and thus regional inequalities affects populist voting. This suggests that—in order to reduce populist voting—it may be beneficial to think about more inclusive models of structural changes and effective regional redistribution policies to counteract a rise in regional inequality.

Chapter 5

Conclusion

This general conclusion shortly summarizes the main findings and the theoretical contribution of this dissertation (see chapter 1.2 for a detailed summary of the individual chapters). Thereafter, I outline potential policy implications derivable from the results of the individual studies. Finally, I discuss potential avenues for future research.

5.1 Theoretical contribution and main findings

This dissertation comprises three individual studies on the role of perceived economic inequalities in the formation of political preferences, each of which focusses on a different kind of perceived economic inequality and engages with specific debates in the literature on economic inequality and political preferences. I show that considering perceived inequalities is relevant in order to understand the mechanisms in which economic inequality links to political preferences.

Chapter 2 studies the importance of inequality perceptions for the formation of preferences for redistribution, showing that inequality perceptions are not dependent on actual levels of inequality but associated with socio-economic and ideological positions. While previous work emphasized the importance of inequality perceptions, they are usually considered to be exogenous (Karadja et al., 2017; Niehues, 2011). I contribute to this research by explicitly acknowledging the endogenous character of inequality perceptions. Chapter 3 builds upon these findings but focusses on

taxation inequality. The chapter shows that individuals perceive tax rates for different income groups differently depending on their own income position. Preferred tax rates for different income groups, however, are rather similar across individual income positions. Both chapters 2 and 3 indicate that there is heterogeneity in perceived inequalities and that these perceptions are relevant to the formation of political preferences. Considering perceived inequalities helps to understand the underlying theoretical mechanisms through which individuals process information about inequality and its relevance for political preferences. As these two studies, however, rely on correlational analyses of observational data, I complement them, in chapter 4, by a case study of Germany in which I aim to identify the causal effect of perceived regional inequality on political preferences by applying a quasi-experimental design. Studying populist voting in Germany, I find that experiencing regional inequality can affect populist voting.

Beyond examining these specific questions in the individual empirical studies, this dissertation presents a broader picture of the relationship between perceived inequality and political preferences. Several implications can be drawn from it: Theoretically, explanations of the influence of economic inequality on political preferences often suffer from a lack of concrete modelling of the macro-micro link between the macro-level phenomenon economic inequality and the individual level outcome. While theories such as the MR model have some merit at the individual-level, the limited predictive power of these models suggest, that more attention should be paid to the specificities resulting from this macro-micro link. One of these specificities is the relevance of perceptions: Perceptions are relevant because perceptions of macro-level phenomena can differ individually. I offer a theoretical framework that explicitly considers individual perceptions. Using economic self-interest as an exemplary mechanism, I demonstrate that considering perceived inequality is important to accurately assess the relevance of specific theoretical mechanisms. I argue that the role of self-interest for the formation of political preferences may be misestimated by past research as economic inequality may shape not only political preferences but also the ways in which individuals perceive inequality. If these perceived economic

inequalities are not modelled, it is possible that perceived economic inequalities distort empirical analyses. That is, my dissertation has methodological implications for survey research: I study different operationalisations of perceived economic inequalities. In doing so, I show that not explicitly considering perceived economic inequalities when studying political preferences may lead to biased estimates as individuals often reveal their preferences based upon their perception of the status quo. Methodologically, it is thus important to accurately operationalise and measure inequality perceptions.

5.2 Policy implications

The dissertation provides insights into current political and societal debates in the field of economic inequality and its effects on political preferences in particular and on societies in general. The empirical chapters show that perceived economic inequalities are stratified by individual and/or regional socio-economic and ideological characteristics. As perceived economic inequalities are relevant for the formation of individual political preferences and possibly for other forms of preferences and individual behavior, a potential policy implication is to enable individuals to gather accurate information on economic phenomena in order to make informed decisions. Further, as experiencing and perceiving inequality can foster political polarisation or political dissatisfaction, developing strategies that create economically more equal and inclusive environments is an additional policy implication. Several measures can be taken to increase the availability of information about economic inequality and to create more inclusive economic environments:

Predistribution. While traditional redistributive policies attempt to mitigate already accumulated economic inequalities through taxes and benefits, the idea of predistribution is that the state should try to prevent the accumulation of economic inequalities a priori. Potential policies are: encouraging long-term investments, providing public services, investing in skills of young individuals, and finding ways for

worker empowerment (Diamond and Chwalisz, 2015). Predistribution politics can help to create economically more equal life courses across individuals, regions and countries. This, in turn, may result in less heterogeneous perceptions of economic phenomena.

Reduce Segregation. Reducing ideological and socio-economic segregation seems to be a promising way to increase inter-group interactions. Inter-group interactions allow individuals to form expectations and perceptions based on more accurate, or at least more diverse, information (Cansunar, 2020; Mijs, 2019; Sorace and Hobolt, 2020; Windsteiger, 2017). This becomes particularly relevant in the light of increasing economic inequality within countries (Alvaredo et al., 2018) as a rise in inequality may increasingly divide individuals socio-economically. Inclusive strategies for the development of neighbourhoods, regions and countries are thus desirable. This may also be a promising strategy to counteract political polarisation and populist voting (Autor et al., 2017; Colantone and Stanig, 2018b; Diermeier, 2020; Huebscher et al., 2020). One approach to achieve this would be to (re)structure policies and redistribution mechanisms in such a way that they empower specific, vulnerable groups and thus function in a more target-oriented way.

Procedural fairness. This dissertation studies the ways in which individuals perceive outcome inequality and its effects on political preferences. The process of accumulation of inequality is, however, also important to individuals and can also influence perceptions of outcome inequality. Individuals tend to be more likely to accept inequality if they consider the process of accumulation as fair or legitimate (Mijs, 2019; Wegener, 1987). For instance, Ku and Salmon (2013) show that individuals are more likely to tolerate inequality if the source of initial inequality is random assignment. The evaluation as fair or acceptable of different processes of inequality accumulation such as randomness, merit or corruption varies across cultural contexts (Almås et al., 2015; Osberg and Smeeding, 2006). Understanding when and why individuals accept or reject which forms of procedural inequalities is important to better understand individual perceptions of and preferences for inequality.

Enabling. Societies should be structured in ways that empower and enable individuals to acquire information on specific topics and to critically reflect and classify this information.¹ This is not only, but also the responsibility of the state and civil society. Creating spaces that enable deliberation are one way of achieving this objective. Such deliberation processes can change individual perceptions, evaluations, and preferences due to exchange of information, engaging with different lines of reasoning, or group processes (Zimmermann et al., 2018). While it seems normatively desirable to enable individuals to gather accurate information about macroeconomic phenomena, in liberal societies every individual has self-evidently the right not to care: every individual should also be free to be completely indifferent to how well informed she is about macroeconomic phenomena such as economic inequality. The capability to freely decide upon that, however, should be provided by society.

