# Opportunity Matters: Economic Inequality and Redistribution across Western Democracies

by

Bastian Becker

Submitted to

Central European University

Doctoral School of Political Science, Public Policy and International Relations

In partial fulfillment of the requirements for the degree of Doctor of Philosophy



Supervisor: Professor Thilo Bodenstein

Word count: 68,860

Budapest, Hungary

2017

I, the undersigned [Bastian Becker], candidate for the degree of Doctor of Philosophy at the Central European University Doctoral School of Political Science, Public Policy and International Relations, declare herewith that the present thesis is exclusively my own work, based on my research and only such external information as properly credited in notes and bibliography. I declare that no unidentified and illegitimate use was made of work of others, and no part the thesis infringes on any person's or institution's copyright. I also declare that no part the thesis has been submitted in this form to any other institution of higher education for an academic degree.

Budapest, 2 May 2017

_____

Signature

# Acknowledgments

One could say that it takes a village to write a dissertation. This village is home to the usual suspects, which I mention below, and of course, those who work to sustain the infrastructure every aspiring academic relies on. But what has become abundantly clear to me only over the past tumultuous weeks, this village is even larger. It is inhabited by people who realize the importance of spaces in which contradictory ideas can coexist and where they can develop free from political and economic pressures. As such, I want to acknowledge those who have stood up for academic freedom in Budapest, elsewhere, and at other times. If it was not for them, there would not be much writing.

For his mentorship, I would like to thank my supervisor Thilo Bodenstein, who did not grow tired of warning me of the many pitfalls of academic research. Over the years, I also benefited from keen commentary by Anil Duman, Austin Choi-Fitzpatrick, Achim Kemmerling, and Levente Littvay, who all served on my supervisory panel at different points. I am also particularly thankful for the feedback I received from Borbála Kovács and Michael Dorsch. Discussions with Daniel Stegmueller, who sponsored my stay at the University of Mannheim, have greatly contributed to the core ideas of this dissertation.

My family has been a constant source of support, provided refuge from the ivory tower when I needed it, and made sure I can talk about my research in non-academic terms. I am especially thankful to my parents, Petra and Martin, my siblings, Anna and Tobias, and my grandmother, Katharina. My other grandparents, August, Christel, and Rudolf, were not to witness my doctoral endeavors, but they have been a lasting inspiration to me.

Many friends have contributed to this dissertation in one way or another. Ana, Jalu,

Maja, Michel, Nikola, Thanos, and Sherry had an important role to play in getting me to Budapest in the first place. I thank them for their encouragement and foresight. In Budapest, I enjoyed the company of many wonderful people. For their friendship and engaging discussions, I especially thank Adina, Alex, Anatoly, Andra, Andreea, Anna, Bruno, Daniela, Emrah, Imre, Jelena, Martin, Renira, and Sashi. For their help in polishing this dissertation, Csilla and Miles deserve special mention. I also want to thank Love and Verena, who greatly enriched my time in Mannheim, and Heiko, with whom I have been pondering the "big questions" for decades.

I shall also acknowledge the great people I met at conferences and workshops over the last years, many of which have provided invaluable feedback on the ideas of this dissertation. Last but not least, I am also indebted to students that participated in classes I taught or assisted. Without them, I would not have learned to appreciate academic life as much as I do now.

# Abstract

Despite widely shared equal opportunity norms, all Western democracies are marked by income gaps between people of different gender, race, ethnicity, and family background. Why do democratic governments not institute policies to alleviate such gaps? Political economy scholarship posits that people's demands for redistribution are key to the introduction of such policies. This scholarship is often concerned with income differences between the rich and the poor but has little to say about how other cleavages come into play. Therefore, this dissertation explores how people's demands for redistribution are affected by the presence of income gaps.

In this dissertation, it is argued that based on income gaps, people form beliefs about their own economic opportunities and inequality in opportunity more generally. However, since people do not usually have access to sufficient information to form accurate beliefs about inequality in opportunity, they only hold accurate beliefs about their own economic opportunities. While people both reject unequal opportunities (inequity-aversion) and seek to maximize their well-being (self-interest), having inaccurate beliefs about the first has the consequence that people's redistributive preferences only serve to maximize the returns from their own opportunities. Therefore, redistributive preferences are more polarized in those democracies where income gaps are larger and opportunities more unequal. This polarization makes it harder for political actors to build coalitions around redistributive policies, undermining progressive policy change.

To support these arguments, this dissertation explores the formation of redistributive preferences comparatively, in a total of 21 Western democracies, including the United

States and various Central and Eastern European countries. Most empirical chapters are based on secondary data sources and explore how both objective measures and subjective beliefs about inequality in opportunity can explain differences in redistributive preferences. The advanced arguments are further supported through an online survey experiment, which finds that information on income gaps strengthens the workings of inequity-aversion. Finally, a cross-country analysis shows that the suggested effect of polarization due to inequality in opportunity on governmental redistribution is robust to various alternative explanations.

In sum, this dissertation demonstrates how a closer incorporation of social cleavages into existing political economy frameworks can enhance our understanding of dynamics of inequality and redistribution in democracies. Further research should go beyond the limited time frame of this dissertation, which is restricted to a cross-sectional comparison of contemporary democracies.

# Contents

# List of Tables

# List of Figures

# Chapter 1

# Introduction

> "No political form has hitherto been discovered that is equally favorable to the prosperity and the development of all the classes into which society is divided. [...] The advantage of democracy [lies] in contributing to the well-being of the greatest number." – Alexis de Tocqueville, 1835, *Democracy in America*

> "The Nation has not yet found peace from its sins; the freedman has not yet found in freedom his promised land. Whatever of good may have come in these years of change, the shadow of a deep disappointment rests upon the Negro people [...]" – W.E.B. Du Bois, 1903, *The Souls of Black Folk*

> "[T]he American worker is presumably more likely to believe in individual opportunity. His European counterpart, accept[s] the image of a closed-class society [...] While these stereotypes of the relative degree of social mobility in Europe and America do not correspond to reality, their acceptance may well affect voting." – Seymour M. Lipset, 1959, *Political Man*



In the first half of the twentieth century, virtually all Western democracies achieved universal suffrage. Until today, the *de jure* political equality did not translate into economic equality of previously marginalized groups. Where a person is situated on the economic ladder is still determined–to a large extent–by what gender, ethnicity, or race they are, where they grow up, and whether they do so in a wealthy, educated family or not. Such inequality in opportunity materializes in lasting income gaps between men and women, natives and migrants, and people with educated parents and those without. Politically, this puts people into a dilemma. Should they demand their government to reduce income gaps that reflect unequal opportunities, or should they make such demands contingent

on whether, or not, they are privileged by such unequal opportunities? It is argued here that people seek to satisfy both desires, but their political preferences effectively *reinforce* existing income gaps. The reason for this lies in what people know about the distribution of economic opportunities. Even though people are aware of the opportunities available to themselves, they are not aware of how strongly their opportunities differ from those of others. Thus, existing inequality in opportunity polarizes demands for redistribution, and hinders progressive policy change in democracies.[1]

This dissertation aids efforts to move mainstream political economy scholarship beyond its narrow focus on economic inequality, which has much to say about economic differences between the rich and the poor but little about how social cleavages come into play. In so far as the public at large is more concerned about equality of opportunity than about equality of outcomes, the mainstream scholarship fails to echo political debates outside of academia. Of course, this is not to say that there has been no research on this. In fact, scholars have long attested to the ubiquitousness and political salience of equal opportunity norms, and relatedly inequity-aversion, in Western democracies.[2] Others have more recently explored the political-economic foundations of separate cleavages, in particular gender, race, ethnicity, and family background.[3] This dissertation builds on these different strands in the literature – its contribution is to integrate them into a mainstream political economy account of inequality and redistribution. This account is further enriched by incorporating recent insights from behavioral research, in particular on bounded rationality, which shows that biased beliefs about the income distribution intimately affect the workings of political economy models. Although this dissertation is limited empirically to 21 contemporary Western democracies, including the United States (US) and most of Europe, it has wider implications for scholarship on democratic theory.



[1] Among western democracies, Switzerland was the last to institute universal suffrage in 1971.

[2] For example, Hochschild (1986); Kluegel and Smith (1986); Feldman (1988); Kluegel and Mason (2004); Page and Jacobs (2009), and McCall (2013).

[3] For example, Edlund and Pande (2002); Iversen and Rosenbluth (2006); Finseraas (2008); Baldwin and Huber (2010); Newman (2015); Alt and Iversen (2016), and Hersh and Nall (2016). These studies focus on specific cleavages, i.e. ethnicity, gender, migration, or race. The theoretical account offered here is more general and equally applies to a wide range of cleavages.

**Unequal opportunities, and the production of privilege.** Unequal economic opportunities are not easy to capture. They are an accumulation of practices–in the labor market, educational institutions, families and so on–that are contingent on circumstances beyond individual control. Sociologists refer to such processes as ascription (Lieberson, 2001). As the history of Western democracies shows, equal treatment is not sufficient for equality of opportunity to prevail. On such example is the abolition of slavery, which as Du Bois laments in 1903, did not effectively free African-Americans from economic and other kinds of exploitation.[4] Realizing such contradictions, Sen (1992) argues that equality of opportunity is not sufficiently described by the set of rules governing social interactions, but requires attention to distributive outcomes. Equality of opportunity is realized only if outcomes are independent from circumstances beyond individual control (Roemer, 1998a). Hence, differences in economic outcomes that coincide with inborn circumstances like gender, ethnicity, birthplace, physical ability, or family background, are a materialization of unequal economic opportunities.[5]

While unequal economic opportunities describe the general distribution of economic opportunity within a society, *privilege*–as understood in this dissertation–refers to how specific individuals are affected by the distribution of opportunity. Men are frequently paid more than women for the same work, and often have more easy access to jobs. This is male privilege. Such economic privilege is commonly also experienced by those born able-bodied, into wealthy families or neighborhoods, to highly educated parents, or into majority ethnic groups. Unequal economic opportunities and adherent privileges clash with widely held norms about equality of opportunity. So, what do people make out of this contradiction?

**What motivates people's response to unequal opportunities?** Political economy scholarship has employed assumptions about rational self-interest to explain a wide range

[4]In fact, even in the present day, slavery's legacy is seen to define political and racial attitudes and thus the lives of African-Americans (Acharya et al., 2016).

[5]This dissertation refers to the extent to which economic outcomes are determined by circumstances as inequality in (economic) opportunity or unequal (economic) opportunities. It is not to be confused with the kind of economic inequality subject to most existing political economy research. The latter describes differences in economic outcomes between individuals without any account of the role of circumstances.

of phenomena, such as public goods provision (Olson, 1965), democratization (Acemoglu and Robinson, 2000), or welfare state emergence (Meltzer and Richard, 1981). However, a swath of studies suggests that people do not always, or not only, act to maximize their own economic resources. People might take the well-being of their peers into account, based on so-called other-regarding preferences, or have "sociotropic" preferences about the general distribution of resources. Research on inequity-aversion has been particularly prominent. Inequity-aversion suggests that people reject outcome differences that are not due to differences in legitimate inputs (Adams, 1965; Fehr and Schmidt, 1999). Each of these research strands suggests ways in which people might respond to the presence of unequal economic opportunities.

In this dissertation, self-interest and inequity-aversion are explored as motivations of individual behavior. On the one hand, individuals draw economic returns from privilege, and those who benefit from it can expect to have higher future incomes than those who lack such privilege. Those seeking to maximize their material well-being are best advised to form political preferences in line with their privilege. On the other hand, inequity-aversion suggests that people who value equality of opportunity should demand more governmental redistribution the more unequally opportunities are distributed. Exploring economic and social survey data for 21 Western democracies, both motives are found to affect preference formation. However, to understand how they unfold, and which is more consequential, it is necessary to consider what people know about inequality in opportunity and privilege. Only if beliefs correspond to reality can political preferences effectively induce governments to implement desired distributive changes.



**What do people know about unequal opportunities?** If we are to make sense of people's political preferences, an understanding of their beliefs about the world is imperative. Within the rational choice framework, people are often assumed to possess full knowledge, and thus, to hold accurate beliefs about the world. While this assumption has been challenged by decades of research, many political economy theories have not been seriously threatened as much weaker informational assumptions usually suffice, i.e.

limited but unbiased information (see Becker, 1976; Coleman and Fararo, 1992; Page and Shapiro, 1992). However, such assumptions are not always warranted. Therefore, scholarship has increasingly focused on the information environment to which boundedly rational people are exposed, and on the basis of which they form beliefs about the world (Simon, 1955). An important finding in the political economy literature on inequality is that people commonly underestimate the extent of inequality and believe their income to be closer to the national average than it actually is. Realizing that people are usually surrounded by others similar in economic standing, and form beliefs about the world based on their peers, takes us a long way in understanding such biases (Cruces et al., 2012; Fernández-Albertos and Kuo, 2015; Iversen and Soskice, 2015).

People's beliefs about inequality in opportunity play an important role in this dissertation. Not only are they interesting in themselves, but their close examination allows for a better understanding of issues regarding causality as well as when and why people act upon self-interest or normative motives. Most importantly, if people only have partial knowledge about the world, it constrains their ability to form preferences in line with their motivations. For example, following the research above, if people form beliefs based on peers that are rather similar to them, they might as well underestimate the extent of their privilege or the overall extent of inequality in opportunity. The findings presented here confirm this. However, it is also shown that people learn from new information and that this can strengthen the link between their preferences and reality, particularly with respect to aversion to unequal opportunities.



**Do people's demands affect redistributive policies?** Although this dissertation is mainly concerned with preference formation on the individual level, the question of whether these preferences translate into redistributive policies shall not be left entirely untouched. In fact, plenty of research is skeptical about the importance of individual preferences for policy-making (e.g. Bartels, 2008; Gilens, 2012). However, while these scholars show that preference aggregation through contemporary political institutions is far from democratic ideals (i.e. political equality), they do not reject individual preferences

and public opinion as completely irrelevant. Indeed, others have found governments to be rather responsive to developments in public opinion (Brooks and Manza, 2007).

Political economy scholarship most commonly relies on the median voter theorem. Political parties compete in a one-dimensional space, and to win they have to gain support from the decisive voter, the median voter (Downs, 1957). Despite its simplicity, the theorem has been successfully applied in a wide range of research projects. However, to better understand multi-dimensional politics and multi-party systems, scholars increasingly emphasize on the distribution of preferences. In particular, preference polarization is seen as a stumbling block to political consensus and policy change (e.g. McCarty et al., 2008; Rehm et al., 2012). Although this dissertation is mainly occupied with individual responses to unequal opportunity, implications of individual-level dynamics for macro-level outcomes are also discussed, and a first explorative analysis of differences in governmental redistribution across countries is conducted. This analysis provides some indicative evidence that countries with higher inequality in opportunity are in fact less able to institute redistributive policies.

**Summary of the argument.** People respond to inequality in opportunity in line with their self-interest. The more likely they are to benefit from unequal opportunities due to a privileging set of circumstances, the less likely they are to support redistribution. At the same time, people are also generally opposed to unequal opportunities and demand redistribution in response to it. However, they are largely unaware of the actual extent of inequality in opportunity. This is the case because being mostly around people like themselves makes people underestimate inequality in opportunity. Importantly, this does not constrain people's ability to form accurate beliefs about the economic benefits they reap from their privilege. Exactly because their social environment is limited, people rarely connect their own privilege to the experiences of those less, or more, privileged. As a result, people's redistributive preferences are mainly defined by their own privilege and serve their material self-interest.

This has important consequences for distributive conflict. Countries in which oppor-

tunities are more unequal, economic attainment is more defined by privilege, and hence, people's present and future incomes are more aligned. This stronger alignment polarizes preferences for redistribution. As polarization makes it more difficult for political actors to build coalitions around redistributive policies,[6] this can explain why levels of redistribution are lower in countries where income gaps are more prevalent.

This dissertation advances political economy scholarship on inequality and redistribution on both the individual and country-level. First, factors that have a decisive role in the determination of economic outcomes and thus inequality, such as gender, race, or family background, do not feature prominently in mainstream political economy accounts. These factors are usually sidelined, as they do not square easily with the rational choice framework the literature is invested in. This dissertation shows how such factors can be meaningfully integrated in this framework, since they affect rational expectations individuals form about their future incomes. Second, the dissertation anticipates a novel explanation for why some countries redistribute more than others. This explanation adds to dominant accounts in the literature that focus on economic prosperity[7] and inequality between individuals. At the same time, it might shed light on ambiguities in these established accounts, such as why countries with higher inequality redistribute less, which is the opposite from what theory traditionally predicts.

The argument offered here is a pessimistic one. Unequal opportunities in the present reinforce inequalities in the future. Informational biases and distributive conflict incapacitate political actors to counteract unequal opportunities, even though such inequality is widely rejected among the electorate. That being said, this dissertation provides room for optimism as well. What people believe about the presence of inequality in opportunity plays an important role for their redistributive preferences. And, as much of the pessimism of the main argument hinges on informational biases, it bodes well that such biases seem rather easy to correct. An experiment that allows people to "check their privilege" by providing information about income gaps hints at political dynamics that can help break

[6]Dryzek and Goodin (1986), Rehm et al. (2012), and Rehm (2016) make that argument with regards to the joint distribution of income and (unemployment) risk.

[7]Or what is frequently referred to as economic development or growth.

the reinforcing cycle between present and future inequalities.[8]

**Research strategy.** In line with much of the political economy literature on redistribution, this project is comparative in nature. It spans most Western democracies, all of which are advanced industrialized economies, including twenty European countries and the US. However, in developing the role unequal economic opportunities play, close attention is paid to micro-mechanisms that are constitutive of the relationship between the distribution of economic opportunities and government redistribution. The empirical analysis mostly draws on secondary country-level and individual-level data, often jointly, using adequate statistical techniques. 2010 constitutes the reference year of the analysis; some of the secondary data was collected as early as 2008, other only in 2011. Questions about causality on the individual level are further explored with an online survey experiment among US-American respondents.

**Structure.** The next chapter elaborates on the literature in which this project is embedded. Chapter 3 lays out the theoretical framework and develops its main propositions formally through a rational choice model. These propositions are derived on the basis of different assumptions about what motivates people and what they believe about the world, but are brought together in one framework of how, why, and when people respond to inequality in opportunity. The four subsequent chapters explore the empirical validity of the different theoretical propositions. Chapter 4 operationalizes and compares objective and subjective measures of inequality in opportunity. Chapter 5 then explores people's responses to unequal opportunities (i.e. support for redistribution) under the assumption that their beliefs about the world are free of bias. Loosening this strong assumption, Chapter 6 considers the effects of subjective beliefs about the distribution of economic opportunities on redistributive preferences. In Chapter 7, causal relationships between objective measures, subjective beliefs, and redistributive preferences are closely investigated

[8] As Jennifer Hochschild emphasized in her Presidential Address at the 112th Annnual Meeting of the American Political Science Association, pessimism in political science about social change undermines its emancipatory potential. She argues that developments over the last centuries give at least as many reasons for optimism and urges a more optimistic outlook in research and teaching (for a related article, see Hochschild, 2017).

with an online survey experiment among US-American respondents. Chapter 8 discusses the implications of the revealed individual-level dynamics for macro-economic outcomes, in particular government redistribution, and offers some preliminary findings that can guide further research. The final Chapter 9 discusses implications for political economy scholarship and our understanding of redistributive politics more generally.

# Chapter 2

# The Political Economy of Inequality and Redistribution

> "The first man who, having fenced in a piece of land, said 'This is mine,' and found people naïve enough to believe him, that man was the true founder of civil society."[1]
> – Jean-Jacques Roussea, 1755, *Discourse on the Origin of Inequality*

The distribution of economic resources is one of the main functions of societies and most consequential for the well-being of individuals living within them. In contemporary Western democracies, three institutions are key to the distribution of economic resources. First, at its basis is a property rights regime that defines what economic resources can be owned and by whom. Secondly, markets regulate which and how property can be transferred. Third, governments not only enforce the previous two institutions but also set up redistributive mechanisms that alter the distribution of economic resources directly (e.g. income transfers through taxation) or indirectly (e.g. public education). Thus, studying people's preferences regarding that distribution is not only worthwhile because of its immediate bearing on their lives, but also because public opinion influences governmental decision-making in democracies.

[1] Civil society is applied different from its contemporary use and refers to civilization or modern society.

Today, most societies use money to determine the economic resources a person has at her disposal. Hence, when we talk about the distribution of economic resources, we usually refer to a person's income or wealth. Like the literature this dissertation speaks to, the elaboration here focuses on the distribution of income. While income and wealth are not epiphenomenal, wealth is in great measure a result of income savings, such that any exploration of one of the two always speaks to the other. Furthermore, most people's immediate well-being immediately depends on their income. This makes income more political salient than wealth, of which few have enough as to give it equivalent significance.

Comparative political economy offers many insights into why some countries redistribute more than others. The two key components of every political economy model are preference formation and preference aggregation. The prior explains the causes of individuals' political preferences, and the latter elaborates on how such preferences are translated into policy outcomes. In the following, core insights of this literature are introduced, emphasizing ways in which they speak to the question that is at the heart of this dissertation, namely, *what is the effect of income gaps on people's support of government redistribution*? Therefore, the review begins with the introduction of the literature's workhorse model, the Romer-Meltzer-Richard (RMR) model. This is followed by a more detailed discussion of scholarship on preference formation, exploring in particular the role of economic cleavages, social preferences, and bounded rationality.

Advances in these three branches of the literature inform much of the theoretical framework that is developed in Chapter 3. Research on economic cleavages reveals important causes and consequences of distinct income gaps. Commonalities among research on cleavages, such as ethnicity, race, gender, and family background are highlighted as they are later joined in the theoretical framework. While the literature on economic cleavages is mostly concerned with material self-interest, scholarship on social preferences explores when people reject distributive outcomes even if doing so goes against their self-interest. This scholarship clarifies why people might be opposed to income gaps on grounds other than material well-being. Lastly, recent research on bounded rationality highlights how widespread misperceptions about the income distribution affect the workings of political

economy models on inequality and redistribution. Findings of this literature are discussed and play an important role in the later development of the theoretical framework.

As the focus of this dissertation is on individual-level mechanisms, a discussion of preference aggregation is relegated to Chapter 8. That chapter explores implications of the revealed individual-level mechanisms for country-level government redistribution.

## 2.1 Theories of Government Redistribution

### 2.1.1 Class-Based Approaches

Much of the political economy literature on inequality and redistribution uses a class-based approach to theorize how the distribution of economic resources in society is determined. In this literature, class does not have the same categorical boundaries it usually does in sociological scholarship. Instead, class refers to a person's or household's position in the income distribution, and reference to "the rich" and "the poor" simply alludes to this underlying continuum.

Large parts of the contemporary scholarship on the political economy of inequality and redistribution can be related back to the theoretical work by Romer (1975) and Meltzer and Richard (1981). The popularity of their work is due to its simplicity while still combining two of the major tenets of economics and political science. Namely, rational choice theory, which posits that individual behavior is self-interested and fully informed, and the median voter theorem, which implies that the preference of the median voter is pivotal for decision-making in competitive democracies. In the RMR model, citizens have to choose a flat tax rate, according to which everyone's income is to be taxed; equal parts of the tax revenue are then redistributed to all citizens. In their model, two factors determine the tax rate a person prefers. First, everyone with an income below the mean income benefits from a tax rate above zero, and–considering only that–would maximize their income by choosing a tax rate of 100%. Second, what people's preferences are moderated by is their awareness of incentive-effects of redistribution. A tax of 100% would diminish

any incentive to work and thus taxable income. This effect of tax on incentives is more detrimental in low inequality environments. Everything else being equal, the RMR model makes two predictions. While support for redistribution decreases with a person's income, it increases with the level of inequality.

Unsurprisingly, their model is often criticized for being overly simplistic, and the empirical support it receives is mixed. The empirical evidence in favor of the model is strongest with regards to income. While many studies attest to the consistently negative effects of income on support for redistribution, studies are divided on the effect of inequality. Most cross-sectional studies find no relationship between inequality and preferences for redistribution (Lübker, 2007) or their findings point int the opposite direction, the famous "Robin Hood paradox", implying lower (support for) redistribution in more unequal countries (Alesina et al., 2001; Iversen and Soskice, 2006; Lindert, 2007; Haggard et al., 2013). Finseraas (2009) constitutes an exception. The author finds that people residing in more unequal countries are indeed more supportive of redistribution, and provides further evidence for an additional prediction he derives from the model. As inequality increases, the distance between the median and mean income grows, strengthening the effect of income on redistribution. All that being said, there is little reason to expect the RMR model to hold on a small set of countries, between which many more things than just inequality vary. Indeed, looking at changes within countries across time, Milanovic (2000) finds support in favor of the model's macro-level predictions, and Schmidt-Catran (2016) for its predictions regarding individual preferences.

A more fundamental criticism of the RMR model concerns its interpretation. The model contends that individuals are more supportive of redistribution at high levels of economic inequality as the effect of redistribution on work incentives become less detrimental as inequality grows. However, economic efficiency is not the only externality of inequality. Alesina and Giuliano (2011) show that in the presence of imperfect access to credit, inequality leads to lower private spending in education and hence lower macro-economic output. As this is not in the interest of the rich, they become more supportive of

redistribution.[2] Alternatively, it is sometimes suggested that crime is a negative externality of inequality. As inequality grows, more people are in need and potential gains from crime increase. Rueda and Stegmueller (2015) suggest that *fear* of crime, without claiming any actual effect of inequality on crime, is enough for people to support redistribution as inequality increases. In their study of West and North-European regions, they show that support for redistribution, along with fear of crime, is higher where inequality is higher, and that this effect is particularly pronounced among the rich. While such criticism is indeed fundamental, it does not affect the specification of the model.[3] As such, instead of abandoning the model, much subsequent work focuses on the correct interpretation of the model as well as extending it to work out unrealistic theoretical assumptions or empirical shortcomings.

One such extension concerns the tax schedule. While the RMR model assumes a flat tax and equal benefits, most real world schedules are progressive, and some of them regressive. Two studies have explored the effect of the progressivity of the tax schedule on redistributive preferences. Barnes (2014) looks at 17 advanced democracies and finds where taxation is less progressive, support for redistribution is more likely to encompass demand for increases in tax level as well as progressivity. Beramendi and Rehm (2016) similarly find tax progressiveness affects preference formation. In countries with a more progressive tax schedule, preferences for redistribution, and specific attitudes towards the welfare state, are more strongly affected by income. As such, progressivity introduces an additional dimension to the redistributive game which has important implications for how we understand incentives as well as the policy choices available. That being said, a better understanding of progressivity does not speak directly to this dissertation and will not feature prominently in subsequent chapters.

For the purposes of this dissertation, a more instructive extension is the consideration of future income. Those who can expect to be better off in the future should be less concerned

[2]Unfortunately, the authors do not present any empirical test for their proposition.

[3]Benabou (2000) suggests that increases in inequality might directly undermine public support for redistribution due to positive externalities. Although his model has some predictive power on the aggregate level, it finds no support in individual-level analyses, and its strict assumption are unlikely to be met often (Kelly and Enns, 2010).

about their present deprivation, and *vice versa*. This idea was initially formulated by Hirschman and Rothschild (1973) as the "tunnel effect". Benabou and Ok (2001) have shown formally that if the mobility process is concave (i.e. more people can *expect* to rise above the mean income than can expect to fall below it), opposition to redistribution can grow substantially.[4] For the US, Alesina and La Ferrara (2005) confirm that individuals form preferences in line with their objective income expectations (more on this in Section 2.2.3). How are such expectations formed? Stegmueller (2013a) and Rueda et al. (2014) argue that individuals form expectations based on what they know about labor market returns to human capital (i.e. education, work experience). The authors integrate expectation formation directly into the RMR model and find that individuals form preferences that maximize their present as well as future well-being. That people consider their future well-being might not be that surprising, but the analytical strategy employed by the authors has great potential to explore further structural aspects of the income distribution.

To realize the potential of analyzing income expectations in this way, one should consider that economic attainment depends upon a plethora of factors; education, occupation, gender, race, ethnicity, effort, or luck, to name a few. Looking at many of these factors in isolation, we know them to strongly correlate with different political preferences. The underlying mechanisms are most commonly elaborated in sociological terms. Solidarity among workers makes them stand up to capitalists, education nurtures people's acceptance of existing inequalities, women prefer more government services because of pro-social attitudes, parochial altruism[5] stops people from contributing to common goods in heterogeneous communities, and so on. This is not to suggest that these arguments should be ruled out entirely. However, where meaningful one should consider in how far such factors matter to individuals because they influence a person's future economic standing.[6] The remainder of this chapter shows that this analytical strategy is rather common by now,

[4]Dorsch (2010) shows that when government spending is modeled as a public good rather than income redistribution, preferences are more sensitive to changes in mobility rates.

[5]Also known as homophily or in-group bias.

[6]The focus on the future is important here, since explanations focusing on present conditions are hard to disentangle from immediately experienced deprivation or fortune.

and that in many cases theoretical propositions based on economic self-interest do better empirically than sociological explanations, or at least shed reasonable doubt onto them.

### 2.1.2 Cross-Class Approaches

The literature discussed so far regards redistribution as a struggle between classes, usually stylized as the rich and the poor. This section gives an overview of so-called cross-class approaches that emphasize the political salience of shared risks or common stakes in welfare states. While these approaches are not the main reference point of the subsequent theoretical and empirical chapters, they serve as an important guide in developing the arguments of this dissertation

In offering a resolution to the Robin Hood paradox, which refers to the absence of greater redistribution in countries with more extensive inequality, Korpi and Palme (1998) mount a famous challenge to class-based approaches. The authors argue that larger welfare states that provide more universal coverage are not only more effective in reducing inequality, but due to a broad base of beneficiaries, also receive wider public support. Following the work of Esping-Andersen (1998), many other have argued that the extent of popular support is "built into" welfare states. This line of research originates from Esping-Andersen's *Three World of Welfare Capitalism* (1998), where he develops a typology of three welfare state types–liberal, social-democratic, and conservative–and uses them to categorize OECD countries. Welfare state types differ in terms of size, coverage, decommodification, and cleavage structure, among other things. Coverage refers to the conditionality of benefits, that is, whether they are provided universally or are targeted only at those in need. Decommodification is the degree to which people can live their life independently of the market. Cleavage structures, which are not the same in all countries, organize interests in the political arena and are the result of the social alliances that shaped the emergence of welfare states. In summary, the way people relate and think about the welfare state differs per regime type, such that one can expect differences in breadth of support and the cleavages that structure that support.

The literature that followed agrees that people are least likely to support liberal welfare regimes (Svallfors, 1997; Linos and West, 2003; Jæger, 2009) but disagrees on whether it is highest in social democratic (Linos and West, 2003) or conservative regimes (Jæger, 2009). Furthermore, Linos and West's (2003) work also highlights the importance of differences in the cleavage structure. They suggest that, on the one hand, whether one is a labor market insider (i.e. someone permanently employed) or not is most consequential for redistributive attitudes in conservative regimes as well as in social-democratic ones that encourage the accumulation of specific skills. On the other hand, social class (in terms of occupation) has the strongest effects in liberal regimes.

In recent years, this literature has moved from a focus on institutions to a more individualistic mode of analysis. An early example is research by Rueda (2005, 2007) on contemporary welfare state politics. He conjectures that individual preferences depend on a person's position in relation to the labor market. These can be differentiated into *insiders*, those with secure employment, *outsiders*, those with insecure or no employment, and an upscale group of professionals and entrepreneurs. Rueda shows that outsiders, who are most exposed to unemployment, are most supportive of redistribution. Since insiders face a low risk of unemployment and carry most of the tax burden, redistribution receives little support from them. And because the upscale group has nothing to gain from redistribution, it opposes redistribution. A study of unemployment experiences following the financial crisis in the US in 2008 illustrates how quickly a change in labor market status affects a corresponding preference shift (Margalit, 2013). By further considering party competition and dynamics set into motion by industrialization, Rueda (2007) explains how leftist parties have moved away from making politics for all workers and hence contributed to the precariousness today's labor market outsiders find themselves in. In a similar vein, Kemmerling (2009) argues that the general shift from taxation of wealth to income drove a wedge between high-skilled and low-skilled workers, putting the latter at a strategic disadvantage. Thus, low-skilled workers have lost in political influence and their economic situation has grown more precarious.

An area of research that has been particularly insightful explores unemployment risks

and their insurance by welfare states. Moene and Wallerstein (2003) argue that class-based approaches falsely interpret governments as satisfying redistributive demands. While welfare states are also redistributive, they mainly fulfill social insurance functions that protect workers against the risk of becoming unemployed due to "layoffs, ill health, or accidents" (Moene and Wallerstein, 2003). The authors argue that if people perceive welfare as insurance against the risk of unemployment, then demand for it should increase with a person's income. If inequality increases, less people benefit from insurance which reduces support of the welfare state. Their argument finds support in the fact that more unequal countries–at least among those part of the OECD–generally have less encompassing welfare states that provide such insurance. Rehm (2009) provides additional support showing that people working in occupations where risk of unemployment is higher are more supportive of redistribution. Häusermann et al. (2015) differentiate occupational unemployment risk by gender and age, further corroborating the importance of such risks for different welfare state attitudes.

Other scholars emphasize the context in which people respond to risks and demand insurance. For example, Iversen and Soskice (2001) suggest that people who have more specific skills, which are not easily transferable, demand more redistribution, since job loss often results in longer periods of unemployment for them. Consequently, countries that emphasize specific skills in their educational systems also redistribute more. Gingrich and Ansell (2012) look at how welfare institutions affect the relationship between unemployment risks and redistributive preferences. They find, only where institutions provide little employment protection and benefits are contingent on previous employment, redistributive attitudes are affected by unemployment risk. These studies not only show that present redistribution, and taxation, by governments can be an important direct determinant of redistributive preferences. What is more, redistribution and taxation also indirectly affect individual-level relationships, which are commonly studied in isolation of country characteristics. Rehm (2016) highlights the importance of economic change, in particular industrialization. He argues that welfare states expand faster during times in which unemployment risks are shared more equally.

Cross-class approaches increasingly speak to traditional class-based political economy approaches. One reason for that is the increasing similarity of their analytical approaches. This is well exemplified in an article by Rehm et al. (2012) who analyze the joint distribution of income and unemployment risks. They find that support for welfare states, in particular unemployment benefits, is more polarized where income and unemployment risks are more strongly related. Furthermore, the behavioral motivations underlying individual responses to risks are equivalent to responses to income expectations, that is a concern about one's future economic standing. The arguments developed below regarding responses to unequal economic opportunities are not concerned with unemployment risks or the specific make-up of welfare states. However, the distribution of opportunities plays an important role in the formation of political coalitions that transcend economic classes, as they are conventionally conceived in the political economy literature (i.e. the rich and the poor). Key to this argument is the overlap of different interests people hold, in particular regarding present and future income. This mirrors the common theme in cross-class approaches that people value risks, which effectively refer to some future status, in addition to their current well-being. Unemployment risks, just like future incomes, can stimulate "solidarity" with those that experience economic deprivation in the present. As such, there are important similarities between the cross-class literature and the argument developed here.

## 2.2 Preference Formation



Of the literature discussed so far, class-based approaches are the foundation upon which this dissertation builds. Due to their parsimony, they serve as reference point for much of the related literature, including many cross-class approaches. However, scholars have in recent years focused on aspects that class-based approaches are largely oblivious of, but whose consideration can provide valuable insights into the workings of inequality and redistribution. Thus, the following sections focus on advances in scholarship on preference formation. These advances can inform how people relate to the presence of unequal opportunities in labor markets, as evidenced by income gaps.

### 2.2.1 Economic Cleavages

Social cleavages and groups are at the center of many political phenomena, and feature prominently in many theories of politics. Here, the focus lies on such theories that fall under the rubric of political economy. The main analytical framework of political economy models, rational choice, sheds light on how individual and collective action are constrained by structural conditions, namely, the distribution of economic resources. Thus, these models explain how structural conditions are self-reinforcing. Highlighting the material conditions that underpin (undesirable) social phenomena is a major strength of political economy theories. This is well-captured by the concluding statement of Alt and Iversen's (2016) study on ethnic relations in the US labor market, "Tolerance is surely always desirable, but it will not solve the problem of rising inequality if the cause is not primarily prejudice but rather reflects self-interest and economic forces." (ibid., p.14)

Political economy provides insights on various economic cleavages. Work on inborn circumstances is most relevant for exploring the effect of unequal economic opportunities in labor markets on redistributive preferences. Scholarship on gender, race, ethnicity, migration and family background falls into this category. Other cleavages that do not speak directly to inequality in opportunity but are of recurrent concern in the literature, in particular class and religion, are also covered in passing. While the following summary certainly does not do justice to the wealth of research on any of these cleavages, it intends to point out important commonalities. Capitalizing on such commonalities will help in developing a framework that encompasses distinct cleavages simultaneously. These commonalities are key to Chapter 3, which integrates different economic cleavages into one unified theoretical framework.



#### Ethnicity, Race, and Migration

Although ethnicity, race, and migration are not equivalents, they have many conceptual similarities, and political economy theories often address them in interchangeable ways (see the review article by Stichnoth and Van der Straeten, 2013). Historically, race has

been a highly politicized topic in the US, and as European countries–due to free movement within and immigration from without–become again more heterogeneous, the political salience of ethnicity has increased in parallel.

One of the most unique opportunities to study the effect of race is the enfranchisement of African-Americans in the US. Although the right to vote was granted to black males as early as 1870, in several states its implementation was effectively delayed for almost a century. Until abolished, so-called Voting Rights Acts, such as literacy tests and poll taxes, made it particularly difficult for African-American, who had little access to educational and economic resources, to use their *de jure* voting rights. As African-Americans were predominantly poor, theory predicts that their enfranchisement should have led to an expansion of welfare states and redistribution. In a detailed analysis of US states, Husted and Kenny (1997) confirm this to be the case. That being said, these findings are not instructive for today's racial inequality as the revealed mechanism is driven purely by African-Americans' poverty, not race. Of course, this poverty persists and to some extent explains difference in political preferences between races today (Kinder and Winter, 2001).

Alesina et al. (1999) argue that racial fractionalization[7] undermines the provision of public goods as different racial groups prefer distinct public goods or are adverse to sharing it with members of other races. Willingness to share economic resources with members of the same ethnic or racial group is also referred to as parochial altruism. Similarly, Trounstine (2016) demonstrates that public goods provision is undermined by residential segregation along racial lines. Dahlberg et al. (2012) are able to causally identify the effect of immigration on support for redistribution. They find that immigration decreases natives' support for redistribution, especially among the rich, and interpret their findings as an instance of parochial altruism.

Research on fractionalization is not limited to public goods provision and redistribution, but spans many other aspects of social phenomena, such as violent conflict or economic growth. However, Baldwin and Huber (2010) warn against overemphasizing cultural and linguistic differences between groups. For a large set of countries, the authors show

[7]The authors refer to ethnic fractionalization but effectively only dinstinguish people by race.

that economic differences, measured as between-group inequality, can better account for differences in public goods provision than conventional measures of cultural or linguistic fractionalization. Several US studies look at how economic and racial differences are intertwined. Hersh and Nall (2016) show that preferences for redistribution and income are more negatively related in localities that have large minority populations. This is in line with the finding by Luttmer (2001) that support for welfare depends on whether a person shares the race with welfare recipients in their locality. In the US, rich whites are more willing to support poor whites, and rich blacks to support poor blacks.

Does fractionalization mediate economic context because people are less "altruistic" towards those of another race or ethnicity? Several recent studies shed reasonable doubt on that explanation. Burgoon et al. (2012) find that people are more supportive of redistribution if their occupation has a higher share of foreign-born workers. They contend that this might be due to heightened economic insecurities through increased competition. Similarly, Finseraas (2012) shows that as the proportion of ethnic minorities among the poor grows, rich majority group members become more confident about their economic future, which leads them to become less supportive of redistribution. Empirical support is provided by a comparative analysis of European regions. Alt and Iversen (2016) explore the same argument comparing advanced democracies, and pitch it directly against arguments of parochial altruism. Their findings corroborate those by Finseraas, and also echo Alesina and La Ferrara (2005). The latter suggest that individuals infer their own income prospects from their knowledge about the intragenerational mobility process, whereby they account for racial difference in mobility rates. They show that those with more promising prospects, e.g. whites, are less supportive of redistribution, which is in line with their future self-interest. As such, these studies suggest that people are motivated by their own future well-being rather than by altruism towards co-ethnics (or lack thereof towards others).



### Family Background

The next cleavage to be considered is family background. The related literature usually does not refer to it in terms of a cleavage, but as social mobility instead. Social mobility

has been conceptualized in a multitude of ways. One important distinction concerns the social dimension the researcher looks at. Most commonly, these are measures of social status or economic class. Another important distinction is between *intra*generational mobility and *inter*generational mobility. The first refers to mobility within a person's lifetime. In Section 2.1.1, examples of this work (e.g. Benabou and Ok, 2001, and Alesina and Angeletos, 2005) were discussed. Intergenerational mobility refers to the relationship between parents' attainment (most commonly that of fathers) on a given social dimension and their children's attainment.[8] This section introduces scholarship concerning intergenerational economic mobility that looks at the relationship between parents' and children's economic attainment, where attainment is most commonly measured in terms of income. This literature can be read as being concerned with family background as a social cleavage.

One reason political economists began considering mobility was the inability of the RMR model to explain differences in redistribution simply on the basis of economic inequality. Benabou and Ok (2001) point out that intergenerational mobility affects redistributive preference to the extent that parents care about their children's well-being. Scholars were initially hopeful that rates of mobility could explain the lack of a welfare state in the US, despite it being more economically unequal than many of its European counterparts (Alesina et al., 2001, 2004). However, it is now well-established that inequality and mobility are strongly correlated. The so-called "Great Gatsby curve" shows that economically more unequal countries, including the US, are also less mobile (Corak, 2013). Further research has shown that mobility varies widely across the US. Some localities have much lower rates than any other advanced democracies and others have rates comparable to the highly mobile societies of Canada and Denmark (Chetty et al., 2014). As such, mobility on the aggregate level, just like economic inequality, does not sit well with the RMR model.

Studies of mobility on the individual level square more easily with standard political

[8]Intergenerational mobility is commonly measured for the same age of parent and offspring, not at the same point in time.

economy arguments. Piketty (1995) develops a model in which individuals learn about the mobility process through their own experience as well as socialization in the family. From this they make inferences about the incentive-reducing effects of redistribution, which in turn affects their preference regarding the optimal level of redistribution. Comparative work by Corneo and Grüner (2002) gives support to the hypothesis that those who experienced upward mobility as compared to their fathers are less likely to support redistribution.[9] These authors point out that their finding supports Piketty's argument but can also be understood as a desire for economic fairness. Those who learn from their own experience that mobility is possible, and thus that success due to individual effort, are less likely to support redistribution. Such fairness considerations and social preferences are further explored below (Section 2.2.2).

Research on intergenerational mobility highlights how family background acts as a constraining force on a person's economic attainment. Of course, this can imply that people can get "stuck" in low as well as high economic strata. Such mobility can affect political preferences in a variety of ways, but one is that people realize the constraining force on their own economic potential and adjust preferences to maximize their well-being accordingly (Alesina et al., 2001).

### Gender

A cleavage that is surprisingly poorly integrated into mainstream political economy thinking is gender. Similar to research on race, some of the first studies concern enfranchisement, and again these results can be fully explained by material deprivation. Lott Jr. and Kenny (1999) show that government expenditure and revenue increased across US states following women's suffrage. The same is true for the late franchise extension (1971) in Switzerland (Abrams and Settle, 1999) and Western European countries more generally (Aidt and Dallal, 2007). Although these studies are insightful in many ways, for political economy theory they do little more than confirming the proposition of the RMR model. Those who are economically less well-off (here, women) demand, in line with their self-interest, more

[9] Alesina and Angeletos (2005) find the same for changes in occupational prestige.

redistribution, and governments adhere to these demands.

Another line of research emphasizes the emergence of gender norms, with regards to work and politics, and their persistence over time. It is often argued that the onset of agriculture instantiated gender roles as it made a division of household labor, with women doing most of the household work and men laboring the fields, economically advantageous. Gender norms emerged around this efficient mode of organization and persist until today. Alesina et al. (2013) argue that gender norms are more unequal where technologies that made a gendered division of household work economically advantageous were adopted early. Ross (2008) finds similar effects for economies reliant on oil production. Along the same line, Doepke and Tertilt (2009) find that economies' greater reliance on human capital increased the incentives for men to invest in their daughters. This contributed to the advancement of gender equality long before women won the right to vote. Fernández et al. (2004) show how gender norms reproduce, and more importantly, how they decline when a gender-unequal division of labor is not economically efficient anymore. All in all, these studies find that gender norms are rooted in historical economic conditions. However, the relevance of such norms today relies on non-economic reproduction of such norms. Thus, they shed little light on how men and women respond to economic incentives today and how this affects their economic and political behavior.

Several studies emphasize the importance of contemporary economic conditions for the reproduction of gender inequality. Albanesi and Olivetti (2009) show that pay differences, labor market participation and division of household labor are interlinked and reinforcing, if employers believe women to be more inclined towards household work than men. But how does this affect political preferences? The stability of marriage is often seen as one important factor. As labor force participation is lower among women, divorce carries higher costs for them than men. Edlund and Pande (2002) argue that the decreasing stability of marriage in the US explains increased support of women for redistributive policies and left parties. They find this effect to be most pronounced among lower and middle-class women. In their research, Iversen and Rosenbluth (2010) bring together many of the already discussed dynamics. They furthermore argue that improved labor market

opportunities for women increase their demand for public support of household work and public employment. Such provision relieves women of normatively prescribed obligations in the household and enables them to pursue independent careers.

As for the two previously discussed cleavages, being of one gender or another has important implications for one's economic opportunities. Opportunities are not the same for men and women, for example, due to differences in pay or access to employment. Among other things, this scholarship shows that preferences between men and women differ because of unequal economic opportunities, and not only because of differences in the ways they have been socialized.

### Further Cleavages

The main interest for this dissertation is in inborn cleavages and their implications for dynamics of economic inequality and redistribution. Not all cleavages that political economists are concerned about are inborn. Here, research on two of the most important cleavages that are not inborn, religion and class, is covered. Some might be surprised to see that these cleavages are not considered inborn. Religion and class are both a product of choice and inborn circumstances, but a person's belonging to any particular class or religion should not be confused with that of their parents. Class, in its categorical understanding, frequently changes between parents and their offspring, and research on the consequences of parental class was covered above (see p.22). Parental religiosity has not been addressed by political economists. The scholarship referred to below concerns people's own religious commitments.

**Class.** Other than the class-based approaches mentioned above (Section 2.1.1), where class simply serves as a convenient linguistic shortcut for individuals' economic standing, some scholars explore class explicitly as a socio-economic group. Corneo and Grüner (2002) conjecture social rivalry between economic classes, such that economic classes seek to maintain distance to classes below them and to reduce distance to those above. They show that members of an economic class become less supportive of redistribution if the social

status difference between their class and the one below is small, and more supportive if the respective difference to the class just above them is large.

Instead of arguing for the importance of social rivalry, Lupu and Pontusson (2011) inversely argue for the importance of social affinity. They posit that a society is made up of three income classes–poor, middle, and affluent–and that each of these groups' interest depends on their economic proximity, and thus affinity, to the other groups. However, their empirical focus is exclusively on the politically pivotal middle class. In support of their argument, Lupu and Pontusson show that more redistribution can be found in countries where the income gap between the middle and the poor is small, or where the gap between the middle and the affluent is large. While they take this to be an indication that individuals incorporate the economic status of those they are close to (i.e. members of their own class, and proximate class), their empirical analysis–as it focuses exclusively on the country level–cannot exclude the possibility of their finding being a manifestation of individual self-interest.

**Religion.** Religion is often seen to posses an important role in determining redistributive preferences. Scheve and Stasavage (2006) argue that religiosity functions as a substitute to the kind of social insurance provided by the welfare state. People who attend religious service frequently can expect their community to provide material and psychic relief when experiencing hardship. Thus, they rely less on support from the welfare state. The authors show that their results are unaffected by religious denomination and hold across a wide range of countries. Stegmueller et al. (2012) complement the insurance argument with one that emphasizes the politicization of welfare states in Europe. As welfare states overtook many of the social domains in which churches were traditionally active, Christian institutions (including churches and parties) developed a determinate anti-welfare stance. Contending that this should also affect the attitudes of their followers, the authors show that individuals who identify with a Christian religion are more likely to oppose the welfare state, and that they do so independent of their frequency of church attendance. This claim is supported by an empirical analysis of 16 Western European countries. On a different

note, religious beliefs can affect people's view of a just world. It has been argued that the protestant work ethic leads its adherents to believe that poor economic outcomes result from a lack of individual effort (Benabou and Tirole, 2011).

#### Cleavages and Opportunities

In the introduction of this dissertation it was argued that systematically different labor market outcomes between people of different gender, ethnicity, and parental background are a materialization of unequal economic opportunities. As just elaborated, independent literatures have developed around each of these cleavages. While many economic dynamics and political implications are specific to each cleavage, there are also important commonalities. Most importantly, people are seen to respond to economic incentives that are contingent on which side of a cleavage they stand on. In the theory chapter, this commonality joins different cleavages into a common framework that looks at how income expectations, in particular, differences in labor market return rates, depend on one's inborn characteristics. Of course, this is not to say that such a framework can fully incorporate the specialized explanations uncovered for each specific cleavage. However, it does reveal the workings of economic forces that unfold similarly across a variety of cleavages.

### 2.2.2 Social Preferences

Political economy scholarship traditionally assumes materially self-interest behavior, and thus income maximization. However, some scholars have focused on further behavioral motives that take the economic well-being of others into account. This line of research, and work on inequity-aversion in particular, provides important insights as to why people might oppose distributions reflecting unequal opportunities.

The most established alternative motive is *inequity-aversion*, and can be traced back to work by Adams (1965). Adams suggests that people are inequity-averse and seek to revoke inequity when experiencing it. According to equity theory, people experience inequity if inputs and outcomes are not balanced. In the context of organizational studies, in

which Adams developed his theory, outcomes might include pay, status, respect, or praise; inputs then might include work effort, education, gender, or age. People are regarded to compare their own inputs and outcomes to that of a reference person or group. For some decades, Adams' equity theory mostly inspired sociologists, who explored a wide array of social settings from firms to romantic relationships, in which people appeared to act inequity-averse.[10]

Political economists became interested in the idea of inequity-aversion as a behavioral motive when Fehr and Schmidt (1999) published a ground-breaking article showing that individual economic behavior in experiments can often be better explained with inequity-aversion than with self-interest. Although the authors do not explicitly refer to Adams's work, parallels in their work are hard to overlook. One reason for that might be that equity theory was developed within the larger body of social exchange theory, which–other than rational choice theory–emphasizes relationships between individuals rather than independent individual actions. However, social exchange theory and rational choice theory build on similar epistemological foundations, such that theoretical propositions can easily be translated from one to the other (Emerson, 1976). That being said, Fehr and Schmidt (1999) impose one decisive simplification on the original equity theory. They argue that within the context of laboratory experiments the reference point reduces to the egalitarian outcome, such that inequity-aversion effectively reduces to inequality-aversion.[11] As Fehr and Schmidt (2010) point out, this simplification comes with drawbacks (discussed below), they are willing to incur for the sake of parsimony.

Other scholars furthered this line of research with experiments specifically tailored to the study of political behavior and attitudes. Krawczyk (2010) and Balafoutas et al. (2013) show that participants are more likely to support redistribution if unequal pay-offs are allocated randomly rather than by participants' performance in a task. Sauermann and Kaiser (2010) set up an experiment where a group of participants gets to decide over

[10]For a an early review see Walster et al. (1973), or find a more recent one in Hatfield et al. (2011).

[11]This requires two assumptions; one, that for each participant the relevant reference group is all participants, and two, that strategic behavior during a game is not an input that can justify unequal outcomes.

the pay-off structure through iterated voting. They show that a group's decision can be better explained if in addition to self-interest, one considers that individuals also seek to minimize the difference between their income and the group's mean income, an indication of inequity-aversion. As with any laboratory experiment, a shortcoming of research on inquity-aversion is its questionable external validity, and thus generalizability. Do these findings hold outside of the laboratory?

The main challenge for research on inequity-aversion in the real world is that, unlike in experiments, it does not reduce to inequality-aversion. Therefore, it is not clear what is "inequitable". Most studies focus on subjective beliefs about inequity, and implicitly motivate it as aversion to inequality in opportunity. This is maybe most clear in an article by Fong (2001) who uses a survey that asks about poverty and wealth respectively, and whether each of them is the result of "effort", "circumstances and luck", or both. She finds that those who believe in the importance of effort oppose redistribution, and those who believe in the importance of circumstances and luck support it. Similarly, Linos and West (2003) suggest that people who believe in the importance of exogenous factors, that are beyond individual control, are more supportive of redistribution than those who believe in self-determined factors, that are within individual control. However, from an equality of opportunity perspective, their study suffers from a questionable categorization of factors into these two categories. For example, "knowing the right people" is counted as exogenous, and "ability" as self-determined.

Other works focus exclusively on what people believe about effort. For the US, Alesina and Angeletos (2005), and Corneo and Grüner (2002), in their comparative study, find that people's belief in the importance of "hard work" has an inequality-justifying function and is a strong predictor of redistributive attitudes. The risk of working with subjective beliefs for any scholar interested in the structural constraints of individual behavior is that they sometimes come to be seen as internally motivated. In Benabou and Tirole (2006), beliefs about economic fairness are borne out of an intrinsic need of individuals to believe in a just world. The theory chapter argues that this shortcoming can be overcome by an explicit conceptualization of inequity-aversion as aversion to inequality in opportunity.

Another behavioral motive is *altruism*. Some of the corresponding literature has already been covered above, where (parochial) altruism refers to favoritism towards in-group members, such as people of the same race (Alesina et al., 1999), ethnicity (Luttmer, 2001; Dahlberg et al., 2012), or economic class (Lupu and Pontusson, 2011). Without recourse to cleavages, Dimick et al. (2016) explore altruism between individuals. They contend that people take others' economic situation into account by recognizing that an additional penny matters more (in utility terms) to a poorer person than its loss to a richer person. While altruism among the poor is constrained by their economic resources and the fact that utility gains from redistributing from a poor person to an even poorer person are relatively low, the opposite is true for richer people. As such, altruism is income-dependent and thus manifests only in the redistributive preferences of the rich. Analyzing US survey data and the effect of economic inequality within states, Dimick et al. (2016) find empirical support for their proposition. Others have pointed out that altruism towards the poor might be limited by deservingness considerations. The tendency to portray the poor as undeserving is not limited to the protestant work ethic, but as Katz (2013) suggests, a widespread phenomenon in Western countries. Analyzing survey responses from Germany, France, Sweden, and the United Kingdom, Cavaillé and Trump (2015) show that perceptions of the poor (for example, as lazy, or as being discouraged by benefits, or as abusing them) are an important dimension of redistributive attitudes.

Of the discussed behavioral motives, inequity-aversion plays the most important role, next to self-interest, in the later development of the theoretical framework. Inequity-aversion is conceptualized as aversion to inequality in opportunity, and thus income gaps. This allows relating inequity-aversion back to structural aspects of the income distribution, which is a link largely absent in the aforementioned literature on social preferences.



### 2.2.3 Bounded Rationality

Bounded rationality, as opposed to conventional perfect rationality, takes into account that individuals do not have full information about the world and that their cognitive

ability to process information is not unconstrained. Recent work on bounded rationality has proven indispensable for political economy scholarship, particularly when it comes to phenomena relating to the distribution of economic resources. Most classical political economy models assume individuals to be perfectly rational, and thus, such models do not have to be concerned with beliefs individuals hold about the world. However, several recent studies argue that such an assumption often undermines our understanding of the very phenomena these models seek to study. In particular, research on bounded rationality suggests that ignorance of beliefs might be one reason for political economists misguided optimism about the redistributive workings of democracy.

Most political economy scholarship on bounded rationality starts from the premise that individuals have access only to information in their social surrounding (Mutz and Mondak, 1997; Granovetter, 2005). Thus, belief bias originates in the information available to each individual. Some scholars highlight the role of social networks as they determine the amount and content of information available to an individual. As a consequence, people believe their own income to be closer to the average than it actually is (Evans and Kelley, 2004; Cruces et al., 2012; Fernández-Albertos and Kuo, 2015; Kuziemko et al., 2015) and underestimate the extent of inequality (Osberg and Smeeding, 2006; Norton and Ariely, 2011). With regards to social mobility, several studies suggest that people form accurate beliefs about their future income (Hojat et al., 2000; Dominitz, 2001; Webbink and Hartog, 2004; Filippin and Ichino, 2005). Ravallion and Lokshin (2000) and Rainer and Siedler (2008) demonstrate that such beliefs are an important determinant of redistributive preferences. That being said, Jaime-Castillo and Marqués-Perales (2014) show that people often underestimate the general impact of social origins on offspring's attainment. Among their Spanish survey respondents, those who are more prone to this bias are also less supportive of redistribution. Americans are similarly naïve about the impact of social origins. Indeed, Americans in less mobile localities tend to be more optimistic about the extent of intergenerational mobility (Alesina et al., 2017).

The previous section on social preferences discussed how much of the empirical literature on inequity-aversion relies on subjective beliefs. In the mentioned works, it is not made

explicit where these beliefs come from. While some argue that such beliefs are internally motivated (Alesina et al., 2004; Benabou and Tirole, 2006), other studies hint at the importance of information that people draw from observing their environment.[12] Of course, not all beliefs correspond to observable phenomena, but many scholars highlight such beliefs as they can be related back to the material world. For example, Jaime-Castillo and Marqués-Perales (2014) argue that people care about equal chances for upward mobility for people whose parents belong to different occupational classes. Such beliefs are verifiable through factual information. Relatedly, on race, Mutz and Mondak (1997) find that presidential approval in the US depends on whether economic growth is shared equally across racial lines. In regards to gender, Newman (2015) argues that belief in meritocracy depends on local earning gaps.[13]

Following the same line of inquiry, several studies attest to the causal role of factual information in belief formation. Most of these studies encompass survey experiments that treat some respondents with factual information about inequality and mobility to see how beliefs and preferences are affected. For example, if people are exposed to their actual income rank (Cruces et al., 2012; Fernández-Albertos and Kuo, 2015), or information on the impact of changes inequality on their own economic standing (Kuziemko et al., 2015), they adjust preferences for redistribution in line with their material self-interest. Similarly, confronting individuals with factual information about mobility leads to a correction of belief biases, and at least among left-leaning Americans, to greater support for redistribution (Alesina et al., 2017).[14]

The main contribution of these studies is to explore in how far the strict assumption

[12]In scholarship that regards beliefs as internally motivated, information plays a negligible role and belief bias is usually self-serving. As such, internal explanations are particularly problematic for traditional political economy research as they displace the explanatory role of the economic structure in which individuals are situated.

[13]In particular, Newman (2015) argues that–due to ideological disillusionment–gender earning pay gaps lead to low beliefs in meritocracy among women in localities where the gap is small. Beliefs in meritocracy are higher where the gap is large or absent.

[14]Trump (2017) conducts a number of similar experiments, but finds that as people learn that inequality is greater than they thought, they increase their tolerance for inequality. She argues that a desire to believe in the status quo as just is the mechanism behind this finding. However, as preferences regarding the level of inequality are the dependent variable rather than preference for redistribution, Trump's findings do not directly compare to the studies just mentioned.

of perfect rationality in political economy models is reasonable, and to point at ways to make sense of discrepancies between theory and reality. Indeed, conferring that individuals' beliefs are based on information in their social environment brings us a long way.[15] However, related scholarship points at other important sources of "bias", many of which are still to be incorporated into political economy frameworks. For example, some have highlighted the importance of geographic location, contending that individuals infer national economic conditions from those in their locality (Weatherford, 1983; Reeves and Gimpel, 2011; Ansolabehere et al., 2014). There is also a body of literature that highlights the information available to individuals through media channels, such as television (Behr and Iyengar, 1985), radio (Strömberg, 2004), newspapers (Jerit et al., 2006), and economic forecasts (Duch and Stevenson, 2011). As such, all these studies point at the importance of information environments and their mediating role between the economic structure and subjective beliefs. Information environments can help explain how subjective beliefs are conditioned by an individual's position within the economic structure.

The take-away point is that beliefs should be addressed upfront. This is done in both the theoretical and empirical parts of this dissertation. Indeed, belief biases play a crucial role in explaining why self-interest trumps inequity-aversion, and thereby, why redistributive preferences effectively reinforce present income differences.

## 2.3 Summary

This chapter demonstrated the wealth of research on inequality and redistribution political economists accumulated, mostly over the last two decades. Of course, several seminal works date back longer. The literature is organized around two themes preference formation and aggregation. While the former inquires about the formation of preferences in response to given distributions of economic resources, the latter explores how the emergent constellation of preferences affects redistributive policy-making. As this dissertation is occupied with

[15] Risk research similarly attests that individuals infer their own probability of job loss through events in their networks and among people like them (Olofsson and Rashid, 2011; Rehm, 2016).

how individuals respond to income gaps, the focus here was on literature relating to preference formation.

The literature distinguishes different behavioral motives, self-interest being the most prominent one. Self-interest plays a central role in research on social cleavages. Social cleavages influence the economic opportunities available to a person, who in turn adjust preferences in a way that serves their material self-interest. The first contribution of the following theoretical chapter is to emphasize this commonality, in particular, the effect of cleavages on labor market opportunities, and join them into one framework. Inequity-aversion is another behavioral motive that is central to this dissertation. In particular, it guides our understanding of why people might oppose to income gaps that reflect circumstances beyond individual control. The theory chapter develops both behavioral motives and how they relate to each other.

Political economists working on inequality and redistribution increasingly emphasize the importance of questioning assumptions about perfect rationality, i.e. common knowledge, and to better theorize what people know about the distribution of income. This scholarship is particularly relevant here, as inquiries into inequality of opportunity are not only about the distribution of income but also its covariation with other factors, such as gender or family background. Insights from this scholarship will be instrumental to explaining the inequality-reinforcing dynamics of individual preference formation in response to unequal opportunities.

# Chapter 3

# Theoretical Framework: Opportunities, Information, and Preferences

> "This focus on individual behavior as the thing to be explained is not completely misplaced in social science. [...] The image of man demanded by a theory that begins at the level of social systems is *homo sociologicus*, a socialized element of the system. The questions of moral and political philosophy which address the fundamental strain between man and society cannot be raised. The freedom of individuals to act as they will, and the constraints that social interdependence places on that freedom, nowhere enter the theory." – James S. Coleman, 1990, *Foundations of Social Theory*



Income gaps have received little attention in the political economy literature. This chapter lays out a theoretical framework to how rational actors might respond to the presence of such income gaps. In doing so, it joins insights from different vibrant streams in the related literature, in particular, on economic cleavages, inequity-aversion, and bounded rationality. The chapter begins by introducing Roemer's (1993; 1998a) equality of opportunity theory, which stresses the importance of differentiating inequality causes within and beyond individual control. Secondly, it is shown that rational agents can use information about the causes of inequality, either to diminish inequality due to causes

they deem inequitable (inequity-aversion), or to increase their material well-being by adjusting preferences to such information in a self-serving fashion (self-interest). Thirdly, the commonplace assumption about rational actors being fully informed is discussed; hypotheses that explore the role biased beliefs can play in preference formation are elaborated.

**Why rational choice?** As common in political economy literature, theoretical propositions are developed on the basis of rational choice theory. Rational choice theory advocates a methodological-individualist approach, thus seeking to explain social phenomena based on the behavior of individuals "contributing" to the respective phenomenon. The deductive nature of rational choice theory implies that its propositions follow directly from assumption made about individual behavior. While these assumptions are often attacked by critics, there is in fact no consensus on the "right" set of assumptions even among rational choice scholars. Such scholars often adapt assumptions to their subject matter, and it remains disputed whether agreement on any one set of assumptions is desirable in the first place. One reason contributing to this diversity is that rational choice theory is often regarded as a "tool" for theory development rather than a substantive theory in itself (Hausman, 1992, Ch. 7, Green and Shapiro, 1994, Johnson, 2010).

Nonetheless, there is a common set of assumptions where there is agreement within the rational choice literature. The most basic of those are the so-called *methodological individualism*, which was already mentioned above, and the assumption that individual behavior comprises *purposive action*, which implies that individual have objectives and act towards them based on their beliefs about the world. Acting is understood as making choices among different options. The controversy begins with asking what these objectives are and how individuals form beliefs, as this is where assumptions about *rationality* enter the picture. Rationality is often taken to imply that individuals are exclusively self-interested and have full information, and thus unbiased beliefs, about the world surrounding them. Even advocates of rational choice theory frequently question these very demanding rationality assumptions, and weaken them by including behavioral motives

beyond self-interest or by limiting the amount of information individuals are assumed to possess (Coleman, 1986; Coleman and Fararo, 1992; Green and Shapiro, 1994).[1]

A further assumption is that individuals are homogeneous, implying that the assumptions about purposive action and rationality equally apply to all individuals. Of course, this still allows for diversity in individual behavior, as individuals might have different options and information available to them. Although this assumption is sometimes weakened, such that different types of individuals are considered (e.g. Fehr and Schmidt, 1999), doing so makes it difficult to detect universal patterns of individual behavior (Green and Shapiro, 1994). Coleman and Fararo (1992) defend this search for universal patterns, as well as the assumption of rationality, by arguing that rational choice is less about describing "individual behavior (as in its psychological basis)" than it is about revealing "the incentive structure surrounding individuals." (1992, p. xi)

Another point of contention is the application of utility maximization for theoretical development. In this regard, it is important to note that this invokes no further assumptions than the ones already spelled out. Rather, it presents a way to formalize assumptions and the derivation of propositions, which are otherwise expressed only verbally. As such, specifying utility functions helps developing consistent and transparent theoretical propositions (Coleman, 1986).

## 3.1 A Positivist Approach to (In)equality of Opportunity

In response to a philosophical debate about what constitutes equality of opportunity, Roemer (1993, 1998a) drew the important distinction between causes of differential outcomes that are within individual control and such that are beyond it. On a normative level, he

[1]The standard assumption of rationality encompasses what Ferejohn (1991) calls thin rationality. Thin rationality means that self-interest does not posit what it is that is in a person's self-interest. Thick rationality then describes accounts of rationality that already specify what is in a person's self-interest. For example, in the political economy literature, individuals are commonly assumed to maximize income or wealth. Naturally, the more restrictive accounts of thick rationality are the ones more easily and frequently criticized (e.g. Green and Shapiro, 1994).

argues that this distinction matters in determining what outcomes are a responsibility of the individual and which are not, and therefore refers to them as "circumstances" and "effort" respectively. More importantly for the present endeavor, Roemer argues that if the set of circumstances is known, any way in which outcome differences reflect differences in circumstances must be regarded as the result of unequal opportunities.

Roemer (1998a) describes his approach as a *level-playing-field* approach, and contrasts it with approaches to equality of opportunity that emphasize *non-discrimination*. He understands non-discrimination to imply that the distribution of outcomes has to be based on procedures that work independently from circumstances that individuals are not deemed responsible for. However, he argues this is not sufficient to create equal opportunities as individuals with different circumstances might have different capacities to make use of non-discriminatory procedures (see also Sen, 1992).[2] A level-playing-field approach takes this into account and requires circumstances to have no impact at all on outcomes for equality of opportunity to prevail.

The requirement for circumstances to have no impact at all on outcomes for equality of opportunity to prevail also entails that the indirect effect of circumstances through effort must be regarded as a violation. As such, different circumstances might lead individuals to exert different amounts of effort. However, this is then not primarily a result of individual choice and thus violates equality of opportunity.[3]

The formalization of Roemer's (1998a) approach is straightforward. Analogous to Bourguignon et al. (2007) and Checchi and Peragine (2010), the distribution of an outcome $O$ can be expressed as a function of circumstances $C$ and effort $E$. Here, effort is partly determined by an individual's circumstances (meaning it is beyond the control of the individual), and partly due to individual choice $G$, i.e. genuine effort, over which the individual is in control. As such, circumstances $C$ and genuine effort $G$ are assumed to be

[2]For example, non-discrimination in the educational sphere is not sufficient to create equal opportunities if wealthy parents can buy private tutoring for their children.

[3]For example, being born to rich parents (a circumstance) might not only have direct advantages, such as attending private elite schools, but also indirect ones on individual effort, such as being more competitively minded. Both effects are the consequence of a circumstance, and for equality of opportunity to prevail, should have no impact on a person's attainment of an outcome.

independent ($G \perp C$). These relationships can thus be summarized as follows,

$$O = f(C, E), \tag{3.1}$$

$$E = g(C, G). \tag{3.2}$$

Substituting equation (2) into (1), it follows, $O = f(C, g(C, G))$. Due to the independence assumptions, this can be re-expressed as $O = \pi(C, G)$.

For equality of opportunity to prevail, circumstances $C$ should have no effect on outcomes $O$, neither directly or indirectly. Put differently, $\int_i^I \pi(C_a, G_i) = \int_j^J \pi(C_b, G_j)$, $\forall a \neq b$, where $I$ and $J$ are the set of individuals with circumstances $a$ respectively $b$. The assumption that genuine effort is independent from circumstances implies that the distribution of effort within each circumstance group is the same.[4] Hence, differences between the population mean and the group mean of each individual fully represent the extent of inequality in opportunity, $\Theta$.

While Roemer does not specify what circumstances violate equality of opportunity, his subsequent work (Roemer, 2002; Dardanoni et al., 2006; Roemer and Trannoy, 2015), as well as conceptual advancements by others (Bourguignon et al., 2007; Checchi and Peragine, 2010), emphasize inborn circumstances. The moral arbitrariness of the birth lottery has been key to well-known work by Rawls (1971), who argues that people are not responsible for circumstances (i.e. genetic traits, social environment) they inherit at birth. Understood in this way, *inequality of opportunity is defined as the impact of luck at birth on the individual attainment of outcomes.* It is in this positive understanding that the concept is in the following employed to conceptualize inequality in opportunity in the economic sphere, and labor markets in particular.

[4]This conceptualization of inequality in opportunity is also known as the ex-ante inequality in opportunity approach. It is sometimes distinguished from the ex-post inequality in opportunity approach, which argues for the equalization of outcomes across effort groups, rather than circumstance groups (Checchi and Peragine, 2010; Fleurbaey and Peragine, 2013). However, under the assumption–made here–that circumstances and effort are completely independent, both approaches are equivalent.

**Inequality in economic opportunity.** Inequality in opportunity has at least as many faces as there are desirable outcomes in society, e.g. education, health, status. However, the interest here lies in the distribution of income through labor markets. The extent to which the distribution of incomes reflects luck at birth is what in this dissertation is referred to as inequality in economic opportunity.

When it comes to income, it is important to distinguish temporary incomes and lifetime incomes. Temporary income, $w_t$, constitutes a person's income at a specific time point $t$ (e.g. per annum), and varies over a person's lifetime. Lifetime incomes, $y$, constitute a person's total income accrued over their lifetime, $\sum w_t$, and thus is not affected by where one currently stands in their life-cycle. The distinction is important as when it comes to equality of opportunity, it is variations in life-time income that are commonly regarded as a violation of the principle, not variations in temporary income. To give equal consideration to relative income differences, inequality in opportunity, $\Theta$, is usually defined as $\sum log(\bar{Y}/\bar{Y}_{g[i]})$,[5] where $Y$ and $Y_g$ are the distributions of lifetime incomes in the population respectively circumstance group, $g$, that individual, $i$, belongs to. As $\Theta$ summarizes deviations of circumstance group means from the overall average, it effectively captures the extent of income gaps between the respective groups.

