

Structuring the Analysis of Wealth Inequality using the Functions of Wealth: A Class Based Approach *

Pirmin Fessler[†] and Martin Schürz[‡]

16 February 2020

Draft for NBER/CRIW Conference March 5-6, 2020

Abstract

We integrate concepts from sociology into the economic analysis of inequality and propose a relational approach focusing on different functions of wealth. We operationalize these functions by empirically analyzing the groups of renters, owners, and capitalists. Employing European and US data, we find that classifying households based on these functions of wealth aligns well with the income and wealth distribution, in ways that vary considerably across countries. Our approach allows us to distinguish between wealth as a means of capitalist production, as a substitute for public wealth (precautionary wealth), and as a source of non-cash income (housing wealth used). We propose new measures of inequality directly linked to social realities.

JEL Classifications: D14, D15, D31, D63, Z13

Key Words: wealth, inequality, households, survey data, class, economic stratification

*The authors thank Maximilian Kasy, Arthur Kennickell, Markus Knell and Alyssa Schneebaum as well as participants of the first WID conference in December 2017 in Paris and participants of the Joint Statistical Meetings in August 2018 in Vancouver for valuable comments and discussion. We also would like to thank Maximilian Propst and Katharina Drescher for valuable research assistance. The views expressed in this paper are exclusively those of the authors and do not necessarily reflect those of the OeNB or the Eurosystem.

[†]Oesterreichische Nationalbank, Otto Wagner Platz 3, 1090 Vienna, Austria, pirmin.fessler@oenb.at, Tel: (+43) (1) 404 20-5235

[‡]Oesterreichische Nationalbank, Otto Wagner Platz 3, 1090 Vienna, Austria, martin.schuerz@oenb.at, Tel: (+43) (1) 404 20-7410

1 Introduction

For a long time, the two main questions in empirical research in economics on private wealth were about its definition: what should we consider when we analyze private wealth (Jenkins, 1990; Davies and Shorrocks, 2000; OECD, 2013), and what is its distribution among different types of households (Sierminska et al., 2006; Kennickell, 2012)? This literature mainly uses surveys to analyse the wealth distribution.

In the most prominent recent strand of the literature, which uses administrative tax data in its analyses, the main focus is on wealth concentration and the evolution of top-shares over time. Piketty (2013) and others extensively document the evolution of the concentration of income (Alvaredo et al., 2013) and inheritances (Piketty, 2011) as sources of flows into wealth, as well as the stock of wealth itself (Kopczuk and Saez, 2004). This literature follows a quantitative-counting logic of more and less, with no explicit reference to power or production relations, and their approach seems to have no normative elements. It is agnostic to sociological issues, such as the fact that differences in quantities might imply qualitative differences with regard to the functions of wealth and that the meaning of wealth levels and/or wealth shares depends on the context in a certain society at a certain point in time. Recent examples of this type of approach include Piketty (2013), who argues that extreme capital accumulation can endanger democracy and is therefore in favor of a tax on wealth to slow down the process of wealth concentration. Moreover, the OECD (2015) argues that higher inequality drags down economic growth and harms opportunities, and that high wealth inequality in particular limits investment opportunities and therefore growth. In discussions about wealth inequality, researchers and politicians often claim that there is not enough precautionary saving at the bottom, not enough wealth or excessively high income taxes for a downpayment to buy a home in the middle, and too much wealth concentration for a functioning democracy at the top. However, the pure counting logic of the current approach to the analysis of wealth does not justify such interpretations. Such ideas are implicitly based on a distinction between the different functions that wealth can have for its owners, which is missing in the current literature.

Looking at the wealth distribution alone provides an incomplete picture of the social implications of wealth. Additional insight can be gained by classifying households based on the particular functions of their wealth holdings. As we will show, its focus on the functions of wealth provides a coherent organization of the data from the outset. Our way of organizing the data integrates theoretical considerations from sociology and moves beyond an abstract statistical concept. In other words, it makes the implicit explicit.

The main contribution of our paper is to make these implicitly assumed functions of

wealth - which are necessary for meaningful interpretations - explicit in the statistical analysis. All too often, wealth analyses hide behind deciles, percentiles, and top shares. Without narratives about power and production relations between social classes, which are only brought into the analysis in interpretations after the fact, the analyses are not particularly meaningful. Making the power and production relations explicit in the statistical analysis of wealth inequality brings us forward in creating a more transparent and consistent analysis of wealth inequality as a social reality.

While in the 19th century the antagonism between those who owned the means of production (“capitalists”) and those who did not (“workers”) was dominant, the rise of the welfare state in the 20th century changed social class structures by adding a social class in between (see [Piketty \(2013\)](#), [Wright \(2005\)](#), [Therborn \(2012\)](#) and others). We therefore define three social classes of households. The first class comprises renters, who mainly have wealth for precautionary reasons. Second, owners are those who not only have wealth for precautionary reasons but also use their wealth to live, by means of owner-occupation, and therefore generate non-cash income (imputed rent) from their wealth. The third class is the one of capitalists, who not only own their home, but additionally rent out further real estate and/or have self-employed business wealth. The work most closely related to our own – as far as we are aware – are [Hugrée et al. \(2017\)](#) and [Schürz \(2019\)](#), who share the perspective on social classes when analyzing the wealth distribution.

We use data from the Survey of Consumer Finances (SCF) for the United States, the Household Finance and Consumption Survey (HFCS) for continental Europe, and the Wealth and Asset Survey (WAS) for the UK to apply this approach. Bringing our definitions of social classes to the data, we find renters in the bottom, owners in the middle, and capitalists at the top of both the income and the wealth distributions. This finding stands in sharp contrast to standard economic theory, as standard assumptions say that households should be indifferent between renting and owning. The country patterns differ markedly, which is likely due to institutional settings, tax law, history, the welfare state, and many other conditions. As an example, different policies for owner-occupiers target different groups in different countries. The bottom 50% shares of wealth can consist mostly of renters’ precautionary wealth in one country, while it can comprise mainly the homes of homeowners in another. We find that the share of renters in the population is positively related to countries’ total social security spending. Our approach allows us to gain new perspectives on inequality, in that we propose measures of inequality that are directly linked to social realities.

We produce class-based shares of income (wealth) to population share ratios. One of our main results is that while owners tend to have average levels of income and wealth (ratios close to 1), most inequality is explainable by differences between renters and capitalists. For

income, the ratios are smallest for renters in the United States (0.47, i.e. on average about half of the overall mean) and highest for capitalists in the United States (2.5). For wealth, they are smallest for renters in Finland (0.1) and largest for capitalists in Austria (4.7, i.e. on average 4.7 times the overall mean).

We calculate disaggregated wealth-to-income ratios, which are a class-specific micro-level version of the country-level capital-to-income ratios widely used in the literature. The owners' ratios are about the size of the macro figures (around 5 – 6) while the renters have substantially lower wealth-to-income ratios in all countries (mostly below 2.5). Capitalists, on the other hand, have substantially higher ratios (for the majority of countries, including the US, above 10). Clearly, differences between classes are by far larger than differences between countries.

We introduce wealth-to-income ratios between capitalists (wealth) and renters (income), which directly speak to important social relations. They answer the question of how many years of labor a capitalist can buy from a renter, who relies on labor income. This measure of social distance varies from 11 (Greece) to 57 (US) years of renters' income if one uses means of capitalist wealth to renters mean yearly income. If medians are used instead of means, it varies from 8 years in Slovakia to 36 years in the United Kingdom.

Inequality measured within class as well as a decomposition of overall inequality by class both can also help to illuminate how inequalities relate to social reality and political processes. Overall, inequality decompositions show that while the US is the only country in which more than 50% of overall income inequality is explained by between-class inequality, that is true with regard to wealth for almost all countries. With regard to income within-class inequality is very similar for all classes in all countries. But with regard to wealth, it is particularly large for renters in all countries, which might make it more difficult for renters to develop common interests and be recognized as a group.

Our approach can be directly linked to questions of justification of wealth inequality and allows us to distinguish between wealth as a means of capitalist production and other forms of wealth, such as private wealth as a substitute for public wealth (precautionary wealth) and private wealth as a source for non-cash income (housing wealth used).

The rest of this paper is structured as follows. Section 2 integrates theoretical reasoning from sociology behind our empirical approach. Section 3 introduces the data. Section 4 presents empirical results. Section 5 concludes. In the appendix we present several extensions and robustness checks. While we focus on the US, the UK, Germany, and France in the main text, we show many detailed country figures in [Appendix A](#). We show how the class patterns across countries relate to welfare state expenditures at the country-level in [Appendix B](#). In [Appendix C](#) we illustrate the robustness of our definitions. In [Appendix D](#) we show that this

pattern already existed in the US in 1962, though less clear-cut and with a smaller owner class, just as the literature suggests. The rise of the owners in the middle is documented for the US. In [Appendix E](#) we present further evidence based on Austrian HFCS data, showing how our approach based on the functions of wealth also ties in with respondents' subjective ideas about functions of wealth in society. [Appendix F](#) includes figures for the US, the UK, Germany and France, which show class locations in the joint distribution of income and wealth.

2 Functions of Wealth

In this section we discuss the theoretical background of our approach. In subsection [2.1](#) we introduce the definition of wealth we use. Subsection [2.2](#) discusses the theoretical reasoning behind a relational approach to the analysis of wealth based on the functions of wealth. Finally, subsection [2.3](#) includes the definition of the typology we introduce based on the functions of wealth.

2.1 Definition of wealth

Currently, most researchers mean non-human assets minus debt when they talk about private wealth. Most of the time, they also exclude any intangible assets like pension rights or social security wealth and basically any other rights to uncertain future benefits ([Davies and Shorrocks, 2000](#)). [Davies and Shorrocks \(2000\)](#) use the term “augmented wealth” to refer to a broader definition of (net) wealth (net worth) that includes entitlements to future pension streams, though they point out a number of problems involved with such a broader definition (risk adjustments, discount rates, borrowing constraints, etc.). Earlier studies have generated some key facts about the distribution of private household wealth (among them [Jenkins \(1990\)](#), [Davies and Shorrocks \(2000\)](#), [Sierminska et al. \(2006\)](#), and [Kennickell \(2012\)](#)): Net wealth is very concentrated and distributed much more unequally than income. The bottom 50 percent in the wealth distribution of households holds only a tiny fraction of aggregate wealth. Non-financial assets outweigh financial assets and consist mainly of households' main residences. Finally, the distribution of financial assets is substantially more unequal across households than the distribution of non-financial assets. Household wealth was lower during the period from the 1950s to the 1970s than in later decades, reflecting - among other things - recovery from World War II destruction. [Saez and Piketty \(2012\)](#) mention anti-private capital policies including rent control, progressive taxation, financial repression, and nationalization policies. Politics were reversed in the 1980s and 1990s via

liberalization, deregulation, “and large wealth transfers from public to private hands through cheap privatization” (p. 9). Thus the rise of private wealth is partly due to a decline of public wealth.

The OECD (OECD, 2013) has recently defined household net wealth as the monetary value of all assets minus its liabilities. In the OECD’s definition, wealth has to be transferable. It therefore excludes all forms of public pension entitlements. We follow the literature and the recommendation of the OECD and stick to the definition of marketable wealth as our main variable of interest. Fessler and Schürz (2018) gives a more comprehensive discussion of the definitions of private and public wealth.

2.2 Towards a relational and multidimensional analysis of wealth

Recent literature of wealth concentration focuses on wealth alone. Also Piketty (2013), Kopczuk and Saez (2004), Saez and Zucman (2016) and many others follow the same one-dimensional approach and focus on the share of an arbitrary group of top wealth holders. The favored focus on the top tail of the richest 1% (Alvaredo et al., 2017; Piketty, 2013; Alvaredo et al., 2013; Piketty, 2011) implicitly proposes that the rich are different from the rest of the society. But it cannot derive arguments for such a claim directly from the data as it uses only percentiles of the net wealth distribution. Furthermore, the one-dimensional approach suggests that we do not know about the different functions that wealth has across the distribution. However, this is only a specific data restriction of administrative data. And it suggests that it is negligible how the composition of the top-1% share changes over time and that the concept of shares of percentiles will be useful in any case. Since a specific perspective on the data has to be taken, in order to analyse them - and even gather them -, the chosen perspective influences what we see and what we do not see. What we can do, however, is try to make the data analyses a priori as transparent and as informative as possible with regard to how it is connected to the interpretation of the results. With regard to wealth, that means linking wealth to its functions, right from the start of the analysis.

Figure 1 shows a schematic illustration of a potential structure of functions of wealth across the wealth distribution.

At the very bottom of the distribution, associated with low amounts of usually very liquid wealth holdings, the main function of wealth is provision. Households save for all kinds of precautionary reasons, among them the motive of “saving for a rainy day” such as the necessary replacement of a washing machine or car repairs, but also for unexpected unemployment, sickness, or vacation. The necessity of this precautionary wealth accumulation heavily depends on welfare state policies and the degree to which they ensure these contin-

gencies of life in an organized way. This form of wealth is usually a substitute for welfare state policies and more generally public wealth (see also [Appendix B](#)).

With increasing wealth, use becomes more prevalent. The main item in household wealth, which is both used and serves as source of non-cash income, is home ownership. Theoretically, households should be indifferent between renting or owning a house under the standard assumptions (strict life cycle preferences, no bequest motives, no credit constraints, rational behaviour etc.). In practice, however, all of the conditions of the standard model are violated. Households care about bequests (both as recipients and as givers); they face borrowing constraints (like downpayment requirements); they show less-than-fully-rational behaviour; and the tax system often favors ownership vis-a-vis renting. As we will see later, all of these factors lead to a situation in which renters of their home are mostly found at the very bottom of the distribution - which stands in sharp contrast to what standard economic theory would predict. This form of wealth typically is a source of non-cash income.

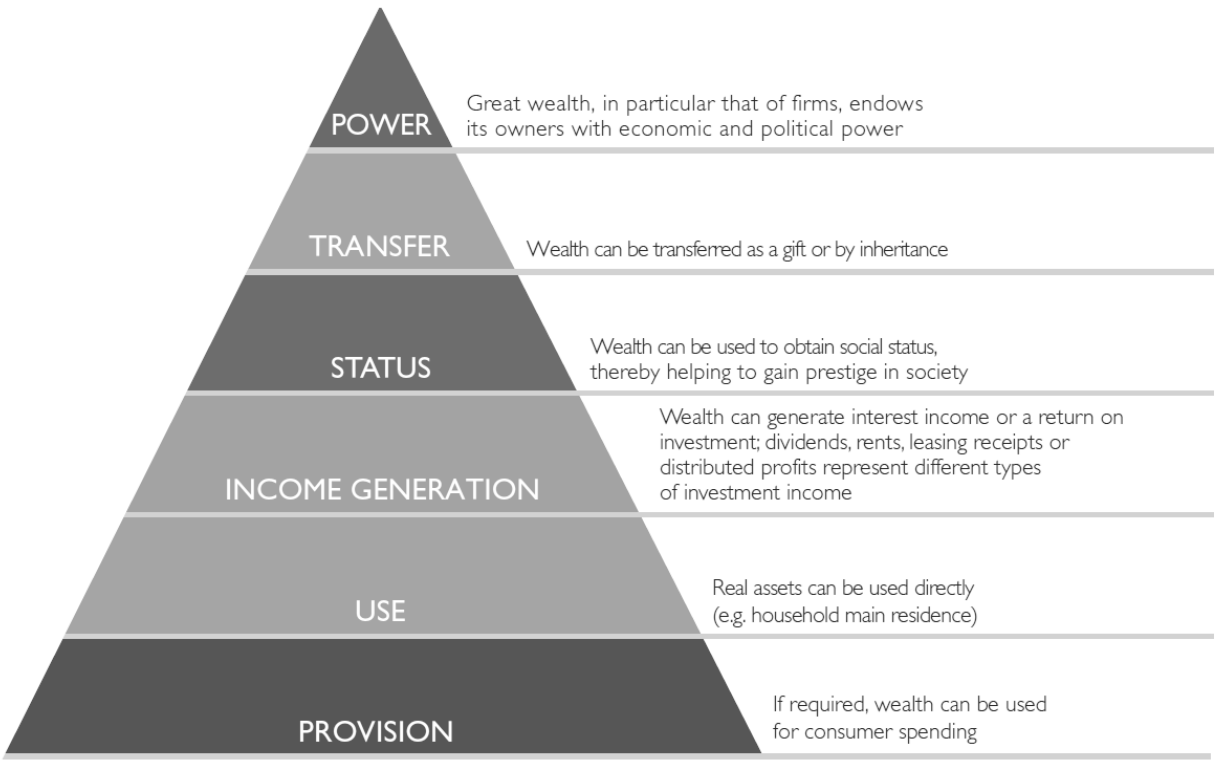
With even higher wealth, the function of income generation becomes more important. This function is more dominant for households that own self-employed businesses and/or real estate wealth that they rent out to earn capital income. This form of wealth is a source of considerable cash income.

