# The Functions of Wealth: Renters, Owners and Capitalists across Europe [*]

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## Abstract

Piketty (2017) argues for a multidimensional approach to the analysis of wealth inequality. Specifically, he suggests that social classes should be analysed as power and production relations between social groups, not just as percentiles in statistical distributions. We propose such a relational approach by focusing on different functions of wealth and operationalize it by analysing renters, owners and capitalists empirically. Employing recent European data we find that classifying households based on decisive functions of wealth aligns well with the wealth distribution but in ways that vary considerably across countries. Intergenerational wealth transfers are a main driver of class location. Our class typology can serve as an excellent proxy for the position of a household in the wealth distribution. We discuss why this class typology has many potential advantages with regard to the measurement and analysis of wealth. Class is key in order to understand wealth inequality.

**JEL Classifications:** D14, D15, D31, D63, Z13
**Key Words:** wealth, inequality, households, survey data, class, economic stratification

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# 1 Introduction

Piketty (2017) argues for a multidimensional approach to the analysis of wealth inequality. Specifically, he suggests that social classes should be analysed as power and production relations between social groups, not just as percentiles in in statistical distributions . Deciles and Percentiles should be viewed as a language allowing for comparisons between societies that are otherwise impossible to compare[1] (Piketty, 2014).

We propose such a relational approach by focusing on the different functions of wealth and operationalize it by analysing renters, owners and capitalists empirically. 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 class structures by adding a class in between as documented by Piketty (2013), Wright (2005), Therborn (2012) and others. Therefore we define three types of households. First, renters, who mainly have wealth for precautionary reasons and have to pay rent to owners or capitalists. Second, owners, who additionally to precautionary reasons also use their wealth to live in by means of owner occupation, an therefore generate a (imputed) rent from their wealth. Third, capitalists, who not only own their home, but additionally rent out further real estate and/or have self-employed business wealth.

So far, the two main questions in empirical research in economics on private wealth were about its definition, i.e. "What should we consider, when we are analysing private wealth?" (Jenkins, 1990; Davies and Shorrocks, 2000; OECD, 2013), as well as its distribution, i.e. "Who holds how much of private wealth?" (Sierminska et al., 2006; Kennickell, 2012). This literature mainly used surveys to analyse the wealth distribution.

In the most prominent recent strand of the literature, using administrative tax data, the main focus was wealth concentration and the evolution of top-shares. Piketty (2013) and others extensively document the evolution of the concentration of income (Alvaredo et al., 2013) and inheritances (Piketty, 2011) as a source of flows into wealth as well as the stock of wealth itself (Kopczuk and Saez, 2004). Using tax data is advantageous in that they often provide good coverage of information for the wealthiest households and cover a long period of time. Such data often fail to provide any additional micro-level information on the individuals and households paying the taxes, which would be necessary to investigate joint distributions and pursue a multidimensional approach. The focus of this literature follows a quantitative-counting logic of more and less, has no reference to power or production relations, and seems to have no normative ingredients. Derived statements have forms like, "Household $X$ has $n$ Euro less than Household $Y$" or "The share of the top 1% of the richest households is $X$% whereas the share of the bottom 50% is $Y$%". Whether the difference is high or low then depends on subjective perceptions and interpretations. This statistical approach is agnostic with regard

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[1]He mentions France in 1789 and China or the United States in 2014 as such an example.

to the fact that (i) differences in quantities might imply qualitative changes with regard to the functions of wealth and that (ii) the meaning of wealth levels and/or wealth shares, depends on the context in a certain society at a certain point in time. A top 1% share of $X\%$ means something different in a democracy than in an autocracy, or depending on the size of the welfare state, which substitutes private wealth, and many other institutions which are different through time and across countries. If the Top 1% owns a large share of business wealth that requires a different assessment than if they hold the same share in savings accounts.

The agnostic stance of the literature, however, stands in sharp contrast to common interpretations of the statistical results. Recent examples include Piketty (2013) who argues to prevent extensive capital concentration for the sake of democracy, a tax on wealth ought to be implemented to slow down the process of wealth concentration. So he relates large top-shares to power, which could endanger democracy. The OECD (2015) argues that, higher inequality drags down economic growth and harms opportunities, and that specifically high wealth inequality limits investment opportunities and therefore growth.

In discussions about wealth inequality there is not "enough precautionary saving" at the bottom, "not enough wealth or to high income taxes for the downpayment to buy a home" in the middle, and "too much wealth concentration for a functioning democracy" at the top.

The main contribution of our paper is to make these implicitly assumed functions of wealth - which are necessary for meaningful interpretations - explicit already in the statistical analysis. To often wealth analyses hide behind deciles, percentiles and top shares. Without narratives about power and production relations between social groups which are only added afterwards in interpretations they would hardly make a lot of sense. To make these relations explicit in the statistical analysis of wealth inequality is a step towards a more transparent and consistent analysis of wealth inequality as a social reality.

As early as 1900, German sociologist Georg Simmel identified a central feature of wealth in his seminal work, "The Philosophy of Money ." Simmel writes about the "superadditum or surplus value of wealth" for the rich, namely that "a great fortune is encircled by innumerable possibilities of use, as though by an astral body, which extend far beyond the employment of the income from it or the benefits which the income brings to other people (Simmel, 1978)" .

We use recently published data from the Household Finance and Consumption Survey (HFCS) to examine this relationship and yield the following main results: We find, that in the euroarea and in every single euroarea country renters are dominantly located in the bottom, owners in the middle and capitalists at the top of the wealth distribution. But at the same time, the two points in the wealth distribution where there are more owners than renters and - at a higher wealth level - more capitalists than owners varies considerably across countries. As we illustrate this is likely a result of institutional differences. We produce income and wealth

relations at the household level, and calculate class specific capital to income ratios. Capital to income ratios based on class medians are well bellow 1 for renters and usually well above 5 and up to 13 for capitalists. This result relates to our result, that the likelihood of being a renter is about twice as high without inheritance than with inheritance, whereas the likelihood of being a capitalist is twice as high with inheritance than without. Therefore class is key in order to understand wealth inequality. We show, that our approach is stable to deviations from our particular choice of relational classes as well as rather independent of age, education or occupation, which is often used in class analysis.

The rest of this paper is structured as follows. Section 2 includes the theoretical reasoning behind our empirical approach. Section 3 introduces the data. Section 4 presents empirical results. In section 5 we illustrate and discuss the advantages of our approach. Section 6 concludes.

## 2 Functions of Wealth

### 2.1 How is wealth defined?

In the fourth book of the Nicomachean Ethics, Aristotle defined wealth as follows: "Wealth is everything whose value is measured by money" (1119, b 26)[2]. This sounds almost like a modern definition. From the economic perspective, wealth in general includes economic goods that may reap returns. Wealth is attributable to persons and is a stock that must be valuated. This valuation is indispensable for wealth to be measured statistically.

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) and use only marketable wealth. Even though they are very important for the welfare of the individuals, problems with such rights are manifold. Davies and Shorrocks (2000) use the term "augmented wealth" to refer to a broader definition of (net) wealth (net worth), also including entitlements to future pension streams, and at the same time point to 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. Nonfinancial assets outweigh financial assets and consist mainly of households' main residences. Finally, the distribution of financial assets is substan-

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[2]See table 5 in Appendix C

tially more unequal across households than the distribution of nonfinancial 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 also anti-private capital policies including rent control, 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.

Recently the OECD (OECD, 2013) has defined household net wealth as the monetary value of all assets minus its liabilities. In the OECDs definition wealth has to be transferable. It therefore also 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 variable of interest. See Fessler and Schürz (2015) for a more comprehensive discussion of the definitions of private and public wealth.

## 2.2   Towards a relational analysis of wealth

Most recent literature of wealth concentration focuses on wealth alone. Also Piketty (2013), Kopczuk and Saez (2004) and many others follow the same one-dimensional approach and focus on the share of an arbitrary group of top wealth holders. The top 1%, top 5% or top 10% or even smaller top shares or millionaires. Mike Stasavage from the LSE´s International Inequalities Institute is seeing a new "inequality paradigm" in social sciences and has praised that "Piketty has sidestepped (though not eradicated) the normative debates" by avoiding normative judgements. But is this a new inequality paradigm? In all discussions about results of this type of one-dimensional analyses arguments reach out to the functions and multidimensionality of capital and therefore ownership of the assets, "the means of production". How else should one give an interpretation to the mere fact that some share of the population holds some share of assets? This is only possible by adding what it actually means to hold a certain amount of assets in a certain society at a certain time with a certain mode of production and certain social relationships. Class locations are complex, high income individuals might inherit large amounts of wealth, high education might go along with high income but low wealth, family ties and economic developments at the global scale, like the rise and fall of industries, shape class location (Wright, 2005).

Piketty (2017) hopes that "his work can contribute to make a little progress on the long road toward a gradual reconciliation between economics and the social sciences" (Piketty, 2017, p.548). Piketty argues against one-dimensional economic models as their concepts are too abstract and claims that "capital is best viewed as a complex, multidimensional set of property relations" (Piketty, 2017, p.548).

However, one-dimensionality is implied not only by models but also by a statistical focus on wealth shares over time and countries. Researchers suggest that such an approach is a way of organizing the data. But it is at the same time a way of suggesting that there exists a strict distinction between statistics and normative considerations. This epistemic hypothesis is wrong.

The focus on the specific groups (Bottom 50%, Top 10% or Top 1%) is not based on the statistical data but on the – implicitly normative - judgements of researchers. 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 form the rest of the society. But it cannot provide arguments for such a claim as it uses only percentiles of the net wealth distribution. For the readers it will be a more or less obvious claim that the rich are special – e.g. have a negative impact for democracy (see below). Furthermore, the one-dimensional approach suggests that we do not know about the forms wealth takes and functions wealth has across the distribution. However, this is only a common 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.

As a specific perspective on the data has to be taken, in order to analyse (and even gather) it, the chosen perspective will in any case influence what we see and what we do not see. What we can do, however is to try to make the data analyses a priori as transparent and as informative as possible with regard to how it is related to the interpretation of the results. With regard to wealth that means linking wealth to it's functions, right from the start of the analysis.

Looking at the wealth distribution alone only provides an incomplete picture of the social implications of wealth. Additional insight can be gained by classifying households based on decisive functions of their wealth holdings, which aligns well with the wealth distribution but in ways that vary considerably across countries. Our way of organizing the data integrates theoretical considerations from the social sciences and moves beyond an abstract statistical concept. As we will show, its focus on functions of wealth allows a coherent organization of the data justified by social stratification right from the beginning. In other words: it makes the implicit explicit.

It makes no sense to talk about private property for Robinson Crusoe before Freitag approaches the island. Thus, property means a social relation among owners and between owners and non-owners. And it makes only sense to talk about property in a society and under conditions of scarcity. Wealth should not be understood only as ownership of assets. In order to understand wealth one has to study its functions empirically.

The precautionary motive can be exercised without violations of wealth functions of other people. Whether person $A$ saves 1000 EUR for precautionary motives in a savings account

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will only to a small degree influence others in their saving behavior. There might be peer effects on saving decisions but functions will not collide. With real estate this is different: It is a positional good. If person $A$ has a property with sea access others cannot have it at the same time. The use function of wealth can be exercised only by exclusion of others. This possibility of exclusion of use is important in status issues as Veblen (1994) has demonstrated impressively. If $A$ increases his status by ostentative demonstration of his real wealth, e.g. by owning a castle, this lowers the status of others. However, for the function of use there are alternatives to different degrees in different countries (see table 2). People can rent flats. Thus, institutions on the real estate market as well as other income related institutional differences matter.

With business wealth it is even more obvious. Moral qualifications in favor of entrepreneurs (risk-orientation, innovations,...) and justifications in society (decisive for functioning of the market, creating of jobs) lead to a hierarchy among functions of wealth. This is documented by a privileged position of business wealth in the inheritance process (exceptions in the case of inheritance taxes). And in particular the power issue is asymmetric. If the power of entrepreneurs increases the power of the others has to decrease.

Figure 1 shows a schematic illustration of a potential structure of functions of wealth across the wealth distribution. The more wealth, the more functions are potentially available.

At the very bottom, associated with low amounts of usually very liquid wealth holdings is the function of provision. Households save for all kinds of precautionary reasons among them the motive of "saving for a rainy day", .i.e. 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 to which degree they insure these contingencies of life in an organized way.

With increasing wealth, use becomes more prevalent. The main item in household wealth, which is used and therefore provides 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 down-payment requirements), they show less-than-fully-rational behaviour and in addition the tax system often favours 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. With even higher wealth the function of income generation becomes more important. This function is more dominant for households with considerable ownership of true "means of production", in the sense that they own self-employed businesses and/or real estate wealth they

rent out to earn capital income.

These three decisive functions of wealth we use as a base for our relational approach. Of course there exist other functions of wealth, like status, transfer and power. Of course, not all functions of wealth are additive as this illustration might suggest. Despite that higher net wealth implies more possible functions of wealth for wealth holders, the precise actual functions have to be studied empirically. Some wealth functions are substitutes, some are complimentary and others might even conflict. Some, such as power, might be available inside smaller reference groups also with lower wealth but at the level of the society only with very large wealth of certain types. Many of them are hard or even impossible to measure in a survey. But we are confident, that these three decisive functions we use are a step towards a more transparent and consistent analysis of wealth inequality as a social reality.