Although Roemer's (1993; 1998a) equality of opportunity theory sprung out of a normative debate, the way it is employed here is to positively describe a social phenomenon. Earlier, it was suggested that inequality of economic opportunity describes the effects of birth luck on individual income attainment. As such, inequality in opportunity exists as an empirical phenomenon independent of people's thinking about it.[6] Individuals are surrounded by other individuals with different inborn circumstances and different incomes. Inequality in economic opportunity is present if there is a correlation between individuals' circumstances and their incomes. Whether people hold correct beliefs about this empirical fact, and whether it affects their own behavior, are separate questions. Indeed, these are the questions that drive the following theoretical elaborations.

[5]This corresponds to the Theil-0-coefficient, also know as Mean Logarithmic Deviation (MLD).
[6]Related empirical literature is discussed in Section 4.1.2.

## 3.2 Preference Formation in the Presence of Unequal Opportunities

### 3.2.1 Self-interest as Maximization of Returns to Opportunity

As is common in the rational choice literature, the individual is assumed to have full information, and thus accurate beliefs about the world, and to be self-interested in a purely materialistic way. This kind of self-interest equates utility maximization with income maximization, which is motivated on the basis of the subject matter of the literature, economic inequality. Starting from this premise, inequality in opportunity can be seen as affecting income expectations. This can explain how redistribution preferences become contingent on the individual's own inborn circumstances. If their circumstances are privileging, i.e. leading to higher expectations about their future income, the individual prefers less redistribution, and *vice versa*.

As discussed in the literature review, the RMR model, developed by Romer (1975) and Meltzer and Richard (1981), constitutes the central reference point for political economy literature on inequality and redistribution. They posit that individuals maximize their current consumption (i.e. after-tax income) in a world where the income tax rate is flat and redistributed in equal shares. Let $y$ denote before-tax income, $\tau$ the tax rate, and $c$ consumption. As the tax is a flat rate, after-tax income can be expressed as $y(1-\tau)$, and the equal share that everyone receives from redistribution is $\tau\bar{y}$. As the individual's consumption is made up of their after-tax income and their share from redistribution, consumption $c$ amounts to,

$$c = y(1-\tau) + \tau\bar{y}. \tag{3.3}$$

Then the utility function the individual maximizes can be written as follows. Subscript $p$ indicates that consumption and income refer to the present time period.[7]

[7]The original RMR model also incorporates productivity, such that people choose a certain combination between leisure and work. This aspect does not change the results substantively and is ignored here.

$$u(c_p) = y_p - \tau y_p + \tau \bar{y}_p. \tag{3.4}$$

**Expectations & opportunities.** In the following, two extensions to the model are introduced in order to formulate how rational actors maximize returns from unequal opportunities. First, it is posited that in addition to present consumption, individuals also consider future consumption in their maximization efforts. This mirrors Friedman's (1957, ch. 3) *permanent income hypothesis* per which individuals maximize consumption over the expected course of their life, and not only for one point in time, i.e. present consumption.[8] Thus, the individual's utility function is described by two elements, present consumption $c_p$ and future consumption $c_f$,

$$u(c_p, c_f) = c_p + c_f. \tag{3.5}$$

For the sake of simplicity, no discounting is assumed, i.e. consumption in both periods is valued equally. To spell out the full utility function, it needs to be taken into account that future consumption is also affected by taxation and redistribution. To this end, only one round of voting is assumed, such that the tax rate is the same in both periods. Furthermore, no aggregate economic growth across the two periods is assumed, such that the average income in the population remains unaltered. Hence, the following function determines each agent's utility,

$$u(c_p, c_f) = y_p(1 - \tau) + E(y_f)(1 - \tau) + 2\tau \bar{y}_p. \tag{3.6}$$

Second, individuals can be seen as forming expectations of their future income on the basis of information about the joint distribution of income and income-affecting factors. Following Rueda et al. (2014), such expectations can be based on the so-called Mincer model (Mincer, 1958, 1974), which understands income as return to a person's accumulated

[8] As discussed in the literature review, other authors have previously integrated expectations about future income into models of preference formation (e.g. Piketty, 1995; Benabou and Ok, 2001; Alesina and La Ferrara, 2005). That being said, their approaches differ from the one suggested here.

human capital, i.e. meritocratic factors. To determine the effect of unequal opportunities, the basic model is extended to account for differences in return rates due to inborn circumstances. If people are assumed to assess their income potential on the basis of this model, it can be used to directly specify future income expectations.

In the Mincer model, human capital consists of a fixed component plus a person's level of education $d$ as well as their post-education work experience $e$. Income $y$ in time period $t$ thus is the product of these human capital elements and their respective rates of return $\beta$. As empirical findings show decreasing returns to human capital, Mincer specified the income function as follows,

$$log(y_t) = \beta_0 + \beta_1 d + \beta_2 e + \beta_3 e^2. \tag{3.7}$$

As experience is understood as time since job entry, Mincer suggests that experience is the difference between a person's present age $a$ and their years of schooling minus six, $e = a - s - 6$. Subtracting six accounts for life-years before school entry.

It is well established that the return rates in the Mincer model are not the same for all people. Inborn characteristics are thought to affect return rates due to discrimination as well as differential socialization. To account for such effects, Polachek (1975) suggests that all components (i.e. intercept and slopes) of the earnings function should be allowed to vary for people with different circumstances.[9] The Mincer model can thus be re-expressed as follows, where subscript $c$ indicates the set of circumstances considered to affect return rates,

$$log(y_t) = \alpha_c + \beta_{c1} d + \beta_{c2} e + \beta_{c3} e^2. \tag{3.8}$$

How do income expectations feature in individuals' preference formation? As the stylized preference model consists only of two periods, present and future, and no discounting is assumed, income expectations are collapsed by taking the average over the remaining

[9]Polachek (1975) focuses on income difference due to gender, but the logic of his model applies similarly to other circumstances.

income periods, that is from the period following a person's current age $a$ plus 1, to exclude the present period, until their retirement $R$,

$$E(y_f) = \frac{\int_{a+1}^{R} y_t dt}{R - a - 1}. \tag{3.9}$$

Having derived how individuals form expectations about their future income, an individual's utility function can be re-written as follows,

$$u(c_p, c_f) = y_p(1 - \tau) + \frac{\int_{a+1}^{R} y_t dt}{R - a - 1}(1 - \tau) + 2\tau\bar{y}_p. \tag{3.10}$$

Based on this utility function, what tax rate does the rationally self-interested agent prefer? As shown in the Appendix 3.1, the following values of $\tau$ maximize $u(c_p, c_f)$, and thus, represent the preferred tax rates,

$$\tau = \begin{cases} 1, & \text{if } \dfrac{y_p + \frac{\int_{a+1}^{R} y_t dt}{R-a-1}}{2} < \bar{y}_p \\ [0,1], & \text{if } \dfrac{y_p + \frac{\int_{a+1}^{R} y_t dt}{R-a-1}}{2} = \bar{y}_p \\ 0, & \text{if } \dfrac{y_p + \frac{\int_{a+1}^{R} y_t dt}{R-a-1}}{2} > \bar{y}_p \end{cases}$$

As $y_p$ is the present income, $\frac{\int_{a+1}^{R} y_t dt}{R-a-1}$ the expected average of future incomes, the left-hand sides of the above equations indicate the average income over the two periods in the model. Hence, full taxation is preferred if a person's average income over both periods is less than the average income in the population. Under full taxation, the individual receives a population-average income ($\tau\bar{y}_p$, where $\tau = 1$) through redistribution that exceeds her two-period income average. However, if a person's income average over both periods exceeds the population average, no material gain is to be made from redistribution. Hence, the preference is a 0% tax rate. Finally, if the two-period average equals the population average, the individual is indifferent between tax rates, since tax rates do not affect her utility.

From the optimality conditions, it is also clear that in determining their preferred tax rate, an individual's expectations play a decisive role. The higher they are, the likelier an individual's average income over the two periods exceeds the population-average income. As such, the derived propositions about self-interested rational behavior can be summarized in the following hypothesis.

> **Hypothesis I.** People with higher income expectations due to inborn circumstances are less likely to support redistribution.

### 3.2.2 Inequity-aversion as Aversion to Unequal Opportunities

It is often argued that individuals are not solely interested in their material well-being but are thought to hold social preferences as well (see Section 2.2.2). Rather than incorporating inequality in opportunity into their decision making based on self-interest, inequality in opportunity might carry normative value to the individual. Thus, individuals might reject the effect of unequal opportunities on outcomes. This proposition is developed based on Adams (1965) 'Equity theory', which posits a behavioral motive that consists of interpersonal comparisons of input-output-ratios.

**Equity theory.** According to equity theory, people see outcome differences as justified if they result from differences in relevant inputs. Whenever this is not the case they experience inequity and seek to revoke it (Adams, 1965). Three aspects of the theory are central to understanding when people experience inequity. First, the outcomes and inputs that factor into someone's inequity assessment can differ from person to person. Second, inequity assessments are based on social comparisons. This means that people do not have an independent idea of what amount of inputs should lead to what amount of outcome. Instead, they compare their own ratio of inputs and outcomes to a reference ratio, i.e. the ratio of inputs and outcomes of a reference person (or group). Thirdly, inequity is not only experienced if one receives too little of an outcome as compared to one's input, but also if one receives too much. In summary, this means that whenever the ratio of the inputs, $x$, a

person provides and the outcomes, $o$, she receives does not equal the same ratio ($\frac{o^*}{x^*}$) of a reference person or group, she experiences feelings of inequity.

In short, a person experiences inequity if,

$$\frac{o}{x} \neq \frac{o^*}{x^*}. \tag{3.11}$$

Adams (1965) contends that whenever such an imbalance occurs, the person experiencing inequity will work to revoke the imbalance. One last note is warranted before proceeding. While a person experiences inequity whenever the two ratios in equation 3.11 are not balanced, Adams posits that inequity is experienced more strongly the greater the difference between the two is. Four behavioral responses are then available to the individual to reduce the experienced inequity. First, a person can change their own inputs or outputs, or seek to change those of the reference person. Second, a person can adjust their beliefs about what relevant outputs and inputs are. Third, a person can change their reference point. Fourth, a person can exit the situation in which the inequity is experienced.

Equity theory was developed within the larger body of social exchange theory, which other than rational choice theory, emphasizes relationships between individuals rather than independent individual actions. Nonetheless, social exchange theory and rational choice theory are built on similar epistemological foundations, such that theoretical propositions can easily be translated from one to the other (Emerson, 1976). The probably best-known application of equity theory in the rational choice literature is Fehr and Schmidt's (1999) work on inequity-aversion in economic experiments.[10] Although the authors do not explicitly refer to Adams (1965), parallels in their work are hard to overlook. That being said, their application presents a simplification of the original equity theory. Fehr and Schmidt (1999) argue that in regards to laboratory experiments the reference point is the egalitarian outcome, such that inequity-aversion becomes inequality-aversion. This

[10]Their work falls into a long tradition in behavioral game theory to include "social preferences" into the utility functions that individuals maximize (Camerer, 2003).

simplification comes with a number of caveats, but the authors are willing to incur them for parsimony's sake (Fehr and Schmidt, 2010). That being said, while their simplification does have merits in the context of laboratory research, it is not sufficient for exploring redistributive preferences in real world democracies.[11] Instead, the following section develops an understanding of inequity-aversion that derives its reference point from people's assumed subscription to the norm of equality of opportunity.

**Aversion to unequal opportunities.** The present research seeks to elucidate the question on how economic inequality affects individual preferences for redistribution. In particular, how do unequal economic opportunities in labor markets, understood as a positive social phenomenon, affect such preferences? In this quest, inequity-aversion–with its emphasis on input-output relationships–offers itself as a guiding behavioral motive. To bring inequity-aversion and inequality in opportunity together, it is here assumed that in the economic sphere, people subscribe to equality of opportunity on a normative basis. Hence, people should reject unequal economic outcomes whenever they reflect differences in circumstances determined at birth, and thus inequality in opportunity.

Numerous studies lend support to the idea that with regards to the distribution of economic resources, people care about equality of opportunity (Hochschild, 1986; Kluegel and Smith, 1986; Kluegel and Mason, 2004; Krawczyk, 2010; Balafoutas et al., 2013). While understandings of equality of opportunity vary, the mentioned studies indicate the importance of Roemer's (1998a) suggestion that outcome differences reflecting differences in circumstances constitute a violation. Thus, an individual who subscribes to this understanding should not consider such circumstances as inputs that justify outcome differences. Quite the opposite, if outputs reflect circumstances they should lead the individual to experience inequity. Furthermore, the mentioned studies suggest that individuals do not only care about how they are personally affected by unequal opportunities, but about its consequences for other people as well. Therefore, the inequity, $\Phi$, a person experiences due to unequal opportunities in labor markets can be regarded as

[11] Even within the constraints of laboratory research, several studies question the usefulness of the egalitarian outcome as reference point(Gueth and van Damme, 1998; Selten and Ockenfels, 1998).

corresponding to the extent of inequality in opportunity, $\Theta$, as defined in Section 3.1.

To specify how rational actors respond to inequity, the redistributive effect of taxation on inequity needs to be specified. Here, it is posited that redistribution reduces inequity proportionally, $\Phi \propto (1-\tau)\Theta$, such that inequity is fully experienced in the case of no taxation, and inequity is fully alleviated in the case of full taxation. Considering that inequality of opportunity is conceptualized in terms of relative income differences, which implies monotonicity in $\tau$ but not proportional decreases, this constitutes a simplification.[12] However, it does not affect the intuition of the model here, or the propositions derived from it, and thus, is admissible.

**Preference formation.** Now that inequity-aversion has been motivated as aversion to unequal opportunities, it can be spelled out how this behavioral motive contributes to preference formation. Note that, for now, the assumption of full knowledge is retained, which implies that individuals fully process the information they hold about all their fellow citizens. This assumption will not be weakened until later in Section 3.2.3.

A rational agent who in addition to being interested in their material well-being is also concerned about inequity, can be described as maximizing the following utility function,

$$u(c, \psi) = c - \alpha\Psi. \tag{3.12}$$

Here, $c$ again represents the agents' consumption, and $\Psi$ the inequity they are experiencing. $\alpha$ represents the weight the agent gives to inequity *vis-à-vis* their material self-interest, i.e. consumption. This parameter is unknown but constrained to positive values as it would otherwise not be meaningful to speak of aversion to inequity.

To spell out the full utility function, the redistributive effects of taxation on income and inequality in opportunity need to be taken into account. The implications for inequality

[12] In fact, after-tax inequality in opportunity $\Theta^*$ equals $m\Theta$, where $m = \sum(log(\bar{y}/((1-\tau)y_g + \tau\bar{y})))/\sum(log(\bar{y}/y_g))$. However, the increased accuracy from carrying this term through the following derivations does not compensate for increased complexity. As $m$ is monotonously decreasing in $\tau$, assuming proportionality between $\Theta^*$ and $\Theta$ is an admissible simplification.

in opportunity were just discussed. With regards to income the RMR approach of a flat tax rate, and redistribution in equal shares, is retained. As such, the utility function can be spelled out as follows,

$$u(c, \psi) = y(1 - \tau) + \tau\bar{y} - \alpha(1 - \tau)\Theta \tag{3.13}$$

A rational actor that is averse to unequal opportunities in this way can maximize their utility by preferring a tax rate according to the following rule (for the full derivation, see Appendix 3.1).

$$\tau = \begin{cases} 1, & \text{if } y < \bar{y} + \alpha\Theta \\ [0, 1], & \text{if } y = \bar{y} + \alpha\Theta \\ 0, & \text{if } y > \bar{y} + \alpha\Theta. \end{cases} \tag{3.14}$$

The optimality conditions imply that a person is more likely to choose full taxation if potential redistributive returns are high and/or redistribution can greatly reduce the otherwise experienced inequity. How exactly an individual weighs these two aspects depends on the value of $\alpha$, which is not known. However, as $\alpha$ is constrained to positive values, the following hypothesis about general inequity-aversion can be derived.

> **Hypothesis II.** Higher inequality in opportunity makes people more likely to support redistribution.



### 3.2.3 Preference Formation under Limited Information

In the previous sections, two distinct theoretical propositions of how inequality in opportunity can affect individual preferences were developed. The starting point was the standard assumption that individuals act purely based on material self-interest. It was argued that individuals take unequal opportunities into account when forming expectations about their future income. After that, inequity-aversion was elaborated as an alternative

behavioral motive, suggesting that people reject the effect of unequal opportunities on labor market incomes. Having moved beyond one contentious assumption in the rational choice literature, that is exclusive material self-interest, this section addresses the assumption of full information, or more specifically, the unbiasedness of beliefs.

The literature review introduced the growing political economy research on inequality and redistribution that considers the role of information and beliefs (see Section 2.2.3). Information refers to the signals people receive about the real world. The sum of these signals describe a person's information set. Based on this information set, a person forms beliefs about quantities relevant to them. Above, people were assumed to possess full information, which implicitly motivated information sets that contain the complete joint distributions of incomes, ages, educational degrees, and inborn circumstances. In the case of self-interest, rational actors use this information to form accurate beliefs about their future income, and for inequity-aversion, they form accurate beliefs about the level of inequality in opportunity.

In today's societies, where full information about the income distribution implies knowledge about millions of incomes, full information appears too strong an assumption. This concern is attenuated if–as is the case here–this assumption covers not only income but its joint distribution with other individual characteristics. However, incomplete information does not necessarily lead to incorrect beliefs about the world, i.e. in case the incomplete information set is representative of the full set. That being said, no such optimism can be inferred from earlier research (see Section 2.2.3).

What is contained in an information set? In order to form beliefs about future incomes and the level of inequality in opportunity (as specified in the previous sections), individuals need at least some information about the distribution of incomes $y$, levels of education $d$, ages $a$, and circumstances $c$. If the information is incomplete, then the information set, $\Omega$ of individual $i$ can be expressed as, $\Omega_i = \{y_i, c_i, d_i, a_i, y_j, c_j, d_j, a_j | j \subset \{1, \dots I\} \wedge j \neq i\}$.[13] This says that each individual, $i$, knows their own income, $y$, education, $e$, age, $a$, and

[13]In the case of full information, the information set is specified as follows, $\Omega_i = \{y_j, c_j, d_j, a_j | j \in \{1, \dots I\}\}$

circumstances, $c$, and also possesses the same information about other individuals, $j$. These other individuals are a subset of the total population of $I$. These information sets need to be taken into account when expressing the utility functions individuals maximize. The following two equations do so for rational agents that are self-interested (equation 3.15), respectively inequity-averse (equation 3.16).

$$u(c_p, c_f) = E\Big(y_p(1-\tau) + \frac{\int_{a+1}^{R} y_t dt}{R-a-1}(1-\tau) + 2\tau\bar{y}_p \Big| \Omega\Big), \tag{3.15}$$

$$u(c, \Psi) = E\Big(y(1-\tau) + \tau\bar{y} - \alpha(1-\tau)\Theta \Big| \Omega\Big). \tag{3.16}$$

These utility functions correspond to the ones developed in the previous section with the only difference that they consider that beliefs about future incomes and the level of inequality in opportunity are affected by the information available to the individual. Thus, rational agents prefer those tax rates that maximize their utility given those beliefs. When beliefs are biased because of incomplete information, those preferences are not the same as the ones under the assumption of full information. What incomplete information implies for preferences hinges on how individuals' information sets are constrained.

Literature on inequality beliefs frequently argues that biases are the result of individuals beings surrounded mostly by others that are similar in terms of economic standing, i.e. income. If this is true, it also has important implications for beliefs about future incomes and inequality in opportunity. Indeed, if circumstances are at least to some extent correlated with income, then each person should be surrounded mostly by others with similar circumstances. Hence, even under incomplete information, individuals should be able to form accurate beliefs about their future income. The same does not follow for beliefs about inequality in opportunity. If people are surrounded mostly by others with similar economic standing, differences in average incomes between circumstance groups among those in the surrounding are smaller than the respective group differences in the total population. As such, beliefs about inequality in opportunity should be downwardly biased.

Based on these considerations, hypothesis I on self-interested behavior (see Section 3.2.1) should hold, even if incomplete information is considered. On the contrary, hypothesis II on fully informed inequity-aversion (see Section 3.2.2) is expected to be rejected. Instead, the following adapted hypothesis for inequity-aversion should hold.

> **Hypothesis III.** The higher people believe inequality in opportunity to be, the more likely they are to support redistribution.

Furthermore, taking the role of information seriously implies certain behavioral responses in the case new information is received. In particular, no behavioral change is expected when the new information is unbiased and prior beliefs are accurate. However, when prior beliefs are inaccurate, new information should lead to an updating of beliefs and an adjustment of preferences in line with the respective behavioral motives. These considerations lead to the formulation of the following two hypotheses.

> **Hypothesis IV.** New information about actual income expectations does not affect people's support for redistribution.
>
> **Hypothesis V.** New information about the actual extent of inequality in opportunity makes people more likely to support redistribution.

## 3.3 Summary of Theoretical Propositions

The previous sections elaborated a theoretical framework to explain the relationship between income gaps in labor markets and preferences for redistribution (Table 3.1 lists all derived propositions). Two ways in which income gaps in the labor markets affect whether people support redistribution, or not, are derived. On the one hand, individuals infer their own future income from present income gaps, leading those with privileging circumstances (i.e. the beneficiaries of income gaps) to demand less redistribution, even if they are presently poor, and *vice versa*. On the other hand, inequity-aversion implies that people reject income gaps as they are a materialization of unequal opportunities.

Bounded rationality suggests that people do not always possess accurate beliefs about observable entities, such as the distribution of income. Such concerns are especially relevant for beliefs that depend on information about the joint distribution of incomes and circumstances. It stands to reason that it is less demanding for a person to form accurate beliefs about how her future income depends on her inborn circumstances, than it is to arrive at accurate beliefs about income gaps. The latter requires her to know how income depends on all combinations of circumstances. Positing that individuals act in line with material self-interest, as well as inequity-aversion, redistributive preferences are more likely to reflect self-interest because individuals are largely unaware of how others are affected by income gaps. Therefore, new information about income gaps should especially strengthen the workings of inequity-aversion.

Before moving on, a few words are warranted on what might be considered missing pieces in the explication of the theoretical framework. In particular, rational choice models on redistribution often account for differences in policy persistence, time preferences,

Table 3.1: Overview of Theoretical Propositions

**I. Self-interest & Full information**
People with higher income expectations due to inborn circumstances are less likely to support redistribution.

**II. Inequity-aversion & Full information***
Higher inequality in opportunity makes people more likely to support redistribution.

**III. Inequity-aversion & Belief bias**
The higher people believe inequality in opportunity to be, the more likely they are to support redistribution.

**IV. Information & Income expectations**
New information about actual income expectations does not affect people's support for redistribution.

**V. Information & Inequality in opportunity**
New information about the actual extent of inequality in opportunity makes people more likely to support redistribution.

*Note:* (*) Following the discussion in this chapter, this hypothesis is expected to <u>not</u> be confirmed.

and government inefficiencies. While these are important considerations, they have been consciously ignored in the previous elaborations. Government inefficiency, e.g. due to administrative costs incurred by governments as they redistribute, can be modeled as "dead weight loss".[14] While this would have revealed "interior solutions"[15] in agents' maximization efforts, the theoretical propositions derived from the model would have been unaffected.

Time preferences and policy persistence are a concern when multiple income periods are considered. Time preferences imply that individuals value consumption in the future differently from consumption in the present. It is usually assumed that present consumption is preferred, and future consumption is discounted. Unless this discount factors equals zero and future consumption is not valued at all, the theoretical proposition derived above are again unaffected. Above, only one round of voting was assumed. With their one vote, individuals maximize the utility derived from present and future incomes. The chosen tax persists into the future. This approach can be advanced by allowing for multiple rounds of voting and varying degrees of policy persistence. Again, unless policies are not persistent at all, i.e. tax policies can be chosen completely independently from prior tax rates, the propositions presented above hold.

In short, the goal of the theoretical elaborations differs from modeling exercises for the purpose of equilibrium analysis, which would have benefited from a more detailed specification. Instead, formalization here is used to transparently develop theoretical propositions in a coherent (rational choice) framework. Ignoring certain further specifications served this goal.



[14]Dead weight losses here imply that only a portion of the collected taxes is redistributed.
[15]That is preferred tax rates that are not at the limit of the rate's range, i.e. 0 or 1.

## 3.4 Appendix

### Appendix 3.1

To determine the preferred tax rates $\tau$ for the utility function derived for self-interest, self-centered and general inequity-aversion, the maxima of those functions need to be determined. For each utility function $u()$, this is done by finding the first derivative with respect to $\tau$, $\frac{du}{d\tau}$ and setting it to zero. For simplicity, let $u'() = \frac{du}{d\tau}$. Furthermore, the possibility of corner solutions, i.e. maxima of $u()$ at $\tau = 0$ or $\tau = 1$, has to be assessed.

**Self-interest.** The following utility function has been determined for a self-interested individual that considers unequal opportunities to affect their future income,

$$u(c_p, c_f) = y_p(1-\tau) + \frac{\int_{a+1}^{R} y_t dt}{R-a-1}(1-\tau) + 2\tau\bar{y}_p, \tag{3.17}$$

$$u'(c_p, c_f) = 2\bar{y}_p - y_p - \frac{\int_{a+1}^{R} y_t dt}{R-a-1}. \tag{3.18}$$

It follows that $u' = 0$ if and only if $y_p - \frac{\int_{a+1}^{R} y_t dt}{R-a-1} = 2\bar{y_p}$, in the case of which $\tau$ does not enter and thus is irrelevant in determining the maximum. What about corner solutions? Let $u_0()$ denote $u()$ for $\tau = 0$, and $u_1()$ for $\tau = 1$. Inserting 0 respectively 1 for $\tau$ into $u()$, it follows,

$$u_0(c_p, c_f) = y_p + \frac{\int_{a+1}^{R} y_t dt}{R-a-1}, \tag{3.19}$$

$$u_1(c_p, c_f) = 2\bar{y}. \tag{3.20}$$

Due to the strict monotonicity of $u()$ whenever $u'() \neq 0$, one of the corner solutions presents the maximum. The maximum is at $\tau = 1$, if $u_1() > u_0()$, and *vice versa*. Hence there are three unique solutions for $\tau$ that maximize $u()$.

$$\tau = \begin{cases} 1, & \text{if } \frac{y_p + \frac{\int_{a+1}^{R} y_t dt}{R-a-1}}{2} < \bar{y}_p \\ [0,1], & \text{if } \frac{y_p + \frac{\int_{a+1}^{R} y_t dt}{R-a-1}}{2} = \bar{y}_p \\ 0, & \text{if } \frac{y_p + \frac{\int_{a+1}^{R} y_t dt}{R-a-1}}{2} > \bar{y}_p \end{cases} \tag{3.21}$$

**Inequity-aversion.** For inequity-aversion, the utility function and its first derivative with respect to $\tau$ are the following,

$$u(c, \Psi) = y(1-\tau) + \tau\bar{y} - \alpha(1-\tau)\Theta, \tag{3.22}$$

$$u'(c, \Psi) = -y + \bar{y} + \alpha\Theta. \tag{3.23}$$

Again, the only maximum is one for which $\tau$ does not matter, $u'(c, \Psi) = 0$ if $y = \bar{y} + \alpha\Theta$. u() takes the following values at the ends of the range of $\tau$,

$$u_0(c, \Psi) = y - \alpha\Theta, \tag{3.24}$$

$$u_1(c, \Psi) = \bar{y}. \tag{3.25}$$

Due to the monotonicity of $u()$ when $u'() \neq 0$, these corner solutions represent conditional maxima. As such, $u()$ is maximized by the following values of $\tau$,

$$\tau = \begin{cases} 1, & \text{if } y < \bar{y} + \alpha\Theta \\ [0,1], & \text{if } y = \bar{y} + \alpha\Theta \\ 0, & \text{if } y > \bar{y} + \alpha\Theta. \end{cases} \tag{3.26}$$

# Chapter 4

# Labor Market Opportunities: Facts and Beliefs

> "One is not born a genius, one becomes a genius; and the feminine situation has up to the present rendered this becoming practically impossible." – Simone de Beauvoir, 1949, *The Second Sex*

Labor markets provide people with income in return for their labor. This chapter explores to what extent such incomes are determined by inborn circumstances, that is, the result of unequal opportunities. More specifically, the chapter addresses two questions. How are economic opportunities in different Western labor markets distributed, and what do people believe about the distribution of these economic opportunities?

While there are many circumstances that could be considered, the following analysis is restricted to three. For one thing, integrating findings from political economy scholarship on different cleavages into an analysis of unequal opportunities calls for a focus on previously researched, inborn cleavages (i.e. circumstances). For another, data limitations have to be considered. As such, it is only possible to focus on circumstances for which data is available from which both objective and subjective measures can be constructed. The three circumstances for which literature exists and data is available are gender, family

background, and migration background (respectively, ethnicity/race). Family background can be approached in different ways but here the focus is on parental education, which captures both social and economic aspects of a person's upbringing and social environment. Race and ethnicity are obviously not one and the same, even if the literature conjures similar mechanisms to explore their political relevance (see 2.2.1). Furthermore, not all countries are home to the same ethnicities, which threatens comparability for a study featuring multiple cases. Therefore, when it comes to the measurement of objective levels of inequality in opportunity, the focus is put on migration background rather than ethnicity or race. This ensures comparability and captures important aspects of a person's social environment and discriminatory practices they might face. However, when it comes to beliefs about opportunity, the focus is on ethnicity (for European countries) and additionally race (for the US) due to data availability. It is demonstrated that this mismatch is inconsequential for the measurement of subjective beliefs about opportunity.

The analysis here encompasses twenty-one Western democracies. These countries can be categorized as economically advanced democracies, which is the common scope of the related political economy literature. Of the cases typically analyzed, the US and twelve Western European countries (Belgium, Cyprus, Denmark, Finland, France, Germany, Netherlands, Norway, Spain, Sweden, Switzerland, United Kingdom) are included. This is complemented by eight Central and Eastern European (CEE) countries that are not as commonly subject to the literature but fall under the umbrella of economically advanced democracies (i.e. Croatia, Czech Republic, Estonia, Hungary, Lithuania, Poland, Slovakia, Slovenia). The different data sets used throughout the empirical chapters would at times have allowed to include additional countries. However, the mentioned countries constitute the largest set for which it was possible to perform, with few exceptions, the same analyses throughout this and the following chapters.

The chapter consists of two main parts. The first one is concerned with the objective measurement of inequality in opportunity and builds on the approach by Roemer (1998a), introduced in the theoretical chapter. After elaborating details of the measurement, opportunity distributions across Western labor markets are compared, based on data from

the EU Survey on Income and Living Conditions (EU-SILC), for European countries (Eurostat, 2015), and the Panel Study of Income Dynamics (PSID, 2015), for the US. The second main part explores how subjective beliefs in the distribution of opportunity can be measured, by using a scale part of studies conducted by the International Social Survey Programme (ISSP, 2014). A measure si developed, and validated, to capture people's beliefs about the importance of gender, ethnicity/race, and family background in determining economic attainment, or in short, beliefs about opportunity. All data has been chosen so that their collection was as close as possible to 2010, the reference year of this study. Finally, the (lacking) correspondence between facts and beliefs about opportunity is discussed. The measures computed in this chapter serve as crucial inputs to later chapters that explore the effect of unequal opportunities on redistributive preferences and outcomes.

## 4.1 Income Gaps and the Measurement of Inequality in Opportunity

### 4.1.1 Decomposing Economic Inequality

How can unequal opportunities be objectively quantified? The groundwork to answer this question has already been laid in the theoretical chapter, discussing the work of Roemer (1998a). If individual effort is independent from circumstances at birth, any correspondence between such circumstances and economic attainment in later life must be the result of processes that violate the ideal of equality of opportunity.

If all relevant circumstances are known, assessing the degree of inequality in economic opportunity can be translated into a rather simple problem of statistical disaggregation. Based on the inborn circumstances, a collectively exhaustive and mutually exclusive set of types is generated, each individual belonging to exactly one type. According to the equality of opportunity concept utilized here, it is differences between types that indicate

inequality in opportunity. Differences between individuals within types are seen as a result of effort and luck. These types constitute what in statistics is usually referred to as a group. It follows that, in order to assess the degree of inequality in economic opportunity, measures of between-group inequality can be used (Checchi and Peragine, 2010; Ferreira and Gignoux, 2011). The preferred statistical measure for this is the Theil-0 estimator, which belongs to the family of non-parametric General Entropy measures, and gives equal weight to relative income differences. Some scholars resort to parametric measures of between-group inequality if their data has many categories (i.e. types) with only few observations. Parametric measures do, however, have the disadvantage of making distributional assumption about the data. Following Elbers et al. (2007), the Theil-0 estimator for between-group inequality ($BGI$) and total inequality ($TI$) are defined as follows.

$$BGI = \sum_{g}^{G} w_g * log(\mu/\mu_g) \tag{4.1}$$

$$TI = \sum_{i}^{I} w_i * log(\mu/o_i) \tag{4.2}$$

In this $g$ and $i$ are indexes for groups (i.e. types) and individuals respectively. $\mu$ indicates the overall average (in income), and $\mu_g$ the group average; $o_i$ stands for the outcome variable (i.e. income) of individuals. $w_g$ and $w_i$ are statistical weights of groups and individuals. $TI$ then indicates the total inequality between all individual, whereas $BGI$ indicates only the inequality between group means. Thus, $BGI$ indicates the absolute extent of inequality in opportunity, and $BGI/TI$ indicates the relative extent of inequality in opportunity. The later measure is more commonly used in related empirical literature, but it is discussed below why the absolute extent is the more adequate measure for the purposes of this research.

An important question relates to the selection of inborn circumstances which are to be used in the analysis of inequality in economic opportunity. Arguably, there is a potentially

infinite number of circumstances that could be considered. Qualitatively, it can be argued that a focus on the most relevant circumstances can provide us with a sufficiently good understanding of inequality in economic opportunity with little risk of oversimplification. Some inborn circumstances can almost universally be dismissed as having negligible, if any, effect on income attainment (for example, fingerprints or eye color). Other circumstances play an important role almost everywhere and cannot be disregarded (for example, parental education or gender). However, it is important to keep in mind that circumstances that are highly relevant in one place might have no relevance in another (think of caste in India). What the effect of different circumstances on income attainment is eventually constitutes an empirical question; however, where to draw the line between relevant and irrelevant ones is left to the discretion of the researcher. The choice of relevant circumstances is central to attaining a sufficiently good representation of the actual extent of inequality in economic opportunity.

Ferreira and Gignoux (2011) argue and derive mathematically that a measure of inequality in opportunity that builds on an incomplete list of circumstances, which is unavoidable in practice, always provides a measurement of the lower bound of the level of inequality in opportunity in a given country. This implies that when the economically most consequential circumstances are included, this lower bound estimate will be close to the actual value. Furthermore, if the difference between the lower bound measure and the actual value is independent of the value of the lower bound, then the lower bound measure allows us to make unbiased comparisons between countries. Considering the availability and comparability of data, the circumstances included in the following analysis are gender, migration background, and parental education. Gender distinguishes female and male. Migration background indicates whether a person, or both of their parents, are born outside of the current country of residence. Parental background is captured by the highest level of education of either parent. These are among the circumstances most commonly discussed in research on inequality, which speaks to their importance in determining economic outcomes. As there is no reason to assume that the impact of these circumstances should be idiosyncratically related to the impact of circumstances not

included here (such as physical ability or place of birth), the lower bound estimate is in the following used as a measure of inequality in opportunity.

### 4.1.2 Western Labor Markets in Comparison

**Data sources.** In order to measure inequality in economic opportunity for the countries included in this study, two well-established economic surveys are drawn upon. First, micro-data from the EU-SILC is used to determine levels of inequality in opportunity for 20 European countries. EU-SILC is a streamlined effort by the European Commission's statistical agency, Eurostat, to provide high quality, comparable data on social and economic indicators across the European Union (Eurostat, 2015). Secondly, the PSID is employed to compute the same indicators for the US. The PSID is a panel survey which since its beginning in 1968 has been conducted by researchers at the University of Michigan (PSID, 2015). Both of these surveys are designed to have samples that are nationally representative, and are widely used across the social sciences.

Both surveys employ random probability sampling on the household level. While in some of the countries part of the EU-SILC only one person per household is interviewed at random, in the majority of countries all members aged 16 or older are. These differences arise in part due to the use of household surveys in some countries, and register data in others, which is the greatest weakness of the survey when it comes to their cross-country comparability (Lohmann, 2011). Similarly, the PSID elicits information on all household members. All analyses here are limited to household heads and their partners. This avoids confounding inequality in opportunity measures due to adult children co-habiting with their parents, and reduces the extent of clustering in the data where all household members are interviewed. As such, clusters are minimal compared to sample size and not further addressed in the following analysis. Furthermore, both surveys include weights that account for selection probabilities and non-response.[1] These weights are used in all

[1]None of the surveys provides information on unit non-response, meaning if people completely refuse to participate in the survey. This is unfortunate as that information could be used to improve the accuracy of estimates.

analyses throughout this chapter.

For the measurement of inequality in opportunity, each respective country sample is limited to respondents aged 25-59, which are currently employed (including self-employment). The age limitation arises due to practical constraints. The EU-SILC survey of 2011 includes a module on *Intergenerational Transmission of Advantage* that is not part of every annual survey cycle. This module contains items on parental education, which are essential for the analysis here. However, as the module is administered only to 25-59 year olds, the computations here have to be limited to the same age span. To be consistent the same constraint is applied to the PSID data.[2] Furthermore, as the interest here is only in income differences due to opportunities provided in the labor market, the analysis is limited to respondents currently employed, including part-time, full-time, and self-employment. As such, the following computations do not capture income differences due to unequal employment opportunities, that is, unequal access to jobs.

The EU-SILC and the PSID come with data that is already fully imputed. The imputation of missing data for the EU-SILC is done using statistical and deductive approaches. "Deductive" here means that values are completed based on auxiliary information such as tax or insurance regulation. In the context of income estimation, the application of deductive imputation can be regarded as adequate. The statistical imputation is done by single-imputation using a range of methods, such as mean imputation, hot-deck imputation, or regression imputation, whereby the choice is left to the national statistical offices. One concern with single imputation methods is that they fail to adequately reflect variability in the data, and multiple imputation is therefore generally preferable. Furthermore, while the methodological choice is left to the national statistical offices to ensure usage of the "most adequate" imputation method, from the standpoint of cross-country comparability this approach should be seen with skepticism (Iacovou et al., 2012).

Although EU-SILC would benefit from greater standardization in terms of data col-

[2]Later analyses of preference formation are performed for populations aged 18-59. Although the computations here are conducted based on a narrower age range, the resulting measures are representative of the main years a person spends in the labor force and reduce potential biases due to job entry ages that differ by education.

lection and treatment of missing data, it is widely considered to be the most advanced comparative data set on income distributions available to social scientists. Several evaluation studies attest that the income distributions are similar to other respected data sources, i.e. Luxembourg Income Study (Jäntti, 2007). Aggregate indicators, like the Gini coefficient, closely correspond to what is known from other comparative data sources (Van Kerm, 2007; Atkinson et al., 2010). The PSID was first conducted in 1968 and is the longest running survey of its kind. Repeated quality studies attest to its continued representativeness of the American population for longitudinal as well as cross-sectional analyses (Duncan and Hill, 1989; Brown et al., 1996). Aggregate income statistics computed based on the PSID reliably reproduce the findings of other major survey instruments (Kim and Stafford, 2000).

**Variables.** To proceed with the computations, the variables of interest, i.e. income and circumstances, need to be clearly defined. As a large share of the labor force today is self-employed, income here includes not only such through regular employment but also income from own business activity. For the US, the income variable is computed by summing over two PSID items, indicating income from employment respectively self-employment. In the PSID, these two variables are *labor income*, which includes wages, salaries, overtime, trade, and different kinds of extra pay, and *labor income from business*, which includes incomes from self-employment (but not from assets). Both items are before-tax. The EU-SILC entails more detailed income questions, and therefore, income is constructed by summing over four different items, including income from employment and self-employment plus social insurance contributions. The respective EU-SILC variables are *employee cash income*, *employee non-cash income*, *cash benefits from self-employment*, and *employer's social insurance contribution*. Again, all items, and thus the computed incomes, are before-tax. This is important as interest here lies in the distribution of incomes before they have been subject to redistribution. Furthermore, all incomes are adjusted for age differences, such that life-cycle variations do not affect the estimation of inequality in

opportunity (see Atkinson, 1971).[3]

The literature review introduced political economy research on inborn cleavages that are highly consequential for economic attainment, in particular, gender, race, ethnicity, migration and family background. To compute objective levels of inequality in opportunities for the use in later analyses, migration background is used as a circumstance; race and ethnicity are excluded. Ethnic group composition varies across countries, and migration background can be less ambiguously defined across contexts, which is why it is preferable here. Data on race is only available for the US, and thus, for the sake of comparability, excluded from the analysis in later chapters. However, for illustrative purposes, this chapter measures inequality in opportunity–for the US–based on migration background, and separately, race.

The three circumstance variables are broken into categories to allow for the construction of a set of types, such that every individual belongs to exactly one type. For parental background, a three-category variable is created to reflect the highest level of education of a person's parents,[4] split into 'lower secondary education or below', 'higher secondary/post-secondary', and 'tertiary'. Gender then distinguishes between 'female' and 'male' respondents. Migration background is coded as a dichotomous variable, distinguishing those who are born abroad or have two foreign-born parents from other respondents (i.e. natives).[5] Hence, inequality in opportunity is then estimated based on 12 types (3*2*2),[6] where each observation belongs to exactly one type, such as a female migrant with a university-educated parent, for example.

**Results.** Table 4.1 presents the results of the computation of the degree of inequality in opportunity according to specifications above (see p.61). The second column indicates how much inequality exists between groups (i.e. types), or absolute inequality in opportunity, and column three the total amount of inequality. Column four then presents

[3]All incomes are adjusted to the reference age of 42, on a by-country basis, by accounting for life-cycle differences on the basis of a cubic regression of logged income on age.

[4]That is, whatever level is higher for father or mother.

[5]This potentially captures children of so-called ex-patriots, but their number is likely to be negligible.

[6]Three categories to indicate parent's highest levels of education, times two for gender, times two for migration background.

Table 4.1: Inequality of Opportunity across Western Labor Markets

| Country | BGI | TI | BGI/TI |
|---|---|---|---|
| CH | 0.059 | 0.375 | 0.156 |
| $US_{race}$ | 0.057 | 0.574 | 0.100 |
| US | 0.054 | 0.574 | 0.095 |
| UK | 0.049 | 0.585 | 0.084 |
| DE | 0.048 | 0.593 | 0.081 |
| EE | 0.037 | 0.485 | 0.075 |
| NL | 0.036 | 0.409 | 0.088 |
| CY | 0.036 | 0.375 | 0.096 |
| FR | 0.028 | 0.430 | 0.065 |
| NO | 0.027 | 0.343 | 0.079 |
| PL | 0.023 | 0.634 | 0.036 |
| HU | 0.023 | 0.278 | 0.083 |
| CZ | 0.023 | 0.273 | 0.083 |
| BE | 0.020 | 0.412 | 0.049 |
| LT | 0.018 | 0.589 | 0.031 |
| HR | 0.017 | 0.296 | 0.057 |
| ES | 0.016 | 0.679 | 0.024 |
| SE | 0.016 | 0.419 | 0.038 |
| SK | 0.012 | 0.291 | 0.043 |
| SI | 0.012 | 0.254 | 0.046 |
| FI | 0.011 | 0.291 | 0.037 |
| DK | 0.011 | 0.436 | 0.024 |

*Note:* In descending order by between-group inequality (BGI). r(BGI,TI)=.35, r(BGI,BGI/TI)=.84 (correlation coefficients).

the relative extent of inequality in opportunity, which is the share of total inequality captured by inequality between groups only. Absolute inequality in opportunity is highest in Switzerland, and lowest in Denmark (rows in descending order by BGI). Generally speaking, Scandinavian countries–apart from Norway–have the lowest levels of inequality in opportunity. On the opposite end, Western European countries–with the exception of Spain and Belgium–have the highest levels. Opportunities in the US are slightly less unequal than in Switzerland.

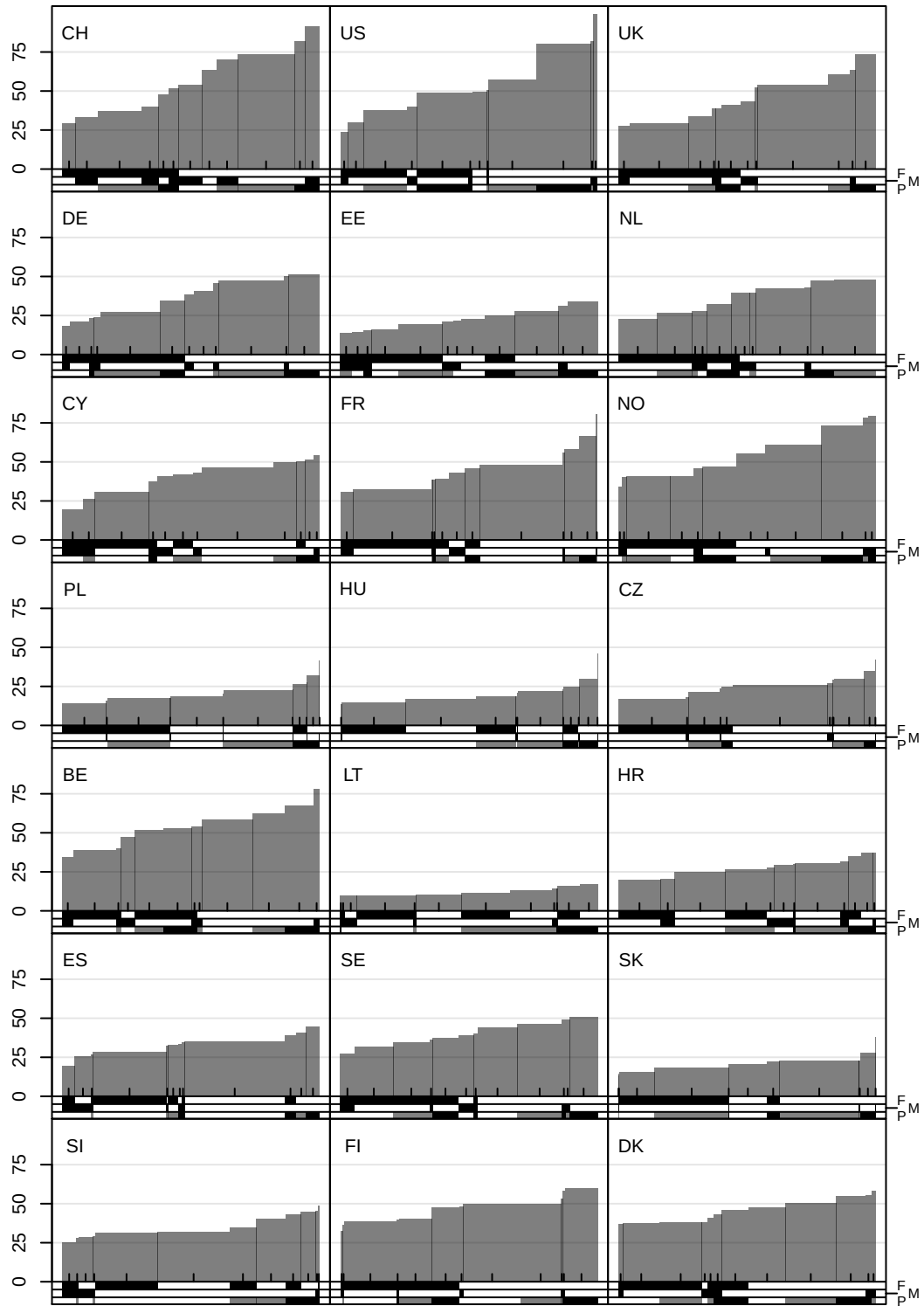
The row labeled US is based on the same circumstances used for the European countries, that is gender, parent's education and migration background; $US_{race}$ replaces migration background with a race variable, which distinguishes between African-Americans, Caucasians,and others. While inequality in opportunity is somewhat higher for the latter measure, the difference is surprisingly small, and the position of the US compared to European countries unchanged. CEE countries occupy the midfield, Estonia having the highest level of inequality in opportunity among them, and Slovenia the lowest.

To illustrate in greater detail what the measures, in particular, absolute inequality in opportunity (i.e. BGI) capture, Figure 4.1 shows, for each country, the distribution of incomes means across circumstance groups. As a reminder, differences in group mean incomes is exactly what *BGI* summarizes (see equation 4.1). Each bar in Figure 4.1 refers to a specific circumstance group. The height of each bar indicates the respective group's mean income, age-adjusted and in 2010-US$, PPP, and the bar's width represents each group's share in the employed labor force. At the bottom of each panel, the circumstances of each group are indicated. Black highlighting in the first line indicates female, and in the second line it indicates migration background. The third line indicates parents' highest level of education, black implies at least one parent completed tertiary education, and gray one completed secondary education. The panels, each representing one country, are in descending order of absolute level of inequality in opportunity (top-left to bottom-right).

As absolute inequality in opportunity is conceptualized to capture mean differences between circumstance groups, the distributions in the bottom panel of Figure 4.1 are flatter than the ones at the top. However, it is not simply the flatness of the distribution that the opportunity measure captures. More precisely, it is relative income differences between groups, and these are more pronounced in countries with low incomes. For example, this explains Estonia's high ranking despite what appears to be a rather flat distribution.

Regarding the locations of specific circumstance groups, one can identify different patterns. Female groups occupy the lion share of the lower halves of each distribution, but tend to do better in most CEE countries. Although groups with migration background generally do worse in the labor market, the effects are not as pronounced as for gender. In some cases, such as Belgium, Denmark, Slovenia, Norway, and Switzerland, migrants do particularly well, given they have highly educated parents. Considering that educational attainment is often similar between parents and children, this is likely the result of high-skilled immigration. Indeed, group mean incomes are also strongly sorted along levels of parental education, where higher parental education generally increases the economic attainment of children irrespective of their gender and migration background. Taken together, Table 4.1 captures how only three circumstances work to strongly affect

Figure 4.1: Distribution of Income Means, by Circumstance Group and Country




*Note:* Each plot displays the distribution of mean labor market incomes (2010US$, PPP, age-adjusted) attained by different groups. Each bin (and respective rug tick) corresponds to one group. Bin-width equivalent the respective group size. Bottom of each panel indicates circumstances of each group. First line, black indicates female; second line, black indicates migration background; third line, black indicates parents with university education, gray with secondary education. Panels in decreasing order of between-group inequality. Computations based on EU-SILC and PSID.

individuals' labor market opportunities as evidenced by the resulting income gaps.

**Prior studies.** Several other studies have explored the extent of inequality in opportunity in Western democracies. However, as most studies use somewhat different sets of circumstances (and at times rely on different measures), one should be careful in drawing comparisons. For the US, Pistolesi (2009) uses the same data to explore trends in inequality in opportunity up to the year 2001. He limits his analysis to male household heads and as circumstances includes parental education and occupation, race, place of birth, and age. The results show that *relative* inequality in opportunity fell from around 33% in 1968 to 18.6% in 2001. This decrease can be fully attributed to increases in total inequality rather than increases in absolute inequality in opportunity. Considering that total inequality grew further in the meantime, and that the study includes a larger set of circumstances (with the exception of gender), they can be regarded in line with the findings presented here. Marrero and Rodríguez (2013) look at inequality in opportunity across US states between 1970 and 2000, also using PSID data. Including only race and parental education as circumstance, they find levels in absolute inequality in opportunity mostly around .01 (but up to .04). These lower numbers are no surprise considering the omission of gender and no inclusion of alternative circumstance variables.

The most similar study on European countries was also conducted by Marrero and Rodríguez (2012). The authors use EU-SILC data, although for the year 2005. Seventeen of the twenty European countries included here are part of their analysis. Generally, their estimates of absolute inequality in opportunity are much lower than the ones presented here, and even the correlation between the two is negligible. However, this is not surprising. The lower estimates are likely due to a smaller set of circumstances (foreign birthplace, and parental education as well as occupation), and a sample limited to 25-50 year olds. Most importantly though, they use disposable income, which corresponds to income after tax. As such, differences between their estimates and the before-tax estimates presented in Table 4.1 are also an indication of the effects of redistributive policies.

Most other studies focus on inequality in opportunity in the developing world. Bour-

guignon, Ferreira, and Menéndez' (2007) study of Brazil is now widely cited as it was one of the first detailed studies of inequality in economic opportunity. They find that about 25% of the total inequality in earnings between urban males is due to circumstances, thus unequal economic opportunities. In this, the most decisive circumstance appears to be father's education, but father's occupation and race also play an important role. Mother's education and region of birth were also part of the analysis. Ferreira and Gignoux (2011) present a comparative study of six Latin American countries. They include the same circumstances as Bourguignon, Ferreira, and Menéndez (2007), but do not limit their study to urban males and include sex as a circumstance too. While they find that Brazil has the highest absolute degree of inequality of economic opportunity (in terms of household income per capita), Guatemala (35.9%) and Panama (33.8%) have higher degrees of inequality of opportunity relative to total inequality; the same estimate for Brazil is 32.9%. Cogneau and Mesplé-Somps' (2008) study of the male populations of five African countries finds that in Ghana only about 10% of total consumption inequality is caused by unequal opportunities. In all other countries, this number lies above 20%, the highest level being found in Guinea (31%). The two circumstance variables upon which their analysis is based are family background (constructed from father's occupation and education) and region of birth. Singh (2012) analyzes earnings inequality among males in India. The circumstances included by the author are caste, religion, region, as well as father's education and occupation. In his analysis of birth cohorts, he finds that inequality in economic opportunity has generally been falling, making up 18.3% (urban) and 16% (rural) of total inequality in the youngest cohort.

As can be seen from this short review of the empirical literature on inequality in opportunity, the operationalization of the concepts differs widely. These differences are mostly due to the consideration of different sets of circumstances, the focus on different target populations, and the analysis of different income variables. As such, it is difficult to compare the measures presented here to other studies even when looking at the same countries. While the literature usually emphasizes relative inequality in opportunity, it becomes most clear from the study by Marrero and Rodríguez (2013), why a focus on

absolute inequality in opportunity is more appropriate for the purposes here. Their study shows that relative inequality in opportunity in the US fell solely because of increases in total inequality. It is likely that many European countries have experienced the same trend. From a normative point of view, it is not clear why increases in total inequality should alleviate concerns about inequality due to inborn circumstances. For this reason, the focus in this dissertation is on absolute levels of inequality in opportunity that simply capture the extent of income gaps in the labor market.

## 4.2 Beliefs about Unequal Opportunities

This section turns to the question of how unequally people believe economic opportunities to be distributed. As discussed in the literature review, some works have been occupied with assessing in how far people reject economic outcomes they deem inequitable (e.g. Fong, 2001; Corneo and Grüner, 2002; Alesina and Angeletos, 2005). While their conceptualization of such inequity assessments loosely corresponds to understandings of equity as equality of opportunity, the goal of this section is to develop a measure of beliefs that does so more closely. This measure is developed using a scale, part of the ISSP, about people's beliefs of the determinants of success in life. Subsequently, the measure's consistency and validity is assessed.

### 4.2.1 Subjective Determinants of Economic Attainment

To determine whether people believe opportunities to be unequal, meaning that outcomes are affected by circumstances beyond individual control rather than the result of individual effort, a scale part of ISSP's *Social Inequality* module is explored (ISSP, 2014). The ISSP is a cross-country survey initiative that administers standardized surveys with different rotating modules in a large and diverse number of countries. Weights are provided such that each country's sample is representative of their adult population. The data that is analyzed here comes from ISSP's 2009-round, and the analysis is limited to those 21

Western democracies also included in the previous section. Unlike in the previous section (see p.64), each country sample is limited to the population of 18 to 59 year olds, thus corresponding to the target populations analyzed in later chapters.

Modern statistical analyses require a proper treatment of missing data. Unless missingness is completely random, discarding observations with item-missing information, i.e. answers to specific questions, implies an information loss. This loss results from the fact that for the observations with only some items missing, items that are not missing are also removed. As such, discarding observations with some missing items can induce bias and affect uncertainty estimates in unanticipated ways. Multiple imputation presents a comprehensive way to avoid these issues. Basically, missing items are randomly imputed conditional on a range of covariates. It is the inclusion of adequate covariates that warrants the assumption that data is *conditionally* missing at random (Rubin, 1987; King et al., 2001). For the multiple imputation, all ISSP variables that are used in this or later chapters are included, complemented by other variables that are potentially informative about the missingness of variables of interest. Thus, the imputation encompasses all variables listed in the codebook in Appendix C, which also entails further information on the imputation process. Repeating the random imputation results in a number of complete data sets with no items missing. Here, 50 such imputations are conducted. This procedure is applied once on a country-by-country basis ahead of all following analyses. Analyses are then run on each of the imputed datasets separately and the results subsequently merged.[7]

How can beliefs about opportunity be measured? The ISSP's Getting-ahead scale asks people to indicate how important different factors are for success in life. The complete scale encompasses eleven such items. However, in line with the equality of opportunity concept, only personal characteristics that are within or beyond individual control are relevant here. Six of the eleven items fulfill this criterion. Regarding characteristics within individual control, people are asked two questions; one about the importance of hard work, and another about having ambition. Four further questions ask about characteristics beyond individual control; these include family wealth, parent's education, gender, and

[7]The data sets imputed here for the ISSP are also used in Chapter 6.

Table 4.2: ISSP Getting-Ahead Scale (Excerpt)

Please tick one box for each of these to show how important you think it is for getting ahead in life...

| | Essential | Very important | Fairly important | Not very important | Not imp. at all |
|---|---|---|---|---|---|
| ... how important is coming from a wealthy family? | ◯1 | ◯2 | ◯3 | ◯4 | ◯5 |
| ... how important is having well-educated parents? | ◯1 | ◯2 | ◯3 | ◯4 | ◯5 |
| ... how important is having ambition? | ◯1 | ◯2 | ◯3 | ◯4 | ◯5 |
| ... how important is hard work? | ◯1 | ◯2 | ◯3 | ◯4 | ◯5 |
| ... how important is a person's race/ethnicity? | ◯1 | ◯2 | ◯3 | ◯4 | ◯5 |
| ... how important is being born a man or a woman? | ◯1 | ◯2 | ◯3 | ◯4 | ◯5 |

*Note:* Further items refer to giving bribes, having political connections, knowing the right people, having a good education yourself, and a person's religion. Can't choose option not displayed here.

ethnicity/race.[8] Table 4.2 shows an excerpt of the original scale featuring only the items analyzed here. Unfortunately, the scale does not include an item referring to migration background. However, as the interest here is in determining whether there is a general belief in inequality in opportunity underlying all items, this is not a major concern. It is shown further below, that a scale with an additional migration item does not lead to substantively different results.

The Getting-ahead scale is designed to explore the possibility of underlying continuous latent variables. Likert (1932) first suggested using multi-item scales for this purpose. Each item needs to feature the same linearly ordered answer options, and suggest equal intervals between them. This is attained through physical equal spacing in the questionnaire, successive numbering of answer options, and corresponding labeling. In addition, all questions should have the same directionality for the answer options, such that the poles of the answer options imply the same meaning. Last but not least, the answer options should have a natural zero point. A closer look at Table 4.2 reveals all of these criteria are satisfied by the Getting-ahead scale.

The frequency distribution of responses to each of the Getting-ahead items is summa-

[8]In the US, the ethnicity item mentions race in addition to ethnicity.

Table 4.3: ISSP Getting-Ahead Scale, (Descriptives)

| Importance | Essential | Very | Fairly | Not very | Not at all |
|---|---|---|---|---|---|
| Wealthy family | 6.3 | 17.2 | **30.7** | 32.2 | 13.7 |
| Educated parents | 7.2 | 26.9 | **37.4** | 21.6 | 6.8 |
| Ethnicity | 2.7 | 8.8 | 22.0 | **31.3** | 35.0 |
| Gender | 2.6 | 7.7 | 21.0 | **32.5** | 36.2 |
| Hard work | 26.6 | **44.1** | 23.2 | 5.1 | 0.9 |
| Ambition | 27.6 | **43.8** | 23.1 | 4.5 | 1.0 |

*Note:* Median values in bold-face (N=18,392). After multiple imputation (unweighted).

rized in Table 4.3. Note that this summary, as the following analysis, are based on 50 imputed data sets, with no missing data for any of the 18,392 observations. As appropriate, some of the analysis is conducted on a pooled data set (where all observation are merged and country nesting ignored), while others employ unpooled data (i.e. separate results for each country).

How extensive do people believe inequality in opportunity to be? In the previous section, objective inequality in opportunity has been conceptualized as the extent to which individual outcomes depend on characteristics beyond individual control. As such, one might expect to find one factor underlying the items included in the Getting-ahead scale that pitches characteristics within individual control against those beyond it. For ease of writing and reading, characteristics within individual control and those beyond individual control are, from hereon, referred to as internal characteristics and external characteristics, respectively.

The analysis here begins with an exploratory factor analysis (EFA). This type of analysis is useful in determining potential underlying continuous factors. Factors in this type of analysis constitute linear combinations of the included items that seek to reduce the dimensionality of the data while losing as little information as possible. The number of factors is set manually, and can be as small as one, but may not exceed the number of items included in the analysis. Minimizing the loss of information can focus on different aspects of the data; for the analysis here factors are sought that can capture the variation in the original data as good as possible. Computationally, factors are extracted through an iterative process that takes the constraints (number of factors) and desired optimization

(variation in original data) into account. For this, the process of varimax-rotation is employed, which picks orthogonal (uncorrelated) factors that fulfill the outlined criteria (Kline, 1994; Brown, 2006).

Table 4.4 summarizes the results of two EFA runs, allowing for one, and two factors respectively. Indicated in each column are first the loadings, then the eigenvalue, and more importantly, the proportion of variance explained by that factor. Loadings greater or equal to .3 are highlighted, which is the minimum factor loading recommended by Costello and Osborne (2005). In fact, the lowest loading of any of the selected (i.e. highlighted) items is .47. Column 1.1 presents the result of the EFA with one factor. The extracted factor of the one-factor solution loads on all items, but unlike expected, does not indicate opposite signs for external and internal characteristics. That being said, the factor has low loadings on the internal characteristics and largely corresponds to external ones. This one factor alone explains about 22% of the variation in the original data. The two factors coming out of the second EFA are represented in columns 2.1 and 2.2. Like before, the first factor loads on the external characteristics, although now more heavily on ethnicity and gender. The second factor strongly loads on internal characteristics, presenting very low loadings for the external ones. However, the variance explained by the second factor is at a low 14% and a corresponding eigenvalue of below 1 indicates that information is not aggregated efficiently.[9]

Table 4.4: Results from Exploratory Factor Analysis (EFA), pooled

| Factors | (1.1) | (2.1) | (2.2) |
|---|---|---|---|
| Ambition | 0.23 | 0.12 | 0.69 |
| Hard work | 0.14 | 0.01 | 0.65 |
| Wealthy Family | 0.68 | 0.59 | 0.14 |
| Educated parents | 0.56 | 0.47 | 0.15 |
| Ethnicity | 0.50 | 0.60 | -0.02 |
| Gender | 0.48 | 0.58 | -0.02 |
| Eig.Val. | 1.34 | 1.38 | 0.84 |
| Var.Expl. | 0.22 | 0.23 | 0.14 |
| Fit | 0.45 | 0.67 | |
| BIC | 7572.68 | 3360.66 | |

*Note:* Factor loadings greater or equal to .3 are highlighted. Varimax-rotation applied.

[9]Heath et al. (2010) find similar results when analyzing the full scale over all available rounds.

Two important points can be drawn from the exploratory factor analysis. First, people's belief about the importance of internal and external characteristics in determining success cannot be reduced to one underlying factor. Second, respondents hold distinct beliefs about each of the two characteristics, i.e. assessments of the importance of internal characteristics, just like external ones, go together. Unpooled EFA, meaning separate analyses for each country, reveal a similar picture (see Appendix 4.1, Tables 4.6 and 4.7). The one factor solution highlights the importance of external factors. Only in Poland the first factor does not load on gender and ethnicity. In addition, the factor also loads on one or two of the internal characteristics in Belgium, Switzerland, Norway, and Slovakia. The two factor solution cleanly separates internal from external characteristics for all but six countries. In Cyprus, neither of the first two factors strongly loads on family wealth or parent's education. In Finland, internal characteristics do not load on either factor. In the Netherlands, family wealth and parent's education cross-load on the first and second factor. Minor deviations in Poland, Slovakia, and the United Kingdom are due to slightly too high/low loadings of single items (with respect to the somewhat arbitrary .3 threshold). Despite these ambiguities, the unpooled EFAs lend themselves to the findings of the pooled analysis.

The analysis here suggests that internal and external determinants are not simply two sides of the same coin. Why is that? An important difference between internal characteristics and external one is that the latter are objectively identifiable and observable. This is likely to have implications for how people interpret ISSP questions about determinants for success in life. On the one extreme, seeing internal characteristics as important can imply that external ones are less important. In this case, answers would speak to the idea of equality of opportunity (this is how an exclusive focus on effort is sometimes justified, e.g. Alesina and Angeletos, 2005). However, at the other extreme of possible meanings, respondents might emphasize internal characteristics exactly because of the importance of external characteristics. Put differently, as the influence of external characteristics on success in life grows, ambition and hard work become ever more important to overcome these obstacles. Furthermore, as external characteristics are less ambiguously observable in

the real world, it is also less likely that corresponding beliefs are motivated. As Benabou and Tirole (2006) argue, rational agents can motivate beliefs about the importance of effort to maximize their utility in an inherently inequitable world.

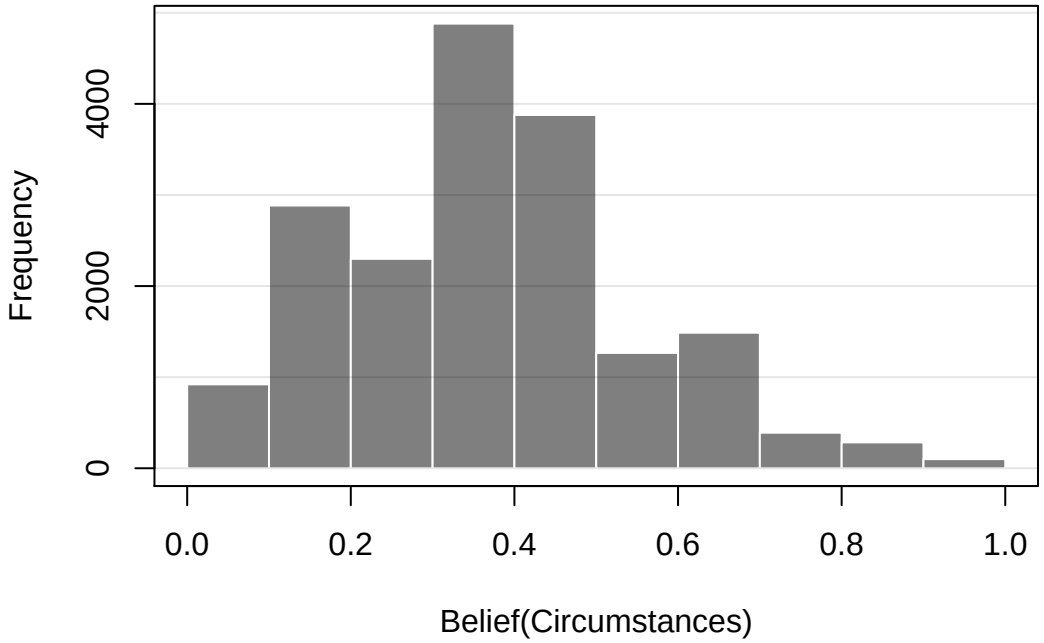
All this is not to say that beliefs about internal characteristics are not worthy of exploring. However, when it comes to what beliefs people hold about the importance of inborn circumstances in the real world, and thus objective inequality in opportunity, it is more adequate to focus on beliefs about external characteristics directly. Based on these findings, the following section suggests a construct that captures beliefs about external characteristics, or put differently, beliefs about unequal opportunities, and explores its validity.

### 4.2.2 Quantifying Beliefs about Unequal Opportunities

The foregoing exploratory factor analysis and accompanying discussion suggest that one common factor underlies people's beliefs about the importance of external characteristics (i.e. gender, ethnicity/race, parental education, and family wealth). As the respective items are elicited on a Likert-type scale, a straightforward way of aggregating them is by constructing a summated rating scale, which simply means summing over the individual items (Spector, 1992). Each item here ranges from 1 to 5 (see Table 4.2), such that their sum goes from a minimum of 4 to a maximum of 20. Without any substantive implications for the further analysis, the computed values can be rescaled to range from 0 to 1. Table 4.2 presents a histogram, pooled across all countries, of the newly created construct representing beliefs about inequality in opportunity. To be precise, this measure is referred to as *Belief(Circumstances)*, since it is based on external rather than internal characteristics (see previous section). The first goal of this section is to assess the internal consistency of the new construct.

**Internal consistency.** Internal consistency is assessed here based on two criteria, Cronbach's alpha and item-remainder coefficients. *Cronbach's alpha* incorporates the number

Figure 4.2: Histogram of Constructed Variable, Belief in Opportunity, pooled




*Note:* Range from 0 (all external characteristics not important at all) to 1 (all external characteristics essential); Mean=.373, SD=.185 (N=18,392). After multiple imputation (unweighted).

of items as well as the amount of intercorrelation between them. Increases in either of them are taken as a sign of higher internal consistency, and thus, result in a higher alpha-estimate.[10] Alpha can range from 0 to 1, and .7 is sometimes recommended as minimum acceptable value. *Item-remainder coefficients* determine the sensitivity of a scale to dropping one of the items. This is done by computing the correlation between each item and a summated rating scale of the remaining ones. Higher correlations indicate lower sensitivity, and thus, a higher degree of internal consistency. Recommendations as to the minimum acceptable value vary, but a value around .4 is common (Spector, 1992).

Table 4.5 presents the item remainder coefficients and Cronbach's alpha for all countries jointly (pooled data), as well as separately by country. Not all values exceed the above-mentioned recommended minimum values, especially for Cronbach's alpha. Most of the alphas are close to the threshold and lie between .6 and .7 (light shading). Regarding the item remainder coefficients, about a third of them have values below the recommended .4,

[10]Cronbach's alpha is computed according to the following formula: $\alpha = k/(k-1) * (s_T^2 - \sum s_I^2)/s_T^2$, where k stands for the number of items, $s_T^2$ for the variance of the constructed scale, and $\sum s_I^2$ for the sum of the variances of the individual items.

but again the vast majority of them is in its proximity (values between .3 and .4 are light shaded). It is important to note, that the thresholds mentioned here do not possess the same authoritativeness critical values do in hypothesis testing. Furthermore, the small number of items and the heterogeneity present in a comparative data set such as the ISSP are disadvantageous to attaining high values for either indicator, Cronbach's alpha or item-remainder coefficients. Taking this into account, it can be concluded that the new construct travels sufficiently well across countries. Thus, the results affirm the internal consistency of the *Belief(Circumstances)* construct.

**Construct validation through online survey.** Up to this point, the derivation of the construct for people's belief about opportunity inequality built on existing data only. The derived construct, *Belief(Circumstances)*, satisfies theoretical considerations and is internally consistent. In a last step, the construct's validity is explored (Spector, 1992).