We use these three functions of wealth as a base for our relational approach. Of course, there are other functions of wealth, such as status, transfer, and power. Not all functions of wealth are additive, as this illustration might suggest. Aside from the idea that higher net wealth implies more possible functions of wealth for wealth holders, the precise actual functions of wealth have to be studied empirically. Some wealth functions are substitutes, some are complimentary, others just overlap. Many of them are hard or even impossible to measure (in a survey). But we are confident that the three functions we use are a step towards a more transparent and consistent analysis of wealth inequality as a social reality. They provide an informed way to analyze the wealth (shares) of different social classes in society, which are related in their economic lives.

2.3 Renters, owners, and capitalists

Property and in particular “the means of production” have been core concerns of economics and sociology since the beginning of capitalism. They served as a key to identify different economic systems and to build theories of social classes. The distribution of asset ownership shapes society in that it determines to a large degree inequality in income, consumption, as well as different forms of human and social capital ([Bourdieu, 2002](#)) and therefore power relations, production relations, and class locations. The classical Marxian notion implies

Figure 1: Functions of wealth



Notes:

- (i) This graph shows an illustration of the functions of wealth. The pyramid suggests the increasing prevalence with increasing wealth.
- (ii) *Source:* Own Illustration.

an antagonism of those who have capital (“capitalists”) and those who do not (“workers”). But, due to the rise of the middle-class in the 20th century people could accumulate a large amount of assets that do not directly relate to “means of production,” but that instead fulfil other functions. The welfare state strongly shapes these social relationships and therefore the meaning of asset ownership in different societies. Whenever feasible, it thus makes sense to include these functions directly when analysing the wealth distribution. Further, recent sociological research is aware of the importance of wealth in the process of social stratification.

Spilerman (2000) and Keister and Moller (2000) emphasized the importance of taking all household resources (in particular household wealth) into account when describing social stratification. Recently Killewald et al. (2017) argued that wealth is an important and independent dimension of social stratification. As one promising avenue Killewald et al. (2017) mention that

“decisions about appropriately operationalizing net worth are not merely a methodological concern; they may significantly shape substantive conclusions. We encourage using transformations that permit coverage of the entire range of net worth values (e.g., percentiles) and that align with the analytic intent.”

Our transformation into three classes covering the full range of net worth values is based on the functions of wealth which are both linked to the forms of wealth and the relations between the resulting classes:

1. **Renters.** Renters are those who do not own their home. They mainly hold wealth for precautionary reasons. They need to pay a rent to capitalists (or the state) to live in their houses or apartments. Their only main income source is labor income. Renters have mostly precautionary wealth.
2. **Owners.** Owners (additionally) use wealth by living in their own house or apartment. In the vast majority of cases, this house or apartment is also their single most valuable asset. They do not pay a rent to live in their houses or apartments. Living in their own apartment generates a rent, the imputed rent, which is a form of non-cash capital income. Owners mostly have wealth they use through owner-occupied housing.
3. **Capitalists.** Capitalists (additionally) either rent out their further real estate to the renters and/or own a business and make profit by using renters and owners as workforce and selling goods or services to them or other capitalists (or businesses).

These definitions make the relations between the classes explicit: while renters have to sell their labor force to pay for their home, they rent from the capitalists; owners are less dependent since they have at least some capital income via the imputed rent. As they do not have to pay rent, owners are also important consumers. However, they still earn the income they can use for consumption by selling their labor to capitalists. Capitalists, on the other hand, employ both renters and owners, and sell goods to both, while - in the case of main residences - they only rent out to renters.

Besides potential direct relationships such as landlord and renter, employer and employee, or producer and consumer, the functions of wealth and different forms of assets which go along with our class definition also come along with an antagonism of interests. Economic policies serve the interests of some and neglect those of others. Who these groups are is to a large degree a direct consequence of who possesses what combination of assets which is correlated but not identical to a rank in a wealth or income distribution. Renters, owners, and capitalists are thus likely opposed in terms of their interests vis-a-vis a given set of policies. This opposition can also have implications for subjective identity and be relevant for the formation of coalitions supporting certain policies and social movements.

This approach allows us to distinguish between private wealth as a substitute for public wealth (precautionary wealth), private wealth as a source for non-cash income (housing wealth used), and private wealth as a means of production generating profit (business wealth and rental income from housing wealth beyond the home).

These different forms of private wealth are tied to different classes and accompanying power relations.

As Lance Taylor recently discussed, inequality is driven by the power of capital in relation to workers and how this relationship was transformed over the past four decades (Taylor et al., 2015). Private wealth must be interpreted in relation to different volumes of public wealth and different institutional settings over time and between countries. These are relevant factors and drivers of the power relations between renters, owners, and capitalists. This conceptualization is easily overlooked when just analyzing top shares of private wealth. Today, the role of top incomes in this context is especially difficult to assess because of the role that stock buy-backs play in raising executive compensations (Lazonick and Hopkins, 2016). How wealth is used to exercise political power at the very top of the distribution can also be studied by analyzing industry contributions to political campaigns. Ferguson et al. (2018) recently employed such data to analyze this process for the 2016 Presidential Campaign.

3 Data

We use the most comprehensive wealth surveys for the United States, the United Kingdom, and continental Europe to illustrate our relational approach of analyzing wealth and wealth inequality.

The Survey of Consumer Finances (SCF) in its current form surveys United States households every three years since the 1980s. It is the gold standard of wealth surveys, using state of the art techniques in all steps of data production (Kennickell, 2012, 2011). The Board of Governors of the Federal Reserve System runs the SCF and provides detailed documentation (<https://www.federalreserve.gov/econres/scfindex.htm> [accessed on 28th January 2020]). The net sample size is about 6,300 households representing about 125 million US households. We use the 2016 wave of the SCF.

The Household Finance and Consumption Survey (HFCS) of the European Central Bank (ECB) started in 2010 and gathers information for all Euroarea and some additional countries. We use the second wave, which was mostly collected 2014, making it relatively close to the collection period of the SCF wave we use. The HFCS is a large scale a priori harmonized wealth survey closely following the SCF. The survey consists of country-level surveys which are coordinated at the ECB and closely follow the common rules with regard to all steps of data production. All the data are then validated at and provided by the ECB. The net sample size for the countries covered is about 85,000 households representing about 145 million European households. A detailed overview of the first results of the second wave of the HFCS is presented in ECB (2016a), while ECB (2016b) delivers a detailed methodological report including information about data gathering, sampling, editing, and multiple imputation. For information and a bibliography see https://www.ecb.europa.eu/pub/economic-research/research-networks/html/researcher_hfcn.en.html [accessed on 28th January 2020].

The Wealth and Asset Survey (WAS) for the United Kingdom¹ was launched in 2006 and is a biennial longitudinal survey conducted by the Official National Statistics (ONS). We use round 5 of the survey, which was collected between 2014 and 2016. The net sample of the survey consists of about 19,000 households representing about 27 million households in the UK. For information see <https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/debt/methodologies/wealthandassetssurveyqmi> [accessed on 28th January 2020].

The SCF, the HFCS, and the WAS produce population weights to reweight samples to the

¹The WAS actually covers Great Britain, excluding addresses north of the Caledonian Canal, the Scottish Islands, and the Isles of Scilly. However, we use the term United Kingdom in this paper.

overall household population. We use those weights in all calculations throughout the paper. We also use imputations (WAS) and multiple imputations (SCF and HFCS) to account for item non-response. Since we do not engage in variance estimation, we do not need to use replicate weights (HFCS and SCF) in this paper.

We summarize basic information on the surveys in table 1. It shows country-level survey information on fieldwork, net sample size, response rate, number of households represented in the target population, and survey mode.

Table 2 shows descriptive statistics of gross income and net wealth across all countries we analyze. All values are given in EUR. We do not use any adjustment for purchasing power or inflation. Such adjustments are questionable in many ways. We generally refrain from comparing absolute values across countries in this paper. Differences between means and medians are larger for net wealth than for gross income, pointing to the fact that the distribution of wealth is considerably more skewed than the distribution of income.

Table 3 shows different inequality measures such as percentile shares and ratios as well as the gini coefficient. Inequality is higher for net wealth than for gross income in all countries. Both the distribution of income and that of net wealth differ substantially between countries.

Table 1: Survey Information

	Fieldwork	Net sample size	Response rate	# of hh	Mode
Austria	2014/2015	2,997	49.8	3,862,526	CAPI
Belgium	2014/2015	2,238	30	4,796,647	CAPI
Cyprus	2014	1,289	60.4	303,242	CAPI
Estonia	2013	2,220	63.9	571,857	CAPI
Finland	2014	11,030	64.1	2,622,499	CAPI (2.5%) CATI (97.5%)
France	2014/2015	12,035	65	29,017,678	CAPI
Germany	2014	4,461	19	39,672,000	CAPI
Greece	2014	3,003	40.8	4,266,745	CAPI
Hungary	2014	6,207	38.5	4,127,671	CAPI (68.6%) CAWI(31.5%)
Ireland	2013	5,419	59.7	1,690,073	CAPI
Italy	2015	8,156	43.3	24,694,122	CAPI (92.9%) PAPI(7.1%)
Latvia	2014	1,202	52.9	828,907	CAPI
Luxembourg	2014	1,601	23.4	210,965	CAPI
Malta	2014	999	35.4	159,427	CAPI (83%) PAPI(17%)
Netherlands	2014	1,284	32	7,590,228	CAWI
Portugal	2013	6,207	54.2	4,017,981	CAPI
Poland	2014	3,483	54.2	13,492,882	PAPI
Slovakia	2014	2,136	53.4	1,855,392	CAPI
Slovenia	2014	2,553	40.5	820,541	CAPI
Spain	2011/2012	6,106	31.7	17,429,812	CAPI
United Kingdom	2014/2016	18,808	55, 69 ⁱⁱ	27,600,000	CAPI
United States	2016	6,254	65, 33 ⁱⁱⁱ	125,981,702	CAPI

Notes:

(i) Mode acronyms: Computer-assisted personal interview (CAPI); paper based personal interview (PAPI); computer-assisted web interview (CAWI).

(ii) for the WAS 55% response rate refers to the new cohort and 69% refers to the old cohort.

(iii) for the SCF 65% response rate refers to the area probability sample and 33% refers to the list sample oversampling the wealthy.

(iv) *Source:* HFCS 2014 for continental European countries. SCF 2016 for the United States. WAS 2014/2016 for United Kingdom.

Table 2: Medians and Means of Income and Wealth

Country	Gross Income		Net Wealth	
	Median	Mean	Median	Mean
Austria	35.7	43.3	85.86	258.4
Belgium	41.2	52.0	217.84	330.3
Cyprus	22.7	30.5	169.98	387.3
Germany	35.5	48.4	60.71	214.3
Estonia	11.0	17.1	43.42	97.0
Spain	24.0	31.9	159.54	273.6
Finland	40.0	50.0	108.79	193.2
France	30.5	37.6	113.14	242.7
Greece	17.6	21.2	65.04	104.2
Hungary	7.9	10.8	26.20	50.8
Ireland	39.8	54.6	100.56	216.3
Italy	25.0	33.4	147.00	225.6
Luxembourg	64.6	87.2	437.27	768.4
Latvia	8.7	14.2	14.18	40.0
Malta	22.7	27.7	210.35	338.8
Netherlands	43.8	50.3	81.88	151.1
Poland	11.9	14.7	57.07	96.4
Portugal	15.4	21.5	71.20	156.0
Slovenia	14.9	19.8	80.32	137.7
Slovakia	13.1	15.4	50.30	66.0
United States	45.2	89.4	87.87	623.3
United Kingdom	40.4	53.8	321.25	612.8

Notes:

(i) Medians and means are shown in EUR thousands (not accounted for purchasing power differences across countries or time).

(ii) *Source:* HFCS 2014 for continental European countries. SCF 2016 for the United States. WAS 2014/2016 for the United Kingdom.

Table 3: Inequality Measures of Income and Wealth

Country	Gross Income					Net Wealth				
	Top 5	Bot 50	P80/P20	P90/P50	Gini	Top 5	Bot 50	P80/P20	P90/P50	Gini
Austria	15.7	26.0	3.0	2.2	0.35	43.6	3.2	57.1	6.0	0.73
Belgium	17.3	22.7	3.8	2.4	0.39	29.9	11.3	21.2	3.2	0.59
Cyprus	18.9	20.6	4.1	2.6	0.43	43.9	6.1	16.3	4.8	0.72
Germany	22.7	20.3	3.9	2.6	0.45	46.3	2.5	112.5	7.7	0.76
Estonia	23.2	15.8	6.5	3.3	0.50	43.4	7.4	17.9	4.5	0.69
Spain	21.3	20.8	3.9	2.5	0.44	33.3	12.0	7.7	3.4	0.60
Finland	17.0	23.0	3.8	2.4	0.39	31.6	6.7	83.2	4.2	0.65
France	17.8	24.8	3.0	2.2	0.37	37.5	6.3	32.2	4.7	0.68
Greece	16.2	24.8	3.1	2.3	0.37	29.0	10.5	21.7	3.7	0.60
Hungary	20.8	21.1	3.8	2.7	0.43	35.8	9.5	10.4	4.1	0.64
Ireland	20.0	20.5	4.0	2.7	0.44	37.7	1.4	171.4	5.4	0.75
Italy	19.1	21.9	3.6	2.6	0.42	29.6	9.9	30.5	3.4	0.60
Luxembourg	20.0	22.0	3.5	2.6	0.42	36.5	8.6	31.6	3.5	0.65
Latvia	26.7	15.2	6.1	3.6	0.52	49.4	2.8	32.9	5.8	0.79
Malta	16.7	22.1	4.0	2.4	0.40	33.5	14.2	5.7	2.9	0.57
Netherlands	13.8	25.5	3.2	2.1	0.35	29.0	2.2	71.8	4.7	0.70
Poland	17.2	22.5	3.8	2.4	0.40	29.1	11.3	12.9	3.7	0.59
Portugal	21.1	21.0	3.8	2.8	0.44	36.7	7.0	25.9	5.1	0.68
Slovenia	19.6	19.5	4.7	2.7	0.45	37.9	10.7	12.4	3.2	0.63
Slovakia	17.7	22.3	3.9	2.2	0.40	23.2	17.4	5.5	2.6	0.49
United States	39.8	13.0	4.9	3.4	0.60	65.1	1.2	106.9	12.2	0.86
United Kingdom	20.6	21.2	3.9	2.6	0.43	29.3	8.7	20.0	4.7	0.62

Notes:

(i) This table shows the Top 5% share in percent of total gross income (net wealth), the share of the bottom 50% in percent of total gross income (net wealth), percentile ratios as well as the Gini index of total gross income (net wealth).