5.3 Avenues for future research

The dissertation has explored the ways in which perceived economic inequalities help to understand the formation of political preferences. These findings open avenues for future research.

The empirical studies of this dissertation focus on perceived economic inequalities conceptualized as perceived income inequality, perceived tax inequality, and experience of regional inequality. Whether and, if so, how the conclusions drawn here can be applied to other forms of inequality such as wealth inequality or educational inequality remains open. It would be interesting for future research to assess how individuals perceive different forms of economic inequality. As a wider generalisation, future research should also assess how individuals perceive other economic

¹Empirically, it is unclear which effects information has on individuals. Individuals may make more informed decisions as a result. However, information can also have undesirable consequences. For instance, in the context of taxation, it is possible that if everyone knew how much tax is evaded, everyone would evade more (Popitz, 2016).

parameters such as unemployment rates, gross domestic products or inflation and how that affects individuals (e.g. Alesina et al., 2019).

While some of my empirical analyses rely on cross-country surveys, I do not study variation across countries. Comparative studies that systematically analyse how perceptions of inequality vary across countries would be valuable contributions towards understanding the extent to which perceptions of inequality and the mechanisms by which perceptions of inequality affect political preferences are context- and culture-specific (e.g. Kelley and Zagorski, 2004; Osberg and Smeeding, 2006). A further promising path could be to focus more strongly on temporal changes. General societal transformations, induced by globalisation and digitalisation, increase information availability and diversity of information. It is, however, empirically unclear how these societal trends affect the ways in which individuals perceive their environment and how such trends affect individuals differently depending on their economic and institutional environments. For instance, such societal transformations could either foster or reduce political polarisation. To conduct cross-country analyses as well as temporal analyses to study these questions, data that can be compared across countries and time is needed. For that, a stronger focus on operationalizing and measuring perceptions of inequality in surveys across countries and across time would be crucial.

Methodologically, more research is needed assessing the ways in which individuals form perceptions of economic inequality in particular and economic phenomena in general. There is little or no consensus on how to *best* measure individual perceptions of economic phenomena and it often remains open what individuals actually think about when answering survey questions on inequality perceptions. Do individuals think in income distributions or in hierarchies when thinking about inequality? Do individuals differentiate between wealth and income inequality? A general debate on methodological approaches to measuring perceived inequality would be useful. While there are approaches to directly measure perceptions, some studies use experience of or exposure to economic inequality as a proxy for perceptions of inequality

(see, for instance, chapter 4). Empirically, this relationship between experience of inequality and perceptions of inequality is unclear: In chapter 4, I assume that experiencing (regional) inequality directly translates into perceiving inequality. While I theoretically argue for that, I do not test this assumption. Experience may make inequality more salient to individuals. However, the effects of experiencing inequality may vary between individuals and types of experience. For instance, experiencing earnings inequality between co-workers may affect individual (political) preferences and behavior differently than experiencing regional economic inequality.

Recent research advanced in causally testing the relationship between perceived economic inequality and political preferences (Alesina and Stantcheva, 2020; Bublitz, 2020; Colantone and Stanig, 2018b; Cruces et al., 2013; Kuziemko et al., 2015). However, many ambiguities remain about the exact causal mechanisms at work and the role of economic self-interest. It would be interesting to assess the relevance of other mechanisms beyond self-interest for the formation of political preferences in (quasi-)experimental designs. For instance, when and why do individuals act altruistically? How does considering perceived economic inequalities help to better understand the economic and institutional environments that foster or suppress altruistic actions?

Political ideas and preferences of individuals are also dependent on the supply side of politics. Political fragmentation, election manifestos, the emergence of new political parties and actors, and the ways in which political parties communicate can influence political ideas and preferences. Studying the role of politics, policy and polity to better understand the formation of perceived inequalities and the ways in which perceived inequalities influence political preferences would be an interesting task for future (interdisciplinary) research.

This dissertation focussed on the role of perceived economic inequalities for the formation of political preferences. Perceived economic inequalities may, however, be relevant for a variety of individual behaviour and preferences. There is a huge literature that links economic inequality to a wide range of societal outcomes such as

life satisfaction (Delhey and Dragolov, 2014; Hopkins, 2008; Wolbring et al., 2013), (subjective) health (Ellison, 2002), trust (Uslaner and Brown, 2005), educational decisions (Stocké et al., 2011), or political participation (Schäfer and Schwander, 2019). I would expect that it is valuable to explicitly study the role of perceived economic inequality for not only political preferences but also a wide range of other individual-level outcomes.

Future research should try to answer questions such as how individuals learn about inequality to complement the findings presented in this dissertation to better understand the relevance of perceived economic inequalities for the formation of individual political preferences in particular and for individuals and societies in general.

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Appendix

A.1 Introduction

Figure 1.1: income inequality and preference for redistribution by selected countries (DE, GB, SE, HU, IT) over time (2002-2016).

I use the European social survey (cumulative dataset) from 2002 (ESS round 1) to 2018 (ESS round 9) (ESS, 2020). Preference of redistribution is operationalized by the item *'Using this card, please say to what extent you agree or disagree with each of the following statements. The government should take measures to reduce differences in income levels.'* with the answering categories *1-agree strongly* to *5-disagree strongly*. For figure 1.1, I collapse the variable to a binary variable, summarizing *agree* and *strongly agree* to category 1, and *neither agree nor disagree*, *disagree* and *strongly disagree* as 0. The value on the right y-axes thus reflects the share of respondents favouring redistribution. I use gini coefficients for net income distributions provided by Eurostat. I imputed missing values: For the 2006 gini coefficient for HU, I use the 2007 gini coefficient. For DE, I use gini coefficients provided by the World Bank for 2002 and 2004.

