Stefan Ederer
Maximilian Mayerhofer
Miriam Rehm

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Rich and Ever Richer: Differential Returns Across Socio-Economic Groups

Stefan Ederer[a], Maximilian Mayerhofer[b], and Miriam Rehm[c]*

[a]*Austrian Institute of Economic Research (WIFO) & Department of Socioeconomics, Vienna University of Economics and Business (WU); [b] Department of Socioeconomics, Vienna University of Economics and Business (WU); [c] Institute for Socio-Economics, University of Duisburg-Essen, Duisburg, Germany & Department of Socioeconomics, Vienna University of Economics and Business (WU), Vienna, Austria; Lotharstraße 65, 47057 Duisburg, miriam.rehm@uni-due.de*

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This paper estimates rates of return across the gross wealth distribution in eight European countries. Like differential saving rates, differential rates of return matter for Post Keynesian theory, because they impact the income and wealth distribution and add an explosive element to growth models. We show that differential rates of return matter empirically by merging data on household balance sheets with long-run returns for individual asset categories. We find that (1) the composition of wealth differentiates between three socioeconomic groups: 30% are asset-poor, 65% are middle-class home owners, and the top 5% are business-owning capitalists; (2) rates of return rise across all groups; and (3) rates of return broadly follow a log-shaped function across the distribution, where inequality in the lower half of the distribution is higher than in the upper half. If socioeconomic groups are collapsed into the bottom 95% workers and top 5% capitalists, then rates of return are 5.6% for the former and 7.2% for the latter.

Introduction

The distribution of wealth plays an important role in determining economic capabilities and in shaping the position of individuals in the socioeconomic structure. Wealth is not only distributed much more unequally than income, but it is also linked to political power. For all these reasons, Post Keynesian economics has a long tradition of investigating the theory of wealth inequality (Pasinetti 1962, Dutt 1990, Palley 2012). Recently, advances in data availability have garnered renewed interest in empirical wealth research (Piketty 2014; Saez and Zucman 2016; Alvaredo et al. 2017).

In conceptualizing inequality, the Post Keynesian literature traditionally differentiates between classes. Workers differ systematically from capitalists in their insertion into the economy, i.e. their options and outcomes (Wright 1997), which is reflected in their respective income sources. Recent Post Keynesian thought has thus paid detailed attention to the functional distribution of income (Bhaduri and Marglin 1990; Barbosa and Taylor 2006; Stockhammer and Ederer 2008; Stockhammer, Onaran, Ederer 2009). This has shifted the focus somewhat from classes to the source of income. For understanding wealth inequality, however, classes or socioeconomic groups are important (Rehm and Schnetzer 2015; Rehm, Naqvi, Hofmann 2016; Ederer and Rehm 2019): The ownership of businesses conveys very different economic capabilities than, say, the ownership of one's main residence. Since returns differ between wealth categories, such differences in ownership translate directly into differential returns on wealth for different socioeconomic groups.

The Post Keynesian literature has long provided theoretical arguments for differential rates of return (Kahn 1959, Laing 1969, Harcourt 1972, Pasinetti 1974, 1983; Gupta 1977) analogous to differential saving rates. This debate revolved around the question whether interest rates (received by workers) are lower than profit rates (received

by capitalists) and already raised several key points around differential returns: First, differential rates of return impact the income distribution if there are mixed income sources, because they imply workers' income from profits on their invested capital is lower than capitalists'. Second, differential rates of return may lead to positive (i.e. explosive) feedback effects in the distribution of wealth. Third, this then has implications for the stability of a growth regime. The issue of differential rates of return is thus highly relevant for the Post Keynesian growth literature.

Crucially for this paper, new and improved data sources now make it possible to investigate the question of differential rates of return empirically. Some recent empirical work (Bach, Calvet, and Sodini 2018; Fagereng et al. 2018) has done so for individual Nordic countries, often with a limited theoretical backdrop. The aim of this paper is thus to situate differential returns in a modern Post Keynesian debate, and to provide an empirical estimate for differential rates of return for socioeconomic groups in several European countries.

This paper estimates rates of return across the distribution of gross wealth in European countries by combining two (relatively) novel data sets. We apply rates of return compiled by Jordà et al. (2018) to the Household Finance and Consumption Survey (ECB 2014) and show that (1) the composition of wealth differentiates between three socioeconomic groups: the asset-poor, middle-class home owners, and capitalists; (2) rates of return rise over those groups in all countries; and (3) inequality is higher between the middle and bottom than between the top and middle of the wealth distribution.

The structure is as follows: Section 2 reviews the literature and section 3 describes the data sources. Section 4 contains our results, and section 5 concludes.

Literature Review

The Post Keynesian literature has long recognized that socioeconomic groups or classes (i.e., workers and capitalists) differ in systematic ways. One key aspect here are differential saving rates, i.e. that capitalists on the whole save a larger fraction of their income than workers. This is a well-established concept in Post Keynesian theory that was introduced by Keynes (1936) and formalized by Kalecki (1937), who posits a bipolar distribution of functional income – where workers exclusively earn wages and rentiers receive only profits – and in addition assumes that workers do not save. With these restrictive assumptions, the functional and the personal income distribution coincide. Kaldor (1955) relaxes the assumption that workers do not save in his well-known savings function, and thus moves towards a differentiation by income source. However, wage-earners still have a lower saving rate than profit-earners, because firms retain some profits to reinvest.