(ii) *Source:* HFCS 2014 for continental European countries. SCF 2016 for the United States. WAS 2014/2016 for the United Kingdom.

4 Results

In this section we bring our relational approach to the data and illustrate what it can add to the analyses of inequality. We report results within and between countries. For within-country results, we focus on the US, the UK, Germany, and France.² In subsection 4.1 we show the prevalence of our class typology across countries. Subsection 4.2 focuses on the income distribution, while subsection 4.3 focuses on the net wealth distribution. In subsection 4.4 we present new perspectives on inequality: we show class shares and relative class shares, class specific wealth-to-income ratios, wealth-to-income relations between classes, inequality within classes, as well as a decomposition of overall inequality by class.

4.1 Prevalence of renters, owners, and capitalists

Figure 2 shows the shares of renters, owners, and capitalists (as defined in subsection 2.3) in all countries in the analysis. The share of renters ranges from about 15% in Slovakia to about 56% in Germany; it is about 36% in the US. The share of owners ranges from roughly 30% in Germany to about 73% in Slovakia and lies at about 48% in the US. The share of capitalists is lowest in the Netherlands, with about 3%, and largest in Ireland, where more than 23% of the household population fall into that category. In the US about 15% of households are classified as capitalists. Generally, the variety across countries is rather large. However, in all countries but Germany and Austria, owners are the largest class. Figure 2 is sorted by countries' share of renters, revealing that countries with strong a strong welfare state and social housing generally have a higher share of renters. Figure B.1 in Appendix B further illustrates the role of institutions in shaping class sizes, by plotting the share of renters against social security expenditure across countries.

4.2 Class location across the income distribution

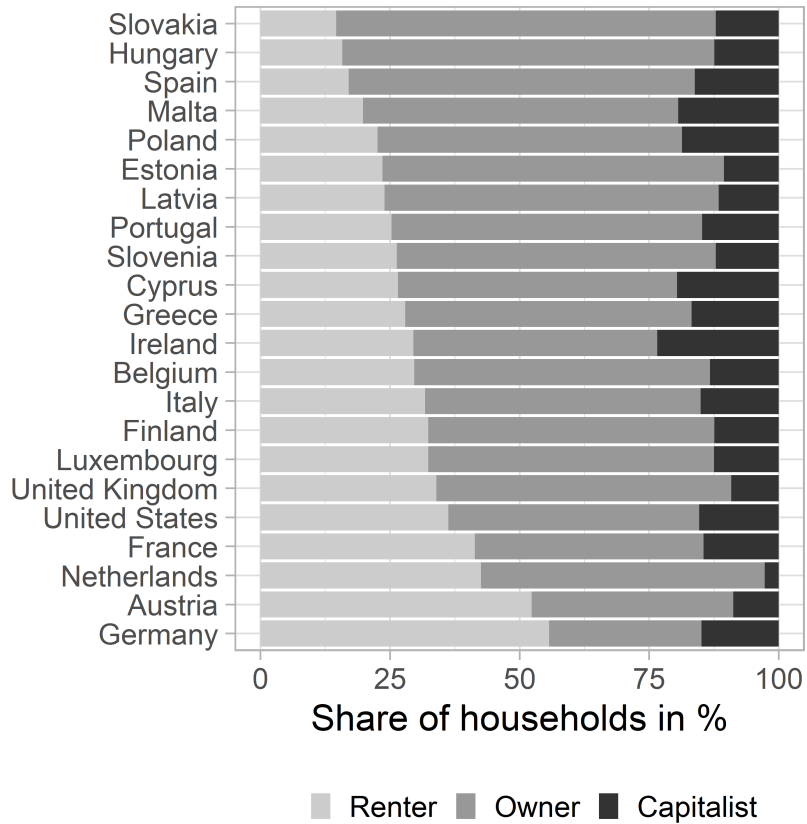
As a first step, we use the cumulative distribution function (cdf) of gross income, $F_Y(y) = P(Y \leq y)$, combined with a locally weighted linear regression to estimate the shares of owners, renters, and capitalists across the net wealth distribution.³ Figure 3 shows the resulting estimates for renters, owners, and capitalists in the US, the UK, Germany, and France.⁴ The lines can be interpreted as the probability that a household with income $y = y_0$ is a renter, owner, or capitalist. The shares of renters, owners, and capitalists align well

²All other country-level results can be found in Appendix A.

³More specifically we use a locally weighted regression (loess) using a Tukey tri-weight kernel and a bandwidth of 0.5 and apply it via R's ggplot2

⁴Figures A.1 and A.2 in Appendix A show analogous estimates for all countries we analyze.

Figure 2: RENTERS, OWNERS AND CAPITALISTS



Notes:

- (i) This graph shows the prevalence of renters, owners, and capitalists in the US, the UK, and continental European countries.
- (ii) All statistics are calculated taking into account multiple imputations (when available) and survey population weights.
- (ii) *Source:* SCF 2016 for the US; WAS 2014-2016 for the UK; HFCS 2014 for continental Europe.

with the income distribution. The probability of being a renter declines almost linearly with income in the US, the UK, Germany, and France. While it is very likely for households at the bottom of the income distribution to be renters, it is rather unlikely that high-income households are renters. At the same time, the probability of being a capitalist rises with income. Especially at the top of the income distribution, the probability of a household being in the capitalist class increases strongly in all four countries. The share of owners also rises with income, but decreases at the very top. Aside from these similarities across countries, one can see some marked differences across countries. While owners in the UK are the dominant class from the 25th percentile up to the very top, in Germany renters are the dominant class up to the 75th percentile. While capitalists dominate the top of the income distribution in the US, Germany, and France, they do not do so in the UK. Unlike in France and the US, there are almost as many renters at the top as owners in Germany.

Because of the different portfolio components corresponding with the functions of wealth, different policies will create different shares of winners and losers across the income distribution. For example, while a tax deduction of interest payments for a mortgage might create mainly winners across a large part of the income distribution in the UK, it might create mainly losers for most of the income distribution in Germany. This can translate to different interests vis-a-vis a given set of policies as well as for the formation of coalitions supporting certain policies.

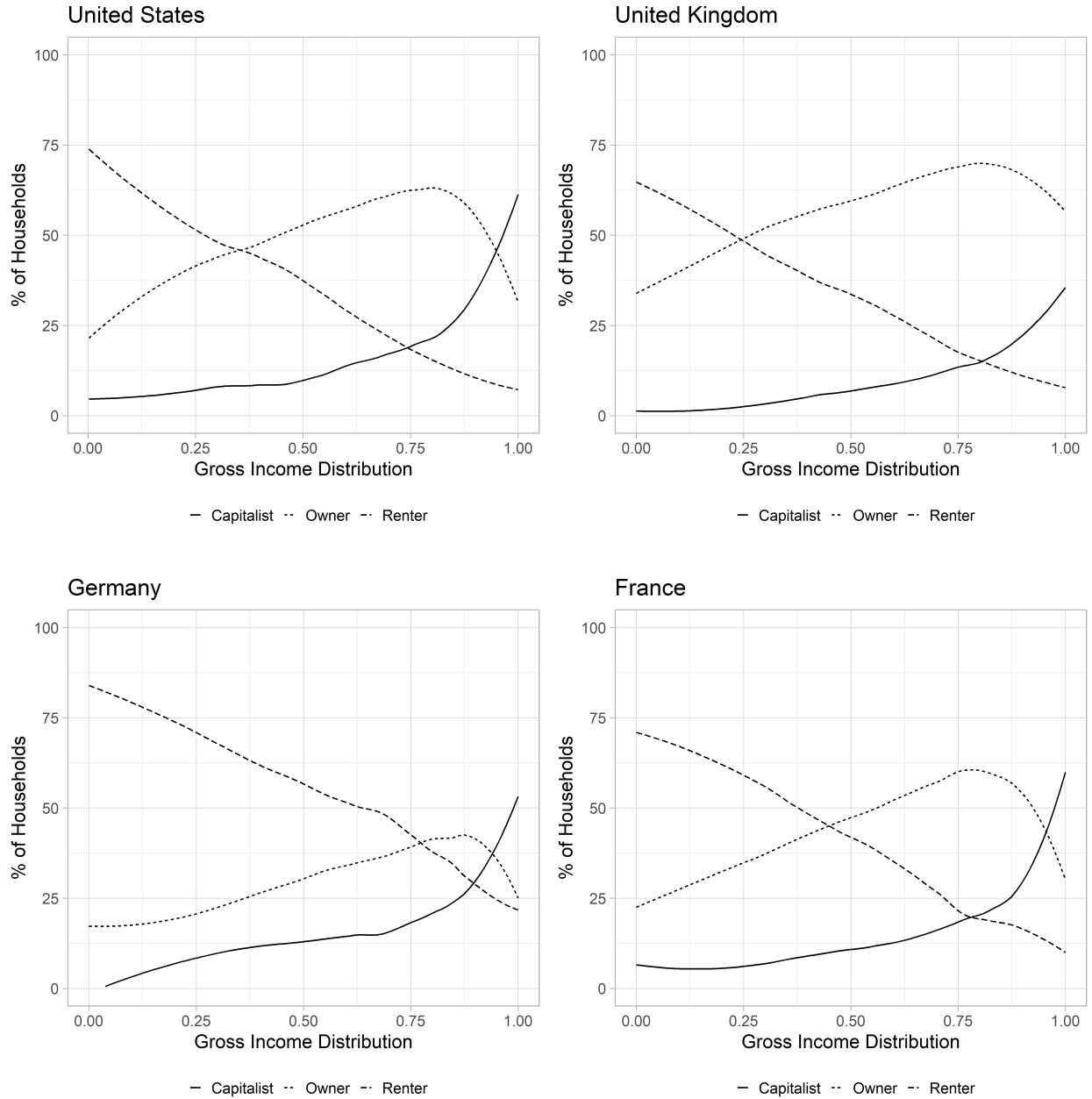
4.3 Class location across the wealth distribution

Figure 4 shows the analogous graphs for the wealth distribution. Renters, owners, and capitalists align well with the wealth distribution. Similar to the income distribution, renters are mostly found in the lower half of the wealth distribution; owners mostly in the upper-middle part; while capitalists dominate the very upper part. These patterns are more pronounced for wealth and are very different at the bottom of the net wealth distribution, where household debt is important.

There are pronounced differences across countries. While owners are the most dominant group as low as the 35th percentile in the US and the UK, there are many more homeowners at the bottom of the wealth distribution in the US. That fact reflects the ability to use high loan-to-value ratios to finance home ownership. Some of those households end up having negative net wealth, which shows up in this high share of owners at the very bottom of the wealth distribution.

This case illustrates another way in which country-level institutions interact with the location of social classes. In this case, the banking culture and/or regulatory rules directly

Figure 3: Class location across the income distribution



Notes:

- (i) This graph shows the prevalence of renters, owners and capitalists over the income distribution of the US, the UK, Germany, and France. We use a locally weighted regression estimator (loess).
- (ii) *Source:* SCF 2016 for the US; WAS 2014-2016 for the UK; HFCS 2014 for continental Europe.

influence the shape of the curve measuring the prevalence of owners across the wealth distribution. The lower loan-to-value ratio standards are, the more likely the presence of owners at the very bottom of the wealth distribution.

While in the US capitalists are very dominant at the top, the UK is the only country in our sample where owners are the dominant group up to the very top (in the survey). In Germany and to a lesser degree in France, renters are a larger class. In France, owners become the dominant group around the 40th wealth percentile; in Germany, owners make up the majority of households only between the 55th and 88th percentiles. Owners are much less dominant in Germany than in the UK, the US, and even France. The strong prevalence of capitalists at the top in Germany reflects the fact that widespread shareholding is less common in Germany and that the structure of that economy is dominated by family businesses. The former fact is also grounded in the public pension system. Figures A.3 and A.4 in Appendix A show analogous estimates for all countries we analyze.

We hypothesize that different institutions and more specifically different degrees of welfare state interventions shape the profiles of this social class typology across the wealth and income distributions. In particular, state pension systems, public health provisions, public education, unemployment insurance, and other forms of public welfare are substitutes to the precautionary function and therefore will partly crowd out the accumulation of private wealth, especially in the lower parts of the wealth distribution (see Feldstein (1974), Jappelli (1995), Alessie et al. (2013), and Fessler and Schürz (2018)). The tax system, rental subsidies, tenancy laws, and social housing all influence the threshold at which renters turn into owners. And inheritance, property, and capital income taxes as well as labor market conditions and the environment for small enterprises might be relevant for the concentration of business wealth and therefore the prevalence of capitalists across the distribution. Historical events such as war or land reforms, but also the collapse of the Eastern bloc and the various different paths of transition towards market economies for those countries, shaped the patterns of this typology across the wealth distribution. For example, most households in eastern Germany became renters of their homes formerly owned by the state, while most slovak households became homeowners. The impact of these realities on the prevalence of renters in the contemporary German and Slovak societies is still very pronounced and has led to the fact that, as shown in figure 2, Germany has the largest share of renters while Slovakia has the lowest share of renters among all observed countries.

In Appendix D we show that this pattern already existed in the US in 1962, though it was less clear cut and there was a smaller owner class. Comparing the US in 1962 and today shows clearly the rise of the new middle owner class. Today the classes are even more aligned with the wealth distribution. In the US, there are fewer renters in the middle and at the top,

and fewer capitalists in the bottom and the middle than in 1962. Generally, owners are also more likely to be found in the middle today. However, due to the availability of mortgage credit with very low downpayment we find more owners at the very bottom of distribution compared to 1962.

Class locations in the joint distribution of income and wealth for the US, the UK, Germany and France can be found in [Appendix F](#).

4.4 New perspectives on inequality

In this section we propose measures related to our approach. They allow for new perspectives on inequality and open up space to link the analysis of inequality directly to social realities.