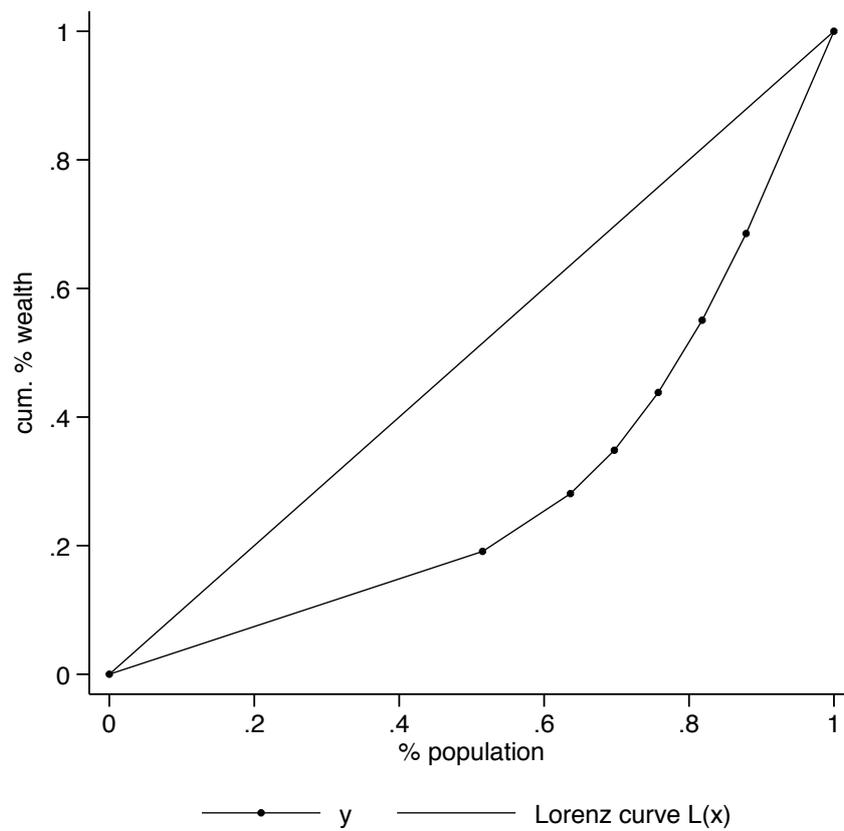
A.2 Polarized perceptions, polarized preferences? Linking inequality and preferences for redistribution

Calculation of subjective Gini coefficient. When interpreting each of the bars the diagrams A to E in figure 2.3 exists of as one, distinct social group and when assuming that these social groups are interval-scaled, it is possible to calculate Gini indices for each of these diagrams. Thereto, the length of each bar is interpreted as the share of the population within each of these seven classes. An assumption about the relative distribution between classes was made in order to calculate the Gini coefficient. It is assumed that they relate proportionally to each other. In terms of wealth, this means, that an individual in the second lowest class owns twice as much as an individual in the lowest class, while an individual in the highest class owns seven times as much as one in the lowest class since each diagram consists of seven bars. This is a rather strong assumption. However, since the underlying distribution individuals think of is unknown, it seems to be reasonable to assume a proportional relation between classes. This is at least what the diagrams suggest due to equal height of the bars. This assumption allows to derive the Lorenz curve. The Lorenz curve is exemplary illustrated for diagram A (see figure 5.1). The Gini index is then defined by formula 2 (Gastwirth, 1972). Or, more intuitively, as the area between the Lorenz-Curve and the angle bisector divided by 1. This calculation procedure is similar to the one used by Gimpelson and Treisman (2017).

$$Gini = \frac{\int_0^1 [x - L(x)] dx}{\int_0^1 x dx} = 1 - 2 \int_0^1 L(x) dx \quad (5.1)$$

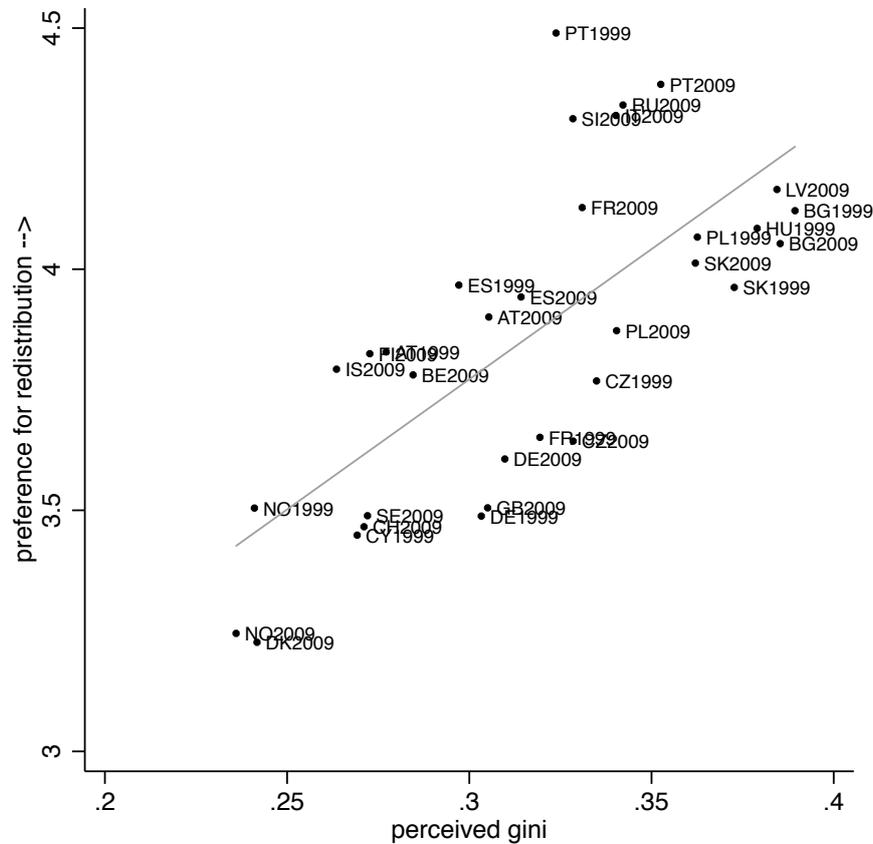
In contrast to Niehues (2014) and Gimpelson and Treisman (2017), the bars are explicitly not defined as income classes since it remains unknown of what kind of inequality individuals think when looking at these diagrams since the question in the ISSP does not specify that. While Gimpelson and Treisman (2017) are more cautious and also check the correlations with other measures besides income inequality, both papers conclude that there are misperceptions in the society. It is also possible

Figure 5.1: Calculating the Gini coefficients. Example for diagram A.



Note: Own illustration.

Figure 5.2: Average Preference for Redistribution by perceived Gini coefficient.



Note: $R^2=.51$. Source: ISSP 1999 + 2009. $n=20455$.

that respondents' perceptions are not linked to the appropriate measure. This is, however, hard to test. I interpret that measure as perception of a kind of inequality individuals consider as relevant for them. This can vary across individuals, societies, and time. It is unclear if individuals think about income distributions, educational inequalities, wealth inequalities, or status inequalities. I consider the derived subjective (perceived) Gini coefficients obtained here as incommensurable to actual Gini coefficients of income or wealth distributions.

Table 5.1: Full model: Regression on perceived inequality (I_{perc}) and preference for redistribution (red_{pref}).