Pasinetti (1962), in contrast, deals with classes (workers and capitalists) and assumes different saving rates for each class regardless of their income sources. Furthermore, he points out that workers who save and thus accumulate wealth must receive a part of profits as interest, even though he assumes a single rate of return for both workers and capitalists (Pasinetti 1962).[1] In modern Post Keynesian models, a positive saving rate for workers is by now a standard assumption (e.g. Bhaduri and Marglin 1990). In the recent literature,

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1. He states that "in a long-run equilibrium model, the obvious hypothesis is that of a rate of interest equal to the rate of profits" (Pasinetti, 1962, pp. 271-272). Samuelson and Modigliani (1966) point out that while it is necessary to make this assumption explicit in Pasinetti's framework, it is not relevant in Kaldor's framework, given that the latter distinguishes between income groups.

a number of works have built on Pasinetti in incorporating an endogenous wealth distribution in Post Keynesian frameworks (Palley 2012, 2017; Taylor et al. 2015; Ederer and Rehm 2019), in which the wealth share of workers and capitalists depend inter alia on their saving rates. If there are differential rates of return, then the question whether to focus on the functional or personal income distribution is important, because profit incomes (which are determined by the functional income distribution) differ by classes (i.e., the personal income distribution). That is, differential returns directly impact the income distribution.

A rich Post Keynesian debate has examined the implications for Post Keynesian theory if the interest rate received by workers is lower than the rate of profit received by capitalists. First suggested by Kahn (1959) and picked up by Laing (1969), early contributions to the literature on differential rates of return were among others Balestra and Baranzini (1971), Harcourt (1972), Maneschi (1974), Moore (1974), Gupta (1977), Fazi and Salvadori (1981), and especially Pasinetti's seminal work (1974, 1983).[2] This literature revolved around the recognition that an interest rate lower than (capitalists' or the average) profit rate lends further support to a Pasinetti-like stable wealth distribution.[3] Differential returns however add an explosive element to the dynamic of wealth inequality, and thus have implications for the stability of growth. They raise the likelihood of landing in an 'anti-dual equilibrium' (Darity 1981), in which capitalists own all the wealth.

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2. For a comprehensive overview of this theoretical literature, see Baranzini and Mirante (2013).

3. As opposed to the 'dual equilibrium' by Samuelson and Modigliani (1966), in which capitalists cease to exist and are replaced by workers, who own all wealth.

Furthermore, differentiating between the rates of return for workers and capitalists also opens up possibilities to include different assets and a different portfolio composition for the two classes (Kurz and Salvadori 2010). In particular, it permits including a monetary asset (Ramanathan 1976), and thus brings "money back into Cambridge macroeconomics" (Kregel 1985). Distinguishing between different (monetary and non-monetary) assets is now standard in portfolio choice theory (Brainard and Tobin 1968, Tobin 1969) and in Post Keynesian stock-flow-consistent modelling (Godley and Lavoie 2007).

Conceptually, differential rates of return thus have a similar effect on the distribution of income between classes and on the distribution of wealth as different saving rates. As Pasinetti (1974: 141) puts it: "… a rate of interest lower than the rate of profit has the same effect as a higher propensity to save of the capitalists". This aspect was stressed more recently by Piketty (2014, 430f), who is concerned with the scale effects or increasing returns of wealth that may contribute to rising wealth inequality: Already large estates accumulate at a much faster pace than smaller wealth holdings, as the former receive relatively higher returns (Piketty 2014), which in turn makes them larger, leading to higher returns and so on. This cumulative causation (Myrdal, 1957) is self-reinforcing and leads to an explosive pattern unless macroeconomic constraints, e.g. through feedback effects of wealth inequality on aggregate demand, stabilize the wealth distribution (Ederer and Rehm 2018).

Three recent empirical studies find differential rates of return, two of them using administrative data in Nordic countries. Bach, Calvet, and Sodini (2018) estimate from an administrative panel of Swedish residents that returns on gross wealth are on average roughly 2 percentage points higher for households in the top 5% of the wealth distribution compared to the median. Fagereng et al. (2018) document differential returns on net

wealth using Norwegian administrative tax records. Moving from the 5th to the 95th percentile of the wealth distribution increases the median return by about 4.5 percentage points, from -0.15% to more than 4%. Furthermore, using survey data for the US, Kuhn, Schularick, and Steins (2017) show that income data does not fully explain changes in the wealth distribution, and conclude that asset prices must therefore also play a role. They estimate changes in wealth shares resulting from systematic differences in the portfolio composition of the bottom 25%, the next 65% and the top 10% of households, which they characterize as a 'race' between house prices and stock values.

One important channel giving rise to differential rates of return is thus households' balance sheets. There is ample evidence that the type of assets owned differs systematically along the wealth distribution: Wealthy households typically hold a larger fraction of their wealth in equity such as businesses or stocks; the (upper) middle class owns real estate, mostly their primary residence; and poorer households' portfolios comprise mostly deposits and saving accounts (Rehm and Schnetzer 2015, Kuhn, Schularick, Steins 2017).

While there are several potential channels through which differential rates of return may arise, such as ability, professional portfolio management, or networks (Piketty 2014, 447f), the recent empirical literature provides extensive evidence regarding the household balance sheet channel on differential returns. In fact, all three papers cited above confirm this channel for Sweden (Bach, Calvet, and Sodini 2018), Norway (Fagereng et al. 2018) and the U.S. (Kuhn, Schularick, and Steins 2017).

This paper builds on and expands the existing literature on the empirical evidence of differential returns, which the Post Keynesian literature has shown to be highly relevant for theoretical questions of distribution and growth. It combines a novel data set on historic rates of return by Jordà et al. (2018) with asset class data from the Household

Finance and Consumption Survey (ECB 2014) to estimate total real rates of return along the distribution of wealth for eight European countries.

Data

To construct differential returns along the wealth distribution, we combine data from the second wave of the Household Finance and Consumption Survey 2014 (HFCS, ECB 2014) on households' balance sheets with a data set by Jordà et al. (2018) that contains information on rates of return for broad asset classes. The HFCS collects ex-ante harmonized micro-level data on detailed real and financial asset categories in 20 European countries, and covers a total of 84,000 households. The data are multiply imputed, which we take into account in our reported estimates by using Rubin's Rule.