Figure 1: Functions of wealth
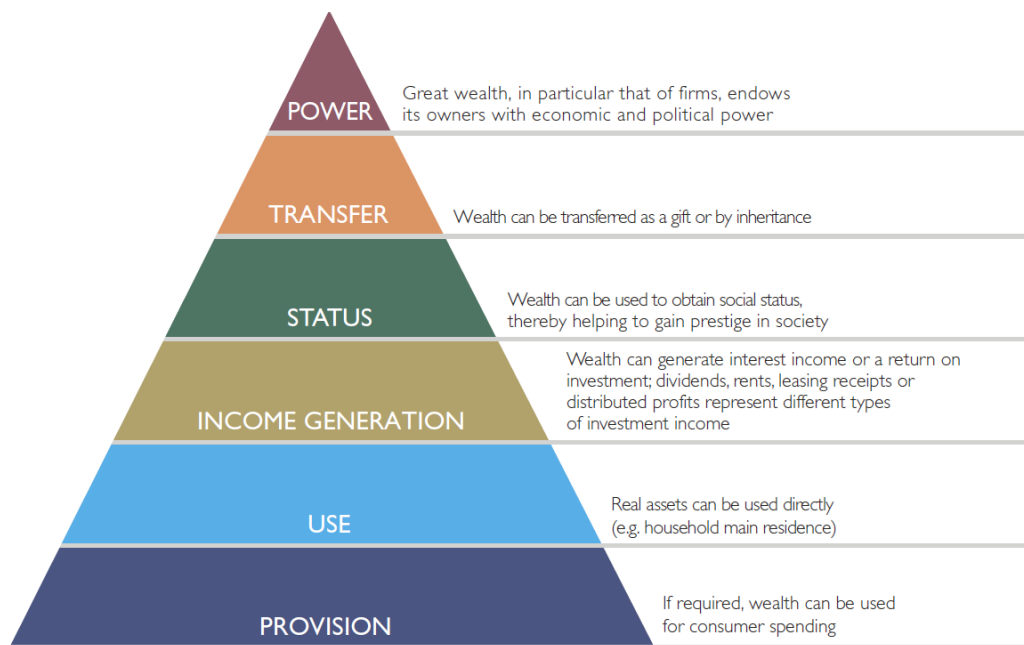


*Notes:*
(i) This graph shows an illustration of the additive functions of wealth. The pyramid suggests the increasing prevalence with increasing wealth.
(ii) *Source:* Own Illustration.

## 2.3   Renters, owners and capitalists

Property and in particular "the means of production" are a core concern 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 as it determines to a large degree inequality in income, consumption as well as different forms of human and social capital (Bourdieu, 2002) and therefore individual power relations, production relations and class locations.

The classical one-dimensional notion implies an antagonism of those who have capital ("capitalists") and those who don't ("workers"). But, due to the rise of the middle-class in the 20th century a large amount of assets were accumulated which do not directly relate to "means of production" but fulfil other functions. The welfare state strongly shapes these social relationships and therefore the meaning of asset ownership in different societies. Whenever feasible, it makes therefore sense, to include these functions directly when analysing the wealth distribution.

We try to identify groups of households who have access to the three most important functions of wealth, precaution, use, and income generation and who are linked through power relations. We use a class typology of three types of households.

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 life in their houses or apartments.

2. **Owners.** Owners 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 life 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.

3. **Capitalists.** Capitalists are owner occupiers. They do not pay a rent to life 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. But on top of that they 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).

In Appendix B we provide robustness checks with regard to this definition. One could argue for the classical definition and define all self-employed business owners as capitalists (not only owner-occupiers) and split the rest of the population into owners and renters to take the rise of the middle class into account. Then we would have capitalists who also pay rent

to other capitalists. As one can see in Appendix B, this would lead to more "capitalists" who are renters in the lower part of the distribution and to less "capitalists" in the upper part as in our preferred definition also owner occupiers who rent out further real estate are defined as "capitalists" . We think our preferred definition is useful as it excludes mostly very small self-employed businesses (freelancers) who are renters but includes very wealthy real estate owners who rent out their further real estate in the "capitalists" definition. However, as one can see in Appendix B, the analysis is rather robust to such minor changes in definition.

Furthermore in Appendix B we also show, that our definition is also robust in aligning with the wealth distribution if age (squared age, cubed age) and education, as well as age (squared age, cubed age) and occupation, which is often used for definitions of social class, are filtered out.

If our class definition is useful, it should align well with the wealth distribution. We dominantly find renters in the bottom, owners in the middle and capitalists at the top of the wealth distribution. How clear-cut these definitions work along the wealth distribution, in the sense that the overlap is small, and at which point in the distribution the switch from renters to owners and from owners to capitalists occurs depends on several factors.

# 3   Data

We use data from the second wave of the Household Finance and Consumption Survey (HFCS), which was mostly collected 2014 and 2015 in all Euroarea countries. The HFCS is a large scale a priori harmonized wealth survey following closely the US Survey of Consumer Finances (SCF). As the goal of the HFCS is also to allow country level analyses and cross-country comparisons, it has a much larger sample size than the SCF. The net sample size for the Euroarea is about 75,000 households representing about 145 million european households. In most countries the survey is conducted via face-to-face computer assisted personal interviews (CAPI). All countries produce population weights to reweight samples to the overall household population. The data is tested and validated by the European Central Bank (ECB). In most countries missing values are imputed using a bayesian multiple imputation framework based on chained equations and a broad conditioning approach.

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. The HFCS data has already been used by the Eurosystem, international organisations like the OECD and the IMF as well as many academic researchers on a large variety of topics. For information and a bibliography see https://www.ecb.europa.eu/home/pdf/research/hfcn.

We summarize some of the information on the surveys in table 1. It shows country-level

survey information on fieldwork, net sample size, response rate, number of households and survey mode.

Table 1: Survey Information

|  | Fieldwork | Net sample size | Response rate | # of hh | Mode |
|---|---|---|---|---|---|
| Austria | 2014/2015 | 2997 | 49.8 | 3,862,526 | CAPI |
| Belgium | 2014/2015 | 2238 | 30 | 4,796,647 | CAPI |
| Cyprus | 2014 | 1289 | 60.4 | 303,242 | CAPI |
| Estonia | 2013 | 2220 | 63.9 | 571,857 | CAPI |
| Finland | 2014 | 11030 | 64.1 | 2,622,499 | CAPI (2.5%) CATI (97.5%) |
| France | 2014/2015 | 12035 | 65 | 29,017,678 | CAPI |
| Germany | 2014 | 4461 | 19 | 39,672,000 | CAPI |
| Greece | 2014 | 3003 | 40.8 | 4,266,745 | CAPI |
| Ireland | 2013 | 5419 | 59.7 | 1,690,073 | CAPI |
| Italy | 2015 | 8156 | 43.3 | 24,694,122 | CAPI (92.9%) PAPI(7.1%) |
| Latvia | 2014 | 1202 | 52.9 | 828,907 | CAPI |
| Luxembourg | 2014 | 1601 | 23.4 | 210,965 | CAPI |
| Malta | 2014 | 999 | 35.4 | 159,427 | CAPI (83%) PAPI(17%) |
| Portugal | 2013 | 6207 | 54.2 | 4,017,981 | CAPI |
| Slovakia | 2014 | 2136 | 53.4 | 1,855,392 | CAPI |
| Slovenia | 2014 | 2553 | 40.5 | 820,541 | CAPI |
| Spain | 2011/2012 | 6106 | 31.7 | 17,429,812 | CAPI |
| The Netherlands | 2014 | 1284 | 32 | 7,590,228 | CAWI |

*Notes:*
(i) Computer-assisted personal interview (CAPI); paper based personal interview (PAPI); computer-assisted web interview (CAWI).
(ii) *Source:* HFCS 2014.

Table 2 shows descriptive statistics of the main variables we use. Columns two to five show medians and means of net wealth and gross income for the Euroarea and all Euroarea countries. Columns six to eight show the mean of the identifiers we use to construct the typology as outlined in section 2 as well as the robustness checks, which can be found in appendix Appendix B. These are dummy variables for owner occupiers, households with self-employment business as well as households with rental income from real estate property. Net wealth in the HFCS is defined as real assets plus financial assets minus liabilities of the household. Real assets include the household main residence, other real estate property, self-employed businesses, vehicles and other valuables. Financial wealth consists of deposits, sight- and savings accounts, shares, bonds, mutual funds, money owed to the household, private pension plans as well as other less common items such as managed accounts, royalities, options, and so on.

Liabilities cover collateralized debt and uncollateralized debt, including credit card debt and overdrafts.

Table 2: Descriptive statistics of main variables used

| | Net wealth | | Gross income | | Owner occupier | Self-employment business | Rental income |
|---|---|---|---|---|---|---|---|
| | Median | Mean | Median | Mean | Share (%) | Share (%) | Share (%) |
| Euroarea | 104.1 | 223.3 | 29.5 | 39.4 | 61.2 | 11.0 | 9.0 |
| | (1.6) | (3.7) | (0.2) | (0.3) | (0.2) | (0.2) | (0.2) |
| Austria | 85.9 | 258.4 | 35.7 | 43.3 | 47.7 | 7.0 | 4.9 |
| | (5.6) | (32.1) | (0.8) | (0.8) | (0.6) | (0.6) | (0.4) |
| Belgium | 217.9 | 330.3 | 41.2 | 52.0 | 70.3 | 8.5 | 8.7 |
| | (6.9) | (13.4) | (0.9) | (1.1) | (1.3) | (0.9) | (0.4) |
| Cyprus | 170.1 | 387.3 | 22.7 | 30.5 | 73.5 | 18.5 | 9.0 |
| | (16.2) | (41.4) | (1.5) | (0.9) | (2.2) | (1.7) | (1.2) |
| Estonia | 43.5 | 97.0 | 11.1 | 17.1 | 76.5 | 11.7 | 2.2 |
| | (2.2) | (6.8) | (0.3) | (0.3) | (0.1) | (0.6) | (0.3) |
| Finland | 110.0 | 195.3 | 40.1 | 50.1 | 67.7 | 7.6 | 7.9 |
| | (2.1) | (2.2) | (0.2) | (0.1) | (0.5) | (0.2) | (0.2) |
| France | 113.3 | 243.1 | 30.5 | 37.6 | 58.7 | 8.8 | 11.9 |
| | (3.7) | (5.9) | (0.3) | (0.2) | (0.6) | (0.3) | (0.3) |
| Germany | 60.8 | 214.3 | 35.5 | 48.4 | 44.3 | 9.3 | 13.8 |
| | (3.7) | (11.0) | (0.7) | (0.9) | (0.1) | (0.4) | (0.7) |
| Greece | 65.1 | 104.2 | 17.6 | 21.2 | 72.1 | 15.7 | 5.9 |
| | (4.0) | (5.5) | (0.4) | (0.5) | (0.1) | (1.1) | (0.4) |
| Ireland | 100.6 | 216.3 | 39.8 | 54.6 | 70.5 | 20.2 | 10.0 |
| | (3.0) | (6.8) | (0.5) | (0.8) | (0.1) | (0.7) | (0.4) |
| Italy | 146.2 | 226.4 | 25.0 | 33.4 | 68.2 | 16.0 | 4.4 |
| | (4.0) | (4.9) | (0.4) | (0.5) | (0.7) | (0.7) | (0.3) |
| Latvia | 14.2 | 40.0 | 8.7 | 14.2 | 76.0 | 10.8 | 3.4 |
| | (0.9) | (5.0) | (0.5) | (0.9) | (1.8) | (1.3) | (0.8) |
| Luxembourg | 437.5 | 768.4 | 64.6 | 87.2 | 67.6 | 3.9 | 12.5 |
| | (17.5) | (53.4) | (1.7) | (2.0) | (1.3) | (0.5) | (0.1) |
| Malta | 209.9 | 350.4 | 23.0 | 29.0 | 80.2 | 16.3 | 6.4 |
| | (7.0) | (27.7) | (0.7) | (0.7) | (1.1) | (0.6) | (0.6) |
| Portugal | 71.2 | 156.0 | 15.4 | 21.5 | 74.7 | 12.7 | 6.0 |
| | (2.6) | (5.7) | (0.3) | (0.5) | (0.9) | (0.7) | (0.6) |
| Slovakia | 50.3 | 66.0 | 13.1 | 15.4 | 85.4 | 10.8 | 4.2 |
| | (1.3) | (2.5) | (0.4) | (0.4) | (1.1) | (1.1) | (0.5) |
| Slovenia | 80.4 | 137.7 | 14.9 | 19.8 | 73.7 | 12.7 | 3.2 |
| | (2.5) | (12.4) | (0.3) | (0.4) | (1.0) | (0.6) | (0.4) |
| Spain | 159.6 | 273.6 | 24.0 | 31.9 | 76.5 | 14.3 | 7.1 |
| | (4.9) | (10.6) | (0.6) | (0.8) | (0.1) | (0.9) | (0.6) |
| The Netherlands | 82.0 | 151.1 | 43.9 | 50.3 | 57.5 | 2.7 | 1.6 |
| | (6.3) | (6.4) | (1.0) | (0.9) | (0.1) | (0.5) | (0.4) |

*Notes:*
(i) Net wealth and gross income in EUR thousands. Standard errors in parentheses.
(ii) HFCS variable codes: net wealth (dn3001); gross income (di2000); owner occupier dummy (da1110i);
self-employment business wealth dummy (da1140i); rental income from real estate property dummy (di1300i)
(iii) *Source:* HFCS 2014.

# 4 Results

## 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 Euroarea countries as well as the Euroarea as a whole. The share of renters in the Euroarea is about 39%, but it ranges from about 15% in Slovakia to about 56% in Germany. The share of owners ranges from roughly 30% in Germany to about 73% in Slovakia and lies at about 47% in the Euroarea. The share of capitalists is lowest in The Netherlands with about 2.7% and largest in Ireland, where more than 23% of the household population fall into that category. In the Euroarea, about 14% of households are capitalists.

As Figure 2 is sorted by the share of renters, one can clearly see that countries in which a lot of social housing exists and the welfare state is generally stronger, the share of renters is usually larger. See also figure 12 in Appendix A.

## 4.2 Prevalence across the net wealth distribution

Formally, we observe cross-sections with draws from the country-distribution functions $P^c$ of the vector $(W, Y, T)$ consisting of net wealth $W$, gross income $Y$ and household types $T$. One can also think of $T$ as consisting three indicator variables $t^j$, where $j = \{1, 2, 3\}$, indicates if $t$ identifies renters ($j = 1$), owners ($j = 2$) or capitalists ($j = 3$). We also use the overall cross section draw $P^{ea}$ which refers to the union $\bigcup_{c \in C} P^c$ of the collection of country level draws $\{P^c : c \in C\}$, and therefore the Euroarea.