	I_{perc} (1) $\hat{\beta}/se$	I_{perc} (2) $\hat{\beta}/se$	red_{pref} (3) $\hat{\beta}/se$	red_{pref} (4) $\hat{\beta}/se$	red_{pref} (5) $\hat{\beta}/se$	red_{pref} (6) $\hat{\beta}/se$	red_{pref} (7) $\hat{\beta}/se$	red_{pref} (8) $\hat{\beta}/se$
I_{perc}				0.02***	0.02***		0.004	-0.01*
$I_{perc}^{unexplained}$				0.00	0.00	0.01***	0.00	0.01
$I_{perc}^{explained}$						0.13***		
$I_{perc} \times$ subj. status							0.004*	
$I_{perc} \times$ political orient.								0.01***
belief in meritocracy		-0.33***	-0.10***	-0.09***	-0.08*	-0.06***	-0.09***	-0.09***
pol. o. (1-left,5-right)		0.08	0.02	0.02	0.03	0.02	0.02	0.02
subj.status (1-low,5-top)		-0.38***	-0.20***	-0.19***	-0.19***	-0.14***	-0.19***	-0.48***
education (ref. lowest formal)		0.09	0.03	0.03	0.03	0.03	0.03	0.07
> lowest formal		-1.15***	-0.18***	-0.16***	-0.18***	0.03	-0.29***	-0.16***
= secondary		0.08	0.02	0.02	0.02	0.05	0.05	0.02
> secondary		0.12	-0.03	-0.03	-0.04	-0.10**	-0.03	-0.03
\geq university		0.22	0.03	0.04	0.04	0.03	0.04	0.04
male (ref. female)		-0.57*	-0.17***	-0.17***	-0.16*	-0.15**	-0.17***	-0.17***
		0.25	0.04	0.04	0.07	0.04	0.04	0.04
		-0.95**	-0.29***	-0.29***	-0.30**	-0.18**	-0.29***	-0.29***
		0.28	0.04	0.04	0.08	0.05	0.04	0.04
		-1.51***	-0.42***	-0.40***	-0.38***	-0.28***	-0.40***	-0.40***
		0.30	0.06	0.06	0.08	0.07	0.06	0.06
		-0.28*	-0.17***	-0.17***	-0.16***	-0.12***	-0.17***	-0.16***
		0.11	0.03	0.03	0.03	0.02	0.03	0.03
actual post-tax gini	0.34				0.02			
unemployment rate	0.23				0.01			
GDP p.c. (1000\$ ppp)					-0.00			
2009 (ref. 1999)	-1.17				0.01			
	1.08				-0.01			
					0.00			
					0.29**			
					0.10			
constant	21.34*	33.19***	4.85***	4.35***	4.41***	0.26	4.71***	5.16***
N	7.80	0.82	0.17	0.15	0.42	1.02	0.25	0.24
country-year FE	20455	20455	21568	20455	20455	20455	20455	20455
R ²	no	yes	yes	yes	no	yes	yes	yes
	0.037	0.307	0.179	0.190	0.157	0.192	0.190	0.194

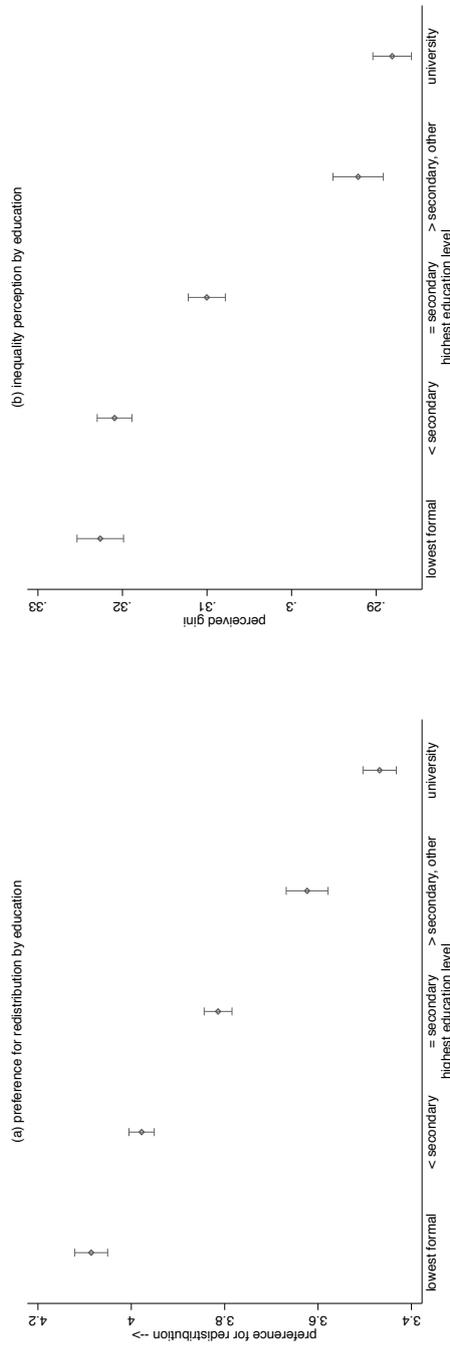
Note: * $p < .05$, ** $p < .01$, *** $p < .001$. standard-errors clustered on country-level. $\hat{\beta}$'s for age, age², employment status, and gender not shown.

Table 5.2: Country-level correlations for variables of interest.

	pref. for red.	actual Gini	perceived Gini	GDP p.c.	unemp. rate
pref. for red.	1				
actual Gini	.391	1			
perceived Gini	.712*	.313	1		
GDP p.c.	-.529	-.240	-.759*	1	
unemp. rate	.326	.032	.538	-.457	1

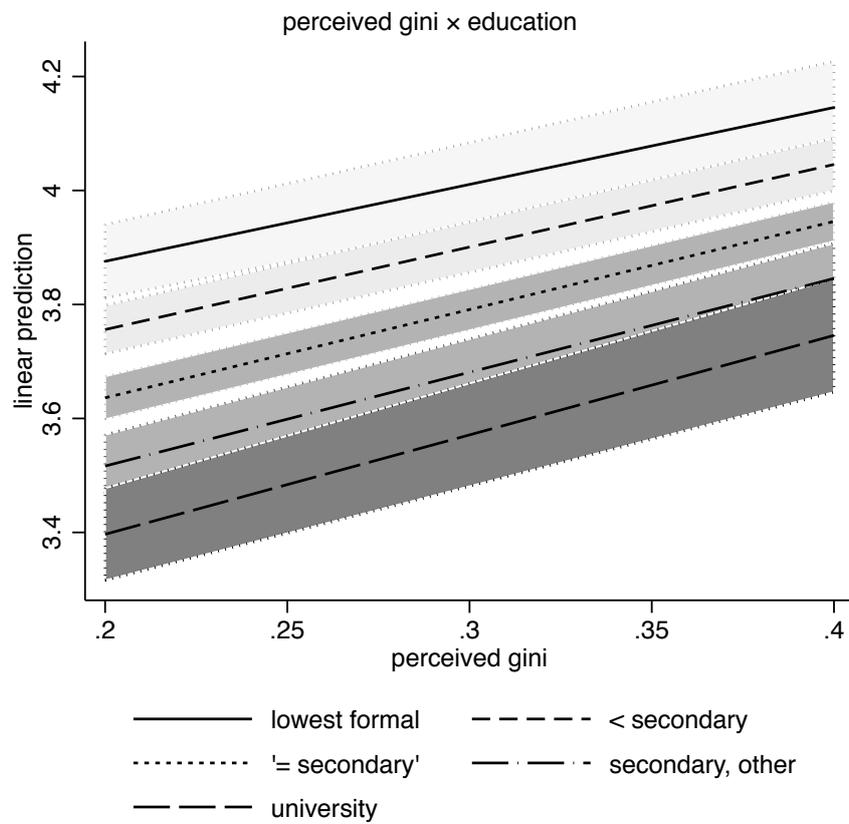
Note: * $p < .001$. cross-country variation only. Source: ISSP 1999 + 2009. World Bank. n=20455.