Table 4.5: Internal Consistency of Constructed Variable

| Country | Item remainder coefficients (IRC) | | | | Cronbach's alpha |
|---|---|---|---|---|---|
| | Family wealth | Parental education | Gender | Ethnicity | |
| all | 0.48 | 0.38 | 0.44 | 0.42 | 0.65 |
| BE | 0.45 | 0.3 | 0.38 | 0.35 | 0.59 |
| CH | 0.38 | 0.33 | 0.36 | 0.36 | 0.58 |
| CY | 0.29 | 0.29 | 0.25 | 0.3 | 0.49 |
| CZ | 0.54 | 0.46 | 0.49 | 0.47 | 0.7 |
| DE | 0.5 | 0.38 | 0.45 | 0.39 | 0.65 |
| DK | 0.51 | 0.48 | 0.46 | 0.43 | 0.69 |
| EE | 0.36 | 0.27 | 0.38 | 0.38 | 0.56 |
| ES | 0.47 | 0.35 | 0.47 | 0.44 | 0.65 |
| FI | 0.56 | 0.55 | 0.47 | 0.4 | 0.71 |
| FR | 0.47 | 0.29 | 0.51 | 0.42 | 0.64 |
| HR | 0.45 | 0.35 | 0.4 | 0.37 | 0.61 |
| HU | 0.48 | 0.5 | 0.43 | 0.44 | 0.68 |
| LT | 0.41 | 0.43 | 0.35 | 0.32 | 0.6 |
| NL | 0.44 | 0.27 | 0.5 | 0.48 | 0.64 |
| NO | 0.52 | 0.49 | 0.52 | 0.35 | 0.68 |
| PL | 0.46 | 0.43 | 0.41 | 0.4 | 0.64 |
| SE | 0.49 | 0.43 | 0.54 | 0.46 | 0.69 |
| SI | 0.55 | 0.51 | 0.46 | 0.45 | 0.7 |
| SK | 0.52 | 0.44 | 0.43 | 0.4 | 0.67 |
| UK | 0.48 | 0.43 | 0.4 | 0.47 | 0.66 |
| US | 0.42 | 0.37 | 0.54 | 0.45 | 0.66 |

*Note:* Grey-shading indicates for IRC indicates value below .4 threshold, dark-shading below more lenient threshold of .3; similar for Crombach's alpha, light shading below .7, dark shading below .6.

This is done by checking whether the construct captures other empirical observations that correspond to the theoretical concept underlying it. To this end, additional data is gathered through an online survey which includes the original items of the ISSP Getting-ahead battery. The battery is complemented with additional items that ask people about external characteristics not included in the original ISSP survey (i.e. place of birth, and physical disability). Furthermore, a question that asks people to directly assess to what extent (i.e. percentage) income differences are a result of external characteristics is added. For the construct to be externally valid, answers to these additional items/questions should be strongly correlated with scores computed solely based on the above-developed *Belief(Circumstances)* construct.

The online survey was conducted between April, 22nd, and May, 6th, 2015 over Amazon Mechanical Turk (MTurk, for short), and accepted responses from US residents only. MTurk is an online time-sharing platform, through which registered workers complete so-called human-intelligence tasks, i.e. small tasks not easily completed by computers, such as image recognition. Social scientists have used this platform for years to gain quick access to a broad cross-section of the US society. The survey had a total of 234 participants. In the survey, the ISSP Getting-ahead battery was extended by the following items,

> ... *how important is where one is born in the US?* (*BirthplaceRegion*),
>
> ... *how important is being born in the US?* (*BirthplaceUS*), and
>
> ... *how important is being born without disabilities?* (*Disability*).

Furthermore, respondents were asked to indicate to what extent income differences are determined by circumstances. They could indicate their response on a sliding scale ranging from 0 to 100%.

> *What people earn in America is partially within their control, and partially determined by their circumstances. For example, circumstances include gender, race, or family background. On the following scale, 0% indicates that circumstances play no role for how much someone earns, and 100% indicates that circumstances completely determine how much someone earns. Please indicate your opinion.*

With between 2 and 7 observations missing for each of the variables of interest, the elicited data has very low missingness. Therefore, in each step of the following analysis, observations with missing data are simply discarded.

Corresponding to computations in the previous section, scores for the 4-item *Belief(Circumstances)* variable are calculated based on the newly collected survey data. The distribution of the scores in the online survey has somewhat higher values than in the ISSP data; the respective means are .475 and .394, the 25th percentile, .313 and .25 respectively, and 75th percentile, .625 and .5 respectively.[11] Do the computed scores correlate with the items added to the survey? For *BirthplaceRegion* the correlation coefficient is .59, for *BirthplaceUS* .43, and .50 for *Disability*. As would be expected from a valid construct, the correlation coefficients are indeed quite high.

Respondents to the online survey, estimate that on average income differences are to 55.8% determined by circumstances (standard deviation: 23.8). The correlation coefficient of the percentage-score and the 4-item-*Belief(Circumstances)*-construct is .426, indicating a strong correspondence between the two. This compares favorably to the correlation between the percentage score and the averaged response of the Getting-ahead items reflecting internal characteristics, hard work and ambition, which is -.193 only. Furthermore, if the original 4-item-*Belief(Circumstances)*-construct is complemented with the 3 new items on external characteristics, the corresponding correlation with the percentage-score changes little, and actually somewhat decreases (.382). In sum, the high correlation between the 4-item construct and the percentage-score speaks for the construct's validity, and the fact that a 7-item-construct cannot improve the correlation implies that the 4-item-construct captures external characteristics not explicitly included.

The online survey data illustrates another important point. Cronbach's alpha of the 4-item-*Belief(Circumstances)*-construct is .79. This is already higher than what was attained for the US-sample of the original ISSP data (see Table 4.5). However, if the new items for external characteristics are added to the construct, Cronbach's alpha improves

[11] Note that the MTurk sample is not representative of the US population (Berinsky et al., 2012), and that the ISSP was conducted seven years prior to the online survey presented here.

to .84. This gives support to the earlier contention that estimates for internal consistency in the ISSP data suffer from the small number of items (see p.79).

Overall, this section has shown that what people think about the importance of internal characteristics (hard work, ambition) and external characteristics (gender, ethnicity, race, family wealth, and parental education) are not two sides of the same coin. Internal characteristics do not capture people's beliefs about the importance of external ones. Therefore, assessing beliefs about inequality in opportunity is better done by focusing on external characteristics directly. First, external characteristics correspond more closely, and less ambiguously so, to the center piece of inequality in opportunity, that is inborn circumstances. Put differently, external characteristics relate directly to observable features of the income distribution and its covariation with circumstances. Furthermore, a construct based on what people think about the importance of external characteristics has further desirable features, in particular internal consistency and external validity.

It is important to reiterate a small discrepancy between the objective measure of inequality in opportunity elaborated in the first half of this chapter, and the subjective belief measure constructed in the second half. While the factual measure incorporates migration background as a circumstance, the belief measure relies on ethnicity (and additionally, for the US, race). However, it has been shown with an online survey that the belief measure constitutes an unbiased measure of an underlying trait that corresponds to a general belief in opportunity, and thus does not depend on the included items. As such, it can be concluded that both the objective measure and the belief measure correspond to the same empirical phenomenon, i.e. the extent of inequality in opportunity in general, and not a particular combination of circumstances.



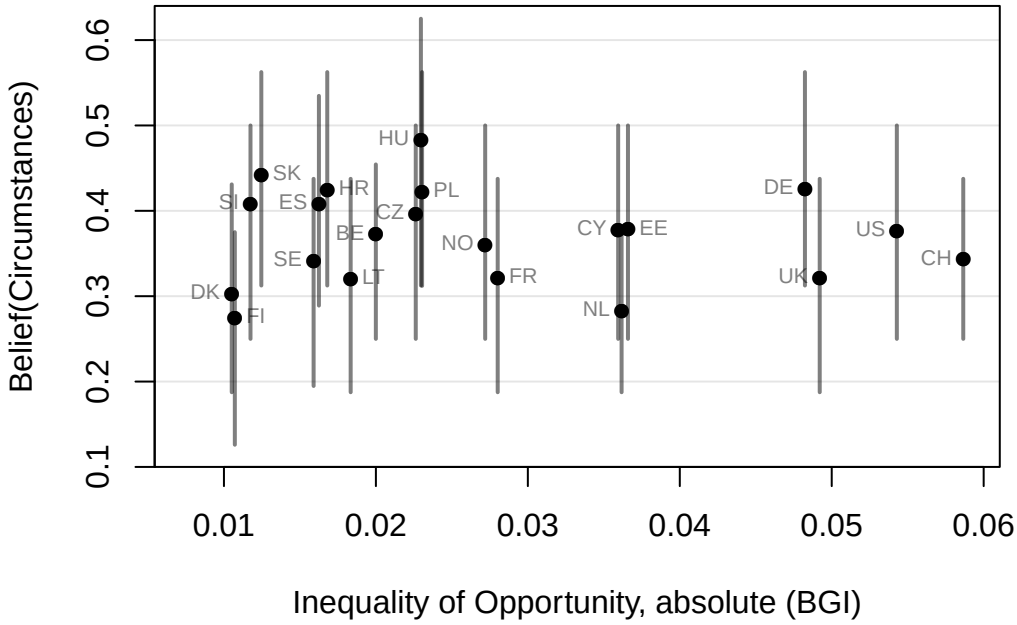
## 4.3 Facts and Beliefs across Western Democracies

This chapter first elaborated a measure that captures inequality between circumstance groups to indicate objective levels of inequality in opportunity. Second, a subjective measure

of inequality in opportunity based on how important people believe circumstances to be in determining economic success was developed. Beliefs about inequality in opportunity are most pessimistic in Hungary, and most optimistic in Finland. That being said, as Figure 4.3 indicates, most of the variation in these beliefs lies within countries. Despite the huge within-country variation, do beliefs reflect objective levels of inequality in opportunity? Figure 4.3 shows that this is not even on average the case, and the within-country variation must disappoint any hope that–regarding inequality in opportunity–subjective beliefs correspond to objective reality.

This discrepancy between subjective and objective measures–between facts and beliefs about inequality in opportunity–underscores the importance to consider the role of either in explaining individual behavior. The next two chapters explore what can be learned about individual behavior by focusing on (1) objective measures (Chapter 5), which necessitates the assumption of full information (or at least unbiased beliefs), and (2) subjective beliefs (Chapter 6) respectively, which require less stringent informational assumptions. However, even if beliefs do not correspond to reality, information still matters. Chapter 7 inquires about how new information on unequal opportunities affects preference formation.

Figure 4.3: Beliefs about Opportunity and Actual Opportunity Inequality, by country




*Note:* Grey lines indicate interquartile range (r=-.076). After multiple imputation (within-country sampling weights applied).

## 4.4 Appendix

### Appendix 4.1

Table 4.6: Exploratory Factor Analysis, 1 Factor, unpooled

| Country | Am | HW | WF | EP | Gn | Et | EV | V% |
|---|---|---|---|---|---|---|---|---|
| BE | 0.37 | 0.24 | 0.67 | 0.53 | 0.44 | 0.38 | 1.28 | 0.21 |
| CH | 0.32 | 0.19 | 0.79 | 0.74 | 0.42 | 0.43 | 1.7 | 0.28 |
| CY | 0.22 | 0.1 | 0.51 | 0.45 | 0.36 | 0.4 | 0.82 | 0.14 |
| CZ | 0.14 | -0.01 | 0.73 | 0.66 | 0.53 | 0.51 | 1.53 | 0.25 |
| DE | 0.24 | -0.04 | 0.8 | 0.8 | 0.45 | 0.37 | 1.69 | 0.28 |
| DK | 0.22 | 0.19 | 0.78 | 0.64 | 0.42 | 0.36 | 1.42 | 0.24 |
| EE | 0.23 | 0.19 | 0.73 | 0.69 | 0.48 | 0.45 | 1.56 | 0.26 |
| ES | 0.07 | 0.02 | 0.78 | 0.72 | 0.33 | 0.33 | 1.38 | 0.23 |
| FI | 0.24 | -0.05 | 0.42 | 0.31 | 0.63 | 0.6 | 1.1 | 0.18 |
| FR | 0.23 | 0.18 | 0.55 | 0.42 | 0.65 | 0.65 | 1.41 | 0.23 |
| HR | 0.04 | -0.07 | 0.55 | 0.5 | 0.49 | 0.48 | 1.03 | 0.17 |
| HU | 0.03 | 0 | 0.54 | 0.32 | 0.74 | 0.61 | 1.33 | 0.22 |
| LT | -0.1 | -0.12 | 0.44 | 0.37 | 0.8 | 0.67 | 1.44 | 0.24 |
| NL | 0.19 | 0.03 | 0.71 | 0.64 | 0.36 | 0.34 | 1.23 | 0.2 |
| NO | 0.3 | 0.13 | 0.69 | 0.72 | 0.47 | 0.47 | 1.54 | 0.26 |
| PL | 0.11 | 0.08 | 0.68 | 0.75 | 0.29 | 0.25 | 1.21 | 0.2 |
| SE | 0.16 | 0.09 | 0.55 | 0.48 | 0.72 | 0.64 | 1.5 | 0.25 |
| SI | -0.05 | -0.16 | 0.77 | 0.73 | 0.51 | 0.32 | 1.54 | 0.26 |
| SK | 0.45 | 0.38 | 0.52 | 0.39 | 0.64 | 0.6 | 1.55 | 0.26 |
| UK | 0.29 | 0.09 | 0.76 | 0.7 | 0.4 | 0.37 | 1.48 | 0.25 |
| US | 0.29 | 0.2 | 0.68 | 0.7 | 0.39 | 0.46 | 1.46 | 0.24 |

*Note:* Factor loadings greater or equal to .3 are highlighted. Am=Ambition, HW=Hard work, WF=Family wealth, EP=Parent's education, Gn=Gender, Et=Ethnicity, EV=Eigenvalue, V%=Variance explained.

Table 4.7: Exploratory Factor Analysis, 2 Factors, unpooled

| Country | Am | HW | WF | EP | Gn | Et | EV | V% | Am | HW | WF | EP | Gn | Et | EV | V% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BE | 0.18 | 0.03 | 0.63 | 0.45 | 0.5 | 0.47 | 1.35 | 0.22 | 0.65 | 0.58 | 0.16 | 0.21 | 0.06 | 0 | 0.58 | 0.1 |
| CH | 0.16 | 0.01 | 0.78 | 0.71 | 0.45 | 0.45 | 1.77 | 0.29 | 0.71 | 0.73 | 0.13 | 0.18 | -0.01 | 0.05 | 0.9 | 0.15 |
| CY | 0.71 | 0.37 | 0.17 | 0.07 | 0.13 | 0.12 | 1.07 | 0.18 | 0.23 | 0.13 | 0.24 | 0.2 | 0.41 | 0.49 | 0.8 | 0.13 |
| CZ | 0.1 | -0.07 | 0.75 | 0.68 | 0.5 | 0.48 | 1.55 | 0.26 | 0.74 | 0.72 | 0.01 | 0.11 | 0.01 | -0.05 | 1.07 | 0.18 |
| DE | 0.17 | -0.17 | 0.79 | 0.78 | 0.47 | 0.38 | 1.7 | 0.28 | 0.57 | 0.76 | 0.11 | 0.15 | -0.06 | -0.04 | 0.94 | 0.16 |
| DK | 0.06 | 0.03 | 0.71 | 0.58 | 0.5 | 0.44 | 1.47 | 0.25 | 0.73 | 0.71 | 0.14 | 0.19 | -0.04 | -0.04 | 0.94 | 0.16 |
| EE | 0.11 | 0.06 | 0.73 | 0.7 | 0.47 | 0.44 | 1.61 | 0.27 | 0.65 | 0.65 | 0.1 | 0.09 | 0.06 | 0.08 | 0.75 | 0.13 |
| ES | 0 | -0.05 | 0.78 | 0.71 | 0.35 | 0.35 | 1.39 | 0.23 | 0.62 | 0.64 | 0.09 | 0.13 | -0.14 | -0.08 | 0.86 | 0.14 |
| FI | 0.08 | -0.23 | 0.21 | 0.07 | 0.57 | 0.76 | 1.23 | 0.2 | 0.32 | 0.28 | 0.51 | 0.59 | 0.19 | 0.1 | 0.62 | 0.1 |
| FR | 0.07 | 0.07 | 0.46 | 0.29 | 0.77 | 0.65 | 1.5 | 0.25 | 0.78 | 0.49 | 0.14 | 0.28 | -0.03 | 0.13 | 0.79 | 0.13 |
| HR | 0.07 | -0.07 | 0.57 | 0.51 | 0.48 | 0.47 | 1.04 | 0.17 | 0.67 | 0.64 | -0.02 | -0.06 | 0.05 | 0.01 | 0.86 | 0.14 |
| HU | 0.04 | 0.01 | 0.53 | 0.31 | 0.78 | 0.61 | 1.36 | 0.23 | 0.61 | 0.47 | 0.14 | 0.16 | -0.1 | -0.07 | 0.65 | 0.11 |
| LT | -0.01 | -0.03 | 0.44 | 0.38 | 0.8 | 0.66 | 1.47 | 0.25 | 0.7 | 0.74 | -0.01 | 0.08 | -0.11 | -0.08 | 1.02 | 0.17 |
| NL | -0.04 | -0.23 | 0.53 | 0.37 | 0.57 | 0.57 | 1.29 | 0.21 | 0.48 | 0.46 | 0.37 | 0.57 | -0.07 | -0.1 | 0.84 | 0.14 |
| NO | 0.2 | 0.01 | 0.72 | 0.72 | 0.44 | 0.44 | 1.63 | 0.27 | 0.77 | 0.63 | 0.03 | 0.07 | 0.1 | 0.08 | 0.85 | 0.14 |
| PL | 0 | -0.05 | 0.68 | 0.73 | 0.32 | 0.28 | 1.24 | 0.21 | 0.6 | 0.64 | 0.02 | 0.24 | -0.07 | -0.07 | 0.82 | 0.14 |
| SE | 0.09 | 0 | 0.55 | 0.48 | 0.72 | 0.64 | 1.54 | 0.26 | 0.76 | 0.76 | 0 | 0.07 | 0.03 | 0.06 | 1.1 | 0.18 |
| SI | 0.05 | -0.07 | 0.77 | 0.73 | 0.52 | 0.32 | 1.56 | 0.26 | 0.58 | 0.67 | -0.16 | -0.07 | 0.04 | 0.05 | 0.8 | 0.13 |
| SK | 0.13 | 0.1 | 0.35 | 0.17 | 0.73 | 0.74 | 1.77 | 0.3 | 0.81 | 0.59 | 0.27 | 0.33 | 0.16 | 0.1 | 0.94 | 0.16 |
| UK | 0.12 | -0.11 | 0.74 | 0.63 | 0.47 | 0.45 | 1.53 | 0.26 | 0.63 | 0.62 | 0.15 | 0.36 | -0.06 | -0.11 | 0.84 | 0.14 |
| US | 0.11 | 0.01 | 0.67 | 0.61 | 0.47 | 0.53 | 1.56 | 0.26 | 0.76 | 0.72 | 0.09 | 0.23 | -0.02 | 0 | 0.96 | 0.16 |

*Note:* Factor loadings greater or equal to .3 are highlighted. Am=Ambition, HW=Hard work, WF=Family wealth, EP=Parent's education, Gn=Gender, Et=Ethnicity, EV=Eigenvalue, V%=Variance explained.

# Chapter 5

# Rational Calculus under Inequality in Opportunity

> "The sad truth is that most evil is done by people who never make up their minds to be good or evil." – Hannah Arendt, 1978, *The Life of the Mind*

This chapter, as well as the two following ones, seeks to shed light on the relationship between inequality in opportunity and redistributive preferences. Two different behavioral motives are explored, self-interest and inequity-aversion. In doing so, a central question is, how closely redistributive preferences are linked to objective aspects of inequality in opportunity. In this chapter, preference formation is explored assuming full information and that individuals hold accurate beliefs about the distribution of opportunities. To the extent that theoretical propositions based on this assumption are empirically supported, structural change, i.e. in the distribution of opportunities, has immediate implications for demands for redistribution.

The chapter proceeds as follows: the next section elaborates on the measurement of income expectations under the assumption of full information. The second section then describes the data and model specifications used for the preference analysis. Section three presents the main findings of how individuals respond to unequal opportunities under

both self-interest and inequity-aversion. The fourth section explores how dynamics on the individual level vary across countries, the last section concludes.

## 5.1 Unequal Opportunities and Income Expectations

### 5.1.1 Meritocratic and Ascriptive Income Expectations

The theoretical chapter laid out how individuals are assumed to form expectations about their future income. Individuals observe the current income distribution and its covariation with other factors, i.e. age, education, and circumstances. Assuming that income generating processes do not change over time, they can use this information to form expectations about their future income, based on their own age, education, and circumstances (i.e. gender, migration background, and parental education). This process was elaborated formally using a version of the Mincer model.

The functions below again show the specification of the standard Mincer model (subscript $M$), which focuses on *meritocratic* factors only (i.e. education, work experience), and the extended Mincer model (subscript $A$), which incorporates *ascriptive* factors (i.e. circumstances) to account for unequal labor market opportunities.

$$log(y_{M,t}) = \beta_0 + \beta_1 d + \beta_2 e + \beta_3 e^2, \tag{5.1}$$

$$log(y_{A,t}) = \alpha_c + \beta_{c1} d + \beta_{c2} e + \beta_{c3} e^2. \tag{5.2}$$

If individuals are assumed to form income expectations exclusively based on meritocratic factors (e.g. Rueda et al., 2014), then their average annual income expectation for the remainder of their work life (from present age $a$ plus 1, to exclude the present period, till retirement age $R$) can be expressed as,

$$E(Y_M) = \frac{\sum_{t=a+1}^{R} y_{m,t}}{R-a-1}. \tag{5.3}$$

However, this expectation ignores ascriptive factors. To incorporate them, expectations have to be based on the extended Mincer model as defined above. In doing so, it is important not to conflate the effects of meritocratic and ascriptive income expectations if one is interested in the effects of unequal opportunities on preferences. As such, ascriptive income expectations, $E(Y_a)$, are defined as the difference between the annualized average over the extended model and that of the standard model.

$$E(Y_A) = \frac{\sum_{t=a+1}^{R} y_{A,t}}{R-a-1} - E(Y_M). \tag{5.4}$$

Defining ascriptive income expectations in this way has important implications. First, it sidelines effects of unequal educational opportunities. When both expectations variables are included in the same model, any effect of unequal educational opportunities is absorbed by the meritocratic income expectations term. Hence, ascriptive income expectations reflect only unequal opportunities in the labor market. Second, if the two were not separated, one would risk conflating individual effort and structural opportunities. In other words, if income expectations were based on equation 5.4 without subtracting meritocratic expectations, the estimates would reflect differential effort to the extent such effort is captured by differences in educational attainment.

Is it reasonable to assume that people are aware of these income-affecting factors? Dominitz (2001) argues that this is the case. Comparing subjective expectations and (objective) expectations based on realized income data, the author demonstrates that both kinds of expectation measures are similarly affected by the same set of factors, e.g. gender, race, education, age, and employment status. Many studies focus on university students to explore the accuracy of income expectations. Hojat et al. (2000) shows that expectations of male and female medical students reflect the actual gender pay gap. Filippin and Ichino (2005) support to this finding with a panel study among economics and business

students. Another study finds that student expectations not only reflect gender pay gaps but also variations across academic disciplines (Webbink and Hartog, 2004). Studies on unemployment risks echo these findings. People infer their own risk of unemployment from respective rates among others with the same gender, ethnicity (Olofsson and Rashid, 2011), place of residence, level of education (Ansolabehere et al., 2014), or occupation (Rehm, 2016). Together, these studies suggest that people are indeed able to form accurate beliefs about their future economic standing and its dependence on a range of income-affecting factors.

### 5.1.2 Estimating Income Expectations

Income expectations are estimated using EU-SILC data, for European countries, and PSID data, for the US (see Chapter 4). As before, the sample, upon which the estimations are based, is limited to currently employed (or self-employed) individuals aged 25 to 59. The three circumstances incorporated in the estimation process are gender, migration background, and parental education. The estimation itself is performed for each country independently. Estimating expectations based on the employed labor force has important implications for later preference analysis. In particular, it ignores differential probabilities to take up employment, which might be either due to unequal access to jobs or differential propensities to work. Incorporating such probabilities would require a more complex model of expectation formation, which for the sake of simplicity–and a keen focus on income gaps in the labor market–is not advanced here.

In a first step, both of the above Mincer models, standard and extended, are estimated. The standard Mincer model includes only meritocratic factors, i.e. education and work experience, as predictors of income. The extended model additionally includes ascriptive factors, i.e. gender, migration background, and parental education. In order to avoid overfitting of the extended model, it is estimated in reduced form only. Dummies are included for each circumstance value[1] and all two-way interactions between them; the

[1]Gender and migration background are binomial variable and therefore represented by a single dummy each. Parental education distinguishes three levels, i.e. no parent completed secondary level of education,

return rates of the meritocratic factors are independently interacted with each circumstance dummy. The results of these estimations are presented in Appendix 5.1. It is important to note that the model is not identified and specific parameter estimates have to be interpreted cautiously. That being said, the model is not supposed to describe learning processes about specific parameters (neither is it to determine their true values). Instead, the models are supposed to predict income conditional on education, work experience, and circumstances.

In a second step, and with the estimation results in hand, meritocratic and ascriptive income expectations are computed from bootstrapped predictions for each possible combination of educational degrees, work experience, and circumstances. For each such combination, income predictions are independently bootstrapped based on 100 random draws from the multivariate distribution of the parameter estimates. As income expectations cover the period of a person's remaining work life, they are computed based on the pooled set of bootstrapped predictions that correspond to the person's degree (and circumstances) and with work experience values between the person's current work experience and the experience they reach at the age of 60.[2] For these pooled sets, means and standard deviations are computed to describe the distributions of income expectations. With regards to ascriptive income expectations, it is important to note that before this final computation, the mean meritocratic expectation has to be subtracted first (see equation 5.4).

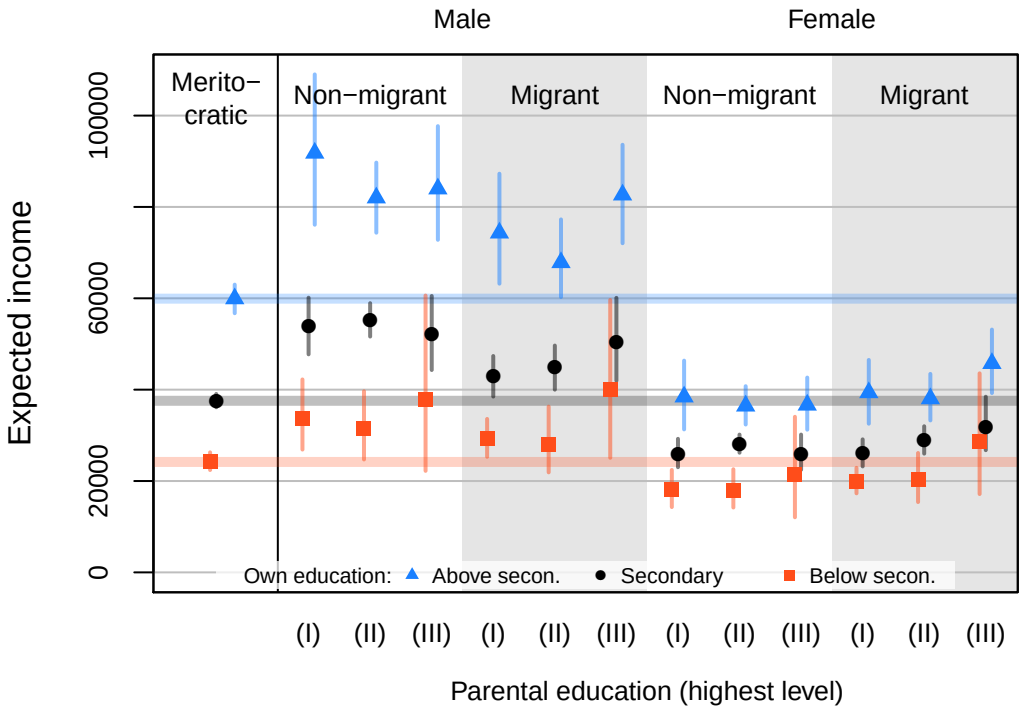
Figures 5.1 and 5.2 exemplify the output of this estimation process. For Denmark and Switzerland, the two countries with the lowest respectively highest absolute inequality in opportunity, these figures show income expectations for a twenty year old (with no work experience, yet). The expectations show the mean over the remaining work life (dots) and 95% confidence intervals around them to indicate the uncertainty in the expectation. On



at least one parent completed secondary education, and at least one parent completed post-secondary education. The two latter categories are coded as dummies.

[2]For age 60, income is partly predicted out of sample. Indeed this is only the case for person that exceed the maximum value of work experience possibly attained by a person of 59 years. As such, this out of sample prediction is acceptable, considering that it allows including a sample of the same age ranges in all analyses. In particular, 59 year olds would otherwise have to be excluded from the later preference analysis.

Figure 5.1: Income Expectations by Circumstance Group and Degree, Switzerland




*Note:* Income expectations (2010-US$, PPP) of a 20-year old, with 95% confidence interval. Blue indicates annualized income expectations (until age 59) for persons with university degree; black indicates completed secondary education; red less than secondary completed. Left panel based on predictions from standard Mincer model; right panel on extended Mincer model. Parental education indicates highest level of any parent completed, (III) university degree, (II) secondary complete, (I) less than secondary. Migrant indicates person or at least one parent born abroad.

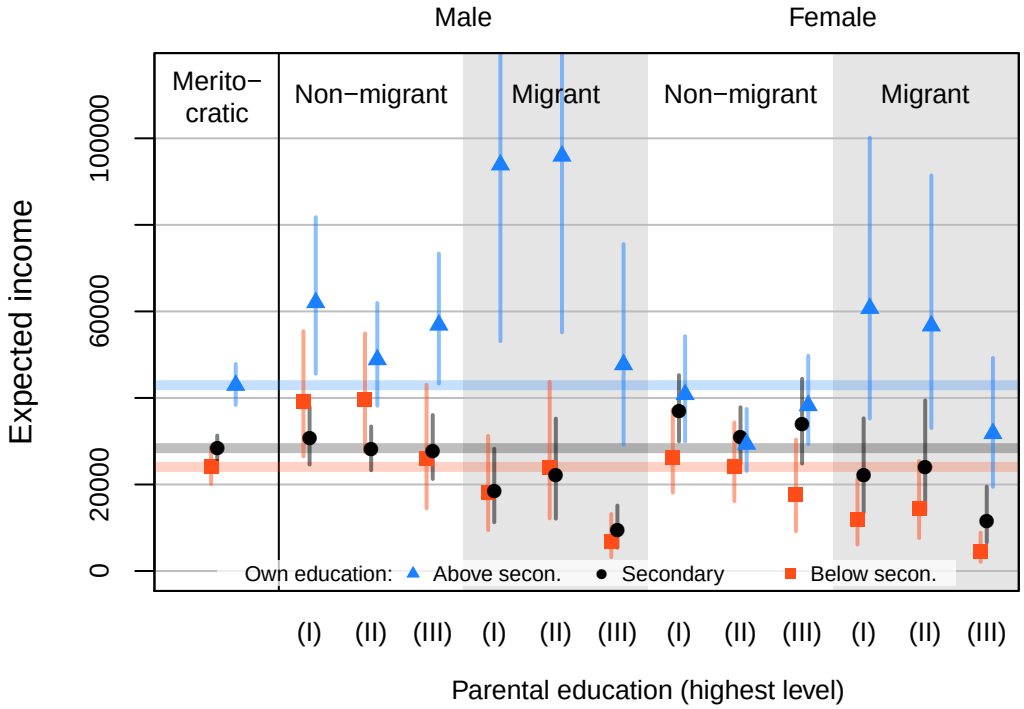
the very left, both plots show the meritocratic income expectations for a twenty-year old that did not complete secondary education (red), did complete it (black), or attained a university degree (blue).

The larger panel on the right shows how these expectations differ if they are based on the extended Mincer model, i.e. gender, migration background, and parental education are taken into account. Measures of ascriptive income expectations correspond to the difference between the predictions of the extended model (right panel) and those of the standard model (left panel). In Switzerland, the role of gender is most obvious. Whereas Swiss men (right panel, left half) typically have higher income expectations than what would be expected from their education and work experience alone (i.e. positive values for ascriptive income expectations), women generally have lower expectations (i.e. negative values for ascriptive income expectations). In Denmark–to little surprise–the effect of

circumstances, including gender, are generally weaker. However, specific circumstance combinations are still particularly consequential for income expectations (e.g. migrants with highly educated parents do rather poorly). Equivalent figures for each country can be found in Appendix A; they show that different circumstances, and their combinations, unfold quite differently across countries.

As individuals form income expectations on the basis of the Mincer model, the predictive uncertainty of the model indicates the uncertainty individuals hold about their annual future income. Ideally, the uncertainty in these estimates is incorporated into any empirical analysis of redistribution preferences that seeks to understand the role of income expectations. The next section sets the ground for the preference analysis, and among many things, lays out how uncertainty in income expectations is propagated in the model.

Figure 5.2: Income Expectations by Circumstance Group and Degree, Denmark




*Note:* See Figure 5.1 note.

## 5.2 Analyzing Redistributive Preferences

### 5.2.1 Data

In the following analyses, two established data sources are used; the European Social Survey (ESS, 2010a), which covers the 20 European countries included in this research, and the General Social Survey (GSS), for the US (Smith et al., 2016). Both surveys apply random probability sampling and provide weights to account for sampling error and non-response, such that they are representative of the adult population of each country. The reason for not using the ISSP in this chapter is that it does not feature variables for migration background and parent's education. These variables are necessary to combine the survey data with the above computed income expectation measures.[3] For the following analyses, the ESS, which was fielded between 2010 and 2011 (wave 5), and the GSS, for which data was collected in 2010,[4] are joined into one data set. While most variables can be considered close to equivalent in both surveys, their standardization is elaborated below (a complete codebook can be found in Appendix B).

As in the previous chapter, multiple imputation is employed to account for missing data (see Section 4.2.1). For the imputation all variables mentioned in the codebook in Appendix B are included. For each country 50 complete data sets are imputed. These data sets are combined, resulting in 50 fully imputed cross-country data sets. All of the following analyses are run on each of these cross-country data sets and the combined results presented. As the following analyses employ Bayesian estimation, results are conveniently combined by joining the posterior parameter samples of each estimation process. Furthermore, the multiply imputed data sets are used to account for measurement uncertainty in the income expectation estimates, meritocratic as well as ascriptive. The previous section determined distributions of these estimates, for each combination of

[3] As a reminder, those measures were computed based on EU-SILC and PSID data, as these data sets ensure high quality income data. The computed income expectation measures are merged with the ESS and GSS data used in this section by matching the income expectations computed for each combination of education, work, experience, gender, migration background, and parental education with the corresponding variables in the ESS and GSS data.

[4] The GSS has a cross-sectional component and a panel. Here, the combined data set is used.

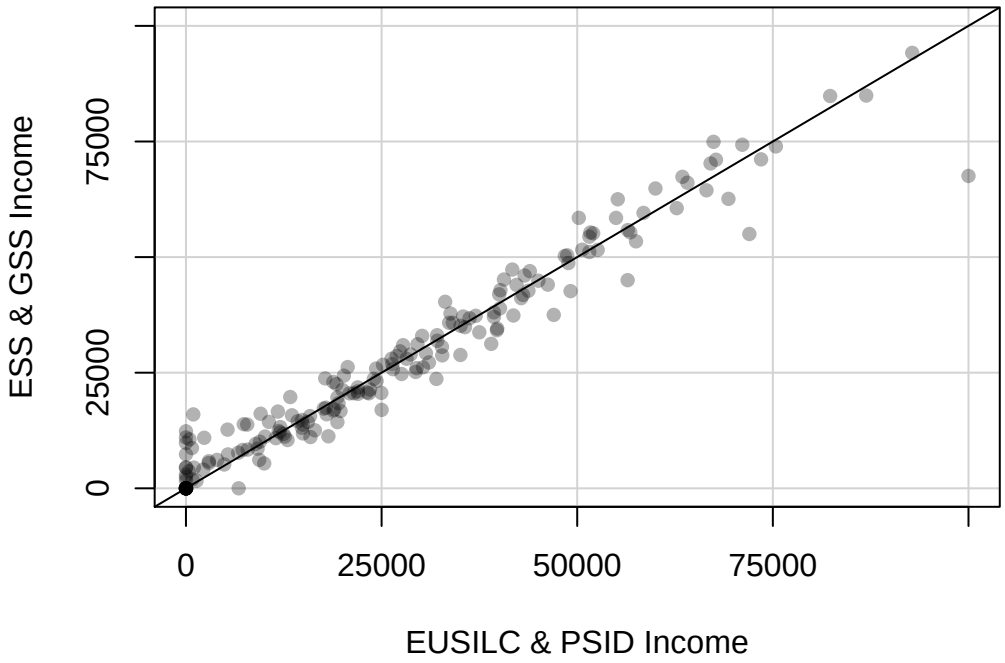
age, level of education, and inborn circumstances, and assuming them to be normally distributed, computed their mean and standard deviation. Here, each observation is complemented, independently for each imputed data set, with a random draw from their respective expectation distributions. All results thus incorporate the uncertainty arising from "measurement error" in both expectations variables.

In order to differentiate the effects of income expectations from those of present income, it is crucial to have a good measure of the latter. In particular, staying true to the elaborations in the theoretical chapter, a measure for individual's present income before tax is needed. GSS respondents indicate their before-tax income as belonging to one of 25 categories, ranging from *Under $1,000* to *$150,000 and over*. This is transformed to a continuous scale by taking mid-points.[5] The ESS does not contain a question about individual income. Therefore, this variable is constructed from household income and individual's relative contribution to it. To be precise, respondents are asked to indicate their household's income and the share they contributed to it. Multiplying the two produces a measure of the respondent's individual income (for details see Appendix B, p.216). Categories are again transformed into a continuous variable by taking mid-points. All incomes are adjusted to account for price levels and transformed into 2010-US$.

Furthermore, the income question in the ESS refers to after-tax income. Thus, assumptions have to be made, about each country's tax schedule, in order to produce before-tax incomes. In line with the theoretical model, a flat-tax rate is assumed. This hypothetical tax rate is determined such that it accounts for mean differences in the before-tax income distribution of the EU-SILC and the after-tax income distribution of the data used here. In order to assess the validity of the income transformations, the distribution of the derived before-tax individual income variable is compared to the corresponding distribution of the EU-SILC and PSID. For this purpose, the thresholds separating income deciles are computed for each country. Figure 5.3 plots these thresholds against each other, and as would be expected from a valid measure, they cluster closely around the diagonal. This

[5]Following Hout (2004), the upper-most category is replaced with the value of its lower bound and multiply it by the factor 1.3, which accounts for the common, positively skewed, shape of the income distribution.

Figure 5.3: Validation of Derived Individual Income Variable (ESS, GSS)




*Note:* Each point represents one pair of income decile thresholds computed based on ESS and GSS, respectively EUSILC and PSID (r=.977). All incomes, before-tax, 2010-US$, PPP. After multiple imputation, within-country sampling weights applied.

impression is further supported by a high correlation coefficient for the decile thresholds (r=.977). The largest discrepancy occurs for low incomes, the ESS and GSS have lower proportions of respondents with no income. However, as this concerns a small part of the overall distribution, this discrepancy is no reason to doubt the validity of the before-tax income measure derived for the ESS and GSS data.

Summary statistics for all variables used in the following analyses are presented in Table 5.1. Categorical variables are "dummied out", such that a binary variable is constructed for each category of the original variable. For *Employment*, these are *Employed*, *None*, and *Other*. *Keep house* indicates whether someone stated house keeping or child rearing as their main activity. *Occupation* categorizes based on the first digit of the ISCO-88 scheme, which loosely correspond to required skill levels (in decreasing order). For example, 1 refer to professional and technical occupations, 5 to service occupations, 8 to unskilled workers (see Appendix B, p.215 for further details). *Gender* indicates 1 for men and 2 for women. Married is a dummy taking value 1 if the respondent is married. *Ideology* refers to ideological self-positioning, and ranges from liberal (0) to conservative (1). Similarly,

*religiosity* indicates how religious a respondent perceives herself to be, the range is from 0 to 1 and higher values imply higher religiosity. *Degree: Secondary* is another dummy variable, which takes the value 1 if someone did complete secondary education (i.e. high school in the US). *Degree: Below secondary* indicates if this is not the case, and *Degree: Above secondary* take values 1 if someone completed a post-secondary degree, be it vocational or academic.

Note that continuous variables are further transformed before the analysis. First, all continuous variables are centered on the respective country mean, as interest here is in the effect of within-country variation rather than between-country variation (see also, Enders and Tofighi, 2007; Snijders and Bosker, 2012). Those variables that are only centered are marked with superscript $c$. Some continuous variables are further normalized, which is indicated by superscript $n$, as this expedites the convergence of the estimation process (Stan Development Team, 2015). As no such standardization is conducted for income and both expectations variables, one-unit changes still correspond to a change of 10,000 US$, which makes the interpretation of the respective parameter coefficients easier. Detailed information on all variables can be found in the codebook in Appendix B, which describes in detail how variables from the ESS and GSS were joined.

Before diving into the analysis of redistribution preferences, let us have a look at how these preferences are distributed across countries. All three surveys used in this study (i.e. ESS, GSS, ISSP) feature questions commonly considered to indicate redistributive preferences, that is the amount of redistribution the individual would like the government to enact. In the ESS, respondents are asked to indicate their agreement with redistribution as follows, *To what extent you agree or disagree with each of the following statements. [...] The government should take measures to reduce differences in income levels.* The answer options range from *(1) Strongly agree*, *(2) Agree*, *(3) Neither agree nor disagree*, *(4) Disagree*, to *(5) Strongly disagree*, and include the option not to answer. The redistribution question in the GSS is more extensive, *Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that*

Table 5.1: Descriptives: Merged ESS and GSS Data

| | Mean | Median | Quart.1 | Quart.3 | Min. | Max. | St.Dev. |
|---|---|---|---|---|---|---|---|
| Income$^c$ | 3.06 | 2.43 | 1.07 | 4.39 | 0.00 | 26.74 | 2.79 |
| Expectations\|Merit$^c$ | 2.50 | 2.30 | 1.60 | 3.15 | 0.16 | 7.25 | 1.32 |
| Expectations\|Ascription$^c$ | 0.15 | 0.05 | -0.38 | 0.60 | -4.39 | 15.87 | 0.94 |
| Age$^n$ | 39.73 | 40.00 | 30.00 | 50.00 | 18.00 | 59.00 | 11.94 |
| Household size$^n$ | 3.00 | 3.00 | 2.00 | 4.00 | 0.59 | 14.00 | 1.42 |
| Employment: Employed | 0.68 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.47 |
| Employment: None | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.28 |
| Employment: Other | 0.24 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.43 |
| Keep house | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.27 |
| Occupation-0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.05 |
| Occupation-1 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.28 |
| Occupation-2 | 0.15 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.36 |
| Occupation-3 | 0.16 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.37 |
| Occupation-4 | 0.11 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.31 |
| Occupation-5 | 0.16 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.37 |
| Occupation-6 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.14 |
| Occupation-7 | 0.12 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.33 |
| Occupation-8 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.27 |
| Occupation-9 | 0.11 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.31 |
| Gender | 1.53 | 2.00 | 1.00 | 2.00 | 1.00 | 2.00 | 0.50 |
| Married | 0.50 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.50 |
| Leftright$^n$ | 0.51 | 0.50 | 0.40 | 0.67 | 0.00 | 1.00 | 0.22 |
| Religiosity$^n$ | 0.43 | 0.50 | 0.20 | 0.67 | 0.00 | 1.00 | 0.30 |
| Degree: Below second. | 0.19 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.39 |
| Degree: Secondary | 0.56 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.50 |
| Degree: Above second. | 0.25 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.44 |
| Education (years)$^n$ | 13.48 | 13.00 | 12.00 | 16.00 | 0.00 | 45.00 | 3.46 |

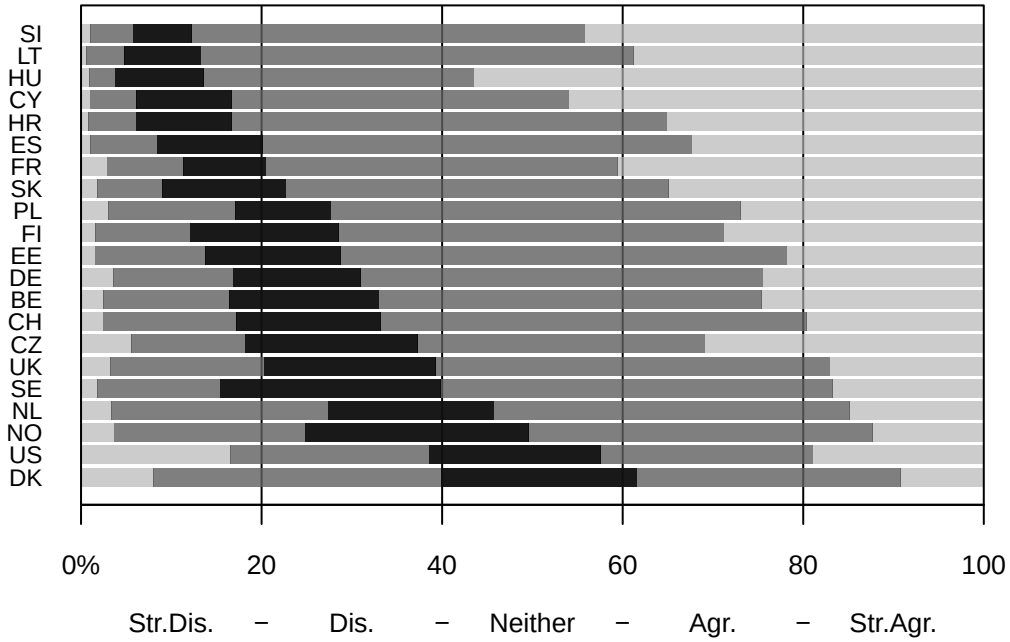
*Note:* For the analysis, variables marked with $c$ are centered on the country mean, variables marked with $n$ are normalized for each country. After multiple imputation (unweighted).

*the government should not concern itself with reducing this income difference between the rich and the poor.* Instead of five answer options, the GSS gives respondents seven. They are reduced to five by merging the two categories between the extreme points and the mid-point (see Appendix B, p.215). The most important difference here is the explicit reference to taxation. However, for the purposes here, both questions are considered equivalent.[6] Figure 5.4 summarizes the distribution of responses for each country.

Several country-level variables are used in the analysis. Of central interest is the measure of absolute inequality in opportunity, BGI, which was constructed in the previous

[6]If any, invoking taxes is likely to have one of two effects. First, it shifts people attention to the cost of redistribution, making respondents generally less likely to agree. However, this is not a major concern here as the interest lies in relative preference shifts rather than absolute levels. Furthermore, the statistical analyses account for such general changes in the distribution through the employment of country-level effects. Secondly, invoking taxation might differentially affect the responses of respondents, in particular if they have different ideological commitments. The role of such ideological commitments is considered in the analysis.

Figure 5.4: Redistribution Preferences Across Countries (ESS, GSS)




*Note:* Countries in descending order by percentage agreeing with redistribution. Shading of bars indicates "Strongly disagree", "Disagree", "Neither", "Agree", "Strongly agree". After multiple imputation (unweighted).

chapter. Further data is drawn from external sources. First, Solt's (2016) market Gini cofficients are taken as a measure of before-tax income inequality. Economic prosperity is indicated by each country's per capita gross domestic product (2010-US$, PPP) (World Bank, 2016). Ethnic fractionalization, which describes the probability of two randomly chosen people belonging to different ethnic groups, is based on Fearon (2003). Last but not least, a dummy variable indicates whether a country has previously been under direct or indirect soviet rule. Table 5.2 displays the created country-level data set.



### 5.2.2 Model Specification

All models in the preference analysis are estimated in a Bayesian framework. Opposite to frequentist statistics, Bayesian statistics treat the data as given and parameters as random. Rather than relying on the experimental logic and hypotheses testing that underpin frequentist approaches, the goal of Bayesian statistics is to provide ranges of credible values for parameters given specific data and a model about the underlying data-generating process. Instead of relying on the assumption of asymptotic normality in estimating

Table 5.2: Country-Level Data

| Country | BGI | Gini (before tax) | GDP (per capita) | Ethnic fractionalization | Post-soviet |
|---|---|---|---|---|---|
| BE | 0.020 | 44.869 | 40225 | 0.567 | 0 |
| CH | 0.059 | 42.772 | 53179 | 0.575 | 0 |
| CY | 0.036 | 48.407 | 34166 | 0.359 | 0 |
| CZ | 0.023 | 43.937 | 27560 | 0.322 | 1 |
| DE | 0.048 | 50.733 | 38975 | 0.095 | 0 |
| DK | 0.011 | 46.631 | 42498 | 0.128 | 0 |
| EE | 0.037 | 48.507 | 21137 | 0.511 | 1 |
| ES | 0.016 | 50.536 | 33141 | 0.502 | 0 |
| FI | 0.011 | 47.537 | 38454 | 0.132 | 0 |
| FR | 0.028 | 49.233 | 36212 | 0.272 | 0 |
| HR | 0.017 | 46.353 | 20282 | 0.375 | 1 |
| HU | 0.023 | 47.420 | 21839 | 0.186 | 1 |
| LT | 0.018 | 55.513 | 20003 | 0.338 | 1 |
| NL | 0.036 | 46.070 | 45590 | 0.077 | 0 |
| NO | 0.027 | 44.578 | 63353 | 0.098 | 0 |
| PL | 0.023 | 47.566 | 20506 | 0.047 | 1 |
| SE | 0.016 | 47.992 | 40820 | 0.189 | 0 |
| SI | 0.012 | 41.283 | 28157 | 0.231 | 1 |
| SK | 0.012 | 42.553 | 23333 | 0.332 | 1 |
| UK | 0.049 | 54.184 | 35840 | 0.324 | 0 |
| US | 0.054 | 50.372 | 48557 | 0.491 | 0 |

*Note:* BGI as computed above. Gini (before tax) from Solt (2016), GDP (per capita) from World Bank (2016), and ethnic fractionalization from Fearon (2003).

posterior distributions of parameters, Bayesian approaches iteratively draw random values from the posterior distribution. After a sufficient number of draws, these random values fully describe the posterior distribution of the model parameters. Bayesian estimation is thus particularly well-suited for estimations based on data that do not constitute a random sample, as for example country-level data (Western and Jackman, 1994; Jackman, 2004). In the data used for the following analysis, individuals are nested within countries (see previous section). Therefore, it is adequate to estimate models in a hierarchical framework that accounts for the data structure. For the reasons just mentioned, Bayesian estimation is adequate for hierarchical models where the level-2 units are countries (Stegmueller, 2013b).

Two kinds of models are used in the following analysis, one using fixed effects for countries, the other using random effects. Fixed effects models allow country intercepts to vary completely freely, such that they fully absorb any general shifts in the distribution of the dependent variable due to contextual factors unaccounted for by other variables in the

model (Snijders and Bosker, 2003, Ch.4). Random effect models posit that each country's intercept is drawn from one common distribution. The main advantage of random effects models is that they allow for the introduction of country-level variables as predictors of both intercepts and slopes on the individual level. On the off side, country intercepts in random effects model are less free to vary, and thus risk introducing bias. However, as the number of observations within each country is large and most of the variation on the dependent variable lies within countries, potential bias is negligible (Clark and Linzer, 2015). Furthermore, as the dependent variable (agreement with redistribution) is ordered, all models feature ordered logit link functions.

The fixed effects model is specified as follows, where $y$ indicates each observation's score on the dependent variable, and $x$ data points of the independent variables.

$$logit\big(P(y_{ij} \leq c|x_{ij})\big) = \zeta_c - \alpha_j - \sum \beta_k x_{ijk},$$

with $\zeta_c$ representing the cut points, $\alpha_j$ the parameters for country fixed effects, and $\beta_k$ the individual-level predictors. $c$ ranges from 1 to 4 to separate the five ordered categories, $i$ indicates individuals 1 through N, and j indicates countries 1 through M.

The random effects models can be described by the following system of equations.[7] In addition to the dependent variable, $y$, and independent individual-level variables, $x$, independent variables on the country level are represented by $z$.

$$logit\big(P(y_{ij} \leq c|x_{ij}, z_{ij})\big) = \zeta_c - \alpha_j - \sum \beta_{rj} x_{ijr} - \sum \beta_k x_{ijk}$$

$$\begin{bmatrix} \alpha_j \\ \beta_{1j} \\ \dots \\ \beta_{Rj} \end{bmatrix} \sim t_1 \left( \begin{bmatrix} \gamma_0 + \sum \gamma_{gj} z_{gj} \\ \delta_{10} + \sum \delta_{1hj} z_{1hj} \\ \dots \\ \delta_{R0} + \sum \delta_{Rhj} z_{Rhj} \end{bmatrix}, \Sigma \right)$$

[7]This specification is also sometimes referred to as a mixed effects model. However, here the difference between both specifications lies in how the intercept and parameter coefficients of interest, i.e. regarding income and expectations variables, are treated (i.e. as fixed or random). Thus, the specification is referred to as random effects model.

Here, random intercepts are indicated by $\alpha_j$, random slopes by $\beta_{rj}$, and corresponding country-level parameters by $\gamma$ and $\delta$ (where the first terms correspond to the grand intercept/slopes). $\beta_k$ represents individual-level fixed effects, which subsume the control variables included in the model. $\Sigma$ indicates the covariance matrix. As before, $i$ stands for individuals 1 through N, $j$ for countries 1 through M. In addition, $r$ indicates individual-level predictors with random slopes (1,...R), $k$ indicates individual-level predictors with fixed slopes (R+1,... R+K). $g$ enumerates country-level predictors (1,...G) for the random intercept, and $h \in \{1, ...H\}$ for the random slopes.

Random effects models are vulnerable to the impact of outliers, if the number of observations is small on any given level. Here, this is the case on the country-level, where there are no more than 21 observations. To reduce the potential impact of outliers, the random effects models feature robust standard errors on the second level (i.e. a multivariate t-distribution with one degree of freedom) (Gelman et al., 2013, p.441ff).

The models estimated in the following section do not always make use of the full specifications. Null models, for example, include only intercepts (fixed or random) but no further parameters as no independent variables are included. Similarly, not all estimated random effects models include country-level predictors for individual-level slopes, which simplifies the location vector of the multivariate t-distribution.

Apart from this, all models are estimated using the same Bayesian set-up. First, uninformative, diffuse priors are used such that the estimation is driven by the data and not prior knowledge.[8] Robustness checks show that estimation results are no different from the case when non-informative, flat priors are used. That being said, the uninformative, vague priors are preferred as they expedite the convergence of the estimation process. Second, for each of the 50 imputed data sets, two MCMC chains are run using Hamilton Monte-Carlo sampling[9] (length, 700; warm-up, 200; thinning 5), such that a total of 10,000

[8]Fixed effects models have the following priors, $\alpha_j \sim N(2.5, 10)$, centered on the mid-point between the two central cut-points, and $\beta_j \sim N(0, 10)$. For the random effects models the priors are the same for all $\beta_k$s, $\gamma$s, and $\delta$s, i.e. $N(0, 10)$. Furthermore, $\Sigma$ which is defined as $I\tau_t\Omega I\tau_t$, where $\Omega$ is the correlation matrix, and $\tau$ a vector of coefficient scales. The priors are defined as follows, $\Omega \sim LKJcorr(2)$ (see Lewandowski et al., 2009 for details), and $\tau \sim |Cauchy(0, 5)|$.

[9]As implemented in the STAN software (Stan Development Team, 2015).

posterior samples are recovered for each model's parameters. Third, convergence is checked through visual inspections of chains, half-width tests, Heidelberger-Welch diagnostics, and by assessing scale reduction factors.

Last but not least, a short comment on the usage of weights in Bayesian statistics is warranted. Other than frequentist approaches, it is difficult to accommodate weights in the estimation process of Bayesian approaches. However, as Gelman and Carlin (2001) and Gelman (2007) point out, it is possible to arrive at unbiased parameter estimates if the variables affecting weights are included as control variables. Furthermore, to determine average effect estimates, Hanmer and Ozan Kalkan's (2013) observed values approach is used, which effectively relies on post-stratification and can thus accommodate sampling weights.[10] In doing so, weights are applied to account for sampling probabilities within countries only. Differences in population sizes are not considered as this would imply that the results are mostly driven by a few large countries, in particular the US, whose population comes close that of all European countries included here taken together.

## 5.3 Findings

### 5.3.1 Making Opportunity Pay Off

In theorizing the potential effects of inequality of opportunity on redistributive preferences, the RMR model served as starting point (see Section 3.2). The model was extended, on the one hand, to theorize how rational actors utilize unequal economic opportunities to maximize their own economic well-being. On the other, it was developed how inequity-aversion can affect redistributive preferences, because people reject the effect of inborn circumstances on the distribution of incomes. Here, the derived propositions are explored in the same order, first building a statistical model to capture the basic logic of the RMR model, gradually extending it to determine the role of unequal economic opportunities

[10]The observed values approach is to be distinguished from the more commonly used average-case approach, which is to provide effect estimates for average (i.e. representative) values of the independent variables. As Hanmer and Ozan Kalkan (2013) demonstrate, the average-case approach can result in highly misleading estimates for non-linear models.

in preference formation. In this section, the focus is on the main individual effects, and country-level variation is explored in the subsequent one.

According to the RMR model, individuals maximize their income, and thus support government redistribution if they are to profit from it. First and foremost, this implies that individuals with lower incomes (before tax) are more likely to favor redistribution. In the theoretical chapter, the model was extended to include future incomes as well. In particular, individuals form expectations about their future income by observing the distribution of income and its covariation with other income-relevant observables. It was then shown that currently poor rational agents reject redistribution, if their income expectations are sufficiently high. The same logic–with the opposite implication–applies to currently rich agents. This proposition is not limited to specific kinds of income expectations, but the main interest here is in the effect of income expectations due to unequal opportunities, i.e. ascriptive factors (see hypothesis I).

Model fit is assessed with two indicators. First, *Pred.%* indicates the average probability of any observation being correctly predicted.[11] However, this measure is far from ideal as it does not penalize for the number of predictors and ignores information regarding the variability of the predictions. A better suited indicator for model fit is the Watanabe-Akaike information criterion (WAIC). The WAIC approximates computationally more demanding cross-validation methods of predictive accuracy that require multiple estimation processes. Furthermore, WAIC is preferable over AIC and DIC as it makes use of the full posterior distribution of the model parameters instead of focusing on a point estimate, such as the maximum likelihood estimator. Lower values for the WAIC indicate better fit.[12]

To explore whether the suggested individual-level mechanisms have any face validity,

[11]To be precise, $Pred.\% = \frac{1}{N*S}\sum_{i=1}^{N}\sum_{s=1}^{S} p(y_i|\theta^s)$, where $y$ indicates the observed values, $\theta$ the posterior distribution of the model parameters, $N$ indicates the number of observations, $i$, and $S$ the number of posterior samples, $s$ (Ben-Akiva and Lerman (1985) introduced this indicator for frequentist models). The measure is not to be confused with the proportion of cases correctly predicted by the model, which is ignorant of the probabilities predictions come with.

[12]Following Gelman (2013, p.173f.), WAIC is defined as $-2(lppd - p_{WAIC})$, where the first term, *lppd*, indicates the log pointwise predictive density, and and the second, $p_{\text{WAIC}}$ indicates the effective number of parameters which serves as a penalty. The terms are computed as follows; $lppd = \sum_{i=1}^{N} log\big(\frac{1}{S}\sum_{s=1}^{S} p(y_i|\theta^s)\big)$, and $p_{\text{WAIC}} = 2\sum_{i=1}^{N}\big(\log\big(\frac{1}{S}\sum_{s=1}^{S} p(y_i|\theta^s)\big) - \frac{1}{S}\sum_{s=1}^{S}\log p(y_i|\theta^s)\big)$, where $y$ indicates the observed values, $\theta$ the posterior distribution of the model parameters, $N$ indicates the number of observations, $i$, and $S$ the number of posterior samples, $s$.

a baseline model with country fixed effects and no other predictors is estimated first (Table 5.3, model I). Model II adds present income, and model III also includes the two components of income expectations. As outlined in the previous section, these two components distinguish income expectations due to meritocratic and ascriptive factors, that is factors that do not violate equality of opportunity (education, work experience) and such that do (gender, migration background, parental education). The two expectations variables together indicate the average annual income from an individual's current age until retirement. Like present income, they are scaled such that a one-unit change constitutes a US$10,000-change in 2010 power purchase parities, and thus account for differences in price levels. As controls, only age and age-squared are included, to account for potentially confounding age-effects (other control variables, which cannot be considered pre-treatment, are included only during later robustness checks).

The estimation results of this model (III) are in line with the theoretical expectations, higher income expectations, just like present income, reduce the probability of agreement with redistribution. The evidence for each of those effects is strong, since the proportion of the posterior distributions shedding values greater than zero is effectively 0% for each of them. Parameters not indicated in the table here, such as country fixed effects or the cut points, can be found at the end of this chapter (see Appendix 5.2).

Before further testing the robustness of this finding, the next models test for the second behavioral motive conjectured in the theoretical framework, inequity-aversion. Rather than reaping the material benefits they can derive from unequal opportunities, inequity-averse agents reject income differences that reflect factors beyond individual control. As such, people living in countries where income gaps due to gender, migration background, and parental education are more pronounced, should be more supportive of redistribution (assuming that they hold correct beliefs about these gaps). Chapter 4 elaborated that the joint extent of such income gaps can be captured by a measure of between-group inequality, BGI. Although it is conjectured to matter to the individual directly, from a statistical standpoint, this measure is a country-level predictor, requiring a random effects model (Snijders and Bosker, 2003, Ch.4). Again, a baseline model (IV) is first estimated,

Table 5.3: Redistributive Preferences, Model Results, I-IX

| | (I) | (II) | (III) | (IV) | (V) | (VI) | (VII) | (VIII) | (IX) |
|---|---|---|---|---|---|---|---|---|---|
| Income | | -0.133 | -0.109 | | -0.109 | -0.109 | -0.109 | -0.084 | -0.109 |
| | | (0.000) | (0.000) | | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Expectation\|Merit | | | -0.158 | | -0.159 | -0.159 | -0.159 | -0.035 | |
| | | | (0.000) | | (0.000) | (0.000) | (0.000) | (0.047) | |
| Expec.\|Ascription | | | -0.075 | | -0.075 | -0.075 | -0.075 | -0.069 | |
| | | | (0.000) | | (0.000) | (0.000) | (0.000) | (0.000) | |
| Expec.\|Merit(10y) | | | | | | | | | -0.149 |
| | | | | | | | | | (0.000) |
| Expec.\|Ascr.(10y) | | | | | | | | | -0.072 |
| | | | | | | | | | (0.000) |
| Household size | | | | | | | | -0.021 | |
| | | | | | | | | (0.062) | |
| Employment: None | | | | | | | | 0.13 | |
| | | | | | | | | (0.993) | |
| Employment: Other | | | | | | | | -0.124 | |
| | | | | | | | | (0.002) | |
| Married | | | | | | | | -0.125 | |
| | | | | | | | | (0.000) | |
| Married*Empl.: None | | | | | | | | 0.082 | |
| | | | | | | | | (0.915) | |
| Keeping house | | | | | | | | 0.006 | |
| | | | | | | | | (0.539) | |
| Ideology | | | | | | | | -0.389 | |
| | | | | | | | | (0.000) | |
| Religiosity | | | | | | | | 0.022 | |
| | | | | | | | | (0.962) | |
| Education (years) | | | | | | | | -0.139 | |
| | | | | | | | | (0.000) | |
| *Cross-level interactions* | | | | | | | | | |
| Intercept*BGI | | | | | -0.275 | -0.203 | -0.054 | | |
| | | | | | (0.012) | (0.130) | (0.397) | | |
| Int.*Gini | | | | | | 0.02 | -0.198 | | |
| | | | | | | (0.599) | (0.266) | | |
| Int.*GDP | | | | | | -0.333 | -0.775 | | |
| | | | | | | (0.005) | (0.028) | | |
| Int.*Fractionalization | | | | | | | 0.116 | | |
| | | | | | | | (0.572) | | |
| Int.*Post-soviet | | | | | | | -0.839 | | |
| | | | | | | | (0.170) | | |
| Age, Age$^2$ | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Occupation | | | | | | | ✓ | | |
| Model | FE | FE | FE | RE | RE | RE | RE | FE | FE |
| Observations | 27141 | 27129 | 27129 | 27141 | 27129 | 27129 | 27129 | 25785 | 27129 |
| (Countries) | (21) | (21) | (21) | (21) | (21) | (21) | (21) | (20) | (21) |
| WAIC | 78797.2 | 78144.6 | 77974 | 78779.2 | 77960.5 | 77966.1 | 77965.1 | 73290.4 | 77990.3 |
| Pred.% | 29.497 | 30.071 | 30.174 | 29.482 | 30.162 | 30.166 | 30.165 | 31.097 | 30.157 |

*Note:* Number in parentheses indicate percentage of posterior above zero. Model VIII excludes Finland. Parameters not displayed here, in Appendix 5.2.

and model V introduces BGI as a country-level predictor, together with the previous individual-level predictors (income, expectations, and age variables). Although there is

strong evidence in support of an effect of BGI, it points not in the expected direction. Countries with higher BGI have lower average support for redistribution. Is this finding due to a misspecified model?

To explore this, it is important to consider other economic factors that might condition the effects of BGI. In the RMR model, aggregate inequality affects support for redistribution by decreasing the marginal cost of taxation. As both mechanisms, that is tax concerns and inequity-aversion, are rooted in the income distribution, it is quite possible that their effects condition each other in the real world. Furthermore, Dion and Birchfield (2010) argue that economic prosperity decreases support for redistribution as ever smaller proportions of societies are considered poor enough to require redistributive benefits. Therefore, model VI includes a variable for inequality (*Gini*) and prosperity (*GDP* per capita). While Gini does not come out as a significant predictor, the effect of GDP is negative as expected. Most importantly, the effect of BGI is shrunk, and–with 12.3% of the posterior above zero–the evidence for a negative effect is now much smaller.

To give BGI the benefit of doubt, two further variables that might condition its effect on redistributive preferences are considered. First, ethnic fractionalization has been shown to be an important predictor of support for redistribution (Dahlberg et al., 2012) and public goods provision more generally (Alesina et al., 1999). As fractionalization and migration are closely intertwined, there might be more to be learned from a model that includes both variables are the same time. Secondly, a large portion of the data here comes from countries that have been under Soviet rule or at least under its influence. Citizens of these countries assess the role of government in society differently, particularly because of economic experiences in the course of transition to open market economies (Kluegel and Mason, 2004; Loveless and Whitefield, 2011). The results of model VII show that adding these variables further diminishes the effect of BGI on redistributive preference, even so not much evidence of an effect of either fractionalization or post-soviet status is revealed.

Altogether, there appears to be no evidence of inequity-averse behavior. If anything, the presented model results suggest that BGI decreases support for redistribution. As such, in line with the expectations formulated in the theoretical chapter, hypothesis II is

rejected. As emphasized earlier, scholarship on bounded rationality emphasizes limitations of individuals to form accurate beliefs about the income distribution. This concern is especially pronounced where in addition to the distribution of income, the distributions of circumstances have to be observed as well in order to form accurate beliefs about the extent of inequality in opportunity. Thus, it is no surprise that the actual extent of inequality in opportunity does not have immediate bearing on redistributive preferences. Therefore, the subsequent chapter takes beliefs, i.e. what people know about the income distribution, into account. However, in the remainder of this chapter, the focus is on self-interested behavior, in particular in response to income expectations.

The previous models have shown consistently negative effects on support for redistribution for all three income variables. Is this finding robust–in particular for ascribed income expectations–against the inclusion of other variables commonly considered in the literature? Economic uncertainty is a recurrent topic in the literature and it posits equally forward-looking behavior of individuals as does the consideration of income expectations. Labor market status is seen to play an important role. Whether one is a labor market insider or outsider, that is with permanent, secure employment or not, determines the claims one can make on the welfare state in the case of adverse events (Rueda, 2007), as well as the odds of such events occurring in the first place (Häusermann et al., 2015). Similarly, occupation is often seen as a driver of redistributive demands. Those working in occupations with higher unemployment risks are generally more supportive of various kinds of welfare state support (Rehm, 2009, 2016). Religion is also seen to have an important role to play. Scheve and Stasavage (2006) argue that religiosity functions as a substitute to social insurance provided through welfare states. People who attend religious service frequently can expect their community to provide material and psychic relief when experiencing hardship. For this reason, worshipers are less reliant on other support. Quite differently, religion–just like ideology–might also distract poor voters from their economic interests (Frank, 2004; De La O and Rodden, 2008).

Furthermore, it is common to test robustness against the inclusion of various sociodemographic controls, such as gender, education, household size, or marital status. Whereas

household size and marital status are frequently included because of their immediate economic relevance, the effects of gender and education are most commonly regarded to be of non-economic nature. In particular, being socialized into a given gender role, just like going through different levels of education, is regarded to shape preferences and beliefs fundamentally. Including gender and education in the same model as income expectations poses challenges to the estimation, because the expectation measures themselves are, among other variables, estimated based on gender and education. Hence, including variables for gender, education, and income expectations in the same model induces collinearity that biases the estimation.[13]

That being said, not including education and gender in the model risks mistaking socializational effects for effects of economic expectations. To minimize this problem, alternate variables are included to serve as proxy controls for gender and education. These proxy controls are chosen to capture the socializational effects of gender as well as education. For education, years of education, instead of levels of education, is included. Rather than measuring achievement, years capture the duration of exposure to the educational system. Arguably, socialization might even be better captured by such exposure. It is less straightforward to find an appropriate proxy control for gender. That said, doing so is imperative for the research here, as the main interest lies in the effect of unequal opportunities and thus ascribed income expectations. Therefore, a number of proxy controls that are seen as constitutive of gender's role in political behavior are included.

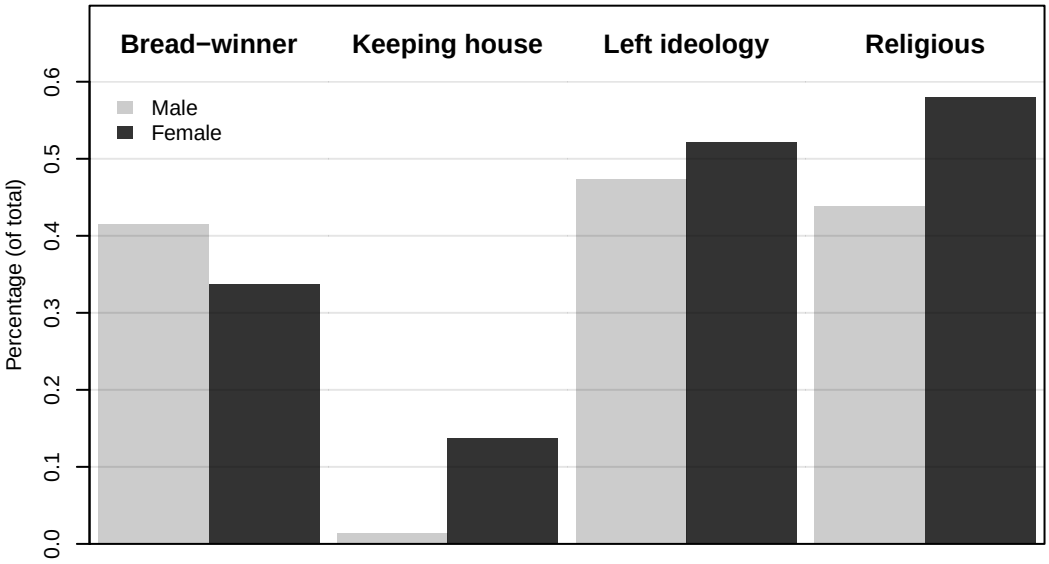
Iversen and Rosenbluth (2006, 2010) argue that socialization is partly aimed at preparing young women for the "marriage market". They are thus instilled with a greater willingness to commit to household chores and to be financially dependent on a partner. Young men are commonly raised with their prospective role as "bread-winner" in mind. Of course, socialization is not deterministic. Therefore, what a person ends up doing can be seen as an indication of whether traditional gender socialization has been effective or not. Furthermore, divorce carries particular risks for non-bread-winning partners. Edlund and Pande (2002) show that women's political preference depend on divorce risks. These

[13]This is a recurrent challenge for literature on economic cleavages, discussed in Section 2.2.

risks increase probabilities of falling into poverty, making women more supportive of redistributive policy agendas. However, the same should apply for males that are not bread-winners. Focusing on values themselves rather than context, Norrander and Wilcox (2008) argue that the political implications of gender are largely due to different ideological and religious views of men and women.