As a first step, we use the cumulative distribution function (cdf) of net wealth, $F_W(w) = P(W \leq w)$ combined with a local linear regression of the form $t = m(w) + u$, where $m(\cdot)$ is a conditional mean function and the estimate of $m(w)$ at $w = w_0$ is a locally weighted average of $t_i^j$, which is indicating that household $i$ is of type $j$. So formally
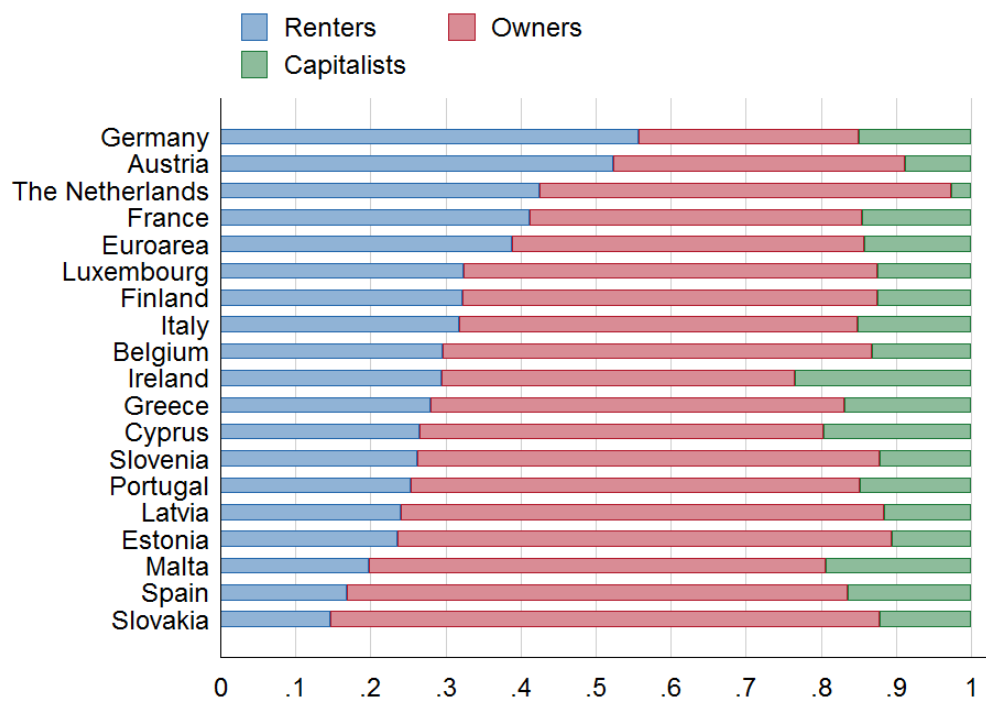
$$\hat{m}(w_0) = \sum_{i=1}^{N} \mu(w_i, w_0, h) t_i^j \qquad \forall j \in J, \tag{1}$$

where the weights $\mu(\cdot)$ sum to one and increase with decreasing distance $\|w_i - w_0\|$. Specifically we employ a locally weighted least squares estimator to obtain a regression estimate by minimizing at $w = w_0$,

$$\sum_{i=1}^{N} K\left(\frac{w_i - w_0}{h}\right) \left[t_i^j - \alpha_0 - \beta_0 (w_i - w_0)\right]^2 \qquad \forall j \in J, \tag{2}$$

where $K(\cdot)$ is the epanechnikov kernel, $h$ is the bandwith and $\alpha_0$ and $\beta_0$ are the constant

Figure 2: Renters, owners and capitalists

and slope parameters. Note that we use a rather small bandwith of 0.05 (0.5 percent of observations) to closely follow the data instead of smoothing too much.

Figure 3 shows the resulting estimates for renters, owners and capitalists in the euroarea. The lines can be interpreted as locally estimated share of households or probability, that a household with wealth $w = w_0$ is a renter, owner or capitalist. Renters are mostly found in the lower half of the wealth distribution, owners mostly in the upper-middle part and capitalists dominantly in the very upper part. The turning point where it is more likely to be a owner than a renter is just below the 40th percentile, whereas the switch from owner to capitalist just below the 95th percentile. Only few capitalists are found to be in the lower part of the wealth distribution and only few renters are found in the upper part of the wealth distribution. However, there is an increase in owners at the very bottom of the distribution, which is due to the possibility to use high loan to value ratios to finance home ownership in some but not all countries. Some of those households end-up having negative net wealth, which shows up in this increase of owners at the very bottom. Our class typology can serve as an excellent proxy for net wealth and is easy to retrieve from two survey questions and potentially different register data (see section 5.1).

Is this rather a clear-cut observed sorting into types along the net wealth distribution or a statistical artefact? This could be driven by the fact that in some countries with generally lower wealth levels there are more renters, and in other countries with higher private wealth levels more owners or capitalists. If so it would be misleading at the euroarea level as it would be mostly a sorting due to differences between countries instead of differences between types. However, this is not the case. Figures 10 and 11 show analogous estimations for all Euroarea countries. The same pattern emerges in all countries. The only difference being that in some countries the overlap is a little larger and in other smaller and the switching points from renters to owners and owners to capitalists are at different percentiles of the respective country level net wealth distribution.

Different institutions and more specifically different degrees of welfare state interventions will shape the profiles of this class typology across the wealth distribution. In particular, state pension systems, public health provision, 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 (2015)). The tax system, rental-subsidies, tenancy laws and social housing might influence the treshold at which renters turn into owners. And inheritance, property and capital income taxes, labor market conditions as well as the environment for small enterprises might be relevant for the concentration of business capital and therefore the prevalence of capitalists across

the distribution.

Historical events such as war or land reform, but also the collapse of the Eastern bloc and the following different paths of transition towards market economies, might shape the patterns of this typology across the wealth distribution. As an example, while most households in eastern Germany became renters of their homes formally owned by the state, most slovak households became homeowners. The impact on the prevalence of renters in the contemporary German and Slovak societies is still very pronounced and, as we will see later, lead to the largest share of renters in Germany and to the lowest share of renters in Slovakia among all Euroarea countries.

Figure 3: Renters, owners and capitalists in the euroarea
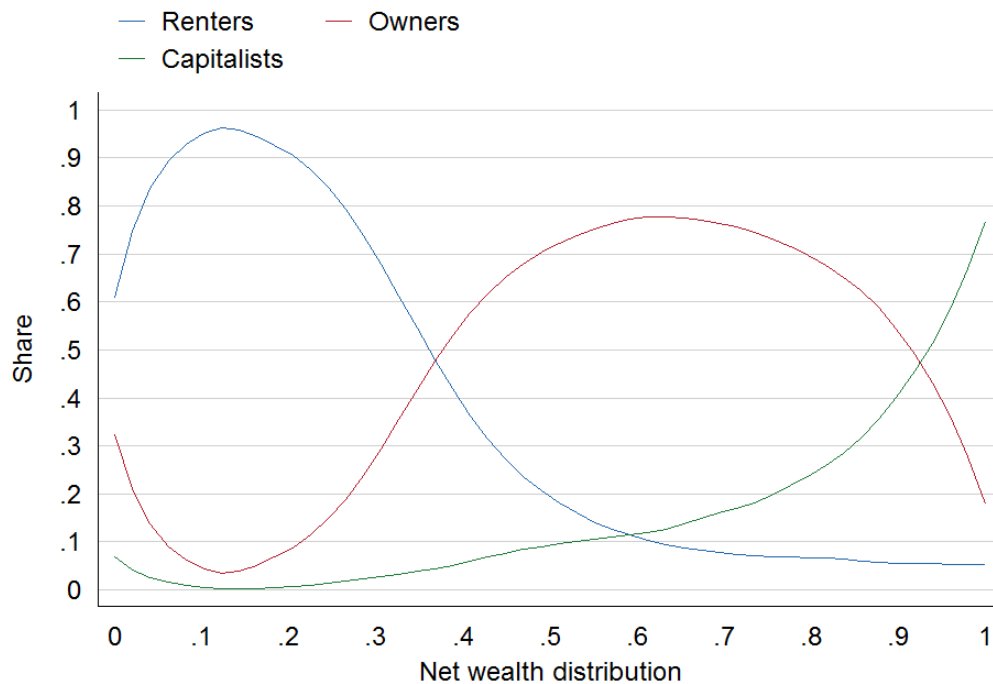
### 4.3 Wealth of renters, owners and capitalists

As a next step we normalize wealth of every household $w_i$ by the overall median of wealth $w_{med}$ and multiply it by 100 to get a normalized measure of net wealth at the household level in percent of the overall median of net wealth,

$$w_i^{norm} = \left( \frac{w_i}{w_{med}} \right) \times 100. \tag{3}$$

We then calculate the cdf of wealth $F_W^j(w)$ for each group $j \in J$ separately. Figure 4 shows normalized wealth plotted against the cdf of wealth for renters, owners and capitalists up to 1000% of median wealth. About 90% of renters have below median wealth, whereas about 90% of capitalists have above median wealth. A large share of renters (more than 70%) have less than 50% of median wealth, whereas about 50% of capitalists have more than 400% of median wealth. Percentile distances are rather large. At the 80th percentile, renters still have about 60% of the median, while owners already have more than 300% and capitalists already about 800% of median wealth.

### 4.4 Income and wealth

As a next step we look at 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 class types. Capitalists use their capital via businesses 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 capital (homes) to live in and do not have to pay rent for it, but generate the 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 lifetime. The wealth income relation we can look at at the micro level shows us how this relation varies for different class types inside and between countries. Third, our survey data allows us to analyse wealth and income jointly. Income is a major source of wealth and it is a major function of wealth to serve as a resource of consumption in times with low or no income.

Table 3 delivers the shares of renters, owners and capitalists as well as the conditional medians of income and wealth (in EUR thousands) in the respective groups, $(y_{med}|t^j = 1)$ and $(w_{med}|t^j = 1)$ for all $j \in J$. We use the median as it is a robust statistic in the sense of Huber (2003). That means, that it has a bounded influence function and can not be changed dramatically by true outliers or any data contaminations resulting from measurement or other steps in the data production process applied in surveys, such as editing, weighting or imputations. Note, that we also use population weights as well as multiple imputations using Rubin's Rule

Figure 4: Normalized wealth of renters, owners and capitalists in the euroarea
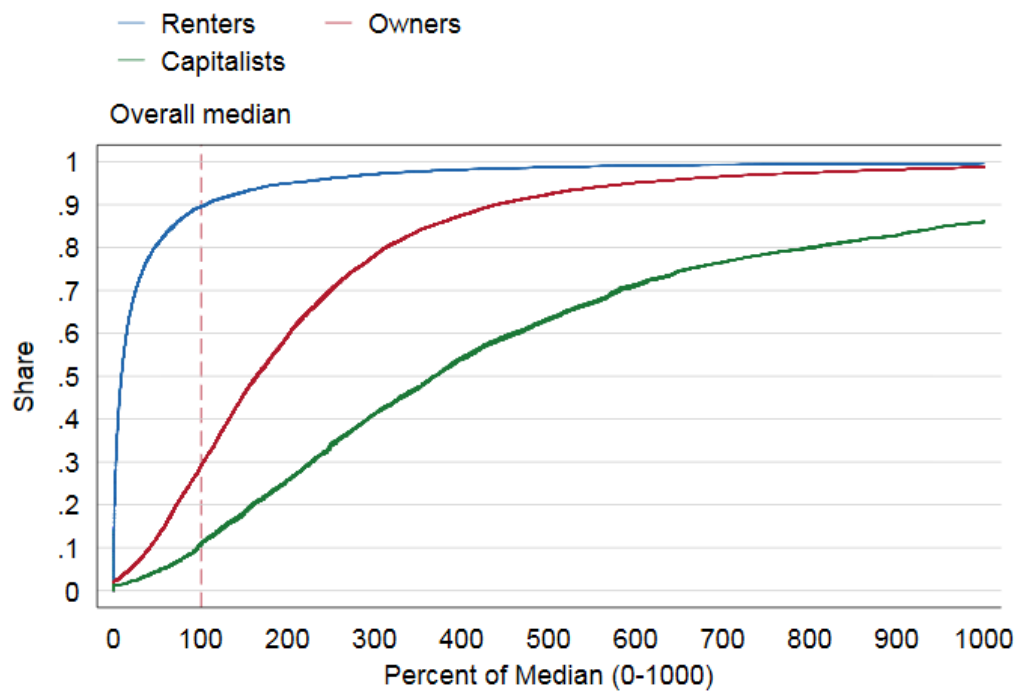
to calculate correct medians, given the multiply imputed dataset. That means, that for any statistical object $\theta$, we estimate $\hat{\theta}_k$, the estimate given dataset $k$ in multiple imputed datasets $K$ (in case of the HFCS K=5) and then average over these estimates to get the estimate for $\theta$, namely $\hat{\theta} = \frac{1}{K} \sum_{k=1}^{K} \hat{\theta}_k$ (Rubin and Little, 1986).

Regardless of the large differences in the share of renters, in all countries (except Malta) median yearly gross income is (mostly substantially) larger than median net wealth of renters. One can think of these relations as some measure of a group specific capital to income ratio. In most cases yearly income is about 2-5 times larger than net wealth, which translates to capital to income ratios of 0.2 to 0.5. For owners that relationship is already turned around. Median wealth is larger than median yearly income for all owner populations in all countries. In most cases median wealth is 3-8 times as large as median yearly income. Also for capitalists median wealth is larger than median income in all countries. For most countries ratios rise to about 5-13. Note that these are medians, so mean capital to income ratios are markedly larger, especially for capitalists (see figure 15 in Appendix A).

Another perspective on income and wealth shares is to relate them to the actual population shares. That relates closely to the usual calculation of top 1%, top 5%, top 10% or sometimes bottom 50 % shares of wealth and income, as at the center is also the relation between the share in wealth or income and the population share. A top 5% share of 30% in income means, that the income share is 6 times the population share and therefore strongly overproportional. Similarly, figure 5 relates the share in gross income ($a$) as well as the share in net wealth ($b$) to the respective population shares of renters, owners and capitalists. In both graphs countries are sorted by the relation of owners which is in all countries and for both, income and wealth, closest one, which means that their share in income and wealth is closest to their population share. Capitalists have in all countries 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 that the income distribution, wealth ratios have a generally show higher variation than income ratios. For income the ratios are smallest for renters in Finland a (0.6) and highest for capitalists in Latvia (2.11), whereas for wealth they are smallest for renters in Finland (0.1) and largest for capitalists in Austria (4.7).
Differences in country patterns are rather large. Distances between renters and capitalists with regard to wealth are largest in Austria, Germany and Luxembourg, but with regard to gross income they are among the smallest in those countries. Given the tax system and the strong redistribution in these countries one can expect even smaller distances for net income, which is unfortunately not covered by our data.