Figure 5.3: Preference for redistribution (a) and perceived Gini (b) by education.



Note: Source: ISSP 1999 + 2009. n=20455. 95% ci.

Figure 5.4: Marginal effects of perceived Gini \times education on the preference for redistribution.



Note: Source: ISSP 1999 + 2009. n=20455.

Table 5.3: Regression on perceived inequality (I_{perc}) and preference for redistribution (red_{pref}) (perceived inequality as ordinal variable).

	I_{perc}		red_{pref}	
	(ordered probit)		(ordinary least squares)	
	b	se	b	se
perceived inequality (ref. Type A)				
Type B			-0.14***	0.02
Type C			-0.27***	0.04
Type D			-0.36***	0.03
Type E			-0.15	0.08
belief in meritocracy	0.05***	0.01	-0.09***	0.02
political orientation (1-left, 5-right)	0.06***	0.01	-0.19***	0.03
subj. status (1-bottom, 5-top)	0.18***	0.02	-0.16***	0.02
age	-0.02*	0.01	0.00	0.00
age ²	0.00	0.00	-0.00	0.00
occupation (ref. full time)				
part-time	0.00	0.03	0.06	0.07
< part-time	0.06	0.04	0.00	0.03
out of labor force	0.02	0.04	0.04	0.02
training	-0.01	0.04	0.08*	0.04
education (ref. lowest formal)				
> lowest formal	-0.04	0.04	-0.03	0.03
= secondary	0.05	0.04	-0.16***	0.04
> secondary	0.11*	0.05	-0.28***	0.04
≥ university	0.19***	0.05	-0.39***	0.05
female (ref. male)	0.05*	0.02	-0.17***	0.03
constant (model red_{pref})			5.02***	0.18
constant (cut2)	-0.63***	0.17		
constant (cut3)	0.42***	0.12		
constant (cut4)	1.11***	0.12		
constant (cut5)	2.58***	0.21		
N	20455		20455	
country-year fixed effects	yes		yes	

* $p < .05$, ** $p < .01$, *** $p < .001$

Note: * $p < .05$, ** $p < .01$, *** $p < .001$. standard-errors clustered on country-level.

Table 5.4: Predicted values for red_{pref} at means to understand the magnitude of the bias introduced by not controlling for inequality perceptions.

	red_{pref} : excluding $I_{perc}^{unexplained}$	red_{pref} : including $I_{perc}^{unexplained}$
predicted values at mean	3.811	3.818

Note: T-test for differences in means: $\Pr(T < t) = 0.27$. $n=20455$, $sd=1.136$.

A.3 Taxed fairly? How differences in perception shape attitudes towards taxation

Table 5.5: OLS regression on preferences for taxation for different income groups.

<i>DV: taxes are too low; ...; too high [-2;2]</i>	(1)	(2)
	b/se	b/se
interaction (ref: tax for low incomes)		
tax for middle incomes × subj. status		-0.07***
		0.01
tax for high incomes × subj. status		-0.17***
		0.01
interaction (ref: tax for low incomes)		
tax for middle incomes × income	-0.04***	
	0.00	
tax for high incomes × income	-0.08***	
	0.00	
equivalenced hh income	0.04***	-0.00**
	0.00	0.00
subj. status (1-bottom; 10-top)	-0.00***	0.08***
	0.00	0.00
tax preference question ((ref: low incomes))		
middle incomes	0.67***	0.85***
	0.02	0.03
high incomes	1.91***	2.44***
	0.03	0.05
preference for redistribution	0.98***	0.98***
	0.00	0.00
education(years of schooling)	-0.00	0.00
	0.00	0.00
male (ref. female)	0.00**	0.00**
	0.00	0.00
constant	-3.80***	-4.03***
	0.02	0.03
country-FE	yes	yes
N	38510	38510
N(individuals)	13201	13201

Note: coefficients for ISCO classification, employment status, age and country-fixed effects are not shown. * $p < .05$, ** $p < .01$, *** $p < .001$. Source: ISSP 2016, own calculations.

Table 5.6: OLS regression on fairness gaps evaluated for different income groups.

<i>DV: fairness gap</i>	(1)	(2)
	b/se	b/se
interaction (ref: evaluated group: 1200Euros)		
evaluated group: 2200Euros × income	0.000 0.00	
evaluated group: 3200Euros × income	0.001** 0.00	
evaluated group: 6000Euros × income	0.001*	
interaction (ref: evaluated group: 1200Euros)		
evaluated group: 2200Euros × subj. status		0.01 0.23
evaluated group: 1200Euros × subj. status		0.35 0.37
evaluated group: 6000Euros × subj. status		0.82 0.56
personal gross income	-0.00 0.00	
subj. status		-0.46 0.31
fairness gap for (ref. 1200Euros)		
evaluated group: 2200Euros	0.16 0.68	0.96 1.50
evaluated group: 3200Euros	-2.30* 0.98	-2.35 2.43
evaluated group: 6000Euros	-6.63*** 1.44	-8.85* 3.62
male (ref. female)	0.09 0.93	-0.07 0.86
education (ref. primary)		
vocational	1.23 1.35	0.92 1.36
secondary	2.51 1.33	2.07 1.32
university	-0.11 1.33	-0.40 1.31
constant	9.97*** 1.73	12.30*** 2.44
country-FE	yes	yes
N	2123	2107
N (individuals)	535	531

Note: Coefficients for employment status not shown. * $p < .05$, ** $p < .01$, *** $p < .001$. Source: PUMA 2019, own calculations.

Figure 5.5: PUMA Questionnaire wave 6: 'Politik, Steuergerechtigkeit und Gesundheit'. Items P6M204a-d.