We use real rates of return from the data set of Jordà et al. (2018) (henceforth, JKKST) for bonds, housing, and equity. The data cover 16 advanced economies, of which 8 overlap with the HFCS.[4] In order to capture long-run returns, we use the average between 1980 and 2015. Rates of return on bonds are measured in the JKKST data as the total return on long-term government bonds listed and traded on local exchange markets with a targeted maturity of around 10 years. Rates of return on equity comprise indices weighted by market capitalization of individual stocks and a selection of stocks representative for the stock market. Finally, rates of return on housing are obtained by combining the house price series from Knoll, Schularick, Steger (2017) with data on rents from Knoll (2016) using the rent-price approach.

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4. These are Belgium, Finland, France, Germany, Italy, the Netherlands, Portugal and Spain.

Table 1. Crosswalk of asset categories between HFCS and JKKST

Asset in the HFCS	Variable	Asset Categories in JKKST			
		Bonds	Business Wealth	Housing	Other
Real Assets					
Main Residence	DA1110			x	
Other Real Estate for Business Activity	DA1121		x		
Other Real Estate not for Business Activity	DA1122			x	
Vehicles	DA1130				x
Valuables	DA1131				x
Financial Assets					
Self-Employment Business	DA1140		x		
Deposits	DA2101				x
Mutual Funds	DA2102		x		
Bonds	DA2103	x			
Non Self-Employment Business	DA2104		x		
Shares	DA2105		x		
Managed Accounts	DA2106		x		
Money Owed to the Household	DA2107				x
Other Fin. Assets (e.g. Derivatives)	DA2108		x		
Voluntary Pensions/Life Insurances	DA2109	x			

Note: This table shows the allocation of assets categories in the HFCS to those in Jordà et al. (2018).

Source: ECB 2014, Jordà et al. 2018 (data); own elaboration

Table 1 shows the crosswalk between the HFCS and JKKST asset categories. It does not contain JKKST's asset category 'Bills', because the HFCS does not provide sufficiently detailed information on bond ownership by issuer. Furthermore, we add the category 'Other' for minimal-yield assets, such as vehicles, valuables, deposits and money owed to the household by others. We follow Bach, Calvet, Sodini (2018) in assuming that this asset category does not yield returns.[5]

Table 2 shows total wealth in the resulting asset categories by country, as well as the number of observations in our sample.[6] Table 3 depicts real rates of return for each corresponding asset category from JKKST.

Table 2. Total wealth by asset category and net sample size

Country	Bonds	Housing	Business Wealth	Other	Net sample size
Belgium	75	1,143	311	230	2,238
Finland	9	449	88	77	11,030
France	620	4,882	1,347	1,178	12,035
Germany	592	5,574	1,768	1,456	4,461
Italy	184	4,258	733	566	8,156
Netherlands	194	1,205	96	262	1,284
Portugal	12	480	125	101	6,207
Spain	155	3,772	774	559	6,106

Note: Total assets in the categories Bonds, Housing, Business Wealth and Other are in billions of Euro.
Source: ECB 2014 (data); own elaboration

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5. More precisely, Bach, Calvet, Salvini (2018) assume no excess return over the risk-free interest rate for deposit-like wealth. The risk-free interest rate on 10-year government bonds has hovered near zero in several European countries.
6. Negative values are excluded.

Table 3. Average annual real rates of return, 1980-2015

Country	Bonds	Housing	Equity
Belgium	6.24	7.20	11.49
Finland	5.76	9.47	16.17
France	6.94	6.39	11.07
Germany	4.22	4.12	10.06
Italy	5.85	4.57	9.45
Netherlands	5.59	6.41	11.90
Portugal	6.25	7.15	8.34
Spain	5.72	4.62	11.00

Note: Rates of return are pre-tax and measure the income per unit of capital.

Source: Jordà et al. 2018

Results

Combining these asset compositions with the rates of return of JKKST, we find that the rates of return rise across the wealth distribution, as Figure 2 shows. They are near zero for the bottom 5% in all countries except Finland (where they start above 1%) and remain well below 2% for the bottom 20% in all countries except Portugal. Rates of return then rise steeply and plateau for the upper half of the wealth distribution until the top 5% in most cases. The resulting pattern is roughly one of a log function for the bottom 95% of the wealth distribution with an inflection point between the 2nd and 8th gross wealth vingtile. Only Germany shows a more linear gradient in the bottom half of its wealth distribution. Rates of return then rise steeply for the top 5% in most countries; the exceptions are the Netherlands and Portugal.

Figure 1 shows the relative distribution[7] of households' asset categories across unconditional gross wealth vingtiles. The composition changes from 'other' wealth being the dominant asset category at the bottom of the wealth distribution, to housing in the (upper) middle, and to business wealth increasing in importance at the top of the wealth distribution. On (unweighted) average over all countries, housing supersedes the no-yield asset category 'Other' in the 6th vingtile in making up more than 50% of households' balance sheets. At the other end of the unconditional wealth distribution, business wealth gains importance above 25% of households' assets only in the top vingtile, i.e. the top 5% of households by wealth. These indicators can thus be used to divide the population into three groups with corresponding ownership patterns of wealth categories: the first, asset-poor group comprises on average the bottom 30% of the population, the second, home-owners, the middle 65%, and the third, business owners, the top 5%. We thus find substantial differences in the composition of assets between socio-economic groups.