See figure 13 in Appendix A for a comparison of top 5% shares and shares of renters,

Table 3: Income and wealth of renters, owners and capitalists

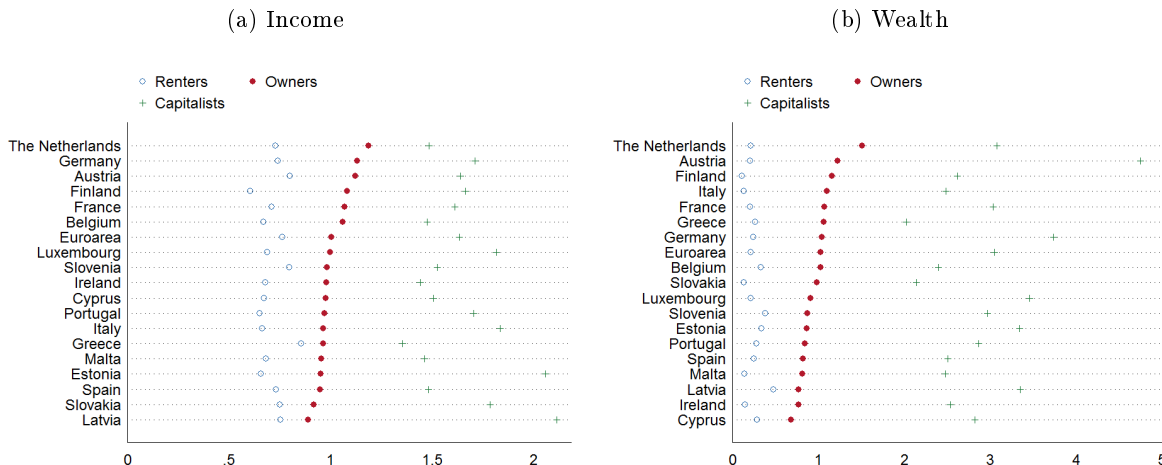| | Renters | | | Owners | | | Capitalists | | |
|---|---|---|---|---|---|---|---|---|---|
| | Share | Wealth | Income | Share | Wealth | Income | Share | Wealth | Income |
| Euroarea | 0.39 | 8.9 | 23.2 | 0.47 | 170.5 | 31.6 | 0.14 | 383.0 | 47.6 |
| Austria | 0.52 | 12.0 | 29.5 | 0.39 | 264.0 | 42.3 | 0.09 | 599.6 | 54.6 |
| Belgium | 0.30 | 9.1 | 25.8 | 0.57 | 267.2 | 46.6 | 0.13 | 538.7 | 65.5 |
| Cyprus | 0.27 | 13.2 | 18.1 | 0.54 | 183.5 | 24.1 | 0.20 | 505.2 | 32.4 |
| Estonia | 0.24 | 1.5 | 6.9 | 0.66 | 53.2 | 10.9 | 0.11 | 137.2 | 25.5 |
| Finland | 0.32 | 2.1 | 23.5 | 0.55 | 169.2 | 46.2 | 0.12 | 330.8 | 68.9 |
| France | 0.41 | 11.8 | 22.4 | 0.44 | 196.4 | 35.6 | 0.15 | 438.7 | 48.3 |
| Germany | 0.56 | 10.0 | 27.6 | 0.29 | 167.0 | 44.8 | 0.15 | 403.5 | 59.5 |
| Greece | 0.28 | 3.0 | 15.7 | 0.55 | 78.4 | 17.1 | 0.17 | 151.4 | 23.2 |
| Ireland | 0.30 | 3.5 | 29.1 | 0.47 | 128.7 | 42.3 | 0.23 | 360.9 | 57.6 |
| Italy | 0.32 | 7.0 | 18.5 | 0.53 | 193.3 | 26.2 | 0.15 | 377.4 | 50.3 |
| Latvia | 0.24 | 0.2 | 5.6 | 0.64 | 17.8 | 8.6 | 0.12 | 68.5 | 16.8 |
| Luxembourg | 0.32 | 18.3 | 42.7 | 0.55 | 562.9 | 69.9 | 0.12 | 1436.5 | 117.7 |
| Malta | 0.20 | 13.7 | 12.7 | 0.61 | 221.1 | 24.2 | 0.19 | 403.1 | 31.2 |
| Portugal | 0.25 | 2.8 | 11.6 | 0.60 | 82.2 | 15.8 | 0.15 | 258.8 | 26.1 |
| Slovakia | 0.15 | 2.7 | 10.4 | 0.73 | 54.3 | 12.3 | 0.12 | 86.4 | 20.0 |
| Slovenia | 0.26 | 2.6 | 10.4 | 0.62 | 96.7 | 15.0 | 0.12 | 212.2 | 25.4 |
| Spain | 0.17 | 7.6 | 16.6 | 0.67 | 165.3 | 23.5 | 0.16 | 388.5 | 35.0 |
| The Netherlands | 0.43 | 11.0 | 31.0 | 0.55 | 188.5 | 55.4 | 0.03 | 364.0 | 67.0 |

*Notes:*
(i) This table shows population shares as well as medians of net wealth and yearly gross income in EUR thousands for renters, owners and capitalists in the euroarea and euroarea countries.
(ii) *Source:* HFCS 2014.

owners and capitalists in net wealth.

Figure 5: Shares of wealth and income in relation to population share

(a) Income
(b) Wealth



*Notes:*
(i) These graphs show shares of income and wealth in relation to the population share of renters, owners and capitalists across countries.
(ii) *Source:* HFCS 2014.

## 4.5    Inheritance and Gifts

There is a long tradition in philosophy starting with Plato and in economics beginning with Adam Smith from the 18th century onwards that does not avoid normative issues on wealth, but rather is of normative substance explicitly (see table 5 in Appendix C).

In Plato's *Republic*[3] wealth is judged in moral terms. Both poverty and large wealth have negative consequences for individuals and for the society. Only moderate wealth enables a moral live. The Scottish moral philosopher David Hume a close friend of Adam Smith recognized the inherent moralization of property, "power and riches commonly cause respect, poverty and meanness contempt, though particular views and incidents may sometimes raise the passions of envy and of pity". Thus, people cannot avoid moral judgements on wealth. They rather follow a specific pro-rich pattern in their moral judgements: "Wealth, indeed is often regarded as a kind of moral merit is indicated by the term ´respectability´ and by popular references to the ´well-to-do as upright citizens´ or ´the better-class public´." (Simmel, 1900, p.217). Furthermore, differences among earned and unearned wealth between self-made millionaires (working rich) and inheritors (trust babies) points towards moral qualifications among the

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[3]See table 5 in Appendix C

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wealthy.

Figure 6 shows the share of households among renters, owners and capitalists, who already received an inheritance or gift in the Euroarea. Among renters this share is below 17%, whereas among owners it reaches 40% and among capitalists more than 53%. Inheritances and gifts are strongly correlated with class type and therefore location in the wealth distribution.

Figure 6: Inheritances and Gifts of renters, owners and capitalists
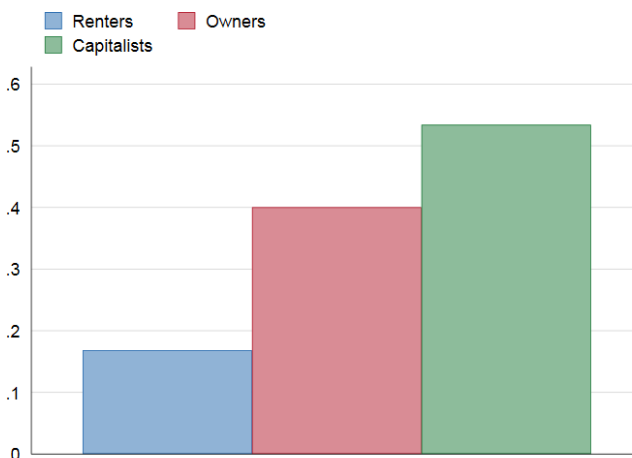
*Notes:*
(i) This graph shows the share of households who already received a gift or inheritance among renters, owners and capitalists in the euroarea.
(ii) All statistics are calculated taking into account multiple imputations and survey population weights.
(ii) *Source:* HFCS 2014.

Another way to examine this relationship and analyse the question of how one becomes a renter, owner or capitalist is to produce transition matrices. Table 4 shows such a matrix, where we also include the information about an expected inheritance or gift[4]. The likelihood of being a renter is about twice as high without inheritance than with inheritance, whereas the likelihood of being a capitalist is twice as high with inheritance than without. Also the likelihood of being a owner is higher with inheritance. The values are also differentiated for those who expect and those who do not expect an inheritance in order to illustrate that age might matter here (see also Appendix B). Those who did not receive an inheritance but expect one might be younger and still become owners through an inheritance, consequently the share of renters is a little larger. Of course capital to income ratios are closely related to inheritances,

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[4]Note that in Spain and Finland there is no information about expected inheritance available. For those countries households with and without inheritance are sorted into the group which does not expect an inheritance. See Appendix D for country level tables.

which are the transfer of accumulated capital of past (labour) income across generations. See Appendix D for country level tables.

Table 4:  Inheritance, expected inheritance and type in the Euroarea

|  | Renters | Owners | Capitalists |
| --- | --- | --- | --- |
| No Inheritance and none expected | 0.48 | 0.43 | 0.10 |
| No Inheritance but expected | 0.50 | 0.38 | 0.12 |
| Inheritance and none expected | 0.19 | 0.59 | 0.22 |
| Inheritance and expected | 0.24 | 0.49 | 0.26 |

# 5  Potential advantages with regard to measurement and further analyses

In this section we briefly discuss potential benefits of our approach with regard to the measurement of wealth (5.1), interdisciplinary research (5.2), cross country analyses (5.3), rising capital to income ratios (5.4) as well as potential tax evasion (5.5).

## 5.1  Measurement of wealth

Gathering wealth in a survey is very demanding with regard to the number of questions. Surveys with the explicit goal to gather concise information about the wealth have households do so by asking a large number of questions to collect wealth items. In both, the SCF as well as the HFCS, this is done in a sequential way. First, the interviewer asks about the existence of a certain item. And if the item exists, the interviewer asks specifically about the value of the item. If the value is not stated by the respondent, the interviewer asks the respondent to provide an interval to pin down the value or to choose such an interval from a list. This procedure has to be repeated for a large number of items to come up with a final estimate for the net wealth of the individual household. Given this estimate and the estimates of all other households, the household can then be ranked in the wealth distribution.

Most other surveys on income, consumption or labor force participation do not include any measurement of net wealth, as it would just be too demanding to include in a typical survey. Surveys already suffer from having to many questions which in turn leads to higher unit- as well as item-non-response.

One advantage of our class typology, as figures 3, 10 and 11 show is, that by only asking two (one of them only in a subsample conditional on the first question) simple questions we can already say - with rather high probability - if the household will be at the bottom, in the middle or at the top of the wealth distribution. These questions are:

1. "Are you owning the home you live in?"

2. Conditional on answering "Yes" to question one: "Are you owning a business you or a family member is working in or do you earn any income from renting out real estate?"

Given answers to these two questions, all households can be sorted into our class typology. Renters are the ones who answer "No" to question one and do not get question two. Owners are the ones who answer "Yes" to question one and "No" to question two. And Capitalists are the ones who answer "Yes" to both questions.

These two questions are not very sensitive to respondents and not very complicated for either interviewer or respondent. The item non-response will be rather small too. They can easily be added to any survey and they deliver (combined with results from the HFCS, the SCF or other wealth surveys) probabilities for the rank in the net wealth distribution and are excellent proxies for the net wealth of households. Of course this is not an alternative to the extensive detailed gathering of wealth data, as for many analyses detailed information on the household balance sheet is necessary. It also does not substitute a detailed wealth survey with regard to estimating the full distribution of wealth but instead serves as an excellent proxy on the location of a household in the wealth distribution which is related to the different functions of wealth.

Survey data - as opposed to most administrative data available - has the advantage to allow for such a relational approach. We argue that this advantage should be exploited instead of focusing on the one-dimensional approach of estimating top shares and propose a straight forward way to do so.

Furthermore register data in many countries might exist, which allows to construct this typology in order to serve as a proxy for household net wealth. This could in turn also imply potential for the joint analysis of register and survey data. Such an approach could also be viewed as analogous to functional income analysis (labor vs. capital income) in the realm of wealth. Cross country analysis can benefit from such an approach, as it allows to compare households across countries that share common social relations.

## 5.2   Interdisciplinary research

Interdisciplinarity as an aim for economists means broadening the view. It does neither need to neglect normative issues nor should it create an artificial dichotomy between statistical approaches on the one side and theoretical considerations on the other side. As Bourdieu noted: every act of research is simultaneously empirical and theoretical. It confronts the world of observable phenomena and it makes hypotheses about the underlying structures of relations that the observations want to capture. Reflexivity on and transparency of the different perspectives of scientific approaches will help not to overlook that the research process is a kind

of construction of social reality. And interdisciplinarity among sociology, economics, social psychology, history and cultural anthropology on the subject of wealth has to focus on the unquestioned preconstruction of the scientific object (Bourdieu, 1992).

Recent sociological work which can be linked to our approach includes Hecht (2017), who elaborates how top incomes and wealth are made sense of and produced by economic "elites" through the cultural process of economic evaluation. Top incomes are produced via economic evaluative practices which conceptualize the value of labour based on increases in the value of capital. Hence the legitimating purpose of top incomes and wealth is service to capital. Sørensen (2005) concludes that a sound basis for class concepts should be based on property rights to assets and resources that generate economic benefits. He claims that the distribution of rents creates exploitation classes that may engage in collective action. Furthermore also McCloskey (2014) stressed the importance to make the implicit normative perspectives and assumptions more explicit when analyzing wealth inequality.