4.4.1 Class shares

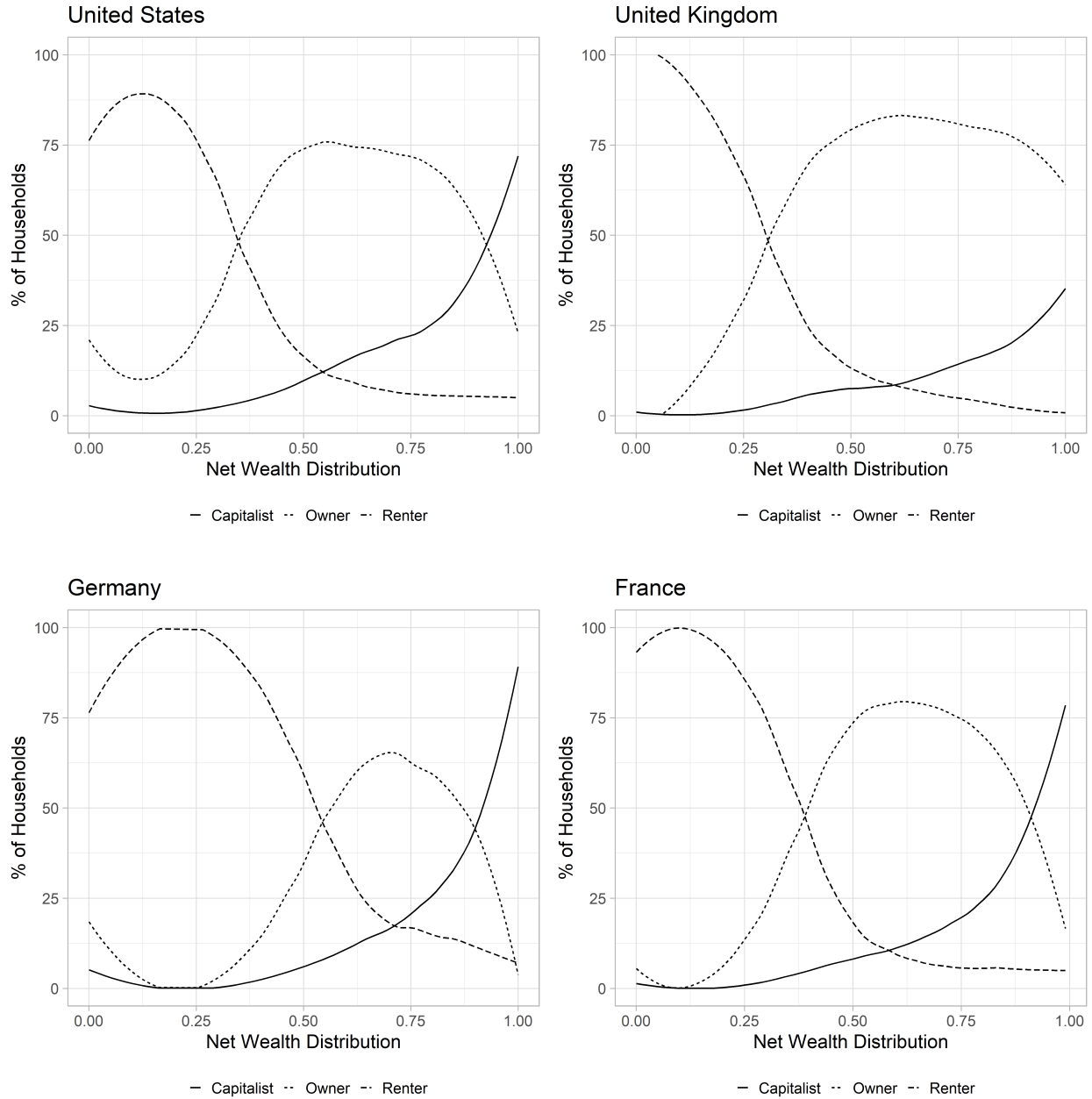
Table 4 shows the class shares in income and wealth across countries. As expected, capitalists' shares in wealth are markedly larger than their shares in income, while renters' shares in income are larger than their shares in wealth. For owners, the pattern is less clear. While owners in some countries have lower wealth than income shares, their wealth shares are considerably higher than their income shares in others.

In cross-country comparisons of percentile shares, it is unclear what the underlying households in the different countries actually have in common. Households in the top 1% in one country might have less income (or wealth) than households in the top 10% in another country. In one country, the majority of households around the 90th percentile might mostly hold wealth as productive capital in the form of business wealth, while in other countries, home ownership might be dominant. The bottom half in one country might consist mostly of home owners having non-cash income from imputed rents, while in another country it might be mostly renters depending almost only on their labor income. While for the very top of the wealth and income distribution, it might be true that they are part of a "global elite" based on business wealth, that is not the case for the bottom 50%, but also for the top 10%, top 5% and even top 1% in many countries. Meaningful cross-country comparisons therefore need concise definitions of the groups compared.

4.4.2 Relative class shares

One perspective on income and wealth shares is to relate them to the actual population shares. This approach closely relates to the usual calculation of top 1%, top 5%, top 10% or sometimes bottom 50% shares of wealth and income, as it relates the share in wealth or income and the population share. For example, a top 5% share of 30% in income means that

Figure 4: Class location across the wealth distribution



Notes:

- (i) This graph shows the prevalence of renters, owners, and capitalists over the net wealth distributions of the US, the UK, Germany, and France. We use a locally weighted regression estimator (loess).
- (ii) *Source:* SCF 2016 for the US; WAS 2014-2016 for the UK; HFCS 2014 for continental Europe.

Table 4: Class shares in income and wealth

Country	Gross Income			Net Wealth		
	Renter	Owner	Capitalist	Renter	Owner	Capitalist
Austria	41.9	43.7	14.4	10.8	47.6	41.7
Belgium	19.9	60.5	19.6	9.8	58.4	31.8
Cyprus	17.9	52.5	29.6	7.6	36.8	55.5
Germany	41.2	33.2	25.6	13.5	30.6	55.9
Estonia	15.5	62.8	21.7	7.9	56.8	35.3
Spain	12.4	63.4	24.2	4.4	54.8	40.8
Finland	19.6	59.5	20.8	3.4	63.6	33.1
France	29.4	47.2	23.5	8.6	47.4	44.0
Greece	23.9	53.3	22.8	7.3	58.7	34.0
Hungary	12.6	65.7	21.7	3.3	59.0	37.7
Ireland	20.0	46.1	33.8	4.3	36.2	59.5
Italy	21.0	51.4	27.6	4.2	58.5	37.3
Luxembourg	22.3	55.1	22.6	6.8	50.0	43.1
Latvia	18.0	57.4	24.6	11.3	49.7	38.9
Malta	13.7	60.7	25.6	2.9	51.0	46.1
Netherlands	30.9	65.1	4.0	9.1	82.5	8.3
Poland	16.3	57.2	26.5	2.7	49.9	47.3
Portugal	16.5	58.2	25.3	7.1	50.4	42.5
Slovenia	20.9	60.4	18.6	10.3	53.8	35.9
Slovakia	11.0	67.3	21.7	1.9	72.0	26.1
United States	17.1	44.5	38.3	4.7	35.1	60.2
United Kingdom	21.7	61.0	17.3	5.9	72.0	22.1

Notes:

- (i) This table shows class shares in percent of total income and wealth.
(ii) *Source:* SCF 2016 for the US; WAS 2014-2016 for the UK; HFCS 2014 for continental Europe.

the income share is six times the population share and therefore strongly overproportional. Figure 5 relates the share in gross income as well as the share in net wealth to the respective population shares of renters, owners, and capitalists. In both graphs, countries are sorted by the ratio of owners. This ratio is close to one in all countries and for both income and wealth. That means that a group's share in income and wealth is very close to its population share. Another illustrative interpretation is that a ratio of one means that the households in that class have - on average - exactly the overall average, or, the amount that every household would have given equality (of income or wealth) across all households.

In all countries, capitalists have an overproportional share in income and wealth, whereas renters have in all countries an underproportional share of income and wealth. As the wealth distribution is more unequal than the income distribution, wealth ratios generally show higher variation than income ratios. For income, the highest and lowest ratios are in the US: they are smallest for renters there (0.47, i.e. on average about half of the overall mean) and highest for capitalists there (2.5). For wealth, they are smallest for renters in Finland (0.1) and largest for capitalists in Austria (4.7, i.e. on average 4.7 times the overall mean).

Differences in country patterns are rather large. Wealth distances between renters and capitalists are largest in Austria, the United States, Germany, and Luxembourg, but with regard to income, they are among the smallest in Austria, Germany, and Luxembourg - whereas by far the largest in the United States.

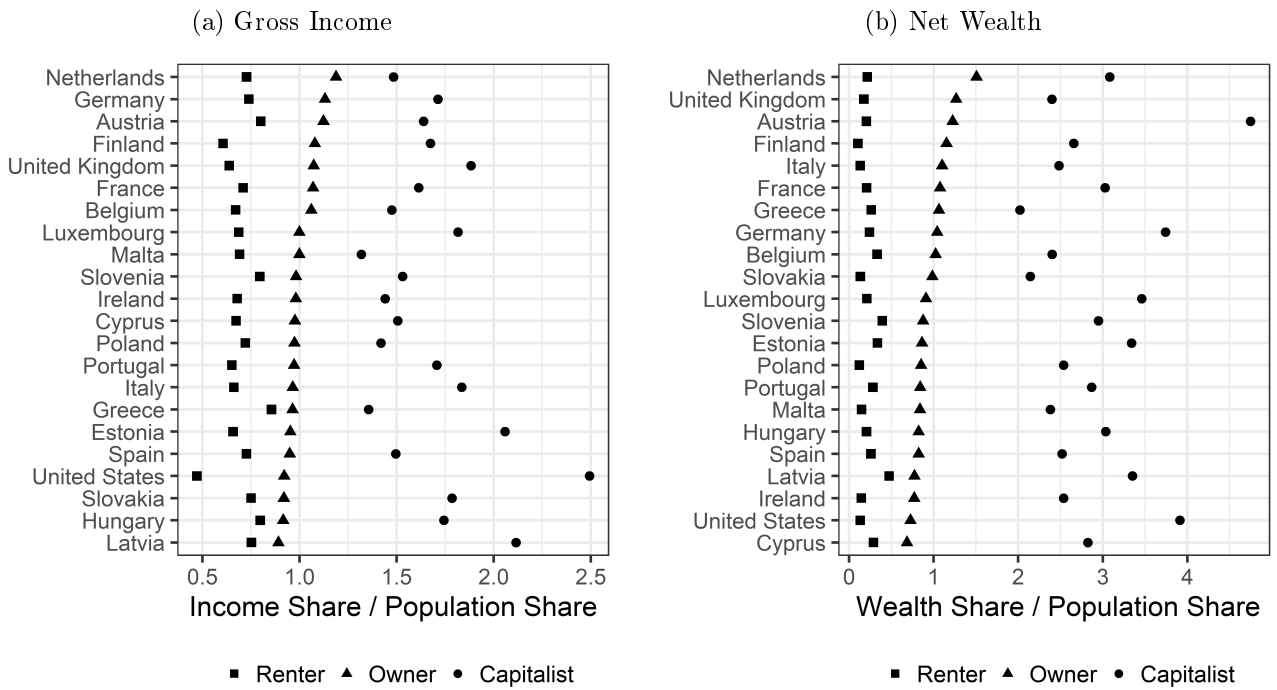
The fact that owners' shares in income and wealth are so close to their population share means that to a large degree inequality in both income and wealth is driven by differences between renters and capitalists. We will further explore this finding using decomposition methods below.

4.4.3 Class-specific wealth to income ratios

As a next step we analyze income and wealth jointly. This relation is helpful for several reasons. First, the form of income plays a major role in the definition of our social classes. Capitalists use their capital to generate capital income and/or use their real estate wealth to do so by renting to renters. Renters pay this rent from their income, whereas owners use their wealth (homes) to live in and do not have to pay rent for it, but generate the non-cash income in the form of imputed rent (which is not included in our definition of gross income).

Second, the capital-to-income ratio prominently used by [Piketty \(2017\)](#) is a major measure of capital accumulation and the importance of inherited wealth versus wealth created in a given year. We look at the wealth-to-income relation at the micro level, which shows us how this relation varies for different social classes inside and between countries. It also gives us an idea of how important inheritances are within social classes and therefore is a proxy for

Figure 5: Class shares of income and wealth in relation to population shares



Notes:

(i) These graphs show shares of income and wealth in relation to the population share of renters, owners, and capitalists for all countries.

(ii) *Source:* SCF 2016 for the US; WAS 2014-2016 for the UK; HFCS 2014 for continental Europe.

the stability of class membership and class location over generations.

Third, our survey data allows us to analyse wealth and income jointly. Income is a major source of wealth and – along with generating income – it is a major function of wealth to serve as a resource of consumption in times with little or no income.

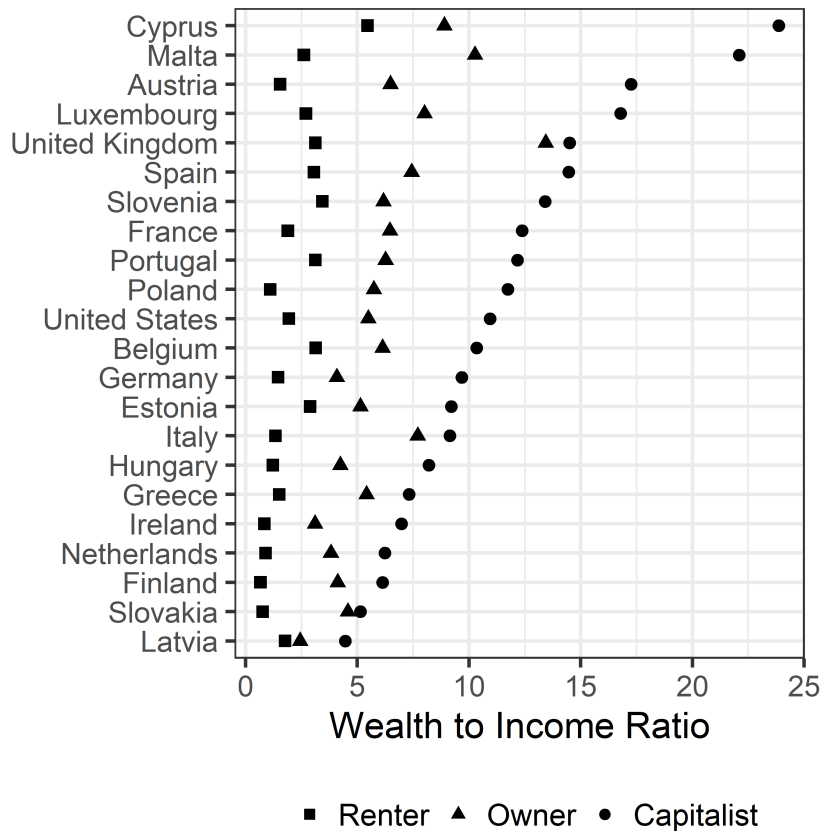
Figure 6 shows class-specific wealth-to-income ratios, similar to the economy-wide capital-to-income ratios provided by [Piketty \(2017\)](#) and others. The wealth-to-income ratios are to be interpreted as a form of disaggregated capital-to-income ratios, which are usually defined as the capital stock divided by national income of an economy. The wealth-to-income ratios shown are based on means. The owners' ratios are about the size of the macro figures while the renters have substantially lower wealth-to-income ratios in all countries. Capitalists, on the other hand, have substantially higher ratios. Ratios of owners also show how expensive home ownership is relative to the typical income of an owner. The large ratios of capitalists reflect the higher probability of inheritances in this class as well as the larger amounts of wealth they inherit. Differences between classes are by far larger than differences between countries.

4.4.4 Class-relating wealth-to-income ratios

Figure 7 takes this analysis a step further and relates the mean (median) wealth of capitalists to the mean (median) income of renters. It therefore directly speaks to an important social relation in society. It answers the question of how many typically priced years of labor a capitalist, who has relevant cash income from wealth, can buy from a renter, who relies completely on labor income and does not have relevant cash- (income from renting out real estate or self-employed business) or non-cash (owner occupation) income. This measure of social distance varies from 11 (Greece) to 57 (US) years, if one uses average capitalist wealth to renters' average yearly income. If medians are used instead of means, it varies from 8 years in Slovakia to 36 years in the United Kingdom. As can be seen in figure 7 the ranking of countries is highly correlated between the use of means (which gives more weight to the very wealthy) and medians (which relates more to the typical capitalist and renter).

More directly, as economy-wide capital-to-income ratios, these social class-specific wealth-to-income ratios as well as the relation between capitalists' wealth and renters' income measure the relevance of inheritances as well as the potential of social mobility through labor income in a society. They are measures of inequality directly linked to social realities.