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7. For the distribution of absolute values of household asset categories across unconditional gross wealth vingtiles, see Figure 1A in the Appendix.
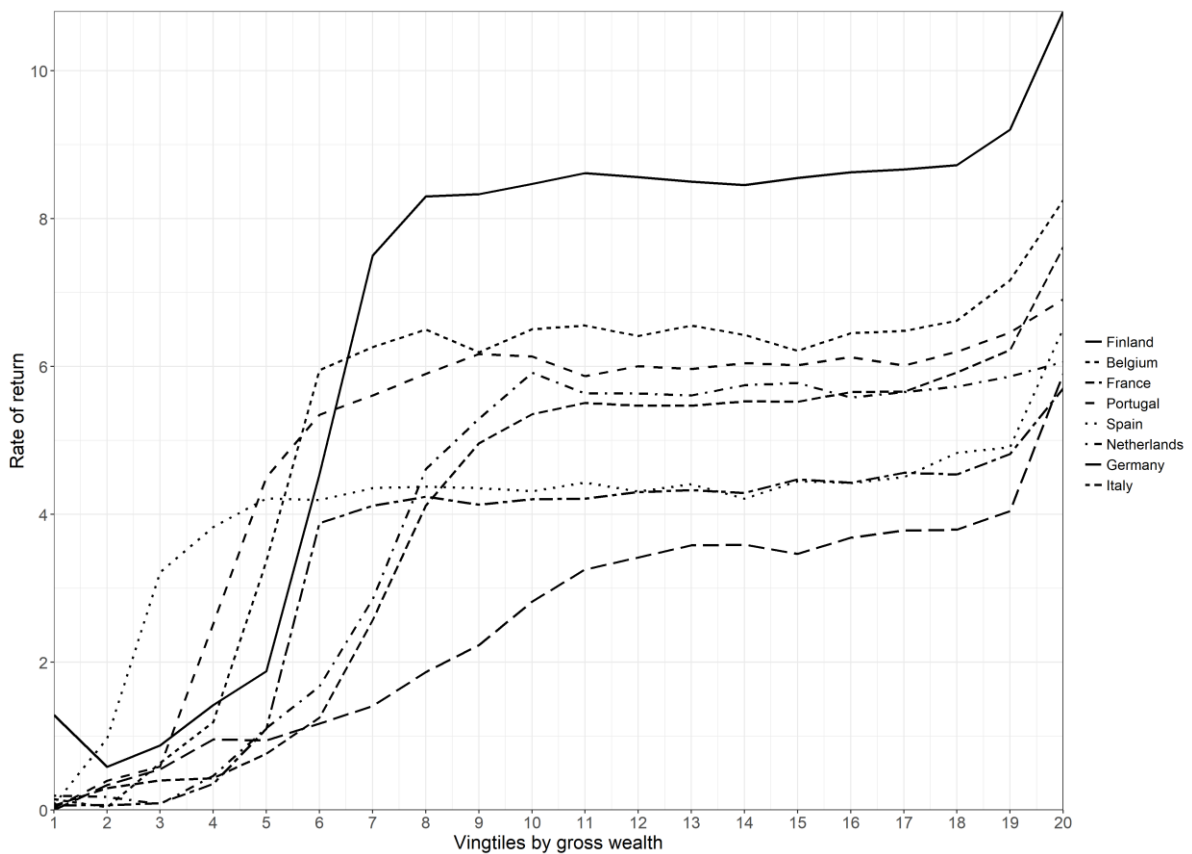
wealth distribution. Rates of return then rise steeply for the top 5% in most countries; the exceptions are the Netherlands and Portugal.

Figure 1. Asset composition by gross household wealth vingtiles
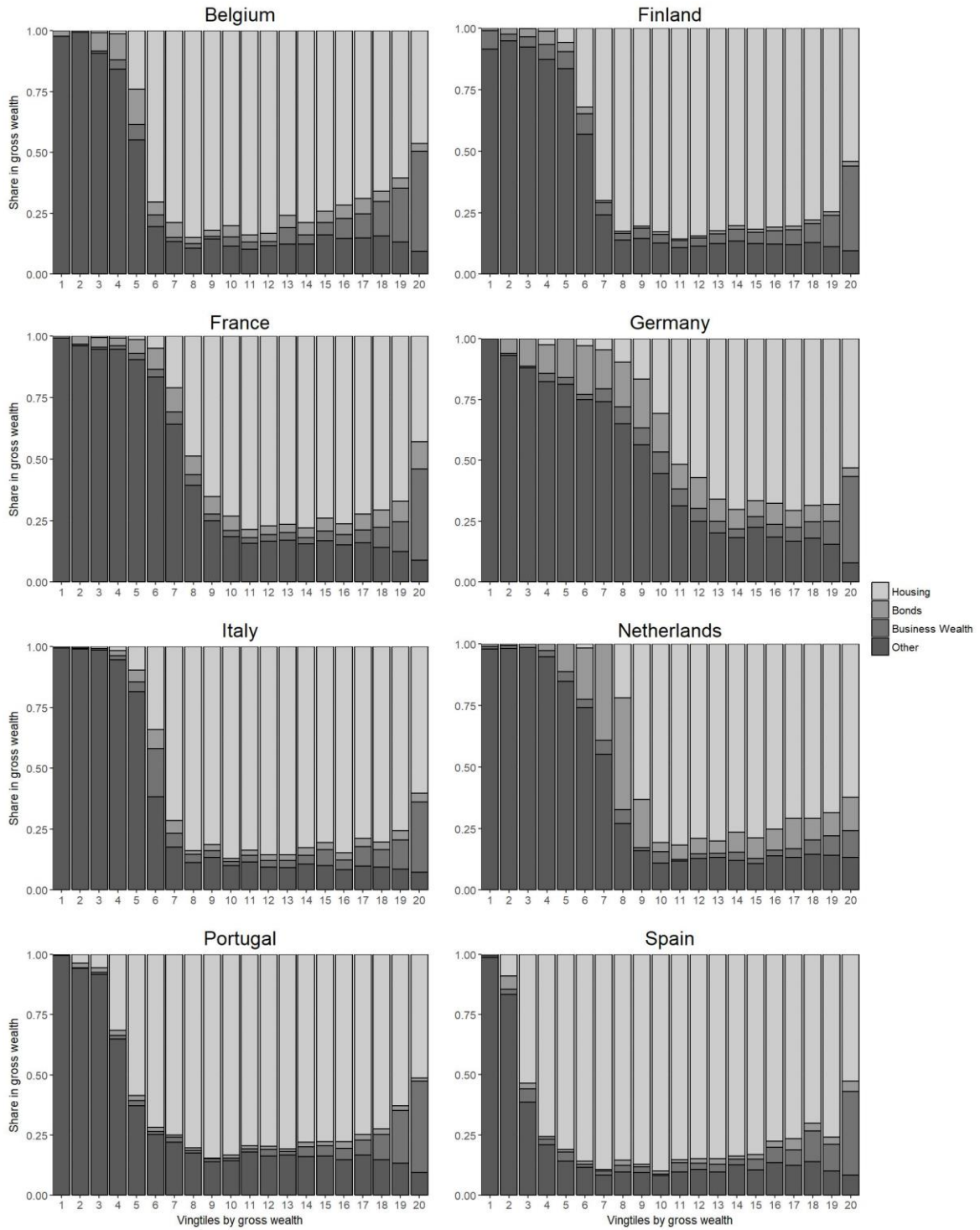
Source: ECB 2014 (data); own elaboration