Figure 5.5 gives an overview over the distribution of the discussed variables in the data analyzed here. There are fewer female bread-winners, that is less married women that work than married men that work. The number of women (married or not) naming house-keeping as their main activity is much larger than the number of men. Women are more likely to be left of the average ideological position in their country than men, and their expressed religious commitments are also more likely to be above average. That being said, none of these activities or characteristics is limited to one gender only. However, each of them is, among other things, an indication of socialization in line with traditional gender roles. Thus, including respective variables minimizes the risk of conflating effects

Figure 5.5: Select Variables by Gender, pooled




*Note:* Frequency of select variables by gender. Variables pooled for all countries (after multiple imputation, unweighted). *Bread-winner*: Percentage of men respectively women that are married and employed. *Keeping house*: Percentage of men respectively women whose main occupation is house-keeping. *Left-ideology*: Percentage of men respectively women whose self-positioning is left to their country's average ideological position. *Religious*: Percentage of men respectively women with self-acclaimed religious commitments above respective country average.

of socialization with effects of income expectations. As Howell and Day (2000) point out, preference differences across gender are to some extent also simply due to compositional differences between both gender groups. Thus, the risk of conflation is further reduced by the inclusion of other controls, such as education, employment status, or occupation.

Following these consideration, the robustness model (VIII) includes an indicator for *employment* status (employed, none, keeping house, other), and *occupation*, which distinguishes occupations on the basis of ISCO-88's broadest classification (i.e. 1-digit).[14] Furthermore, *religiosity* and *ideology* are controlled for, higher values indicating more religiosity respectively conservativeness. Socio-demographic controls encompass a dummy for *marital status*, the number of household members (*household size*), and respondent's *education* in number of years. An interaction term between marital status and employment is added, where 1 indicates being married and not in employment (i.e. unemployed, house keeping, or other).[15] Note that Finland could not be included in the estimation of this model, as the Finish data does not contain information on marital status.

The results show that the parameter estimates for present income and expected ascribed income are barely affected by the inclusion of these control variables. At the same time, the effect estimate of expected meritocratic income is reduced substantially and an effect is now only weakly supported by the data. Given that meritocratic expectations are estimated solely based on two variables, education and work experience, the collinearity issues induced by including years of education as a control appears to still be severe.

The last model of this section addresses the question of whether it is reasonable to assume that rational actors are as farsighted as to consider the full duration of their remaining work life in forming income expectations. Indeed, rational actors might find inferences to later points in the future to be subject to greater uncertainty or might hold

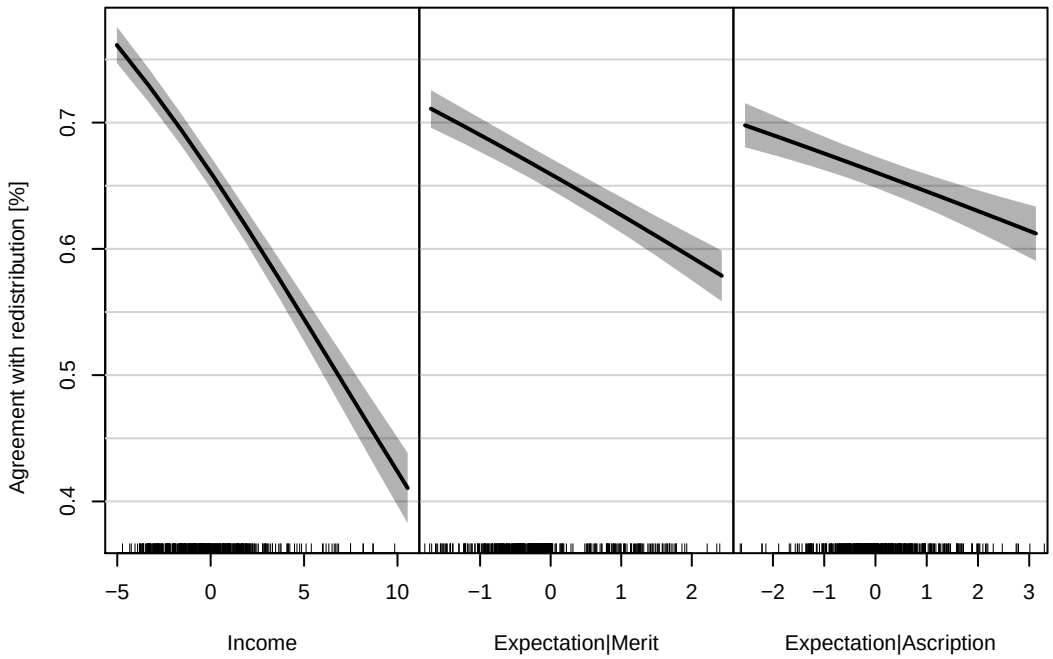
[14]The inclusion of the occupation indicator is indicated at the bottom of the table. These and other parameter estimates are relegated to Appendix 5.2 due to space limitations.

[15]The value of such "kitchen sink" models from a statistical point of view is questionable (Achen, 2005; Clarke, 2005, 2009). Indeed, most attention here should be on the main model that includes only the variables corresponding to the theoretical model. However, including such a model for the purpose of checking robustness is still common practice. Furthermore, separate estimations of models including only single control variables (not presented here), also showed parameter estimates corresponding to the main variables of interest to be robust.

time preferences that makes them weigh down incomes expected in distant periods. To address such concerns, both income expectations variables are recalculated to cover only a time period of 10 years from each respondent's current age. Model IX shows that the results are basically indistinguishable from the main model.

To better illustrate what the estimated model parameters imply substantively, Figure 5.6 presents effect plots for the three income variables. The plots show the probability of agreement with redistribution (that is responding with strongly agree or agree) over the central 99%-range of values observed for each respective income variable. As such, extreme values on the income variables are excluded as they severely inhibit the representativeness of the presented plots. The probabilities presented here are computed using the observed values approach (Hanmer and Ozan Kalkan, 2013) for each posterior set of parameter values. As such, the presented probabilities take parameter uncertainty and sample variability into account. From the plot, it can be seen that the probability of agreeing with redistribution decreases strongly as a person's present income, or one of their components of expected

Figure 5.6: Income Effects on Redistribution Preferences




*Note:* Probability of agreement (i.e. *agree* or *strongly agree*), conditional on present income and expectations. All income variables in 2010-US$ (10,000s, PPP), centered on the respective country mean. Shading indicates 95% credible intervals. Based on model III. Observed values approach, within-country sampling weights applied.

income, increases. Moving from the $0.5^{th}$ to the $99.5^{th}$ percentile (which corresponds to the full range of the horizontal axis), present income decreases the probability of agreement by over 30 percentage points. For both expectations variables, this effect is about 10 percentage points. However, as can be seen from the bottom of the plot, the steeper slope for present income is due to the much wider range of observed values.

Another way to compare effect sizes is to consider probability changes for interquartile changes in the independent variable. For present income the first and the third quartile are at -1.58 and 1.08 (in US$10,000s), and moving from the prior to the latter decreases the probability of agreeing with redistribution by 5.8 percentage points (95%-CI: 5.2-6.4). For meritocratic income, a move from -.51 to .45 decreases the probability of agreement by 3 percentage points (95%-CI: 2.5-3.6), and for ascribed expected income, moving from -.54 to .42 decreases the probability by 1.4 percentage points (95%-CI: 0.9-1.9).

### 5.3.2 Rational Calculus in Comparison

In this section, a closer look is taken at variation across countries, in particular how the income effects vary across different contexts. In a first step, the main model (III, displayed again in Table 5.4) is re-estimated on two limited subsets, one excluding CEE countries and one including them only.[16] For one thing, political economy literature on inequality and redistribution focuses less commonly on CEE countries. Therefore, it is informative to see in how far the model estimation is affected by their inclusion. Furthermore, before the direct influence of the Soviet Union on CEE countries receded, their citizens were exposed to ideological indoctrination quite different from now dominant capitalist discourses. As such, the former Soviet rule affects the way people think about their governments into the present day. Such effects are amplified by, and at times indistinguishable from, the shared experience of economic hardship during the early transition (Kluegel and Mason, 2004; Bohle and Greskovits, 2012). Model X presents the results based only on CEE countries.

[16] As a reminder, the set of CEE countries encompasses Croatia, the Czech Republic, Estonia, Hungary, Lithuania, Poland, Slovakia, and Slovenia. The Western countries include Belgium, Cyprus, Denmark, Finland, France, Germany, the Netherlands, Norway, Spain, Sweden, Switzerland, the United Kingdom, and the US.

The estimates of all three income variables have the expected sign and there is strong evidence in support of an effect. Indeed, the estimates are larger than in the model that includes all countries, in particular with regards to expected meritocratic income.

Does this imply that the previous results were driven by the inclusion of CEE countries? Model XI estimates the results including all but CEE countries, that is all Western European countries plus the US. While the estimates are somewhat lower than what was found when all countries were included, the differences are small. Unsurprisingly, it is largest for expected meritocratic income. Overall, all three income variables work as theoretically expected, both among the traditional set of Western countries and among CEE countries.

While the model applies to both CEE and Western countries, estimating separate models also made clear that there is considerable variation in parameter coefficients between countries. Are there any factors beyond what could be called "Soviet legacy" that explains such variation? The two economic factors the literature most commonly relates to redistributive preference formation are considered. First, income effects can be increased by levels of inequality. Finseraas (2009) derives this prediction directly from the RMR model, in which an increase in inequality implies a larger distance between mean and median income. To the contrary, Dion and Birchfield (2010) argue that higher levels of inequality increase consensus among citizens about redistributive policies, due to a shared concern for those in poverty, thus ameliorating the workings of self-interest (i.e. income). It is important to note that these conditional effects are formulated with reference to relative income differences. The analysis here looks at absolute income differences, thus the propositions by the mentioned authors have only limited applicability. Dion and Birchfield (2010) further suggest that concerns about the prevalence of poverty similarly lead to greater redistributive consensus in economically less developed countries, reducing the impact of incomes on support for redistribution. These accounts focus on present income, but the suggested mechanisms should equally apply to future incomes.

Model XII presents a random effects model, where *Gini* and *GDP* are country-level predictors for the random intercept as well as random slopes of all three income variables. The grand slopes of the income variables have the expected sign and evidence in support of

Table 5.4: Redistributive Preferences, Model Results, X-XIII

| | *(III)* | (X) Sample: CEE | (XI) Sample: ~~CEE~~ | (XII) | (XIII) |
|---|---|---|---|---|---|
| Income | -0.109 | -0.166 | -0.101 | -0.119 | -0.109 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Expectation\|Merit | -0.158 | -0.443 | -0.116 | -0.248 | -0.192 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Expectations\|Ascription | -0.075 | -0.094 | -0.072 | -0.079 | -0.087 |
| | (0.000) | (0.003) | (0.000) | (0.002) | (0.001) |
| Household size | | | | | -0.051 |
| | | | | | (0.000) |
| Employment: None | | | | | 0.203 |
| | | | | | (1.000) |
| Employment: Other | | | | | -0.101 |
| | | | | | (0.000) |
| *Cross-level-interactions* | | | | | |
| Intercept*Gini | | | | -0.109 | -0.134 |
| | | | | (0.178) | (0.187) |
| Intercept*GDP | | | | -0.447 | -0.467 |
| | | | | (0.001) | (0.027) |
| Intercept*Post-soviet | | | | | -0.095 |
| | | | | | (0.445) |
| Income*Gini | | | | -0.007 | -0.005 |
| | | | | (0.288) | (0.333) |
| Income*GDP | | | | 0.018 | 0.015 |
| | | | | (0.901) | (0.863) |
| Exp.\|Merit*Gini | | | | 0.061 | 0.056 |
| | | | | (0.968) | (0.976) |
| Exp.\|Merit*GDP | | | | 0.154 | 0.138 |
| | | | | (1.000) | (1.000) |
| Exp.\|Ascription*Gini | | | | 0.001 | -0.001 |
| | | | | (0.505) | (0.472) |
| Exp.\|Ascription*GDP | | | | 0.009 | 0.011 |
| | | | | (0.647) | (0.682) |
| *Variance components* | | | | | |
| Income | | | | 0.04 | 0.039 |
| | | | | (1.000) | (1.000) |
| Exp.\|Merit | | | | 0.085 | 0.067 |
| | | | | (1.000) | (1.000) |
| Exp.\|Ascription | | | | 0.05 | 0.048 |
| | | | | (1.000) | (1.000) |
| *Correlation of random parameters* | | | | | |
| Intercept*Income | | | | 0.444 | 0.402 |
| | | | | (0.964) | (0.930) |
| Intercept*Exp.\|Merit | | | | -0.139 | -0.155 |
| | | | | (0.306) | (0.298) |
| Intercept*Exp.\|Ascription | | | | 0.255 | 0.241 |
| | | | | (0.802) | (0.787) |
| Income*Exp.\|Merit | | | | -0.01 | -0.006 |
| | | | | (0.486) | (0.493) |
| Income*Exp.\|Ascription | | | | -0.318 | -0.325 |
| | | | | (0.144) | (0.141) |
| Exp.\|Merit*Exp.\|Ascription | | | | 0.064 | 0.044 |
| | | | | (0.583) | (0.553) |
| Age, Age$^2$ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Occupation | | | | | ✓ |
| Model | FE | FE | FE | RE | RE |
| Obs.(Countries) | 27129(21) | 9278(8) | 17851(13) | 27129(21) | 27129(21) |
| WAIC | 77974 | 24869.9 | 52965.6 | 77829.5 | 77726.9 |
| Pred.% | 30.174 | 34.252 | 28.152 | 30.333 | 30.454 |

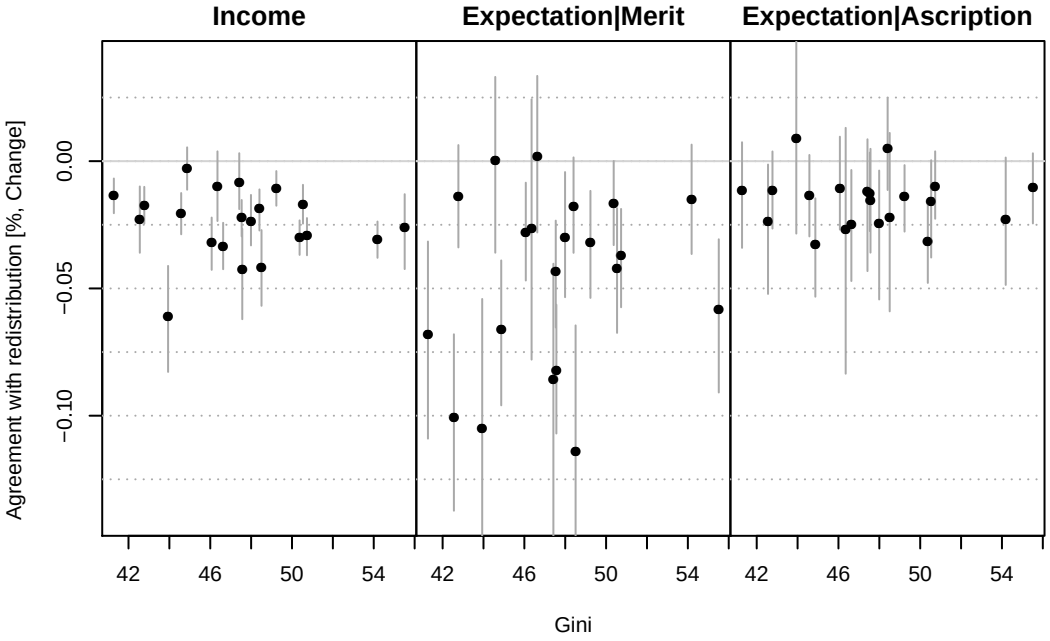
*Note:* CEE, Central and Eastern European countries. Number in parentheses indicate percentage of posterior above zero. Parameters not displayed here, in Appendix 5.2.

theoretical expectations. These estimates are somewhat stronger than in the fixed effects specification that includes the same individual-level variables (model III), especially for expected meritocratic income. While the percentage of correctly predicted cases compared to the fixed effects model increases only by .16 percentage points, the more important WAIC measure decreases by about 150 points (indicating better fit). Including *GDP* appears to play a particularly important role in improving the predictive power of the model. Looking at cross-level interactions, *GDP* has a strong, negative effect on the intercept, and a positive effect on the estimates corresponding to present income and meritocratic expectations. Contrary to the above formulated proposition, *Gini* also has a negative effect on the intercept (weak evidence). The interactions with present income and expected ascribed income are negligible. Only with regard to expected meritocratic income, there is evidence of an effect. As inequality increases, the effect of meritocratic expectations on redistributive preferences weakens.

The robustness of these findings is explored by estimating a model that adds post-soviet status as an additional predictor of the intercept. Although model X and XI showed that individual-level slopes differ between CEE countries and the rest, only the better theorized economic variables are included as country-level predictors for the slopes. However, including post-soviet status as a predictor for the intercept accounts for contextual differences unaccounted for by the model and avoids that other parameter estimates are confounded by such contextual effects. Furthermore, economic controls that have shown to be important in earlier models are included, i.e. employment status, occupation, and household size, again to account for potential confounding of the model. However, as model XIII shows such concerns can be relieved. None of the previously discussed parameters changes in substantial ways. The largest change occurs for the grand slope of expected meritocratic income, which is reduced by about a fifth, bringing it closer to estimates of the fixed-effects model results.

All in all, the estimation of these random-effects models that allow the slopes of the income variables to vary with country-level variables, whose importance has previously been identified in the literature, are in line with the previous findings of the fixed effects

Figure 5.7: Inequality and Income effects, by Country



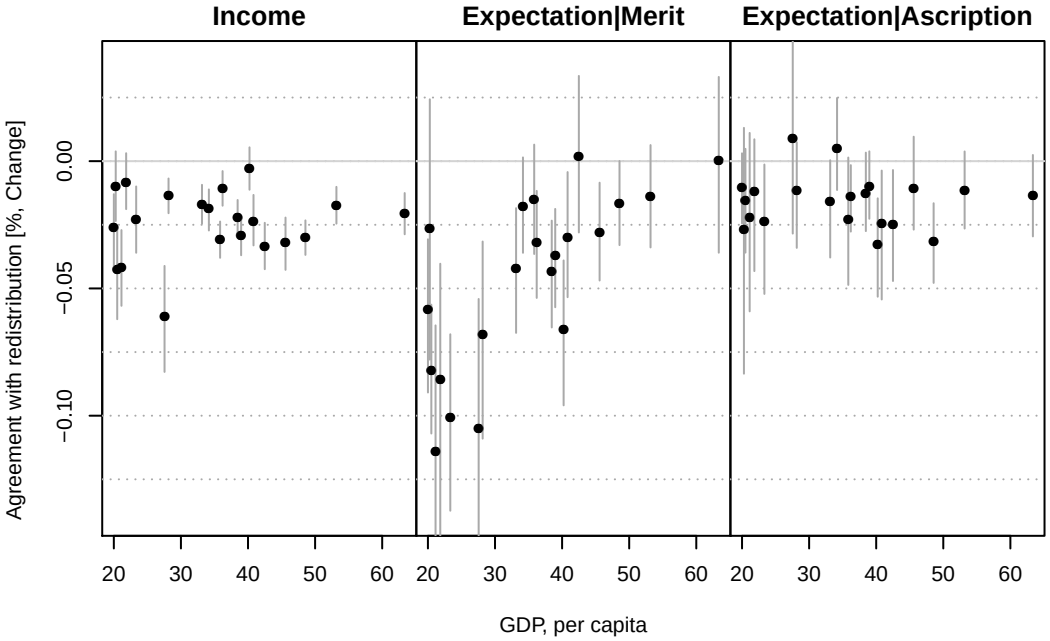

*Note:* Predicted change in probability of agreement (i.e. *agree* or *strongly agree*) due to a change in the respective independent variables from 0 to 10,000US$, conditional on Gini (before tax). Lines indicate 95% credible intervals. Based on model XII. Observed values approach, within-country sampling weights applied.

models. However, country-level conditions appear to matter in ways not completely in line with the literature's expectations. In the RMR model, inequality increases general support for redistribution (not confirmed) and weakens the workings of income effects. The latter effect was found for expected meritocratic income, but not for the variable more commonly assessed in the literature, present income. This can also be seen from the marginal effect plots presented in Figure 5.7, which employs the observed values approach (Hanmer and Ozan Kalkan, 2013). The figure shows the predicted change in the probability of agreement for a one-unit change on the independent variable (i.e. an increase of US$10,000, PPP), given each country's *Gini*-coefficient.

While economic prosperity, i.e. *GDP*, lowers general support for redistribution–in line with the findings by Dion and Birchfield (2010)–it does not increase the salience of income effects. If anything it does the opposite. As can be seen from Figure 5.8, income effects are often stronger in countries with lower levels of *GDP* per capita (with the exception of ascriptive expectations). It shall be left to the discussion of why this might be the case.

Both figures also show that regarding the effect of ascribed income expectations, there

Figure 5.8: Prosperity and Income Effects, by Country




*Note:* Predicted change in probability of agreement (i.e. *agree* or *strongly agree*) due to a change in the respective independent variables from 0 to 10,000US$, conditional on GDP per capita (1,000s, 2010-US$, PPP). Lines indicate 95% credible intervals. Based on model XII. Observed values approach, within-country sampling weights applied.

are two clear outliers. For respondents from the Czech Republic and Cyprus, ascribed income expectations and redistributive preferences appear to be, if at all, positively related. Leaving aside statistical concerns, such as chance, these idiosyncrasies cannot be accommodated by the framework laid out in the theory chapter and call for further investigation of the specific cases.

## 5.4 Discussion

This chapter set out to explore individual preference formation under the assumption that people hold accurate beliefs about the distribution of income and its covariation with income-relevant factors. The findings show that people do indeed act in line with their self-interest. Those who are privileged by unequal opportunities, that is those whose income expectations are positively affected by their circumstances, demand less redistribution. They do so independent of their present economic standing. Furthermore, self-interest exerts a stronger effect on redistributive preferences in countries at lower levels of economic

prosperity. This goes against the findings presented in Dion and Birchfield (2010) who suggest that income effects are more pronounced in richer countries. The contradictory findings might, of course, be due to different sets of analyzed countries. At the same time, the finding here, that income effects (including those of expectations), squares well with the common finding that the marginal utility of consumption is diminishing. Diminishing marginal utility implies that people value additional consumption less, the higher their level of consumption already is (Kauder, 1965; Layard et al., 2008). This might also explain why the effects of income, present and expected, are generally stronger in poorer CEE countries than they are in richer Western countries.

The second main finding of this chapter is the absence of inequity-aversion, at least when unbiased beliefs are assumed. No support was found for greater demand for redistribution in countries with higher levels of inequality in opportunity. If anything, there was some evidence pointing in the opposite direction. However, this evidence was not robust against the inclusion of other relevant variables. As discussed in the theoretical chapter, individuals have to process more information about income and its covariation with other variables in order to form unbiased beliefs about levels of inequality of opportunity than they have to form accurate beliefs about their future income. Furthermore, as people are usually surrounded by others similar to them, sufficient information is unlikely to be available in their social environment. As such, the null finding for inequity-aversion was expected. Among other things, the next chapter takes subjective beliefs into account and explores whether inequity-aversion might be revealed under less stringent informational assumptions.

The findings of this chapter come with a caveat regarding the causal status of income expectations. In the absence of an experimental research design, it is difficult to exclude the possibility of confounding effects. When it comes to the effects of income expectations, socialization is a particular concern. Such concerns are alleviated considerably by previous studies that find subjective expectations to be the result of people's social context, not socialization, and attest to the effect of subjective expectations on political preferences (see Section 2.2.3 and 5.1.1). Although this chapter addressed the possibly confounding effects

of gender socialization, given the use of observational, cross-sectional data, confounding cannot be ruled out entirely. Therefore, future inquiries into the topic should seek to identify experimental, or quasi-experimental, research designs. Two avenues appear to be particularly promising. One is to study franchise extensions more closely, and to explore how, and whether, they unleashed different political dynamics depending on the initial distribution of labor market opportunities. Another is to look at external shocks, such as financial crises, that alter the distribution of labor market opportunities.

# 5.5 Appendix

## Appendix 5.1

Table 5.5: Standard Mincer Model, Results (I)

| | DV: Income, logged | | | | | | |
|---|---|---|---|---|---|---|---|
| | **BE** | **CH** | **CY** | **CZ** | **DE** | **DK** | **EE** |
| Degree: Secondary | .207* | .440* | .617* | .454* | .747* | .168 | .236* |
| | (.086) | (.048) | (.073) | (.075) | (.063) | (.107) | (.116) |
| Degree: Above sec. | .588* | .907* | 1.272* | .952* | 1.342* | .582* | .628* |
| | (.088) | (.054) | (.082) | (.082) | (.069) | (.117) | (.118) |
| Experience | .054* | .040* | .056* | .040* | .034* | .026* | .017 |
| | (.011) | (.005) | (.009) | (.006) | (.006) | (.012) | (.010) |
| Experience$^2$ | −.001* | −.001* | −.001* | −.001* | −.0005* | −.0003 | −.0005* |
| | (.0002) | (.0001) | (.0002) | (.0001) | (.0001) | (.0003) | (.0002) |
| Intercept | 9.511* | 9.739* | 8.562* | 8.846* | 8.702* | 9.699* | 9.039* |
| | (.132) | (.066) | (.113) | (.095) | (.086) | (.151) | (.147) |
| N | 4977 | 6225 | 4072 | 7546 | 10680 | 2485 | 4294 |
| R-squared | .016 | .059 | .062 | .031 | .040 | .016 | .015 |
| Adj. R-squared | .015 | .059 | .061 | .031 | .039 | .015 | .014 |

*Note:* *p < .05.

Table 5.6: Standard Mincer Model, Results (II)

| | DV: Income, logged | | | | | | |
|---|---|---|---|---|---|---|---|
| | **ES** | **FI** | **FR** | **HR** | **HU** | **LT** | **NL** |
| Degree: Secondary | .341* | .210* | .220* | .735* | .385* | .449* | .127* |
| | (.067) | (.079) | (.049) | (.090) | (.040) | (.149) | (.064) |
| Degree: Above sec. | .818* | .534* | .759* | 1.295* | .933* | 1.448* | .568* |
| | (.065) | (.081) | (.055) | (.106) | (.046) | (.152) | (.068) |
| Experience | .036* | .036* | .043* | .091* | .033* | .063* | .022* |
| | (.010) | (.007) | (.006) | (.011) | (.005) | (.013) | (.007) |
| Experience$^2$ | −.001* | −.001* | −.001* | −.001* | −.001* | −.001* | −.001* |
| | (.0002) | (.0002) | (.0001) | (.0002) | (.0001) | (.0003) | (.0002) |
| Intercept | 8.867* | 9.885* | 9.354* | 7.853* | 8.694* | 6.924* | 9.614* |
| | (.119) | (.095) | (.073) | (.141) | (.062) | (.188) | (.087) |
| N | 10983 | 4162 | 9650 | 4187 | 9931 | 4216 | 5504 |
| R-squared | .021 | .029 | .030 | .049 | .050 | .046 | .023 |
| Adj. R-squared | .020 | .028 | .030 | .049 | .050 | .045 | .023 |

*Note:* *p < .05.

Table 5.7: Standard Mincer Model, Results (III)

| | DV: Income, logged | | | | | | |
|---|---|---|---|---|---|---|---|
| | **NO** | **PL** | **SE** | **SI** | **SK** | **UK** | **US** |
| Degree: Secondary | .382* | 1.000* | .377* | .228* | .195 | .303* | .391* |
| | (.081) | (.103) | (.126) | (.041) | (.104) | (.073) | (.063) |
| Degree: Above sec. | .765* | 2.085* | .887* | .792* | .553* | .691* | 1.011* |
| | (.085) | (.116) | (.135) | (.047) | (.110) | (.075) | (.063) |
| Experience | .037* | .017 | .039* | .024* | .045* | .035* | .049* |
| | (.009) | (.009) | (.011) | (.005) | (.007) | (.007) | (.008) |
| Experience$^2$ | −.001* | −.0005* | −.0004 | −.0004* | −.001* | −.001* | −.001* |
| | (.0002) | (.0002) | (.0002) | (.0001) | (.0002) | (.0002) | (.0002) |
| Intercept | 9.691* | 7.675* | 9.095* | 9.551* | 8.876* | 9.491* | 9.115* |
| | (.113) | (.133) | (.156) | (.059) | (.121) | (.092) | (.098) |
| N | 2449 | 11497 | 3110 | 4015 | 6108 | 6249 | 7460 |
| R-squared | .039 | .052 | .025 | .100 | .014 | .026 | .051 |
| Adj. R-squared | .038 | .052 | .024 | .099 | .013 | .026 | .051 |

*Note:* *p < .05.

Table 5.8: Extended Mincer Model, Results (I)

| | DV: Income, logged | | | | | | |
|---|---|---|---|---|---|---|---|
| | **BE** | **CH** | **CY** | **CZ** | **DE** | **DK** | **EE** |
| Female | −.534 | .074 | −.480* | −.832* | −.100 | −.570 | −.904* |
| | (.272) | (.138) | (.230) | (.189) | (.181) | (.322) | (.315) |
| Parent's degree: Secondary | .072 | .155 | −1.504* | −.511 | .978* | −.245 | −.531 |
| | (.360) | (.180) | (.300) | (.326) | (.239) | (.388) | (.387) |
| Parent's degree: Above sec. | −.938* | −.069 | −1.884* | .706 | .949* | −1.090* | −1.164* |
| | (.406) | (.292) | (.454) | (.746) | (.299) | (.450) | (.456) |
| Migration | −.584 | −.555* | −.413 | .145 | −.229 | .057 | .097 |
| | (.349) | (.151) | (.273) | (.435) | (.235) | (.462) | (.407) |
| Degree: Secondary | .112 | .476* | .371* | .340* | .666* | −.227 | −.026 |
| | (.134) | (.121) | (.104) | (.111) | (.132) | (.186) | (.217) |
| Degree: Above sec. | .529* | 1.007* | .806* | .976* | 1.477* | .472* | .208 |
| | (.151) | (.145) | (.127) | (.125) | (.162) | (.222) | (.244) |
| Experience | .044* | .064* | .065* | .051* | .094* | .006 | −.009 |
| | (.021) | (.012) | (.014) | (.009) | (.016) | (.027) | (.027) |
| Experience$^2$ | −.001 | −.001* | −.001* | −.001* | −.001* | −.0001 | −.0003 |
| | (.0004) | (.0003) | (.0003) | (.0002) | (.0003) | (.001) | (.001) |
| Female:Par.degree: Sec. | .178 | .042 | .290* | .200* | −.100 | −.098 | −.106 |
| | (.141) | (.072) | (.126) | (.070) | (.094) | (.162) | (.151) |
| Female:Par.degree: A.sec. | .064 | .056 | .303 | .243* | .143 | .003 | −.054 |
| | (.151) | (.096) | (.168) | (.107) | (.111) | (.186) | (.174) |
| Female:Migration | .199 | .268* | −.349* | .209 | −.558* | .010 | −.238 |
| | (.144) | (.061) | (.112) | (.141) | (.100) | (.204) | (.142) |
| Par.degree: Secondary:Migration | −.079 | .026 | .045 | −.059 | .046 | .291 | −.358* |
| | (.189) | (.075) | (.137) | (.179) | (.122) | (.263) | (.175) |
| Par.degree: A.sec.:Migration | .695* | .187 | −.126 | .097 | −.071 | −.509* | −.013 |
| | (.193) | (.098) | (.177) | (.263) | (.139) | (.252) | (.200) |
| Female:Degree: Sec. | .040 | −.118 | .547* | .050 | −.158 | .588* | .425 |
| | (.176) | (.101) | (.148) | (.148) | (.128) | (.216) | (.236) |
| Female:Degree: A.sec. | .284 | −.257* | .837* | .006 | −.073 | −.019 | .420 |
| | (.185) | (.115) | (.169) | (.165) | (.142) | (.235) | (.245) |
| Female:Experience | −.006 | −.078* | −.086* | .001 | −.048* | .014 | −.0003 |
| | (.022) | (.010) | (.017) | (.012) | (.012) | (.025) | (.021) |
| Female:Experience$^2$ | −.0001 | .002* | .002* | .0003 | .001* | −.0002 | .0004 |
| | (.0005) | (.0002) | (.0004) | (.0003) | (.0003) | (.001) | (.0005) |
| Migration:Degree: Sec. | .074 | −.094 | −.174 | −.074 | .212 | .257 | −.126 |
| | (.207) | (.115) | (.164) | (.303) | (.151) | (.305) | (.296) |
| Migration:Degree: A.sec. | .045 | −.078 | .095 | −.013 | −.097 | 1.168* | .070 |
| | (.224) | (.129) | (.181) | (.338) | (.173) | (.318) | (.308) |
| Migration:Experience | −.056* | .042* | .007 | −.004 | −.007 | −.122* | −.049 |
| | (.028) | (.010) | (.020) | (.030) | (.017) | (.039) | (.026) |
| Migration:Experience$^2$ | .002* | −.001* | −.00005 | −.00002 | .001 | .003* | .001* |
| | (.001) | (.0002) | (.0004) | (.001) | (.0004) | (.001) | (.001) |
| Par.degree: Sec.:Degree: Sec. | −.029 | .092 | .298 | 1.053* | .024 | −.096 | .232 |
| | (.226) | (.125) | (.221) | (.295) | (.141) | (.232) | (.251) |
| Par.degree: A.sec.:Degree: Sec. | .420 | −.138 | 1.184* | −.698 | −.027 | .325 | .356 |
| | (.322) | (.248) | (.398) | (.732) | (.224) | (.321) | (.352) |
| Par.degree: Sec.:Degree: A.sec. | −.205 | −.042 | .265 | .804* | −.245 | −.251 | .464 |
| | (.235) | (.147) | (.230) | (.303) | (.173) | (.264) | (.272) |
| Par.degree: A.sec.:Degree: A.sec. | .099 | −.189 | 1.047* | −.874 | −.409 | .349 | .739* |
| | (.311) | (.253) | (.375) | (.735) | (.240) | (.339) | (.361) |
| Par.degree: Sec.:Experience | .006 | −.031* | .128* | −.036* | −.041* | .031 | .030 |
| | (.028) | (.012) | (.022) | (.014) | (.017) | (.030) | (.029) |
| Par.degree: A.sec.:Experience | .076* | .021 | .138* | .028 | −.033 | .059 | .072* |
| | (.027) | (.016) | (.031) | (.020) | (.019) | (.034) | (.030) |
| Par.degree: Sec.:Experience$^2$ | −.0002 | .001* | −.003* | .001 | .0004 | −.001 | −.0005 |
| | (.001) | (.0003) | (.001) | (.0003) | (.0004) | (.001) | (.001) |
| Par.degree: A.sec.:Experience$^2$ | −.002* | −.0005 | −.004* | −.001* | .0002 | −.001 | −.002* |
| | (.001) | (.0004) | (.001) | (.0005) | (.0004) | (.001) | (.001) |
| Intercept | 10.030* | 9.865* | 9.340* | 9.058* | 8.114* | 10.468* | 9.967* |
| | (.264) | (.171) | (.192) | (.146) | (.222) | (.335) | (.356) |
| N | 4977 | 6225 | 4072 | 7546 | 10680 | 2485 | 4294 |
| R-squared | .053 | .148 | .156 | .077 | .098 | .059 | .044 |
| Adj. R-squared | .048 | .144 | .150 | .073 | .096 | .048 | .037 |

*Note:* *p < .05.

Table 5.9: Extended Mincer Model, Results (II)

| | DV: Income, logged | | | | | | |
|---|---|---|---|---|---|---|---|
| | **ES** | **FI** | **FR** | **HR** | **HU** | **LT** | **NL** |
| Female | −.723* | −.378 | −.333* | −.535 | .132 | −1.412* | .219 |
| | (.245) | (.210) | (.148) | (.291) | (.125) | (.414) | (.178) |
| Parent's degree: Secondary | .002 | .133 | −.379 | −.128 | .424* | −.455 | .949* |
| | (.428) | (.238) | (.246) | (.269) | (.160) | (.455) | (.211) |
| Parent's degree: Above sec. | .102 | .259 | −.025 | −1.111* | .192 | .441 | .443 |
| | (.438) | (.297) | (.256) | (.326) | (.281) | (1.009) | (.265) |
| Migration | −.003 | −.091 | .188 | −.128 | .563 | −1.276 | −.760* |
| | (.356) | (.397) | (.204) | (.357) | (.446) | (.845) | (.223) |
| Degree: Secondary | .445* | .379* | .214* | .858* | .413* | .231 | .286* |
| | (.096) | (.124) | (.073) | (.141) | (.059) | (.232) | (.103) |
| Degree: Above sec. | .764* | .620* | .604* | 1.273* | 1.020* | .981* | .690* |
| | (.097) | (.136) | (.087) | (.169) | (.085) | (.259) | (.117) |
| Experience | .019 | .041* | .048* | .037 | .055* | .013 | .039* |
| | (.015) | (.013) | (.009) | (.021) | (.009) | (.030) | (.013) |
| Experience$^2$ | −.001* | −.001* | −.001* | −.0004 | −.001* | −.0004 | −.001* |
| | (.0003) | (.0003) | (.0002) | (.0004) | (.0002) | (.001) | (.0003) |
| Female:Par.degree: Sec. | −.222 | −.015 | −.054 | −.067 | −.063 | −.099 | −.348* |
| | (.181) | (.106) | (.101) | (.118) | (.056) | (.173) | (.100) |
| Female:Par.degree: A.sec. | .327 | .206 | −.119 | −.286 | −.067 | −.326 | −.162 |
| | (.168) | (.115) | (.097) | (.185) | (.083) | (.226) | (.116) |
| Female:Migration | .197 | .291 | −.130 | −.085 | −.034 | −.544* | .376* |
| | (.145) | (.181) | (.091) | (.127) | (.160) | (.263) | (.111) |
| Par.degree: Sec.:Migration | .402 | −.371 | −.473* | −.035 | −.232 | −.320 | −.121 |
| | (.248) | (.243) | (.158) | (.148) | (.209) | (.293) | (.138) |
| Par.degree: A.sec.:Migration | −.067 | −.144 | −.647* | −.711* | −.072 | −1.560* | .320* |
| | (.223) | (.226) | (.143) | (.238) | (.270) | (.446) | (.143) |
| Female:Degree: Sec. | −.027 | .216 | .069 | −.130 | −.088 | .161 | −.024 |
| | (.139) | (.168) | (.097) | (.184) | (.081) | (.321) | (.128) |
| Female:Degree: A.sec. | .268 | .262 | .276* | .428 | −.112 | .569 | −.090 |
| | (.140) | (.174) | (.111) | (.219) | (.098) | (.334) | (.139) |
| Female:Experience | .023 | −.045* | −.027* | .014 | −.027* | .034 | −.045* |
| | (.020) | (.014) | (.011) | (.021) | (.009) | (.027) | (.014) |
| Female:Experience$^2$ | −.0003 | .001* | .0005* | .00004 | .001* | .0002 | .0005 |
| | (.0004) | (.0003) | (.0002) | (.0005) | (.0002) | (.001) | (.0003) |
| Migration:Degree: Sec. | −.473* | −.752* | −.183 | −.239 | −.115 | .656 | .131 |
| | (.179) | (.251) | (.123) | (.212) | (.252) | (.550) | (.166) |
| Migration:Degree: A.sec. | −.715* | −.235 | .075 | −.394 | −.367 | 1.291* | −.076 |
| | (.210) | (.255) | (.143) | (.255) | (.317) | (.599) | (.176) |
| Migration:Experience | .016 | .028 | −.034* | .052* | −.032 | .063 | .030 |
| | (.029) | (.031) | (.016) | (.026) | (.033) | (.053) | (.018) |
| Migration:Experience$^2$ | −.001 | −.001 | .001* | −.001* | .001 | −.001 | −.0004 |
| | (.001) | (.001) | (.0003) | (.001) | (.001) | (.001) | (.0004) |
| Par.degree: Sec.:Degree: Sec. | −.007 | −.352 | −.157 | | −.088 | .628* | −.411* |
| | (.278) | (.183) | (.198) | | (.114) | (.312) | (.143) |
| Par.degree: A.sec.:Degree: Sec. | −.114 | −.565* | −.120 | | .250 | −.790 | −.577* |
| | (.375) | (.257) | (.222) | | (.255) | (.955) | (.220) |
| Par.degree: Sec.:Degree: A.sec. | .374 | −.204 | −.021 | | −.179 | .502 | −.263 |
| | (.266) | (.191) | (.201) | | (.129) | (.329) | (.157) |
| Par.degree: A.sec.:Degree: A.sec. | −.368 | −.393 | .096 | | .090 | −.769 | −.415 |
| | (.347) | (.254) | (.219) | | (.257) | (.945) | (.222) |
| Par.degree: Sec.:Experience | −.017 | .010 | .048* | .027 | −.010 | −.031 | −.037* |
| | (.036) | (.018) | (.018) | (.024) | (.011) | (.034) | (.017) |
| Par.degree: A.sec.:Experience | .016 | .014 | .018 | .119* | .006 | .067 | .007 |
| | (.032) | (.020) | (.017) | (.032) | (.014) | (.042) | (.019) |
| Par.degree: Sec.:Experience$^2$ | .0005 | .00001 | −.001 | −.001 | .0001 | .001 | .001 |
| | (.001) | (.0004) | (.0004) | (.001) | (.0002) | (.001) | (.0004) |
| Par.degree: A.sec.:Experience$^2$ | −.0002 | −.0003 | −.0003 | −.002* | −.0004 | −.001 | .00001 |
| | (.001) | (.001) | (.0004) | (.001) | (.0003) | (.001) | (.0005) |
| Intercept | 9.228* | 9.969* | 9.611* | 8.480* | 8.402* | 8.185* | 9.429* |
| | (.190) | (.175) | (.119) | (.280) | (.114) | (.386) | (.162) |
| N | 10983 | 4162 | 9650 | 4187 | 9931 | 4216 | 5504 |
| R-squared | .027 | .053 | .070 | .075 | .065 | .073 | .077 |
| Adj. R-squared | .025 | .047 | .068 | .069 | .062 | .067 | .072 |

*Note:* *p < .05.

Table 5.10: Extended Mincer Model, Results (III)

| | DV: Income, logged | | | | | | |
|---|---|---|---|---|---|---|---|
| | **NO** | **PL** | **SE** | **SI** | **SK** | **UK** | **US** |
| Female | −.083 | −1.875* | −1.111* | −.432* | −.304 | −.666* | −.428* |
| | (.249) | (.273) | (.349) | (.125) | (.250) | (.189) | (.212) |
| Parent's degree: Secondary | −.614 | −.347 | −.403 | .116 | −.049 | .399 | −.113 |
| | (.322) | (.323) | (.402) | (.176) | (.315) | (.302) | (.350) |
| Parent's degree: Above sec. | −.496 | −1.341 | .437 | .177 | .165 | .492 | −.236 |
| | (.322) | (1.340) | (.544) | (.239) | (.597) | (.360) | (.340) |
| Migration | −.599 | −2.931* | .376 | .254 | .524 | −.197 | −.767* |
| | (.340) | (1.395) | (.433) | (.163) | (1.178) | (.240) | (.333) |
| Degree: Secondary | .221 | .786* | .293 | .270* | .235 | .309* | .383* |
| | (.159) | (.140) | (.206) | (.064) | (.163) | (.109) | (.139) |
| Degree: Above sec. | .516* | 1.911* | .831* | .787* | .680* | .718* | .991* |
| | (.192) | (.204) | (.243) | (.080) | (.200) | (.118) | (.157) |
| Experience | .009 | −.013 | .028 | .015 | .042* | .032* | .028 |
| | (.022) | (.019) | (.023) | (.008) | (.018) | (.012) | (.025) |
| Experience$^2$ | −.00004 | .0002 | −.0003 | −.0003 | −.001* | −.001* | −.0004 |
| | (.0005) | (.0004) | (.0005) | (.0002) | (.0003) | (.0003) | (.001) |
| Female:Par.degree: Sec. | .009 | .679* | −.021 | −.068 | .155 | −.038 | .113 |
| | (.143) | (.111) | (.157) | (.063) | (.090) | (.118) | (.118) |
| Female:Par.degree: A.sec. | −.076 | .777* | .153 | −.007 | −.144 | −.102 | .088 |
| | (.156) | (.180) | (.178) | (.083) | (.143) | (.123) | (.121) |
| Female:Migration | .309 | .160 | .148 | −.020 | −.306 | .093 | −.067 |
| | (.162) | (.474) | (.171) | (.074) | (.377) | (.123) | (.126) |
| Par.degree: Sec.:Migration | −.183 | −.666 | .116 | −.119 | .088 | .227 | .411* |
| | (.221) | (.546) | (.228) | (.111) | (.455) | (.170) | (.183) |
| Par.degree: A.sec.:Migration | −.225 | .665 | .413 | −.007 | .486 | .059 | .019 |
| | (.213) | (.861) | (.230) | (.126) | (.705) | (.158) | (.161) |
| Female:Degree: Sec. | −.524* | .508* | .616* | −.004 | .206 | .042 | .223 |
| | (.166) | (.207) | (.267) | (.085) | (.211) | (.151) | (.132) |
| Female:Degree: A.sec. | −.522* | 1.036* | .649* | .129 | .201 | .217 | .090 |
| | (.176) | (.238) | (.287) | (.101) | (.226) | (.158) | (.136) |
| Female:Experience | .026 | −.025 | −.003 | .020* | −.039* | −.011 | −.033* |
| | (.019) | (.018) | (.021) | (.010) | (.014) | (.014) | (.016) |
| Female:Experience$^2$ | −.001 | .0005 | .0003 | −.0002 | .001* | .001 | .001* |
| | (.0004) | (.0004) | (.0005) | (.0002) | (.0003) | (.0003) | (.0004) |
| Migration:Degree: Sec. | .364 | .710 | −.470 | −.128 | .110 | .0003 | −.138 |
| | (.226) | (.917) | (.321) | (.094) | (.675) | (.186) | (.181) |
| Migration:Degree: A.sec. | .777* | .627 | −.626 | .074 | −.159 | −.181 | −.271 |
| | (.220) | (1.137) | (.347) | (.132) | (.836) | (.179) | (.185) |
| Migration:Experience | −.019 | .250* | −.046 | −.032* | −.035 | .009 | .091* |
| | (.029) | (.091) | (.030) | (.013) | (.077) | (.020) | (.027) |
| Migration:Experience$^2$ | .0004 | −.005* | .001 | .001* | .001 | −.0003 | −.002* |
| | (.001) | (.002) | (.001) | (.0003) | (.002) | (.0005) | (.001) |
| Par.degree: Sec.:Degree: Sec. | .511* | −.084 | .249 | −.146 | −.289 | −.220 | −.132 |
| | (.188) | (.233) | (.296) | (.136) | (.238) | (.257) | (.160) |
| Par.degree: A.sec.:Degree: Sec. | .226 | 1.054 | −.999* | −.118 | −.268 | −.179 | .002 |
| | (.218) | (1.330) | (.479) | (.215) | (.557) | (.334) | (.192) |
| Par.degree: Sec.:Degree: A.sec. | .588* | −.457 | .359 | −.149 | −.297 | −.360 | −.091 |
| | (.222) | (.276) | (.325) | (.145) | (.265) | (.261) | (.177) |
| Par.degree: A.sec.:Degree: A.sec. | .357 | .786 | −.893 | −.206 | −.594 | −.383 | .117 |
| | (.234) | (1.339) | (.493) | (.216) | (.565) | (.321) | (.200) |
| Par.degree: Sec.:Experience | .010 | .050* | .013 | .002 | .025 | −.006 | .027 |
| | (.025) | (.021) | (.028) | (.012) | (.018) | (.020) | (.028) |
| Par.degree: A.sec.:Experience | .022 | .050 | .048 | −.013 | .035 | −.004 | .024 |
| | (.026) | (.032) | (.029) | (.014) | (.025) | (.020) | (.026) |
| Par.degree: Sec.:Experience$^2$ | −.0001 | −.001 | −.0001 | −.00004 | −.0005 | .0001 | −.001 |
| | (.001) | (.0005) | (.001) | (.0003) | (.0004) | (.0005) | (.001) |
| Par.degree: A.sec.:Experience$^2$ | −.0002 | −.001 | −.001 | .001 | −.001 | .0001 | −.0003 |
| | (.001) | (.001) | (.001) | (.0004) | (.001) | (.001) | (.001) |
| Intercept | 10.363* | 8.592* | 9.608* | 9.743* | 9.080* | 9.793* | 9.510* |
| | (.277) | (.252) | (.335) | (.107) | (.259) | (.148) | (.312) |
| N | 2449 | 11497 | 3110 | 4015 | 6108 | 6249 | 7458 |
| R-squared | .076 | .116 | .054 | .117 | .027 | .052 | .080 |
| Adj. R-squared | .065 | .114 | .045 | .111 | .022 | .048 | .076 |

*Note:* *p < .05.

# Appendix 5.2

Table 5.11: Model Results, I-IX, further parameters

| | (I) | (II) | (III) | (IV) | (V) | (VI) | (VII) | (VIII) | (IX) |
|---|---|---|---|---|---|---|---|---|---|
| Age | | -0.244 | -0.248 | | 0.456 | -0.237 | -0.151 | 0.035 | 0.109 |
| | | (0.492) | (0.481) | | (0.525) | (0.481) | (0.487) | (0.500) | (0.504) |
| $Age^2$ | | 0.395 | 0.389 | | -0.315 | 0.378 | 0.292 | 0.088 | 0.051 |
| | | (0.517) | (0.527) | | (0.483) | (0.526) | (0.521) | (0.507) | (0.505) |
| Occupation-0 | | | | | | | | -0.162 | |
| | | | | | | | | (0.292) | |
| Occupation-1 | | | | | | | | -0.322 | |
| | | | | | | | | (0.000) | |
| Occupation-2 | | | | | | | | -0.2 | |
| | | | | | | | | (0.000) | |
| Occupation-3 | | | | | | | | -0.201 | |
| | | | | | | | | (0.000) | |
| Occupation-4 | | | | | | | | -0.086 | |
| | | | | | | | | (0.036) | |
| Occupation-6 | | | | | | | | 0.078 | |
| | | | | | | | | (0.780) | |
| Occupation-7 | | | | | | | | -0.048 | |
| | | | | | | | | (0.154) | |
| Occupation-8 | | | | | | | | 0.045 | |
| | | | | | | | | (0.791) | |
| Occupation-9 | | | | | | | | 0 | |
| | | | | | | | | (0.502) | |
| Intercept | | | | 3.389 | 3.506 | 3.406 | 3.677 | | |
| | | | | (1.0) | (1.000) | (1.000) | (1.000) | | |
| | | | | *Country intercepts* | | | | | |
| BE | 3.254 | 3.323 | 3.336 | 3.254 | 3.34 | 3.337 | 3.34 | 3.606 | 3.333 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| CH | 3.135 | 3.195 | 3.208 | 3.138 | 3.2 | 3.201 | 3.2 | 3.486 | 3.205 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| CY | 4.194 | 4.289 | 4.306 | 4.182 | 4.292 | 4.297 | 4.293 | 4.577 | 4.301 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| CZ | 3.278 | 3.342 | 3.354 | 3.278 | 3.357 | 3.361 | 3.356 | 3.569 | 3.352 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| DE | 3.278 | 3.341 | 3.351 | 3.277 | 3.346 | 3.347 | 3.348 | 3.626 | 3.348 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| DK | 2.099 | 2.139 | 2.146 | 2.101 | 2.149 | 2.152 | 2.152 | 2.399 | 2.144 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| EE | 3.301 | 3.371 | 3.385 | 3.3 | 3.38 | 3.391 | 3.388 | 3.626 | 3.383 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| ES | 3.748 | 3.824 | 3.84 | 3.74 | 3.832 | 3.834 | 3.836 | 4.093 | 3.835 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| FI | 3.48 | 3.552 | 3.564 | 3.475 | 3.564 | 3.565 | 3.562 | | 3.562 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | | (1.000) |
| FR | 3.937 | 4.029 | 4.042 | 3.928 | 4.032 | 4.035 | 4.033 | 4.333 | 4.038 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| HR | 3.893 | 3.968 | 3.98 | 3.884 | 3.973 | 3.979 | 3.977 | 4.237 | 3.978 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| HU | 4.591 | 4.679 | 4.695 | 4.582 | 4.686 | 4.688 | 4.686 | 4.967 | 4.691 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| LT | 4.057 | 4.139 | 4.151 | 4.045 | 4.14 | 4.147 | 4.145 | 4.415 | 4.148 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| NL | 2.686 | 2.747 | 2.756 | 2.689 | 2.76 | 2.762 | 2.76 | 3.06 | 2.752 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| NO | 2.606 | 2.665 | 2.671 | 2.609 | 2.675 | 2.669 | 2.667 | 2.909 | 2.669 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| PL | 3.399 | 3.465 | 3.474 | 3.397 | 3.475 | 3.482 | 3.477 | 3.76 | 3.471 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| SE | 2.979 | 3.049 | 3.057 | 2.984 | 3.061 | 3.066 | 3.063 | 3.313 | 3.055 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| SI | 4.216 | 4.297 | 4.311 | 4.207 | 4.301 | 4.302 | 4.301 | 4.599 | 4.308 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| SK | 3.763 | 3.839 | 3.853 | 3.754 | 3.848 | 3.853 | 3.854 | 4.118 | 3.85 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| UK | 2.931 | 2.989 | 2.999 | 2.933 | 2.999 | 3 | 2.999 | 3.245 | 2.996 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| US | 2.218 | 2.269 | 2.281 | 2.218 | 2.281 | 2.285 | 2.281 | 2.509 | 2.278 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| | | | | *Variance components* | | | | | |
| Intercept | | | | 0.455 | 0.409 | 0.331 | 0.355 | | |
| | | | | (1.0) | (1.000) | (1.000) | (1.000) | | |
| | | | | *Cut points* | | | | | |
| Cut(1) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | (0.0) | (0.000) | (0.000) | (0.0) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Cut(2) | 1.634 | 1.67 | 1.675 | 1.634 | 1.674 | 1.676 | 1.674 | 1.71 | 1.673 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| Cut(3) | 2.534 | 2.593 | 2.602 | 2.533 | 2.6 | 2.603 | 2.601 | 2.664 | 2.6 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| Cut(4) | 4.363 | 4.459 | 4.476 | 4.36 | 4.473 | 4.476 | 4.475 | 4.606 | 4.473 |
| | (1.0) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |

*Note:* Number in parentheses indicate percentage of posterior above zero.

Table 5.12: Model Results, X-XIII, further parameters

| | *(III)* | (X) | (XI) | (XII) | (XIII) |
|---|---|---|---|---|---|
| Age | -0.248 | 0.014 | 0.471 | -0.273 | 0.117 |
| | (0.481) | (0.503) | (0.525) | (0.483) | (0.496) |
| $Age^2$ | 0.389 | 0.162 | -0.352 | 0.408 | 0.009 |
| | (0.527) | (0.508) | (0.481) | (0.526) | (0.512) |
| Occupation-0 | | | | | -0.28 |
| | | | | | (0.164) |
| Occupation-1 | | | | | -0.387 |
| | | | | | (0.000) |
| Occupation-2 | | | | | -0.188 |
| | | | | | (0.000) |
| Occupation-3 | | | | | -0.222 |
| | | | | | (0.000) |
| Occupation-4 | | | | | -0.106 |
| | | | | | (0.013) |
| Occupation-6 | | | | | -0.041 |
| | | | | | (0.328) |
| Occupation-7 | | | | | -0.022 |
| | | | | | (0.317) |
| Occupation-8 | | | | | 0.042 |
| | | | | | (0.792) |
| Occupation-9 | | | | | 0.015 |
| | | | | | (0.631) |
| Intercept | | | | 3.525 | 3.686 |
| | | | | (1.000) | (1.000) |
| | | | *Country intercepts* | | |
| BE | 3.336 | | 3.297 | | |
| | (1.000) | | (1.000) | | |
| CH | 3.208 | | 3.17 | | |
| | (1.000) | | (1.000) | | |
| CY | 4.306 | | 4.25 | | |
| | (1.000) | | (1.000) | | |
| CZ | 3.354 | 3.486 | | | |
| | (1.000) | (1.000) | | | |
| DE | 3.351 | | 3.312 | | |
| | (1.000) | | (1.000) | | |
| DK | 2.146 | | 2.126 | | |
| | (1.000) | | (1.000) | | |
| EE | 3.385 | 3.52 | | | |
| | (1.000) | (1.000) | | | |
| ES | 3.84 | | 3.792 | | |
| | (1.000) | | (1.000) | | |
| FI | 3.564 | | 3.521 | | |
| | (1.000) | | (1.000) | | |
| FR | 4.042 | | 3.992 | | |
| | (1.000) | | (1.000) | | |
| HR | 3.98 | 4.136 | | | |
| | (1.000) | (1.000) | | | |
| HU | 4.695 | 4.874 | | | |
| | (1.000) | (1.000) | | | |
| LT | 4.151 | 4.315 | | | |
| | (1.000) | (1.000) | | | |
| NL | 2.756 | | 2.725 | | |
| | (1.000) | | (1.000) | | |
| NO | 2.671 | | 2.643 | | |
| | (1.000) | | (1.000) | | |
| PL | 3.474 | 3.61 | | | |
| | (1.000) | (1.000) | | | |
| SE | 3.057 | | 3.022 | | |
| | (1.000) | | (1.000) | | |
| SI | 4.311 | 4.485 | | | |
| | (1.000) | (1.000) | | | |
| SK | 3.853 | 4.007 | | | |
| | (1.000) | (1.000) | | | |
| UK | 2.999 | | 2.964 | | |
| | (1.000) | | (1.000) | | |
| US | 2.281 | | 2.256 | | |
| | (1.000) | | (1.000) | | |
| | | | *Variance components* | | |
| Intercept | | | | 0.441 | 0.44 |
| | | | | (1.000) | (1.000) |
| | | | *Cut points* | | |
| Cut(1) | 0 | 0 | 0 | 0 | 0 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Cut(2) | 1.675 | 1.724 | 1.664 | 1.682 | 1.686 |
| | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| Cut(3) | 2.602 | 2.707 | 2.576 | 2.614 | 2.622 |
| | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| Cut(4) | 4.476 | 4.672 | 4.413 | 4.499 | 4.516 |
| | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |

*Note:* Number in parentheses indicate percentage of posterior above zero.

# Chapter 6

# Beliefs and Aversion to Unequal Opportunities

> "Every generation imagines itself to be more intelligent than the one that went before it, and wiser than the one that comes after it." – George Orwell, 1949, *Nineteen Eighty-Four*

The previous chapter looked at the formation of redistributive preference from a rather conventional rational choice perspective. While inequity-aversion was explored as a behavioral motive in addition to the conventional focus on material self-interest, assumptions about perfect rationality were retained, in particular, regarding the unbiasedness of beliefs. Although it is usually not the goal of rational choice analyses to accurately describe individual behavior but rather to reveal how patterns of exchange manifest structurally (Coleman and Fararo, 1992, p.xi), the accompanying assumptions often face scrutiny. As a consequence, a growing number of political economists advocate a behavioral perspective that acknowledges the boundedness of rationality. From this perspective, they explore theories that originate from the rational choice literature, but either loosen assumptions or explore them explicitly.

A particularly promising stream in this literature is research that inquires about the

role of perceptions, or what is referred to here as beliefs (see Section 2.2.3). Individuals are not assumed to possess unbiased beliefs but are regarded to hold (biased) beliefs about the world that correspond to the limited information available to them, and to act directly upon those beliefs. In the same vein, this chapter explores what can be revealed about behavioral patterns and preference formation if people's beliefs about their own economic standing and the distribution of incomes, in particular covariation with circumstances, are taken into account.

This chapter begins by introducing how beliefs are commonly measured and discusses findings of related research. Subsequently, the effects of such beliefs on redistributive preferences are explored; first on the individual level only, and then their variation across countries.

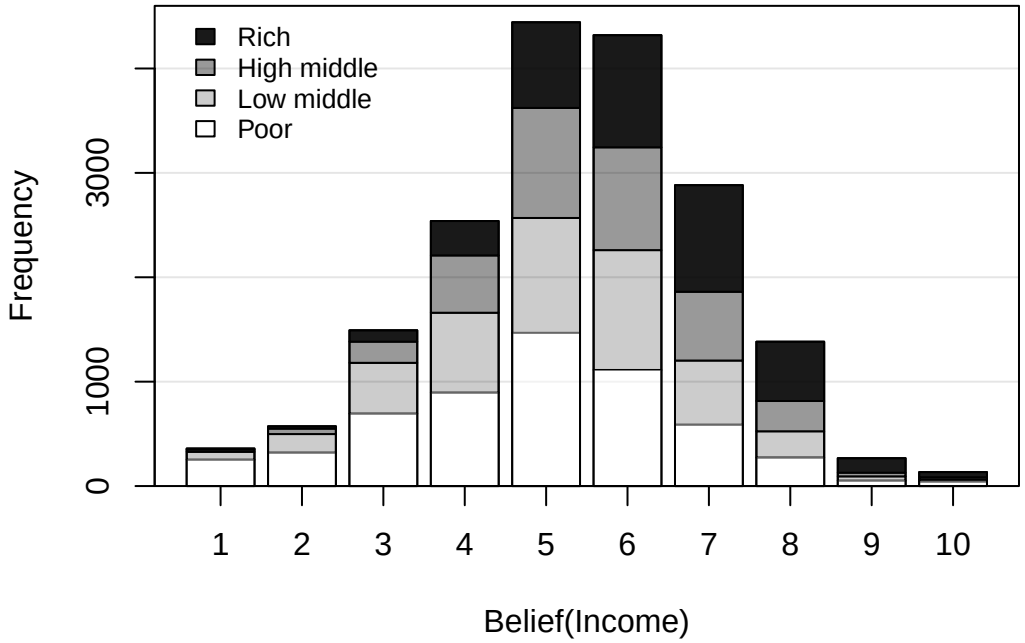
## 6.1 Beliefs about Income and its Distribution

This chapter again draws on ISSP data, which was employed above to develop a measure for how unequal people believe labor market opportunities to be (see Section 4.2). The 2009-survey[1] featured a module on social inequality, which asked people about their own standing in society, the distribution of economic resources, and factors shaping economic attainment. All countries included in the earlier preference analyses are part of the ISSP, such that no merging of separate data sets is necessary.

What do people believe about their own economic standing in society? Previous research has shown that such beliefs are characterized by a strong middle bias. Most people think of themselves as being middle class, or close to it (Evans and Kelley, 2004). The importance of such biases for preferences becomes obvious when they are corrected. If confronted with their actual standing, people adjust preferences for redistribution (Cruces et al., 2012) and progressivity (Fernández-Albertos and Kuo, 2015) in a way that serves their material self-interest. The ISSP elicits such beliefs by asking respondents to rank

[1]ISSP's 2009-survey constitutes the 4th wave of the social inequality module, data collection began as early as 2008 in some countries and lasted until 2012 in others (**?**).

Figure 6.1: Beliefs about Own Economic Standing, pooled




*Note:* Self-identified economic standing on 10-point scale. Grey shading indicates share of respondents with actual income within half a standard deviation from respective country mean (dark grey, above mean), below (white), and above (black). After multiple imputation (unweighted).

themselves on a 10-step economic scale.[2] Given a representative sample of the population, responses should be more or less equally distributed across categories, if people held accurate beliefs about their standing. Figure 6.1, which displays the pooled frequency distribution of responses, shows that this is far from the truth. The strong middle bias becomes immediately obvious. Indeed, almost half of the respondents (47.5%) position themselves in categories 5 or 6.

Despite the strong middle bias, beliefs are not completely unrelated to where people actually stand. The shading of the bars in Figure 6.1 coarsely indicates which income group an individual actually belongs to. The share of rich respondents, with an income of more than half a standard deviation above their respective country mean, is colored black. The share of those whose incomes are more than half a standard deviation below is colored white. Respondents within that range are indicated by grey shading, which is darker for those above their country mean. One can see that poorer respondents tend to

[2]The exact phrasing is as follows, "In our society there are groups which tend to be towards the top and groups which tend to be towards the bottom. Below is a scale that runs from top to bottom. Where would you put yourself now on this scale?"

rank themselves lower than rich respondents. Indeed, barely any rich respondent believes that their rank is below the fourth, and few poor respondents rank themselves above the seventh. The correlation coefficient between both a person's belief and their actual income is .29, which is neither high nor negligible. While what people believe about their economic position is biased in absolute terms, they are less off in terms of their relative standing.[3]

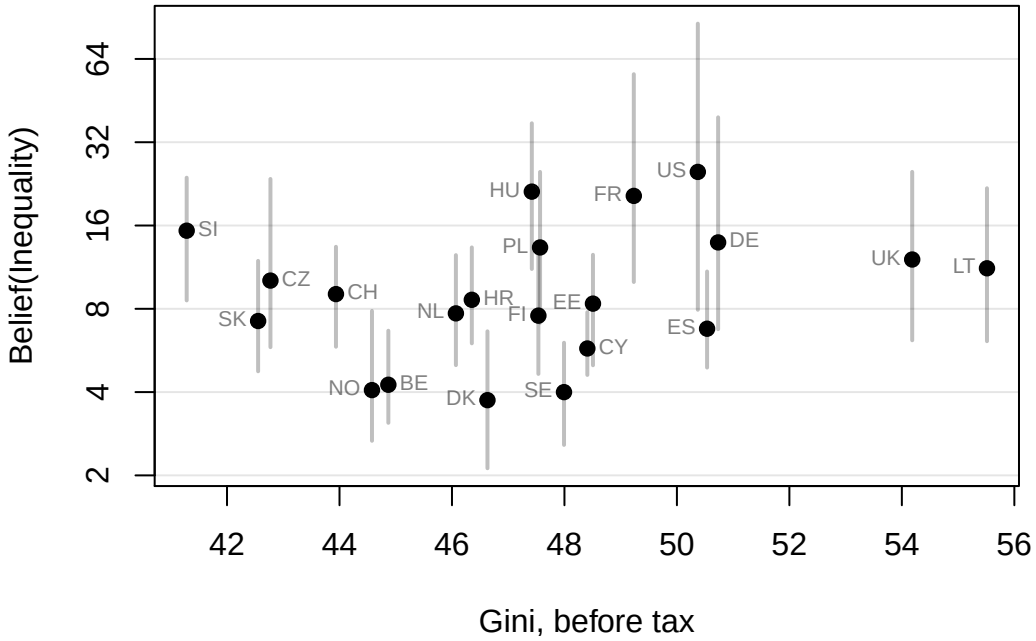
Next, beliefs about inequality, that is economic inequality as conventionally understood, are also known to be systematically biased. Putting beliefs aside, inequality is most commonly assessed by the Gini coefficient, which is also the measure of choice for many political economy inquiries. While the Gini coefficient is valuable analytically, it is unreasonable to elicit beliefs about inequality by asking people directly about what they think the Gini coefficient is. Instead, it is common to rely on people's beliefs about pay levels of different occupations. Here, following work by Osberg and Smeeding (2006), McCall (2013), and Trump (2017), beliefs in inequality are conceptualized as the ratio between what people think the pay of a "chairman of a large national corporation" and an "unskilled worker in a factory" is, both of which are items elicited through the ISSP. For analytical purposes, *Belief(Inequality)* is defined as the logged ratio of the two pay grades.

Figure 6.2 shows the distribution of beliefs in inequality, *Belief(Inequality)*, by country, plotted against each country's Gini coefficient. Values on the vertical axis indicate the unlogged ratios. While the figure shows that beliefs about inequality are not unrelated to its actual extent (the correlation coefficient between the Gini and the mean beliefs is .25), most of the variation of beliefs is within countries, indicating that the correspondence between beliefs and facts is limited. Of course, beliefs and Gini coefficients here cannot be compared in absolute terms as they are measured on different scales. However, it is likely that people vastly underestimate inequality. For example, while the average belief in inequality, i.e. perceived pay ratio between a chief executive and an unskilled worker, is about 25 in the US, the actual ratio in 2010 was already beyond 200 (Mishel and Davis, 2014).[4]

[3]The same middle bias is present in all countries (see Figure 6.8 in Appendix 6.1).

[4]The actual pay ratio is based on an analysis of the 350 largest US firms (in terms of sales).

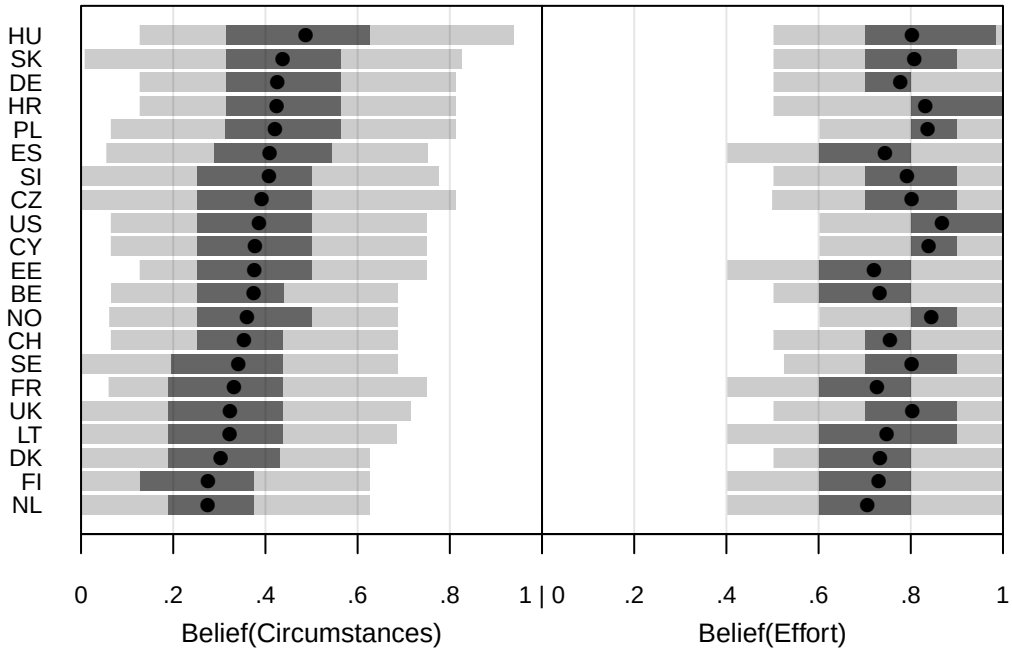
Figure 6.2: Beliefs about Inequality and Gini Coefficients, by Country




*Note:* Black dots indicates country median beliefs about income ratio between a chief executive and an unskilled worked; grey line interquartile range (r=.25). After multiple imputation (unweighted).