Wie viel schätzen Sie zahlt eine Person mit folgenden durchschnittlichen monatlichen Brutto-Gesamteinkommen¹ insgesamt an Steuern und Abgaben?
 Hierunter verstehen wir sowohl Einkommenssteuern, Kapitalertragssteuern als auch Sozialversicherungsbeiträge und Konsumsteuern (wie etwa die Mehrwertsteuer).
¹ Die Person bekommt dieses Gehalt 12-mal im Jahr. Das 13. und 14. Monatsgehalt sind in diesem Betrag bereits inkludiert.

Eine Person mit einem Einkommen von 1200 Euro zahlt % an Steuern und Abgaben.

Eine Person mit einem Einkommen von 2200 Euro zahlt % an Steuern und Abgaben.

Eine Person mit einem Einkommen von 3200 Euro zahlt % an Steuern und Abgaben.

Eine Person mit einem Einkommen von 6000 Euro zahlt % an Steuern und Abgaben.

Note: Source: PUMA (2019).

Figure 5.6: PUMA Questionnaire wave 6: 'Politik, Steuergerechtigkeit und Gesundheit'. Items P6M206a-d.

Welchen Prozentsatz an Steuern und Abgaben des monatlichen Bruttoeinkommens würden Sie als gerecht ansehen?

Für eine Person mit 1200 Euro monatlichen Bruttoeinkommen wären % an Steuern und Abgaben gerecht.

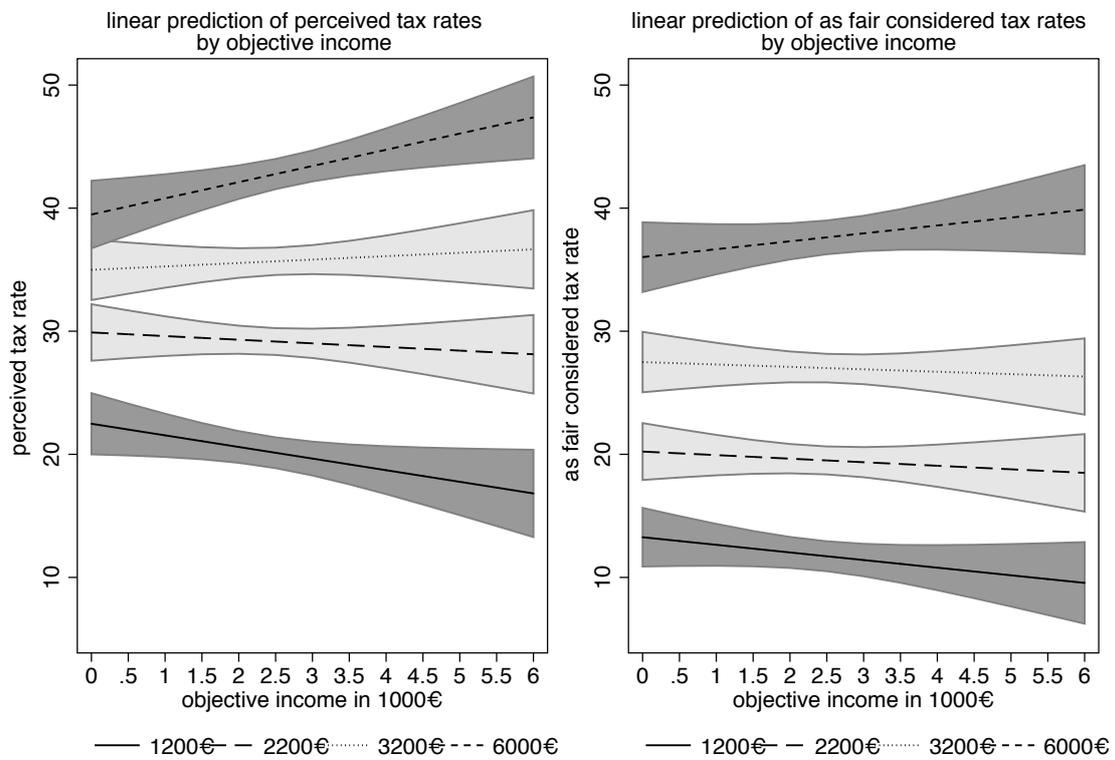
Für eine Person mit 2200 Euro monatlichen Bruttoeinkommen wären % an Steuern und Abgaben gerecht.

Für eine Person mit 3200 Euro monatlichen Bruttoeinkommen wären % an Steuern und Abgaben gerecht.

Für eine Person mit 6000 Euro monatlichen Bruttoeinkommen wären % an Steuern und Abgaben gerecht.

Note: Source: PUMA (2019).

Figure 5.7: Perceived and as fair considered tax rates for different evaluated income groups by objective income.



Note: 95% ci. Source: PUMA (2019). Own calculations.

Table 5.7: PUMA 2018: Descriptives of dependent variables.

variable	mean	sd	N
perceived tax rate for evaluated income: 1200	20.43	13.30	540
perceived tax rate for evaluated income: 2200	29.39	11.86	538
perceived tax rate for evaluated income: 3200	35.84	12.32	537
perceived tax rate for evaluated income: 6000	42.86	13.51	533
fair tax rate for evaluated income: 1200	11.73	10.29	542
fair tax rate for evaluated income: 2200	19.57	10.15	541
fair tax rate for evaluated income: 3200	26.99	11.29	542
fair tax rate for evaluated income: 6000	37.35	13.86	542
fairness gap for evaluated income: 1200	9.02	10.51	538
fairness gap for evaluated income: 2200	10.10	9.33	535
fairness gap for evaluated income: 3200	9.05	9.73	535
fairness gap for evaluated income: 6000	5.55	12.47	531

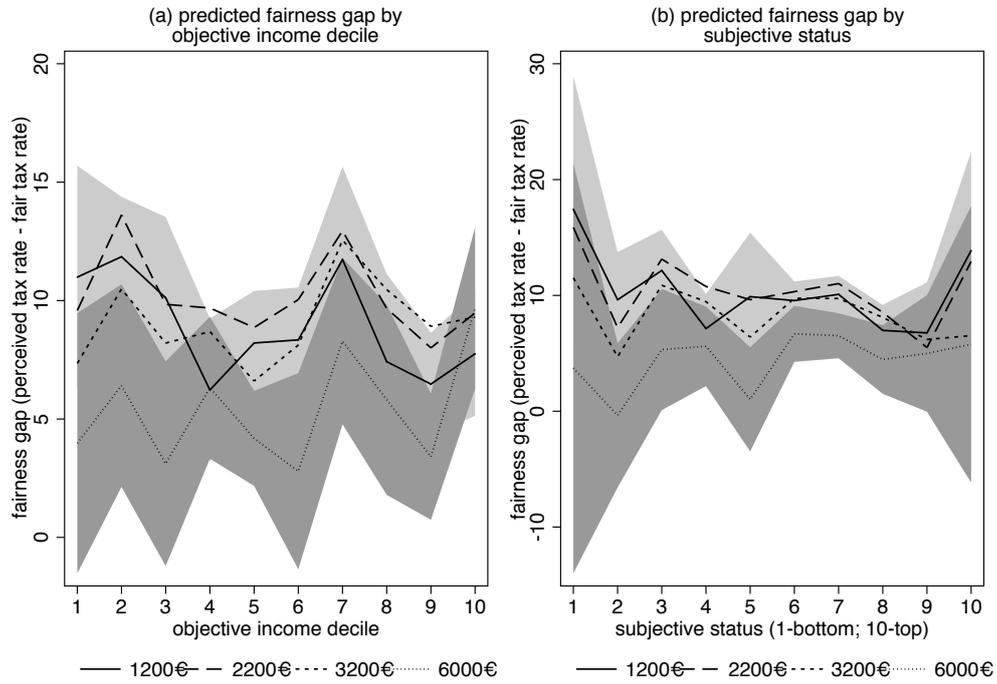
Note: Source: PUMA 2019, own calculations.