A relational approach allows to connect the analysis of wealth inequality directly to the main questions raised with regard to wealth by sociologists and philosophers across the centuries (see also table 5 in Appendix C).

## 5.3   Cross country analyses

Our relational approach groups the households according to the functions of wealth into classes. Therefore these classes have something in common also across countries. Renters use wealth for precautionary savings and pay capitalists (or the state) to live in their home in all countries, whereas owners also have capital income through imputed rent and capitalists own businesses or rent out further real estate. As we can see in figures 10 and 11 in Appendix A the patterns are different in each country. While it is true in all countries (and overall in the Euroarea), that renters are dominantly in the bottom, owners in the middle and capitalists at the top of the wealth distribution, shares and points where one group becomes dominant over another differ dramatically. This shows, that percentile and top share analyses and comparisons might be misleading as the functions of wealth as well as power and production relations seem to be different across the distribution in different countries. These patterns likely differ due to institutional settings, tax law, history, the welfare state and many other things, and should be examined in further research.

Country dummies alone on the other hand, do not explain much. If the inverse hyperbolic sine of net wealth is regressed on country dummies only 3.4% of the variance is explained by the country dummies. That result, namely that the country level does not explain much with

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regard to wealth, is in sharp contrast from what we know about income. If the inverse hyperbolic sine of net wealth is regressed on our typology dummies about 19.6% of the variance is explained by the class dummies. The class dummies are almost orthogonal to the country dummies. If one regresses the class dummies separately on the country dummies and then regresses the inverse hyperbolic sine of net wealth on the resulting residuals still more than 19% of the variance is explained by the class dummies and they all stay significantly different from zero also separately.

One can also use the net wealth distribution to explain the share of renters, owners and capitalists across the net wealth distribution. As we know empirically (see figures 3,10, 11 ) that the functions of wealth align with the wealth distribution, i.e. renters are mostly at the bottom, owners in the middle and capitalists at the top of the wealth distribution, we can use an ordered logit approach to model the class shares.

Figure 7 shows the empirical data approximated by local linear regressions (see figure 3) again as well as predictions based on a logit regression of the types on the cdf of net wealth. Such simple models could be used to analyse counterfactual distributions. One could add household characteristics and than use the estimated coefficients of a model in country A to predict the shares of types across the distribution in country B, to analyse what part of the differences are explainable through household characteristics and what part remains unexplained. In a further step such unexplained parts might be attributed to differences in institutions in a cross country analysis to examine how different institutions shape the functions of wealth and resulting social relations.

## 5.4   Rising capital to income ratios

The highest share of households that already have inherited can be found among capitalists. Among owners the share is markedly higher than among renters (see figure 6). Here we add the values of the inheritances into the analysis. Figure 8 shows the wealth distributions of renters, owners and capitalists normalized by the overall median. It also shows hypothetical wealth distributions in which all inherited wealth is deducted.
We can clearly see that inherited wealth is an important factor of differences between classes. Given rising capital to income ratio, these differences are likely to increase. In particular the overlap of classes across the wealth distribution will likely become smaller.
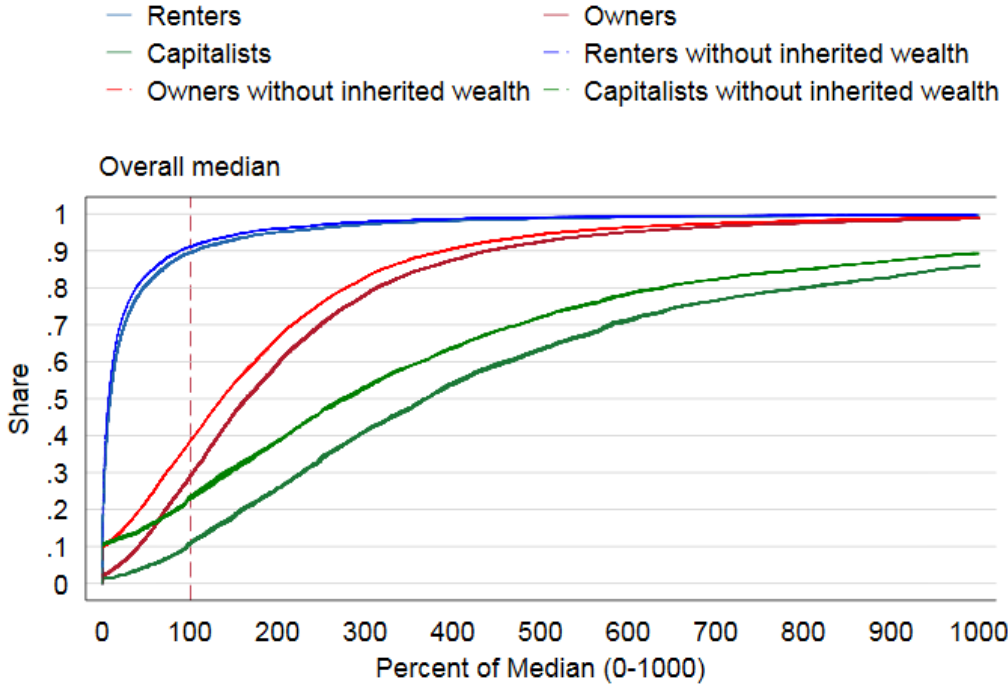
Figure 7: Ordered logit predictions of types based on cdf of net wealth only

(a) Observed



(b) Ordered logit prediction



(c) Ordered logit prediction
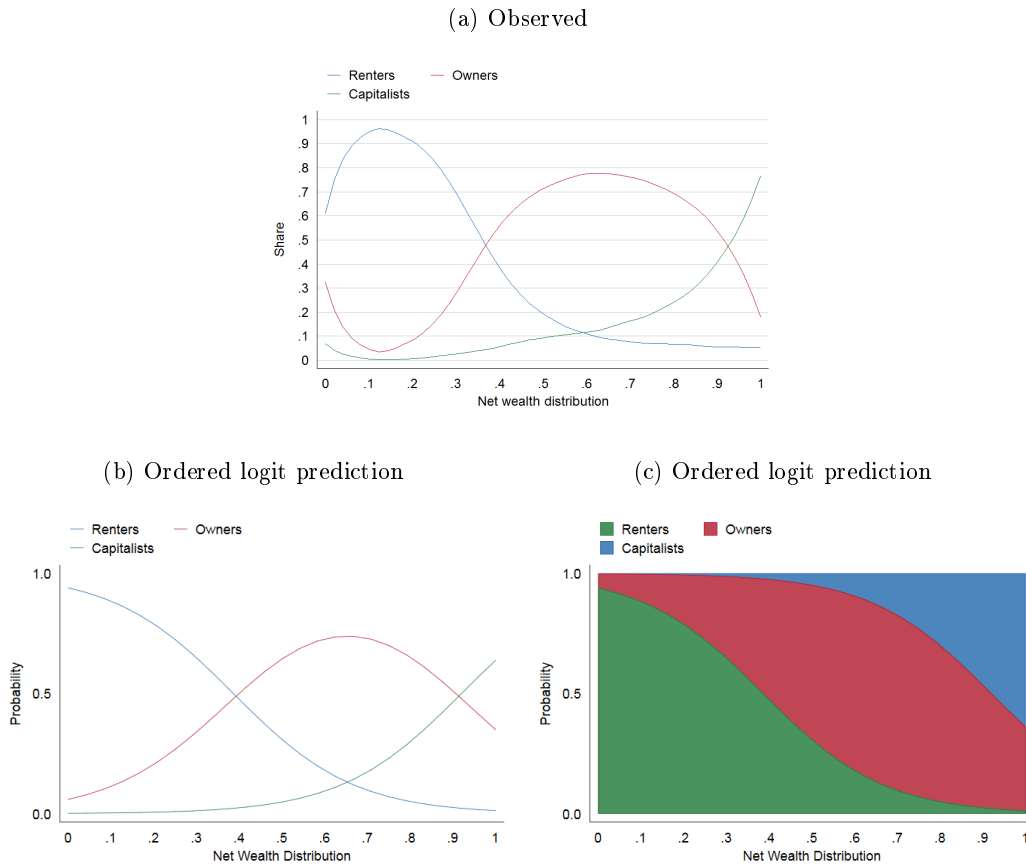


*Notes:*

(i) These graphs shows ordered logit predictions of renters, owners and capitalists across countries based only on the CDF of net wealth.

(ii) *Source:* HFCS 2014.

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Figure 8: Wealth distributions of renters, owners and capitalists in the euroarea: with and without inherited wealth
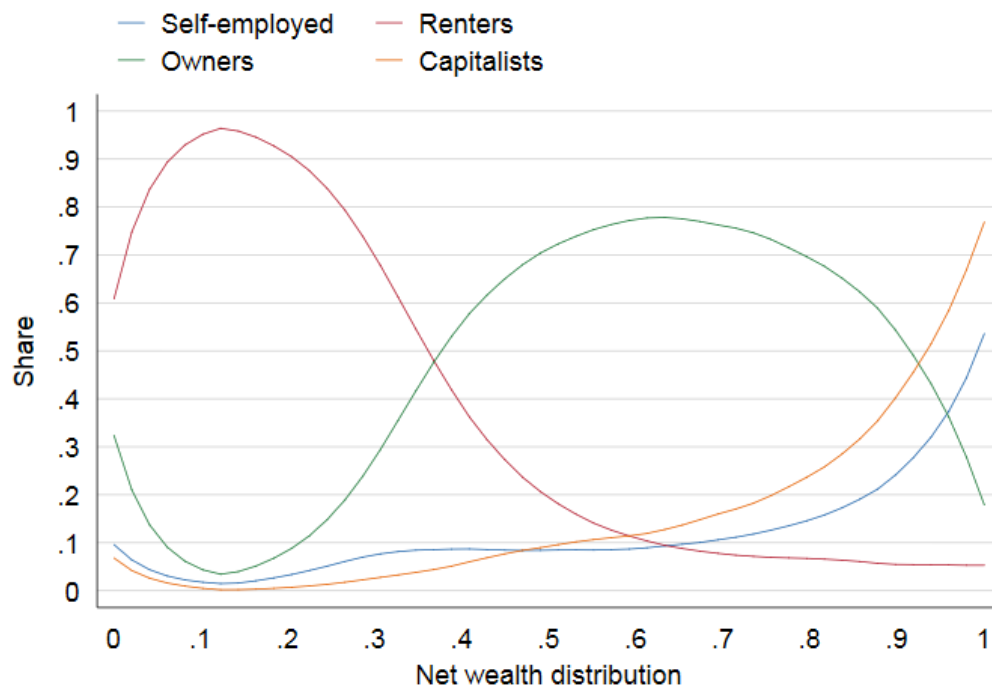
## 5.5 Potential tax evasion

Alstadsæter et al. (2017) recently estimated the share of tax evasion across net wealth and net income percentiles. This share is especially large at the very top of the distribution. Whereas for the employed it's harldy possible to evade taxation as the employer deducts the taxes directly from the wage, the opportunity to evade taxes goes along with owning a self-employed business. Alstadsæter et al. (2017) note that in the self-employment sector the bulk of detected tax evasion takes place and that therefore the size of the sector matters for potential tax evasion. In the case of their paper the self-employed sector accounts for a roughly twice larger fraction of total economic activity in the United States than in Denmark, 11% of factor-cost GDP vs. 6%.

But not only the share of self-employed is relevant but also how the self-employed are distributed across the net wealth distribution. This is shown in figure 9, which includes our class definition and the self-employed. However, we would argue that adding those, who rent out further real estate wealth - as in our definition of capitalists - makes sense, as - similarly to being self-employed - also in case of rental income, tax evasion is rather easy.

Figure 9: Self-Employed across the wealth distribution

# 6 Conclusion

In this paper we included social relations into the analysis of wealth right from the scratch. Usually the wealth distribution is analysed by deciles, percentiles and top-shares of wealth in a one-dimensional way. But, looking at the wealth distribution alone only provides an incomplete picture of the social implications of wealth. We gained additional insight by classifying households based on decisive functions of their wealth holdings.

We proposed a relational approach by focusing on different functions of wealth and operationalized it by analysing renters, owners and capitalists empirically. 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 class structures by adding a class in between. Therefore 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 capital via the imputed rent. And we defined capitalists as those who own their home but also generate capital income through owning a self-employed business or having rental income from other real estate properties.

Employing recent European data on wealth we showed that our relational approach based on decisive functions of wealth aligns well with the wealth distribution but in ways that vary considerably across countries. In the euroarea and in every single euroarea country renters are dominantly located in the bottom, owners in the middle and capitalists at the top of the wealth distribution. 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. Robustness checks with regard to the definition in appendix Appendix B show, that this result is stable to deviations from our particular choice of relational classes.
We further showed that income is the decisive economic variable for renters. This is missed when analyzing the wealth distribution in a one-dimensional way ("bottom 50"). We produced income and wealth relations at the household level, and calculated class specific capital to income ratios. Regardless of the large differences in the share of renters, median yearly gross income is (mostly substantially) larger than median net wealth of renters. In most cases yearly income is about 2-5 times larger than net wealth, which translates to capital income ratios of 0.2 to 0.5. For owners that relationship is already turned around. Median wealth is larger than median yearly income for all owner populations in all countries. In most cases median wealth is 3-8 times as large as median yearly income. Also for capitalists median wealth is larger than median income in all countries. For most countries ratios rise to about 5-13. Note

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that medians are used to calculate these class specific capital to income ratios. Means will be larger especially for capitalists (see figure 15 in Appendix A).

We showed, that intergenerational wealth transfers are a main driver of class relations. The likelihood of being a renter is about twice as high without inheritance than with inheritance, whereas the likelihood of being a capitalist is twice as high with inheritance than without. Also the likelihood of being a owner is higher with inheritance.

In addition we discussed why this class typology has many potential advantages with regard to the measurement and further analyses of wealth.

All in all we see dominant forms of wealth for different parts of the wealth distribution. Financial wealth of renters in the bottom, real estate wealth of owners in the middle and business wealth and further real estate wealth for capitalists at the top of the wealth distribution. This corresponds to different absolute figures of wealth. 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 will be decisive.