Figure 2. Rates of return by country across gross wealth vingtiles

Note: Countries are sorted by their rate of return level in the 20th vingtile.

Source: ECB 2014, Jordà et al. 2018 (data); own elaboration

Whereas the pattern thus shows some striking similarities across countries, levels differ. The "plateau" lies between roughly 3.5% annual real rate of return in Germany and about 8.5% in Finland at the other extreme. Real rates of return stabilize between 4 and 4.5% in Italy and Spain, and between 5.5% and 6.5% in Belgium, France, the Netherlands, and Portugal.

Table 4. Average annual real rates of return for three household groups

Country	Asset-Poor (1)	Home-owning Middle Class (2)	Workers (bottom 95 %) (1+2)	Business-owning Top 5% (3)
Belgium	2.6	6.6	6.5	8.3
Finland	3.4	8.7	8.6	10.8
France	2.6	5.7	5.6	7.6
Germany	2.1	3.7	3.6	5.9
Italy	2.4	4.5	4.4	5.7
Netherlands	3.2	5.7	5.5	6.1
Portugal	2.0	6.1	6.1	6.9
Spain	0.9	4.5	4.5	6.5
Average	2.4	5.7	5.6	7.2

Note: 'Asset-Poor' in column (1) captures all gross wealth household vingtiles at the bottom of the gross wealth distribution owning on average less than 50% of their gross wealth in their main residence (30% of all households). 'Home-owning Middle Class' in column (2) covers households with more than 50% of their gross wealth invested in their main residence, and less than 25% of their gross wealth in business wealth, on average (65% of all households). 'Workers' are column (1) and (2) combined and make up the bottom 95% of all households. 'Business-owning Top 5%' in column (3) are households in the top vingtile, owning on average more than 25% of their gross wealth in business wealth (except in the Netherlands). The average in the last row is an unweighted mean across countries.

Source: ECB 2014, Jordà et al. 2018 (data); own elaboration

Table 4 combines our findings from the two data sources into our main result. It shows unweighted average real annual rates of return for the asset-poor, the home-owning middle class, and the business-owning top 5%. These amount to 2.4%, 5.7%, and 7.2%, respectively. The top 5% thus earn returns that are more than 2.5 times higher than those at the bottom. Over 50 years on an initial investment of 10,000 Euro, this amounts to a difference of about 290.000 Euro. Since the Post Keynesian literature typically refers to just two groups, workers and capitalists, collapsing the former two into a (very broad) workers' group yields an average rate of return of 5.6% for workers and 7.2% for capitalists.

Table 5. Differences in rates of return between selected vingtiles of the gross wealth distribution

Country	v20–v10	v10–v1	v20-v1	v19–v2
Belgium	1.7	6.4	8.1	7.1
Finland	2.3	7.2	9.5	8.6
France	2.3	5.3	7.6	5.9
Germany	3.1	2.8	5.9	3.7
Italy	1.5	4.1	5.6	4.8
Netherlands	0.1	5.7	5.9	5.7
Portugal	0.8	6.1	6.9	6.1
Spain	2.2	4.2	6.4	3.9
Average	1.8	5.2	7.0	5.7

Note: This table shows absolute differences between average rates of return of gross wealth vingtiles. The average in the last row is an unweighted mean across countries.

Source: ECB 2014, Jordà et al. 2018 (data); own elaboration

Finally, Table 5 presents selected distributional indicators in order to take another look at the question where in the distribution inequality in returns stems from. Taking the difference between the rate of return of the top vingtile and the median (v20-v10) yields

0.1 in the Netherlands and 0.8 in Portugal with their broadly stable rates of return in the top half of the wealth distribution. For the other countries, the difference lies between 1.5 (in Italy) and 2.3 (in Finland and France). We therefore find somewhat limited differences in returns between the middle and the top of the distribution.

In contrast, inequality in rates of return is much starker in the bottom half of the distribution. The difference in rates of return received by the median and the bottom vingtile is between 2.8 (in Germany with its almost linearly rising rates of return) and 7.2 (in Finland). That is, on (unweighted) average, European households in the top 5% of the wealth distribution receive an annual real rate of return that is almost 7 percentage points higher than for households in the bottom 30%, whereas the difference between the median and the top is roughly 1.75 percentage points. Table 4 also shows that because of the upward tick of rates of return in the top 5%, using deciles underestimates the differential nature of rates of return in all cases except the Netherlands.[8]

To sum up, we find that asset composition differs substantially across three socio-economic groups, the asset-poor, the home-owning middle class, and the business-owning top 5%. These groups are faced with differentials in rates of return that are economically significant, rising from 2.4% to 5.7% and 7.2%, respectively. Roughly categorized in Post Keynesian terms as 'workers' and 'capitalists', the differentials in rates of return amount to 5.6% and 7.2%. Finally, across the gross wealth distribution rates of return can be approximated by a broadly log-shaped function, with the inflection point lying between the 2nd and 8th vingtile. That is, inequality between the bottom and

8. The uptick in the 10th decile in the Netherlands is due to one household with very high business assets. However, we chose not to deleted single observations from our data.

the middle in rates of return is much larger than that between the middle and the top of the gross wealth distribution.