In Chapter 4, a measure for belief about opportunity was developed. In particular, this measure was based on questions about the importance of circumstances for success in life, *Belief(Circumstances)*. It turned out that such beliefs do not reflect the actual extent of inequality in opportunity (see Figure 4.3). Furthermore, it was argued that in seeking to capture beliefs about factors that violate equality of opportunity, some political economy research falsely relies on beliefs about the importance of effort. Here, a measure for belief in the importance of effort, *Belief(Effort)*, is constructed based on the two items of the ISSP Getting-ahead scale that refer to internal characteristics, i.e. "hard work" and "having ambition". Values range from 0, if the respondent indicates that both internal characteristics are not important at all, to 1, if both are indicated to be essential. In Chapter 4, it was shown that such measure does not–as sometimes contended–capture people's beliefs about circumstances, nor is it externally valid. Still, beliefs about effort, *Belief(Effort)*, are included as a control in some models here, in addition to the preferable *Belief(Circumstances)* measure. Figure 6.3 displays the distributions of both variables for each country.

Figure 6.3: Beliefs about Opportunity and Effort, by Country




*Note: Belief(Circumstances)* indicates average response regarding importance of external characteristics for economic attainment, *Belief(Effort)* average response regarding internal characteristics; both rescaled to range from 0 (low) to 1 (high importance). Black dot indicates mean, dark-grey shading interquartile range, and light-grey shading central 95%. After multiple imputation (unweighted).

In addition to introducing the main belief variables that are used in the following analysis, this section again underlines the importance of analyzing such beliefs. Beliefs have at best a vague correspondence to economic reality. Thus, simply assuming beliefs away threatens the explanatory power of rational choice approaches. This chapter addresses this concern by investigating beliefs directly. Of course, such an approach is not without drawbacks. The most common concern regarding research on beliefs, and perceptions more generally, is their causal status in preference formation. Do beliefs correspond to the information available in people's social environment? Do people filter such information to form beliefs to their liking? The working assumption of this chapter is that beliefs are an unfiltered reflection of information available to individuals. Therefore, the belief measures developed above are conceptualized in ways that reflect aspects of the economic reality, on which research usually focuses. On the basis of this assumption, the present chapter largely ignores concerns about causality, but these concerns are revisited in the subsequent chapter.

## 6.2 Analyzing Redistributive Preferences

### 6.2.1 Data

As mentioned above, this chapter uses ISSP data. 50 data sets have been multiply imputed to account for missing data (see Section 4.2). Table 6.1 presents descriptives for all variables used in the analysis below. First, there are the belief variables that have just been elaborated. *Belief(Income)* ranges from 0 to 1, where larger values indicate higher self-positioning. *Belief(Circumstances)* and *Belief(Effort)* have the same range, higher values indicating stronger belief in the importance of circumstances, respectively

Table 6.1: Descriptives: ISSP Data

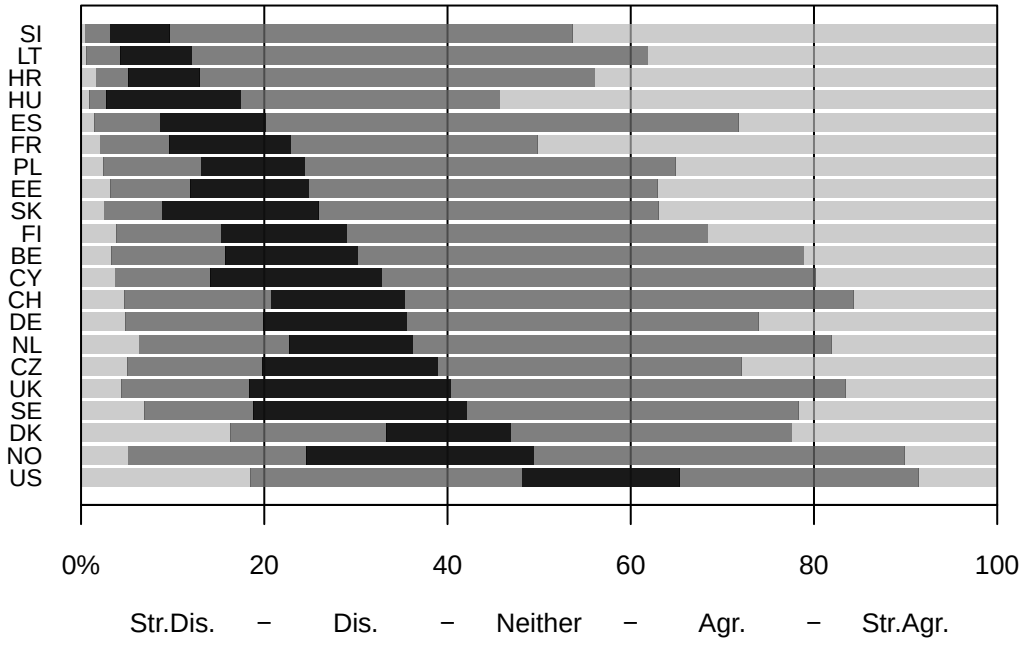
| | Mean | Median | Quart.1 | Quart.3 | Min. | Max. | St.Dev. |
|---|---|---|---|---|---|---|---|
| Belief(Income)$^c$ | 0.49 | 0.44 | 0.33 | 0.67 | 0.00 | 1.00 | 0.19 |
| Belief(Circumstances)$^c$ | 0.37 | 0.38 | 0.25 | 0.50 | 0.00 | 1.00 | 0.19 |
| Belief(Effort)$^c$ | 0.78 | 0.80 | 0.70 | 0.90 | 0.18 | 1.00 | 0.15 |
| Belief(Inequality)$^c$ | 2.32 | 2.15 | 1.61 | 2.93 | -10.40 | 9.32 | 1.17 |
| Mobility: None | 0.35 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.48 |
| Mobility: Down | 0.24 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.43 |
| Mobility: Up | 0.41 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.49 |
| Pay: Just | 0.37 | 0.00 | 0.00 | 0.98 | 0.00 | 0.98 | 0.48 |
| Pay: Below just | 0.59 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.49 |
| Pay: Above just | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.19 |
| Income$^n$ | 53.69 | 2.39 | 0.85 | 18.5 | 0.00 | 2000.00 | 153.91 |
| Female | 0.55 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.50 |
| Degree: Below second. | 0.34 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.47 |
| Degree: Secondary | 0.29 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.45 |
| Degree: Above second. | 0.37 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.48 |
| Employment: Employed | 0.71 | 1.00 | 0.00 | 1.00 | 0.00 | 1.00 | 0.45 |
| Employment: None | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.26 |
| Employment: Other | 0.21 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.41 |
| Household size$^n$ | 3.01 | 3.00 | 2.00 | 4.00 | 1.00 | 25.00 | 1.42 |
| Age$^n$ | 40.24 | 41.00 | 31.00 | 50.00 | 18.00 | 59.00 | 11.81 |
| Occupation-0 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.21 |
| Occupation-1 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.28 |
| Occupation-2 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.35 |
| Occupation-3 | 0.17 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.37 |
| Occupation-4 | 0.11 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.31 |
| Occupation-5 | 0.16 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.37 |
| Occupation-6 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.15 |
| Occupation-7 | 0.12 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.32 |
| Occupation-8 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.25 |
| Occupation-9 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.28 |
| Religiosity$^n$ | 5.96 | 6.00 | 5.00 | 8.00 | 1.00 | 8.00 | 1.95 |

*Note:* For the analysis, variables marked with $c$ are centered on the country mean. Variables marked with $n$ are normalized for each country. After multiple imputation (unweighted).

effort, for economic success. *Belief(Inequality)* expresses the logged ratio between the perceived earnings of a chief executive and an unskilled worker. *Mobility* indicates whether a respondent considers her job status to be higher than that of her father (*up*), the same (*none*), or lower (*down*). Whether a person thinks their own present income to be just, is indicated by *Pay*.

To elicit incomes, the ISSP asks respondents to identify the income category they belong to; mid-points are taken to transform this variable income into a continuous one, *Income* (in thousands of local currency). Incomes are not adjusted for differences in price levels, instead this variable is simply normalized for each country before the analysis. This is sufficient as income mainly serves as a control variable here. *Female* is a dummy variable indicating a person's gender (1 if female, 0 otherwise). *Degree* is again split into three categories, each subsumed under one dummy variable. Similarly, *Employment* distinguishes between those in employment (*Employed*), those without (*None*), and others such as pensioners and students (*Other*). *Household size* and *age* are measured continuously. *Occupation* again indicates which of the main ISCO-88 groups a respondent belongs to.

Figure 6.4: Redistribution Preferences across Countries (ISSP)




*Note:* Countries in descending order by percentage agreeing with redistribution. Shading of bars indicates "Strongly disagree", "Disagree", "Neither", "Agree", "Strongly agree". After multiple imputation (unweighted).

Finally, *Religiosity* here corresponds to how frequently one attends religious services (higher values indicating less frequent attendance). Appendix C entails a detailed codebook.

As can be glimpsed from Figure 6.4, the distribution of redistribution preferences as elicited through the ISSP is very similar to the distributions shown in the previous chapter (based on ESS and GSS data). Considering that all of these samples are representative of the respective country's adult population, and the phrasing of the question is very similar,[5] this was to be expected. A few countries change ranks, such as for example Denmark and the US, but due to the absence of any larger discrepancies, the three surveys (ESS, GSS, and ISSP) constitute comparable data sources for the analysis of redistributive preferences.

### 6.2.2 Model Specification

All models are estimated independently for each of the 50 imputed data sets, and the combined results presented in subsequent sections. As in the previous chapter, the estimated models are hierarchical and the dependent variable (redistribution preferences) is again ordered. Hence, estimation is based on the same models described in detail in Section 5.2.2. Fixed and random effects are used as appropriate.

## 6.3 Findings

### 6.3.1 The Political Relevance of Beliefs

Do the workings of self-interest and inequity-aversion change once subjective beliefs are taken into account? This chapter looks into that question empirically. Therefore, the two focal variables in this chapter are beliefs about one's economic standing, *Belief(Income)*, and beliefs about the economic importance of circumstances, *Belief(Circumstances)*. Unfortunately, data on subjective income expectations is hard to come by and no such variable

[5] "To what extent do you agree or disagree with the following statements? It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes. 1 Strongly agree, 2 Agree, 3 Neither agree nor disagree, 4 Disagree, 5 Strongly disagree, 8 Can't choose."

is included in the ISSP. Thus, the exploration of self-interest is limited to beliefs about present income. In any case, the main interest here lies in the working of inequity-aversion on the basis of beliefs. As the previous chapter has shown, there is no evidence for an effect of actual levels of inequality in opportunity on redistributive preferences. This might either be because people are not inequity-averse or because they hold wrong beliefs about inequality in opportunity. Throughout this dissertation, it was contended that the latter is the case. To verify this claim, this chapter's main contribution is to show that people are inequity-averse on the basis of their beliefs about inequality in opportunity.

Table 6.2 presents the results of the first set of estimated models (parameters not displayed here, in Appendix 6.2). Model I is the baseline model here, featuring only country fixed-effects. The second model adds the two main variables and age (and its square), which can again be considered pre-treatment. Both belief coefficients point in the expected direction. Those who believe to have higher incomes are less supportive of redistribution, and those who believe that income differences are the result of inborn circumstances are more supportive. Evidence in favor of both coefficients is strong (i.e. the percentage of the posterior distribution on either side of zero). The first test that this finding is put to, is to see whether it is robust against the inclusion of other potentially relevant beliefs about income and its distribution. Model III adds beliefs about the extent of inequality, *Belief(Inequality)*, the importance of effort in determining economic success, *Belief(Effort)*, the justness of one's own income, *Pay*, and whether one believes to have been mobile compared to her father's occupation, *Mobility*. Not all of these variables matter statistically or have the expected sign when jointly included in the model. Beliefs about inequality, for example, have no effect on whether one supports or opposes redistribution. However, believing in the importance of effort does, as expected, reduce support. At the same time, it does not account for beliefs in the importance of circumstances as sometimes assumed in the literature. Most importantly, the two belief variables under scrutiny here are only marginally reduced in importance. This implies that the effects of *Belief(Income)* and *Belief(Circumstances)* on redistributive preferences appear not to be confounded by other beliefs.

As discussed at length, beliefs are seen to be formed based on information available to people in their surrounding. What information is available to them depends on many social and economic factors. Therefore, model IV includes controls for a person's gender, level of education, income, employment status, occupation and the size of the household they live in. As no employment data is available for Lithuania and the Netherlands, this model is estimated for the remaining 19 countries only. The parameter estimate of *Belief(Income)*

Table 6.2: Redistributive Preferences under Limited Information, Model Results, I-VI

| | (I) | (II) | (III) | (IV) | (V) | (VI) |
|---|---|---|---|---|---|---|
| Belief(Income) | | -2.274 | -2.039 | -1.594 | -1.669 | -1.588 |
| | | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Belief(Circumstances) | | 0.392 | 0.378 | 0.521 | 0.472 | 0.524 |
| | | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| Mobility: up | | | 0.066 | | | |
| | | | (0.950) | | | |
| Mobility: down | | | 0.033 | | | |
| | | | (0.831) | | | |
| Belief(Effort) | | | -0.28 | | | |
| | | | (0.002) | | | |
| Belief(Inequality) | | | 0.001 | | | |
| | | | (0.527) | | | |
| Pay: below just | | | 0.473 | | | |
| | | | (1.000) | | | |
| Pay: above just | | | 0.089 | | | |
| | | | (0.850) | | | |
| Income | | | | -0.196 | -0.194 | -0.197 |
| | | | | (0.000) | (0.000) | (0.000) |
| Female | | | | 0.238 | 0.202 | 0.246 |
| | | | | (1.000) | (1.000) | (1.000) |
| Degree: below second. | | | | 0.18 | 0.219 | 0.18 |
| | | | | (1.000) | (1.000) | (1.000) |
| Degree: above second. | | | | -0.15 | -0.203 | -0.149 |
| | | | | (0.000) | (0.000) | (0.000) |
| Employment: None | | | | -0.148 | | -0.155 |
| | | | | (0.007) | | (0.005) |
| Employment: Other | | | | -0.24 | | -0.237 |
| | | | | (0.000) | | (0.000) |
| Household size | | | | 0.014 | 0.004 | 0.019 |
| | | | | (0.825) | (0.606) | (0.892) |
| Religiosity | | | | | | 0.044 |
| | | | | | | (0.999) |
| Age, Age$^2$ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Occupation | | | | ✓ | | ✓ |
| Model | FE | FE | FE | FE | FE | FE |
| Obs.(Countries) | 18392(21) | 18392(21) | 18392(21) | 17011(19) | 18392(21) | 17011(19) |
| WAIC | 49746.4 | 48887.5 | 48648 | 44930.8 | 48481.3 | 44924.5 |
| Pred.% | 30.112 | 31.151 | 31.433 | 31.492 | 31.554 | 31.506 |

*Note:* Number in parentheses indicate percentage of posterior above zero. Parameters not displayed here, in Appendix 6.2. Lithuania and Netherlands not included in models IV and VI.

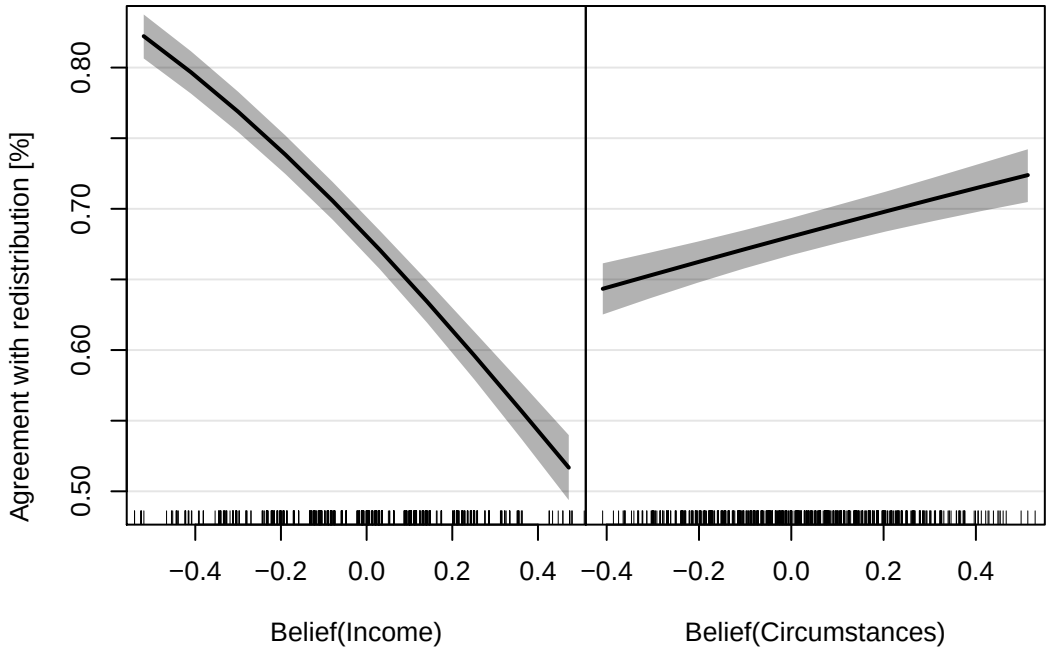
is reduced by almost a quarter, but the evidence in favor of it remains strong. Indeed, the reduction was to be expected given that, as discussed in the previous section, beliefs about income are biased but still reflect one's actual economic standing.

In the same model, the estimate corresponding to *Belief(Circumstances)* actually increases. While this might be because of a better specified model, it could also be because of the removal of two countries from the estimation process. Therefore, model V reintroduces Lithuania and the Netherlands at the expense of variables for employment status and occupational grouping. The parameter estimate of beliefs in circumstances moves again in the direction of the earlier models. Still, taking into account socio-economic conditions appears to generally increase the statistical importance of this belief.

Another variable that could potentially confound the relationship between beliefs about inequality in opportunity and redistributive preferences is religiosity. It was discussed earlier that religious beliefs are sometimes seen to distract, especially poor voters, from their material self-interest (De La O and Rodden, 2008), or to serve as a substitute for welfare state support (Scheve and Stasavage, 2006). What is more, religiosity can also affect concerns about economic fairness (Benabou and Tirole, 2006). Despite that, the results presented in model VI are no different from the previous ones.

To get an idea of the substantive importance of the estimated effects, predicted probabilities for agreeing with redistribution are calculated. This is done for the central 99% of values observed for beliefs in income and circumstances. Figure 6.5 shows that for *Belief(Income)* moving from the lower end of the range to the upper one decreases the predicted probability of agreeing with redistribution by about 30 percentage points. This echoes the finding of the previous chapter, which revealed a similar effect size for a person's actual present income. With about 8 percentage points, the respective change for *Belief(Circumstance)* is smaller but not negligible. Alternatively, the effect sizes can be compared by looking at changes in the predicted probabilities for interquartile changes on the independent variables. For belief in income going from the first to the third quartile (i.e. -.11 to .11), the probability of agreement decreases on average by 7 percentage points (95%-CI: [-6.3, -7.8]). For beliefs in circumstances an equivalent change (i.e. -.13 to .11)

Figure 6.5: Belief Effects and Redistributive Preferences




*Note:* Probability of agreement (i.e. *agree* or *strongly agree*), conditional on country-centered beliefs. Shading indicates 95% credible intervals. Based on model V. Observed values approach, within-country sampling weights applied.

induces an increase in the probability of agreement of 2.1 percentage points (95%-CI: [1.4, 2.8]).

### 6.3.2 Inequity-aversion in Comparison

Until today, the unique historical experience of CEE countries affects how ordinary citizens relate to politics. Did the experience of socialism instill greater appreciation of equality? Or, did widespread cronyism during the early transition demolish trust in the workings of the government? In fact, most studies on beliefs about economic fairness focus on the US or Western European countries, and much less is known about CEE countries.[6]

Therefore, models IV and V from the previous section are re-estimated separately on the set of CEE countries. Looking at CEE countries only (Table 6.3, Models VII, IX),[7] beliefs in income appear to be of equal import. Similarly, CEE respondents who believe

[6]Well-known exceptions include, for example, Kluegel and Mason (2004) and Loveless and Whitefield (2011).

[7]The second model excludes Lithuania from the estimation, for lack of information on respondent's employment status and occupational grouping.

that economic success is due to inborn circumstances are more supportive of redistribution. However, this estimate is weaker than what was previously found for the full sample. It is then no surprise that when the models are estimated on non-CEE countries (models IX, X),[8] a larger estimate for beliefs in circumstances is revealed. There is no discernible difference as to how beliefs about one's own economic standing affect preferences for redistribution. They do so in an equally egoistic way in both sets of countries. However, beliefs about the importance of circumstances are more consequential in the set of non-CEE countries. The remainder of this section explores in how far such variations can be explained by differences in economic context.

The previous chapter explored how economic prosperity and inequality mediate the effect of individual's present and expected income on redistributive preferences. It was found that self-interested behavior is less pronounced in richer countries, and inequality had no discernible role to play. Does this hold when beliefs are taken into account? Less has been written on what can explain differences in the importance of beliefs about economic opportunities or fairness. However, McCall (2014) does suggest that the effect of such beliefs on redistributive preferences should become more salient as inequality grows. Although she makes this argument with a keen eye on the US, the argument is here probed comparatively. Model XII presents the results of a model with random effects for the intercept as well as both belief variables, and inequality, *Gini*, and economic prosperity, *GDP* per capita, as a predictor for each of them. As in the previous chapter, both inequality and prosperity are found to reduce the general level of support for redistribution (although the prior only receives weak support). The only other noteworthy role of second-level predictors is the amplifying influence of inequality on the effect of *Belief(Circumstances)* (only weakly supported by the data).

The two final models add the most important socio-economic controls. Model XIII includes present income, gender, educational degree, and household size, all of which are available for the full set of countries. Model XIV further adds employment status

[8]The Netherlands is excluded from the second model, for lack of information on respondent's employment status and occupational grouping.

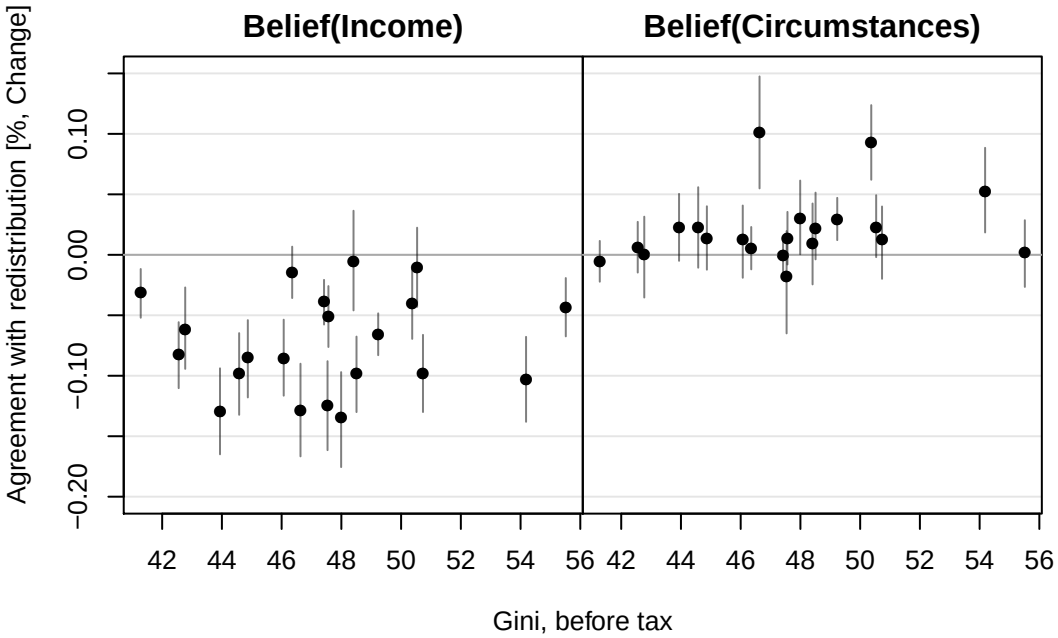
Table 6.3: Redistributive Preferences under Limited Information, Model Results, VII-XIV

| | (VII) Sample: CEE | (VIII) Sample: CEE | (IX) Sample: ~~CEE~~ | (X) Sample: ~~CEE~~ | (XI) | (XII) | (XIII) | (XIV) |
|---|---|---|---|---|---|---|---|---|
| Belief(Income) | -1.547 | -1.464 | -1.687 | -1.631 | | -2.313 | -1.704 | -1.619 |
| | (0.000) | (0.000) | (0.000) | (0.000) | | (0.000) | (0.000) | (0.000) |
| Belief(Circumstances) | 0.188 | 0.222 | 0.673 | 0.714 | | 0.244 | 0.339 | 0.421 |
| | (0.930) | (0.952) | (1.000) | (1.000) | | (0.954) | (0.986) | (0.994) |
| Income | -0.181 | -0.22 | -0.199 | -0.187 | | | -0.193 | -0.196 |
| | (0.000) | (0.000) | (0.000) | (0.000) | | | (0.000) | (0.000) |
| Female | 0.074 | 0.129 | 0.261 | 0.278 | | | 0.199 | 0.235 |
| | (0.932) | (0.989) | (1.000) | (1.000) | | | (1.000) | (1.000) |
| Degree: below second. | 0.27 | 0.265 | 0.184 | 0.136 | | | 0.205 | 0.168 |
| | (1.000) | (1.000) | (1.000) | (0.994) | | | (1.000) | (1.000) |
| Degree: above second. | -0.301 | -0.218 | -0.19 | -0.15 | | | -0.219 | -0.171 |
| | (0.000) | (0.002) | (0.000) | (0.002) | | | (0.000) | (0.000) |
| Household size | 0.037 | 0.054 | -0.005 | 0.001 | | | 0.01 | 0.02 |
| | (0.930) | (0.982) | (0.392) | (0.528) | | | (0.757) | (0.907) |
| Employment: None | | -0.215 | | -0.12 | | | | -0.147 |
| | | (0.014) | | (0.066) | | | | (0.007) |
| Employment: Other | | -0.32 | | -0.197 | | | | -0.237 |
| | | (0.000) | | (0.000) | | | | (0.000) |
| *Cross-level interactions* | | | | | | | | |
| Intercept*Gini | | | | | | -0.115 | -0.129 | -0.172 |
| | | | | | | (0.141) | (0.124) | (0.051) |
| Intercept*GDP | | | | | | -0.452 | -0.458 | -0.445 |
| | | | | | | (0.000) | (0.000) | (0.000) |
| Belief(Inc.)*Gini | | | | | | 0.001 | -0.021 | -0.076 |
| | | | | | | (0.491) | (0.459) | (0.363) |
| Belief(Inc.)*GDP | | | | | | 0.018 | -0.065 | -0.073 |
| | | | | | | (0.542) | (0.388) | (0.375) |
| Belief(Circ.)*Gini | | | | | | 0.144 | 0.176 | 0.252 |
| | | | | | | (0.841) | (0.873) | (0.959) |
| Belief(Circ.)*GDP | | | | | | 0.019 | 0.087 | 0.101 |
| | | | | | | (0.555) | (0.734) | (0.774) |
| *Variance components* | | | | | | | | |
| Belief(Inc.) | | | | | | 0.754 | 0.752 | 0.78 |
| | | | | | | (1.000) | (1.000) | (1.000) |
| Belief(Circ.) | | | | | | 0.364 | 0.392 | 0.388 |
| | | | | | | (1.000) | (1.000) | (1.000) |
| *Correlation of random coefficients* | | | | | | | | |
| Intercept*Belief(Inc.) | | | | | | 0.201 | 0.195 | 0.162 |
| | | | | | | (0.781) | (0.777) | (0.732) |
| Intercept*Belief(Circ.) | | | | | | -0.406 | -0.394 | -0.317 |
| | | | | | | (0.074) | (0.076) | (0.129) |
| Belief(Inc.)*Belief(Circ.) | | | | | | -0.041 | -0.106 | -0.094 |
| | | | | | | (0.442) | (0.356) | (0.374) |
| Age, Age$^2$ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Occupation | | ✓ | | ✓ | | | | ✓ |
| Model | FE | FE | FE | FE | RE | RE | RE | RE |
| Obs.(Countries) | 6476(8) | 5838(7) | 11916(13) | 11173(12) | 18392(21) | 18392(21) | 18392(21) | 17011(19) |
| WAIC | 15550.9 | 14133.6 | 32870.9 | 30761.2 | 49746.3 | 48755 | 48356 | 44815.1 |
| Pred.% | 35.725 | 35.554 | 29.44 | 29.547 | 30.096 | 31.352 | 31.743 | 31.679 |

*Note:* Number in parentheses indicate percentage of posterior above zero. Parameters not displayed here, in Appendix 6.2. Lithuania and Netherlands excluded from models VIII, X, and XIV.

and occupational grouping as controls, thus Lithuania and the Netherlands could not be included in the estimation. As in the fixed effects versions of the same models (IV, V), adding these controls reduces the parameter estimate of *Belief(Income)* and increases the estimate of *Belief(Circumstances)*. Regarding the influence of country-level predictors in

Figure 6.6: Inequality and Belief Effects, by Country



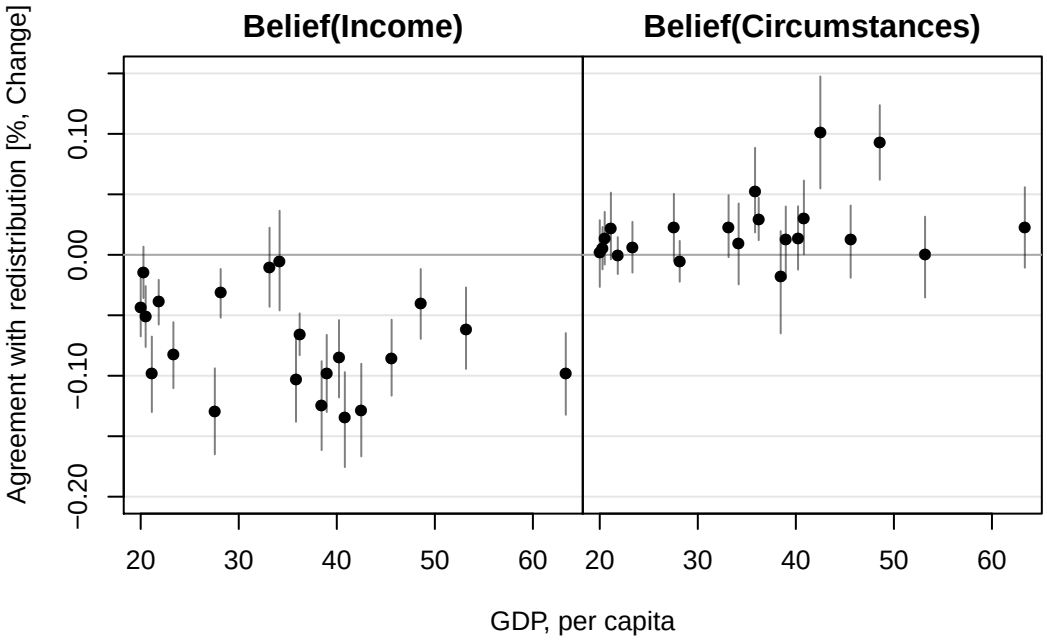

*Note:* Predicted change in probability of agreement (i.e. *agree* or *strongly agree*) due to a interquartile change in the respective independent variables, conditional on Gini (before tax). Lines indicate 95% credible intervals. Based on model XIII. Observed values approach, within-country sampling weights applied.

the individual-level coefficients, nothing much changes. That being said, the evidence for the previously identified effects strengthens. In particular, the findings now strongly suggest that the importance of belief in circumstances is moderated by the level of inequality. In countries where inequality is higher, preference formation is more responsive to such beliefs.

Marginal effect plots summarize the effects of economic contexts on the importance of beliefs in preference formation. Given a country's level of inequality (Figure 6.6) respectively prosperity (Figure 6.7), these plots show for each country the change in predicted probability of agreeing with redistribution for an interquartile change on the given independent variable. Of course, mostly no cross-level interactions were revealed and this becomes clear from the respective plots. The exception is the greater responsiveness of redistributive preferences to beliefs about circumstances in more unequal countries (right panel of Figure 6.6).

What the plots also show, is the large variation of individual-level coefficients across countries. While support for redistribution decreases everywhere if a person believes their

Figure 6.7: Prosperity and Belief Effects, by Country




*Note:* Predicted change in probability of agreement (i.e. *agree* or *strongly agree*) due to a interquartile change in the respective independent variables, conditional on GDP per capita (1,000s, 2010-US$, PPP). Lines indicate 95% credible intervals. Based on model XIII. Observed values approach, within-country sampling weights applied.

income to be higher, in a few countries this effect is insignificant. In many others an interquartile change in *Belief(Income)* reduces agreement by around, or more than, 10 percentage points. For beliefs about inequality in opportunity, most country-specific effects are rather close to zero, for many of which the credible interval actually overlaps with zero. As such, positive coefficients almost everywhere speak to an effect in the expected direction. However, the evidence in favor of it is rather weak, and likely driven by a few countries where beliefs in circumstances have a strong effect (e.g. Denmark, US). As such, the analysis here shows that even when beliefs are taken into account, aversion to unequal opportunities appears to play a "secondary" role when it comes to the formation of redistributive preferences.



## 6.4 Discussion

This chapter explored in how far redistributive preferences are characterized by self-interest and inequity-aversion when subjective beliefs are taken into account. Unlike in the previous

chapter, it was not assumed that such beliefs reflect the material world without bias. The findings here show that self-interest is a strong determinant of redistributive preference even when subjective beliefs about people's own economic standing are taken into account. In particular, those who positioned themselves favorably compared to their fellow citizens are less supportive of redistribution.

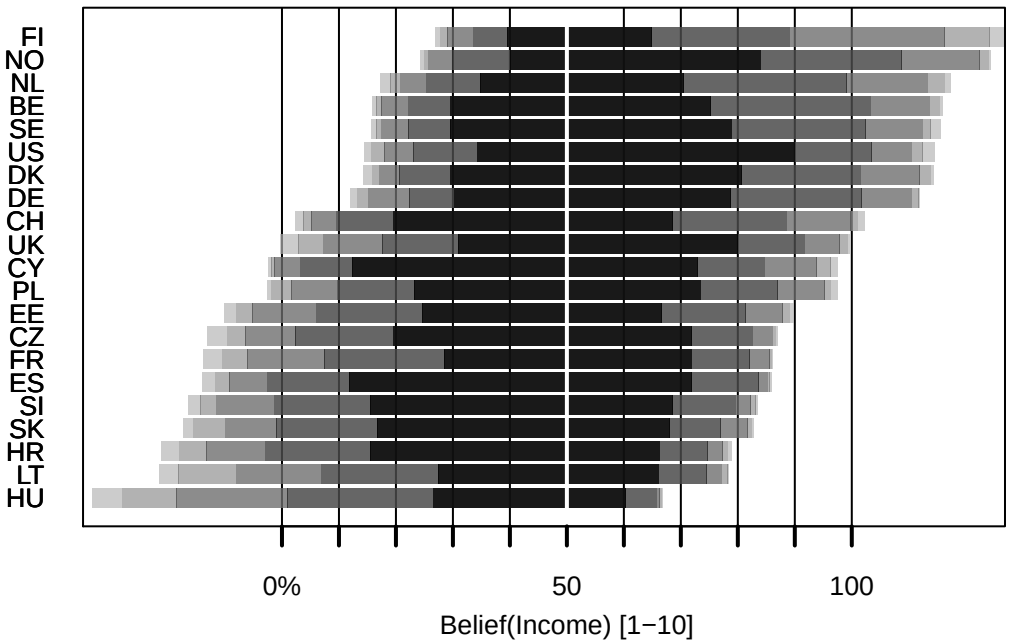
Furthermore, the analysis here also found evidence for inequity-averse behavior. Those who believe that circumstances play a stronger role in the determination of income differences express greater support for redistributive policies. While the strength (and evidence in favor) of this effect is far from overwhelming, especially when zooming in on its variation across countries, the findings here do suggest that it is imperative to account for subjective beliefs if inequity-aversion is to be understood.

It is important to remember that under the assumption of perfect rationality, i.e. that individuals hold accurate beliefs about the world, no support at all was found for inequity-aversion (see Chapter 5). One reason for this discrepancy might be that individuals have access only to limited information in their social surrounding, which biases their beliefs about the world in systematic ways. Therefore, the next chapter considers the role information plays in mediating the relationship between socio-economic structures and people's preferences for redistribution.

## 6.5 Appendix

### Appendix 6.1

Figure 6.8: Beliefs about Own Income across Countries




*Note:* Each shading indicates share of respondents who position themselves at the respective rank (1-10), black indicates the mid-categories (5 & 6). Horizontal axis indicates counterfactual distribution with equal shares for each rank (i.e. 10% per rank). After multiple imputation (unweighted).

# Appendix 6.2

Table 6.4: Model Results, I-VI, further parameters

| | (I) | (II) | (III) | (IV) | (V) | (VI) |
|---|---|---|---|---|---|---|
| Age | | -0.246 | -0.314 | 0.03 | 0.198 | 0.033 |
| | | (0.008) | (0.001) | (0.601) | (0.969) | (0.608) |
| $Age^2$ | | 0.307 | 0.369 | 0.053 | -0.105 | 0.055 |
| | | (0.998) | (1.000) | (0.672) | (0.158) | (0.681) |
| Occupation-0 | | | | -0.455 | | -0.444 |
| | | | | (0.021) | | (0.026) |
| Occupation-1 | | | | -0.419 | | -0.419 |
| | | | | (0.000) | | (0.000) |
| Occupation-2 | | | | -0.128 | | -0.123 |
| | | | | (0.018) | | (0.023) |
| Occupation-3 | | | | -0.031 | | -0.03 |
| | | | | (0.276) | | (0.287) |
| Occupation-4 | | | | -0.084 | | -0.084 |
| | | | | (0.073) | | (0.075) |
| Occupation-6 | | | | 0.038 | | 0.05 |
| | | | | (0.642) | | (0.679) |
| Occupation-7 | | | | 0.149 | | 0.148 |
| | | | | (0.992) | | (0.993) |
| Occupation-8 | | | | 0.25 | | 0.252 |
| | | | | (1.000) | | (1.000) |
| Occupation-9 | | | | 0.139 | | 0.143 |
| | | | | (0.982) | | (0.985) |
| | | | *Country intercepts* | | | |
| BE | 3.031 | 3.116 | 2.921 | 3.157 | 3.083 | 3.152 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| CH | 2.77 | 2.827 | 2.631 | 2.772 | 2.69 | 2.768 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| CY | 2.972 | 3.038 | 2.804 | 3.057 | 3.011 | 3.052 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| CZ | 2.962 | 3.037 | 2.745 | 2.946 | 2.897 | 2.94 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| DE | 2.988 | 3.069 | 2.812 | 2.997 | 2.913 | 2.992 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| DK | 2.41 | 2.474 | 2.224 | 2.546 | 2.484 | 2.539 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| EE | 3.549 | 3.643 | 3.348 | 3.673 | 3.587 | 3.668 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| ES | 3.441 | 3.535 | 3.24 | 3.498 | 3.444 | 3.494 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| FI | 3.296 | 3.374 | 3.076 | 3.427 | 3.349 | 3.421 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| FR | 3.988 | 4.094 | 3.792 | 4.122 | 4.05 | 4.115 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| HR | 3.991 | 4.101 | 3.779 | 4.088 | 4.019 | 4.084 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| HU | 4.248 | 4.362 | 4.012 | 4.309 | 4.257 | 4.304 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| LT | 3.851 | 3.957 | 3.635 | | 3.931 | |
| | (1.0) | (1.000) | (1.000) | | (1.000) | |
| NL | 2.77 | 2.83 | 2.636 | | 2.862 | |
| | (1.0) | (1.000) | (1.000) | | (1.000) | |
| NO | 2.375 | 2.435 | 2.174 | 2.515 | 2.433 | 2.508 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| PL | 3.498 | 3.585 | 3.261 | 3.602 | 3.51 | 3.598 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| SE | 2.764 | 2.829 | 2.514 | 2.819 | 2.762 | 2.813 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| SI | 4.123 | 4.248 | 3.953 | 4.215 | 4.167 | 4.209 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| SK | 3.55 | 3.641 | 3.305 | 3.582 | 3.527 | 3.578 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| UK | 2.721 | 2.78 | 2.508 | 2.761 | 2.684 | 2.756 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| US | 1.587 | 1.617 | 1.341 | 1.69 | 1.621 | 1.683 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| | | | *Cut points* | | | |
| Cut(1) | 0 | 0 | 0 | 0 | 0 | 0 |
| | (0.0) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Cut(2) | 1.432 | 1.458 | 1.469 | 1.483 | 1.48 | 1.484 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| Cut(3) | 2.343 | 2.396 | 2.416 | 2.458 | 2.435 | 2.458 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |
| Cut(4) | 4.147 | 4.264 | 4.305 | 4.33 | 4.332 | 4.331 |
| | (1.0) | (1.000) | (1.000) | (1.000) | (1.000) | (1.000) |

*Note:* Number in parentheses indicate percentage of posterior above zero.

Table 6.5: Model Results, VII-XIV, further parameters

| | (VII) | (VIII) | (IX) | (X) | (XI) | (XII) | (XIII) | (XIV) |
|---|---|---|---|---|---|---|---|---|
| Age | 0.63 | 0.381 | -0.018 | -0.127 | | -0.233 | 0.203 | 0.04 |
| | (1.000) | (0.969) | (0.445) | (0.184) | | (0.012) | (0.973) | (0.638) |
| $Age^2$ | -0.427 | -0.205 | 0.064 | 0.17 | | 0.295 | -0.109 | 0.044 |
| | (0.008) | (0.157) | (0.688) | (0.885) | | (0.998) | (0.148) | (0.647) |
| Occupation-0 | | -0.544 | | -0.419 | | | | -0.414 |
| | | (0.100) | | (0.057) | | | | (0.031) |
| Occupation-1 | | -0.272 | | -0.46 | | | | -0.402 |
| | | (0.017) | | (0.000) | | | | (0.000) |
| Occupation-2 | | -0.173 | | -0.115 | | | | -0.125 |
| | | (0.081) | | (0.054) | | | | (0.020) |
| Occupation-3 | | 0.085 | | -0.072 | | | | -0.03 |
| | | (0.800) | | (0.132) | | | | (0.288) |
| Occupation-4 | | 0.008 | | -0.113 | | | | -0.083 |
| | | (0.534) | | (0.053) | | | | (0.078) |
| Occupation-6 | | 0.17 | | -0.048 | | | | 0.029 |
| | | (0.829) | | (0.367) | | | | (0.605) |
| Occupation-7 | | 0.262 | | 0.051 | | | | 0.155 |
| | | (0.996) | | (0.738) | | | | (0.996) |
| Occupation-8 | | 0.312 | | 0.206 | | | | 0.242 |
| | | (0.995) | | (0.990) | | | | (1.000) |
| Occupation-9 | | 0.149 | | 0.134 | | | | 0.132 |
| | | (0.912) | | (0.945) | | | | (0.977) |
| Intercept | | | | | 3.155 | 3.283 | 3.237 | 3.287 |
| | | | | | (1.0) | (1.000) | (1.000) | (1.000) |
| | | | | *Country intercepts* | | | | |
| BE | | | 3.019 | 3.134 | 3.033 | | | |
| | | | (1.000) | (1.000) | (1.0) | | | |
| CH | | | 2.639 | 2.766 | 2.777 | | | |
| | | | (1.000) | (1.000) | (1.0) | | | |
| CY | | | 2.941 | 3.028 | 2.976 | | | |
| | | | (1.000) | (1.000) | (1.0) | | | |
| CZ | 3.131 | 3.087 | | | 2.966 | | | |
| | (1.000) | (1.000) | | | (1.0) | | | |
| DE | | | 2.867 | 2.998 | 2.991 | | | |
| | | | (1.000) | (1.000) | (1.0) | | | |
| DK | | | 2.416 | 2.516 | 2.417 | | | |
| | | | (1.000) | (1.000) | (1.0) | | | |
| EE | 3.88 | 3.884 | | | 3.536 | | | |
| | (1.000) | (1.000) | | | (1.0) | | | |
| ES | | | 3.384 | 3.481 | 3.432 | | | |
| | | | (1.000) | (1.000) | (1.0) | | | |
| FI | | | 3.28 | 3.398 | 3.289 | | | |
| | | | (1.000) | (1.000) | (1.0) | | | |
| FR | | | 3.983 | 4.109 | 3.982 | | | |
| | | | (1.000) | (1.000) | (1.0) | | | |
| HR | 4.299 | 4.28 | | | 3.98 | | | |
| | (1.000) | (1.000) | | | (1.0) | | | |
| HU | 4.529 | 4.484 | | | 4.238 | | | |
| | (1.000) | (1.000) | | | (1.0) | | | |
| LT | 4.258 | | | | 3.84 | | | |
| | (1.000) | | | | (1.0) | | | |
| NL | | | 2.786 | | 2.778 | | | |
| | | | (1.000) | | (1.0) | | | |
| NO | | | 2.367 | 2.486 | 2.38 | | | |
| | | | (1.000) | (1.000) | (1.0) | | | |
| PL | 3.785 | 3.775 | | | 3.49 | | | |
| | (1.000) | (1.000) | | | (1.0) | | | |
| SE | | | 2.705 | 2.804 | 2.77 | | | |
| | | | (1.000) | (1.000) | (1.0) | | | |
| SI | 4.451 | 4.397 | | | 4.114 | | | |
| | (1.000) | (1.000) | | | (1.0) | | | |
| SK | 3.797 | 3.755 | | | 3.542 | | | |
| | (1.000) | (1.000) | | | (1.0) | | | |
| UK | | | 2.623 | 2.738 | 2.729 | | | |
| | | | (1.000) | (1.000) | (1.0) | | | |
| US | | | 1.563 | 1.666 | 1.59 | | | |
| | | | (1.000) | (1.000) | (1.0) | | | |
| | | | | *Variance components* | | | | |
| Intercept | | | | | 0.47 | 0.304 | 0.318 | 0.342 |
| | | | | | (1.0) | (1.000) | (1.000) | (1.000) |
| | | | | *Cut points* | | | | |
| Cut(1) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.0) | (0.000) | (0.000) | (0.000) |
| Cut(2) | 1.547 | 1.542 | 1.473 | 1.476 | 1.432 | 1.465 | 1.487 | 1.491 |
| | (1.000) | (1.000) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) |
| Cut(3) | 2.642 | 2.647 | 2.387 | 2.411 | 2.343 | 2.408 | 2.448 | 2.47 |
| | (1.000) | (1.000) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) |
| Cut(4) | 4.538 | 4.496 | 4.292 | 4.303 | 4.144 | 4.287 | 4.356 | 4.352 |
| | (1.000) | (1.000) | (1.000) | (1.000) | (1.0) | (1.000) | (1.000) | (1.000) |

*Note:* Number in parentheses indicate percentage of posterior above zero.

# Chapter 7

# An Experiment on the Information-Dependence of Preferences

> "Progress is impossible without change, and those who cannot change their minds cannot change anything." – G. Bernard Shaw[1]

Individuals respond to privilege derived from unequal economic opportunities (i.e. income expectations due to one's inborn circumstances) in a way that is self-serving, but they also reject inequality in opportunity if they regard it to be excessive. The two preceding chapters accommodated those seemingly contradictory findings by arguing that it is more demanding to form accurate beliefs about the overall extent of inequality in opportunity than it is to form accurate income expectations. As such, effects of privilege could be discovered under the assumption of rational expectations (Chapter 5), whereas aversion to unequal opportunities was exposed only when subjective beliefs were taken into account (Chapter 6). In this chapter, this argument is probed with a survey experiment among US-American respondents. The experiment explores the effect that new

[1] As cited in Andrews (1989, p.42).

information has on beliefs about opportunity, beliefs about future incomes, and preferences for redistribution.

## 7.1 Information Environments, Beliefs, and Preferences

In exploring the origins of beliefs, some political economists have turned to internal, psychological explanations, while others have explored how information available to individuals in their external environment acts as a constraining force. When it comes to internal explanations, political economists often describe beliefs as motivated. Individuals want to hold certain views about the world and selectively expose themselves to information or selectively integrate such information into their belief system (Alesina et al., 2004; Benabou and Tirole, 2006; Newman, 2015). In these accounts, information plays a secondary role and belief bias is usually self-serving. Internal explanations are particularly problematic for traditional political economy research, since they displace the explanatory role of the economic structure in which individuals are situated.

Literature that looks at external conditions starts from the premise that individuals have access only to information in their social surrounding (Mutz and Mondak, 1997; Granovetter, 2005). Belief bias thus originates in the information available to each individual. Some scholars highlight the role of social networks as they determine the amount and content of information available to an individual. Based on these considerations, earlier research has shown that people not only underestimate the distance between their own income and the national average (Cruces et al., 2012; Fernández-Albertos and Kuo, 2015) but also the extent of economic inequality in general (Osberg and Smeeding, 2006; Norton and Ariely, 2011). Risk research similarly attests that individuals infer their own probability of job loss through events in their networks and among people like them (Olofsson and Rashid, 2011; Rehm, 2016). Others have highlighted the importance of geographic location, contending that individuals infer national economic conditions from

those in their locality (Weatherford, 1983; Reeves and Gimpel, 2011; Ansolabehere et al., 2014). As such, information environments assume a mediating role between the economic structure and subjective beliefs. Information environments explain how subjective beliefs are conditioned by an individual's position within the socio-economic structure (see Section 2.2.3).

Other than internal accounts of belief formation, external accounts ascribe a causal role to beliefs when it comes to the formation of preferences. Beliefs do not simply adjust to preferences but are constrained by information environments and in turn affect preferences. This account has motivated the reasoning in previous chapters but has not yet been tested empirically. Therefore, this chapter explores these relationships in an experimental setting that facilitates the identification of causal effects. New information, if contradictory to prior knowledge, should lead people to revise their beliefs about the world, and to adjust preferences accordingly. Of course, if beliefs are internally motivated, no belief or preference change should be observed. The next section lays out, based on the arguments offered in previous chapters, what exactly the survey experiment tests.

## 7.2 Survey Experiment

The question guiding the survey experiment is whether and how information environments constrain beliefs about economic opportunities as well as future incomes, and by extension redistributive preferences. The idea is to provide participants with information about the distribution of economic opportunities and to assess with post-treatment questions the effect on beliefs and preferences. In particular, it was previously argued that individuals form beliefs about opportunity and future incomes on the basis of observable income differences between different social groups (e.g. gender, race, family background). As such, experimental subjects will be exposed to exactly this kind of information. It is important to note that if one is to assess the effect of new information, it is imperative to take into account prior knowledge (i.e. prior information) subjects hold. Treatment effects should depend on the difference between new information and prior knowledge. In particular,

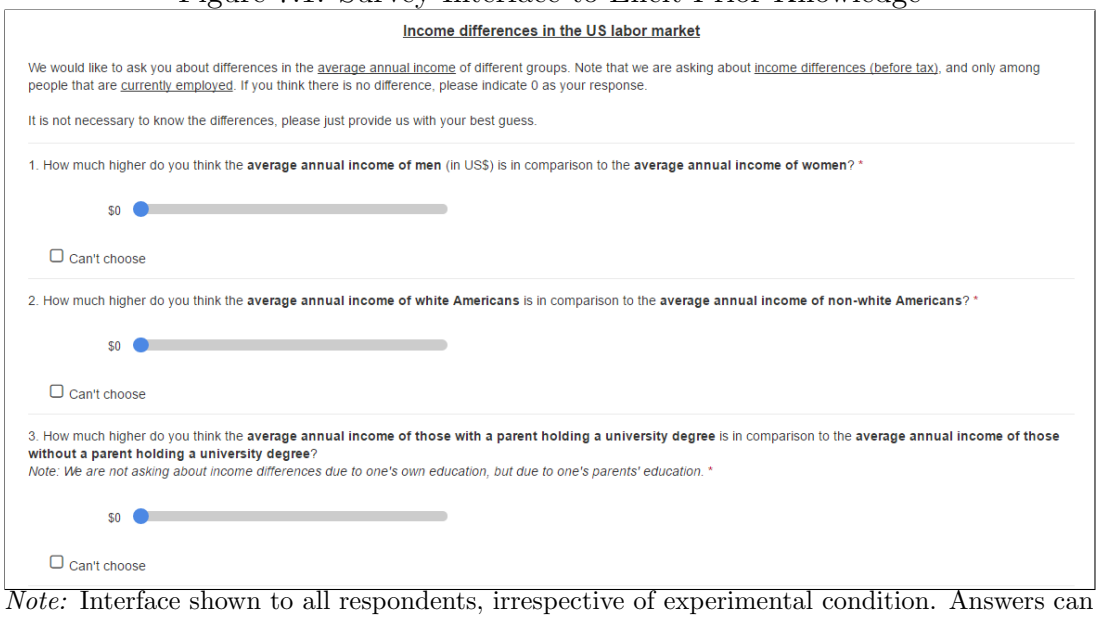
subjects with correct prior knowledge should not be affected by the informational treatment.

In previous chapters, it was suggested that information environments downwardly bias beliefs about inequality in opportunity but still allow people to form accurate beliefs about their future incomes. As such, new information about income differences should–first and foremost–lead individuals to correct their beliefs about inequality in opportunity. Although it is not expected, beliefs about future incomes could be affected too. Among the privileged, those who benefit from unequal opportunities, learning that income differences are larger than they thought could increase optimism about their future income. If they overestimated the differences, they could become less optimistic. The inverse might apply for those who are not privileged by the presence of unequal opportunities. Income differences that are larger than they previously thought could make them less optimistic, and differences that are smaller should make them more optimistic.

If new information affects beliefs, it should in turn also change preferences. The two behavioral motives explored in this dissertation (that is self-interest and inequity-aversion) suggest different preference changes. Self-interest suggests that as people become more optimistic about their future, they should become less supportive of redistribution. Inequity-aversion suggests that as people become more aware of the extent of inequality in opportunity, they should increase their support for redistribution.

The experiment is conducted using online survey software and participants are recruited through MTurk (see p.81). While the exact number of active workers is not known and marked by high turn-over, Stewart et al. (2015) estimate the effective population size of a survey experiment like the one here at just above ten thousand. Of course, the population of workers is not representative of the US population as a whole, but it does cover a broader range of socio-demographics than most laboratory experiments (in particular student samples). Berinsky et al. (2012) show that a wide range of economic games and experiments can be replicated reliably using the platform. Similarly, Clifford et al. (2015) confirm that political psychology studies on MTurk lead to results indistinguishable from studies representative of the US population.

Figure 7.1: Survey Interface to Elicit Prior Knowledge




*Note:* Interface shown to all respondents, irrespective of experimental condition. Answers can be indicated in increments of US$250, with US$37,500 as maximum value.

Each participant's survey experience begins on the MTurk platform. Alongside work offered by other "requesters", they are offered, *Answer a survey about US economy and society (1US$/10mins)*. They can access some additional information,[2] and if they accept the work, they are forwarded to the actual survey. The survey first provides a short disclaimer informing participants about the academic nature of the survey, and assuring them that responses are anonymous, confidential, and do not affect payment. This is followed by the actual experiment; without their knowledge participants are randomly allocated to one for four conditions.

In each condition, what people know about unequal economic opportunities in the labor market is elicited first. In Chapter 3, it was argued that people form beliefs about the distribution of economic opportunities by observing how income varies with other observable characteristics, such as gender or ethnicity. Therefore, prior knowledge about the distribution of economic opportunities is elicited by asking participants to estimate income differences between men and women, whites and non-whites, and people with

[2] "Thank you for your interest in our survey. The survey has about 40 questions and should take approximately 10 minutes to complete. We will begin by asking you about your views on various issues regarding society and economy in the US, and close with some questions about your person. All information that you provide will be kept confidential, and no identifiable information will be passed on to any third party. If you experience any problem or inconvenience with the survey, please let us know immediately."

university-educated parents and those without. Figure 7.1 shows the interface which is used for this purpose; respondents can drag the slider to any multiple of 250, between US$0 and 37,500. Once respondents indicate their guesses, they advance to the treatment stage.

The experiment uses a factorial design with two different treatments. The first treatment consists of providing information on the actual income differences that participants previously guessed. These are presented in the same interface. Visually as red dots, if the respondent underestimated the income difference, and in green, if she overestimated the difference; complemented by a short text above each slider stating whether the respondent's guess was below or above the actual value. The actual differences are computed based on the same data used in previous chapter, i.e. the PSID, and participants are informed about this. In particular, respondents are told that information provided is based on a survey conducted by the University of Michigan. In the following, this treatment is referred to as *Gaps*-treatment. This treatment is designed to "hit people between the eyes", which according to Kuklinski et al. (2000) is necessary for information treatments to have an effect.

That being said, one might be concerned that this treatment primes people toward comparisons between groups and encourages them to express concern for such inequalities. Furthermore, information solely on income gaps might be insufficient for people to update beliefs about their future income. As such beliefs refer to a point estimate, information on income differences might be insufficient if no reference to absolute income levels is included.[3] Therefore, a second treatment is implemented.

The second treatment provides participants with information about what average annual income they can expect before retirement based on their age, education, gender, race, and parent's education. An interactive interface allows participants to check income expectations for any combination of individual characteristics, not just their own. Again,

[3]For example, if a privileged person learns that the income gap between her group and a less privileged one is bigger than she thought, she might adjust beliefs about the economic standing of the other group instead of that of her own. However, if information is presented in terms of absolute income levels for different groups, this ambiguity is avoided.

these expectations are computed with PSID data, about which respondents are informed. In the following, this treatment is labeled as *Future*-treatment. It is important to note that both treatments contain essentially the same information about income differences due to circumstances. However, the *Future*-treatment is richer in detail and contains additional information on income's covariation with age and education. Most importantly, it provides information on income levels in absolute terms, such that it is more straightforward for people to update beliefs about their future income. The factorial design is completed with another treatment condition in which participants receive both treatments (*Gaps&Future*), and of course, a control group that receives neither (*Control*).

The experiment was conducted in two rounds in the summer of 2016, with a total of 887 participants. Due to duplicate IP addresses, failed manipulation checks, or lack of permanent residence in the US, the analysis is restricted to 730 of them.[4] The randomization led to similar group sizes, with 181 participants in the control group, 199 receiving the *Gaps*-treatment, 180 the *Future*-treatment, and 170 both. As already mentioned, MTurk provides a broad sample which, however, is not representative of the US population. Figure 7.1 provides information on the participants in this study. Participants are disproportionately white, young, university-educated, non-religious, and have fewer children than the average

Table 7.1: Descriptive Statistics, Pre-Treatment Variables

| Variable | Mean | S.D. | Min. | 1.Quart. | Median | 3.Quart. | Max. | %Miss. |
|---|---|---|---|---|---|---|---|---|
| Male | 0.53 | 0.50 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Race(white) | 0.78 | 0.41 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Age | 35.62 | 10.99 | 19.00 | 28.00 | 33.00 | 41.00 | 66.00 | 1.51 |
| Education(University) | 0.62 | 0.49 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| University-educated parent | 0.55 | 0.50 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Income(individual) | 13.60 | 6.25 | 1.00 | 10.00 | 15.00 | 18.00 | 25.00 | 0.14 |
| Income(household) | 17.34 | 4.87 | 1.00 | 15.00 | 18.00 | 20.00 | 25.00 | 49.04 |
| Children | 0.75 | 1.20 | 0.00 | 0.00 | 0.00 | 1.00 | 6.00 | 0.27 |
| Household members | 2.63 | 1.46 | 0.00 | 2.00 | 2.00 | 4.00 | 10.00 | 0.00 |
| Religion(Christian) | 0.34 | 0.47 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| Religion(Other) | 0.17 | 0.37 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 |
| *Prior knowledge* | | | | | | | | |
| Gender gap | 8966 | 6906 | 0 | 4250 | 7000 | 11500 | 37500 | 1.23 |
| Race gap | 11026 | 7861 | 0 | 5000 | 9500 | 15000 | 37500 | 0.82 |
| Parental education gap | 14359 | 8732 | 0 | 7875 | 13000 | 20000 | 37500 | 1.51 |

[4]Note that this is not the same sample of respondents that took part in the survey used to validate the construct in Section 4.2.

American. More importantly though, it is confirmed that these covariates are well-balanced across all four groups (see Appendix 7.1).

## 7.3 Findings

### 7.3.1 Descriptive Statistics

What do people know about income differences between different social groups? Earlier research has shown that people usually underestimate the extent of income inequality and think their own income is closer to the average than it actually is (Osberg and Smeeding, 2006; Norton and Ariely, 2011; Cruces et al., 2012; Fernández-Albertos and Kuo, 2015), and thus one might suspect the same to be the case for income differences across social groups.[5] And indeed, for most participants of the survey experiment, this is the case. Figure 7.2 shows that 97.8% of all respondents underestimate the income difference between men and women that are currently employed. 80.5% underestimate the difference between whites and non-whites, and 68.8% underestimate income differences between those that have a university-educated parent and those who do not. As such, most participants should learn from the provision of new information about the distribution of economic opportunities. That being said, people could use the new information to update their beliefs about the general extent of inequality in opportunity, their own future income, or both.

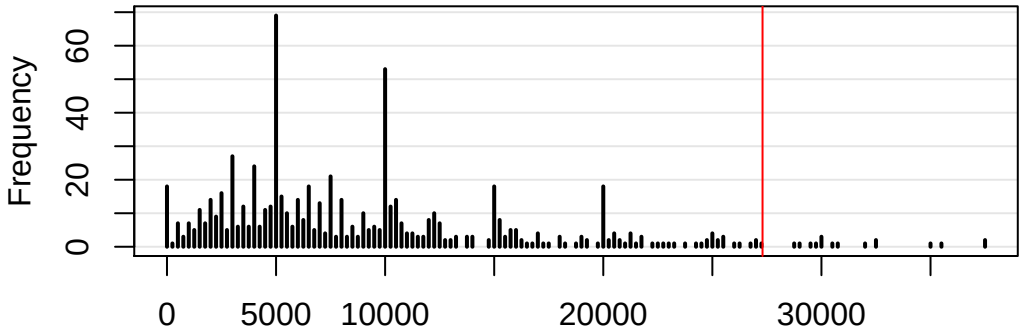
Let us now turn to beliefs about the distribution of economic opportunities; these are elicited after the treatment. To assess what people believe about the general extent of inequality in opportunity, a scale similar to the one developed in Chapter 5 is employed. Participants are asked about the importance of different factors for success in the labor market.[6] Analogous to the *Belief(Circumstances)* variable used in earlier chapters, responses to items about gender, race, and parental education are averaged and then

[5]The fact that Americans overestimate class mobility (Kraus and Tan, 2015) lends itself to these propositions.

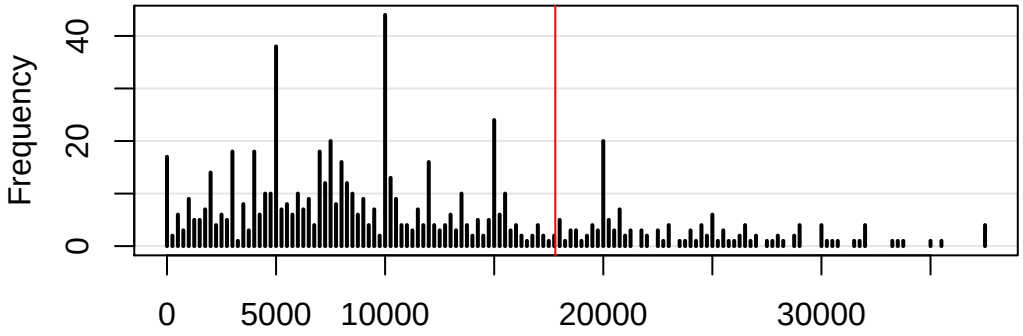
[6]Question: Please tick one box for each of these to show how important you think it is for getting ahead in the labor market... how important is having well-educated parents? / ... how important is a person's ethnicity or race? / ... how important is being born a man or a woman? / [...] Answer options: Essential / Very Important / Fairly important / Not very important / Not important at all.

Figure 7.2: Prior Knowledge about Income Gaps

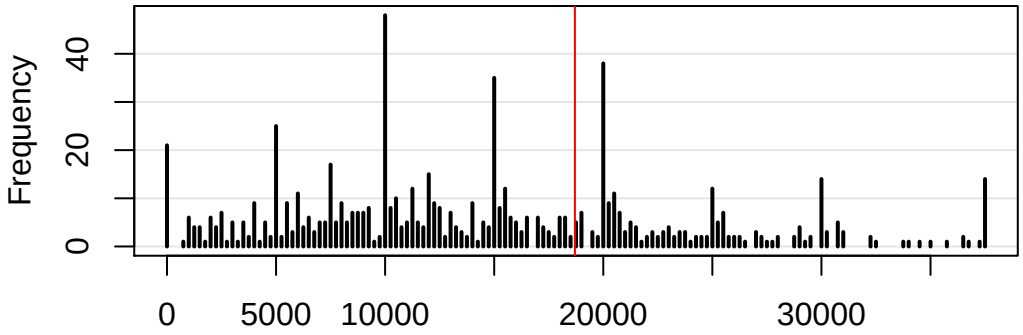
**(a) Gender gap**




**(b) Race gap**




**(c) Parental education gap**

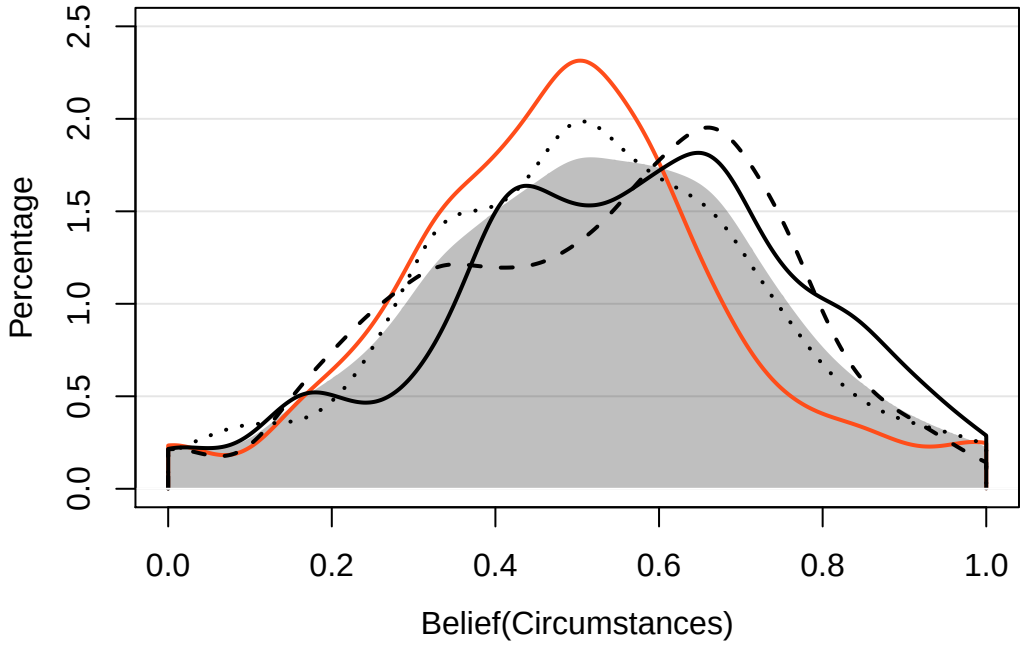



*Note:* Red lines indicate actual income differences based on PSID data; gender difference, US$27,300; race difference, US$17,800; parental education difference, US$18,700. Non-responses not displayed.

rescaled to range from zero to one.[7] The grey shaded area in Figure 7.3 shows the pooled distribution of the new variable for all participants. The red line indicates the distribution for the control group, and the three black lines the distributions for each of the treatment conditions. The treatment conditions (black lines) evidence distributions more shifted to

[7]Unlike in earlier chapters, no item on family wealth is included in the computation of this variable. This is to limit the variable to the same set of circumstances that respondents are previously asked about, and if they are in the treatment group, receive information on.

Figure 7.3: Descriptives, Beliefs about Opportunity across Conditions



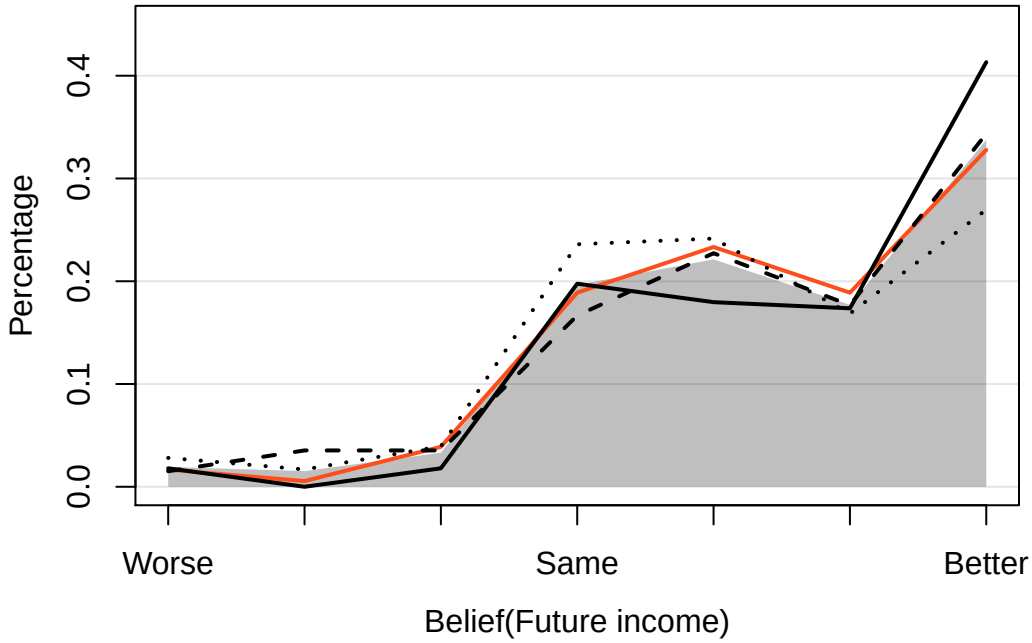

*Note:* Pooled observations (grey); *Control* (red); Treatment:*Future* (dotted), *Gaps* (dashed), *Gaps&Future* (black).

the right. As such, those who received new information about income differences seem to update their beliefs about how unequal economic opportunities are.

Apart from updating beliefs about the general extent of inequality in opportunity, people might use the newly acquired information to correct beliefs about their future economic standing. In the survey, they are asked: "*In the future, do you expect to be financially better or worse off than now?*". Answers are collected on a 7-point scale that ranges from "*worse off*" over "*about the same*" to "*better off*". Figure 7.4 shows that the distributions are rather equal across the conditions, only participants with the *Future*-treatment (dotted line) are somewhat less optimistic about their future income.

Ultimately the interest here is in the effect of new information about the distribution of opportunities on preferences for redistribution. Individuals are asked whether they agree with the following statement, "*The government should redistribute more from the rich to the poor, even if it means increasing taxes.*" They can indicate on a seven point scale whether they slightly, moderately, or strongly dis/agree, or whether they are indifferent. Figure 7.5 shows the distribution of the answers, again for the pooled responses as well as each condition. Simply through eye-balling one can see that distributions within the

Figure 7.4: Descriptives, Beliefs about Future Income across Conditions




*Note:* Pooled observations (grey); *Control* (red); Treatment: *Future* (dotted), *Gaps* (dashed), *Gaps&Future* (black).