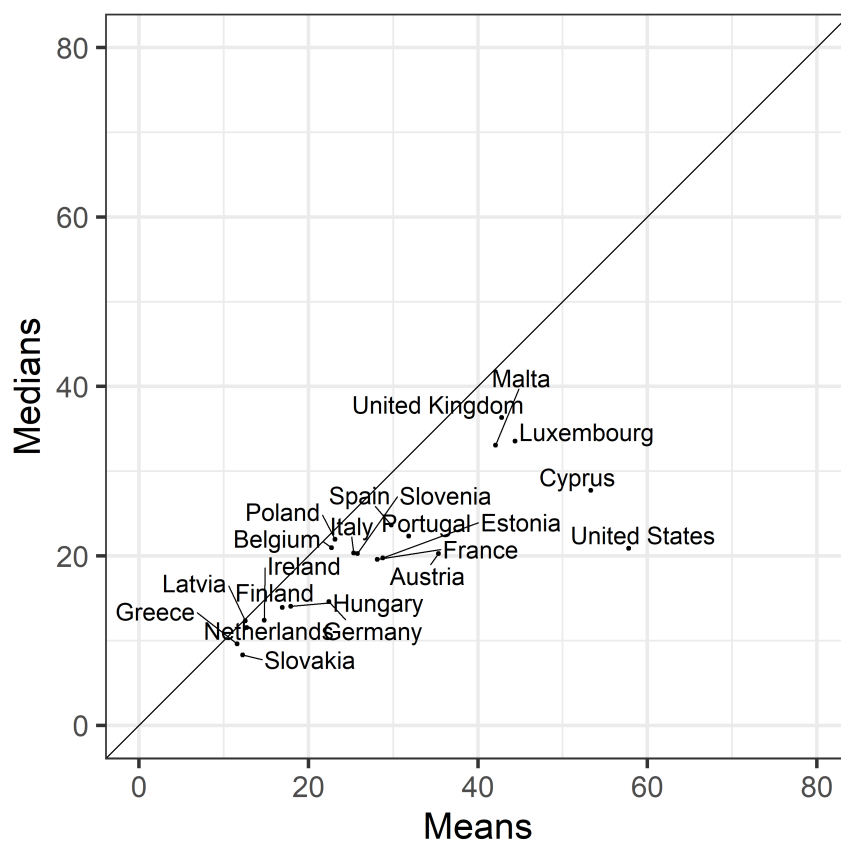
Figure 6: Wealth to income ratios of renters, owners and capitalists



Notes:

- (i) This graph shows wealth to income ratios for renters, owners and capitalists in the US, the UK and continental European countries.
- (ii) All statistics are calculated taking into account multiple imputations (when available) and survey population weights.
- (iii) *Source:* SCF 2016 for the US; WAS 2014-2016 for the UK; HFCS 2014 for continental Europe.

Figure 7: Capitalists' mean (median) wealth in years of renters' mean (median) income



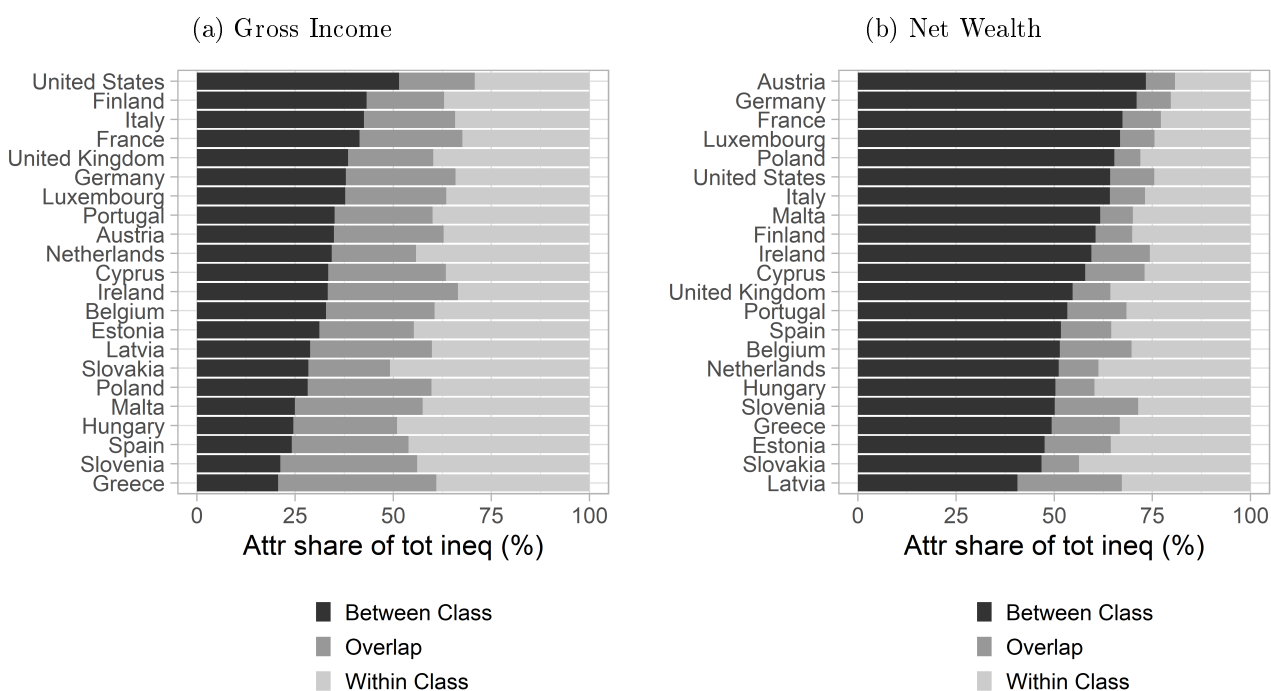
Notes:

- (i) These graphs show capitalists' mean (median) wealth in renters' mean (median) yearly income across countries.
- (ii) *Source:* SCF 2016 for the US; WAS 2014-2016 for the UK; HFCs 2014 for continental Europe.

4.4.5 Class-based inequality decomposition

Figure 8 shows a decomposition of the Gini coefficient by class.⁵ In all countries, between-class inequality explains much more of the overall wealth inequality than overall income inequality. Moreover, the overlap is larger in the case of income inequality. Since classes relate to portfolio components and different forms of income, the shares of winners and losers of certain policies targeting wealth or income components will likely more clearly align with the wealth than with the income distribution. Also, coalitions in favor of certain policies might more easily align along the wealth distribution and specific forms of ownership of certain assets such as homes (owners and capitalists) or real estate and businesses (capitalists).

Figure 8: Gini decomposition by class



Notes:

- (i) These graphs show decompositions of the gini index by class and how much of total inequality is attributable to between-class and within-class-inequality as well as the overlap of both.
- (ii) *Source:* SCF 2016 for the US; WAS 2014-2016 for the UK; HFCS 2014 for continental Europe.

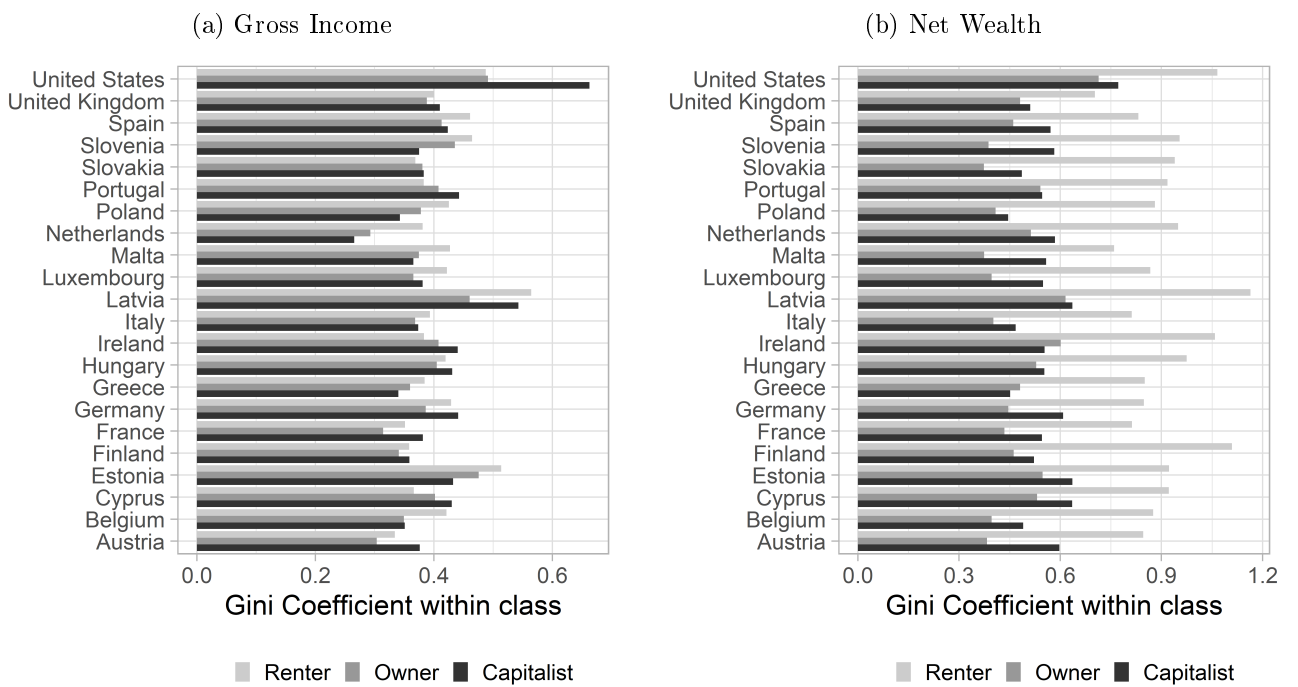
⁵We use the classical Gini decomposition proposed by [Mookherjee and Shorrocks \(1982\)](#) and implement it with R's `decomp` package.

4.4.6 Within-class inequality

In order to develop common interests in a social class, between-class inequality might matter – but a different degree of homogeneity within class might also be relevant. Therefore we show within-class inequality in figure 9. With regard to income, within-class inequality is very similar across all classes. In the US capitalists seem to show somehow higher levels of inequality. With regard to wealth, it is rather clear that renters show the highest within-class inequality in all countries.

We hypothesize that this heterogeneity has implications for subjective identity and is relevant for the formation of coalitions supporting certain policies and social movements. Renters are therefore hardest to target and mobilize as a group when it comes to certain policies as the antagonisms of interests vis-a-vis certain policies might be largest within this class. Even though they share the characteristic of not owning a home or a direct business participation and not renting out further real estate, renters spread much more widely across the wealth distribution, since some of them have substantial financial assets including stocks or bonds. Owners show the lowest within-class inequality of wealth and their single most important wealth item is their home. Their status as homeowners may be an important part of their identity and daily life, making them easier to target and mobilize in political campaigns.

Figure 9: Within-Class Gini Coefficients



Notes:

- (i) These graphs show gini coefficients calculated within class.
- (ii) *Source:* SCF 2016 for the US; WAS 2014-2016 for the UK; HFCS 2014 for continental Europe.

5 Conclusion

The wealth distribution is typically analysed by observing deciles, percentiles, and top-shares of wealth in a one-dimensional way. But looking at the wealth distribution alone does not provide a picture of the social implications of wealth. We gain additional insight by classifying households based on the functions of their wealth holdings and combine the approach with a joint analysis of wealth and income.

We proposed a relational approach by focusing on different functions of wealth and operationalized it by empirically analyzing renters, owners, and capitalists. We defined renters as those who rent their home and have to pay others (capitalists or the state) in order to live in their home. We defined owners as those who own their home and therefore generate some income from wealth via imputed rent. Finally, we defined capitalists as those who own their home and who also generate capital income through owning a self-employed business or by having rental income from other real estate properties.

Employing data for Europe and the US, we showed that our relational approach aligns well with the income and wealth distributions, but in ways that vary considerably across countries. In every country we consider, renters are primarily located in the bottom, owners in the middle, and capitalists at the top of the income and wealth distributions. But at the same time, the two switching points in the wealth distribution where upwards there are at every point more owners than renters and - at a higher wealth level - more capitalists than owners, varies considerably across countries.

We further proposed measures of inequality which are directly linked to social realities. Our class-based share of income (wealth)-to-population share ratios show that while owners tend have average levels of income and wealth (ratios close to 1), most inequality is explainable by differences between renters and capitalists. Our disaggregated class-specific wealth-to-income ratios show the owners' ratios are about the size of the macro figures (around 5–6), while the renters have substantially lower wealth-to-income ratios in all countries (mostly below 2.5). Capitalists, on the other hand, have substantially higher ratios (for the majority of countries, including the US, above 10). Clearly, differences between classes are by far larger than differences between countries.

Our wealth-to-income ratios between capitalists (wealth) and renters (income) vary from 11 (Greece) to 57 (US) years of renters' income if one uses means of capitalist wealth to renters' mean yearly income. If medians are used, it varies from 8 years in Slovakia to 36 years in the United Kingdom. Finally, inequality decompositions show that while the US is the only country in which more than 50% of overall income inequality is explained by between-class inequality, that is true with regard to wealth for almost all countries. Within-

class inequality is very similar for all classes in all countries in the case of income. With regard to wealth, it is rather clear that renters show the highest within-class inequality in all countries.

All in all, we see different forms of wealth to be dominant for different parts of the wealth distribution: financial wealth of renters at the bottom, real estate wealth of owners in the middle, and business and real estate wealth for capitalists at the top of the wealth distribution. This corresponds to different wealth levels. But there is also a link between forms of wealth and functions of wealth. To exercise power in society, neither a savings book nor an owned main residence is decisive.

We showed that social class is key in order to understand wealth inequality. Too often, wealth analyses hide behind deciles, percentiles, and top shares. Rather arbitrary narratives about power and production relations between social classes are only added afterwards in interpretations. The main advantage of our approach is that typically implicitly assumed links to power and production relations are now made explicit. On top of that, such an approach can be directly linked to questions of justification of wealth inequality and allows us to distinguish between wealth as a means of capitalist production, as a substitute for public wealth (precautionary wealth), and as a source for non-cash income (housing wealth used). This allows us to use measures of inequality directly linked to social reality.

References

- Alessie, Rob, Viola Angelini, and Peter van Santen**, “Pension wealth and household savings in Europe: Evidence from SHARELIFE,” *European Economic Review*, 2013, *63*, 308–328.
- Alvaredo, Facundo, Anthony B. Atkinson, Thomas Piketty, and Emmanuel Saez**, “The Top 1 Percent in International and Historical Perspective,” *Journal of Economic Perspectives*, Summer 2013, *27* (3), 3–20.
- , **Salvatore Morelli, and Anthony B. Atkinson**, “Top wealth shares in the UK over more than a century,” Working Papers 2017:01, Department of Economics, University of Venice “Ca’ Foscari” 2017.
- Bourdieu, P.**, “The Forms of Capital,” *Readings in Economic Sociology*, 2002, *Blackwell Publishers*, 280.
- Davies, James B. and Anthony F. Shorrocks**, “The Distribution of Wealth,” in A.B. Atkinson and F. Bourguignon, eds., *Handbook of Income Distribution*, Elsevier, 2000, chapter 605-75.
- ECB**, “The Household Finance and Consumption Survey: results from the second wave,” *ECB Statistical Paper Series*, December 2016, *European Central Bank* (18).
- , “Methodological Report,” *ECB Statistical Paper Series*, December 2016, *European Central Bank* (17).
- Feldstein, Martin**, “Social Security, Induced Retirement, and Aggregate Capital Accumulation,” *Journal of Political Economy*, 1974, *82*, 905–926.
- Ferguson, Thomas, Paul Jorgensen, and Jie Chen**, “Industrial Structure and Party Competition in an Age of Hunger Games: Donald Trump and the 2018 Presidential Election,” *Institute for New Economic Thinking Working Paper Series*, 2018, *66*.
- Fessler, Pirmin and Martin Schürz**, “Private wealth across European countries: the role of income, inheritance and the welfare state,” *Journal of Human Development and Capabilities*, 2018, *19*, 521–549.
- Hugrée, Cedric, Étienne Penissat, and Alexis Spire**, *Les classes sociales en Europe: Tableau des nouvelles inégalités sur le vieux continent*. 2017.