Table 5.8: ISSP 2016: Descriptives of dependent variables.

variable	mean	sd	N
taxation preference: low incomes	-1.04	0.84	13448
taxation preference: middle incomes	-0.57	0.74	13493
taxation preference: high incomes	0.48	1.06	13169

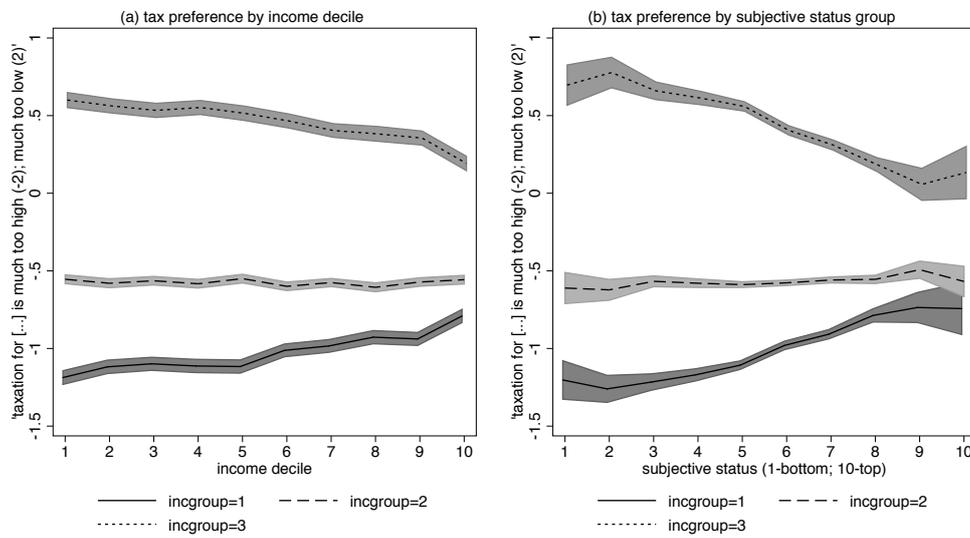
Note: Source: ISSP 2016, own calculations.

Figure 5.8: Fairness gaps for different evaluated income levels by (a) objective income and (b) subjective status. Non-linear estimation.



Note: 95% ci (clustered at individual level). Cis not shown for evaluated tax rate for 2200€ and 3200€ for readability. Source: PUMA (2019). Own calculations.

Figure 5.9: Taxation preference for different evaluated income levels by income group (a) and subj. status group (b). Non-linear estimation.



Note: 95% ci. all countries. N=13201 (38510). Controlled for age, income decile, education, occupational status, gender, general tax preference as well as country-dummies. Weighted by age and gender. Source: ISSP 2016. Own calculations.

A.4 Right here? Regional redistribution and right-wing populist voting in Germany

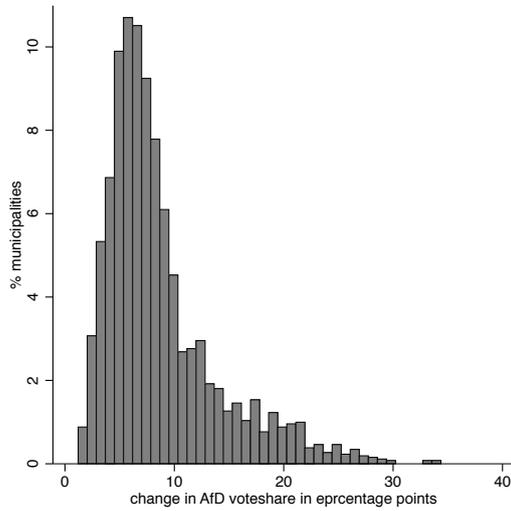
Table 5.9: Full model: POLS, FE- & IV-FE regression on $\ln(\text{AfD})$.

	$\ln(\text{AfD})$	$\ln(\text{AfD})$	$\ln(\text{AfD})$	$\ln(\text{AfD})$	$\ln(\text{AfD})$
	(1)	(2)	(3)	(4)	(5)
estimation	POLS	FE	FE	IV-FE	IV-FE
	b/se	b/se	b/se	b/se	b/se
general assignments p.c. in 100€	0.01	-0.03***	-0.01*	-0.09***	-0.05***
	0.00	0.00	0.00	0.01	0.01
population since 2011 in %	-0.01***	-0.03***	-0.01***	-0.02***	-0.01***
	0.00	0.00	0.00	0.00	0.00
year dummy 2017 (ref. 2013)	0.14***	0.18***	0.20***	0.18***	0.20***
	0.00	0.00	0.01	0.00	0.00
general tax revenue p.c. in 100€	0.00		0.00		-0.00
	0.00		0.00		0.00
investment assignments p.c. in 100€	-0.03***		-0.01		-0.01*
	0.01		0.01		0.01
municipal debt p.c. in 100€	0.00***		-0.00		-0.00
	0.00		0.00		0.00
business tax revenue p.c. in 100€	-0.00		-0.00		-0.00
	0.00		0.00		0.00
real estate tax revenue p.c. in 100€	-0.05***		-0.18***		-0.17***
	0.01		0.02		0.02
income tax revenue p.c. in 100€	0.04***		-0.22***		-0.23***
	0.01		0.02		0.01
voter turnout %	-0.00***		0.03***		0.03***
	0.00		0.00		0.00
% population >65	0.00*		-0.01		-0.01**
	0.00		0.01		0.01
% of ALG II recipients	0.00**		-0.07***		-0.06***
	0.00		0.00		0.00
% registered refugees	-0.01		0.00		0.00
	0.01		0.01		0.01
constant	0.01	-0.19***	-1.40***		
	0.07	0.01	0.20		
N	5216	5216	5216	5216	5216
N (municipalities)		2608	2608	2608	2608
Cragg-Donald Wald F	-	-	-	17.38	30.46