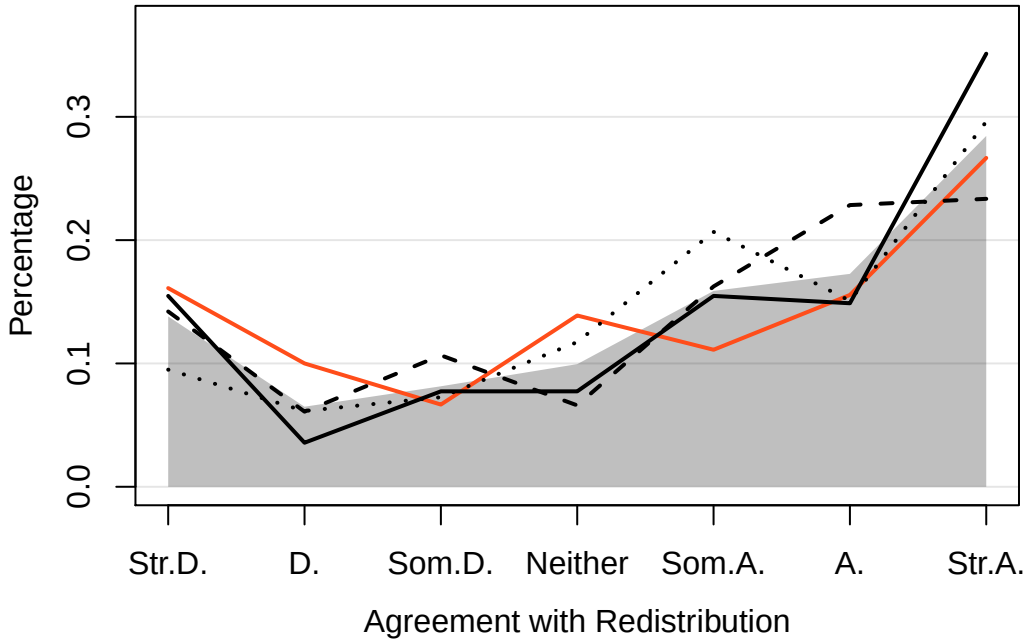
treatment conditions have more support on the right, meaning participants in these groups tend to be more supportive of redistribution.

The next sections explore whether these differences in beliefs and redistribution preferences are statistically significant, and whether they depend on (1) individuals' prior knowledge, or (2) whether individuals can expect to personally benefit from unequal economic opportunities or not.

### 7.3.2 Information Effects on Beliefs

The descriptive analysis above indicated that new information from any of the three treatment conditions potentially affects beliefs about the distribution of economic opportunities. Average treatment effects (ATE) can be computed by taking the difference between the average in the control group and the average of the respective treatment group. To assess whether these differences are likely to have occurred by chance–that is in the absence of a treatment effect–sharp null tests are conducted for each treatment condition. Under the null hypothesis of no effect, it does not matter which units are treated.

Figure 7.5: Descriptives, Redistribution Preferences across Conditions



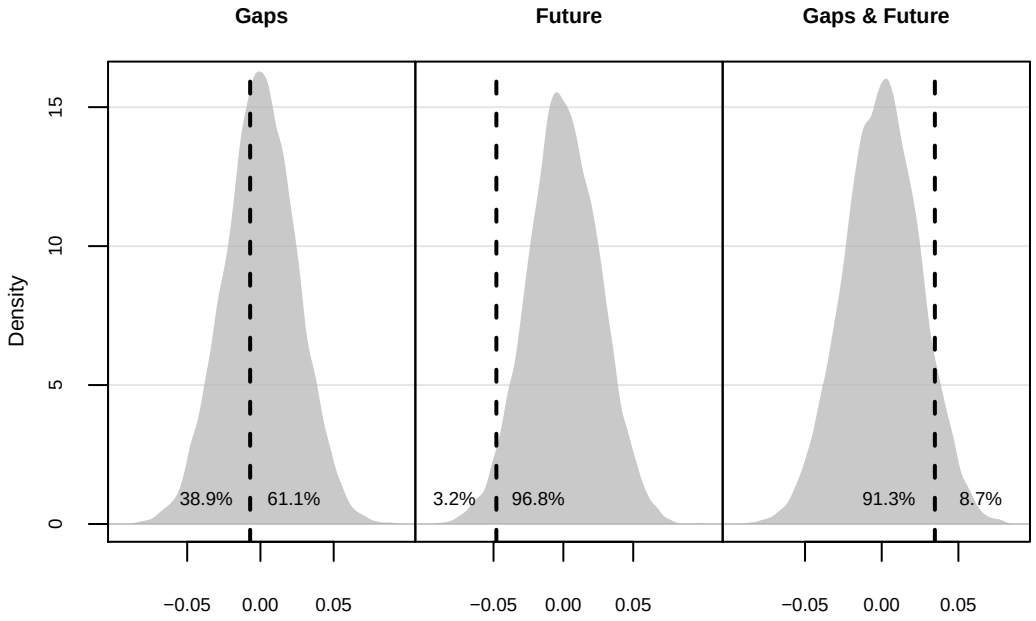

*Note:* Pooled observations (grey); *Control* (red); Treatment: *Future* (dotted), *Gaps* (dashed), *Gaps&Future* (black).

Thus, counterfactual ATEs that are likely to be observed by chance can be simulated by random permutations of the treatment indicators in the data set. Repeating this many time, the resulting distribution of counterfactual ATEs describes a simulated probability distribution of observed treatment effects under the assumption that the true effect is zero. The proportion of values in the simulated distribution that are equal or greater than the actually observed difference indicate the probability that the observed ATE occurred purely by chance. The main advantage of the sharp null tests is that it avoids making asymptotic assumptions (Gerber and Green, 2012, Ch.3).

What effect do the three treatments have on beliefs about future incomes? Figure 7.6 summarizes the results of the respective sharp null tests. The dashed line indicates the observed ATE for each treatment condition, the grey shaded area the simulated distribution of the counterfactual ATEs under the null hypothesis. The tests provide statistical support only for one of the treatments, information on future incomes (i.e. *Future*-treatment). The respective ATE is -.048 and the probability for this value to have occurred by chance is 3.3%, which is significant at conventional statistical standards (i.e. 5%).

However, assuming that treatment effects on beliefs about future income are homoge-

Figure 7.6: Average Treatment Effects, Beliefs about Future Income

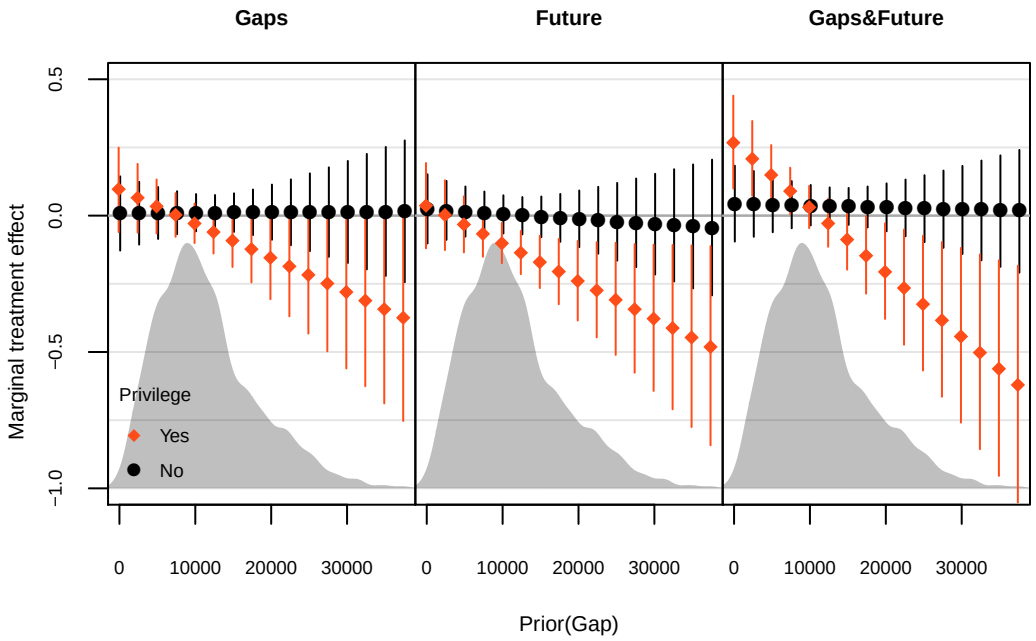



*Note:* Sharp null tests based on randomization inference (N=10,000). Observed ATEs: *Gaps* (-.007), *Future* (-.048), *Gaps&Future* (.035).

neous (that is equal for all subjects) might not be appropriate. First, treatment effects should depend on prior knowledge. Treatment effects should only be expected for those whose prior knowledge was different from the newly provided information. Second, even if the newly provided information contradicts prior knowledge, how this affects beliefs about future income should depend on whether a person benefits from unequal opportunities or not. The presence of such treatment effect heterogeneity is tested with a regression analysis (Gerber and Green, 2012, Ch.9). These regressions include dummies for the treatment conditions, the conditioning variables, and a dummy for the round of the survey experiment to account for time fixed effects. The conditioning variable, *Prior(Gap)*, is represented by the average of each respondent's initial guess about the three income differences. Whether a person is privileged, i.e. benefits from unequal opportunities, is indicated by a dummy variable, *Privilege*, that takes the value 1 if an individual's circumstances (gender, race, parental education) positively affect their income expectations after education and age have been accounted for, and 0 otherwise.[8] The complete regression output can be found

[8]This is computed using the same PSID data presented in the *Future*-treatment. Those who have higher future incomes based on a model that includes circumstances than based on a model that only includes education and age are categorized as privileged.

Figure 7.7: Heterogeneous Treatment Effects, Beliefs about Future Income by Prior Belief and Privilege




*Note:* Red (respondents benefiting from unequal opportunities); black (respondents not benefiting from unequal opportunities). Grey histogram indicates the pooled distribution of prior knowledge about income gaps. Based on model II in Table 7.2 (Appendix 7.2). Bootstrapped standard errors (N=10,000).

in 7.2 (see Appendix); a F-test[9] reveals that adding the two covariates leads to a significant improvement of the model.[10]

Figure 7.7 presents a marginal effects plot to visualize the model's results. Specifically, the plots display the effect of each treatment conditional on prior knowledge, where the dependent variable is the 7-point scale on which beliefs about future income are elicited. Note that this variable is rescaled to range from zero to one, higher values indicating greater optimism. The three panels represent the different treatment conditions. The dots represent conditional average treatment effects (conditional on prior knowledge); the bars indicate 95% confidence intervals. Effects for respondents that benefit from unequal economic opportunities are indicated in red, and for those who do not benefit in

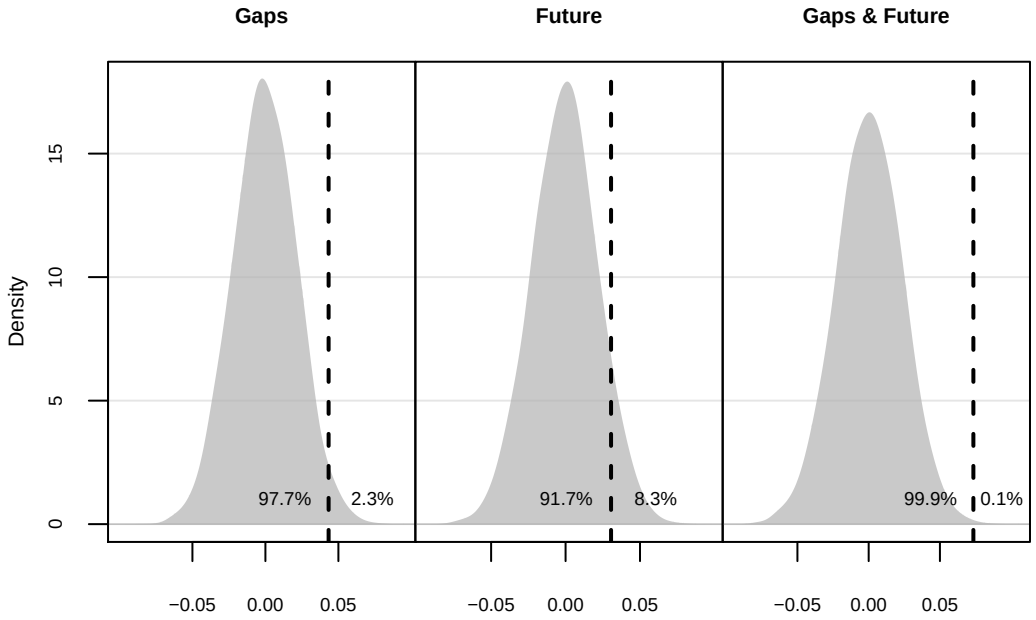
[9]Based on randomization inference as described in Gerber and Green (2012, Ch.9).

[10]One might be concerned that this specification of prior knowledge does not adequately capture what people know about the extent of their own privilege. An alternative way to specify such prior knowledge would be to look at how much people under- or overestimate the extent to which income gaps favor their personal set of circumstances (i.e. gender, race, parental education). An analysis with this alternative specification is included in Appendix 7.3. It is shown that the findings presented in this chapter are robust to this alternative specification.

black. It can be seen that the latter group is unaffected by all treatments, independent of their prior knowledge. The same is not the case for those who personally benefit from unequal opportunities. In both conditions that include the *Future*-treatment, those who are privileged and overestimated income differences become more pessimistic about their future. And in the *Gaps&Future*-condition, those who underestimated the differences become more optimistic. Overall, this suggests that less privileged individuals have accurate beliefs about their future income, whereas many of those who are privileged do not (as they use new information to update their beliefs).

What about beliefs concerning the general extent of inequality in opportunity? If, as previously suggested, people generally have downwardly biased beliefs about inequality in opportunity, all treatments should increase such beliefs. Sharp null tests of the observed ATEs are supportive of this claim (see Figure 7.8). The largest increase, about .073 is observed for the combination of both treatments (right panel). For the *Future*-treatment only (mid-panel), the effect points in the right direction, but does not reach conventional levels of significance.

Figure 7.8: Average Treatment Effects, Beliefs about Opportunity

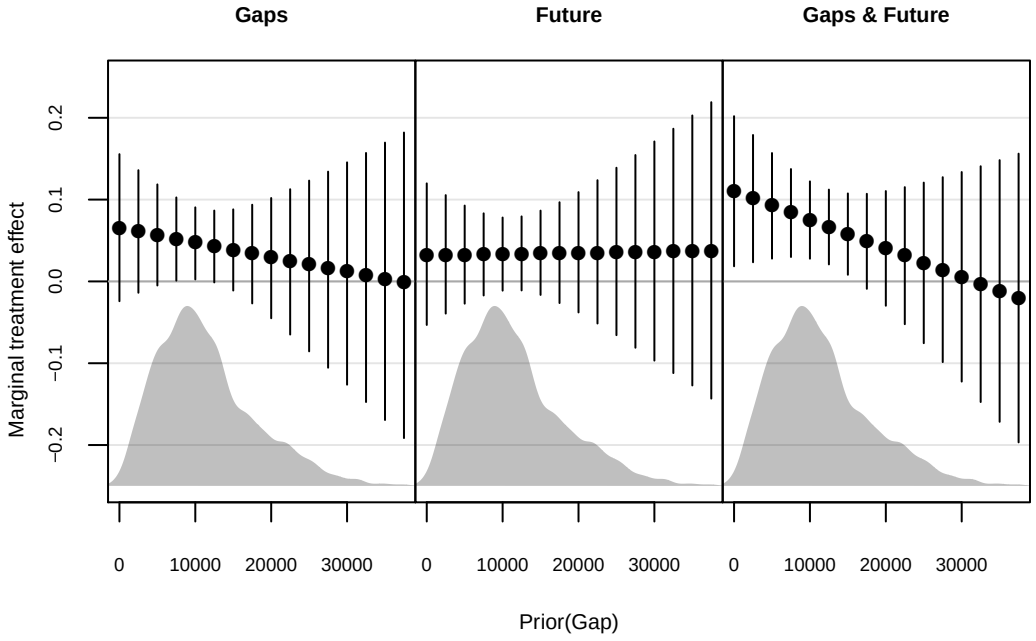



*Note:* Sharp null tests based on randomization inference (N=10,000). Observed ATEs: *Gaps* (.043), *Future* (.031), *Gaps&Future* (.073).

Here, the size of treatment effects should also depend on prior knowledge about income differences. This is again explored in a regression framework, adding a covariate for prior knowledge. From a statistical standpoint, adding the covariate increases the explanatory power of the model only moderately; while the $R^2$ improves by almost two percentage points, the respective F-test is statistically insignificant (see Appendix 7.2, Table 7.3). This can also be seen from the plotted marginal treatment effects (see Figure 7.9). Only in the condition which exposes people to both treatments is the effect significantly large for those who underestimated the income differences. The *Gaps*-treatment shows the expected declining slope, but the results are not statistically significant; however, this might well be due to lack of statistical power.

An important consideration in designing the experimental treatments and the elicitation of prior knowledge in particular was the avoidance of priming effects. Therefore, the elicitation of prior knowledge and subsequent treatments were framed neutrally and no more than the necessary information was supplied. In particular, no information on the income distribution in the US was provided in advance of the elicitation of prior knowledge.

Figure 7.9: Heterogeneous Treatment Effects, Belief about Opportunity, by Prior Belief




*Note:* Grey histogram indicates the pooled distribution of prior knowledge about income gaps. Based on model V in Table 7.3 (Appendix 7.2). Bootstrapped standard errors (N=10,000).

However, earlier research has established that knowledge about the income distribution is conditioned by a person's own position in that distribution. Hence, the risk of a confounded treatment effect arises.[11] Poorer subjects generally believe the income distribution to be more downward-shifted and contracted than it actually is. Learning about the actual extent of income gaps might therefore indirectly provide them with information about their own current standing and lead them to adjust beliefs and preferences accordingly. To account for this possibility of such confounding effects, all models described in this section are also estimated with individual income as control, interacted with all experimental conditions.[12] As can be seen from the respective regression results presented in the Appendix 7.2, this does not affect the findings of earlier models and it can be concluded that participant's own economic standing does not confound the revealed treatment effects.

### 7.3.3 Information Effects on Redistribution Preferences

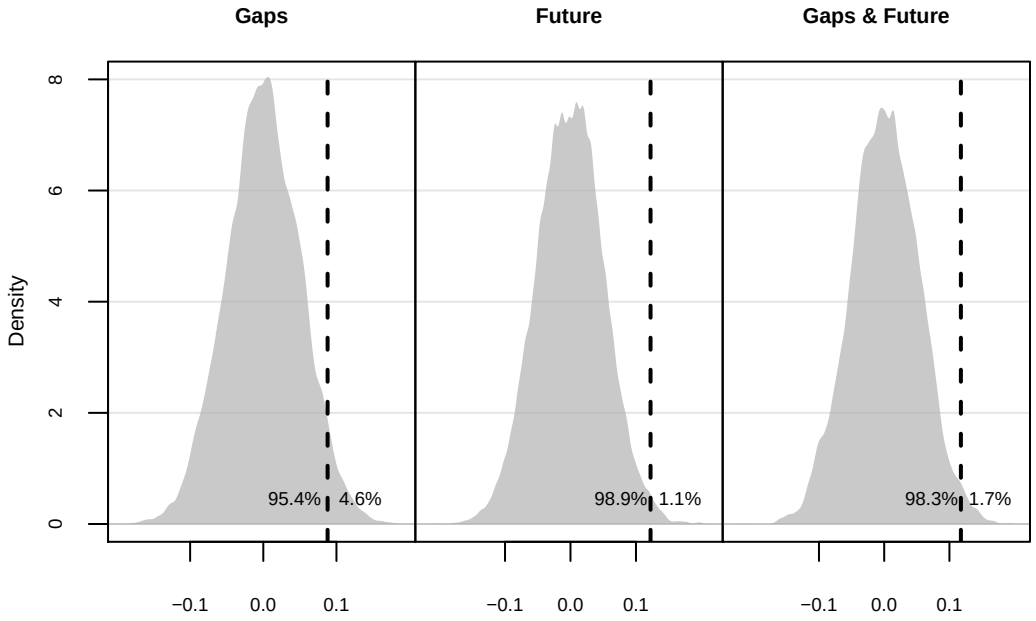
The previous section provided evidence that people learn from new information about income differences in the labor market. All three treatment conditions make people more aware of the general extent of inequality in opportunity. Furthermore, the privileged appear to use newly acquired information to update beliefs about their future incomes. As people update their beliefs, one would expect preferences for redistribution not to go unaffected. As such, this section looks at the effect of the different informational treatments on redistributive preferences, in particular the probability of agreeing with redistribution.

In a first step, sharp null tests are performed to assess the observed ATEs. Note that redistributive preferences are recoded to a dummy variable that takes the value 1 if people are in support of redistribution, and 0 otherwise. As such, the coefficients can be directly interpreted as percentage point changes in the probability to support redistribution. Figure

[11] Similar concerns apply to survey experiments in general and they are not yet widely recognized among political scientists (Hainmueller et al., 2014).

[12] Individual income was elicited after the treatment and thus endogeneity cannot be excluded with complete certainty. That being said, it appears unlikely that the experimental treatments provided here systematically affect participant's reporting of their own individual income.

Figure 7.10: Average Treatment Effects, Redistribution Preferences

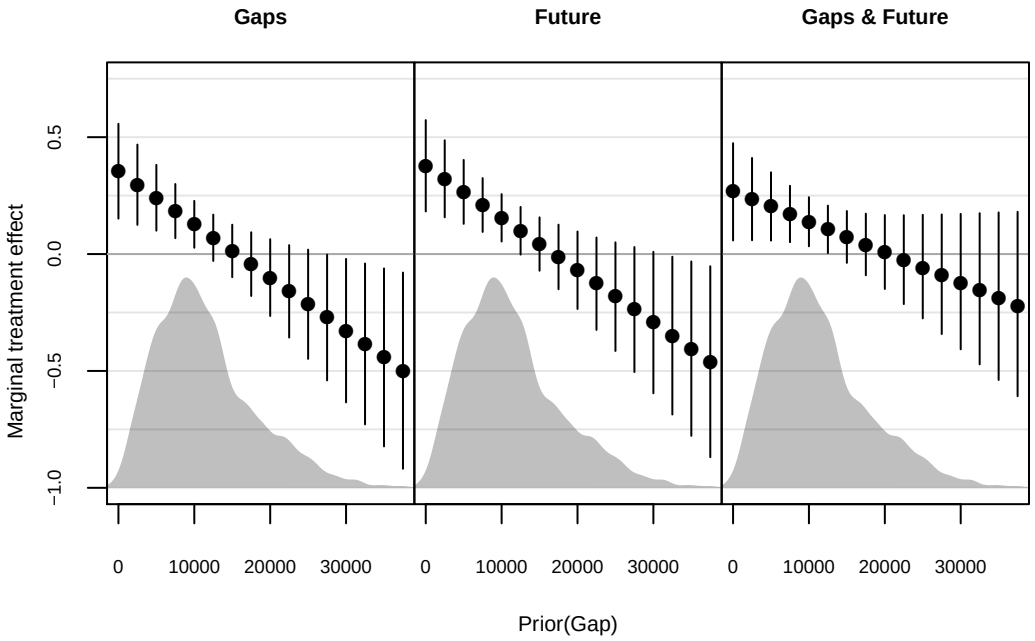



*Note:* Sharp null tests based on randomization inference (N=10,000). Observed ATEs: *Gaps* (.088), *Future* (.122), *Gaps&Future* (.118).

7.10 indicates that all treatment conditions lead subjects to become more supportive of redistribution. The treatment effects are similar in size, each increasing the probability of agreement by about 10 percentage points.

Chapter 5 suggested that people are averse to unequal opportunities but that this aversion is contingent on individual's subjective beliefs about the distribution of opportunities. If this was true, new information about income differences should lead especially those individuals who underestimate them to become more supportive of redistribution. Figure 7.11 visualizes the respective regression results from Table 7.4 (see Appendix 7.2). As before, an F-test is performed using randomization inference, to assess whether adding prior knowledge to the model leads to a statistically significant improvement. An F-value of 3.886 and a corresponding p-value of .005 speak to such an improvement. Substantively, the results show that individuals who previously underestimated income differences become especially supportive of redistribution when they are treated with information about the actual extent of inequality in opportunity. There is also evidence to suggest that those who overestimate income differences at first become less supportive (see left and middle panel).

Figure 7.11: Heterogeneous Treatment Effects, Redistribution Preferences by Prior Belief

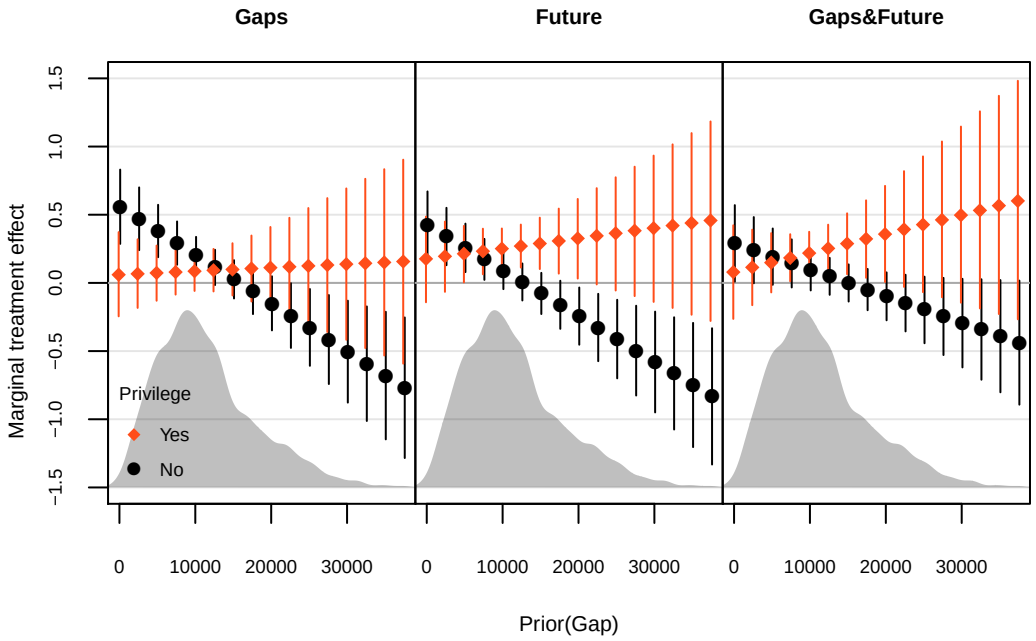



*Note:* Grey histogram indicates the pooled distribution of prior knowledge about income gaps. Based on model VIII in Table 7.4 (Appendix 7.2). Bootstrapped standard errors (N=10,000).

Furthermore, participants can also use the information to adjust their redistributive preferences to their material self-interest. The previous section showed that participants that benefit from unequal opportunities learn from new information about their own future income. But do they adjust their preferences accordingly? To explore this, above regression is re-estimated with the privilege dummy. The results are shown in Figure 7.12. In line with their material self-interest, those who do not benefit from unequal opportunities increase their support for redistribution if they underestimate income differences, and decrease it if they overestimate it. Surprisingly, in the condition with both treatments, this finding is barely statistically significant.

The results for those who benefit from unequal opportunities, the privileged, are less supportive of the self-interest hypotheses. Only those who initially overestimated income differences appear to more strongly support redistribution, which is in line with their self-interest. While this finding is not statistically significant at conventional levels, the huge standard errors indicate that the estimation is underpowered. As such, the evidence is considered suggestive. However, there is no evidence at all that those who are privileged

Figure 7.12: Heterogeneous Treatment Effects, Redistribution Preferences by Prior Belief and Privilege




*Note:* Red (respondents benefiting from unequal opportunities); black (respondents not benefiting from unequal opportunities). Grey histogram indicates the pooled distribution of prior knowledge about income gaps. Based on model IX in Table 7.4 (Appendix 7.2). Bootstrapped standard errors (N=10,000).

and underestimated income differences become more opposed to redistribution, as would be expected if they were purely self-interested.

## 7.4 Discussion

How do the findings presented here square with those of earlier chapters? In Chapter 4, it was argued that people have accurate beliefs about their future incomes. It was shown that individuals in 21 Western democracies are less supportive of redistribution, the higher they can expect their future income to be due to unequal opportunities. This implies that new information (as provided in the experiment here) should not, or only minimally, affect people's beliefs about their future incomes. By extension, redistributive preferences should also not change in a way that attests to material self-interest. Considering the wealth of findings presented above, does the experiment contradict these claims? On the one hand, the experiment showed that in some cases individuals adjust beliefs about their future

income when confronted with new information. On the other hand, this mostly applies for those who benefit from unequal opportunities. And among these participants there is only weak evidence that they adjust redistributive preferences in line with their self-interest.

At the same time, those who do not benefit from unequal opportunities adjust their preferences for redistribution in a way that is strongly in line with material self-interest. However, it is questionable that this adjustment is motivated by material self-interest, as none of the treatments lead those that do not benefit from unequal opportunities to adjust beliefs about their own future incomes. As a matter of fact, inequity-aversion can better account for this pattern.

Chapter 5 developed on the argument that the reason for not seeing more calls for redistribution, i.e. inequity-aversion, in countries with objectively more inequality in opportunity is that it is difficult for people to form accurate beliefs about the extent of inequality in opportunity. As such, new information should lead them to correct such beliefs and demand more redistribution if they previously underestimated income differences, and less if they overestimated them. The experiment provides (mostly) consistent support for this claim. First, all treatment conditions lead participants to upwardly correct their beliefs about inequality in opportunity (although for one of the three conditions, the effect does not reach statistical significance). As most people vastly underestimate income differences, this is what would be suspected. There is also indicative evidence that the effect depends on the level of prior knowledge. Those who underestimated the income differences are most likely to upwardly adjust their beliefs about inequality in opportunity. Second, and most tellingly, in all treatments, participants strongly adjust their redistributive preferences. In line with inequity-aversion, those who underestimated income differences become more supportive of redistribution, and those who overestimated it decrease their support (see Figure 7.11). As such, beliefs about inequality in opportunity and preferences for redistribution both respond to new information in line with inequity-aversion.

The consistent evidence of inequity-averse responses to new information also explains the seemingly self-interested responses among those who do not benefit from unequal opportunities. Both inequity-aversion and self-interest imply for those who do not benefit

to increase their support for redistribution if they underestimated income differences, and to decrease support if they overestimated differences. However, no changes in beliefs about future incomes among this group were documented. Instead, beliefs about the general extent of inequality in opportunity are affected as one would expect.

A last concern relates to the specification of prior knowledge. It was mentioned above that, when it comes to self-interest behavior, prior knowledge might not be best captured by the mean of their income gap guesses (see footnote, p.161). Arguably, prior knowledge about people's own privilege might be better captured by the extent to which income gaps favor their own personal set of circumstances (i.e. gender, race, parental education). Therefore, Appendix 7.3 elaborated on such an alternative specification of prior knowledge and analyzed whether doing so reveals that people update beliefs about their future income and adjust redistributive preferences in line with their self-interest. This turned out not to be the case, further corroborating the findings presented in the main text of this chapter. It can therefore be concluded that the evidence presented here is consistent with the findings of Chapters 5 and 6. In particular, the lack of more opposition to country-level inequality in opportunity is due to people holding biased beliefs about inequality in opportunity, not because they are not inequity-averse.

The fact that the experiment was able to alter beliefs exogenously emphasizes their causal role. In the real world, such beliefs do not form in a vacuum. They are informed by people's surrounding, and it was documented here that the information accessible to a person is relevant for both beliefs about opportunity and the ability to act upon those beliefs, especially to demand redistribution. Earlier research suggests that social networks, geographic locality, and media are all important dimensions of people's information environment in the real world. Such research has focused on relative incomes and beliefs about inequality (between the poor and the rich), but has not yet addressed inequality in opportunity. The focus has also traditionally been on self-interested behavior, and as such, it is all the more important to explore how inequity-aversion unfolds in different information environments in the real world.

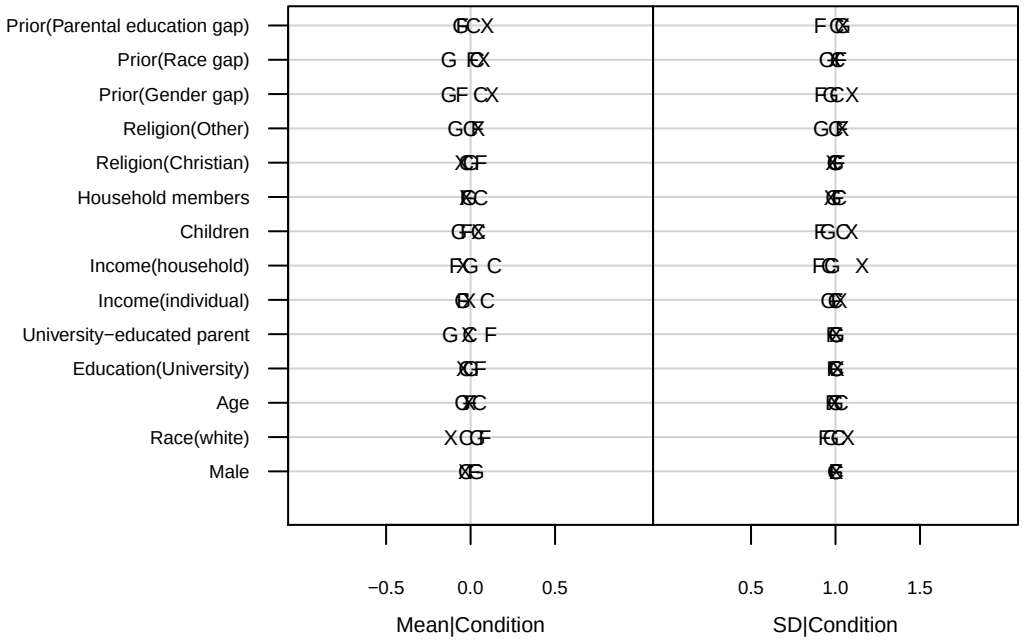
It is important to keep in mind that the case upon which the survey experiment was

conducted, is the US. While the sample of participants is, of course, not representative of the US population, contextual effects should be similarly at work. Two contextual effects are favorable to finding results affirmative of earlier claims, in particular the downward bias of beliefs about unequal opportunities and corresponding preference changes in the case of treatment with accurate information. First, prior studies have shown that Americans, in comparison to Europeans, are more optimistic about chances of upward mobility and more likely to underestimate the importance of factors beyond their control (Lipset, 1959; Alesina et al., 2004; Benabou and Tirole, 2006). Secondly, Americans appear to respond most strongly to their beliefs about unequal opportunity. As the results presented in Chapter 6 show, among US respondents the relationship between belief in unequal opportunities and redistributive preferences is particularly strong. Taken together, this makes the US a most-likely case study (Eckstein, 1975), which Levy (2002) vividly describes as being useful for inverse Sinatra inference, "if I cannot make it there, I cannot make it anywhere." Therefore, although the findings of the survey experiment are affirmative of the arguments advanced earlier regarding the role of beliefs and inequity-aversion, their generalizability can ultimately only be assessed by further tests (especially in countries that are less likely to produce such results).

## 7.5 Appendix

### Appendix 7.1

Figure 7.13: Covariate Balance across Conditions




*Note:* Covariates are normalized for the pooled sample. In a balanced sample, means in all condition-specific subsamples should be close to 0, and standard deviations close to 1. Letters indicate experimental conditions; C=*Control*, G=*Gaps*, F=*Future*, X=*Gaps&Future*.

## Appendix 7.2

Table 7.2: Heterogeneous Treatment Effects: Beliefs, Future Income

| | *Dependent variable:* | | |
|---|---|---|---|
| | Future Income | | |
| | (I) | (II) | (III) |
| Gaps | −0.005 | 0.011 | 0.014 |
| | (0.025) | (0.034) | (0.034) |
| Future | −0.044 | 0.003 | 0.005 |
| | (0.025) | (0.034) | (0.034) |
| Gaps*Future | 0.083* | 0.022 | 0.018 |
| | (0.036) | (0.049) | (0.050) |
| Prior(Gap) | | 0.001 | 0.001 |
| | | (0.032) | (0.032) |
| Privilege | | 0.089* | 0.088* |
| | | (0.037) | (0.038) |
| Income | | | 3.211 |
| | | | (29.317) |
| Gaps*Prior(Gap) | | 0.001 | −0.001 |
| | | (0.050) | (0.050) |
| Future*Prior(Gap) | | −0.018 | −0.022 |
| | | (0.047) | (0.048) |
| Gaps*Privilege | | −0.058 | −0.062 |
| | | (0.050) | (0.052) |
| Future*Privilege | | −0.124* | −0.127* |
| | | (0.052) | (0.053) |
| Prior(Gap):Privilege | | 0.126* | 0.126* |
| | | (0.062) | (0.062) |
| Gaps*Income | | | 10.286 |
| | | | (40.696) |
| Future*Income | | | 24.295 |
| | | | (42.360) |
| Gaps*Future*Prior(Gap) | | 0.010 | 0.015 |
| | | (0.070) | (0.070) |
| Gaps*Future*Privilege | | 0.143 | 0.148 |
| | | (0.074) | (0.076) |
| Gaps*Prior(Gap)*Privilege | | −0.127 | −0.126 |
| | | (0.085) | (0.086) |
| Future*Prior(Gap)*Privilege | | −0.120 | −0.119 |
| | | (0.082) | (0.083) |
| Gaps*Future*Prior(Gap)*Privilege | | 0.015 | 0.015 |
| | | (0.122) | (0.122) |
| Gaps*Future*Income | | | −28.190 |
| | | | (58.877) |
| 2nd survey | 0.022 | 0.023 | 0.022 |
| | (0.018) | (0.018) | (0.018) |
| Intercept | 0.738* | 0.706* | 0.707* |
| | (0.020) | (0.025) | (0.026) |
| Observations | 723 | 723 | 723 |
| $R^2$ | 0.014 | 0.041 | 0.043 |
| Adjusted $R^2$ | 0.009 | 0.019 | 0.015 |

*Note:* *p<0.05; *Prior(Gap)* = Prior knowledge about income gaps (average); *2nd survey* = Dummy second experimental round; *Privilege* = Dummy if above average ascribed income expectations (see text). F-test (p-value): II vs I, 1.627 (.022); III vs II, 0.289 (.062).

Table 7.3: Heterogeneous Treatment Effects: Belief about Opportunity

| | *Dependent variable:* | | |
|---|---|---|---|
| | Belief(Circumstances) | | |
| | (IV) | (V) | (VI) |
| Gaps | 0.043 | 0.045* | 0.044* |
| | (0.022) | (0.022) | (0.022) |
| Future | 0.028 | 0.034 | 0.032 |
| | (0.023) | (0.023) | (0.023) |
| Gaps*Future | 0.00004 | −0.008 | −0.006 |
| | (0.032) | (0.032) | (0.032) |
| Prior(Gap) | | 0.054* | 0.053* |
| | | (0.024) | (0.024) |
| Income | | | −13.598 |
| | | | (25.382) |
| Gaps*Prior(Gap) | | −0.017 | −0.014 |
| | | (0.035) | (0.035) |
| Future*Prior(Gap) | | 0.002 | 0.011 |
| | | (0.034) | (0.034) |
| Gaps*Income | | | −6.864 |
| | | | (35.036) |
| Future*Income | | | −42.274 |
| | | | (37.022) |
| Gaps*Future*Prior(Gap) | | −0.019 | −0.030 |
| | | (0.049) | (0.049) |
| Gaps*Future*Income | | | 59.339 |
| | | | (51.249) |
| 2nd survey | −0.002 | −0.004 | −0.002 |
| | (0.016) | (0.016) | (0.016) |
| Intercept | 0.486* | 0.486* | 0.486* |
| | (0.018) | (0.018) | (0.018) |
| Observations | 725 | 725 | 725 |
| $R^2$ | 0.014 | 0.032 | 0.039 |
| Adjusted $R^2$ | 0.008 | 0.021 | 0.023 |

*Note:* *p<0.05; *Prior(Gap)* = Prior knowledge about income gaps (average); *2nd survey* = Dummy second experimental round; *Privilege* = Dummy if above average ascribed income expectations (see text). F-test (p-value): V vs IV, 3.295 (.112); VI vs V, 1.328 (.220).

Table 7.4: Heterogeneous Treatment Effects: Redistribution preferences

| | *Dependent variable:* | | | | |
|---|---|---|---|---|---|
| | Redistribution (Agreement) | | | | |
| | (VII) | (VIII) | (IX) | (X) | (XI) |
| Gaps | 0.091 | 0.095 | 0.151* | 0.085 | 0.145* |
| | (0.050) | (0.050) | (0.067) | (0.050) | (0.068) |
| Future | 0.120* | 0.123* | 0.041 | 0.116* | 0.047 |
| | (0.051) | (0.051) | (0.069) | (0.051) | (0.069) |
| Gaps*Future | −0.090 | −0.097 | −0.124 | −0.088 | −0.133 |
| | (0.072) | (0.072) | (0.098) | (0.072) | (0.099) |
| Prior(Gap) | | 0.199* | 0.258* | 0.195* | 0.256* |
| | | (0.054) | (0.064) | (0.054) | (0.064) |
| Privilege | | | −0.142 | | −0.118 |
| | | | (0.074) | | (0.075) |
| Income | | | | −104.714 | −81.301 |
| | | | | (57.111) | (58.356) |
| Gaps*Prior(Gap) | | −0.227* | −0.354* | −0.212* | −0.343* |
| | | (0.080) | (0.100) | (0.079) | (0.100) |
| Future*Prior(Gap) | | −0.223* | −0.334* | −0.222* | −0.335* |
| | | (0.077) | (0.095) | (0.077) | (0.095) |
| Gaps*Privilege | | | −0.061 | | −0.066 |
| | | | (0.101) | | (0.104) |
| Future*Privilege | | | 0.222* | | 0.195 |
| | | | (0.103) | | (0.105) |
| Prior(Gap)*Privilege | | | −0.285* | | −0.278* |
| | | | (0.124) | | (0.123) |
| Gaps*Income | | | | 5.733 | 23.106 |
| | | | | (78.910) | (81.022) |
| Future*Income | | | | 129.936 | 99.159 |
| | | | | (83.384) | (84.322) |
| Gaps*Future*Prior(Gap) | | 0.320* | 0.495* | 0.315* | 0.502* |
| | | (0.110) | (0.139) | (0.110) | (0.139) |
| Gaps*Future*Prior(Gap) | | | 0.011 | | 0.047 |
| | | | (0.148) | | (0.150) |
| Gaps*Prior(Gap)*Privilege | | | 0.380* | | 0.372* |
| | | | (0.171) | | (0.171) |
| Future*Prior(Gap)*Privilege | | | 0.410* | | 0.403* |
| | | | (0.165) | | (0.164) |
| Gaps*Future*Prior(Gap)*Privilege | | | −0.458 | | −0.456 |
| | | | (0.243) | | (0.243) |
| Gaps*Future*Income | | | | −169.347 | −185.046 |
| | | | | (115.480) | (117.140) |
| 2nd survey | 0.0004 | −0.006 | −0.006 | −0.004 | −0.007 |
| | (0.036) | (0.036) | (0.036) | (0.036) | (0.036) |
| Intercept | 0.533* | 0.532* | 0.577* | 0.538* | 0.572* |
| | (0.041) | (0.040) | (0.051) | (0.040) | (0.051) |
| Observations | 724 | 724 | 724 | 724 | 724 |
| $R^2$ | 0.010 | 0.031 | 0.059 | 0.048 | 0.071 |
| Adjusted $R^2$ | 0.005 | 0.020 | 0.037 | 0.032 | 0.044 |

*Note:* *p<0.05; *Prior(Gap)* = Prior knowledge about income gaps (average); *2nd survey* = Dummy second experimental round; *Privilege* = Dummy if above average ascribed income expectations (see text). F-test (p-value): VIII vs VII, 3.886 (.005); IX vs VIII, 2.559 (.001); X vs VIII, 3.134 (.012); XI vs IX, 2.230 (.002).

## Appendix 7.3

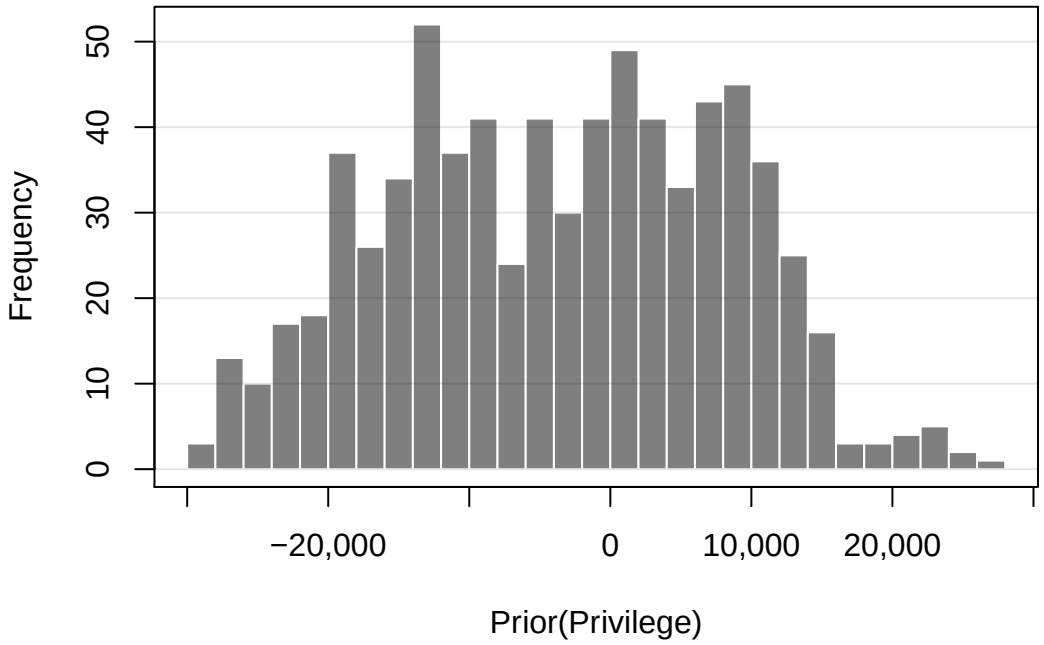
The analyses above explored in how far treatment effects are contingent on prior knowledge about income gaps. Prior knowledge was conceptualized as the mean income gap guess. It was argued that if respondents use newly acquired information to enhance their self-interest, then treatment effects should depend on both prior knowledge, as just defined, and whether one is privileged by unequal opportunities or not. However, instead of looking at prior knowledge of income gaps in general, it might be better to account for the information transmitted by each treatment, considering both guesses of income gaps and which side a person stands on. Put differently, treatment effects might vary by the extent to which each participant learns about their own privilege. This is what is explored in this section. For this purpose, *Prior(Privilege)* is defined as the difference between the sum of the income gaps in ones favor and guesses thereof,

$$\begin{aligned}\text{Info(Privilege)} = \quad & (\text{Male} - .5)\big(27,300 - \text{Prior(Gender gap)}\big) + \\ & (\text{Race(white)} - .5)\big(17,800 - \text{Prior(Race gap)}\big) + \\ & (\text{Univ.-educ. parent} - .5)\big(18,700 - \text{Prior(Par. education gap)}\big),\end{aligned}$$

whereby *Male*, *Race(white)*, and *Univ.-educ. parent* are dummies (taking value 1 if true, and 0 otherwise), and all *Prior* variables refer to participants' initial guesses of the respective income gap (see p.154). The fixed numbers refer to the actual income gaps. A histogram of the newly computed variable is shown in Figure 7.14. Negative values indicate that respondents underestimate the privilege they possess due to income gaps, positive values indicate overestimation. For example, white males with a university-educated parent on average underestimate their privilege by about US$15,650, which corresponds to a negative *Prior(Privilege)* value. Non-white females with no university-educated parent overestimate their privilege (or rather lack thereof) by about US$11,800, which corresponds to a positive variable value.

To explore whether the effects of treatments are contingent on the extent to which respondents misperceive their own privilege, three models are estimated. They correspond

Figure 7.14: Prior Knowledge Bias of own Privilege




*Note:* Prior(Privilege) indicates to what extent respondents misperceive their own privilege. Negative values indicating that they underestimate their privilege, positive values that they overestimate it.

to earlier specifications but include *Prior(Privilege)* as covariate rather than *Prior(Gap)*. Note that for the estimation of the models, *Prior(Privilege)* is in US$ 10,000s. Models XII-XV (Table 7.5) differ only in the dependent variable, estimating effects on beliefs about future income, beliefs about opportunity, and finally, agreement with redistribution.

As can be seen from the model fits statistics, all three models improve somewhat on the respective baseline models. However, for none of the models, *Prior(Privilege)* comes out as a significant predictor of the dependent variable. As such, even under this alternative specification of prior knowledge, no evidence is found that participants would learn from the treatments about their own future income (model XIII). As such, it is no surprise that also no evidence of preference adjustment in line with self-interest is found (model XV). Furthermore, under this alternative specification of prior knowledge, it should not be expected that this knowledge would condition how people update beliefs about opportunity in general. Model XIV confirms that such updating is not happening. Thus, the findings presented here are affirmative of those that were elaborate on in the main text of this chapter.

Table 7.5: Survey Experiment, Robustness Checks

| | *Dependent variable:* | | |
|---|---|---|---|
| | Belief (Future Income) | Belief (Circumstances) | Redistribution (Agreement) |
| | (XIII) | (XIV) | (XV) |
| Gaps | −0.009 | 0.047* | 0.098 |
| | (0.026) | (0.023) | (0.052) |
| Future | −0.043 | 0.028 | 0.096 |
| | (0.027) | (0.024) | (0.053) |
| Gaps*Future | 0.080* | −0.004 | −0.090 |
| | (0.038) | (0.033) | (0.076) |
| Prior(Privilege) | −0.004 | 0.019 | 0.045 |
| | (0.016) | (0.015) | (0.033) |
| Gaps*Prior(Privilege) | −0.006 | 0.006 | 0.020 |
| | (0.022) | (0.019) | (0.044) |
| Future*Prior(Privilege) | 0.012 | −0.008 | −0.073 |
| | (0.022) | (0.020) | (0.044) |
| Gaps*Future*Prior(Privilege) | −0.025 | −0.008 | 0.014 |
| | (0.031) | (0.027) | (0.062) |
| 2nd survey | 0.024 | −0.004 | 0.006 |
| | (0.018) | (0.016) | (0.036) |
| Intercept | 0.736* | 0.493* | 0.546* |
| | (0.021) | (0.019) | (0.042) |
| Observations | 726 | 728 | 727 |
| $R^2$ | 0.021 | 0.023 | 0.021 |
| Adjusted $R^2$ | 0.010 | 0.012 | 0.010 |

*Note:* *p<0.05. *Prior(Privilege)* is in US$ 10,000s. F-test (p-value): XIII vs I, 0.767 (.045) XIV vs IV, 1.632 (.066) XV vs VII, 2.00 (0.44).

# Chapter 8

# Why some Countries Redistribute more than Others

> "I see a beautiful city and a brilliant people rising from this abyss, and, in their struggles to be truly free, in their triumphs and defeats, through long years to come, I see the evil of this time and of the previous time of which this is the natural birth, gradually making expiation for itself and wearing out." – Charles Dickens, 1859, *A Tale of Two Cities*

The previous chapters explored how individuals respond to unequal economic opportunities. Based on their findings, the present chapter discusses the implications of the revealed micro-mechanisms for macro-level outcomes, in particular government redistribution. A simple graphical comparison suggests that there is indeed a relationship between inequality in opportunity and government redistribution (see Figure 8.1). This chapter discusses what might explain this pattern. It first introduces the existing political economy literature on government redistribution under democracy. Secondly, it discusses how inequality in opportunity can be accommodated by the existing accounts, and lastly it offers an explorative statistical analysis of the relationship between inequality in opportunity and government redistribution. As such, this chapter embeds the previously revealed micro-mechanisms in wider political economy debates and informs further research on the topic.

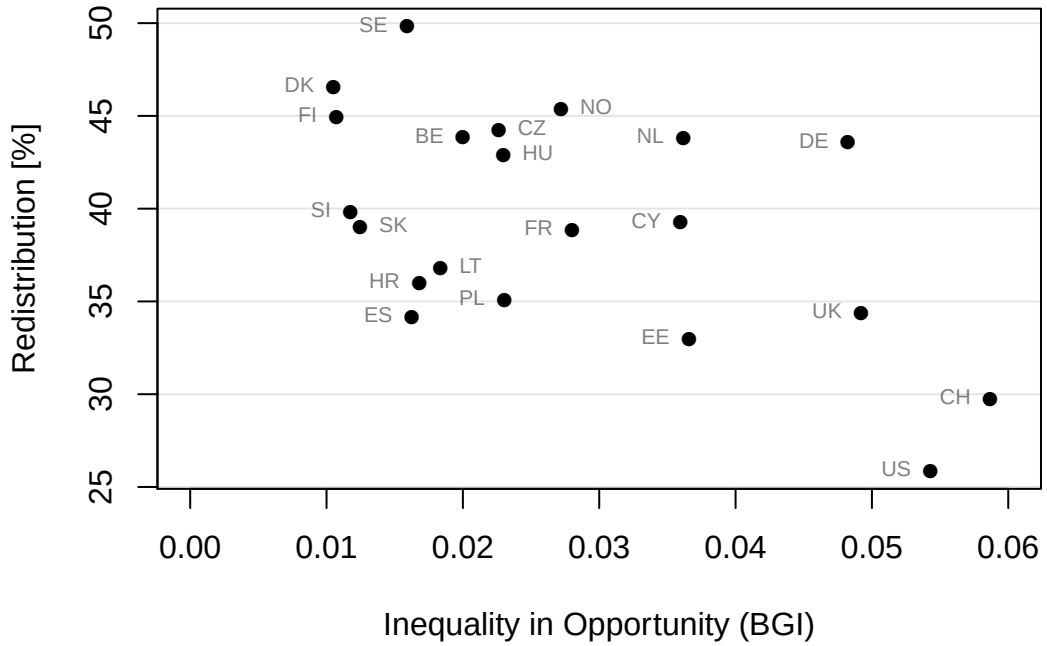
## 8.1 Democracy and Redistribution: A Tale of Two Camps

### 8.1.1 The Redistributive Democracy Camp

The first camp in political economy literature is optimistic about the compensatory function of democracy. It contends that governments engage in greater redistribution in response to rising level of inequality. This camp is sometimes referred to as the *redistributive democracy* perspective Kelly and Enns (2010).

Political economy literature on inequality and governmental redistribution most commonly relies on the median voter theorem. The theorem was developed by Downs (1957), who showed that under a variety of assumptions, parties compete for the median voter, that is the middle-most positioned voter in a one-dimensional policy space, and implement her preference. As mentioned previously, the theorem was popularized among political economists through the work of Romer (1975) and Meltzer and Richard (1981). In the

Figure 8.1: Income Gaps and Redistribution across Western Democracies, 2010




*Note: BGI* computed using Theil-coefficient (data from EU-SILC and PSID, details in Chapter 4). *Redistribution* equals difference in inequality before-tax and after-tax (as measured by the Gini-coefficient) as percentage of before-tax inequality; based on 2010 data by Solt (2016).

RMR model, the median voter theorem helps explaining the size of governments (i.e. redistribution) under different income distributions. The decisive quantity in their model is the distance between the mean and median income among the electorate. The larger the distance, the more redistribution the median voter demands, and the larger governments grow.

Although the RMR model is theoretically sound, the empirical support it receives is mixed at best. Many studies have shown that the RMR model cannot explain cross-national differences in redistribution (Lübker, 2007; Kenworthy and McCall, 2007), or support thereof (Hicks et al., 2016). However, Milanovic (2000) points out that this might be due to omitted variable bias. Instead of a cross-section, he uses a panel of countries and provides some evidence in favor of the model; redistribution increases with growing inequality. That being said, benefits from redistribution are limited to the poor and do not affect the median voter.[1]

Furthermore, the median voter theorem has been developed for the US context and one should therefore be careful about its application to polities that are characterized by multi-dimensional political spaces with more than two parties. This concerns most European countries and might be another reason for the inability of the RMR model to explain differences in redistribution across Western democracies. As Grofman (2004) points out, the median voter theorem hinges on more than a dozen assumptions, such as the presence of two parties only, party unity, voting based on policy proximity, and that politicians are solely office seeking. If one or more of them are violated, it cannot be expected that parties converge or that the median voter preference is implemented.[2] Other scholars suggest relying on the much less assumption driven proposition that governments, and parties competing to be in government, follow majority public opinion. For example, Brooks and Manza (2007) and Rehm (2016) show that welfare state spending follows public support for different policies.

[1]Studies with favorable results regarding individuals' responses to inequality include Finseraas (2009) and Schmidt-Catran (2016).

[2]Nelson (1999) argues that it is the median income among voters, not among the general population (which is the common operationalization in empirical tests of the RMR model), that is the relevant focus point for competing parties.

Scholars have suggested alternative mechanisms which can stipulate that inequality under democracy is self-correcting. Meltzer and Richard (1981) themselves consider concerns about economic efficiency as one such mechanism. If taxation decreases incentives to work, but this effect becomes weaker as inequality grows, opposition to redistributive taxation should be weaker at higher levels of inequality. Another mechanism is elaborated by Dimick et al. (2016). The authors show that rich Americans who live in more unequal states are more supportive of redistribution, which they identify as income-dependent altruism. Similarly, the rich in Europe associate inequality with crime and are more likely to support redistribution as inequality grows (Rueda and Stegmueller, 2015).

Although the discussed studies do not agree on the exact mechanisms, they contend that democracy has a balancing effect on economic inequality. When inequality grows, support for redistribution increases, to which governments respond, thus keeping inequality in check. However, in recent years, a large body of research has been amassed that puts into question this optimistic outlook on the redistributive potential of democratic institutions.

### 8.1.2 The Unequal Democracy Camp

Over the last decade, an increasing number of scholars developed mechanisms to explain how inequality undermines redistributive efforts. In reference to the encompassing work by Bartels (2008), this set of mechanisms is referred to as the *unequal democracy* perspective. A central building block to this literature is its contention that policy is shaped not solely by the preference of the median voter but more generally by the distribution of preferences in the electorate.

An emerging line of research explores the role of polarization in the electorate and among political elites alike. The underlying logic is that a polarized electorate pulls political elites and representative bodies apart and exacerbates consensus-making on the issues on which the public is polarized (McCarty et al., 2008; Bonica et al., 2013; Campbell, 2016),[3] especially economic ones (McCarty et al., 1997). Beramendi and Rehm (2016) understand

[3]See Fiorina et al. (2011) for an opposing view.

polarization as the importance of one's economic standing in determining redistributive preferences. They show that such polarization is increased where tax schedules are more progressive, since everyone's stake in the redistributive is game larger. Polarization can also result from the overlap of different economic incentives that people face (Dryzek and Goodin, 1986). For example, Rehm et al. (2012) show that preferences for various welfare state policies are more polarized where low incomes and high unemployment risks go hand in hand. Voorheis et al. (2015) investigate the direct effect of economic inequality on party polarization, and provide causal evidence that inequality increases such polarization.

Democracy gives the poor great power to redistribute economic resources in their favor. As this happens to a much lesser extent–if at all–than theory (originating from the redistributive democracy camp) predicts, scholars have asked, why do the poor not expropriate the rich? A common argument is that the poor are "distracted" by non-economic issues. For example, religious divides can focus political struggles on value-based questions, leading the poor to dismiss their shared economic interests (Roemer, 1998b; De La O and Rodden, 2008). Another argument is that the poor are simply misinformed about the implications of different policies (Bartels, 2005). Kuziemko et al. (2015) conducts a survey experiment on the repeal of estate taxes under George W. Bush, a highly regressive policy change, which was widely supported among the US public. Informing participants about who is affected by the policy (i.e. the very wealthy) significantly reduces levels of support. Iversen and Soskice (2015) argue that inequality and information are reinforcing. They argue that increases in inequality are associated with institutional change, like decreasing union density and access to education, which simultaneously undermine the availability of political information to the poor.

Tavits and Potter (2014) argue that governments strategically distract poor voters from their economic interests. As inequality increases, the electorate of left parties grows. Right parties compensate for this disadvantage by politicizing non-economic rather than economic issues. The authors show that right parties are more successful in doing so where they can capitalize on pre-existing cleavages like ethnic, religious, or nationalistic identities. Barth et al. (2015) offer an alternative explanation that considers a broader range of

incentives. These authors demonstrate that the constituencies of left and right parties, that is the poor and the rich respectively, respond differently to changes in inequality purely based on economic incentives. Most importantly, the poor do not increase their support for redistributive policies as they value them mostly for their insurance function. And as inequality increases, and the poor become poorer, such insurance can become prohibitively expensive for the poor. Following the preferences of their constituencies, both left and right parties move towards more conservative, less redistributive, policy platforms.

Yet another mechanism through which inequality can affect policy-making is turn-out. It is well-established that the economically well-off are more politically active, not only in terms of voting (Schlozman et al., 2013). Lindert (2007) argues that this is not a recent phenomenon, but characterized modern democracies since their beginning. And as Solt (2008) shows, this effect is more pronounced in countries with higher levels of economic inequality. Office-seeking politicians prioritize preferences of voters over those of citizens. Hence, the less likely poor citizens are to turn out, the less likely their interests are to be translated into policies. McCarty et al. (2008) further argue that immigration can severe this issue, if migrants are overrepresented among the poor and at the same time do not have the right to vote. Due to this dynamic, the median *voter*'s income in the US did in fact not fall over recent decades, despite increases in inequality. Parties are not unaware of these dynamics, and Pontusson and Rueda (2010) find that the ideological success of contemporary left parties crucially depends on whether the poor are mobilized.

Last but not least, an increasing number of studies focuses on the ability of the rich to take disproportionate influence on political outcomes. Many newly instituted policies serve the interests of small but rich groups (Bassett et al., 1999; Bartels, 2008; Hacker and Pierson, 2010; Gilens, 2005, 2012). The rich are not only resourceful, but the fact that they are few makes it easier for them to organize around their interests (Olson, 1965; Harms and Zink, 2003). Campaign donations is one of the most obvious channels of political influence. For the US, Bonica et al. (2013) show that since 1980 contributions from the very rich have grown disproportionately to their income. Looking at the effect of contribution limits, Barber (2015) is able to establish that donations do indeed affect the

behavior of politicians in office. As inequality grows, the rich make ever larger donations, strengthening their representation and solidifying existing inequalities.

In sum, these studies shed reasonable doubt on the effectiveness of democratic institutions to contain increases in inequality. To the contrary, they suggest that democratic institutions reinforce, if not amplify, economic inequalities.

## 8.2 Redistribution in the Presence of Inequality in Opportunity

The preceding chapters shed light on how people form preferences for redistribution in response to unequal economic opportunities. On the one hand, individuals maximize returns they can expect due to unequal opportunities, but on the other, they also reject inequality in opportunity. However, rejection of inequality in opportunity is based on biased beliefs and as such does not reinforce or ameliorate structural inequalities. The same is not the case for self-interested responses. Individuals form accurate beliefs about returns from unequal opportunities, and as such preferences are aligned with the structure of incentives inequality in opportunity provides. How the resulting distribution of preferences affects government redistribution depends on how democracies aggregate these preferences.

Unequal economic opportunities affect the labor market returns individuals with different circumstances can expect. This premise can easily be accommodated by existing theoretical models or mechanisms by expanding the income concept from one that focuses on the present to one that considers the future too (see Chapter 3). As such, it is permanent income individuals care about. Depending on how people form expectations about the future, this effectively alters the income distribution under consideration. That said, it does not alter how incomes translate into preferences or how these preferences are aggregated. Hence, although mechanisms unveiled by prior research (see Section 8.1) have been developed with a focus on present income, they yield the same predictions when expectations about future incomes are taken into account.

While present and future income can be seen as two distinct dimensions, it is important to realize the importance of their joint distribution. If higher present incomes go with higher future incomes, they reinforce each other. If they are inversely related, they cancel each other out. Similar arguments have been made before, for example by Rehm et al. (2012) concerning the overlap of present income and unemployment risks (see Section 2.1.2). As it was argued here that individuals form income expectations based on the present income distribution and its covariation with circumstances, present and future incomes are conceptually related. Other things being equal, the overlap between present and future incomes should be higher where inequality in opportunity is more extensive. Thus, greater inequality in opportunity should strengthen the workings of any of the mechanisms described above, no matter whether they are part of the redistributive democracy camp or the unequal democracy camp.

As is common in political economy scholarship, a simplified model of politics through which preferences are aggregated is elaborated. In fact, two such models are laid out here. The first emphasizes the median voter's preference and can be situated in the redistributive democracy camp. The other pays tribute to the unequal democracy camp and focuses on polarization of the overall preference distribution. As mentioned above, the elaborations that follow focus exclusively on self-interested behavior.

### 8.2.1 Median Voter Theorem

The most popular political model in political economy scholarship is based on the median voter theorem. The theorem conjectures that political actors compete for the median voter, who is the decisive voter in a competitive uni-dimensional two-party system. Indeed, the median voter theorem comes with a bag of assumption, but with regards to economic inequality, it has been successfully applied in many contexts (Meltzer and Richard, 1983; Milanovic, 2000; Schmidt-Catran, 2016). According to the median voter theorem, as specified in the RMR model, it is the distance between the median and the mean of the income distribution that determines the amount of redistribution governments engage in.

How does this proposition change when, in addition to present incomes, future incomes are also considered? In the model specified in Section 3.2.1, it is the average of present and future incomes that drives support for redistribution. As such, if future incomes are independent from present incomes, the distance between the median and mean of the income distribution is shrunk. According to the median voter theorem, redistribution should be lower in this scenario.

That being said, present and future incomes are not independent in the model. According to the specification of the Mincer model in Section 3.2.1, future incomes are based on the joint distribution of present-time incomes, ages, education levels, and circumstances. As education levels and circumstances are constant between the present and future period, present and future incomes should be more strongly correlated when present incomes are more strongly correlated with either of the constants. Thus, higher levels of inequality in opportunity (defined as $\Theta$ in Section 3.1) should also imply a higher correlation between present and future incomes. The higher this correlation, the less does the consideration of future incomes shrink (or even magnify) the distance between median and mean income. As such, the median voter theorem implies that governments should redistribute more, the higher the level of inequality in opportunity.

> **Hypothesis VI.** Higher levels of inequality in opportunity lead governments to redistribute more.

### 8.2.2 Polarization

Instead of emphasizing the median voter's preference, scholarship in the unequal democracy camp frequently highlights the polarization of the preference distribution. It is argued that polarized preferences make it harder for political actors to establish consensus. Parties move apart as they seek to cater to the preferences of their core constituencies, opposition to any consensus policy grows due to increased interest group activity, and so on. As such, polarization can undermine government's redistributive efforts.

The constellation of economic incentives is an important determinant of polarization.

Dryzek and Goodin (1986) show that self-interest can lead individuals to support others' immediate material well-being, if they themselves might face similar material needs in the future. As discussed, higher levels of inequality in opportunity increase the correlation between present and future income. As few people expect to soon be in the position of others, they are less "sympathetic" to the well-being of others. *Vice versa*, lower inequality in opportunity increases the chances of individuals switching positions in the income distribution. Consequentially, preference polarization decreases, and this should facilitate government's ability to redistribute.

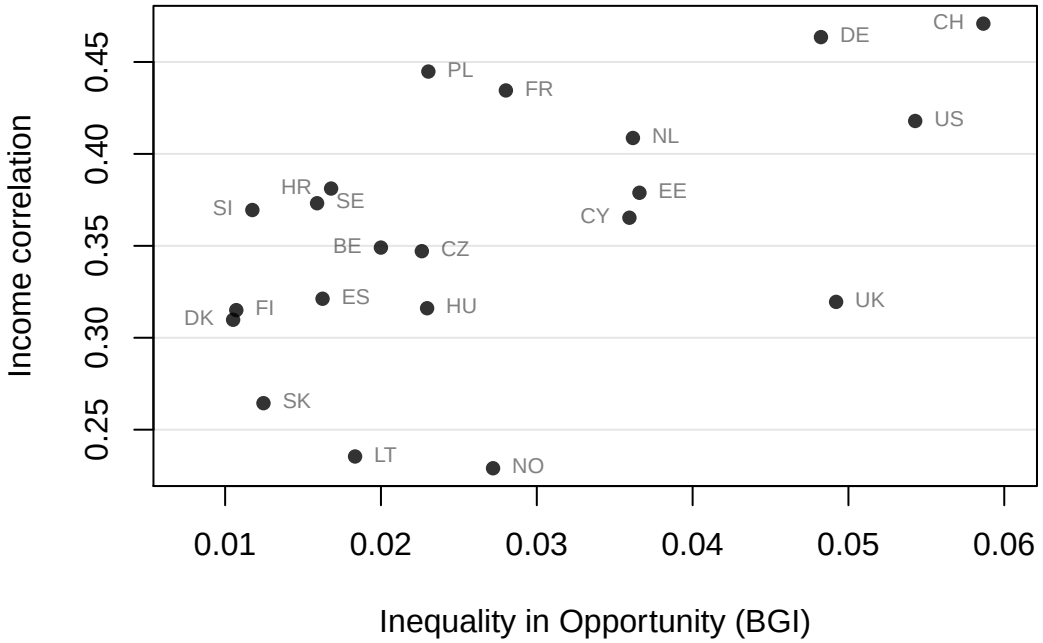
> **Hypothesis VII.** Higher levels of inequality in opportunity lead governments to redistribute less.

## 8.3 Redistribution across Western Democracies: An Exploratory Analysis

The theoretical elaborations above hinge on the premise that higher inequality in opportunity increases the overlap between two types of economic incentives, those from present incomes and those from expected future income (taking into account meritocratic and ascriptive factors). To check whether this holds empirically, correlation coefficients for the two income concepts are computed for each country (based on the merged data set used for the preference analysis in Chapter 5). Table 8.2 displays these correlation coefficients plotted against each country's level of inequality in opportunity. And indeed, in countries with higher inequality in opportunity, present and future income are more strongly correlated (r=.53).

Considering the puzzle laid out at the beginning of this chapter–the inverse relationship between redistribution and inequality in opportunity–the median voter theorem appears to fall short of capturing preference aggregation in the real world. That being said, a mere correlation (as presented in Figure 8.1) does not constitute a sophisticated test, and therefore, this hypothesis derived from the median voter theorem is further scrutinized in

Figure 8.2: Inequality in Opportunity and Income Correlation




*Note:* Inequality in opportunity (BGI) computed using Theil-coefficient, based on 2010 data (EUSILC for Europe, and PSID for US). Income correlations indicate correlations between merged present incomes (based on ESS and GSS data) and future incomes (calculated based on extended Mincer model, using data from EU-SILC, for Europe, and PSID, for US; see Chapter 5).

the following empirical analysis. Here, both hypotheses developed in the previous section are tested cross-sectionally for the same set of 21 Western democracies included in earlier chapters.

### 8.3.1 Data and Analysis

Depending on the specific research objective, different measures of redistribution are used in the literature. Total spending or spending in specific policy areas is most appropriate to welfare state literature that is more interested in the size and coverage of governmental programs than effects on the income distribution. Of course, the same amount of spending can have very different redistributive effects. Here, the interest lies not in the amount of spending but the extent to which spending reduces or increases income differences. For this purpose, it is common to resort to measures that capture the difference between before-tax and after-tax inequality. The most widely used measure of this kind comes from a data

set developed by Solt (2016).[4] The author draws on a number of secondary sources and maximizes their comparability by accounting for differences in conceptualizations across countries and sources. Most alternative data sets fail to do so.

The data used in this chapter is presented in Table 8.1. It includes Solt's (2016) measure of relative distribution, which indicates the difference between before-tax and after-tax Gini as percentage of before-tax Gini. The other columns show data that is used in later models to account for alternative explanations and potential confounding factors. With the exception of the *ethnic fractionalization* variable, which is taken from Fearon (2003), all indicators are computed based on GSS and ESS data following the specifications in the respective literature. All variables are discussed in detail below when they are introduced to a model.