- Jappelli, Tullio**, “Does social security reduce the accumulation of private wealth? Evidence from Italian survey data.,” *Ricerche Economiche*, 1995, 49, 1–31.
- Jenkins, Stephen P**, “The Distribution of Wealth: Measurement and Models,” *Journal of Economic Surveys*, 1990, 4 (4), 329–60.
- Keister, L. A. and S. Moller**, “Wealth inequality in the United States,” *Annual Review of Sociology*, 2000, 26, 63–81.
- Kennickell, Arthur**, “Look again: editing and imputation of SCF panel data,” *Federal Reserve Working Paper*, 2011, prepared for the Joint Statistical Meeting.
- , “Changes in U.S. Family Finances from 2007 to 2010: Evidence from the Survey of Consumer Finances,” *Federal Reserve Bulletin*, 2012, 98.
- Killewald, A., F. T. Pfeffer, and J. N. Schachner**, “Wealth inequality and accumulation,” *Annual Review of Sociology*, 2017, 43, 379–404.
- Kopczuk, Wojciech and Emmanuel Saez**, “Top Wealth Shares in the United States, 1916-2000: Evidence from Estate Tax Returns,” *National Tax Journal*, June Cita 2004, 57 (2), 445–87.
- Lazonick, William and Matt Hopkins**, “If CEO Pay Was Measured Properly, It Would Look Even More Outrageous,” <https://www.ineteconomics.org/perspectives/blog/if-ceo-pay-was-measured-properly-it-would-look-even-more-outrageous>, 2016.
- Mookherjee, D. and A. Shorrocks**, “A decomposition analysis of the trend in UK income inequality,” *Economic Journal*, 1982, 92:368, 886–902.
- OECD**, “Guidelines for micro statistics on household wealth,” *OECD*, 2013.
- , “In It Together: Why Less Inequality Benefits All,” *OECD*, 2015.
- Piketty, Thomas**, “On the Long-Run Evolution of Inheritance: France 1820–2050,” *The Quarterly Journal of Economics*, 2011, 126 (3), 1071–1131.
- , *Capital in the Twenty-First Century* 2013.
- , “Toward a Reconciliation between Economics and the Social Sciences,” in Heather Boushey, J. Bradford DeLong, and Marshall Steinbaum, eds., *After Piketty - The Agenda for Economics and Inequality*, Cambridge: Harvard University Press, 2017, chapter 5.

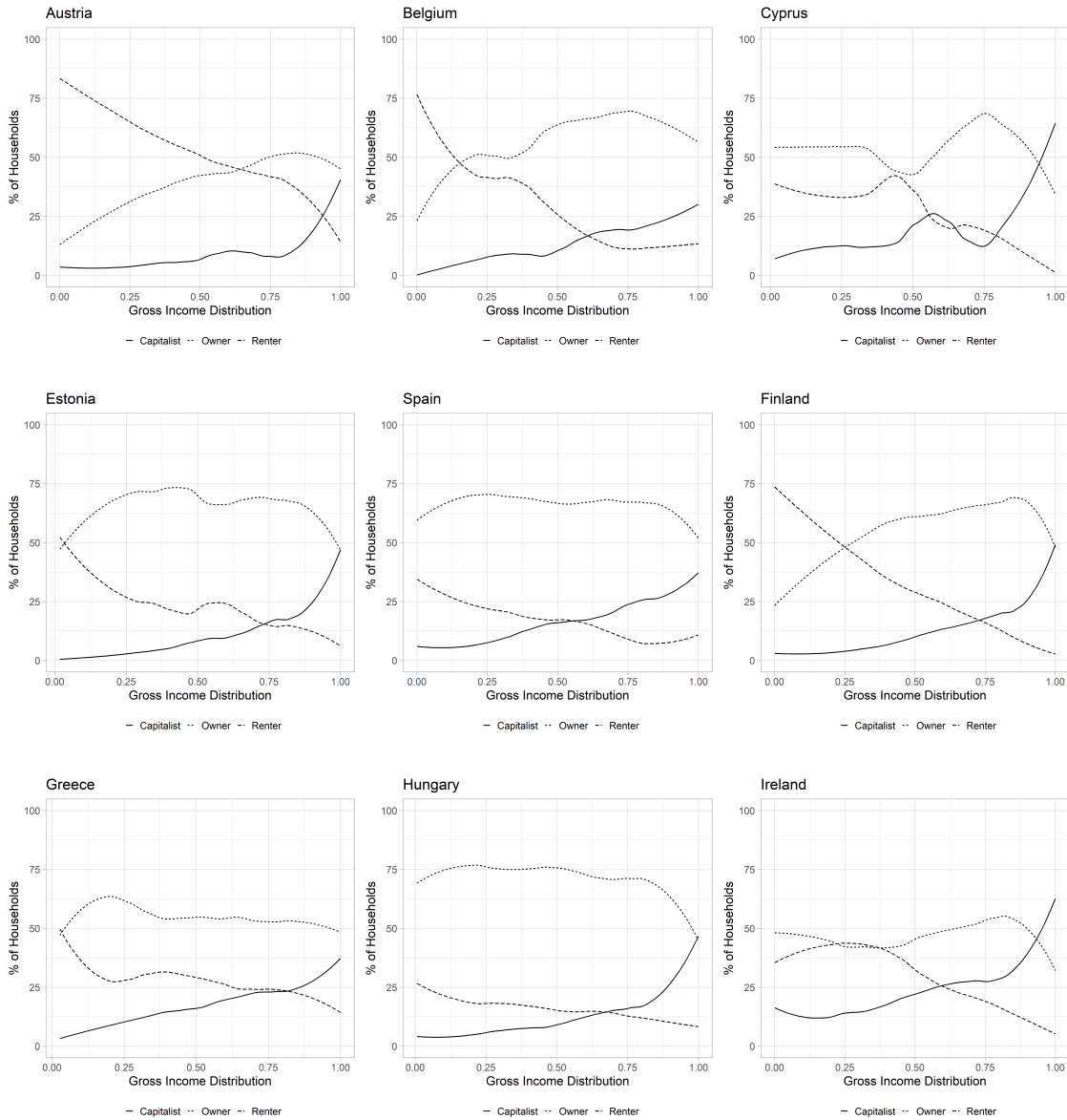
- Saez, Emanuel and Gabriel Zucman**, “Wealth Inequality in the United States since 1913: Evidence from Capitalized Income Tax Data,” *Quarterly Journal of Economics*, 2016, *131(2)*, 519–578.
- Saez, Emmanuel and Thomas Piketty**, “Top Incomes and the Great Recession and policy implications.,” *13. Jacques Polak Annual Research Conference*, 2012, p. IMF Washington D.C.
- Schürz, Martin**, *Überreichtum*. 2019.
- Sierminska, Eva, Andrea Brandolini, and Timothy Smeeding**, “The Luxembourg Wealth Study: A cross-country comparable database for household wealth research,” *Journal of Economic Inequality*, December 2006, *4 (3)*, 375–383.
- Spilerman, S.**, “Wealth and stratification processes,” *Annual Review of Sociology*, 2000, *26*, 497–524.
- Taylor, Lance, Özlem Ömer, and Armon Rezai**, “Wealth Concentration, Income Distribution, and Alternatives for the USA,” *Institute for New Economic Thinking Working Paper Series*, 2015, *17*.
- Therborn, Göran**, “Class in the 21st Century,” *New Left Review*, 2012, *78*.
- Wright, Erik Olin**, “Foundations of a neo-Marxist class analysis,” in Erik Olin Wright, ed., *Approaches to Class Analysis*, Cambridge: Cambridge University Press, 2005, chapter 1.

Appendix A Country level figures

Prevalence across the income distribution. Figures [A.1](#) and [A.2](#) show the prevalence of renters, owners and capitalists across the gross income distribution in all continental European (HFCS) countries.

Prevalence across the net wealth distribution. Figures [A.3](#) and [A.4](#) show the prevalence of renters, owners and capitalists across the net wealth distribution in all continental European (HFCS) countries.

Figure A.1: Class across the income distribution in European countries

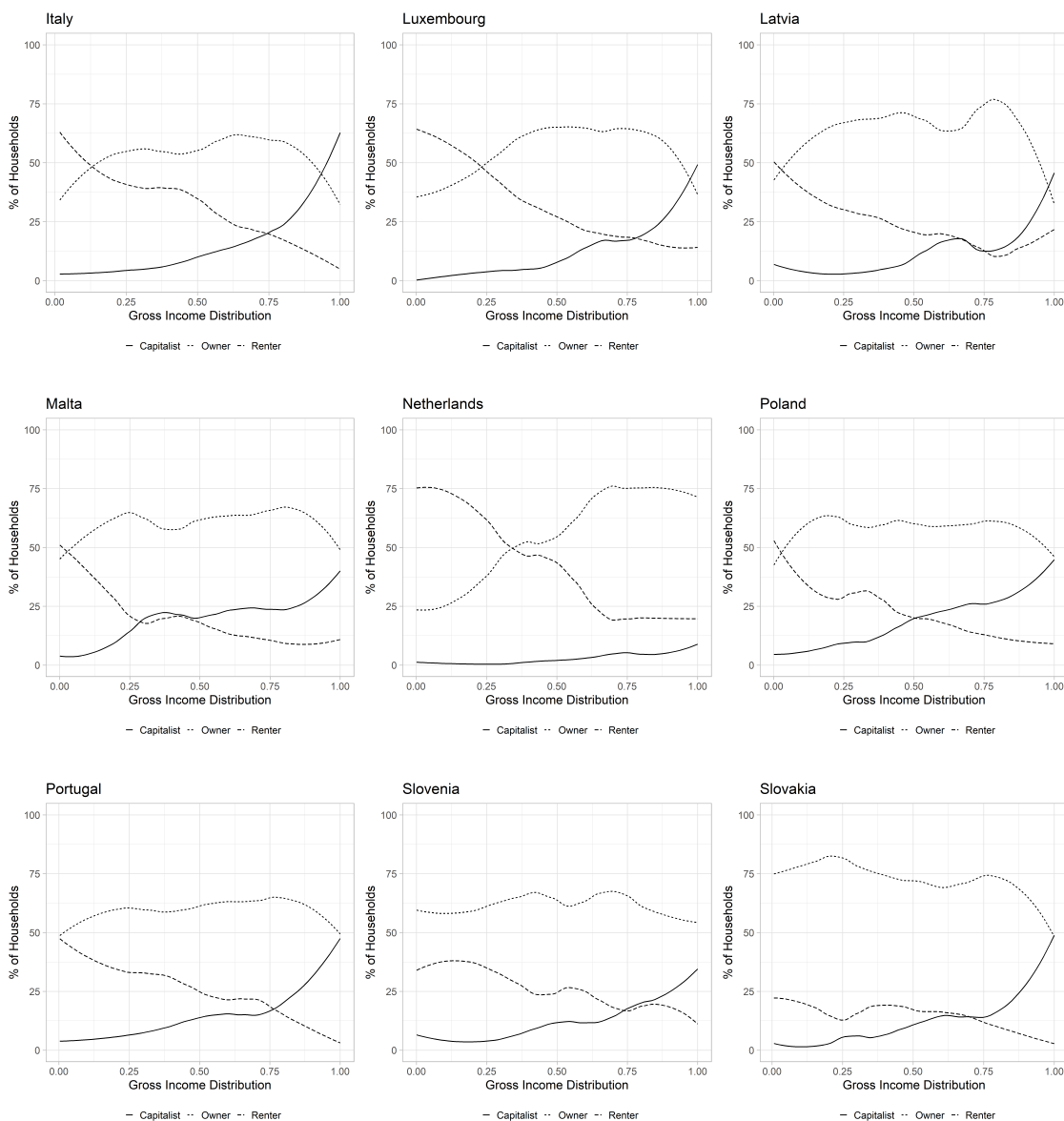


Notes:

(i) These graphs show the prevalence of renters, owners and capitalists over the gross income distribution for different countries. We use a local polynomial estimator.

(ii) *Source:* HFCS 2014.

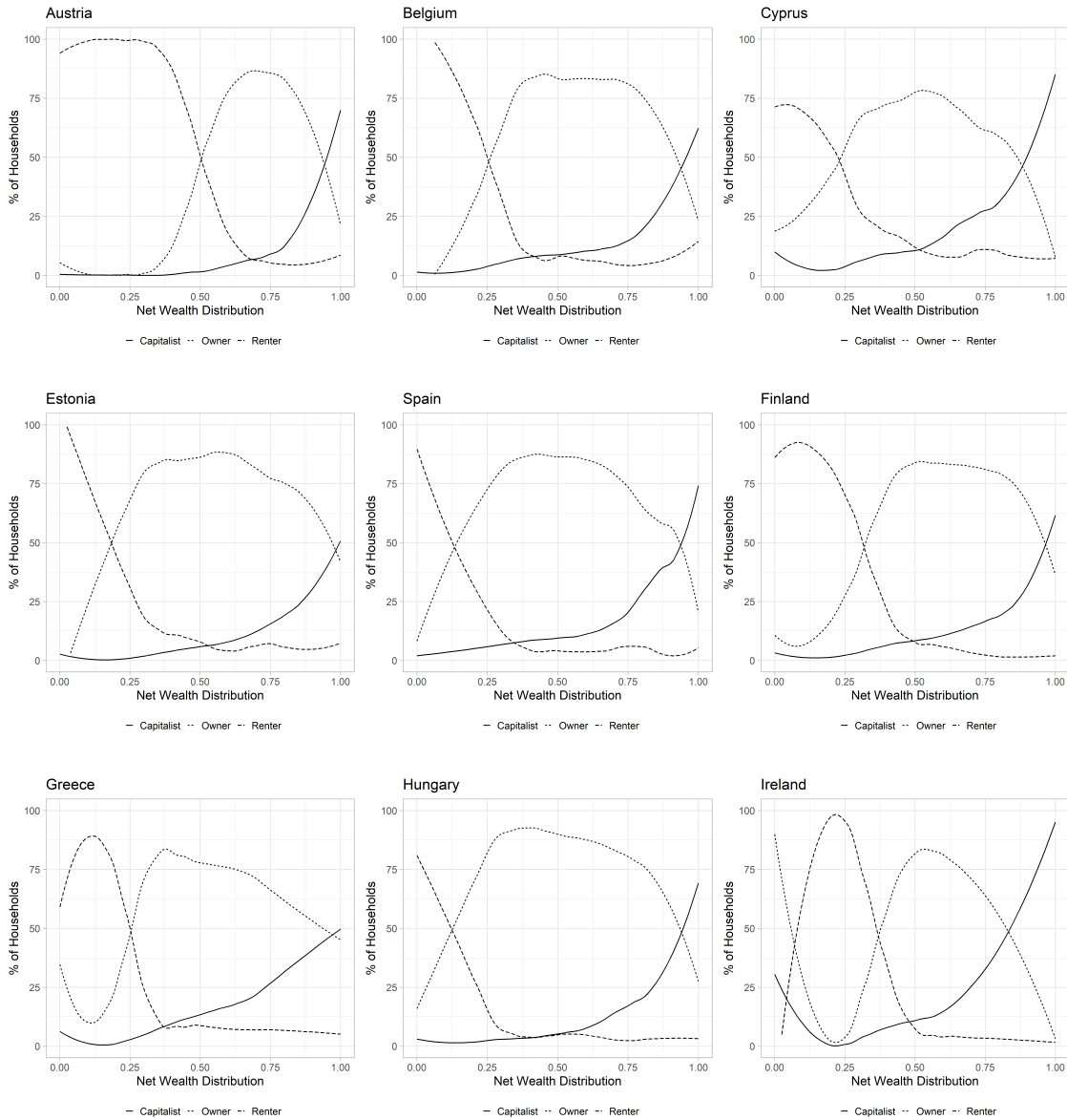
Figure A.2: Class across the income distribution in European countries



Notes:

- (i) These graphs show the prevalence of renters, owners and capitalists over the gross income distribution for different countries. We use a local polynomial estimator.
- (ii) *Source:* HFCS 2014.

