Wealth Inequality Dynamics in Europe and the United States: Understanding the Determinants*

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Abstract

This paper studies the interaction between the long-term dynamics of aggregate household wealth and the wealth distribution in Europe and the United States. We do so by building the first Distributional Wealth Accounts for Europe, including households' assets, liabilities, investment flows, and the wealth distribution for most European countries from 1970-2020. We find that although aggregate household wealth to income ratios have followed a similar increasing pattern in both Europe and the United States since 1970, wealth concentration has increased much faster in the United States. Using standard wealth accumulation decompositions and counterfactual simulations, we show that the weaker rise in labor income inequality and the stronger rise in house prices relative to stock market prices in Europe versus the United States seem to explain why Europe has experienced a more moderate rise in wealth concentration since the mid-1980s.

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1 Introduction

Household wealth has grown faster than national income since the 1980s, with similar levels and trends across advanced economies (Piketty and Zucman, 2014). However, wealth concentration trends have diverged over the same period of time, rising, for instance, much faster in the United States than in continental Europe (Alvaredo, Chancel, et al., 2018). Despite the recent progress made in documenting these trends for a few countries, the complex interactions between the long-run evolution of aggregate household wealth and its distribution remain poorly understood. This is partly due to the absence of homogeneous and consistent long-run estimates of aggregate household investment flows, assets, liabilities, and the wealth distribution, with which to analyze cross-country differences in wealth inequality dynamics.

We break new ground on these issues by building the first Distributional Wealth Accounts (DWAs) for Europe, including households' assets, liabilities, investment flows, and the wealth distribution for most European countries from 1970–2020.[1] We do so by extending the pioneering work of Saez and Zucman (2016) using personal income tax records and of Batty et al. (2020) using the Survey of Consumer Finances (SCF) to build Distributional Financial Accounts (DFAs) in the United States. Our new database provides homogeneous and consistent long-run estimates of the European balance sheet and of the European wealth distribution. We use these new estimates to decompose the accumulation of wealth, so as to better understand the long-run determinants of wealth inequality, and in particular the disparities between Europe and the United States.

We rely on different data sources to build our historical database. First, to construct the European balance sheets, we rely on estimates from a wide range of macro-historical works, which use official and unofficial data sources to reconstruct the balance sheets of countries. When these are unavailable, we use official balance sheets which are generally published by central banks or national statistical offices. Second, to obtain investment flows by asset class, we rely on official financial and non-financial accounts. Finally, to build wealth distributions, we also rely on estimates from a large collection of academic works that use tax records to estimate the distribution of wealth. However, because they often rely on idiosyncratic concepts, which are typically tied to each country's specific tax laws, these estimates are rarely comparable. Hence, we engage in a widespread harmonization effort, using other available data sources (notably surveys), to account for missing assets and adjust the units of analysis. Throughout this work, we always ensure that our distributional estimates are fully consistent with macroeconomic totals.

The Distributional Wealth Accounts for Europe allow us to uncover two important facts. First, the evolution of aggregate wealth relative to national income has been quite similar

[1] The time frame covered varies across countries depending on data availability (see Table 1).

in Europe and the United States, steadily increasing from 300% of national income in 1970 to nearly 500% in 2018. The wealth to income ratio has been slightly higher in recent years in Europe than in the United States, as the reduction in wealth after the global financial crisis—mainly due to the decline in house prices—was higher in the United States. Second, although aggregate household wealth has evolved similarly in Europe and the United States, the dynamics of wealth inequality have been strikingly different in both regions. After an equalizing period during the 1970s, we find that top 1% wealth concentration has risen in both regions since 1980, but much more moderately in Europe than in the United States.

To study the determinants behind these facts we document, we rely on the asset-specific decomposition of wealth accumulation developed by Artola Blanco, Bauluz, and Martínez-Toledano (2021). This is an extension of the standard wealth accumulation decomposition used by Piketty and Zucman (2014) in which the two forces driving wealth accumulation are changes in asset prices (i.e., capital gains) or changes in savings (i.e., volumes). The asset-specific decomposition makes it possible to break down the composition of capital gains and volume effects by asset class (i.e., housing, financial assets, etc.), and thus better understand the drivers behind the dynamics of the wealth distribution. We find that volume effects have been larger in the United States, while price effects have been more important in Europe. Prices have grown more in Europe than in the United States due mainly to the larger rise in house prices and the lower decline in business values in Europe relative to the United States, as financial assets have gained slightly more in value in the United States than in Europe. Instead, volume effects have been larger in the United States that in Europe, mainly due to the stronger increase in business investment in the United States relative to Europe.