The comparative analysis here is limited to a cross-sectional analysis. The reason is

Table 8.1: Country-level Data

| Country | Redistribution | Unemployment rate | Risk inequality | Religious polarization | Ethnic fractionalization |
|---|---|---|---|---|---|
| BE | 43.834 | 0.079 | 0.342 | 0.814 | 0.567 |
| CH | 29.748 | 0.034 | 0.286 | 0.598 | 0.575 |
| CY | 39.253 | 0.075 | 0.268 | 0.028 | 0.359 |
| CZ | 44.236 | 0.088 | 0.368 | 0.583 | 0.322 |
| DE | 43.565 | 0.075 | 0.428 | 1.020 | 0.095 |
| DK | 46.555 | 0.082 | 0.429 | 0.653 | 0.128 |
| EE | 32.985 | 0.114 | 0.398 | 0.574 | 0.511 |
| ES | 34.179 | 0.194 | 0.286 | 0.873 | 0.502 |
| FI | 44.961 | 0.090 | 0.297 | 0.598 | 0.132 |
| FR | 38.871 | 0.106 | 0.245 | 0.817 | 0.272 |
| HR | 35.994 | 0.214 | 0.199 | 0.537 | 0.375 |
| HU | 42.910 | 0.106 | 0.351 | 0.828 | 0.186 |
| LT | 36.793 | 0.183 | 0.318 | 0.443 | 0.338 |
| NL | 43.806 | 0.051 | 0.326 | 0.810 | 0.077 |
| NO | 45.374 | 0.059 | 0.366 | 0.628 | 0.098 |
| PL | 35.091 | 0.096 | 0.419 | 0.400 | 0.047 |
| SE | 49.822 | 0.059 | 0.394 | 0.607 | 0.189 |
| SI | 39.830 | 0.101 | 0.306 | 0.659 | 0.231 |
| SK | 39.012 | 0.110 | 0.327 | 0.891 | 0.332 |
| UK | 34.371 | 0.093 | 0.427 | 0.872 | 0.324 |
| US | 25.856 | 0.095 | 0.268 | – | 0.491 |

*Note:* Redistribution based on Solt (2016); ethnic fractionalization from Fearon (2003); all other indicators computed based on ESS and GSS data as described in text (computed for target population, ages 18-59). See Table 5.2 for further country-level data.

[4]Version 5.0 of the SWIID data set. The data set encompasses one hundred imputations for each country-year to account for measurement uncertainty. Here, such uncertainty is ignored and instead the mean imputation for each country-year used.

that data suitable to the computation of inequality in opportunity indicators (BGI) across a wide range of countries is only available for recent years. As such, the presented findings are at best indicative of a potential causal effect. In particular, it is tested whether the correlational relationship revealed at the beginning of this chapter–the negative relationship between inequality in opportunity and redistribution–holds when alternative explanations are taken into account. For all models, continuous independent variables are normalized, such that their parameter estimates can be directly compared in terms of effect size.

As a sample of 21 countries is neither random nor large, a Bayesian linear regression is devised to test the hypothesized relationships (Western and Jackman, 1994; Schrodt, 2014). The model is specified as follows, and unless pointed out otherwise, uninformative vague priors are used in the estimation process.[5]

$$y_c \sim \mathrm{N}(\beta_0 + \sum \beta_k x_{ck}, \sigma)$$

### 8.3.2 Findings

Table 8.2 presents the results of a first set of models. Model I consists of an empty baseline model, model II includes the two variables most commonly discussed in the literature, inequality (*Gini*) and economic prosperity (*GDP, per capita*), and model III adds inequality in opportunity.[6] As the independent variables have been normalized, the estimated parameter coefficients are directly comparable. Their significance can be assessed by the number in parentheses, which indicates the percentage share of the posterior distribution that is above zero. Values below 5 or above 95 are taken to indicate strong evidence of negative respectively positive parameter estimates; values below 10 or above 90 as weak evidence. Neither economic prosperity nor inequality come out as significant,

[5]All $\beta$-coefficients are given a prior normal distribution with mean 0 and standard deviation 10; $\sigma$ is given a half-Cauchy distribution with a location parameter of 0 and a scale parameter of 5. For each model, 3 chains are run, a warm-up period of 100,000 iterations applied, and 1,000,000 posterior samples drawn (thinning of 100).

[6]The Gini measure is taken from the SWIID database (Solt, 2016), GDP per capita from the World Development Indicators (World Bank, 2016) (see Table 5.2 for the exact values). BGI as well as *Correlation(Incomes)* are based on own calculations.

and the model fit statistics of model II indicate bad fit. Model III is much better able to explain variation in the dependent variable ($R^2$), which is also supported by the lower WAIC.[7] This improved fit is due to the added BGI variable, which indicates inequality in opportunity. Its parameter estimate is large and significant. Furthermore, there is now strong evidence in favor of a positive effect of GDP on government redistribution.

Above, it was argued that inequality in opportunity matters as it leads to a higher overlap between present and future income. As such, one would expect the basic result to hold, if the measure for inequality in opportunity was replaced with the above computed correlation coefficients of the two incomes. Model IV does so. Although the corresponding estimate is smaller in magnitude and more credible values (6.4%) are on the opposite side of zero, taking into account the small sample size, the estimates are supportive of the basic result. Model V explores whether the results presented here depend on the choice of prior distributions, and uses uniform prior distributions instead of uninformative but vague priors. The results are not affected. Models VI checks whether the results are driven by a single highly-influential outlier. Each country is dropped one-by-one and the model estimated separately. It is worth pointing out that none of the separately estimated

Table 8.2: Determinants of Government Redistribution (Regression results), I

| Model | I | II | III | IV | V<br>III+Unif.priors | VI<br>III+Jackknife |
|---|---|---|---|---|---|---|
| GDP, pc | | 0.58<br>(66.8) | 2.53<br>(97.7) | 0.74<br>(71.4) | 2.59<br>(97.4) | 2.51<br>(97) |
| Gini | | -1.38<br>(14.9) | -0.02<br>(49.4) | -1.52<br>(12.5) | 0.01<br>(50.3) | -0.04<br>(48.9) |
| BGI | | | -4.25<br>(0.1) | | -4.35<br>(0.2) | -4.23<br>(0.3) |
| Corr.(Incomes) | | | | -2.03<br>(6.4) | | |
| Intercept | 38.63<br>(100) | 38.61<br>(100) | 38.89<br>(100) | 38.65<br>(100) | 39.39<br>(100) | 38.87<br>(100) |
| Observations | 21 | 21 | 21 | 21 | 21 | 20/21 |
| $R^2$ | -0.016 | 0.055 | 0.445 | 0.172 | 0.452 | 0.448 |
| WAIC | 137.84 | 139.449 | 130.022 | 138.357 | 130.252 | 125.888 |

*Note:* Standardized regression coefficients. Number in parentheses indicates share of posterior greater than 0, in percent. Convergence has been confirmed using the Heidelberger-Welch-test, trace-plots, and autocorrelation diagnostics.

[7]The reason for the WAIC not being even lower is likely due to the inclusion of the first two variables, which have low predictive power.

posteriors (not presented here) leads to significantly different results. Here, the results are combined by averaging over the pooled posterior distributions and presented in column VII (neither the coefficients nor the strength of the evidence supporting them is affected).

Next, alternative explanations of governmental redistribution frequently advanced in the literature are explored. Model VII (Table 8.3) includes a dummy variable for post-soviet countries to ascertain that the relationship is not driven by particularities of historical legacies (Bohle and Greskovits, 2012). Unemployment risks are often seen as an important driver of redistribution. Indeed, such risks are often used to explain the emergence of welfare states in parallel with processes of industrialization (Wilensky, 1974). Blekesaune (2007) show that employment insecurity on the national level, as measured by the unemployment rate, is a strong predictor of public support for redistribution. Here, the unemployment rate is calculated based on the ESS and GSS data used in previous chapters. To be precise, the unemployment rate is defined as the proportion of those currently unemployed as percentage of the labor force (aged 18 through 59). The computed unemployment rates are indicated in the second column of Table 8.1. Adding the national unemployment rate to the model (VIII) strongly increases the explanatory power of the model, but the coefficient does not support the mentioned line of argumentation. In fact, redistribution is lower where unemployment is higher. To be fair, the related scholarship is mostly concerned with the size of the welfare state, not with how redistributive it is. Therefore, redistribution is not the best measure to assess the propositions of that scholarship. What matters here, BGI is robust against the inclusion of national unemployment rates. Its parameter estimate even increases in magnitude.

Another common theme in the literature is polarization within society. With regards to unemployment, Rehm (2016) argues that where risks are more equally shared, welfare states grow larger in size. His measure of risk inequality is a Gini-coefficient of occupational unemployment risks. Thus, for each country in the dataset, the average unemployment rate for each occupation (broadest categorization of ISCO-88 standard) is determined and subsequently the Gini-coefficient computed, whereby each occupation is weighted by its share in the labor force. The resulting risk inequality indicator is presented in

Table 8.3: Determinants of Government Redistribution (Regression results), II

| Model | VII | VIII | IX | X | XI | XII |
|---|---|---|---|---|---|---|
| GDP, pc | 2.67 | 0.68 | 2.41 | 2.8 | 1.89 | 0.91 |
| | (88.6) | (73.6) | (98.1) | (98.8) | (95.7) | (78.6) |
| Gini | 0.03 | 1.58 | -0.35 | 0.25 | -0.34 | 0.81 |
| | (50.1) | (93.7) | (36.7) | (59.6) | (36.8) | (75.5) |
| BGI | -4.26 | -5.59 | -4.23 | -3.56 | -3.23 | -4.56 |
| | (0.2) | (0) | (0.1) | (0.6) | (0.7) | (0.1) |
| Post-soviet | 0.36 | | | | | |
| | (52.2) | | | | | |
| Unempl. rate | | -4.25 | | | | -2.83 |
| | | (0.1) | | | | (5.2) |
| Risk inequality | | | 2.31 | | | 0.47 |
| | | | (98.7) | | | (66.6) |
| Religious polar. | | | | 0.51 | | |
| | | | | (69.1) | | |
| Ethnic frac. | | | | | -2.68 | -1.44 |
| | | | | | (0.6) | (8.8) |
| Intercept | 38.74 | 39.08 | 39 | 39.45 | 39.02 | 39.08 |
| | (100) | (100) | (100) | (100) | (100) | (100) |
| Observations | 21 | 21 | 21 | 20 | 21 | 21 |
| $R^2$ | 0.442 | 0.688 | 0.594 | 0.439 | 0.622 | 0.73 |
| WAIC | 131.462 | 119.973 | 125.016 | 121.416 | 123.969 | 120.664 |

*Note:* Standardized regression coefficients. Number in parentheses indicates share of posterior greater than 0, in percent. Convergence has been confirmed using the Heidelberger-Welch-test, trace-plots, and autocorrelation diagnostics.

Table 8.1. Adding risk inequality to model IX is not supportive of Rehm's proposition. However, redistribution as specified here is again not an ideal measurement for welfare state expansion. As a matter of fact, welfare states do not necessarily have to be redistributive (Korpi and Palme, 1998; Rueda, 2007). That being said, the BGI parameter is robust to the introduction of risk inequality to the model.

Religious polarization constitutes another impediment to government redistribution (Stegmueller et al., 2012). Welfare state expansion can be regarded as threatening to religious institutions, and in response they begin rallying against such governmental activity. Stegmueller et al. (2012) show that religious institutions are more successful in doing so where religious polarization is more pronounced. Their measure of religious polarization is reproduced for the data used here and included in the estimation of model X.[8] No support is revealed for their proposition, and the BGI parameter is, although

[8]Following Stegmueller et al. (2012), religious polarization is defined as $\pi_r \pi_s |y_r - y_s|$, where the two $\pi$s indicate the population share of religious respectively secular individuals, and the latter term indicates

slightly reduced, barely affected.

Last but not least, the most extensive political economy literature refers to ethnic fractionalization. Ethnic fractionalization has been shown to undermine public goods provision in a number of settings (Alesina et al., 1999; Luttmer, 2001; Dahlberg et al., 2012). In model XI, Fearon's (2003) measure of ethnic fractionalization, which indicates the probability of two randomly selected citizens being from different ethnic groups, is included. The estimated parameter points in the expected direction, and leads to a slight reduction of the BGI parameter. That said, BGI remains a strong predictor of government redistribution. This is further confirmed by a final model that includes all of the variables of alternative explanations that had strong support in previous models.

All in all, the results presented here show that the negative relationship between inequality in opportunity and redistribution cannot be accounted for by alternative explanations. The robustness of this relationship is further supported by the fairly consistent parameter estimates across all model specifications. With the exception of model VIII, the parameter estimate is in the vicinity of -4, which implies that relative redistribution decreases by four percentage points as BGI increases by one standard deviation. Given that relative redistribution has a range of less than 25 percentage points (25.9% in the US to 49.8% in Sweden), this is a large effect. Indeed, the only other predictor coming close in substantive importance is the national unemployment rate. Despite their frequent discussion in the literature, most other country-level variables, such as GDP, Gini, or ethnic fractionalization, have smaller, less consistent effects.



## 8.4 Discussion

Democracies are often seen as a panacea for various societal problems. Many scholars interested in the distribution of economic resources share this optimism. The extension of the franchise has often been promoted as a guarantee that a society's prosperity will

the average distance of self-acclaimed religiosity on a eleven-point scale (i.e. 0-10). Unfortunately, the GSS measure of religiosity has only four categories, as opposed to eleven in the ESS, and the US is therefore excluded from this specific model.

be widely shared (Acemoglu and Robinson, 2000) by limiting the emergence of excessive inequality (Meltzer and Richard, 1981). Even without the threat of a popular uprising, inequality under democracy should be self-correcting. Empirically, there is little evidence that this applies to Western democracies. In these countries, the prevailing political institutions appear to solidify–or even amplify–existing inequalities. The previous section lends support to this dark outlook on democracy.

Existing inequalities in opportunity in the labor market shape not only people's present incomes but also what they can expect to earn in the future. Just like present incomes, future incomes provide economic incentives to the forward-looking individual. As shown in detail in previous chapters, those who have reason to believe to be better-off in the future are less supportive of government redistribution. Inequality in opportunity implies that present and future incomes are related. The more unequal opportunities grow, the larger the overlap of both incomes is. Hence, what is at stake for each and every individual increases, and so do incentives for self-interested behavior. The result is a polarization of the electorate, and ever greater commitment among the rich (and politically influential) to oppose redistribution.

The previous section shows that unequal opportunities and a growing polarization of the electorate are not without consequence. Countries with larger inequalities in opportunity redistribute less, even when other factors are controlled for. Of course, there is good reason for skepticism about how persuasive these findings are. Most importantly, the lack of a temporal dimension in the analysis makes it impossible to verify any causal claims. In fact, causality might go in reverse, less redistribution might lead to larger income gaps.[9] However, two things are important to consider. First, the presented gaps refer to income before tax and are not immediately affected by redistribution. Second, even if redistribution has a causal effect on income gaps,[10] it does not answer the question of why democracies tolerate–and even perpetuate–such income gaps. After all, such gaps are widely rejected among the electorate. The micro-mechanisms revealed in the previous chapter suggest

[9] Alesina et al. (2004) make a similar argument with regards to inequality in general.

[10] Thinking about intergenerational transfers, and inheritance taxation, this is certain to be the case.

that this is at least partly due to the inability of voters to accurately perceive the extent of inequality in opportunity and the simultaneous polarization of preferences that comes with increased inequality in opportunity. As such, the extensive evidence on the underlying micro-mechanisms lends itself to the plausibility of the described macro-mechanism.

Chapter 2 discussed a similar controversy surrounding empirical tests of the RMR model. The failure of cross-sectional analyses to reveal any relationship between economic inequality and redistribution (Alesina et al., 2001; Iversen and Soskice, 2006; Lindert, 2007), led others to rightly argue that such non-results might be due to idiosyncrasies of the given country samples. As such, the *ceteris paribus* assumption, i.e. that all confounding factors have been accounted for, is not fulfilled by cross-sectional analyses. This point finds empirical support. Zooming in on changes within countries, scholars have found results affirmative of the RMR model (Milanovic, 2000; Finseraas, 2009; Schmidt-Catran, 2016). This controversy highlights the need to further scrutinize the hypotheses that here found support in cross-sectional analyses, through research designs that pay closer attention to temporal developments, be it studies of single cases or country panels. In fact, such studies might be most fruitfully combined with the recommendations for further research in Chapter 5. Studies of institutional change and external shocks that include not only a temporal dimension but allow for an explicit identification of causal effects.

Another reason for the contradictory empirical findings regarding the effects of economic inequality on governmental redistribution, might be the exclusive focus of the existing literature on present incomes. As the results presented in this chapter show, parameter estimates of the effect of inequality, i.e. *Gini*, on redistribution are highly contingent on model specification (compare, for example, models IV and VIII). Instead, people might be concerned about their permanent income and take into account both their present as well as their expected future income, when forming preferences for redistribution. The findings of Chapter 4 are strongly supportive of this claim. As the level of inequality in opportunity, BGI, captures the extent of overlap between present and expected incomes, it indicates how unequal permanent incomes are distributed. The results in this chapter regarding the effects of BGI are robust against different model specifications. As such, political economy

research might overcome some of its ambiguities by paying greater attention to the role of income expectations.

# Chapter 9

# Conclusion: Opportunity Matters

> "History shows that where ethics and economics come in conflict, victory is always with economics. Vested interests have never been known to have willingly divested themselves unless there was sufficient force to compel them." – B.R. Ambedkar, 1945, *What Congress and Ghandi have done to the Untouchables*

Income gaps in labor markets bear witness of unequal economic opportunities. Are such inequalities here to stay? This dissertation joins three vibrant branches in the political economy literature–work on economic cleavages, inequity-version, and bounded rationality–to speak to this question. At the same time, the main contributions this dissertation makes to existing scholarship are also threefold.

First, this dissertation joins work on economic cleavages that has so far focused on separate cleavages into a common framework. This is done by identifying commonalities in work on otherwise distinct cleavages. In particular, gender, ethnicity, race, migration and family background have been found to be markers of economic opportunities. Put differently, people realize that their economic opportunities, and thus future standing, depend on which side of the respective income gap they stand on and form preferences accordingly. This insight was used to hypothesize about the dependence of redistributive preferences on the combined workings of economic cleavages. The empirical analysis here has shown people to be less supportive of redistribution, the higher an income they can

expect due to the (dis)privileging effects of unequal opportunities.

Second, material self-interest is not the only motive of individual behavior. Earlier scholarship has shown that individuals reject distributions they deem inequitable. However, this research fell short of connecting inequity-aversion to the actual income distribution. Here, this drawback is overcome by conceptualizing inequity-aversion as aversion to inequality in opportunity. Hence, people should demand redistribution in response to income gaps, even if doing so reduces the economic benefits they could otherwise reap from their own privilege. This dissertation finds support for this hypothesis, with one important limitation, which follows from the final contribution.

The final and third contribution builds on insights from behavioral research on bounded rationality. Related scholarship on economic inequality argues that individuals cannot be assumed to have common knowledge or even unbiased beliefs about the income distribution. This dissertation shows that similar limitations apply to people's belief about unequal opportunities. These limitations help explain why self-interested responses to inequality in opportunity are more consequential than inequity-aversion. While people do have a good understanding of the opportunities available to themselves, they do not recognize how much these opportunities differ from those of others. Although self-interest and inequity-aversion both affect redistributive preferences, only the prior is structurally consequential. Inequity-aversion depends on biased beliefs that do not reflect actual inequalities, and therefore, cannot reinforce them.

Based on its theoretical and empirical insights, this dissertation argues that the way individuals respond politically to income gaps contributes to the persistence of those gaps. Redistributive preferences in response to inequality in opportunity are affected by material self-interest and inequity-aversion. However, the latter is not structurally consequential as people do not hold correct beliefs about income gaps. At the same time, people have accurate beliefs about their own privilege, and thus, corresponding self-interest is aligned with the actual distribution of incomes. As a consequence, countries with larger income gaps are characterized by a more polarized electorate. Earlier research has shown that such polarization makes it more difficult to achieve political consensus and to advance

redistributive policies. This dissertation also provides some indicative evidence that this equally applies to inequality in opportunity; where such inequality is higher, governments redistribute less.

**Alternative explanations.** Arguing that income expectations is what makes social cleavages politically salient and consequential has to face up to a number of prominent alternative accounts. One of them is the so-called deservingness heuristic (e.g. Gilens, 2000; Petersen et al., 2011; Katz, 2013; Jensen and Petersen, 2017). Adherents of this school of thought highlight that support for redistribution and welfare policies hinges on whether recipients are regarded as deserving, both in terms of control they have over their well-being as well as whether they have earned reciprocation. Informational cues and media frames are key determinants of how powerfully the deservingness heuristic unfolds. However, such context dependence makes it an unlikely candidate to account for the variation in redistributive preferences explained by differences in income expectations. In particular, the theory has no way of explaining why those individuals more privileged by unequal labor market opportunities should be more susceptible to the deservingess heuristic.

Another popular account of how economic differences across social groups affect support for redistribution, and the provision of public goods more generally, is parochial altruism (e.g. Luttmer, 2001; Bernhard et al., 2006; Rueda, 2014; Trounstine, 2016). Such altruism implies preferences that favor in-group members over out-group members, but can also result simply from preference homogeneity (Habyarimana et al., 2007). However, such accounts commonly focus on ethnic and racial groups and it is not clear whether they would apply to other cleavages whose relevance can be accounted for by differences in income expectations (i.e. gender, family background). Further research is certainly needed to tell both mechanisms apart, even if the disagreement is limited to ethnic and racial cleavages.

Research on intergenerational mobility is interested in economic phenomena, i.e. income ascription, similar to this study. However, it is important to recognize an important

conceptual difference. Mobility research is focused on the correlation between the economic attainment of parents and their offspring. One reason for this is that parental background is often seen as having the strongest ascriptive force of all inborn circumstances. It is unfortunate, however, that the extent of economic mobility is all too often understood as a measure of equality of (economic) opportunity (e.g. Corneo and Grüner, 2002; Beller and Hout, 2006; Fernández-Albertos and Kuo, 2015; Steele, 2015). In most contemporary societies, women receive lower pay than men, even when doing the same work. Intergenerational mobility, which only looks at parental background, does not reveal anything about the unequal economic opportunities men and women face. In many contexts, the same argument can be made with reference to birthplace, caste, ethnicity, and race, amongst many others. Whether the effects of parental background can account for the degree of inequality in (economic) opportunity is, at the very least, an empirical question, and one that is unlikely to be answered affirmatively. Hence, interpreting one characteristic as the sole determinant of inequality of opportunity, as is often done in intergenerational mobility research, risks rendering other sources of inequality in opportunity invisible. Instead, the approach chosen in this study emphasizes the multitude and overlap of different ascriptive circumstances and thus provides a fuller appreciation of inequality in opportunity.[1]

**Implications.** Different explanations have different implications for how social phenomena might be addressed through policy or other means. A conundrum particular to the explanation offered here is that income gaps undermine governmental redistribution, but such redistribution is needed to reduce income differences. Is there a way out? The arguments developed above imply at least three possibilities. One would be to shift governmental spending, be it redistributive or not, to spending that reduces income gaps. Such initiatives are not necessarily related to tax policy but have a much wider scope, e.g. educational or economic investment in geographic or occupational areas in which underprivileged groups are over-represented. Second, unequal opportunities in labor markets should be addressed head on. In particular, it is important to guarantee equal pay

[1]That being said, some scholars explore how mobility rates vary by race (Alesina and La Ferrara, 2005) or gender (Kopczuk et al., 2010), bringing such research closer to the approach of this study.

for equal work and to ensure equal chances for career advancement independent of gender, race, ethnicity, family background, place of birth and so on. More equal labor market opportunities should increasingly widen governments' ability to expand redistributive policies.

A third way through which income gaps can be addressed concerns political knowledge. Over the past decade, political economists working on inequality have increasingly recognized the importance of accounting for people's knowledge about empirical entities that are central to theoretical models. Discrepancies between subjective beliefs and empirical entities must not arise from targeted misinformation, but the contemporary spread of populist politics urges the study of such discrepancies. The findings of this dissertation suggest that better information about income gaps–which indicate a kind of inequality that is particularly objectionable on normative grounds–can facilitate the emergence of consensus on redistributive policies. Hence, such information can help people, and eventually political actors, to overcome the narrow confines of material self-interest. To what extent such optimism is warranted also hinges on our understanding of how information spreads, and whether factual information can prevail over alternative depictions. First endeavors into this question are not hopeful. People's access to information to form accurate beliefs about inequality seems to worsen in tandem with increases in inequality (Barth et al., 2015; Iversen and Soskice, 2015). That being said, a better understanding of the potential of information and dynamics of its diffusion can put scholars, practitioners, and citizens in a better position to counteract effects of information they deem undesirable.

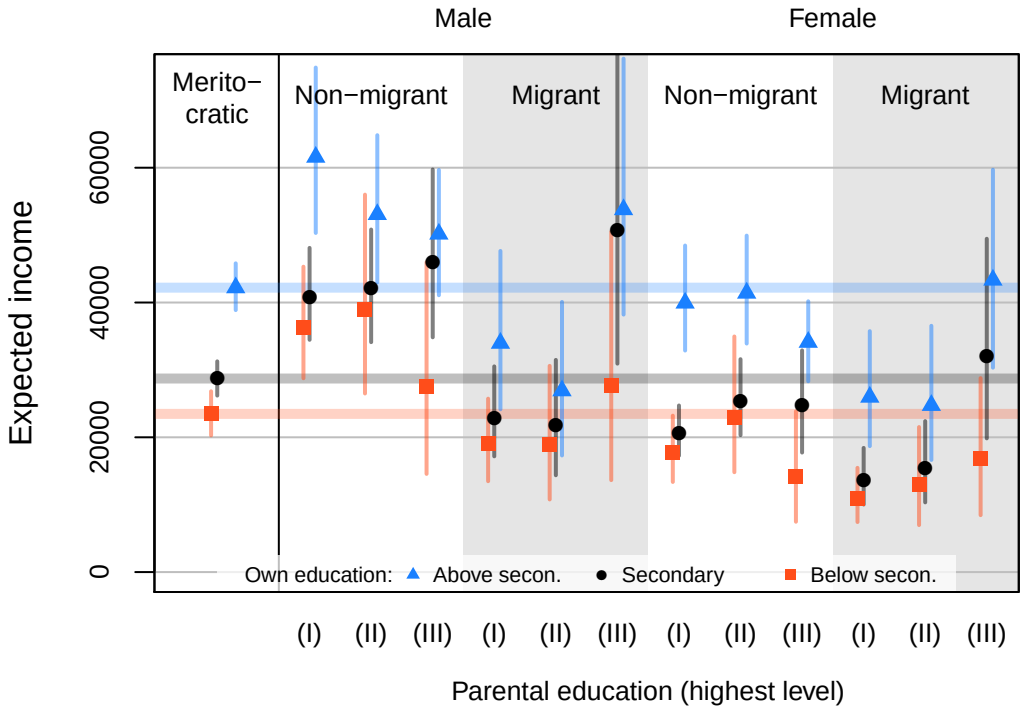
The findings of this dissertation staunchly position it in the unequal democracy camp. As such, this dissertation regards democratic institutions as aggravating inequality rather than reducing it. Among other things, this indicates a victory of the conservative framing of equality and efficiency as standing in a trade-off because economic differences are seen as necessary to spur economic activity. Indeed, this framing has shaped public discourse and debates among political elites for decades (see Okun, 1975). It is, however, important to note that this framing gives no ground to inequality in opportunity. Quite the opposite, unequal opportunities are regarded as inhibiting the efficient allocation of

talent, thus undermining economic prosperity of individuals and society alike. As such, this dissertation's revelation that democracies frequently fail to reduce not only income differences in general, but income gaps, due to gender, ethnicity, and family background, in particular, should be of concern across ideological divides. Greater acknowledgment of the relationships between income gaps, equality of opportunity, and economic efficiency can help bringing democratic societies together to address some of the more pervasive kinds of inequality.

# Appendix A

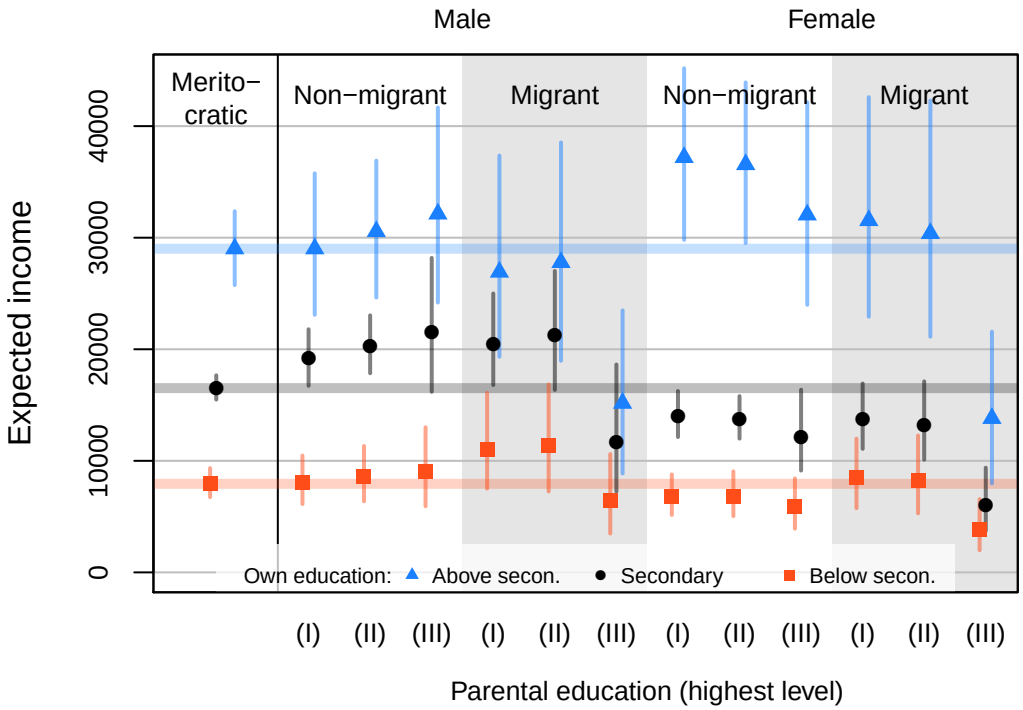
# Income Expectations

Figure A.1: Income Expectations by Circumstance Group and Degree, Belgium



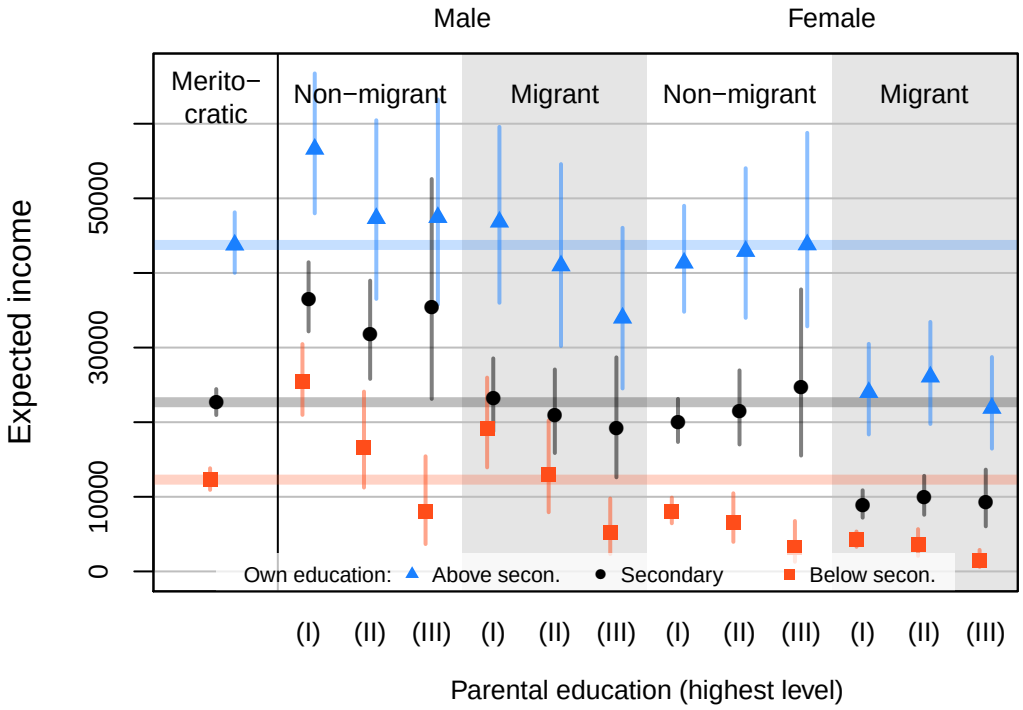

*Note:* Income expectations (2010-US$, PPP) of a 20-year old, with 95% confidence interval. Blue indicates annualized income expectations (until age 59) for persons with university degree; black indicates completed secondary education; red less than secondary completed. Left panel based on predictions from standard Mincer model; right panel on extended Mincer model. Parental education indicates highest level of any parent completed, (III) university degree, (II) secondary complete, (I) less than secondary. Migrant indicates person or at least one parent born abroad.

Figure A.2: Income Expectations by Circumstance Group and Degree, Croatia



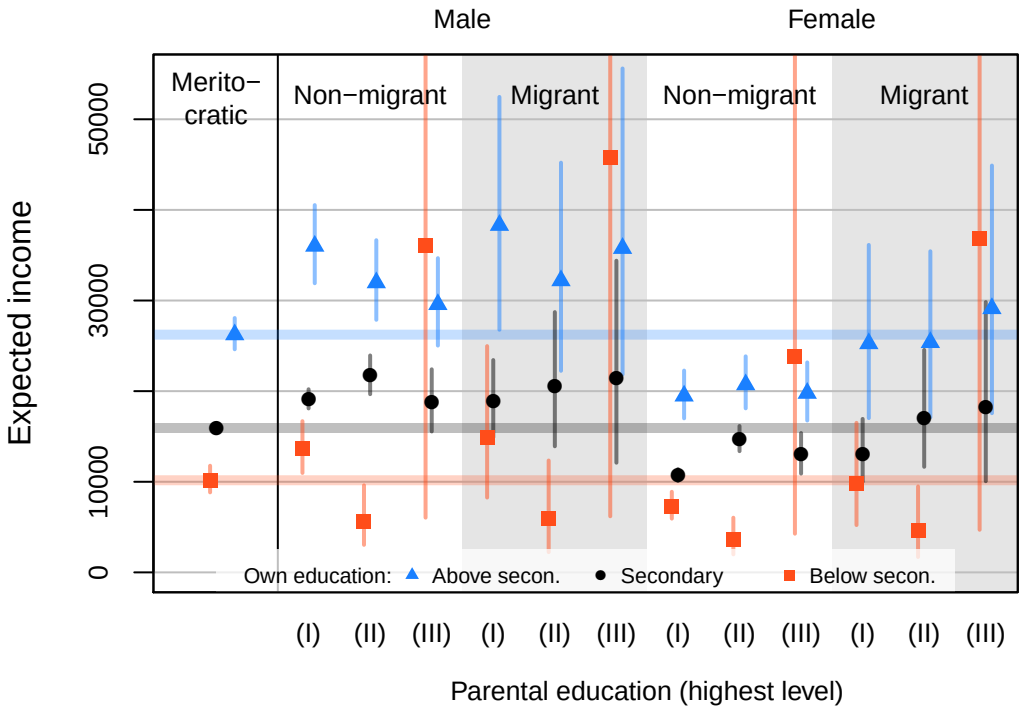

*Note:* See Figure A.1 note.

Figure A.3: Income Expectations by Circumstance Group and Degree, Cyprus



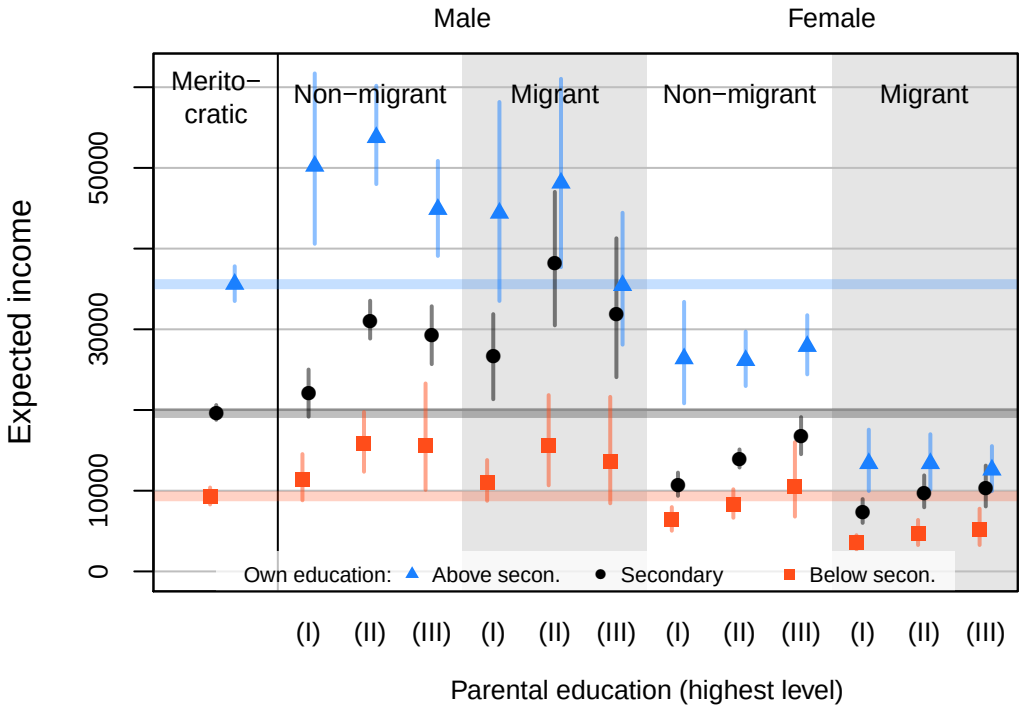

*Note:* See Figure A.1 note.

Figure A.4: Income Expectations by Circumstance Group and Degree, Czech Republic



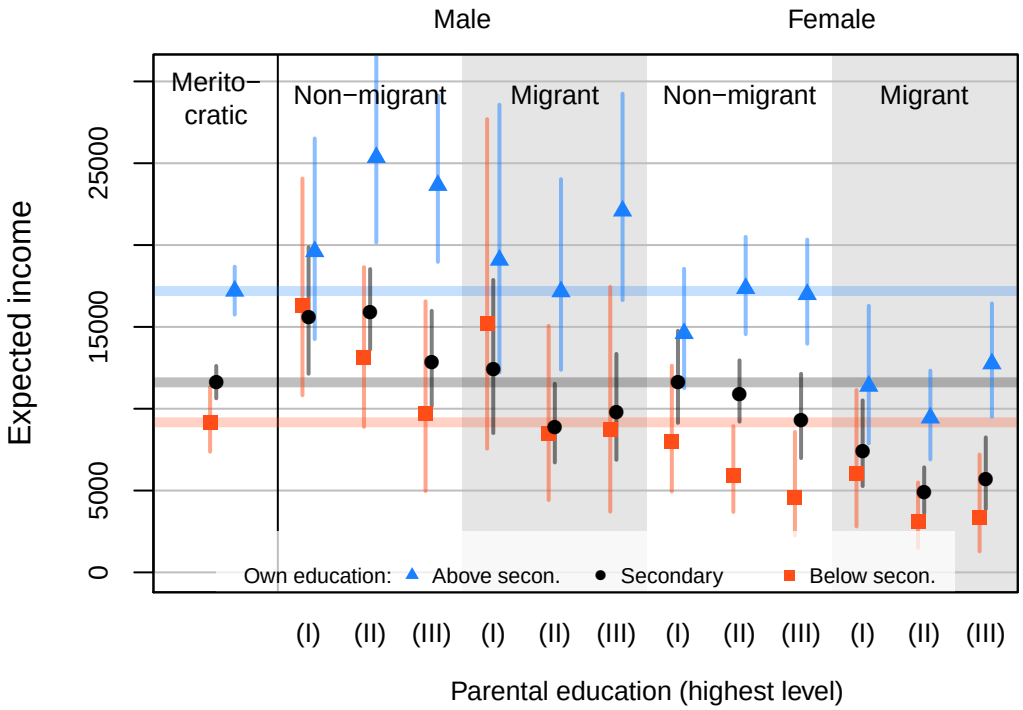

*Note:* See Figure A.1 note.

Figure A.5: Income Expectations by Circumstance Group and Degree, Germany



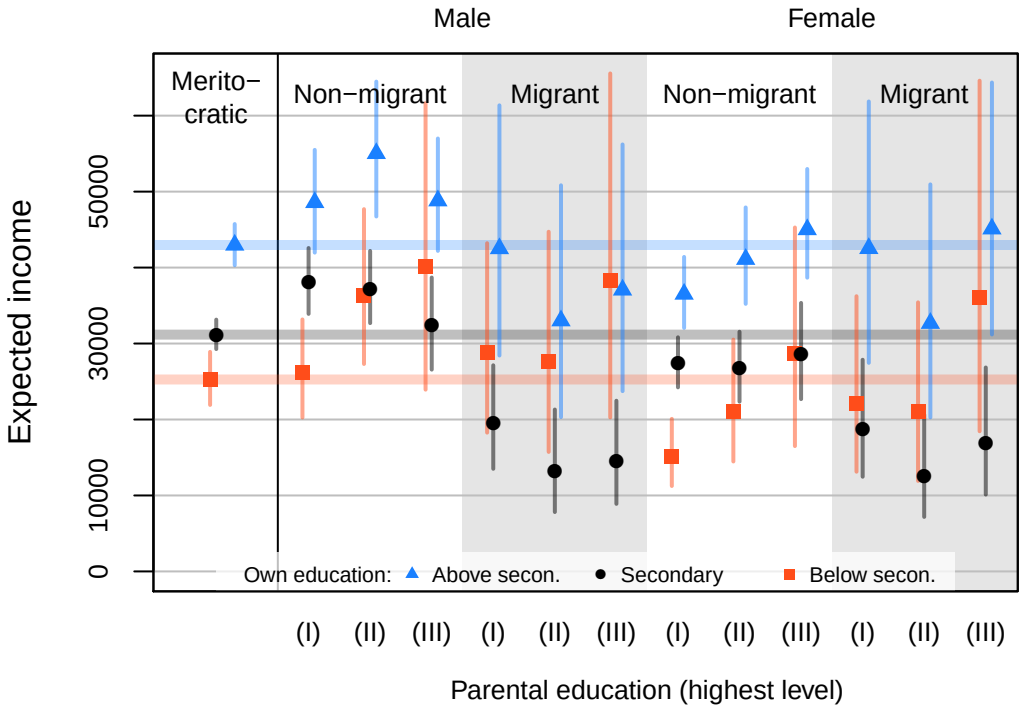

*Note:* See Figure A.1 note.

Figure A.6: Income Expectations by Circumstance Group and Degree, Estonia



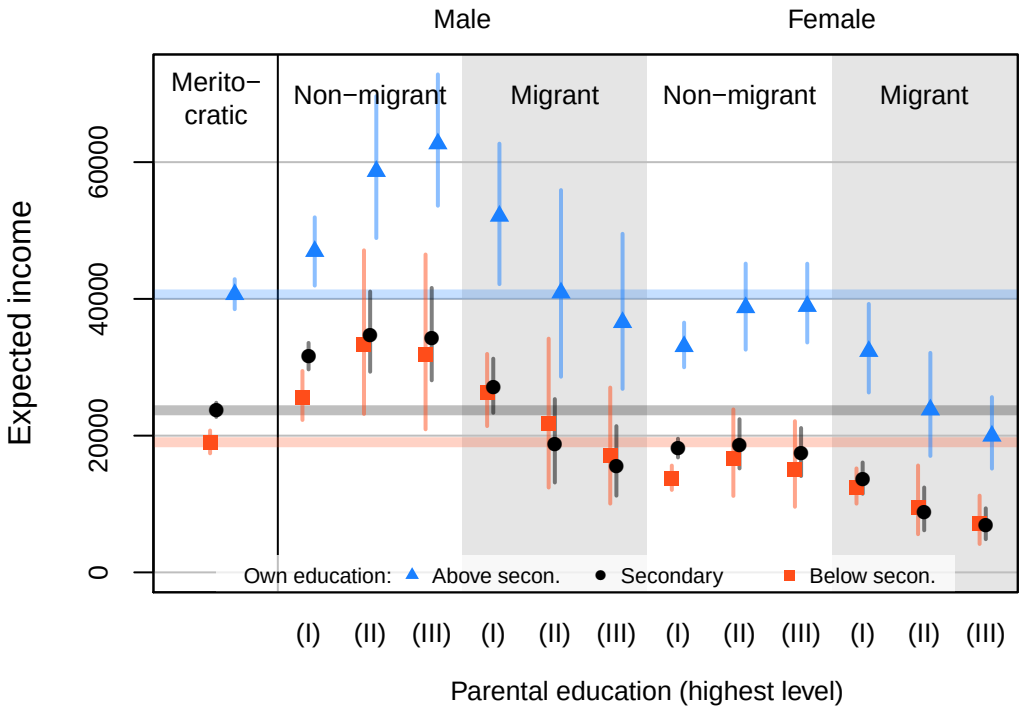

*Note:* See Figure A.1 note.

Figure A.7: Income Expectations by Circumstance Group and Degree, Finland



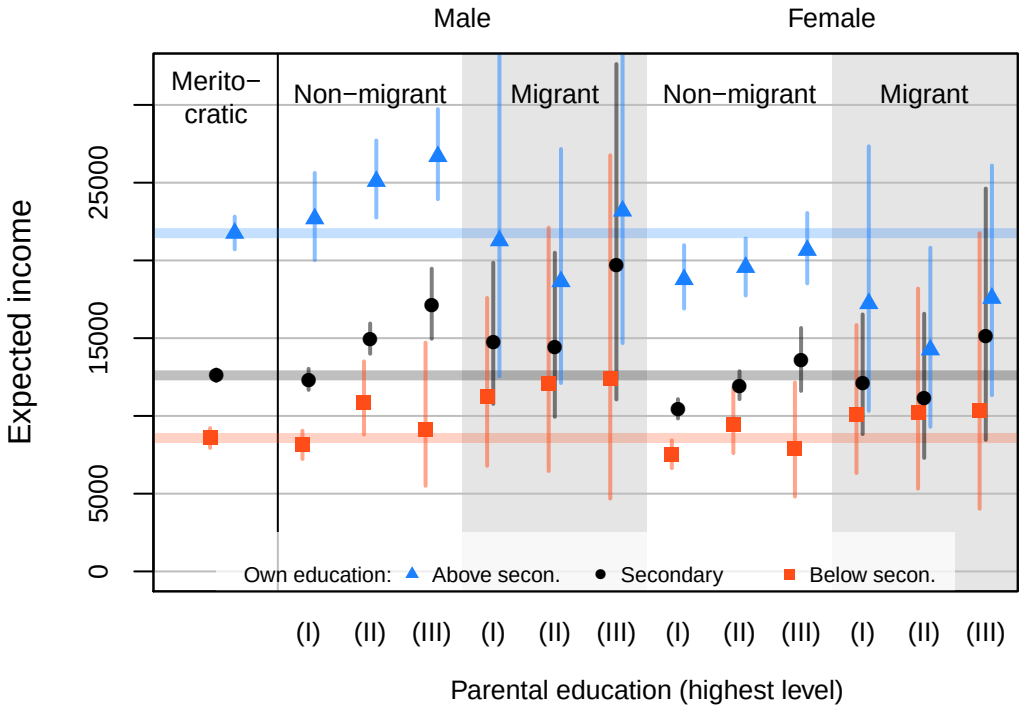

*Note:* See Figure A.1 note.

Figure A.8: Income Expectations by Circumstance Group and Degree, France



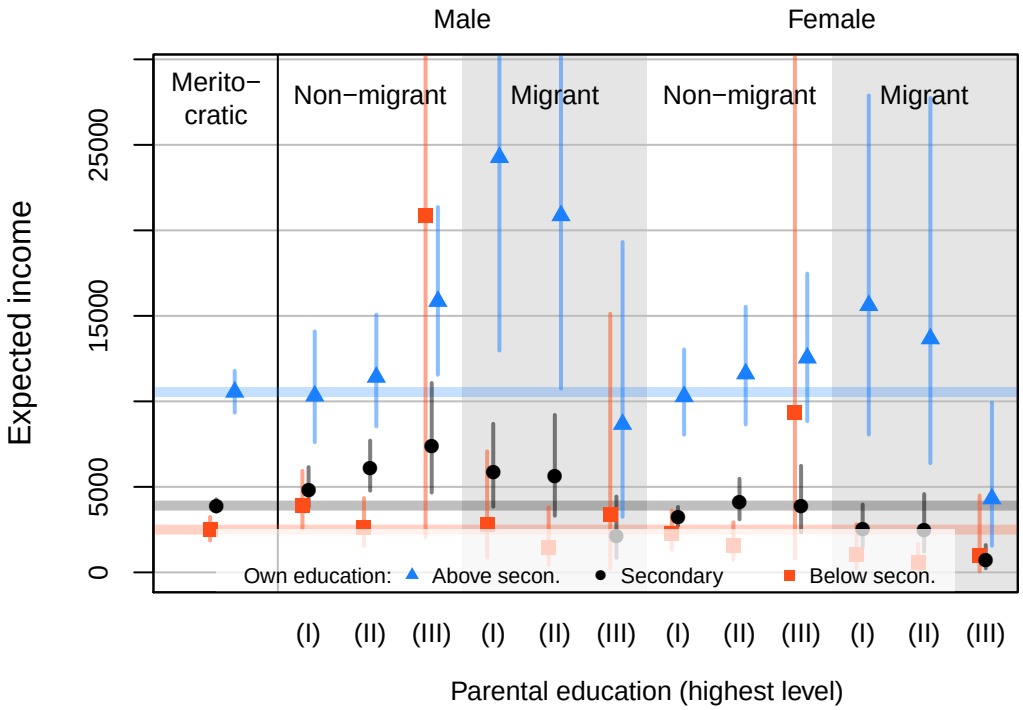

*Note:* See Figure A.1 note.

Figure A.9: Income Expectations by Circumstance Group and Degree, Hungary



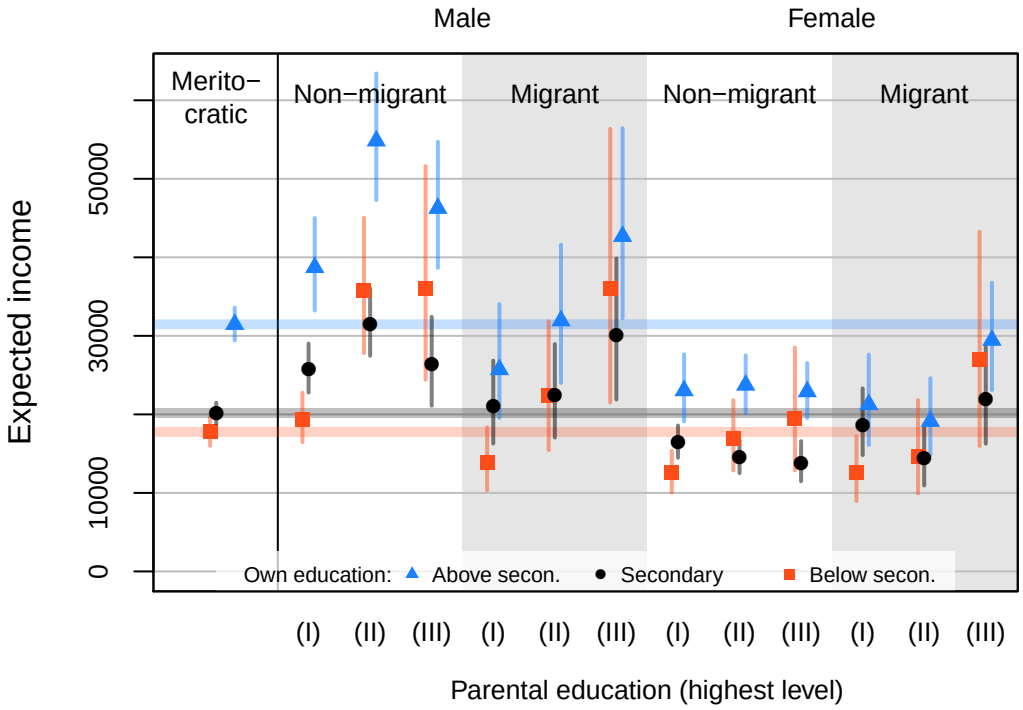

*Note:* See Figure A.1 note.

Figure A.10: Income Expectations by Circumstance Group and Degree, Lithuania



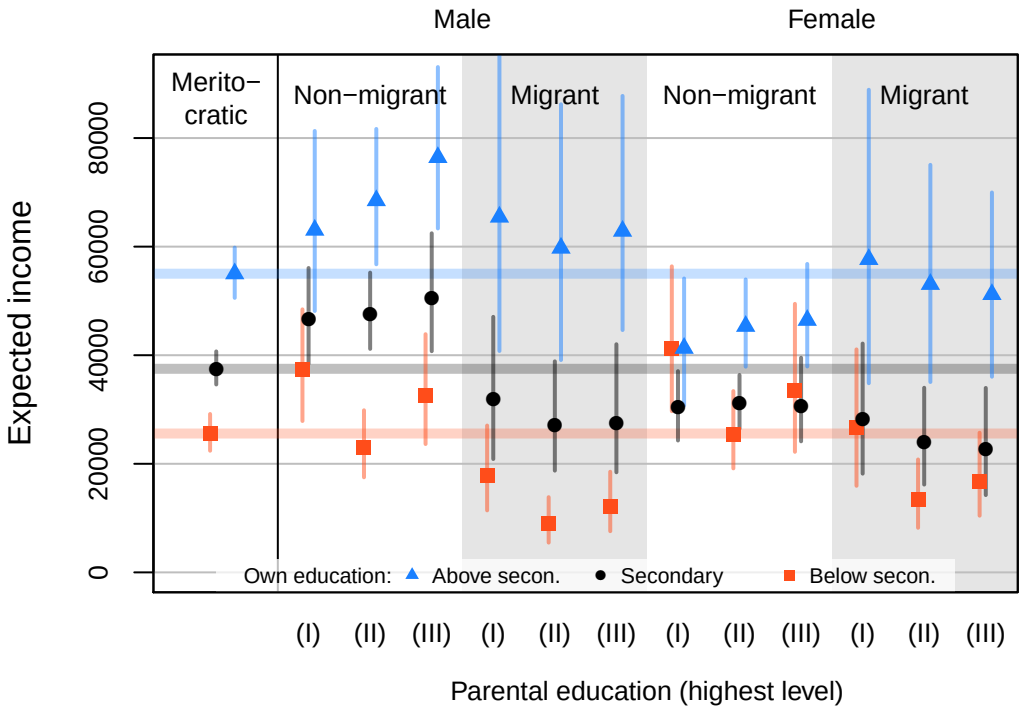

*Note:* See Figure A.1 note.

Figure A.11: Income Expectations by Circumstance Group and Degree, Netherlands



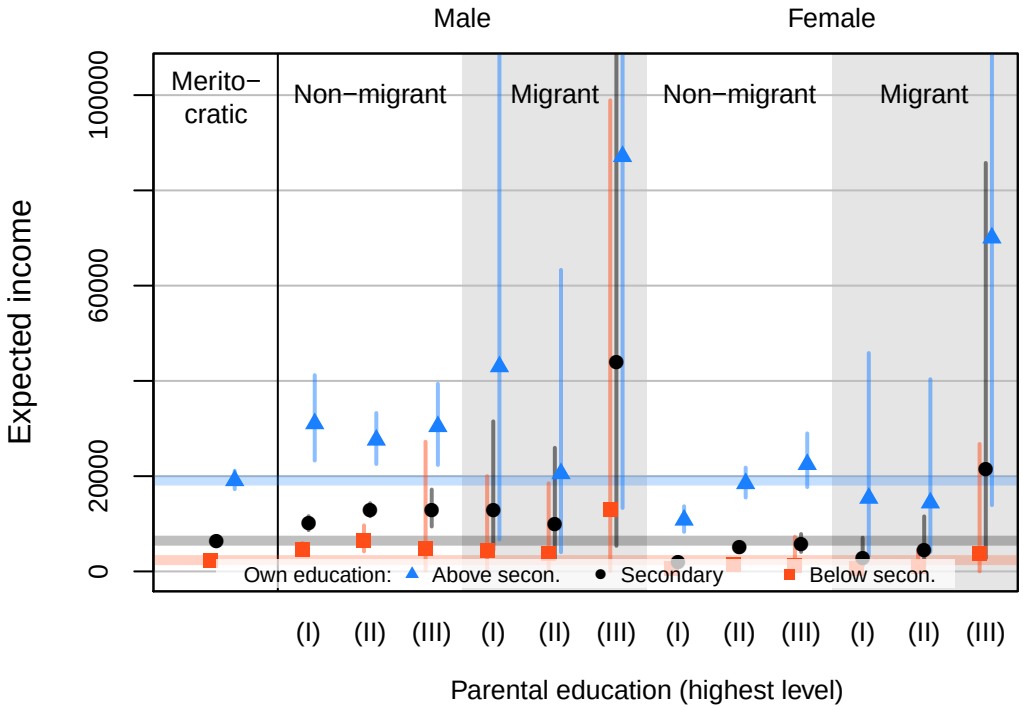

*Note:* See Figure A.1 note.

Figure A.12: Income Expectations by Circumstance Group and Degree, Norway



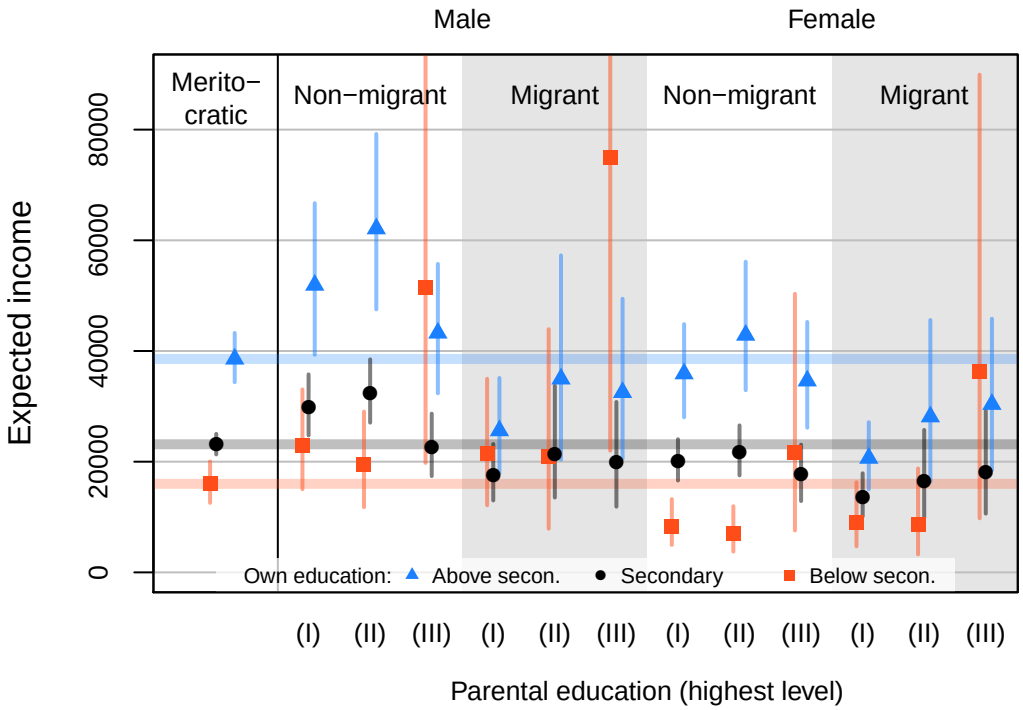

*Note:* See Figure A.1 note.

Figure A.13: Income Expectations by Circumstance Group and Degree, Poland



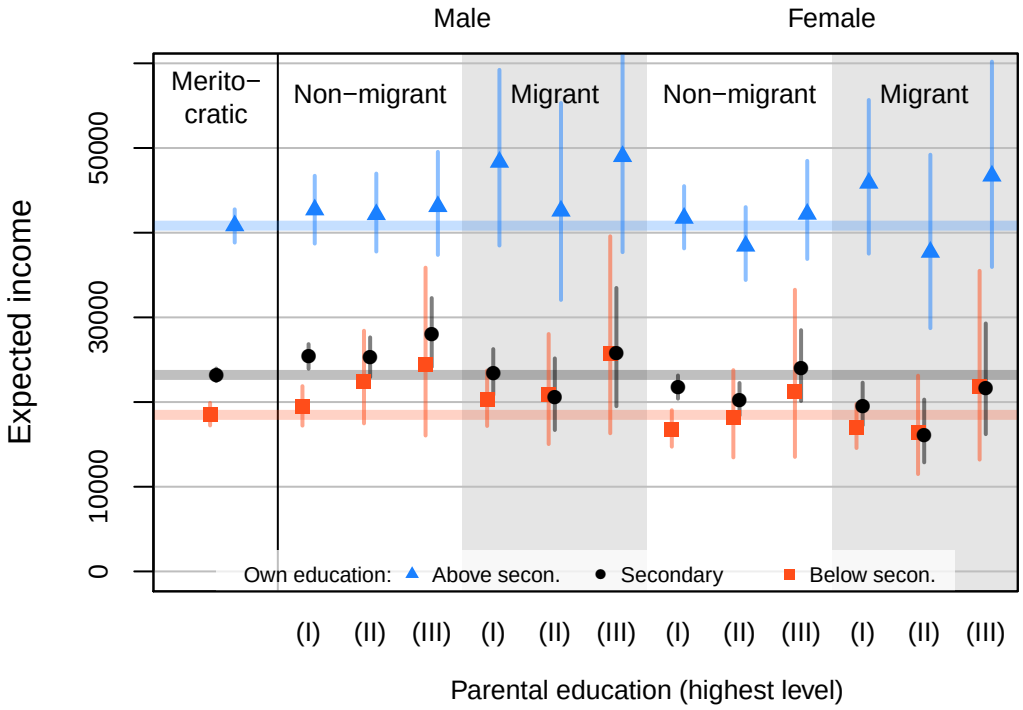

*Note:* See Figure A.1 note.

Figure A.14: Income Expectations by Circumstance Group and Degree, Sweden



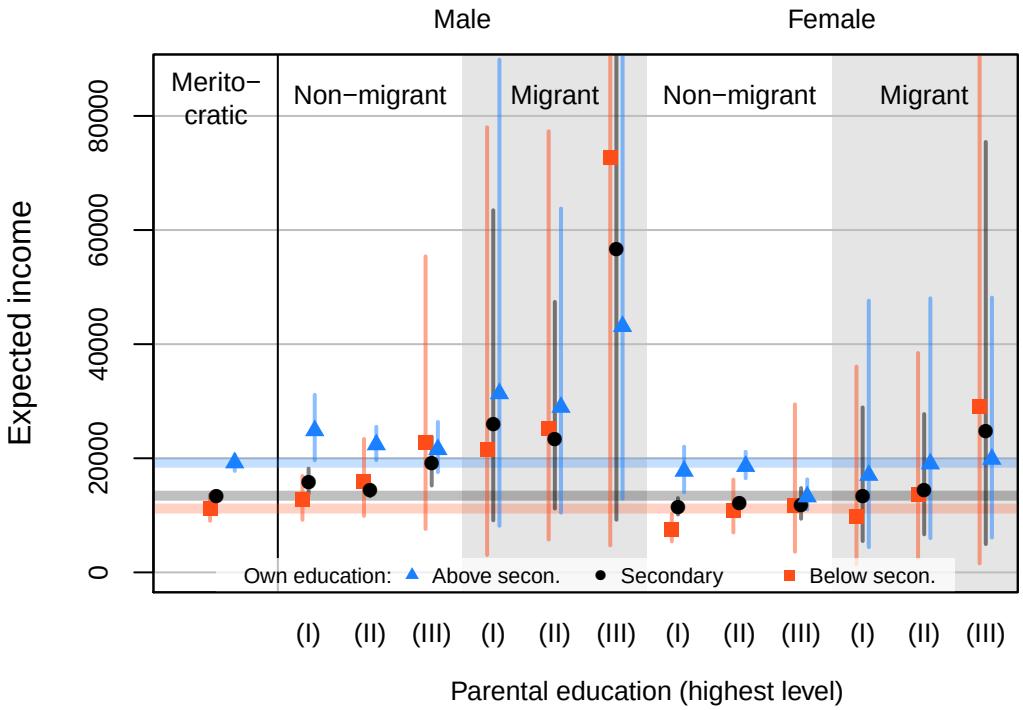

*Note:* See Figure A.1 note.

Figure A.15: Income Expectations by Circumstance Group and Degree, Slovenia



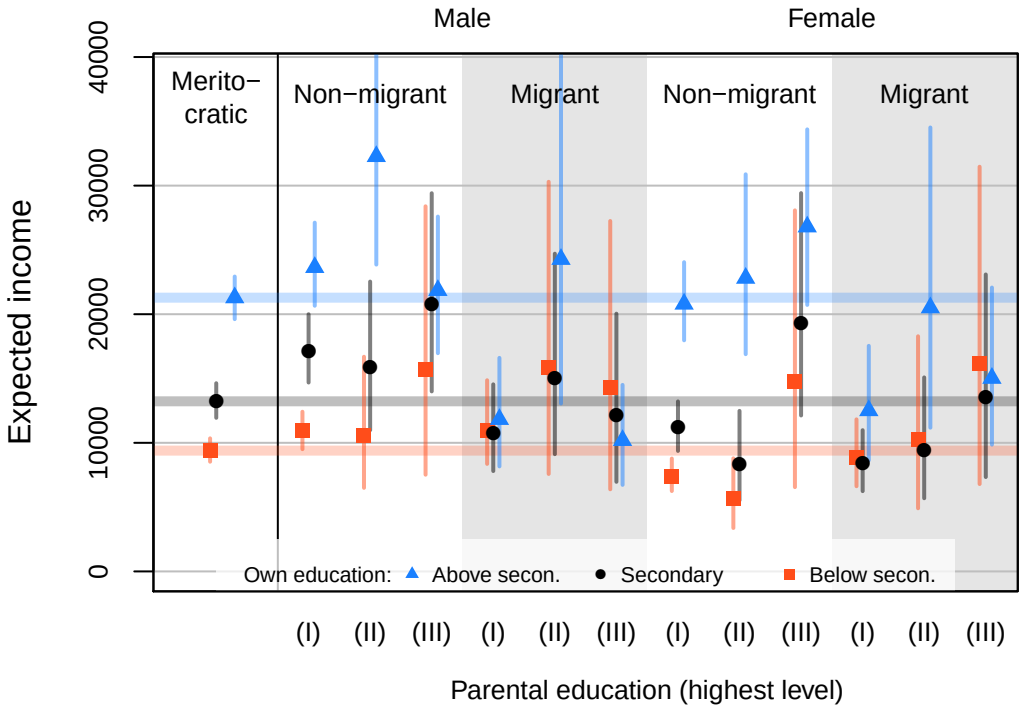

*Note:* See Figure A.1 note.

Figure A.16: Income Expectations by Circumstance Group and Degree, Slovakia



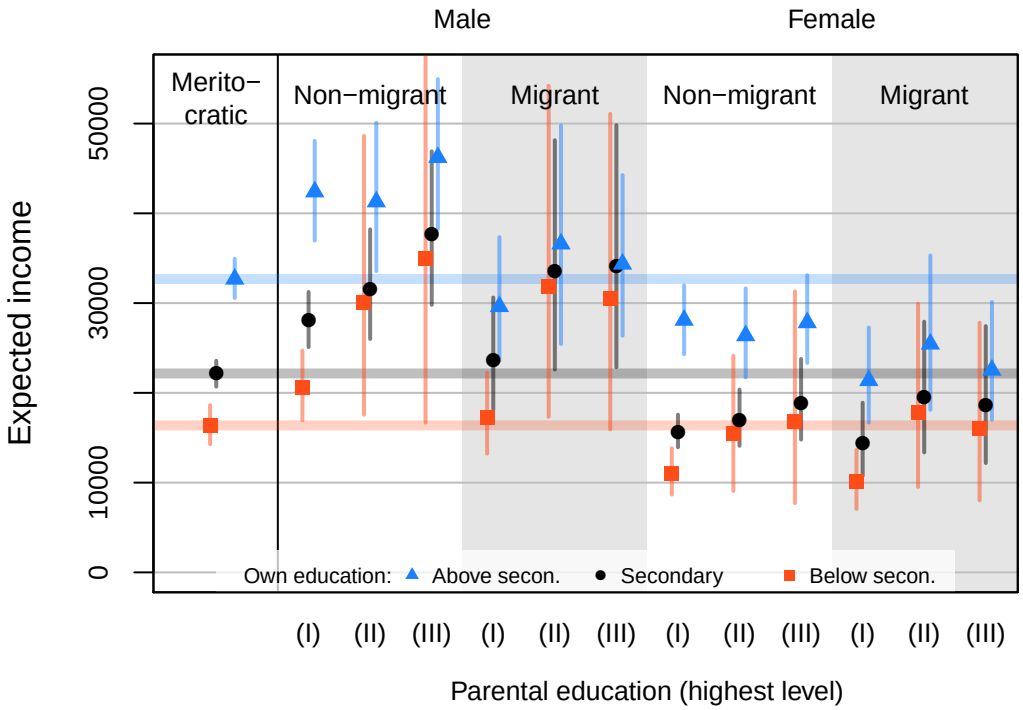

*Note:* See Figure A.1 note.

Figure A.17: Income Expectations by Circumstance Group and Degree, Spain



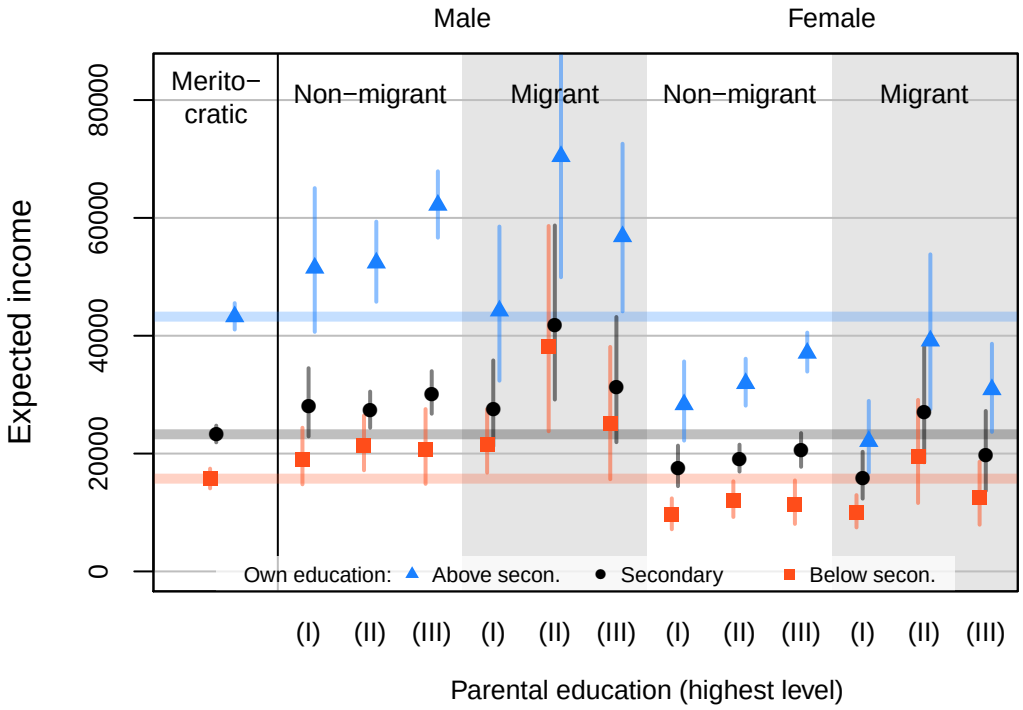

*Note:* See Figure A.1 note.