We showed that class is key in order to understand wealth inequality. Too often wealth analyses hide behind deciles, percentiles and top shares. Without narratives about power and production relations between social groups which are only added afterwards in interpretations they would hardly make a lot of sense. To make these relations explicit in the statistical analysis of wealth inequality is a step towards a more transparent and consistent analysis of wealth inequality as a social reality.

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# Appendix A  Country level and cross country figures

**Prevalence across the net wealth distribution.**  Figures 10 and 11 show the prevalence of renters, owners and capitalists across the net wealth distribution in all euroarea countries. Both are produced analogously to figure 3 in section 4.

In all countries renters are dominant in the lower, owners in the middle and capitalists at the top of the wealth distribution. Our relational approach based on the functions of wealth aligns well with the wealth distribution. However the patterns vary considerably across countries. The points in the distribution at which there are more owners than renters and - at a higher level of wealth - more capitalists than owners differ considerably. We hypothesize that this has likely to do with historical developments and differences in institutions such as the degree of rental subsidies and general welfare state spending. Public welfare is a substitute for private wealth accumulation, especially in the lower part of the distribution (Fessler and Schürz, 2015). See also figure 12.

**Prevalence of renters and social security expenditure**  Figure 12 shows the prevalence of renters as well as social security expenditure per capita across countries. As social security expenditure serves as substitute for private wealth accumulation. one can see a clear positive relationship. Especially Austria and Germany seem to have a large share of renters. In both countries there exists a relatively large share of social housing and rent control mechanisms.

**Top shares and shares of renters, owners and capitalists.**  Figure 13 shows the relationship between the top 5% shares of net wealth and the net wealth shares of renters, owners and capitalists. Capitalist shares are positively correlated with top 5% net wealth shares. This is evidence that common interpretations of with regard to power are justified given our relational approach.
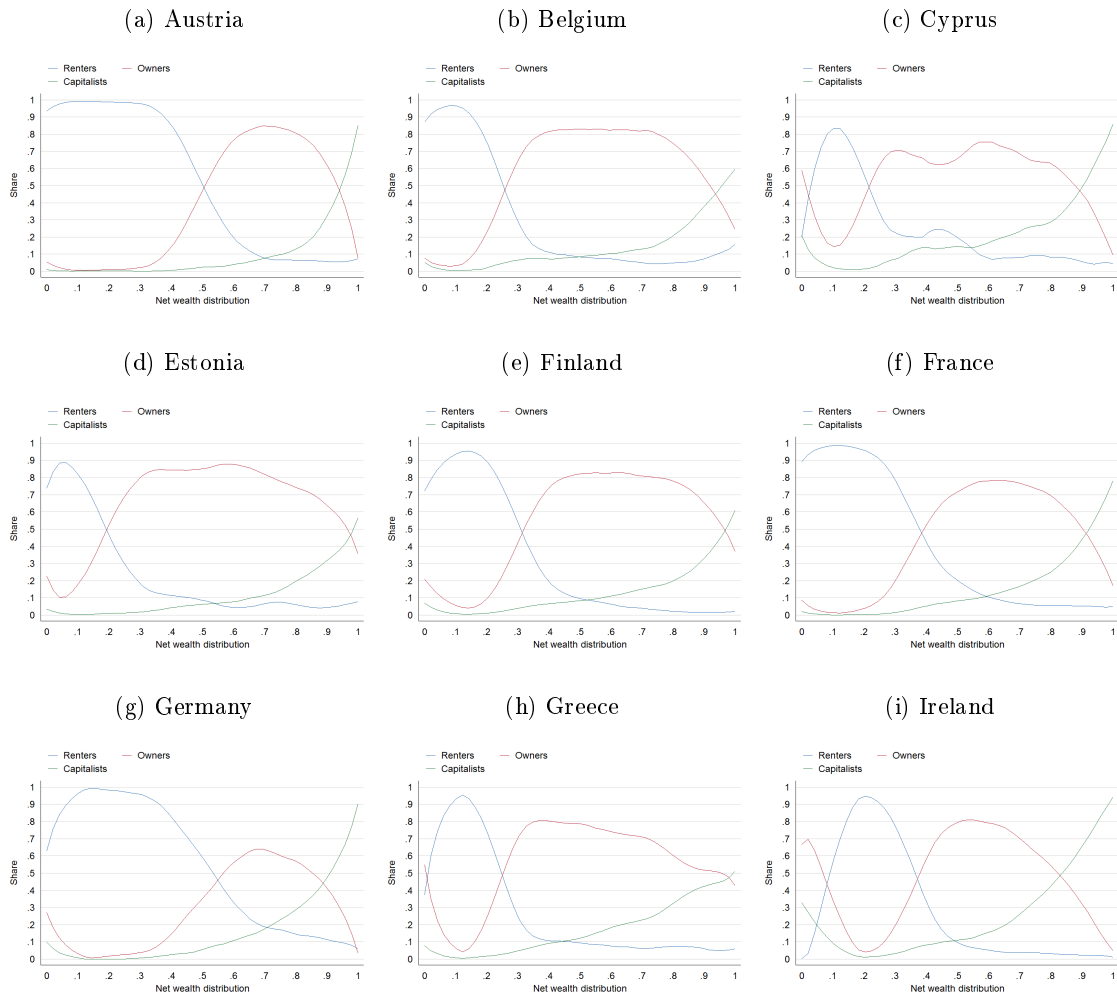
**Income and wealth.**  Figure 14 shows country level graphs relating the income shares of renters (a), owners (c), and capitalists (e) to their shares in net wealth. The relationships are positive for all three types. In countries where a certain type tends to have a higher share in wealth, they tend to have also a higher share in income.

Renters have an especially large share in income compared to their wealth share in Austria and Germany. In Latvia, Belgium, Slovenia, Cyprus, Portugal, Estonia and Spain the share in income relative to the share in wealth is rather large in comparison with other countries. Owners on the other hand have a comparably low income share compared to their wealth share in The Netherlands, Austria, and Germany, and to a lesser degree for owners also in Italy, Greece and France.

Capitalists have also a rather low income share compared to their wealth share in the Nether-

Figure 10: Renters, owners and capitalists in euroarea-countries

(a) Austria



(b) Belgium



(c) Cyprus



(d) Estonia



(e) Finland



(f) France



(g) Germany



(h) Greece



(i) Ireland



*Notes:*
(i) These graphs show the prevalence of renters, owners and capitalists over the net wealth distribution for different countries. We use a local polynomial estimator with an epanechnikov kernel, a bandwith of 0.05 and degree 1 to prevent boundary bias as it allows for any trends also close to the endpoints.
(ii) *Source:* HFCS 2014.

Figure 11: Renters, owners and capitalists in euroarea-countries

(a) Italy



(b) Latvia



(c) Luxembourg



(d) Malta



(e) Portugal



(f) Slovakia



(g) Slovenia


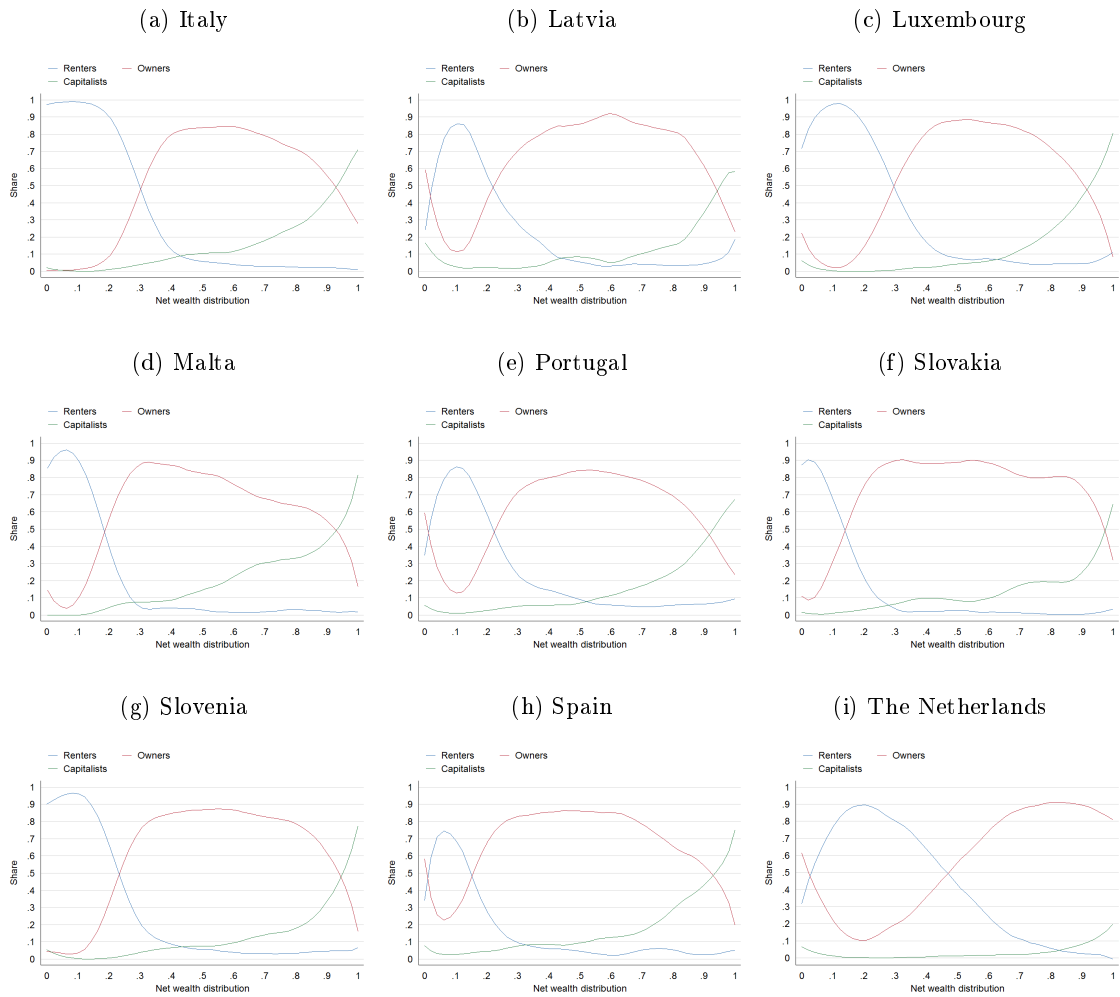
(h) Spain



(i) The Netherlands



*Notes:*
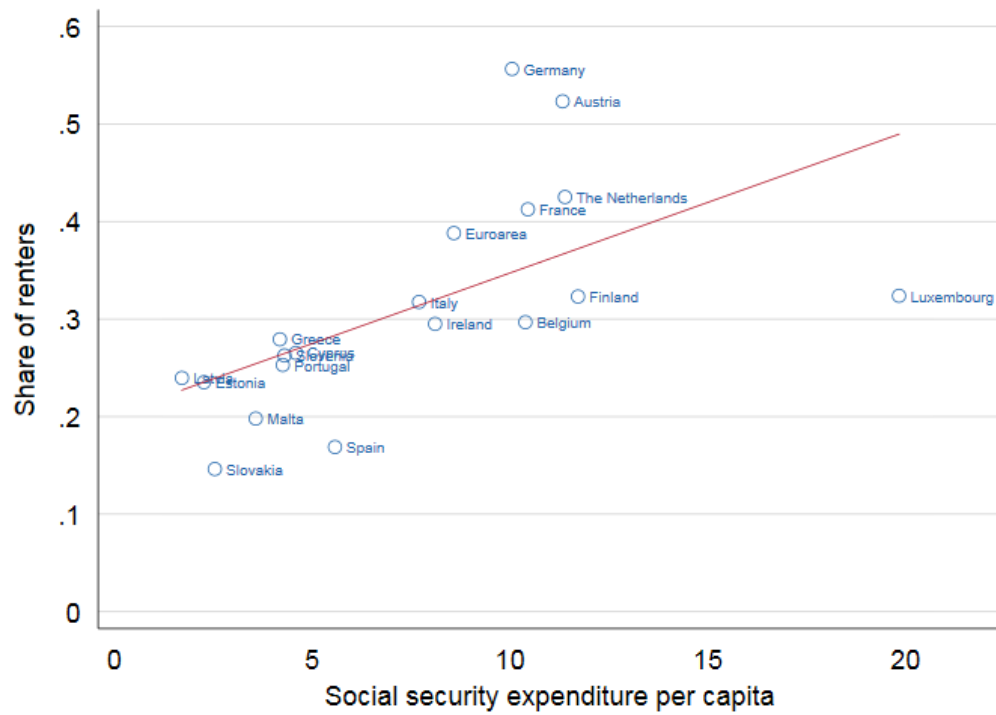
(i) These graphs show the prevalence of renters, owners and capitalists over the net wealth distribution for different countries. We use a local polynomial estimator with an epanechnikov kernel, a bandwith of 0.05 and degree 1 to prevent boundary bias as it allows for any trends also close to the endpoints.

(ii) *Source:* HFCS 2014.