To assess the relative importance of volume versus price effects in explaining the different wealth inequality trajectories across the two regions, we use the wealth distribution series and the asset-specific decomposition developed by Martínez-Toledano (2020) to run several counterfactual simulations for different wealth groups. The four forces shaping the wealth distribution are rate of return inequality, saving rate inequality, labor income inequality and differences in portfolio composition across the wealth distribution. Our simulations shut down one channel at a time: that is, we set each effect (asset prices, savings, portfolio choice or labor incomes) at its average of the pre-simulation period (1970–1985).

We find that saving rates inequality seems to be the main driver of the moderate rise in the top 1% wealth share in France since the mid-1980s.[2] Instead, labor income inequality seems to have pushed wealth concentration down in France. Finally, asset prices and portfolio choice dynamics seem to only have played a role since the 2000s, pushing also

[2] We rely on France and not on the entirety of Europe, since France is the only country for which we have the joint income and wealth distribution since 1970.

wealth concentration down. This is largely explained by the outperformance of house prices relative to stock market prices and the stronger importance of housing in the portfolios of the middle and bottom wealth groups (Kuhn, Schularick, and Steins, 2019; Martínez-Toledano, 2020). In the United States, instead, all channels seem to have somehow contributed to rising top wealth concentration since the mid-1980s. Contrary to France, we find that asset prices, portfolio choice and labor income inequality—and not only saving rate inequality—have contributed to the rise in the top 1% wealth share.

To better understand the different wealth inequality trajectories between Europe and the United States, we also study the dynamics of asset prices and labor income shares of the top 1% wealth group in France to the top 1% wealth share in the United States. Labor income inequality has grown faster in the United States than in France over the period, thus explaining why the level of wealth concentration in the United States would have been lower with the labor income inequality trajectory of France. Furthermore, the dynamics of asset prices seem to have pushed wealth concentration up in the United States and not in France, as wealth concentration in the United States would have not increased with the asset price dynamics of France. This is largely due to the evolution of house prices, as if the United States would have experienced the house price effects of France the top 1% wealth share would have even declined over the period. Our results can be extrapolated to the rest of Europe, as we find the exact same results when analyzing instead of France a large set of European countries since 1995. Taken together, both the different trajectories in asset prices and labor income inequality seem to explain why wealth concentration has risen much less in Europe than in the United States.

This paper contributes to two main strands of the literature. First, there is an empirical literature measuring the long-run evolution of aggregate wealth and its distribution across advanced countries (Acciari, Alvaredo, and Morelli, 2020; Albers, Bartels, and Schularick, 2020; Alvaredo and Saez, 2009; Alvaredo and Artola, 2017; Anghel et al., 2018; Artola Blanco, Bauluz, and Martínez-Toledano, 2021; Garbinti, Goupille-Lebret, and Piketty, 2021; Iacono and Palagi, 2021; Kopczuk and Saez, 2004b; Lundberg and Waldenström, 2017; Piketty and Zucman, 2014; Saez and Zucman, 2016; Smith, Zidar, and Zwick, 2020). We contribute to this literature by providing the first long-run estimate of European aggregate wealth and the wealth distribution.

Second, there is a nascent empirical household finance and theoretical macrofinance literature analyzing the determinants of wealth inequality dynamics (Bach, Calvet, and Sodini, 2018; Bach, Calvet, and Sodini, 2019; Benhabib and Bisin, 2018; Fagereng, Blomhoff Holm, et al., 2019; Fagereng, Guiso, et al., 2019; Gomez, 2019; Hubmer, Krusell, and Smith Jr., 2019; Kuhn, Schularick, and Steins, 2019; Martínez-Toledano, 2020; Nekoei and Seim, 2018; Palomino et al., 2021; Xavier, 2021). These studies focus their analysis on specific countries and—in most cases—on some specific channels. We build upon the tools developed by this literature—in particular, the wealth accumulation decompositions—to better understand the different wealth inequality trajectories between Europe and the United States in recent decades. Our analyses reveal that saving rate, rate of return and labor income inequality are all three key channels behind wealth inequality dynamics and that there is a lot to be learned by carrying cross-regional analyses of wealth inequality dynamics.

The layout of the paper is as follows. Section 2 discusses the concepts, data and methodology used to construct the European balance sheet and the European wealth distribution. In Section 3, we first present the main stylized facts on the evolution of aggregate wealth and the wealth distribution in both Europe and the United States and we then rely on wealth accumulation decompositions and simulation exercises to understand the different wealth inequality trajectories between Europe and the United States. Finally, Section 4 concludes.