Our results are in line with the (limited) existing literature, not just regarding patterns but also with regard to magnitudes. As discussed, Bach, Calvet and Sodini (2018) estimate a differential of 1.99 percentage points between the median and the top 5% of gross wealth, which is almost exactly equal to our result of roughly 2 percentage points. Fagereng et al. (2018, Figure 4A) find a roughly log-shaped function of differential returns from the 20th percentile; their data is noisy below that level since they use net wealth. For this reason, their average rates of return are markedly negative at the bottom of the distribution, but the differential between their rates of return between the median and the top 5% amounts to roughly 1.4 percentage points, which is not very far from our 1.75 percentage points.

It should, however, be noted that our findings, while compatible with the existing literature, need to be interpreted cautiously. First, it is highly likely that we underestimate the differentials in rates of return due to the notorious under-coverage of high-wealth households (which can only be partially redressed by the oversampling of the HFCS), combined with the highly right-skewed distribution of wealth documented in Figure 1A in the Appendix. Second, our data is only able to capture one of several potential channels for differential rates of return, namely household balance sheet composition across the distribution. Taking other channels into account[9] is likely to lead to results finding higher differentials in rates of return. Third, our data does not permit us to capture capital gains, which likely play an important and differential role in wealth accumulation across the

9. Or, ideally, using observed rates of return, which our data quality unfortunately does not permit.

wealth distribution (Taylor et al. 2015). Wealthy households are likely to benefit more from higher capital gains, which again renders our estimates conservative.

Conclusion

This paper estimates rates of return across the distribution of gross wealth in European countries. We find that that three socioeconomic groups are marked by differential rates of return analogous to differential saving rates. This underscores the theoretical considerations of the Post Keynesian literature since the 1950's on differential rates of return.

Concretely, we merge annual real rates of return compiled by Jordà et al. (2018) with the detailed asset categories at the household level provided in the Household Finance and Consumption Survey (ECB 2014) for eight European countries. That is, we apply the rates of return for low-yield assets (deposit and saving accounts, vehicles etc.), housing (i.e., the primary residence), bonds (including voluntary pension plans), and equity (business wealth both in stocks and in direct stakes) to the wealth held by households at the micro level.

Our findings are three-fold: First, the composition of wealth differs substantially between three socioeconomic groups. These are the asset-poor, who own mostly low-yield assets and comprise roughly 30% of the population on average; middle-class home owners, who make up most of the upper half of the population and whose household balance sheet is dominated by the main residence; and capitalists, who own economically significant amounts of business wealth and make up roughly the top 5% of the population.

Second, we find differential rates of return across the wealth distribution. Rates of return rise largely monotonously over the entire population, and there are clear differences in average rates of return for the three socioeconomic groups. The asset-poor

receive a rate of return of about 2.4% on their wealth, the home owning middle and upper class receives roughly 5.7%, and capitalists about 7.2%. If these are collapsed into the standard groups of workers and capitalists, then this averages out to about 5.6% for the former and 7.2% for the latter. The magnitude of our findings is in line with the (limited) existing literature on differential rates of return.

Third, rates of return across the wealth distribution roughly approximate log functions for the bottom 95% in most countries. That is, they rise steeply to a broad "plateau", and then only tick upwards again at the very top of the wealth distribution. This implies that inequality is substantially higher between the middle and bottom than between the top and middle of the wealth distribution.

Naturally, many important research questions remain unanswered. First and foremost, higher-quality data from administrative sources might yield additional insights into the distribution of rates of return, especially at the very top of the distribution. Second, capital gains play an important role in wealth accumulation and merit closer attention since it is likely that they are unevenly distributed, but our data does not permit us to study their dynamics. Third, it would be very interesting to investigate other potential channels for differential returns, such as differences in innate ability, in professionalism in investment management, in access to insider information, or in political clout.

References

Bach, L., L. E. Calvet, and P. Sodini. 2018. "Rich Pickings? Risk, Return, and Skill in Household Wealth." HEC Paris Research Paper FIN-2016-1126. http://dx.doi.org/10.2139/ssrn.2706207

Balestra, P., and M. Baranzini. 1971. "Some Optimal Aspects in a Two Class Growth Model with a Differentiated Interest Rate." *Kyklos* 24 (2): 240–256.

Baranzini M., and A. Mirante. 2013. "The Cambridge Post-Keynesian School of Income and Wealth Distribution." In: Harcourt, G. C. and P. Kriesler, *The Oxford Handbook of Post-Keynesian Economics: Volume 1 Theory and Origins.* New York: Oxford University Press.

Brainard, W. C., and J. Tobin. 1968. "Pitfalls in Financial Model Building." *The American Economic Review* 58 (2): 99-122.

Darity, W. A. 1981. "The Simple Analytics of Neo-Ricardian Growth and Distribution." *The American Economic Review* 71 (5): 978–993.

Dutt, A. K. 1984. "Stagnation, Income Distribution, and Monopoly Power." *Cambridge Journal of Economics* 8 (1): 25–40.

ECB. 2014. *Household Finance and Consumption Survey*, second wave. European Central Bank

Ederer, S., and M. Rehm. 2019. "Will Wealth Become More Concentrated in Europe? Evidence from a Calibrated Neo-Kaleckian Model." *Cambridge Journal of Economics (forthcoming)*.

Ederer, S., and M. Rehm. 2018. "Making Sense of Piketty's "Fundamental Laws" in a Postkeynesian Framework." *INEQ Working Paper Series* 10. Vienna University of Economics and Business.