Figure A.3: Class across the net wealth distribution in European countries

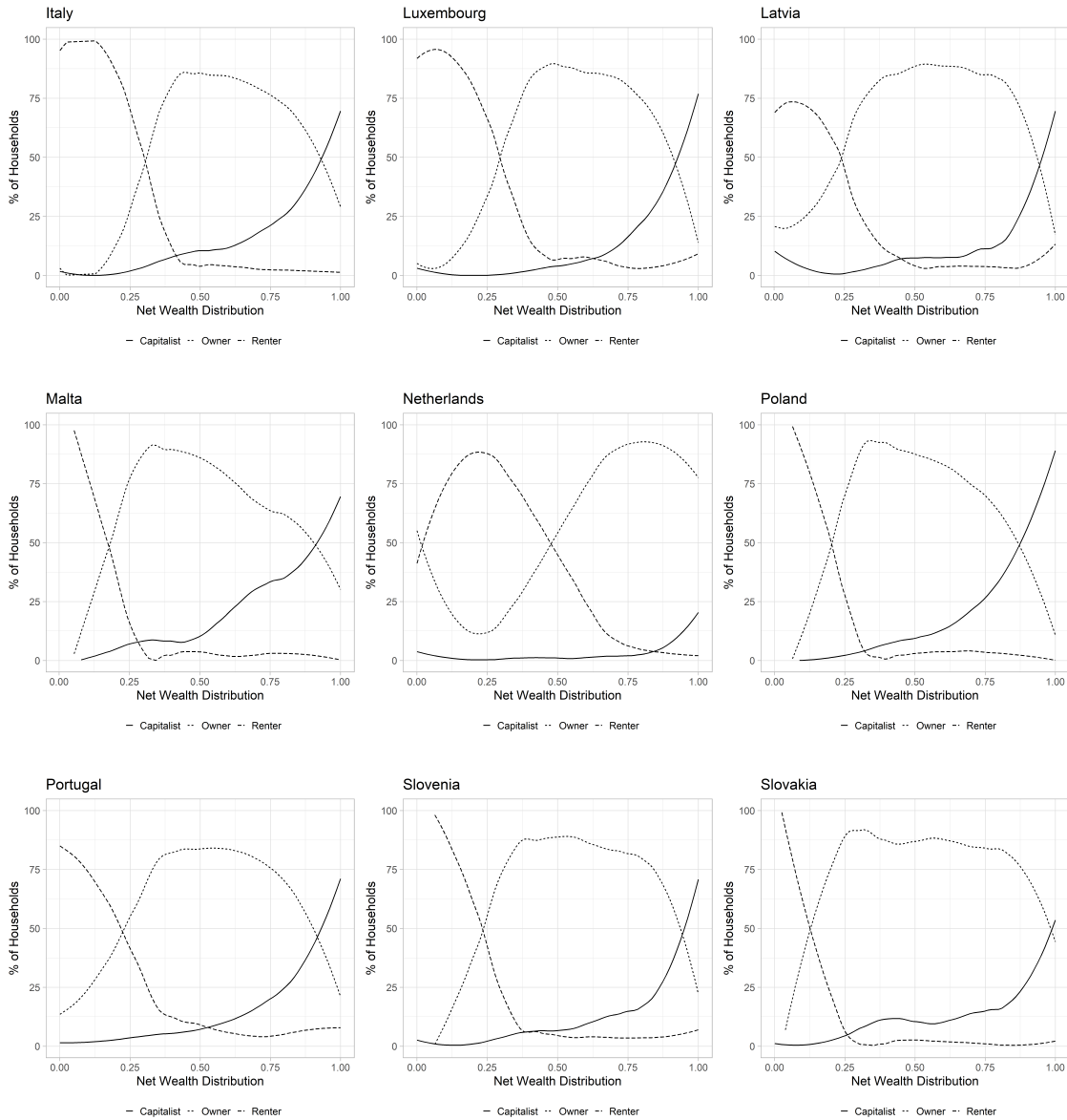


Notes:

(i) These graphs show the prevalence of renters, owners and capitalists over the net wealth distribution for different countries. We use a locally weighted regression estimator (loess).

(ii) *Source:* HFCS 2014.

Figure A.4: Class across the net wealth distribution in European countries



Notes:

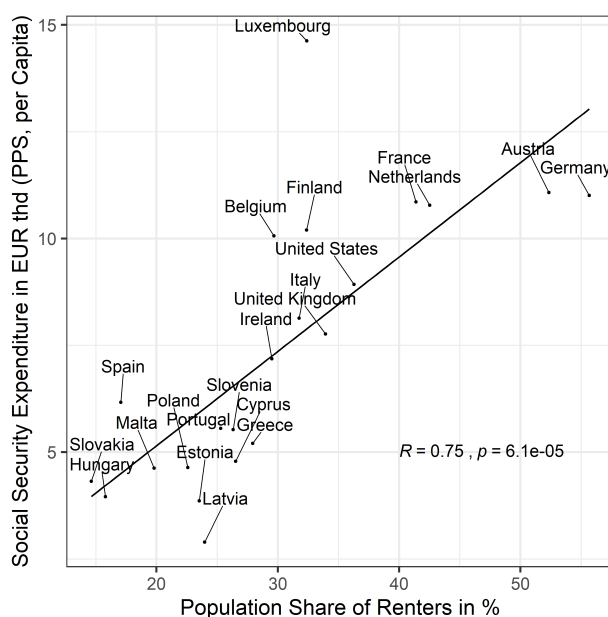
(i) These graphs show the prevalence of renters, owners and capitalists over the net wealth distribution for different countries. We use a locally weighted regression estimator (loess).

(ii) *Source:* HFCS 2014.

Appendix B Class and the Welfare State

Prevalence of renters and social security expenditure Figure B.1 shows the prevalence of renters as well as social security expenditure per capita across countries. Social security expenditure serves as substitute for precautionary private wealth accumulation. One can see a statistically highly significant strong positive relationship.

Figure B.1: Share of renters and social security expenditure



Notes:

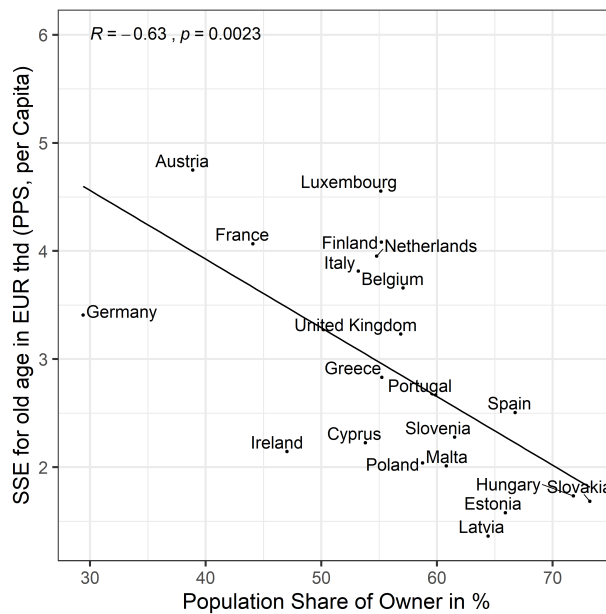
(i) This graph shows the prevalence of renters as a share of all households and social security expenditure per capita in EUR thousands using purchasing power standards (2016; Eurostat for European Countries and OECD for the US).

(ii) *Source:* WAS 2014/2016. SCF 2013. HFCS 2014. OECD, EUROSTAT 2016.

Prevalence of owners and old age expenditure Figure B.2 shows the prevalence of owners as well as old age expenditure per capita across countries. Housing ownership serves as a substitute for old age provision. One can see a highly significant negative relationship between what the state spends for old age and the share of owners.

Net wealth share of the bottom 50 and social security expenditure Figure B.3 shows the share in net wealth of the bottom 50% of households in the net wealth distribution. In the lower half precautionary saving dominates. Public social security expenditure is a

Figure B.2: Share of owners and expenditure for old age



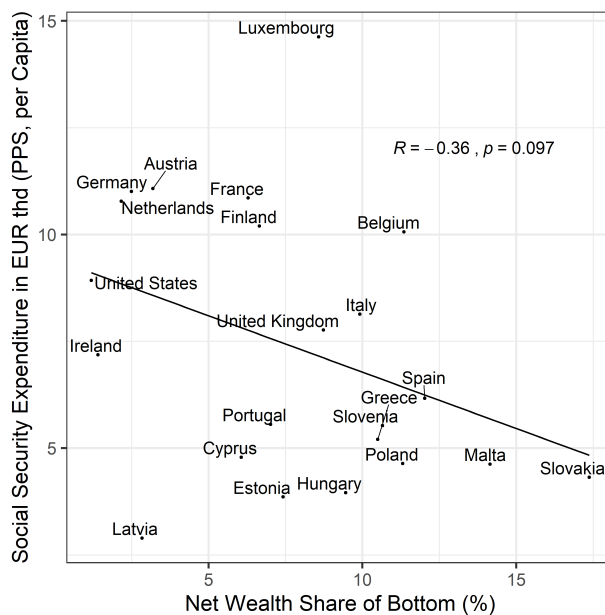
Notes:

(i) This graph shows the prevalence of owners as a share of all households and social security expenditure for old age per capita in EUR thousands using purchasing power standards (2016; Eurostat for European Countries and OECD for the US).

(ii) *Source:* WAS 2014/2016. SCF 2013. HFCS 2014. OECD, EUROSTAT 2016.

substitute for private precautionary wealth.

Figure B.3: Net wealth share of bottom 50 and social security expenditure



Notes:

(i) This graph shows the net wealth share of the bottom 50 % in the net wealth distribution and security expenditure per capita in EUR thousands using purchasing power standards (2016; Eurostat for European Countries and OECD for the US).

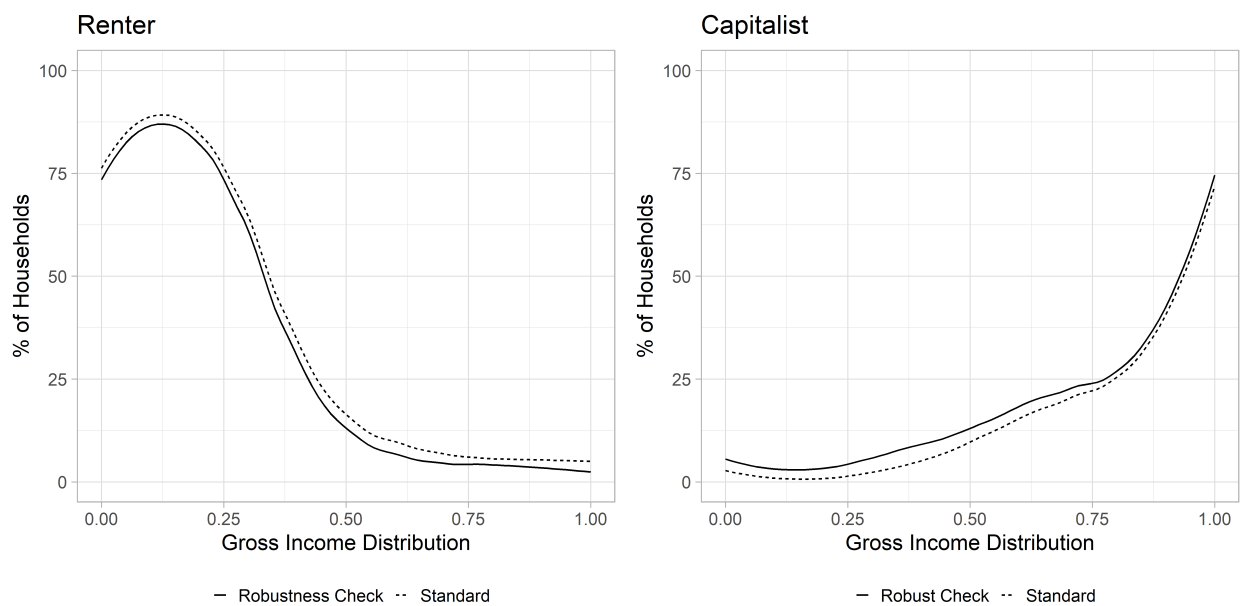
(ii) *Source:* WAS 2014/2016. SCF 2013. HFCS 2014. OECD, EUROSTAT 2016.

Appendix C Robustness of class definition

We use the US data here for illustrative reasons. Similar results can be shown with data from the UK or continental Europe. To check the robustness of our approach we compare our definition of renters, owners and capitalists with a more classical approach, where all households with self-employed businesses or income from renting out real estate are the capitalists, no matter if they are owner occupiers and split all others into renters or owners. As one can see in figure C.1 that does not change the result qualitatively. However, we think our preferred specification fits social reality better, as the self-employed business owners who are renters tend to be the ones which are self-employed because they have atypical contracts rather than businesses.

We also check if the alignment between our definition and the wealth distribution is driven by age. Age is particularly relevant for wealth accumulation. To control if age

Figure C.1: Typology Comparison



Notes:

(i) This shows the prevalence of renters, owners and capitalists in the US according to our preferred and an alternative typology, where all business owners are considered as capitalists disregarding of their status as owner occupiers and the rest of the population is sorted according to their owner occupier status.

(ii) *Source:* SCF 2016.

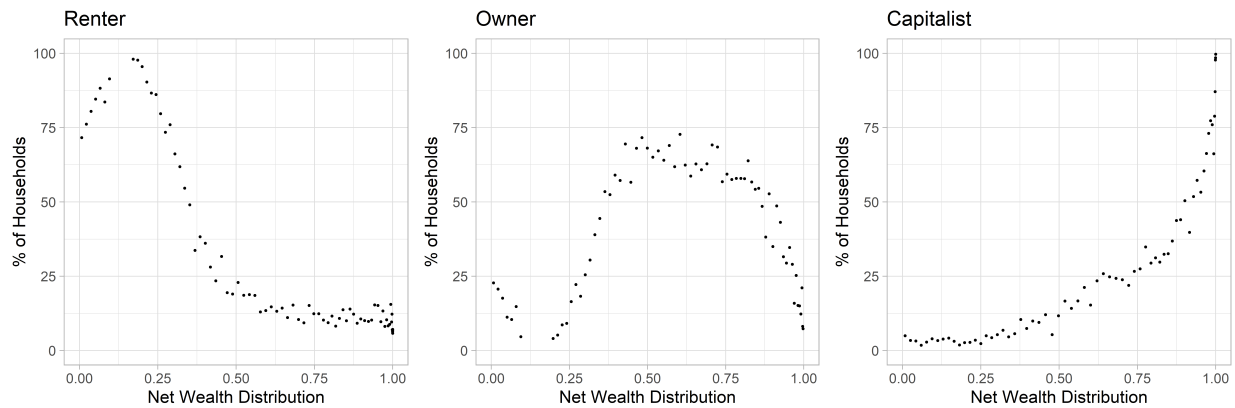
indirectly drives the relationship between our typology and wealth we produce residualized binned scatter plots. We regress both, the dummy variables identifying renters, owners and capitalists (separately) as well as the cdf of net wealth on age, age squared and age cubed. By use of the Frisch-Waugh-Lovell theorem one then can take the residuals of these regressions, where the influence of age as well as education is filtered out and plot them against each other. We do so by calculating the mean of the residuals and adding the means of the respective variables across the distribution of net wealth⁶.