Figure A.18: Income Expectations by Circumstance Group and Degree, United Kingdom




*Note:* See Figure A.1 note.

Figure A.19: Income Expectations by Circumstance Group and Degree, United States




*Note:* See Figure A.1 note.

# Appendix B

# Codebook for Combined ESS and GSS Data

The following codebook lists all variables used in the analyses, including auxiliary variables for the multiple imputation. *Variables name*, *question*, and *answer choices* refer to the original codebook/questionnaire of the European Social Survey (ESS, 2010b) and the General Social Survey respectively (Smith et al., 2016).

The multiple imputation process preserves variables' level of measurement as indicated in the respective variable description. Apart from *Redistribution*, ordinal variables are treated as nominal variables. Further exceptions are indicated in the comments boxes. For age and work experience, their squares are also included in the imputation process as both are employed in later analyses. Imputations are performed on a country-by-country basis as described in the main text (see p.73). As no data is available on marital status for Finland, this variable is excluded from the respective imputations. For further details on the imputation process, see Honaker et al. (2011).



| **Gender** Respondent's stated gender identity [Nominal: 1-male, 2-female] | | |
|---|---|---|
| Source | ESS 5 | GSS |
| Variable name | gender | sex |
| Question | Now, I would like to ask you some details about yourself and others in your household. [...] | – |
| Answer choices | 1 Male 2 Female | 1 Male 2 Female |
| Comments | | Interviewer coded. |

| **Age** Respondent's age [Continuous] | | |
|---|---|---|
| Source | ESS 5 | GSS |
| Variable name | agea | age |
| Question | And in what year were you born? | What is your date of birth? |
| Answer choices | Number | Number |
| Comments | Transformed into age by interviewer. | Transformed into age by interviewer. |

| **Redistribution** Indicates agreement with redistribution on 5-pt scale. Higher values indicating stronger agreement.[Ordinal: 1-2-3-4-5] | | |
|---|---|---|
| Source | ESS 5 | GSS |
| Variable name | gincdif | eqwlth |
| Question | The government should take measures to reduce differences in income levels | Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. |
| Answer choices | 1 Agree strongly 2 Agree 3 Neither agree nor disagree 4 Disagree 5 Disagree strongly | 1 Government should 2 3 4 5 6 7 Government should not |
| Comments | Scale inverted. | Answer categories 2 and 3, and 5 and 6 respectively, collapsed. Scale inverted. |

| **Occupation** Respondent's occupation, categorization as dummy variables corresponding to ISCO-88 (1-digit) [0-Armed forces; 1-Professional and technical occupations; 2-Higher administrator occupations; 3-Clerical occupations; 4-Sales occupations; 5-Service Occupations; 6-Skilled worker; 7-Semi-skilled worker ; 8-Unskilled worker ; 9-Farm worker] | | |
|---|---|---|
| Source | ESS 5 | GSS |
| Variable name | iscoco | isco88 |
| Question | What is/was the name or title of your main job? In your main job, what kind of work do/did you do most of the time? What training or qualifications are/were needed for the job? | [Interviewer instruction] Probe for a precise and detailed description of job and industry. Avoid one word responses. Use neutral probes to obtain more information. Do not assume nor suggest certain characteristics. Repeat R's verbatim response and/or probe to ensure you have a complete, clear, and coherent understanding of the job and industry. enter R's verbatim response below. |
| Answer choices | verbatim | verbatim |
| Comments | Interviewer coded. | Interviewer coded. |

| **Experience** Years since completion of education [Continuous] | | |
|---|---|---|
| Source | ESS 5 | GSS |
| Variable name | – | – |
| Question | – | – |
| Answer choices | – | – |
| Comments | Computed as follows: Experience = Age − Education − 6 | See comment on the left. |

| **Income** Gross income of individual in 2010 international US$, PPP. [Continuous, positive values] | | |
|---|---|---|
| Source | ESS 5 | GSS |
| Variable name | Derived from Inc_hh, pphincr | rincom06 |
| Question | Inc_hh: Constructed, see B<br>pphincr: Around how large a proportion of the household income do you provide yourself? | In which of these groups did your earnings from [Respondent's occupation], from all sources for [last year] fall? That is, before taxes or other deductions. Just tell me the letter. |
| Answer choices | hinctnta: See Inc_hh<br>pphincr: 1 None 2 Very small 3 Under a half 4 About half 5 Over a half 6 Very large 7 All | A. UNDER $1,000 B. $1,000 to $2,999 C. $3,000 to $3,999 D. $4,000 to $4,999 E. $5,000 to $5,999 [...] X. $130,000 to $149,999 Y. $150,000 or over |
| Comments | Inc_ind = hinctnta * s, where s=0, if pphincr=1; s=1/6, if pphincr=2, s=2/6, if pphincr=3, s=3/6, if pphincr=4, ... s=1, if pphincr=7. | Categories transformed into continuous variable by taking respective mid-points as values; top incomes (Y.) replaced with value of category's lower bound (multiplied by 1.3, thus $195,000). |

| **Household income** Gross income of individual's household in 2010 international US$, PPP. [Continuous, positive values] | | |
|---|---|---|
| Source | ESS 5 | GSS |
| Variable name | hinctnta | income06 |
| Question | Using this card, if you add up the income from all sources, which letter describes your household's total net income? | In which of these groups did your total family income, from all sources, fall last year before taxes, that is. Just tell me the letter. |
| Answer choices | A-N: Country-specific income categories | Same as Inc_ind (See B) |
| Comments | Categories transformed into continuous variable by taking respective mid-points as values; top incomes replaced with value of category's lower bound (multiplied by 1.3). Numerical values transformed from net to gross income by assuming a flat tax rate (see VALIDATION OF INCOME MEASURE). All values in 2010 international US$, PPP. | Same as Inc_ind (See B) |

| **Ideology** Individual's self-positioning on a left-right spectrum. Higher values indicate more conservative positions. [Continuous, range:0-1] | | |
|---|---|---|
| Source | ESS 5 | GSS |
| Variable name | lrscale | polviews |
| Question | In politics people sometimes talk of "left" and "right". Using this card, where would you place yourself on this scale, where 0 means the left and 10 means the right? | We hear a lot of talk these days about liberals and conservatives. I'm going to show you a seven-point scale on which the political views that people might hold are arranged from extremely liberal–point 1– to extremely conservative–point 7. Where would you place yourself on this scale? |
| Answer choices | 0 Left 1 2 3 4 5 6 7 8 9 10 Right | 1 Extremely liberal 2 Liberal 3 Slightly liberal 4 Moderate, middle of the road 5 Slightly conservative 6 Conservative 7 Extremely conservative |
| Comments | | |

| **Migration** Indicates whether the individual or all known parents were born abroad. [Dummy] | | |
|---|---|---|
| Source | ESS 5 | GSS |
| Variable name | brncntr, facntr, mocntr | born, parborn |
| Question | brncntr: Were you born in [country]?; facntr: Was your father born in [country]?; mocntr: Was your mother born in [country]? | born: Were you born in this country?; parborn: Were both your parents born in this country? |
| Answer choices | 1 Yes 2 No; | born: 1 Yes 2 No; parborn: 0 Both born in US 1 Mother yes, father no 2 Mother no, father yes 3 Mother yes, father DK 4 Mother no, father DK 5 Mother DK, father yes 6 Mother DK, father no 7 Mother DK, father DK 8 Neither born in US |
| Comments | Respondent coded as having migration background if brncntr equals 2, or facntr and mocntr equal to 2. | Respondent coded as having migration background if born equals 2 or parborn equals 4, 6, or 8. |

| **Employment** Current employment status of the individual [Nominal; 1-Employed, 2-Unemployed, 3-Other]. Employed includes individuals in part-time employment as well as those that are on short-term leave (e.g. vacation, illness). Other includes retirees, students, and people unable to work. | | |
|---|---|---|
| Source | ESS 5 | GSS |
| Variable name | mnactic | wrkstat |
| Question | And which of these descriptions best describes your situation (in the last seven days)? | Last week were you working full time, part time, going to school, keeping house, or what? |
| Answer choices | 1 In paid work (or away temporarily) (employee, self-employed, working for your family business) 2 In education (not paid for by employer), even if on vacation 3 Unemployed and actively looking for a job 4 Unemployed, wanting a job but not actively looking for a job 5 Permanently sick or disabled 6 Retired 7 In community or military service 8 Doing housework, looking after children or other persons 9 Other | 1 Working full time 2 Working part time 3 With a job, but not at work because of temporary illness, vacation, strike 4 Unemployed, laid off, looking for work 5 Retired 6 In school 7 Keeping house 8 Other |
| Comments | Employed: 1; Unemployed: 3, 4; Other: remainder. | Employed: 1, 2; Unemployed: 3, 4; Other: remainder. |

| **Keeping house** Respondent's main occupation is housekeeping or childrearing [Dummy; 1-Yes, 0-No]. | | |
|---|---|---|
| Source | ESS 5 | GSS |
| Variable name | mnactic | wrkstat |
| Question | And which of these descriptions best describes your situation (in the last seven days)? | Last week were you working full time, part time, going to school, keeping house, or what? |
| Answer choices | 1 In paid work (or away temporarily) (employee, self-employed, working for your family business) 2 In education (not paid for by employer), even if on vacation 3 Unemployed and actively looking for a job 4 Unemployed, wanting a job but not actively looking for a job 5 Permanently sick or disabled 6 Retired 7 In community or military service 8 Doing housework, looking after children or other persons 9 Other | 1 Working full time 2 Working part time 3 With a job, but not at work because of temporary illness, vacation, strike 4 Unemployed, laid off, looking for work 5 Retired 6 In school 7 Keeping house 8 Other |
| Comments | Yes: 8; No: remainder, | Yes: 7; No: remainder. |

| **Religiosity** A person's perceived own religiosity. [Continuous, range: 0-1] | | |
|---|---|---|
| Source | ESS 5 | GSS |
| Variable name | rlgdgr | relpersn |
| Question | Regardless of whether you belong to a particular religion, how religious would you say you are? | To what extent do you consider yourself a religious person? Are you . . . |
| Answer choices | 0 Not at all religious 1 2 3 4 5 6 7 8 9 10 Very religious | 1 Very religious 2 Moderately religious 3 Slightly religious 4 Not religious at all |
| Comments | Rescaled to range from 0 to 1 assuming equal spacing. | Inverted and rescaled to range from 0 to 1 assuming equal spacing. |

| **Parental degree** Highest level of education attained by one of the respondent's parents. [Nominal: 1-below high school, 2-high school, 3-above high school] | | |
|---|---|---|
| Source | ESS 5 | GSS |
| Variable name | eiscedf, eiscedm | madeg, padeg |
| Question | eiscedf: What is the highest level of education your father successfully completed?; eiscedm: What is the highest level of education your mother successfully completed? | What is the highest grade in elementary school or high school that (you/your father/ your mother/your [husband/wife]) finished and got credit for? |
| Answer choices | 1 ES-ISCED I , less than lower secondary 2 ES-ISCED II, lower secondary 3 ES-ISCED IIIb, lower tier upper secondary 4 ES-ISCED IIIa, upper tier upper secondary 5 ES-ISCED IV, advanced vocational, sub-degree 6 ES-ISCED V1, lower tertiary education, BA level 7 ES-ISCED V2, higher tertiary education, >= MA level | 0 Less than high school 1 High school 2 Associate/Junior college 3 Bachelor's 4 Graduate |
| Comments | These are the options after recoding through interviewer; original answer options more detailed. 3: If either variable equals 6, 7; else 2: If either variable equals 3, 4, 5; else 1: If either variable equals 1, 2. | See left. 3: If either variable equals 2, 3, 4; else 2: If either variable equals 1; else 1: If either variable equals 0. |

| **Married** Respondent currently married [Dummy; 1-Yes, 0-No]. | | |
|---|---|---|
| Source | ESS 5 | GSS |
| Variable name | maritalb | marital |
| Question | This question is about your legal marital status not about who you may or may not be living with. Which one of the descriptions on this card describes your legal marital status now? | Are you currently–married, widowed, divorced, separated, or have you never been married? |
| Answer choices | 1 Legally married 2 In a legally registered civil union 3 Legally separated 4 Legally divorced / Civil union dissolved 5 Widowed / Civil partner died 6 None of these (NEVER married or in legally registered civil union) | 1 Married 2 Widowed 3 Divorced 4 Separated 5 Never married |
| Comments | Yes: 1, 2; No: Remainder. | Yes: 1, No: Remainder. |

| **Education**<br>Number of years respondent spent in formal education. [Continuous] | | |
|---|---|---|
| Source | ESS 5 | GSS |
| Variable name | eduyrs | educ |
| Question | About how many years of education have you completed, whether full-time or part-time? Please report these in full-time equivalents and include compulsory years of schooling. | What is the highest grade in elementary school or high school that (you/your father/ your mother/your [husband/wife]) finished and got credit for? |
| Answer choices | Number | Number |
| Comments | | Original answer options more detailed, recoded by interviewer. |

| **Degree** Respondent's high level of education completed [Nominal: 1-below high school, 2-high school, 3-above high school] | | |
|---|---|---|
| Source | ESS 5 | GSS |
| Variable name | eisced | degree |
| Question | What is the highest level of education you have successfully completed? | What is the highest grade in elementary school or high school that (you/your father/ your mother/your [husband/wife]) finished and got credit for? |
| Answer choices | 1 ES-ISCED I , less than lower secondary 2 ES-ISCED II, lower secondary 3 ES-ISCED IIIb, lower tier upper secondary 4 ES-ISCED IIIa, upper tier upper secondary 5 ES-ISCED IV, advanced vocational, sub-degree 6 ES-ISCED V1, lower tertiary education, BA level 7 ES-ISCED V2, higher tertiary education, >= MA level | 0 Less than high school 1 High school 2 Associate/Junior college 3 Bachelor's 4 Graduate |
| Comments | These are the options after recoding through interviewer; original answer options more detailed. 3: 6, 7; 2: 3, 4, 5; else 1: 1, 2. | See left. 3: 2, 3, 4; 2: 1; 1: 0. |

| **Financial satisfaction** Respondent's feeling about household income [Nominal: 1-Satisfied, 2-Somewhat dissatisfied, 3-Very dissatisfied] | | |
|---|---|---|
| Source | ESS 5 | GSS |
| Variable name | hincfel | satfin |
| Question | Which of the descriptions on this card comes closest to how you feel about your household's income nowadays? | We are interested in how people are getting along financially these days. So far as you and your family are concerned, would you say that you are pretty well satisfied with your present financial situation, more or less satisfied, or not satisfied at all? |
| Answer choices | 1 Living comfortably on present income 2 Coping on present income 3 Finding it difficult on present income 4 Finding it very difficult on present income 4 | 1 Pretty well satisfied 2 More or less satisfied 3 Not satisfied at all |
| Comments | 1: 1; 2: 2, 3; 3: 4. | |

| **Household size** Number of people living together with respondents [Continuous] | | |
|---|---|---|
| Source | ESS 5 | GSS |
| Variable name | hhmmb | hompop |
| Question | Including yourself, how many people - including children - live here regularly as members of this household? | Please tell me the names of the people who usually live in this household? [...] |
| Answer choices | Number | Number |
| Comments | | Detailed original questions, number determined by interviewer. |

# Appendix C

# Codebook for ISSP Data

The following codebook lists all variables used in the analyses, including auxiliary variables for the multiple imputation. *Variables name*, *question*, and *answer choices* refer to the original codebook by the International Social Survey Programme (ISSP, 2012).

The multiple imputation process preserves variables' level of measurement as indicated in the respective variable description. Apart from *Redistribution*, ordinal variables are treated as nominal variables. Further exceptions are indicated in the comments boxes. Imputations are performed on a country-by-country basis as described in the main text (see p.73). As no data is available for employment status or occupational grouping for Lithuania and the Netherlands, these variables are excluded from the respective imputations. For further details on the imputation process, see Honaker et al. (2011).



| **Redistribution** Indicates agreement with redistribution on 5-pt scale. Higher values indicating stronger agreement.[Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V33 |
| Question | To what extent do you agree or disagree with the following statements? It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes. |
| Answer choices | 1 Strongly agree, 2 Agree, 3 Neither agree nor disagree, 4 Disagree, 5 Strongly disagree |
| Comments | Scale inversed. |

| **Pay** Indicates whether respondent perceives their own pay below, at, or above just level. [Nominal 1-2-3] | |
|---|---|
| Variable name | V53 |
| Question | Is your pay just? We are not asking about how much you would like to earn - but what you feel is just given your skills and effort. If you are not working now, please tell about your last job. |
| Answer choices | 1 Much less than is just 2 A little less than is just 3 About just for me 4 A little more than is just 5 Much more than is just 6 Never had a job |
| Comments | Recoding 1: 1-2; 2: 3; 3: 4-5. Answer category 6 coded as missing. |

| **Mobility** Respondent's job status compared to their father's [Nominal: 1-Down, 2-Equal, 3-Up] | |
|---|---|
| Variable name | V46 |
| Question | Please think about your present job (or your last one if you don't have one now). If you compare this job to the job your father had when you were ¡14,15,16¿, would you say that the level of status of your job is (or was). |
| Answer choices | 1 Much higher than your fathers 2 Higher 3 About equal 4 Lower 5 Much lower than your fathers 6 I never had a job 7 I dont know what my father did, father never had a job, never knew father |
| Comments | Answer categories 6-7 coded as missing. |

| **Employment** Respondent's current employment status: Employed, None, Other [Nominal: 1-Employed, 2-None, 3-Other] | |
|---|---|
| Variable name | WRKST |
| Question | Country-specific |
| Answer choices | 1 Employed, full-time 2 Employed, part-time 3 Employed, less than part-time 4 Helping family member 5 Unemployed 6 Student, school, vocational training 7 Retired 8 Housewife,-man, home duties 9 Permanently disabled 10 Other, not in labour force |
| Comments | Recoding 1: 1-2; 2: 5; 3: remainder. |

| **Occupation** Respondent's occupation according to ISCO-88 classification, 1-digit [Nominal] | |
|---|---|
| Variable name | V65 |
| Question | And in your current job, what is your main occupation? If you are not working now, please tell us about your last job. Describe fully, using two words or more (do not use initials or abbreviations). |
| Answer choices | verbatim |
| Comments | Interviewer-coded to ISCO-88 classification. |

| **Income** Individual income, normalized for each country [Continuous] | |
|---|---|
| Variable name | *countryAbbreviation*_RINC |
| Question | Country-specific |
| Answer choices | Country-specific |
| Comments | Selected category set to mid-point value; in case of top category to 1.3-times of its lower bound. |

| **Income, household** Household income, normalized for each country [Continuous] | |
|---|---|
| Variable name | *countryAbbreviation*_INC |
| Question | Country-specific |
| Answer choices | Country-specific |
| Comments | Selected category set to mid-point value; in case of top category to 1.3-times of its lower bound. |

| **Belief(Income): Economic self-positioning** Individual's perceived own economic standing [Continuous, range:0-1] | |
|---|---|
| Variable name | V44 |
| Question | In our society there are groups which tend to be towards the top and groups which tend to be towards the bottom. Below is a scale that runs from top to bottom. Where would you put yourself now on this scale? |
| Answer choices | 01 Bottom 02 03 04 05 06 07 08 09 10 Top |
| Comments | Rescaled to range from 0-1. |

| **Household size** Number of people living together with respondents [Continuous] | |
|---|---|
| Variable name | HOMPOP |
| Question | Country-specific |
| Answer choices | Number |
| Comments | |

| **Female** Respondent's stated gender identity [Dummy: 0-male, 1-female] | |
|---|---|
| Variable name | SEX |
| Question | Country-specific |
| Answer choices | 1 Male 2 Female |
| Comments | |

| **Age** Respondent's age [Continuous] | |
|---|---|
| Variable name | AGE |
| Question | Country-specific |
| Answer choices | Number |
| Comments | In some countries computed from birth date. |

| **Degree** Highest level of education respondent completed [Nominal: 1-below high school, 2-high school, 3-above high school] | |
|---|---|
| Variable name | DEGREE |
| Question | Country-specific |
| Answer choices | 0 No formal qualification 1 Lowest formal qualification 2 Above lowest qualification (qualifications which are above the lowest qualification, but below the usual entry requirement for universities (intermediary secondary completed)) 3 Higher secondary completed ((usual) entry requirement for universities (the German Abitur, the French Bac, English A-level, etc.)) 4 Above higher secondary level, others (qualifications which are above the higher secondary level, but below a full university degree) 5 University degree completed, graduate studies |
| Comments | Harmonized from country-specific categorization. 1: 0-2; 2: 3; 3: 4-5. |

| **Education** Years respondent spent in education [continuous] | |
|---|---|
| Variable name | EDUCYRS |
| Question | country-specific |
| Answer choices | Number |
| Comments | |

| **Religiosity** Religiosity [Continuous] | |
|---|---|
| Variable name | ATTEND |
| Question | How often do you attend a religious service/ religious services? |
| Answer choices | 0 Not applicable, no religion 1 Several times a week 2 Once a week 3 2 or 3 times a month 4 Once a month 5 Several times a year 6 Once a year 7 Less frequently than once a year 8 Never |
| Comments | Minor deviations in phrasing of questions and answer in some countries. |

| **Urban** Respondent living in urban area [Dummy: 1-Yes, 0-No] | |
|---|---|
| Variable name | URBRURAL |
| Question | country-specific |
| Answer choices | 1 Urban, a big city 2 Suburb, outskirt of a big city 3 Town or small city 4 Country village 5 Farm or home in the country |
| Comments | Yes: 1, 2; No: Remainder. |

| **Getting ahead: Family Wealth** Importance of family wealth to get ahead [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V6 |
| Question | To begin we have some questions about opportunities for getting ahead. Please tick one box for each of these to show how important you think it is for getting ahead in life. |
| Answer choices | 1 Essential 2 Very important 3 Fairly important 4 Not very important 5 Not important at all |
| Comments | For imputation, treated as continuous. |

| **Getting ahead: Parent** Importance of parental education to get ahead [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V7 |
| Question | How important is having well-educated parents? |
| Answer choices | 1 Essential 2 Very important 3 Fairly important 4 Not very important 5 Not important at all |
| Comments | For imputation, treated as continuous. |

| **Getting ahead: Education** Importance of own education to get ahead [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V8 |
| Question | How important is having a good education yourself? |
| Answer choices | 1 Essential 2 Very important 3 Fairly important 4 Not very important 5 Not important at all |
| Comments | For imputation, treated as continuous. |

| **Getting ahead: Ambition** Importance of own ambition to get ahead [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V9 |
| Question | How important is having ambition? |
| Answer choices | 1 Essential 2 Very important 3 Fairly important 4 Not very important 5 Not important at all |
| Comments | For imputation, treated as continuous. |

| **Getting ahead: Hard work** Importance of hard work to get ahead [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V10 |
| Question | How important is hard work? |
| Answer choices | 1 Essential 2 Very important 3 Fairly important 4 Not very important 5 Not important at all |
| Comments | For imputation, treated as continuous. |

| **Getting ahead: Network** Importance of personal network to get ahead [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V11 |
| Question | How important is knowing the right people? |
| Answer choices | 1 Essential 2 Very important 3 Fairly important 4 Not very important 5 Not important at all |
| Comments | For imputation, treated as continuous. |

| **Getting ahead: Connections** Importance of connections to get ahead [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V12 |
| Question | How important is having political connections? |
| Answer choices | 1 Essential 2 Very important 3 Fairly important 4 Not very important 5 Not important at all |
| Comments | For imputation, treated as continuous. |

| **Getting ahead: Bribes** Importance of bribes to get ahead [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V13 |
| Question | How important is giving bribes? |
| Answer choices | 1 Essential 2 Very important 3 Fairly important 4 Not very important 5 Not important at all |
| Comments | For imputation, treated as continuous. |

| **Getting ahead: race/ethnicity** Importance of race/ethnicity to get ahead [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V14 |
| Question | How important is a person's race/ethnicity? |
| Answer choices | 1 Essential 2 Very important 3 Fairly important 4 Not very important 5 Not important at all |
| Comments | For imputation, treated as continuous. |

| **Getting ahead: Religion** Importance of religion to get ahead [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V15 |
| Question | How important is a person's religion? |
| Answer choices | 1 Essential 2 Very important 3 Fairly important 4 Not very important 5 Not important at all |
| Comments | For imputation, treated as continuous. |

| **Getting ahead: Gender** Importance of gender to get ahead [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V13 |
| Question | How important is being born a man or a woman? |
| Answer choices | 1 Essential 2 Very important 3 Fairly important 4 Not very important 5 Not important at all |
| Comments | For imputation, treated as continuous. |

| **Getting ahead: Corruption** Importance of corruption to get ahead [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V17 |
| Question | To what extent do you agree or disagree with the following statements? (Please tick one box on each line.) To get all the way to the top in *country* today, you have to be corrupt. |
| Answer choices | 1 Strongly agree 2 Agree 3 Neither agree nor disagree 4 Disagree 5 Strongly disagree |
| Comments | For imputation, treated as continuous. |

| **Getting ahead: University-1** Equal access to university [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V18 |
| Question | In *country* only students from the best secondary schools have a good chance to obtain a university education. |
| Answer choices | 1 Strongly agree 2 Agree 3 Neither agree nor disagree 4 Disagree 5 Strongly disagree |
| Comments | For imputation, treated as continuous. |

| **Getting ahead: University-2** Equal access to university [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V19 |
| Question | In *country* only the rich can afford the costs of attending university. |
| Answer choices | 1 Strongly agree 2 Agree 3 Neither agree nor disagree 4 Disagree 5 Strongly disagree |
| Comments | For imputation, treated as continuous. |

| **Getting ahead: University-3** Equal access to university [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V20 |
| Question | In *country* people have the same chances to enter university, regardless of their gender, ethnicity or social background. |
| Answer choices | 1 Strongly agree 2 Agree 3 Neither agree nor disagree 4 Disagree 5 Strongly disagree |
| Comments | For imputation, treated as continuous. |

| **Income differences** Differences in income too large [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V32 |
| Question | To what extent do you agree or disagree with the following statements? (Please tick one box on each line) Differences in income in *country* are too large. |
| Answer choices | 1 Strongly agree 2 Agree 3 Neither agree nor disagree 4 Disagree 5 Strongly disagree |
| Comments | For imputation, treated as continuous. |

| **Unemployment security** Agreement with unemployment security [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V34 |
| Question | The government should provide a decent standard of living for the unemployed. |
| Answer choices | 1 Strongly agree 2 Agree 3 Neither agree nor disagree 4 Disagree 5 Strongly disagree |
| Comments | For imputation, treated as continuous. |

| **Social benefits** Agreement with social benefits [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V35 |
| Question | The government should spend less on benefits for the poor. |
| Answer choices | 1 Strongly agree 2 Agree 3 Neither agree nor disagree 4 Disagree 5 Strongly disagree |
| Comments | For imputation, treated as continuous. |

| **Tax progressiveness** Agreement with tax progressiveness [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V36 |
| Question | Do you think people with high incomes should pay a larger share of their income in taxes than those with low incomes, the same share, or a smaller share? |
| Answer choices | 1 Much larger share 2 Larger 3 The same share 4 Smaller 5 Much smaller share |
| Comments | For imputation, treated as continuous. |

| **High income tax** Agreement with taxation of high incomes [Ordinal: 1-2-3-4-5] | |
|---|---|
| Variable name | V34 |
| Question | Generally, how would you describe taxes in *country* today for those with high incomes? |
| Answer choices | 1 Much too high 2 Too high 3 About right 4 Too low 5 Much too low |
| Comments | For imputation, treated as continuous. |

| **Earnings: CEO** Estimate of CEO earnings [Continuous] | |
|---|---|
| Variable name | V23 |
| Question | How much do you think a chairman of a large national corporation earns? |
| Answer choices | Number |
| Comments | For imputation, logged. |

| **Earnings: Worker** Estimate of unskilled worker's earnings [Continuous] | |
|---|---|
| Variable name | V25 |
| Question | How much do you think an unskilled worker in a factory earns? |
| Answer choices | Number |
| Comments | For imputation, logged. |

# Bibliography


Abrams, Burton A. and Russell F. Settle (1999). Women's suffrage and the growth of the welfare state. *Public Choice 100*(3-4), 289–300.

Acemoglu, Daron and James A. Robinson (2000). Why Did the West Extend the Franchise? Democracy, Inequality, and Growth in Historical Perspective. *The Quarterly Journal of Economics 115*(4), 1167–1199.

Acharya, Avidit, Matthew Blackwell, and Maya Sen (2016). The Political Legacy of American Slavery. *The Journal of Politics*.

Achen, Christopher H. (2005). Let's Put Garbage-Can Regressions and Garbage-Can Probits Where They Belong. *Conflict Management and Peace Science 22*(4), 327–339.

Adams, John Stacy (1965). Inequity in social exchange. *Advances in experimental social psychology 2*(267-299).

Aidt, Toke S. and Bianca Dallal (2007). Female voting power: the contribution of women's suffrage to the growth of social spending in Western Europe (1869–1960). *Public Choice 134*(3-4), 391–417.

Albanesi, Stefania and Claudia Olivetti (2009). Home production, market production and the gender wage gap: Incentives and expectations. *Review of Economic Dynamics 12*(1), 80–107.

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

Alesina, Alberto, Reza Baqir, and William Easterly (1999). Public goods and ethnic divisions. *The Quarterly Journal of Economics 114*(4), 1243–1284.

Alesina, Alberto, Rafael Di Tella, and Robert MacCulloch (2004). Inequality and happiness: are Europeans and Americans different? *Journal of Public Economics 88*(9-10), 2009–2042.

Alesina, Alberto and Paola Giuliano (2011). Family Ties and Political Participation. *Journal of the European Economic Association 9*(5), 817–839.

Alesina, Alberto, Paola Giuliano, and Nathan Nunn (2013). On the Origins of Gender Roles: Women and the Plough. *The Quarterly Journal of Economics 128*(2), 469–530.

Alesina, Alberto, Edward Glaeser, and Bruce Sacerdote (2001). *Why Doesn't the US Have a European-Style Welfare System?* National Bureau of Economic Research.

Alesina, Alberto and Eliana La Ferrara (2005). Preferences for redistribution in the land of opportunities. *Journal of Public Economics 89*(5-6), 897–931.

Alesina, Alberto, Stefanie Stantcheva, and Edoardo Teso (2017). *Intergenerational Mobility and Preferences for Redistribution.* NBER. NBER Working Paper 23027.

Alt, James and Torben Iversen (2016). Inequality, Labor Market Segmentation, and Preferences for Redistribution. *American Journal of Political Science*.

Ambedkar, Bhimrao Ramji (1945). *What Gandhi and Congress have done to the Untouchables.* Delhi: Gautam Book Center.

Andrews, Robert (1989). *The Concise Columbia Dictionary of Quotations*. Columbia University Press.

Ansolabehere, Stephen, Marc Meredith, and Erik Snowberg (2014). Mecro-Economic Voting: Local Information and Micro-Perceptions of the Macro-Economy. *Economics & Politics 26*(3), 380–410.

Arendt, Hannah (1978). *The Life of the Mind*. Houghton Mifflin Harcourt.

Atkinson, A. B. (1971). The Distribution of Wealth and the Individual Life-Cycle. *Oxford Economic Papers 23*(2), 239–254.

Atkinson, Anthony B., Eric Marlier, Fabienne Montaigne, and Anne Reinstadler (2010). Income Poverty and Income Inequality. In *Income and Living Conditions in Europe*, Statistical Books, pp. 101–131. Luxembourg: Publications Office of the European Union.

Balafoutas, Loukas, Martin G. Kocher, Louis Putterman, and Matthias Sutter (2013). Equality, equity and incentives: An experiment. *European Economic Review 60*, 32–51.

Baldwin, Kate and John D. Huber (2010). Economic versus Cultural Differences: Forms of Ethnic Diversity and Public Goods Provision. *American Political Science Review 104*(04), 644–662.

Barber, Michael J. (2015). Ideological Donors, Contribution Limits, and the Polarization of American Legislatures. *The Journal of Politics 78*(1), 296–310.

Barnes, Lucy (2014). The size and shape of government: preferences over redistributive tax policy. *Socio-Economic Review*.

Bartels, Larry M. (2005). Homer Gets a Tax Cut: Inequality and Public Policy in the American Mind. *Perspectives on Politics 3*(1), 15–31.

Bartels, Larry M. (2008). *Unequal Democracy: The Political Economy of the New Gilded Age*. New York; Princeton: Russell Sage Foundation; Princeton University Press.

Barth, Erling, Henning Finseraas, and Karl O. Moene (2015). Political Reinforcement: How Rising Inequality Curbs Manifested Welfare Generosity. *American Journal of Political Science 59*(3), 565–577.

Bassett, William F., John P. Burkett, and Louis Putterman (1999). Income distribution, government transfers, and the problem of unequal influence. *European Journal of Political Economy 15*(2), 207–228.

Beauvoir, Simone de (1949). *The Second Sex [Le Deuxième Sexe]*. Gallimard.

Becker, Gary Stanley (1976). *The Economic Approach to Human Behavior*. Chicago: Univ. of Chicago Press.

Behr, Roy L. and Shanto Iyengar (1985). Television News, Real-World Cues, and Changes in the Public Agenda. *Public Opinion Quarterly 49*(1), 38–57.

Beller, Emily and Michael Hout (2006). Welfare states and social mobility: How educational and social policy may affect cross-national differences in the association between occupational origins and destinations. *Research in Social Stratification and Mobility 24*(4), 353–365.

Ben-Akiva, Moshe E. and Steven R. Lerman (1985). *Discrete Choice Analysis: Theory and Application to Travel Demand*. MIT Press.

Benabou, Roland (2000). Unequal societies: Income distribution and the social contract. *American Economic Review*, 96–129.

Benabou, Roland and Efe A. Ok (2001). Social mobility and the demand for redistribution: the POUM hypothesis. *The Quarterly Journal of Economics 116*(2), 447–487.

Benabou, Roland and Jean Tirole (2006). Belief in a just world and redistributive politics. *The Quarterly Journal of Economics 121*(2), 699–746.

Benabou, R. and J. Tirole (2011). Identity, Morals, and Taboos: Beliefs as Assets. *The Quarterly Journal of Economics 126*(2), 805–855.

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

Berinsky, Adam. J., Gregory. A. Huber, and Gabriel. S. Lenz (2012). Evaluating Online Labor Markets for Experimental Research: Amazon.com's Mechanical Turk. *Political Analysis 20*(3), 351–368.

Bernhard, Helen, Urs Fischbacher, and Ernst Fehr (2006). Parochial altruism in humans. *Nature 442*(7105), 912–915.

Blekesaune, Morten (2007). Economic Conditions and Public Attitudes to Welfare Policies. *European Sociological Review 23*(3), 393–403.

Bohle, Dorothee and Béla Greskovits (2012). *Capitalist Diversity on Europe's Periphery*. Cornell Studies in Political Economy. Ithaca, NY: Cornell University Press.

Bois, W. E. B. Du (1903). *The Souls of Black Folk: Essays and Sketches*. Chicago: McClurg & Co.

Bonica, Adam, Nolan McCarty, Keith T Poole, and Howard Rosenthal (2013). Why Hasn't Democracy Slowed Rising Inequality? *Journal of Economic Perspectives 27*(3), 103–124.

Bourguignon, Francois, Francisco HG Ferreira, and Marta Menendez (2007). Inequality of opportunity in Brazil. *Review of Income and Wealth 53*(4), 585–618.

Brooks, Clem and Jeff Manza (2007). *Why welfare states persist: the importance of public opinion in democracies*. Studies in communication, media, and public opinion. Chicago, Ill.: Univ. of Chicago Press.

Brown, Charles, Greg J. Duncan, and Frank P. Stafford (1996). Data Watch: The Panel Study of Income Dynamics. *The Journal of Economic Perspectives 10*(2), 155–168.

Brown, Timothy A. (2006). *Confirmatory factor analysis for applied research*. Methodology in the social sciences. New York, NY: Guilford Press.

Burgoon, Brian, Ferry Koster, and Marcel van Egmond (2012). Support for redistribution and the paradox of immigration. *Journal of European Social Policy 22*(3), 288–304.

Camerer, Colin (2003). *Behavioral Game Theory: Experiments in Strategic Interaction*. New York, N.Y.; Princeton, N.J.: Princeton University Press.

Campbell, James E. (2016). *Polarized: making sense of a divided America*. Princeton: Princeton University Press.

Cavaillé, Charlotte and Kris-Stella Trump (2015). The Two Facets of Social Policy Preferences. *The Journal of Politics 77*(1), 146–160.

Checchi, Daniele and Vito Peragine (2010). Inequality of opportunity in Italy. *The Journal of Economic Inequality 8*(4), 429–450.

Chetty, Raj, Nathaniel Hendren, Patrick Kline, and Emmanuel Saez (2014). Where is the land of Opportunity? The Geography of Intergenerational Mobility in the United States. *The Quarterly Journal of Economics 129*(4), 1553–1623.

Clark, Tom S. and Drew A. Linzer (2015). Should I Use Fixed or Random Effects? *Political Science Research and Methods 3*(2), 399–408.

Clarke, Kevin (2005). The Phantom Menace: Omitted Variable Bias in Econometric Research. *Conflict Management and Peace Science 22*(4), 341–352.

Clarke, Kevin A. (2009). Return of the Phantom Menace Omitted Variable Bias in Political Research. *Conflict Management and Peace Science 26*(1), 46–66.

Clifford, Scott, Ryan M Jewell, and Philip D Waggoner (2015). Are samples drawn from Mechanical Turk valid for research on political ideology? *Research & Politics 2*(4).

Cogneau, Denis and Sandrine Mésple-Somps (2008). Inequality of Opportunity for Income in Five Countries of Africa. In J. Bishop (Ed.), *Inequality and Opportunity: Papers from the Second ECINEQ Society Meeting*, Volume 10 of *Research on Economic Inequality*, pp. 99–128.

Coleman, James S. (1986). Social Theory, Social Research, and a Theory of Action. *American Journal of Sociology 91*(6), 1309–1335.

Coleman, James Samuel (1990). *Foundations of Social Theory*. Harvard University Press.

Coleman, James Samuel and Thomas J. Fararo (1992). *Rational choice theory: advocacy and critique*. Sage Publications.

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

Corneo, Giacomo and Hans Peter Grüner (2002). Individual preferences for political redistribution. *Journal of Public Economics 83*(1), 83–107.

Costello, Anna B. and Jason W. Osborne (2005). Best Practices in Exploratory Factor Analysis: Four Recommendations for Getting the Most From Your Analysis. *Practical Assessment, Research & Evaluation 10*(7), 1–9.

Cruces, Guillermo, Ricardo Pérez Truglia, and Martin Tetaz (2012). Biased perceptions of income distribution and preferences for redistribution: Evidence from a survey experiment. *Journal of Public Economics*.

Dahlberg, Matz, Karin Edmark, and Heléne Lundqvist (2012). Ethnic diversity and preferences for redistribution. *Journal of Political Economy 120*(1), 41–76.

Dardanoni, Valentino, Gary S. Fields, John E. Roemer, and Maria Laura Sanchez Puerta (2006). How demanding should equality of opportunity be, and how much have we achieved? In *Mobility and Inequality: Frontiers of Research from Sociology and Economics*, pp. 59–82.

De La O, A. L. and J. A. Rodden (2008). Does Religion Distract the Poor?: Income and Issue Voting Around the World. *Comparative Political Studies 41*(4-5), 437–476.

Dickens, Charles (1859). *A Tale of Two Cities*. London: Chapman & Hall.

Dimick, Matthew, David Rueda, and Daniel Stegmueller (2016). The Altruistic Rich? Inequality and other-regarding preferences for redistribution. *Quarterly Journal of Political Science (forthcoming)*.

Dion, Michelle L. and Vicki Birchfield (2010). Economic Development, Income Inequality, and Preferences for Redistribution. *International Studies Quarterly 54*(2), 315–334.

Doepke, Matthias and Michèle Tertilt (2009). Women's Liberation: What's in It for Men? *The Quarterly Journal of Economics 124*(4), 1541–1591.

Dominitz, Jeff (2001). Estimation of income expectations models using expectations and realization data. *Journal of Econometrics 102*(2), 165–195.

Dorsch, Michael (2010). Social Mobility and the Demand for Public Consumption Expenditures. *Public Choice* (1/2), 25–39.

Downs, Anthony (1957). An Economic Theory of Political Action in a Democracy. *Journal of Political Economy 65*(2), 135–150.

Dryzek, John and Robert E. Goodin (1986). Risk-Sharing and Social Justice: The Motivational Foundations of the Post-War Welfare State. *British Journal of Political Science 16*(1), 1–34.

Duch, Raymond M. and Randolph T. Stevenson (2011). Context and Economic Expectations: When Do Voters Get It Right? *British Journal of Political Science 41*(01), 1–31.

Duncan, Greg J. and Daniel H. Hill (1989). Assessing the Quality of Household Panel Data: The Case of the Panel Study of Income Dynamics. *Journal of Business & Economic Statistics 7*(4), 441–452.

Eckstein, Harry (1975). Case Studies and Theory in Political Science. In F. Greenstein and N. Polsby (Eds.), *Handbook of Political Science*, Volume 7, pp. 79–138. Reading, MA: Addison-Wesley.

Edlund, Lena and Rohini Pande (2002). Why Have Women Become Left-Wing? The Political Gender Gap and the Decline in Marriage. *The Quarterly Journal of Economics 117*(3), 917–961.

Elbers, Chris, Peter Lanjouw, Johan A. Mistiaen, and Berk Özler (2007). Reinterpreting between-group inequality. *The Journal of Economic Inequality 6*(3), 231–245.

Emerson, Richard M. (1976). Social Exchange Theory. *Annual Review of Sociology 2*, 335–362.

Enders, Craig K. and Davood Tofighi (2007). Centering predictor variables in cross-sectional multilevel models: A new look at an old issue. *Psychological Methods 12*(2), 121–138.

Esping-Andersen, Gøsta (1998). *The Three Worlds of Welfare Capitalism*. Polity Press.

ESS, European Social Survey (2010a). *ESS Round 5: European Social Survey Round 5 Data*. NSD - Norwegian Centre for Research Data.

ESS, European Social Survey (2010b). *ESS Round 5 Source Questionnaire*. Centre for Comparative Social Surveys, City University of London.

Eurostat (2015). *EU Survey on Income and Living Conditions*. European Commission.

Evans, M. D. R. and Jonathan Kelley (2004). Subjective Social Location: Data From 21 Nations. *International Journal of Public Opinion Research 16*(1), 3–38.

Fearon, James D. (2003). Ethnic and cultural diversity by country. *Journal of Economic Growth 8*(2), 195–222.

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

Fehr, Ernst and Klaus M. Schmidt (2010). On inequity aversion: A reply to Binmore and Shaked. *Journal of Economic Behavior & Organization 73*(1), 101–108.

Feldman, Stanley (1988). Structure and consistency in public opinion: The role of core beliefs and values. *American Journal of Political Science*, 416–440.

Ferejohn, John (1991). Rationality and Interpretation: Parliamentary Elections in Early Stuart England. In K. R. Monroe (Ed.), *The Economic Approach to Politics: A Critical Assessment of the Theory of Rational Action*. New York: Harper Collins.

Fernández, Raquel, Alessandra Fogli, and Claudia Olivetti (2004). Mothers and Sons: Preference Formation and Female Labor Force Dynamics. *The Quarterly Journal of Economics 119*(4), 1249–1299.

Fernández-Albertos, José and Alexander Kuo (2015). Income Perception, Information, and Progressive Taxation: Evidence from a Survey Experiment. *Political Science Research and Methods*, 1–28.

Ferreira, Francisco H. G. and Jérémie Gignoux (2011). The Measurement of Inequality of Opportunity: Theory and an Application to Latin America. *Review of Income and Wealth 57*(4), 622–657.

Filippin, Antonio and Andrea Ichino (2005). Gender wage gap in expectations and realizations. *Labour Economics 12*(1), 125–145.

Finseraas, Henning (2008). Immigration and Preferences for Redistribution: An Empirical Analysis of European Survey Data. *Comparative European Politics 6*(4), 407–431.

Finseraas, Henning (2009). Income Inequality and Demand for Redistribution: A Multilevel Analysis of European Public Opinion. *Scandinavian Political Studies 32*(1), 94–119.

Finseraas, Henning (2012). Poverty, ethnic minorities among the poor, and preferences for redistribution in European regions. *Journal of European Social Policy*.

Fiorina, Morris P., Samuel J. Abrams, and Jeremy Pope (2011). *Culture war?: the myth of a polarized America* (3rd ed ed.). Great questions in politics. Boston, MA: Longman.

Fleurbaey, Marc and Vito Peragine (2013). Ex Ante Versus Ex Post Equality of Opportunity. *Economica 80*(317), 118–130.

Fong, Christina (2001). Social preferences, self-interest, and the demand for redistribution. *Journal of Public Economics 82*(2), 225–246.

Frank, Thomas (2004). *What's the matter with Kansas?: how conservatives won the heart of America* (1st ed ed.). New York: Metropolitan Books.

Friedman, Milton (1957). The Permanent Income Hypothesis. In *A Theory of the Consumption Function*, pp. 20–37. Princeton University Press.

Gelman, Andrew (2007). Struggles with Survey Weighting and Regression Modeling. *Statistical Science 22*(2), 153–164.

Gelman, Andrew and John B. Carlin (2001). Poststratification and weighting adjustment. In R. Groves, D. Dillman, J. Eltinge, and R. Little (Eds.), *Survey Non-Response*. Wiley.

Gelman, Andrew, John B. Carlin, Hal S. Stern, David B. Dunson, Aki Vehtari, and Donald B. Rubin (Eds.) (2013). *Bayesian data analysis* (3. ed ed.). Texts in statistical science series. Boca Raton, Fla.: CRC Press/Chapman & Hall.

Gerber, Alan S. and Donald P. Green (2012). *Field Experiments: Design, Analysis, and Interpretation*. New York: W. W. Norton & Company.

Gilens, Martin (2000). *Why Americans hate welfare: race, media, and the politics of antipoverty policy*. Chicago: University of Chicago Press.

Gilens, Martin (2005). Inequality and Democratic Responsiveness. *Public Opinion Quarterly 69*(5), 778–796.

Gilens, Martin (2012). *Affluence and Influence: Economic Inequality and Political Power in America*. Princeton University Press.

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

Granovetter, Mark (2005). The Impact of Social Structure on Economic Outcomes. *The Journal of Economic Perspectives 19*(1), 33–50.

Green, Donald and Ian Shapiro (1994). *Pathologies of Rational Choice Theory: A Critique of Applications in Political Science*. Yale University Press.

Grofman, Bernard (2004). Downs and Two-Party Convergence. *Annual Review of Political Science 7*(1), 25–46.

Gueth, Werner and Eric van Damme (1998). Information, Strategic Behavior, and Fairness in Ultimatum Bargaining: An Experimental Study. *Journal of Mathematical Psychology 42*(2–3), 227–247.

Habyarimana, James, Macartan Humphreys, Daniel N. Posner, and Jeremy M. Weinstein (2007). Why does ethnic diversity undermine public goods provision? *American Political Science Review 101*(04), 709–725.

Hacker, Jacob S. and Paul Pierson (2010). *Winner-Take-All Politics*. New York: Simon & Schuster.

Haggard, Stephan, Robert R. Kaufman, and James D. Long (2013). Income, Occupation, and Preferences for Redistribution in the Developing World. *Studies in Comparative International Development 48*(2), 113–140.

Hainmueller, Jens, Daniel J. Hopkins, and Teppei Yamamoto (2014). Causal Inference in Conjoint Analysis: Understanding Multidimensional Choices via Stated Preference Experiments. *Political Analysis 22*(01), 1–30.

Hanmer, Michael J. and Kerem Ozan Kalkan (2013). Behind the Curve: Clarifying the Best Approach to Calculating Predicted Probabilities and Marginal Effects from Limited Dependent Variable Models. *American Journal of Political Science 57*(1), 263–277.

Harms, Philipp and Stefan Zink (2003). Limits to redistribution in a democracy: a survey. *European Journal of Political Economy 19*(4), 651–668.

Hatfield, Elaine, Richard L. Rapson, and L. Bensman (2011). Equity Theory. In D. J. Christie (Ed.), *The Encyclopedia of Peace Psychology*. New York: Wiley-Blackwell.

Hausman, Daniel M. (1992). *Essays on philosophy and economic methodology*. Cambridge: Cambridge University Press.

Heath, Anthony, Nan Dirk de Graaf, and Yaojun Li (2010). How Fair is the Route to the Top? Perceptions of Social Mobility. In *British Social Attitudes: The 27th Report: Exploring Labour's Legacy*, pp. 29–50. SAGE.

Hersh, Eitan D. and Clayton Nall (2016). The Primacy of Race in the Geography of Income-Based Voting: New Evidence from Public Voting Records. *American Journal of Political Science 60*(2), 289–303.

Hicks, Timothy, Alan M. Jacobs, and J. Scott Matthews (2016). Inequality and Electoral Accountability: Class-Biased Economic Voting in Comparative Perspective. *The Journal of Politics 78*(4), 1076–1093.

Hirschman, Albert O. and Michael Rothschild (1973). The Changing Tolerance for Income Inequality in the Course of Economic Development With A Mathematical Appendix. *The Quarterly Journal of Economics 87*(4), 544–566.

Hochschild, Jennifer L. (1986). *What's Fair?: American Beliefs about Distributive Justice*. Harvard University Press.

Hochschild, Jennifer L. (2017). Left Pessimism and Political Science. *Perspectives on Politics 15*(1), 6–19.

Hojat, Mohammadreza, Joseph S. Gonnella, James B. Erdmann, Susan L. Rattner, J. Jon Veloski, Karen Glaser, and Gang Xu (2000). Gender comparisons of income expectations in the USA at the beginning of medical school during the past 28 years. *Social Science & Medicine 50*(11), 1665–1672.

Honaker, James, Gary King, and Matthew Blackwell (2011). Amelia II: A Program for Missing Data. *Journal of Statistical Software 45*(7).

Hout, Michael (2004). *Getting the most out of the GSS income measures*. Survey Research Center, University of Berkeley. GSS Methodological Report 101.

Howell, Susan E. and Christine L. Day (2000). Complexities of the Gender Gap. *Journal of Politics 62*(3), 858–874.

Häusermann, Silja, Thomas Kurer, and Hanna Schwander (2015). High-skilled outsiders? Labor market vulnerability, education and welfare state preferences. *Socio-Economic Review 13*(2), 235–258.

Husted, Thomas A. and Lawrence W. Kenny (1997). The Effect of the Expansion of the Voting Franchise on the Size of Government. *Journal of Political Economy 105*(1), 54–82.

Iacovou, Maria, Olena Kaminska, and Horacio Levy (2012). *Using EU-SILC data for cross-national analysis: strengths, problems and recommendations*. Institute for Social and Economic Research, University of Essex.

ISSP, International Social Survey Programme (2012). *ISSP 2009 - Social Inequality IV: Variable Report*. GESIS Data Archive.

ISSP, International Social Survey Programme (2014). *International Social Survey Programme: Social Inequality I-IV - ISSP 1987-1992-1999-2009*. GESIS Data Archive.

Iversen, Torben and Frances Rosenbluth (2006). The Political Economy of Gender: Explaining Cross-National Variation in the Gender Division of Labor and the Gender Voting Gap. *American Journal of Political Science 50*(1), 1–19.

Iversen, Torben and Frances McCall Rosenbluth (2010). *Women, work, and politics: the political economy of gender inequality*. The Yale ISPS series. New Haven: Yale Univ. Press.

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

Iversen, Torben and David Soskice (2006). Electoral institutions and the politics of coalitions: Why some democracies redistribute more than others. *American Political Science Review 100*(2), 165–181.

Iversen, Torben and David Soskice (2015). Information, Inequality and Mass Polarization: Ideology in Advanced Democracies. *Comparative Political Studies*.

Jackman, Simon (2004). Bayesian Analaysis for Political Research. *Annual Review of Political Science 7*(1), 483–505.

Jaime-Castillo, Antonio M. and Ildefonso Marqués-Perales (2014). Beliefs about Social Fluidity and Preferences for Social Policies. *Journal of Social Policy 43*(03), 615–633.

Jensen, Carsten and Michael Bang Petersen (2017). The Deservingness Heuristic and the Politics of Health Care. *American Journal of Political Science 61*(1), 68–83.

Jerit, Jennifer, Jason Barabas, and Toby Bolsen (2006). Citizens, Knowledge, and the Information Environment. *American Journal of Political Science 50*(2), 266–282.

Jæger, Mads Meier (2009). United But Divided: Welfare Regimes and the Level and Variance in Public Support for Redistribution. *European Sociological Review 25*(6), 723–737.

Jäntti, Markus (2007). The EU-SILC in Comparative Income Distribution Research: Design and Definitions in International Perspective. In *Comparative EU statistics on Income and Living Conditions: Issues and Challenges*, Helsinki, November 2006, pp. 311–334. Office for Official Publications of the European Communities.

Johnson, James (2010). What Rationality Assumption? Or, How 'Positive Political Theory' Rests on a Mistake. *Political Studies 58*(2), 282–299.

Katz, Michael B. (2013). *The Undeserving Poor: America's Enduring Confrontation with Poverty: Fully Updated and Revised*. Oxford University Press, USA.

Kauder, Emil (1965). *History of Marginal Utility Theory*. Princeton University Press.

Kelly, Nathan J. and Peter K. Enns (2010). Inequality and the Dynamics of Public Opinion: The Self-Reinforcing Link Between Economic Inequality and Mass Preferences. *American Journal of Political Science 54*(4), 855–870.

Kemmerling, Achim (2009). *Taxing the working poor: the political origins and economic consequences of taxing low wages*. Cheltenham: Elgar.

Kenworthy, L. and L. McCall (2007). Inequality, public opinion and redistribution. *Socio-Economic Review 6*(1), 35–68.

Kim, Yong-Seong and Frank P. Stafford (2000). *The Quality of PSID Income Data in the 1990s and Beyond*. Survey Research Center - Institute for Social Research, University of Michigan. Technical Series Paper #00-03.

Kinder, Donald R. and Nicholas Winter (2001). Exploring the Racial Divide: Blacks, Whites, and Opinion on National Policy. *American Journal of Political Science 45*(2), 439–456.

King, Gary, James Honaker, Anne Joseph, and Kenneth Scheve (2001). Analyzing incomplete political science data: An alternative algorithm for multiple imputation. *American Political Science Review 95*(1), 49–69.

Kline, Paul (1994). *An easy guide to factor analysis*. London: Routledge.

Kluegel, James R. and David S. Mason (2004). Fairness matters: social justice and political legitimacy in post-communist Europe. *Europe-Asia Studies 56*(6), 813–834.

Kluegel, James R. and Eliot R. Smith (1986). *Beliefs About Inequality: Americans' Views of What Is and What Ought to Be*. Transaction Publishers.

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

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

Kraus, Michael W. and Jacinth J. X. Tan (2015). Americans overestimate social class mobility. *Journal of Experimental Social Psychology 58*, 101–111.

Krawczyk, Michał (2010). A glimpse through the veil of ignorance: Equality of opportunity and support for redistribution. *Journal of Public Economics 94*(1-2), 131–141.

Kuklinski, James H., Paul J. Quirk, Jennifer Jerit, David Schwieder, and Robert F. Rich (2000). Misinformation and the currency of democratic citizenship. *Journal of Politics 62*(3), 790–816.

Kuziemko, Ilyana, Michael I. Norton, Emmanuel Saez, and Stefanie Stantcheva (2015). How Elastic Are Preferences for Redistribution? Evidence from Randomized Survey Experiments. *American Economic Review 105*(4), 1478–1508.

Layard, R., G. Mayraz, and S. Nickell (2008). The marginal utility of income. *Journal of Public Economics 92*(8–9), 1846–1857.

Lübker, Malte (2007). Inequality and the demand for redistribution: are the assumptions of the new growth theory valid? *Socio-Economic Review 5*(1), 117–148.

Levy, Jack S. (2002). Qualitative Methods in International Relations. In M. Brecher and F. P. Harvey (Eds.), *Millennial Reflections on International Studies*, pp. 432–454. Ann Arbor: University of Michigan Press.

Lewandowski, Daniel, Dorota Kurowicka, and Harry Joe (2009). Generating random correlation matrices based on vines and extended onion method. *Journal of Multivariate Analysis 100*(9), 1989–2001.

Lieberson, Stanley (2001). Understanding Ascriptive Stratification: Some Issues and Principles. In D. B. Grusky (Ed.), *Social stratification: Class, race, and gender in sociological perspective*. Westview Press.

Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology 22*(140).

Lindert, Peter H. (2007). *Growing public:: social spending and economic growth since the eighteenth century. Vol. 1: The story*, Volume 1. Cambridge: Cambridge Univ. Press.

Linos, Katerina and Martin West (2003). Self-interest, Social Beliefs, and Attitudes to Redistribution. Re-addressing the Issue of Cross-national Variation. *European Sociological Review 19*(4), 393–409.

Lipset, Seymour Martin (1959). *Political Man: The Social Bases of Politics*. New York: Doubleday & Company.

Lohmann, Henning (2011). Comparability of EU-SILC survey and register data: The relationship among employment, earnings and poverty. *Journal of European Social Policy 21*(1), 37–54.

Lott Jr., John R. and Lawrence W. Kenny (1999). Did women's suffrage change the size and scope of government? *Journal of Political Economy 107*(6), 1163–1198.

Loveless, Matthew and Stephen Whitefield (2011). Being unequal and seeing inequality: Explaining the political significance of social inequality in new market democracies. *European Journal of Political Research 50*(2), 239–266.

Lupu, Noam and Jonas Pontusson (2011). The Structure of Inequality and the Politics of Redistribution. *American Political Science Review 105*(02), 316–336.

Luttmer, Erzo FP (2001). Group loyalty and the taste for redistribution. *Journal of Political Economy 109*(3), 500–528.

Margalit, Yotam (2013). Explaining Social Policy Preferences: Evidence from the Great Recession. *American Political Science Review 107*(01), 80–103.

Marrero, Gustavo A. and Juan Gabriel Rodríguez (2012). Inequality of Opportunity in Europe. *Review of Income and Wealth 58*(4), 597–621.

Marrero, Gustavo A. and Juan G. Rodríguez (2013). Inequality of opportunity and growth. *Journal of Development Economics 104*, 107–122.

McCall, Leslie (2013). *The Undeserving Rich: American Beliefs about Inequality, Opportunity, and Redistribution*. Cambridge University Press.

McCall, Leslie (2014). The Political Meanings of Social Class Inequality. *Social Currents 1*(1), 25–34.

McCarty, Nolan M., Keith T. Poole, and Howard Rosenthal (1997). *Income redistribution and the realignment of American politics*. AEI studies on understanding economic inequality. Washington, DC: American Enterprise Institute Press.

McCarty, Nolan M., Keith T. Poole, and Howard Rosenthal (2008). *Polarized America: the dance of ideology and unequal riches*. Cambridge, Mass.: MIT Press.

Meltzer, Allan H. and Scott F. Richard (1981). A rational theory of the size of government. *The Journal of Political Economy 89*(5), 914–927.

Meltzer, Allan H. and Scott F. Richard (1983). Tests of a Rational Theory of the Size of Government. *Public Choice 41*(3), 403–418.

Milanovic, Branko (2000). The median-voter hypothesis, income inequality, and income redistribution: an empirical test with the required data. *European Journal of Political Economy 16*(3), 367–410.

Mincer, Jacob (1958). Investment in Human Capital and Personal Income Distribution. *Journal of Political Economy 66*(4), 281–302.

Mincer, Jacob (1974). *Schooling, Experience and Earnings*. New York: Columbia University Press.

Mishel, Lawrence and Alyssa Davis (2014). CEO Pay Continues to Rise as Typical Workers Are Paid Less. *Economic Policy Institute*.

Moene, Karl Ove and Michael Wallerstein (2003). Earnings Inequality and Welfare Spending: A Disaggregated Analysis. *World Politics 55*(04), 485–516.

Mutz, Diana C. and Jeffrey J. Mondak (1997). Dimensions of Sociotropic Behavior: Group-Based Judgements of Fairness and Well-Being. *American Journal of Political Science 41*(1), 284–308.

Nelson, Phillip (1999). Redistribution and the Income of the Median Voter. *Public Choice 98*(1/2), 187–194.

Newman, Benjamin J. (2015). Breaking the Glass Ceiling: Local Gender-Based Earnings Inequality and Women's Belief in the American Dream. *American Journal of Political Science*.

Norrander, Barbara and Clyde Wilcox (2008). The Gender Gap in Ideology. *Political Behavior 30*(4), 503–523.

Norton, Michael I. and Dan Ariely (2011). Building a Better America - One Wealth Quintile at a Time. *Perspectives on Psychological Science 6*(1), 9–12.

Okun, Arthur M. (1975). *Equality and Efficiency, the Big Tradeoff*. Brookings Institution Press.

Olofsson, Anna and Saman Rashid (2011). The white (male) effect and risk perception: can equality make a difference? *Risk Analysis: An Official Publication of the Society for Risk Analysis 31*(6), 1016–1032.

Olson, Mancur (1965). *The logic of collective action: public goods and the theory of groups*. Cambridge, Mass.: Harvard Univ. Press.

Orwell, George (1949). *Nineteen Eighty-Four [1984]*. Secker & Warburg.

Osberg, Lars and Timothy Smeeding (2006). "Fair" Inequality? Attitudes toward Pay Differentials: The United States in Comparative Perspective. *American Sociological Review 71*(3), 450–473.

Page, Benjamin I. and Lawrence R. Jacobs (2009). *Class War?: What Americans Really Think about Economic Inequality*. Chicago: University Of Chicago Press.

Page, Benjamin I. and Robert Y. Shapiro (1992). *The rational public: fifty years of trends in Americans' policy preferences*. American politics and political economy series. Chicago: University of Chicago Press.

Petersen, Michael Bang, Rune Slothuus, Rune Stubager, and Lise Togeby (2011). Deservingness versus values in public opinion on welfare: The automaticity of the deservingness heuristic. *European Journal of Political Research 50*(1), 24–52.

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

Pistolesi, Nicolas (2009). Inequality of opportunity in the land of opportunities, 1968–2001. *The Journal of Economic Inequality 7*(4), 411–433.

Polachek, Solomon William (1975). Potential Biases in Measuring Male-Female Discrimination. *The Journal of Human Resources 10*(2), 205–229.

Pontusson, Jonas and David Rueda (2010). The Politics of Inequality: Voter Mobilization and Left Parties in Advanced Industrial States. *Comparative Political Studies 43*(6), 675–705.

PSID, Panel Study of Income Dynamics (2015). *Public Use Dataset*. Survey Research Center, Institute for Social Research, University of Michigan.

Rainer, Helmut and Thomas Siedler (2008). Subjective income and employment expectations and preferences for redistribution. *Economics Letters 99*(3), 449–453.

Ravallion, Martin and Michael Lokshin (2000). Who wants to redistribute?: The tunnel effect in 1990s Russia. *Journal of Public Economics 76*(1), 87–104.

Rawls, John (1971). *A Theory of Justice*. Harvard University Press.

Reeves, Andrew and James G. Gimpel (2011). Ecologies of Unease: Geographic Context and National Economic Evaluations. *Political Behavior 34*(3), 507–534.

Rehm, Philipp (2009). Risks and Redistribution An Individual-Level Analysis. *Comparative Political Studies 42*(7), 855–881.

Rehm, Philipp (2016). *Risk inequality and welfare states: social policy preferences, development, and dynamics*. New York NY: Cambridge University Press.

Rehm, Philipp, Jacob S. Hacker, and Mark Schlesinger (2012). Insecure Alliances: Risk, Inequality, and Support for the Welfare State. *American Political Science Review 106*(02), 386–406.

Roemer, John E. (1993). A Pragmatic Theory of Responsibility for the Egalitarian Planner. *Philosophy & Public Affairs 22*(2), 146–166.

Roemer, John E (1998a). *Equality of opportunity*. Cambridge, Mass.: Harvard University Press.

Roemer, John E. (1998b). Why the poor do not expropriate the rich: an old argument in new garb. *Journal of Public Economics 70*(3), 399–424.

Roemer, John E. (2002). Equality of opportunity: A progress report. *Social Choice and Welfare 19*(2), 455–471.

Roemer, John E. and Alain Trannoy (2015). Equality of Opportunity. In A. B. Atkinson and F. Bourguignon (Eds.), *Handbook of Income Distribution*. Amsterdam: North-Holland.

Romer, Thomas (1975). Individual welfare, majority voting, and the properties of a linear income tax. *Journal of Public Economics 4*(2), 163–185.

Ross, Michael L. (2008). Oil, Islam, and Women. *American Political Science Review 102*(01), 107–123.

Roussea, Jean-Jacques (1755). *Discourse on the Origin and Basis of Inequality Among Men [Discours sur l'origine et les fondements de l'inégalité parmi les hommes]*. Amsterdam: Marc-Michel Rey.

Rubin, Donald B. (1987). *Multiple imputation for nonresponse in surveys*. Wiley series in probability and mathematical statistics. New York: Wiley.

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

Rueda, David (2007). *Social Democracy Inside Out: Partisanship and Labor Market Policy in Advanced Industrialized Democracies*. Oxford University Press.

Rueda, David (2014). Food comes first, then morals: Redistribution preferences, altruism and group heterogeneity in Western Europe. CAGE Working Paper No.200.

Rueda, David and Daniel Stegmueller (2015). The Externalities of Inequality: Fear of Crime and Preferences for Redistribution in Western Europe. *American Journal of Political Science*.

Rueda, David, Daniel Stegmueller, and Timo Idema (2014). The effects of income expectations on redistribution preferences in Western Europe. Washington, DC. American Political Science Association.

Sauermann, Jan and André Kaiser (2010). Taking Others into Account: Self-Interest and Fairness in Majority Decision Making. *American Journal of Political Science 54*(3), 667–685.

Scheve, Kenneth and David Stasavage (2006). Religion and preferences for social insurance. *Quarterly Journal of Political Science 1*(3), 255–286.

Schlozman, Kay Lehman, Sidney Verba, and Henry E. Brady (2013). *The unheavenly chorus: unequal political voice and the broken promise of American democracy*. Princeton: Princeton Univ. Press.

Schmidt-Catran, Alexander W. (2016). Economic inequality and public demand for redistribution: combining cross-sectional and longitudinal evidence. *Socio-Economic Review 14*(1), 119–140.

Schrodt, Philip A. (2014). Seven deadly sins of contemporary quantitative political analysis. *Journal of Peace Research 51*(2), 287–300.

Selten, Reinhard and Axel Ockenfels (1998). An experimental solidarity game. *Journal of Economic Behavior & Organization 34*(4), 517–539.

Sen, Amartya (1992). *Inequality reexamined*. New York, NY: Oxford University Press.

Simon, Herbert A. (1955). A Behavioral Model of Rational Choice. *The Quarterly Journal of Economics 69*(1), 99–118.

Singh, Ashish (2012). Inequality of Opportunity in Earnings and Consumption Expenditure: The Case of Indian Men. *Review of Income and Wealth 58*(1), 79–106.

Smith, Tom W., Peter V. Marsden, and Michael Hout (2016). *General Social Survey, 2012 Merged Data*. Inter-university Consortium for Political and Social Research, University of Michigan.

Snijders, Thomas A.B. and Roel J. Bosker (2012). *Multilevel analysis: an introduction to basic and advanced multilevel modeling*. Los Angeles, Calif.: Sage.

Snijders, Tom A. B. and Roel J. Bosker (2003). *Multilevel analysis: an introduction to basic and advanced modeling*. London: Sage Publ.

Solt, Frederick (2008). Economic Inequality and Democratic Political Engagement. *American Journal of Political Science 52*(1), 48–60.

Solt, Frederick (2016). The Standardized World Income Inequality Database. *Social Science Quarterly 97*. SWIID Version 5.0.

Spector, Paul E. (1992). *Summated Rating Scale Construction*. SAGE.

Stan Development Team (2015). Stan Modeling Language: User's Guide and Reference Manual. Version 2.9.0.

Steele, Liza G. (2015). Income Inequality, Equal Opportunity, and Attitudes About Redistribution. *Social Science Quarterly 96*(2), 444–464.

Stegmueller, Daniel (2013a). The dynamics of income expectations and redistribution preferences.

Stegmueller, Daniel (2013b). How Many Countries for Multilevel Modeling? A Comparison of Frequentist and Bayesian Approaches. *American Journal of Political Science 57*(3), 748–761.

Stegmueller, Daniel, Peer Scheepers, Sigrid Roßteutscher, and Eelke de Jong (2012). Support for Redistribution in Western Europe: Assessing the role of religion. *European Sociological Review 28*(4), 482–497.

Stewart, Neil, Christoph Ungemach, Adam JL Harris, Daniel M. Bartels, Ben R. Newell, Gabriele Paolacci, and Jesse Chandler (2015). The average laboratory samples a population of 7,300 Amazon Mechanical Turk workers. *Judgment and Decision Making 10*(5), 479.

Stichnoth, Holger and Karine Van der Straeten (2013). Ethnic Diversity, Public Spending, and Individual Support for the Welfare State: A Review of the Empirical Literature. *Journal of Economic Surveys 27*(2), 364–389.

Strömberg, David (2004). Radio's Impact on Public Spending. *The Quarterly Journal of Economics 119*(1), 189–221.

Svallfors, Stefan (1997). Worlds of Welfare and Attitudes to Redistribution: A Comparison of Eight Western Nations. *European Sociological Review 13*(3), 283–304.

Tavits, Margit and Joshua D. Potter (2014). The Effect of Inequality and Social Identity on Party Strategies. *American Journal of Political Science*.

Tocqueville, Alexis De (1835). *Democracy In America*, Volume 1. London: Saunders and Otley.

Trounstine, Jessica (2016). Segregation and Inequality in Public Goods. *American Journal of Political Science 60*(3), 709–725.

Trump, Kris-Stella (2017). Income Inequality Influences Perceptions of Legitimate Income Differences. *British Journal of Political Science*, 1–24.

Van Kerm, Philippe (2007). Extreme incomes and the estimation of poverty and inequality indicators from EU-SILC. In *Comparative EU statistics on Income and Living Conditions: Issues and Challenges*, Helsinki, Finland, pp. 83–93. Office for Official Publications of the European Communities.

Voorheis, John, Nolan McCarty, and Boris Shor (2015). Unequal Incomes, Ideology and Gridlock: How Rising Inequality Increases Political Polarization. Unpublished manuscript.

Walster, Elaine, Ellen Berscheid, and G. William Walster (1973). New directions in equity research. *Journal of personality and social psychology 25*(2), 151–176.

Weatherford, M. Stephen (1983). Evaluating Economic Policy: A Contextual Model of the Opinion Formation Process. *The Journal of Politics 45*(4), 866–888.

Webbink, Dinand and Joop Hartog (2004). Can students predict starting salaries? Yes! *Economics of Education Review 23*(2), 103–113.

Western, Bruce and Simon Jackman (1994). Bayesian Inference for Comparative Research. *The American Political Science Review 88*(2), 412–423.

Wilensky, Harold L. (1974). *The Welfare State and Equality: Structural and Ideological Roots of Public Expenditures*. University of California Press.

World Bank (2016). World Development Indicators.