Figure 12: Share of renters and social security expenditure

Figure 13: Correlation of top net wealth shares and net wealth shares of renters, owners and capitalists

(a) Renters

(b) Owners
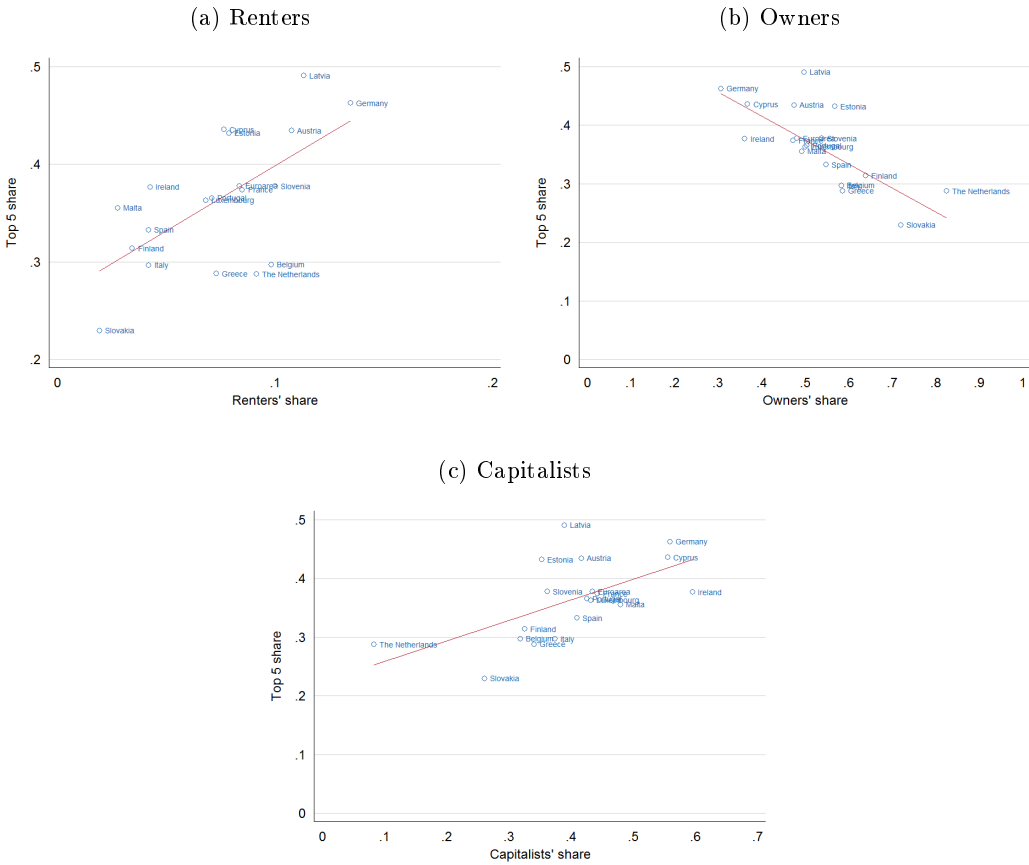


(c) Capitalists



*Notes:*
(i) These graphs show scatter plots of top 5 shares of net wealth and net wealth shares of renters, owners and capitalists across countries.
(ii) *Source:* HFCS 2014.

lands, Austria and Germany, and a comparably large one in Slovakia and Italy.

Income and wealth shares are not robust statistics. Few observations might be very influential for the shares. That is why we use median yearly gross income and median net wealth values in EUR thousands to illustrate the relationship in a more robust way and allow the comparison of absolute values between countries. Figure 14 shows the relationship for renters $(b)$, owners $(d)$ and capitalists $(f)$. The green doted lines illustrate the points where wealth equals income, i.e. a shifted 45 degree line, whereas the red solid lines provides a linear fit.

Figure 14: Income and wealth of renters, owners and capitalists

(a) Renters shares



(b) Owners shares



(c) Capitalists shares



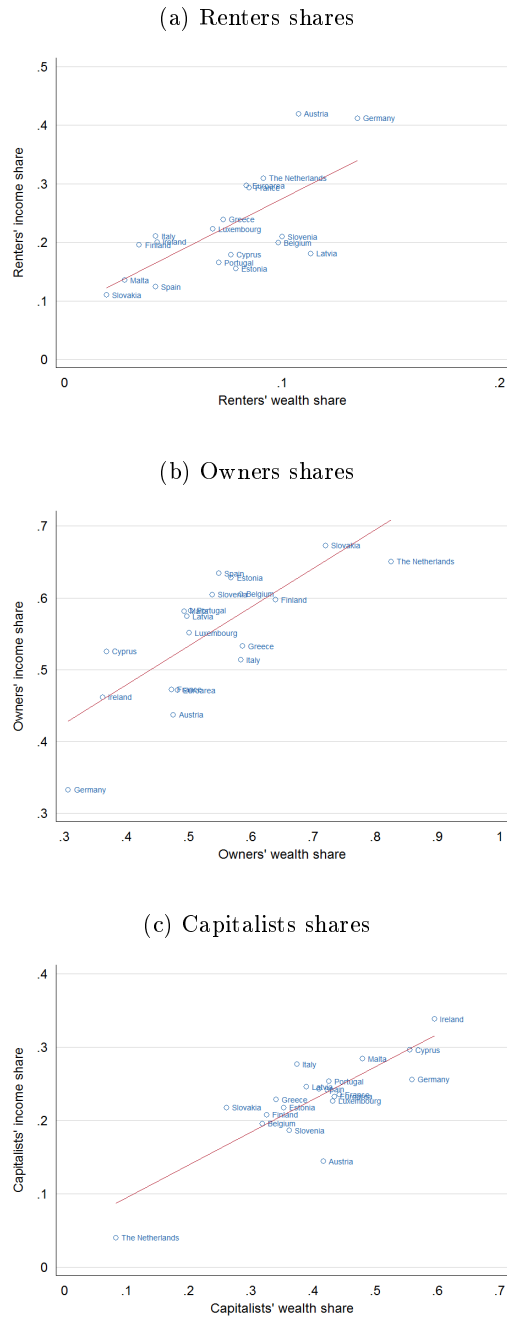*Notes:*
(i) These graphs show scatter plots of shares of income and net wealth shares of renters, owners and capitalists across countries.
(ii) *Source:* HFCS 2014.

Figure 15: Mean income and wealth of renters, owners and capitalists

(a) Renters Median



(b) Renters Mean



(c) Owners Median



(d) Owners Mean



(e) Capitalists Median
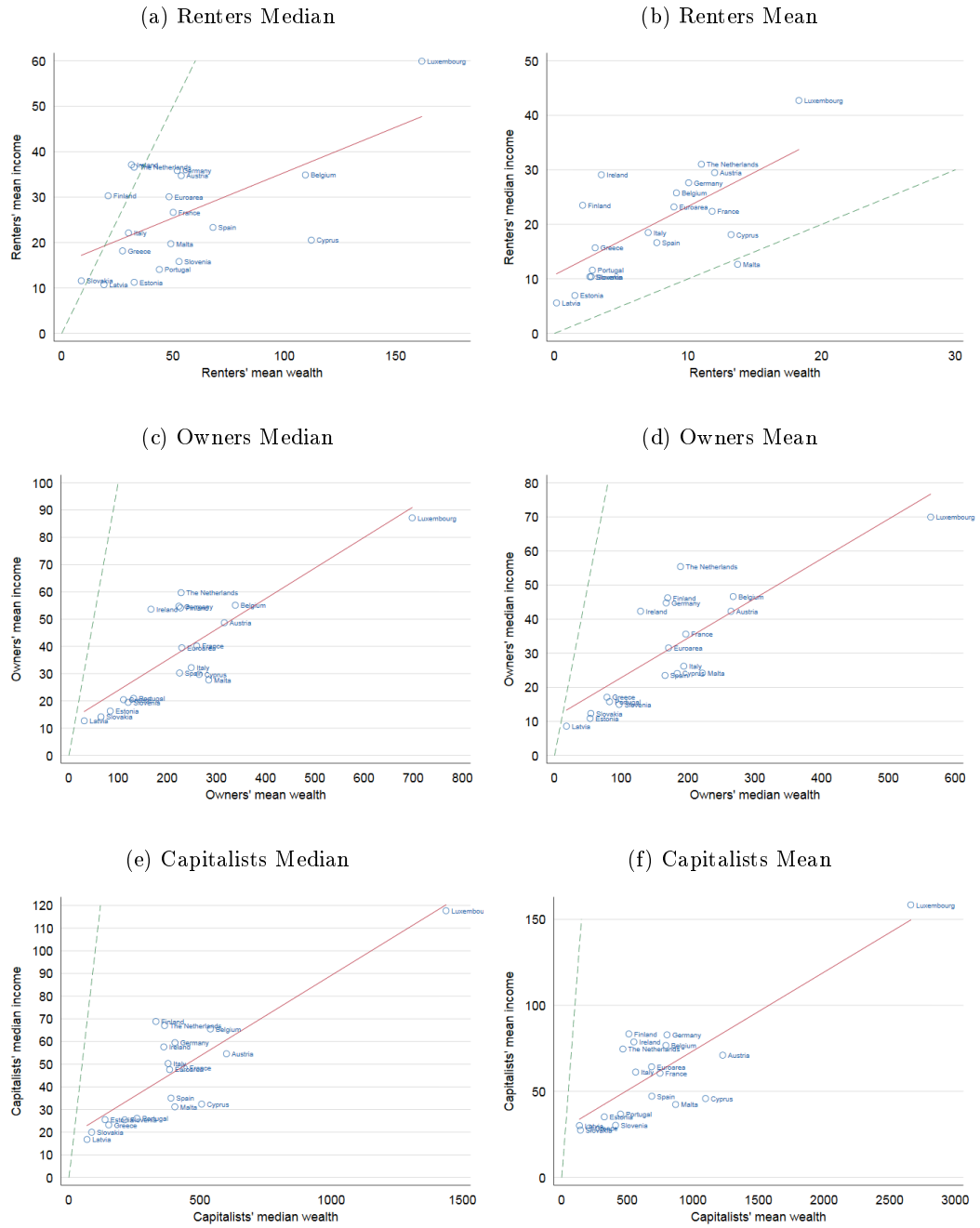


(f) Capitalists Mean



*Notes:*
(i) These graphs show scatter plots median gross income and median net wealth of renters, owners and capitalists across countries.
(ii) *Source:* HFCS 2014.

# Appendix B  Robustness of typology

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 are the capitalists, no matter if they are owner occupiers and split all others into renters or owners. As one can see in figure 16 that does not change the result qualitatively. Still renters are located dominantly in the bottom, owners in the middle and self-employed at the top. However, we think our preferred specification fits social reality better, as the self-employed who are renters tend to be the ones which are self-employed because the have atypical contracts rather than businesses. Furthermore our definition includes also households who own other real estate they rent out and are therefore also able to generate relevant income out of wealth. As one can see they are typically located in the upper part of the distribution (see difference between our capitalists and the self-employed group).

As a further robustness check we check if the alignment between our definition and the wealth distribution is driven by age or other characteristics typically used for the definition of social class, namely education and occupation. To do so 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 squarred and age cubed as well as education (specification one) and occupation (specification two). Education is controlled for by 4 education dummies, for occupation we use the ISCO (International Standard Classification of Occupations) classification and treat all-non working as a different class (56 dummies in total). By use of the Frisch-Waugh-Lovell theorem we then take the residuals of these regressions, where the influence of age as well as education or occupation 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 vingtiles of net wealth.

Figures 17 show the resulting binned scatter plots[5] for renters (a-c), owners (d-f), and capitalists (g-i). One can clearly see that the main patterns of prevalence of renters, owners and capitalists hold. In case of filtering out age, age squared, age cubed and 56 occupational categories the patterns for renters and owners are slightly less pronounced. However it is rather striking that even occupational controls do not change the alignment of the class typology with the wealth distribution qualitatively. So even inside the same age groups and occupational groups our classification sorts household well along the wealth distribution.

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[5]We use the binscatter STATA command written by Michael Stepner, MIT

Figure 16: Typology Comparison
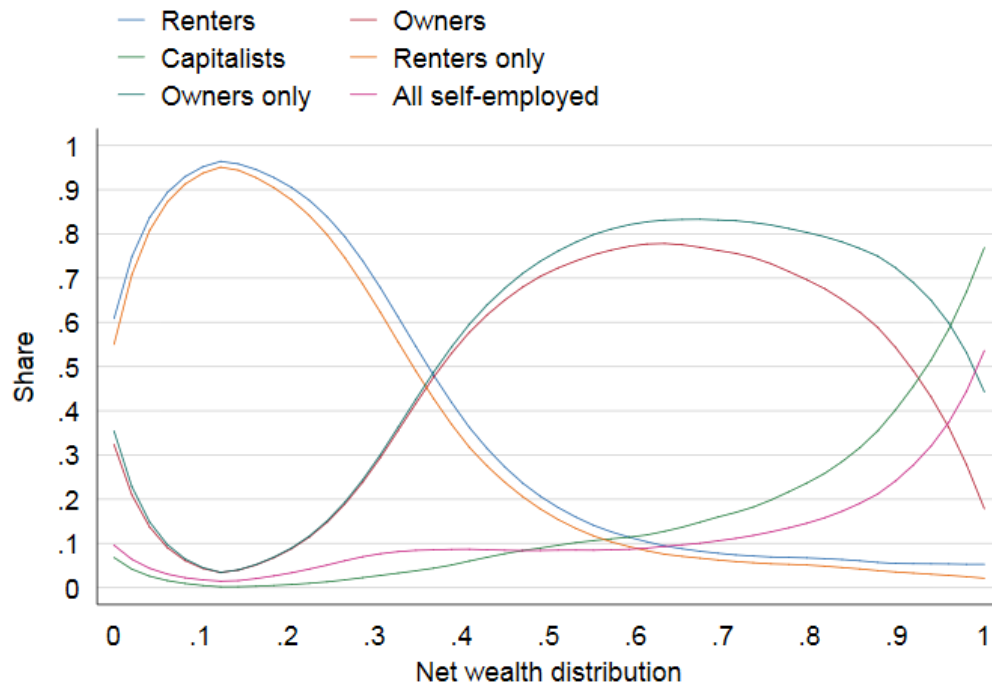
Figure 17: Estimated shares for renters, owners and capitalists - controlled for age, education and occupation