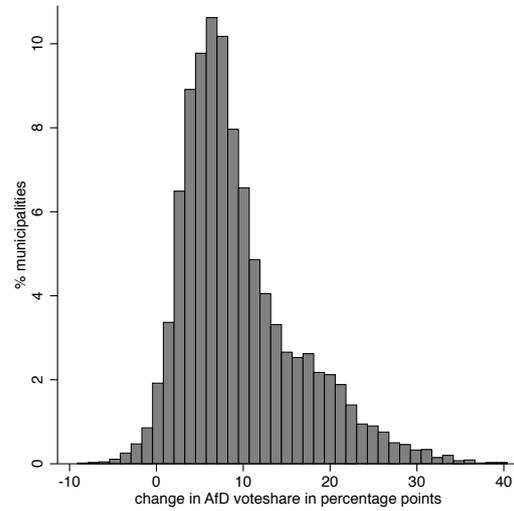
Note: Model (1) further includes federal state-year-dummies which are not reported. standard-errors clustered at municipality-level. * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 5.10: Changes in AfD voteshare for all municipalities and the subsample studies here.

(a) municipality subsample studied here.



(b) all municipalities.



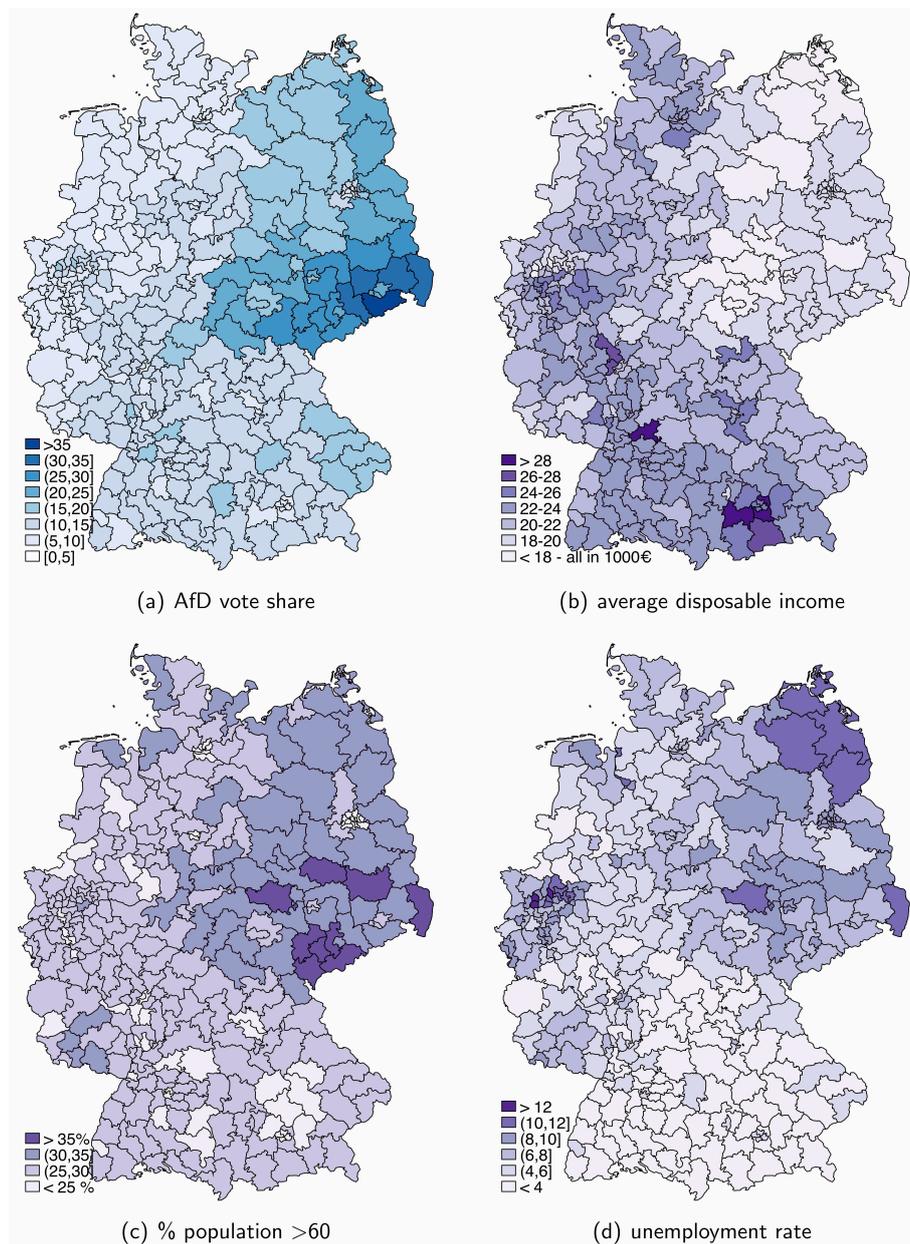
Note: Source: Bundeswahlleiter; own calculations. N(a)=2608. N(b)=10990.

Table 5.10: Robustness: voter turnout as alternative outcome: POLS-, FE- & IV-FE-regression on voter turnout in %.

	(1)		(2)		(3)		(4)		(5)	
estimation	POLS		FE		FE		IV-FE		IV-FE	
	b/se		b/se		b/se		b/se		b/se	
general assignments p.c. in 100€	0.28***		-0.26***		-0.16***		-0.59***		-0.35***	
	0.05		0.04		0.04		0.08		0.07	
population since 2011 in %	0.04		0.08***		0.06**		0.09***		0.06**	
	0.03		0.02		0.02		0.02		0.02	
year dummy 2017 (ref. 2013)	0.28***		0.78***		1.15***		0.80***		1.18***	
	0.07		0.01		0.07		0.02		0.07	
constant	62.76***		64.13***		63.60***					
	0.83		0.14		1.32					
controls	yes		no		yes		no		yes	
N	5216		5216		5216		5216		5216	
N (municipalities)			2608		2608		2608		2608	
Cragg-Donald Wald F statistic							32.43		30.77	

Note: Controls not shown (same model specification as in table 5.9). federal-state-year dummies for POLS (1) also not shown. standard-errors clustered at municipality-level. * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 5.11: Geography of demographic and economic variables in Germany for 2017 by electoral district.



Note: Source: Bundeswahlleiter (2017a, 2017b); own calculations.

List of Papers

Chapter 2: Polarized perceptions, polarized preferences? Linking inequality and preferences for redistribution

single-authored

Chapter 3: Taxed fairly? How differences in perception shape attitudes towards taxation

co-authored with Fabian Kalleitner

Chapter 4: Right here? Regional redistribution and right-wing populist voting in Germany

single-authored