Erikson, R., and J. Goldthorpe. 1992. *The Constant Flux: A Study of Class Mobility in Industrial Societies*. New York: Clarendon Press.

Fagereng, A., L. Guiso, D. Malacrino, and L. Pistaferri. 2018. "Heterogeneity and

Persistence in Returns to Wealth." *CESifo Working Paper* 7107. Center for Economic Studies and Ifo Institute (CESifo), Munich.

Fazi, E., and N. Salvadori. 1981. "The Existence of a Two-Class Economy in the Kaldor Model of Growth and Distribution." *Kyklos* 34 (4): 582–592.

Godley, W., and Lavoie, M. 2007. *Monetary Economics: An Integrated Approach to Credit, Money, Income, Production and Wealth*. London: Palgrave Macmillan.

Gupta, K. L. 1977. "On the Existence of a Two-Class Economy in the Kaldor and the Pasinetti Models of Growth and Distribution." *Journal of Economics and Statistics* 192 (1): 68–72.

Harcourt, G. C. 1972. *Some Cambridge Controversies in the Theory of Capital*. Cambridge: Cambridge University Press.

Jordà, Ò., M. Schularick, and A. M. Taylor. 2017. "Macrofinancial History and the New Business Cycle Facts." *NBER Macroeconomics Annual* 31 (1): 213–263.

Jordà, Ò., K. Knoll, D. Kuvshinov, M. Schularick, and A. M. Taylor. 2018. "The Rate of Return on Everything, 1870–2015." Center for Economic Studies and Ifo Institute Working Paper 6899.

Kahn, R. F. 1959. "Exercises in the Analysis of Growth." *Oxford Economic Papers* 11 (2): 143–56.

Kaldor, N. 1955. "Alternative Theories of Distribution." *The Review of Economic Studies* 23 (2): 83–100.

Kalecki, M. 1937. "A Theory of the Business Cycle." *The Review of Economic Studies* 4 (2): 77–97.

Keynes, J. M. 1936. 1973e. "The General Theory of Employment, Interest, and Money." Vol. VII. In *The Collected Writings*, edited by J. M. Keynes. London: Macmillan

Knoll, K. 2016. "As Volatile as Houses: House Prices and Fundamentals in Advanced Economies." *Unpublished*.

Knoll, K., M. Schularick, and T. M. Steger. 2017. "No Price like Home: Global House Prices, 1870-2012." *American Economic Review* 107 (2): 331–352.

Kregel, J. A. 1985. "Hamlet Without the Prince: Cambridge Macroeconomics without Money." *The American Economic Review* 75 (2): 133–139.

Kuhn, M., M. Schularick, and U. Steins. 2017. "Income and Wealth Inequality in America, 1949-2013." Center for Economic Studies and Ifo Institute Working Paper 6608.

Kurz, H., and N. Salvadori. 2010. "The Post-Keynesian Theories of Growth and Distribution: A Survey." In *Handbook of Alternative Theories of Economic Growth*, edited by M. Setterfield. Cheltenham: Edward Elgar.

Laing, N. 1969. "Two Notes on Pasinetti's Theorem." *The Economic Record* 45 (3): 373–385.

Maneschi, A. 1974. "The Existence of a Two-Class Economy in the Kaldor and Pasinetti Models of Growth and Distribution." *The Review of Economic Studies* 41 (1): 149–150.

Marglin, S. A., and A. Bhaduri. 1990. "Profit Squeeze and Keynesian Theory." In *The Golden Age of Capitalism: Reinterpreting the Postwar Experience*, edited by S. A. Marglin, and J. B. Schor, 153–186. Clarendon: Oxford.

Mohun, S. 2016. "Class Structure and the US Personal Income Distribution, 1918-2012." *Metroeconomica* 67 (2): 334–363. http://doi.org/10.1111/meca.12107

Moore, B. J. 1974. "The Pasinetti Paradox Revisited." *The Review of Economic Studies* 41 (2): 297–299.

Myrdal, G. 1957. "The Principle of Circular and Cumulative Causation." In *Rich Lands and Poor: The Road to World Prosperity*. New York: Harper.

Palley, T. I. 2012. "Wealth and Wealth Distribution in the Neo-Kaleckian Growth Model." *Journal of Post Keynesian Economics* 34 (3): 453–474

Palley, T. I. 2017. "Inequality and Growth in Neo-Kaleckian and Cambridge Growth Theory." *Review of Keynesian Economics* 5 (2): 146–169.

Pasinetti, L. L. 1962. "Rate of Profit and Income Distribution in Relation to the Rate of Economic Growth." *The Review of Economic Studies* 29 (4): 267–279.

Pasinetti, L. L. 1974. *Growth and Income Distribution: Essays in Economic Theory*. Cambridge: Cambridge University Press.

Pasinetti, L. L. 1983. "Conditions of Existence of a Two Class Economy in the Kaldor and more General Models of Growth and Income Distribution." *Kyklos* 36 (1): 91–102.

Piketty, T. 2014. *Capital in the Twenty-First Century*. Cambridge Massachusetts: Harvard University Press.

Ramanathan, R. 1976. "The Pasinetti Paradox in a Two-Class Monetary Growth Model." *Journal of Monetary Economics* 2(3): 389-97.

Rowthorn, R. E. 1981. "Demand, Real Wages and Economic Growth." *Thames Papers in Political Economy*, Autumn, 1–39.

Saez, E., and G. Zucman. 2016. "Wealth Inequality in the United States since 1913: Evidence from Capitalized Income Tax Data." *Quarterly Journal of Economics* 131 (2): 519–578.

Samuelson, P. A., and F. Modigliani. 1966. "The Pasinetti Paradox in Neoclassical and more General Models." *The Review of Economic Studies* 33 (4): 269–301.

Taylor, L., 1985. "A Stagnationist Model of Economic Growth." *Cambridge Journal of Economics* 9 (4): 383–403.