(a) Renters      (b) Renters: age, education      (c) Renters: age, occupation

(d) Owners      (e) Owners: age, education      (f) Owners: age, occupation

(g) Capitalists      (h) Capitalists: age, education      (i) Capitalists: age, occupation
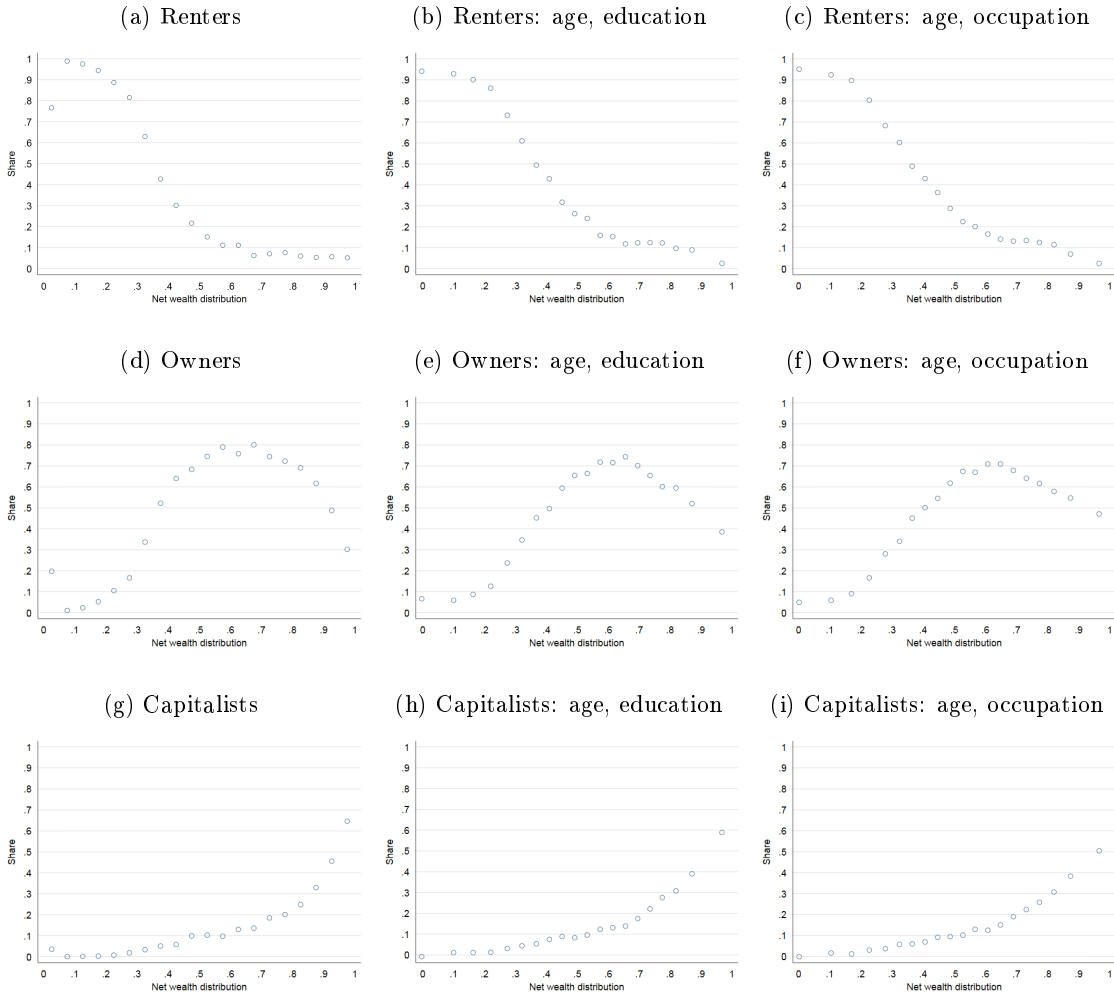
*Notes:*
(i) These graphs show estimated shares of renters, owners and capitalists across the net wealth distribution, but controlled for age, age squarred and age cubed of the household head, as well as education or occupation.
(ii) Using the Frisch-Waugh-Lovell theorem, we first separately regress the identifier as well as the cdf of net wealth on age, age squarred, age cubed and either education or occupation dummies. And Second add means to the residuals and plot the residuals against each other to show the relationship after filtering out the dependent variables from the regressions. We use the binscatter STATA command written by Michael Stepner, MIT, to do so.
(iii) *Source:* HFCS 2014.

# Appendix C    Moral hierachy of wealth

Table 5: The moral hierarchy of wealth - citations

| Author | Publication | Publisher | Year of Publication | Quote |
|---|---|---|---|---|
| Plato | Laws | Gutenberg | 348 BC | the legislator should determine what is to be the limit of poverty or wealth |
| Plato | Republic | Gutenberg | 380 BC | When a potter becomes rich he will grow more and more indolent and careless. He will become a worse potter. |
| Aristotle | Politics | Gutenberg | 350 BC | [I]t is evident that in the case of the goods of fortune as well a middling possession is the best of all. For [a man of moderate wealth] is readiest to obey reason, while for one who is [very wealthy or very poor] it is difficult to follow reason. The former sort tend to become arrogant and base on a grand scale, the latter malicious and base in petty ways; and acts of injustice are committed either through arrogance or through malice |
| Adam Smith | The theory of moral sentiments | Cambridge University Press | 1759 | This disposition to admire and almost to worship, the rich and the powerful, and to despise, or at least, to neglect persons of poor and men condition, though necessary both to establish and to maintain the distinction of rank and the order of society, is at the same time the great and universal cause of corruption of our sentiments |
| David Hume | An enquiry concerning the principles of morals | Oxford | | Where riches are the chief idol, corruption, venality; rapine prevail: arts, manufactures, commerce, agriculture flourish. |
| Adam Smith | The Wealth of Nations | Penguin | 1776 | Wealth is power as Mr. Hobbes says. |
| John A. Hobson | The Science of Wealth | Holt and company | 1911 | There is, however, another broad and widely different use of the term wealth which identifies it with human welfare or well-being. |
| Georg Simmel | Philosophy of Money | Routledge | 1900 | The wealthy man enjoys advantages beyond the enjoyment of what he can buy with his money. The merchant supplies him more reliably and more cheaply than he does poorer people; everyone he meets, whether likely to profit from his wealth or not, is more deferential; he moves in an ideal atmosphere of unquestioned privilege" |
| Georg Simmel | Philosophy of Money | Routledge | 1900 | Wealth, indeed is often regarded as a kind of moral merit is indicated by the term 'respectability' and by popular references to the well-to-do as upright citizens' or 'the better-class public'. |
| Veblen | Theory of Leisure Class | Oxford | 1899 | the evidence of wealth serve to impress one's importance on others and to keep their sense of importance alive and alert but it is scarcely less use in building up and preserving one's self-complacency.... Abstention from labor is the conventional evidence of wealth and is therefore the conventional mark of social standing; and this insistence on the meritoriousness of wealth leads to a more strenuous insistence on leisure.... |
| John Stuart Mill | Principles of Political Economy | Longmans, Green and Co | 1848 | Money, being the instrument of an important public and private purpose, is rightly regarded as wealth; but everything else which serves any human purpose, and which nature does not afford gratuitously, is wealth also. |
| James Meade | Efficiency, equality and the ownership of property | Allen and Unwin | 1964 | A man with much property has great bargaining strength and a sense of security, Independence, and freedom.... He can snap his fingers at those on whom he must rely for income, for he can always rely for a time on his capital. |
| Amartya Sen | Development as Freedom | Harvard University Press | 2007 | ...wanting more income or wealth. This is not because income and wealth are desirable for their own sake, but because, typically, they are admirable general-purpose means for having more freedom to lead the kind of lives we have reason to value. |

# Appendix D  Inheritance and types

In this annex we show all the country level transition matrices analogous to the euroarea matrix 4 in subsection 4.5. They show that in all countries inheritances are closely linked to class. Note that in Spain and Finland there is no information about expected inheritance available.

Table 6:  Inheritance, expected inheritance and type in Austria

|  | Renters | Owners | Capitalists |
|---|---|---|---|
| No Inheritance and none expected | 0.63 | 0.33 | 0.04 |
| No Inheritance but expected | 0.77 | 0.21 | 0.02 |
| Inheritance and none expected | 0.32 | 0.52 | 0.17 |
| Inheritance and expected | 0.43 | 0.42 | 0.15 |

Table 7:  Inheritance, expected inheritance and type in Belgium

|  | Renters | Owners | Capitalists |
|---|---|---|---|
| No Inheritance and none expected | 0.40 | 0.50 | 0.10 |
| No Inheritance but expected | 0.24 | 0.63 | 0.13 |
| Inheritance and none expected | 0.18 | 0.67 | 0.15 |
| Inheritance and expected | 0.10 | 0.61 | 0.30 |

Table 8:  Inheritance, expected inheritance and type in Cyprus

|  | Renters | Owners | Capitalists |
|---|---|---|---|
| No Inheritance and none expected | 0.35 | 0.47 | 0.19 |
| No Inheritance but expected | 0.31 | 0.59 | 0.10 |
| Inheritance and none expected | 0.11 | 0.67 | 0.23 |
| Inheritance and expected | 0.15 | 0.58 | 0.27 |

Table 9:  Inheritance, expected inheritance and type in Germany

|  | Renters | Owners | Capitalists |
|---|---|---|---|
| No Inheritance and none expected | 0.65 | 0.25 | 0.10 |
| No Inheritance but expected | 0.65 | 0.23 | 0.13 |
| Inheritance and none expected | 0.29 | 0.43 | 0.28 |
| Inheritance and expected | 0.42 | 0.35 | 0.23 |

Table 10:  Inheritance, expected inheritance and type in Estonia

|  | Renters | Owners | Capitalists |
|---|---|---|---|
| No Inheritance and none expected | 0.27 | 0.65 | 0.08 |
| No Inheritance but expected | 0.45 | 0.41 | 0.15 |
| Inheritance and none expected | 0.10 | 0.76 | 0.14 |
| Inheritance and expected | 0.21 | 0.64 | 0.16 |

Table 11:  Inheritance, expected inheritance and type in Spain

|  | Renters | Owners | Capitalists |
|---|---|---|---|
| No Inheritance | 0.20 | 0.67 | 0.12 |
| Inheritance | 0.10 | 0.65 | 0.24 |

Table 12:   Inheritance, expected inheritance and type in Finland

|  | Renters | Owners | Capitalists |
|---|---|---|---|
| No Inheritance | 0.41 | 0.48 | 0.10 |
| Inheritance | 0.22 | 0.63 | 0.15 |

Table 13:   Inheritance, expected inheritance and type in France

|  | Renters | Owners | Capitalists |
|---|---|---|---|
| No Inheritance and none expected | 0.55 | 0.38 | 0.07 |
| No Inheritance but expected | 0.51 | 0.39 | 0.11 |
| Inheritance and none expected | 0.26 | 0.53 | 0.21 |
| Inheritance and expected | 0.27 | 0.48 | 0.25 |

Table 14:   Inheritance, expected inheritance and type in Greece

|  | Renters | Owners | Capitalists |
|---|---|---|---|
| No Inheritance and none expected | 0.39 | 0.48 | 0.13 |
| No Inheritance but expected | 0.71 | 0.16 | 0.13 |
| Inheritance and none expected | 0.02 | 0.75 | 0.22 |
| Inheritance and expected | 0.09 | 0.49 | 0.42 |

Table 15:   Inheritance, expected inheritance and type in Ireland

|  | Renters | Owners | Capitalists |
|---|---|---|---|
| No Inheritance and none expected | 0.37 | 0.49 | 0.14 |
| No Inheritance but expected | 0.41 | 0.41 | 0.18 |
| Inheritance and none expected | 0.08 | 0.46 | 0.46 |
| Inheritance and expected | 0.20 | 0.37 | 0.43 |

Table 16:  Inheritance, expected inheritance and type in Italy

|  | Renters | Owners | Capitalists |
|---|---|---|---|
| No Inheritance and none expected | 0.43 | 0.46 | 0.11 |
| No Inheritance but expected | 0.48 | 0.37 | 0.15 |
| Inheritance and none expected | 0.06 | 0.74 | 0.20 |
| Inheritance and expected | 0.08 | 0.57 | 0.35 |

Table 17:  Inheritance, expected inheritance and type in Luxembourg

|  | Renters | Owners | Capitalists |
|---|---|---|---|
| No Inheritance and none expected | 0.39 | 0.54 | 0.07 |
| No Inheritance but expected | 0.44 | 0.46 | 0.10 |
| Inheritance and none expected | 0.12 | 0.63 | 0.25 |
| Inheritance and expected | 0.20 | 0.57 | 0.23 |

Table 18:  Inheritance, expected inheritance and type in Latvia

|  | Renters | Owners | Capitalists |
|---|---|---|---|
| No Inheritance and none expected | 0.26 | 0.65 | 0.09 |
| No Inheritance but expected | 0.48 | 0.45 | 0.07 |
| Inheritance and none expected | 0.09 | 0.73 | 0.17 |
| Inheritance and expected | 0.18 | 0.50 | 0.31 |

Table 19:  Inheritance, expected inheritance and type in Malta

|  | Renters | Owners | Capitalists |
|---|---|---|---|
| No Inheritance and none expected | 0.30 | 0.58 | 0.12 |
| No Inheritance but expected | 0.12 | 0.62 | 0.26 |
| Inheritance and none expected | 0.15 | 0.64 | 0.21 |
| Inheritance and expected | 0.07 | 0.62 | 0.31 |

Table 20:  Inheritance, expected inheritance and type in The Netherlands

|  | Renters | Owners | Capitalists |
|---|---|---|---|
| No Inheritance and none expected | 0.46 | 0.52 | 0.02 |
| No Inheritance but expected | 0.22 | 0.71 | 0.07 |
| Inheritance and none expected | 0.18 | 0.76 | 0.06 |
| Inheritance and expected | 0.28 | 0.66 | 0.06 |

Table 21:  Inheritance, expected inheritance and type in Slovenia

|  | Renters | Owners | Capitalists |
|---|---|---|---|
| No Inheritance and none expected | 0.35 | 0.56 | 0.09 |
| No Inheritance but expected | 0.55 | 0.37 | 0.09 |
| Inheritance and none expected | 0.08 | 0.74 | 0.18 |
| Inheritance and expected | 0.08 | 0.69 | 0.22 |

Table 22:   Inheritance, expected inheritance and type in Portugal

|                                    | Renters | Owners | Capitalists |
|------------------------------------|---------|--------|-------------|
| No Inheritance and none expected   | 0.34    | 0.56   | 0.10        |
| No Inheritance but expected        | 0.23    | 0.60   | 0.17        |
| Inheritance and none expected      | 0.14    | 0.68   | 0.18        |
| Inheritance and expected           | 0.12    | 0.62   | 0.25        |

Table 23:   Inheritance, expected inheritance and type in Slovakia

|                                    | Renters | Owners | Capitalists |
|------------------------------------|---------|--------|-------------|
| No Inheritance and none expected   | 0.18    | 0.73   | 0.09        |
| No Inheritance but expected        | 0.29    | 0.60   | 0.10        |
| Inheritance and none expected      | 0.06    | 0.80   | 0.14        |
| Inheritance and expected           | 0.11    | 0.64   | 0.25        |