Figure C.2 shows the resulting binned scatter plots. One can clearly see that the main patterns of prevalence of renters, owners and capitalists hold. So even inside the same age groups our classification sorts household well along the wealth distribution. Similar calculations can be done using education and occupation. Again the results are rather robust.

Note, that one can also show the intergenerational dimension of this class approach. Owners inherited more often than renters, and capitalists inherited more often than owners. Especially inherited businesses play a major role in becoming a capitalist. So often class location has a dynastic component. Similar arguments can be made by the well known strong intergenerational correlation of education.

⁶We use R's `binreg` command to produce these figures.

Figure C.2: US: Estimated shares for renters, owners and capitalists - controlled for age



Notes:

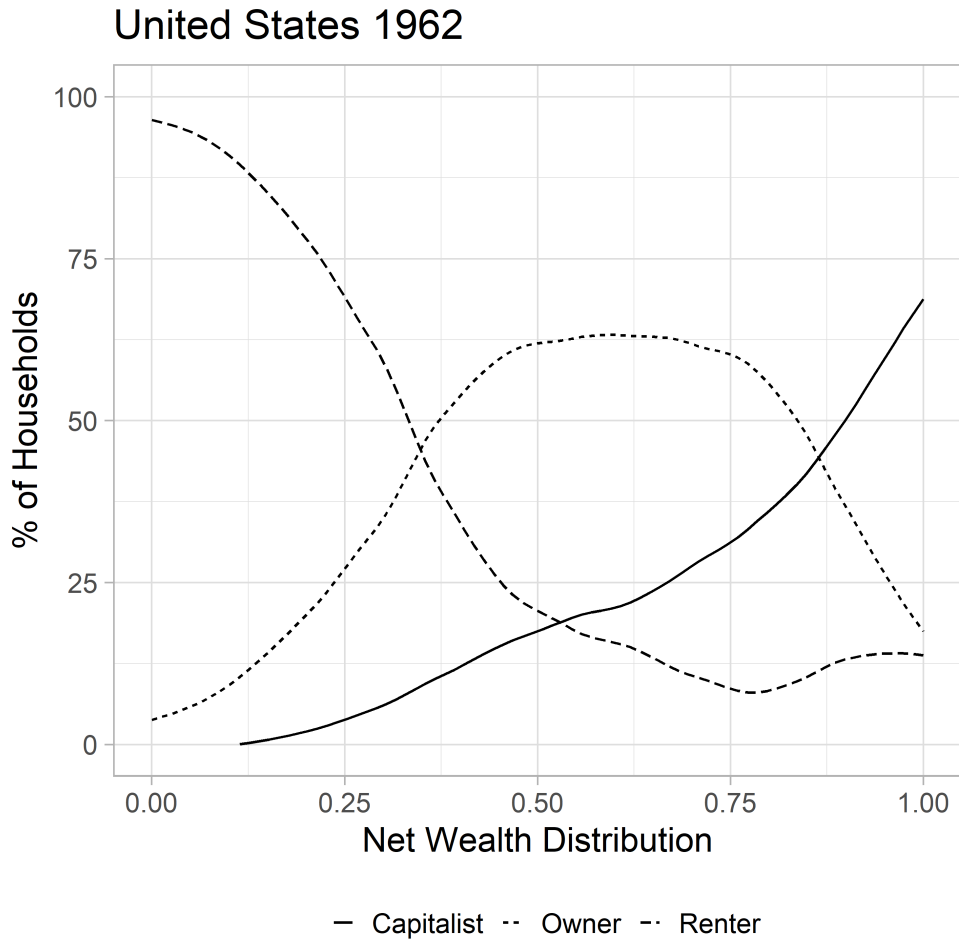
- (i) These graphs show estimated shares of renters, owners and capitalists across the net wealth distribution, but controlled for age, age squared and age cubed of the household head.
- (ii) Using the Frisch-Waugh-Lovell theorem, we first separately regress the identifier as well as the cdf of net wealth on age, age squared, age cubed. Then, we add means to the residuals and plot the residuals against each other to show the relationship after filtering out the independent variables from the regressions. We use the `binregs` command in R.
- (iii) *Source:* SCF 2016.

Appendix D Class locations in the US in 1962

We employ data from the merged 1962 Survey of Financial Characteristics of Consumers and 1963 Survey of Changes in Family Finances (https://www.federalreserve.gov/econres/scf_6263.htm [accessed on 4th July 2018]) to estimate the prevalence of classes across the net wealth distribution for the United States in 1962. It allows us to get an idea of how stable our observed pattern is and shows the rise of the middle owner class since the early 1960ies.

Figure D.1 shows that the main pattern of alignment between social classes and the wealth distribution already existed in the early 1960ies. However, some differences are observable. The share of renters and owners moderately increased from 31% renters in 1962 to 36% renters in 2016 and 41% owners in 1962 to about 48% owners in 2016. The share of capitalists was cut in half from 28% capitalists in 1962 to 15% capitalists in 2016. At the same time the pattern of alignment with the wealth distribution is much more pronounced in 2016 than it was in 1962. While the share of renters is below 10% above the 60th percentile of net wealth in 2013 it was above 10% even above the 80th percentile of net wealth in 1962. While the Capitalists share at median wealth was above 20% in 1962 it is well below 10% today. Also the increase of owners at the very bottom due to the availability of mortgage debt with high loan-to-value ratios was not there in 1962.

Figure D.1: Renters, owners and capitalists in the United States 1962



Notes:

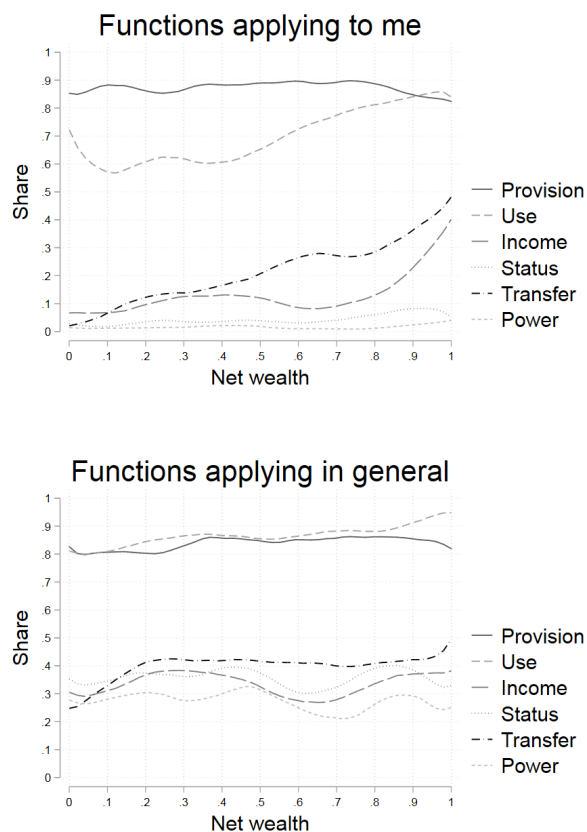
(i) This graph shows the prevalence of renters, owners and capitalists over the net wealth distributions of the United States 1962.

(ii) *Source:* SCF 1962/1963.

Appendix E Subjective Functions

Figure E.1 is based on a direct question to Austrian respondents in the HFCS (third wave 2017 and not HFCS 2014 as used in the rest of the paper). It shows that subjective perceptions of functions of wealth are in line with the structure of the functions in figure 1. The idea that provision and use are the most important functions for most people is strongly supported. As expected, income generation is a function of wealth more relevant at the top of the distribution (see left panel). Note, that (i) people generally assume that more functions of wealth apply to others than to themselves (especially power and status) and (ii) that the pattern with regard to the functions of wealth for others is rather stable across the full distribution, i.e. the same share of wealthy people think that the function of power applies to themselves (hardly anybody) and others (roughly 30%).

Figure E.1: Subjective perceptions of functions of wealth



Notes:

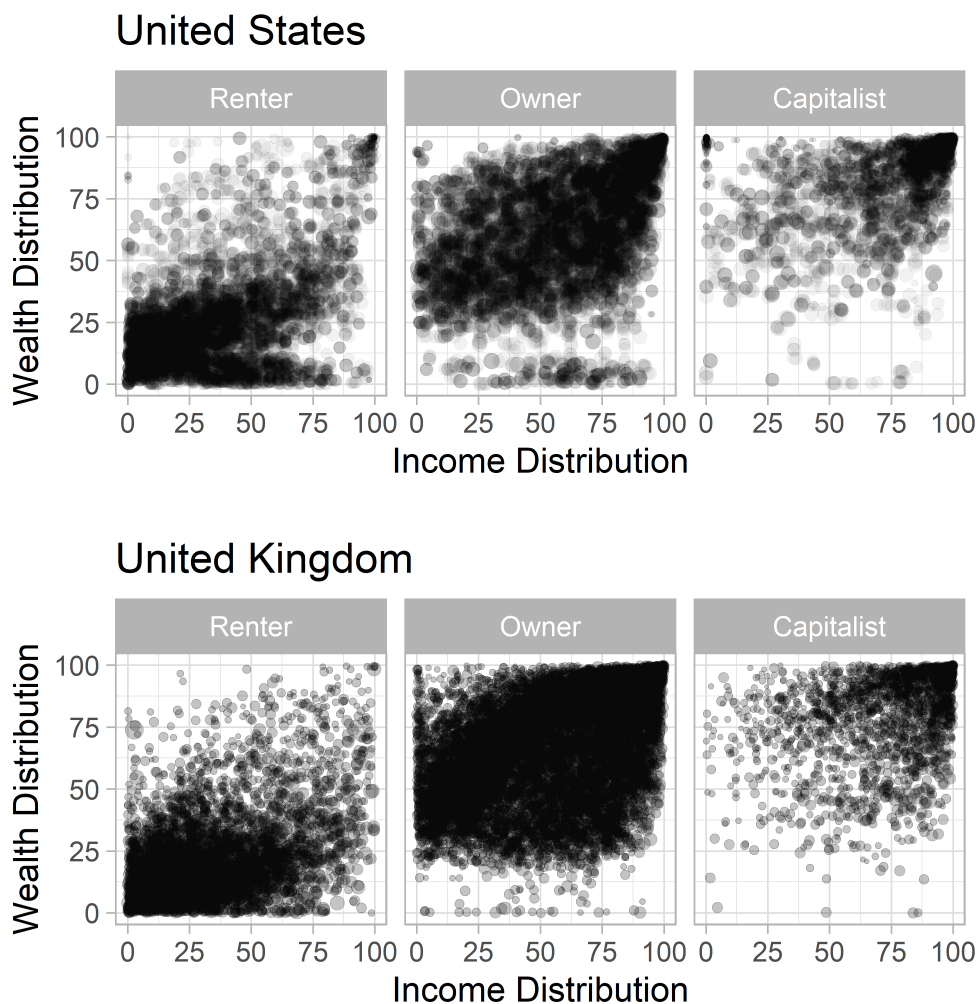
(i) This graph shows respondents answers to the questions which functions of wealth apply to them personally (left graph) and which to individuals in general (right graph) across the distribution of net wealth. We use a locally weighted regression estimator.

(ii) Source: HFCS Austria 2017.

Appendix F Class location in the joint distribution of income and wealth

Figure F.1 shows class locations in the joint distribution of income and wealth for the US and the UK⁷.

Figure F.1: Class location in the joint distribution of income and wealth



Notes:

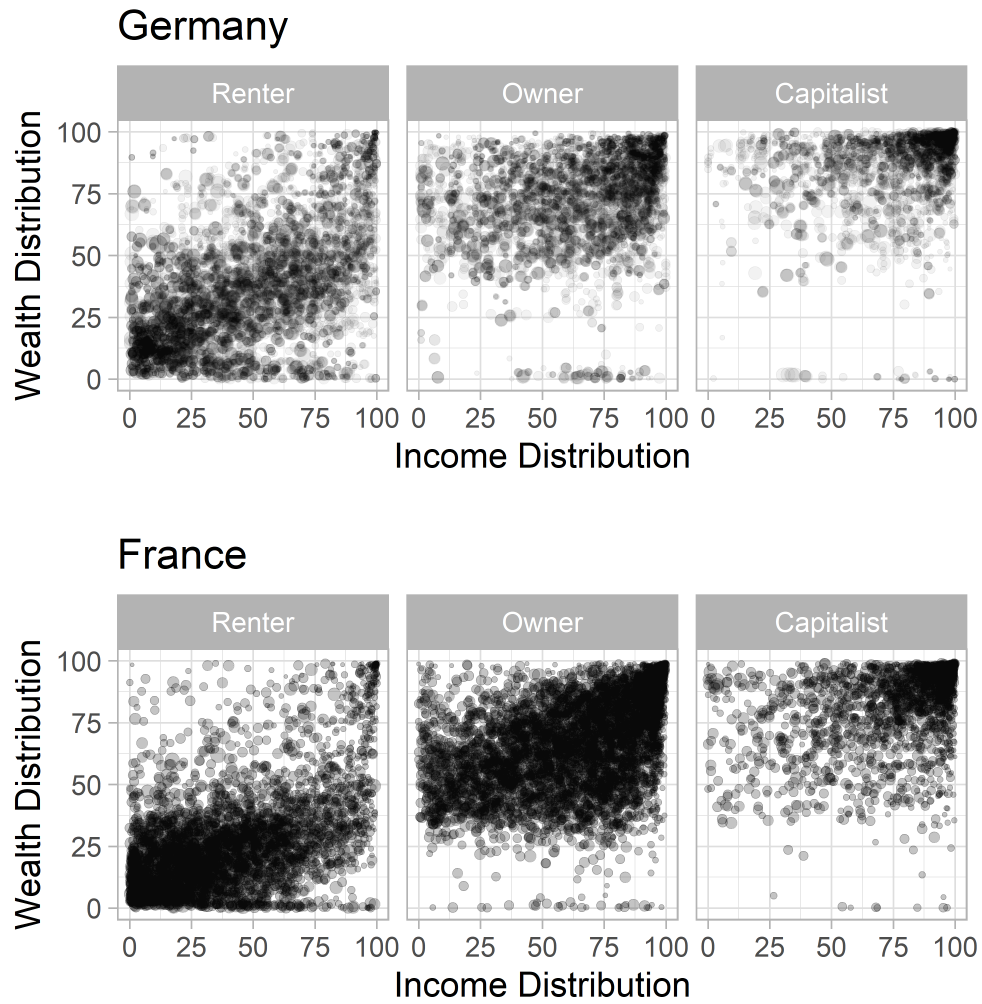
(i) This graph shows class locations in the joint distribution of income and wealth.

(ii) *Source:* SCF 2016 for the US; WAS 2014-2016 for the UK.

⁷Every point shown is an observation in the survey and its size is defined by the number of households it represents (population weights). All points have the same greyscale, only overlapping of points (higher density of observations) leads to darker (more populated) areas

Figure F.2 shows class locations in the joint distribution of income and wealth for Germany and France.

Figure F.2: Class location in the joint distribution of income and wealth



Notes:

- (i) This graph shows class locations in the joint distribution of income and wealth.
- (ii) Source: HFCS 2014.