Taylor, L., O. Omer, and A. Rezai. 2015. "Wealth Concentration, Income Distribution, and Alternatives for the USA." Institute for New Economic Thinking Working Paper Series 17. http://dx.doi.org/10.2139/ssrn.2667880

Tobin, J. 1969. "A General Equilibrium Approach to Monetary Theory." *Journal of money, credit and banking* 1 (1): 15–29.

Wolff, E. N., and A. Zacharias. 2013. "Class Structure and Economic Inequality." *Cambridge Journal of Economics* 37 (6): 1381–1406. http://doi.org/10.1093/cje/bet026
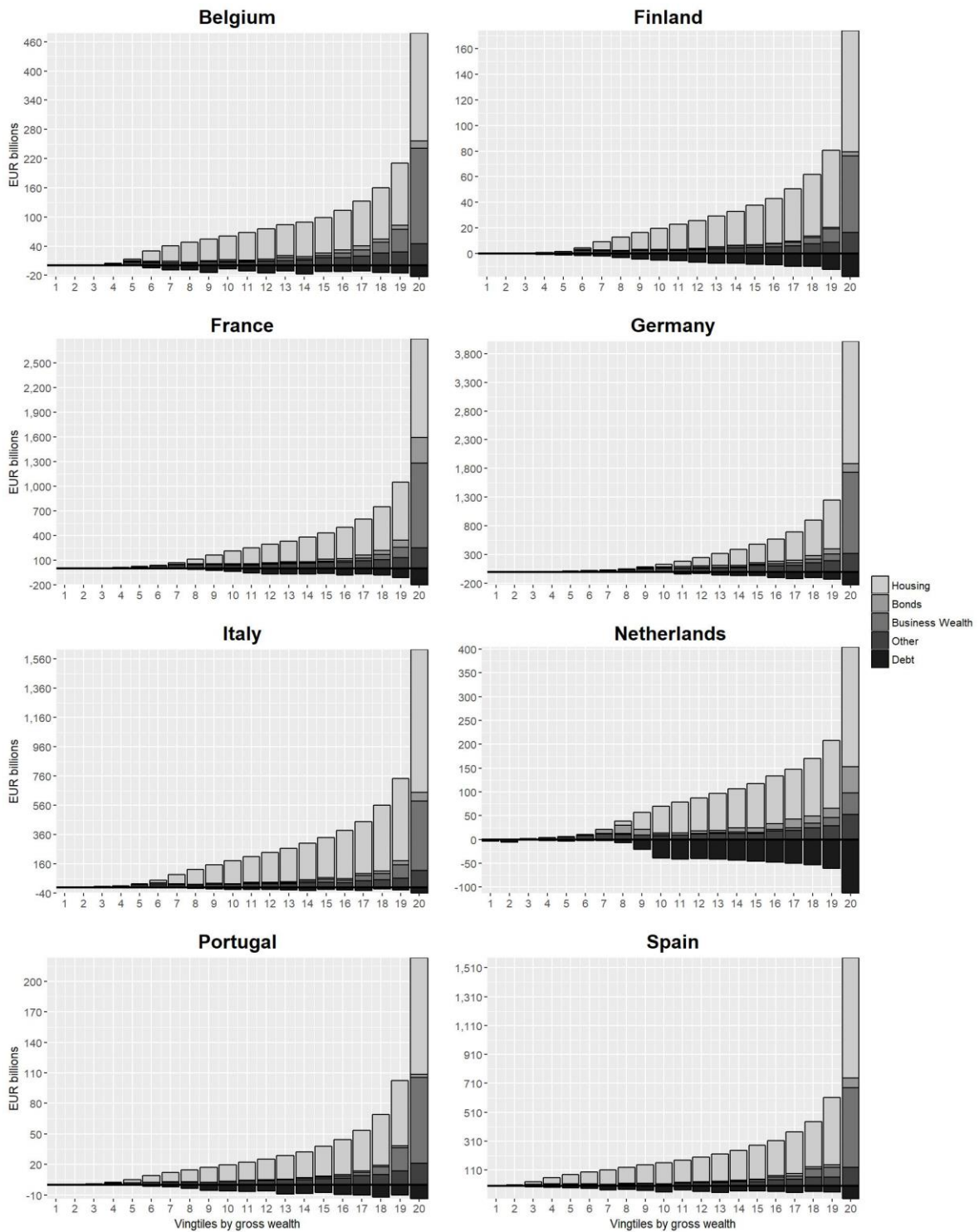
Wright, E. O. 1997. *Class Counts: Comparative Studies in Class Analysis*. Cambridge:

Cambridge University Press.

Zimmermann, K. 2017. "Breaking Banks? Monetary Policy and Bank Profitability."
Unpublished.

Appendix

Figure 1A. Absolute levels of asset categories by gross household wealth vingtiles

Source: ECB 2014 (data); own elaboration

Table 1A. Cut-off vingtiles between the asset-poor and the home-owning middle class by country

Threshold vingtile	Belgium	Finland	France	Germany	Italy	Netherlands	Portugal	Spain	Average
Asset-poor (1)	5	6	8	10	6	8	4	2	6
Middle class (2)	19	19	19	19	19	n.a.	19	19	19

Note: The threshold denotes (1) the vingtile demarcating the asset-poor from the home-owning middle class, i.e. the point in the gross wealth distribution where housing wealth still makes up less than 50% of households' wealth, and (2) the vingtile demarcating the home-owning middle class from the business-owning top 5%, i.e. the point in the gross wealth distribution where business wealth still makes up less than 25% of households' wealth. The average in the last column is an unweighted mean across countries.

Source: ECB 2014 (data); own elaboration

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UNIVERSITÄT
DUISBURG
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Open-Minded

ifSO
institute for
socio-economics

Institute for Socio-Economics
University of Duisburg-Essen

Lotharstr. 65
47057 Duisburg
Germany

uni-due.de/soziooekonomie
wp.ifso@uni-due.de