2 Concepts, Data and Methodology

This section describes the concepts, data and methodology used to construct the Distributional Wealth Accounts for Europe over the period 1970–2020, which we will then use to compare the dynamics of aggregate wealth and wealth inequality between Europe and the United States. The concepts are similar to the ones ones used to build the Distributional Wealth Accounts for the United States (see Saez and Zucman, 2016 and Batty et al., 2020), and follow the guidelines for the compilation of distributional national accounts established by Blanchet, Chancel, Flores, et al. (2021). Further methodological details about the specific data sources and computations can be found in the appendix at the end of the paper.

2.1 Aggregate Wealth: Concepts and Data Sources

The wealth concept we use follows the standards of the international System of National Accounts (SNA). We restrict ourselves to net household wealth: that is, the current market value of all financial and non-financial assets owned by the household sector (sector S14, in the SNA), net of all debts. In particular, we exclude non-profit institutions serving households (NPISH, sector S15) whenever this decomposition is available.[3]

For net financial wealth, that is, for financial assets net of liabilities, we rely when available on the official country-specific financial accounts built under the guidelines of the European System of Accounts. Households' financial assets include equities (stocks, investment

[3]NPISH represent a negligible fraction of household wealth. Some countries do not provide the decomposition between households and NPISH, in which case we consider the combined sector S14+S15.

funds and financial derivatives), debt assets, cash, deposits, life insurance and pensions. Households' financial liabilities are composed of loans and other debts.[4]

For non-financial wealth, we also rely when available on the official country-specific non-financial accounts built under the guidelines of the European System of Accounts. Our definition of household non-financial wealth consists of housing and unincorporated business assets. We exclude consumer durables, which amount to approximately 5% of total household wealth according to the HFCS, because they are not included in the definition of wealth by the SNA.

Financial and non-financial accounts are usually made publicly available by National Central Banks or National Statistical Offices. There are some countries for which full households' financial and particularly non-financial information is lacking. In these cases, we rely on authors' country estimates using alternative official sources.[5] Table 1 (column 1) lists the European countries and time frame for which we have been able to collect aggregate household wealth.[6] Note that the time frame covered varies across countries depending on data availability.

2.2 Distribution of Wealth: Methodology and Data Sources

Our database on the distribution of wealth combines estimates from various sources, which we harmonize to obtain consistent concepts, measurements, and units of analysis. In this section, we review the critical methodological issues. We provide additional details, country-by-country, in the appendix.

Overall Methodology To the extent that it is possible, we start from estimates based on administrative and tax data: depending on the situation in each country, these can be wealth registers, inheritance tax data, or capital income tax data. These estimates usually come from separate works made by several authors who worked directly with these sources, although we collect the data ourselves in some cases (Switzerland, Iceland). Compared to surveys, tax-based estimates are better at capturing the wealthiest people and are generally consistently available over more extended periods. However, they have several shortcomings. The unit of analysis (individuals or households) depends on the local legislation, leading to values that are not directly comparable across countries. They may exclude some (non-taxable) assets. Or they may focus on the top of the distribution and ignore the rest. Therefore, we rely on surveys to make adjustments and obtain consistent

[4]Note that pension wealth excludes unfunded pensions (i.e., Social Security), since they are promises of future government transfers that are not back by any asset, and as such are not considered wealth by the System of National Accounts.

[5]See appendix X for a detailed explanation about all the data sources we rely on to build the balance sheet for European households.

[6]For the United States, we rely on the aggregate wealth series from Saez and Zucman, 2016.

measurements. Finally, we anchor all of our estimates to macroeconomic balance sheet totals to improve the representativeness of the different asset classes and get evolutions that are consistent at the micro and the macro level. In countries with no tax data but survey data available, we use the surveys directly and rescale the different components to match the macroeconomic totals.

Estimates based on Tax and Register Data Estimates based on tax and register data come in three different categories. The most straightforward cases correspond to countries that directly record the distribution of wealth (e.g., Denmark, Netherlands, Switzerland) either because they tax wealth or because they record wealth administratively. However, in most countries, there is no direct administrative record of wealth. In such cases, it remains possible to infer the distribution of wealth from auxiliary information. The first approach is called the estate multiplier method (e.g., Kopczuk and Saez, 2004a). It uses the distribution of wealth at death from inheritance tax data and reweights it using individual mortality rates to infer the distribution of wealth among the living. The second approach is called the capitalization method (e.g., Saez and Zucman, 2016). It estimates wealth from the capital income flows that wealth generates, using asset-specific capitalization factors (the inverse of rates of returns) obtained from national accounts. The most appropriate method is a context-dependent question that depends on the salience and comprehensiveness of inheritance or capital income taxation (Zucman, 2019). We refer to the country-specific papers for discussion, comparisons, and robustness checks. Tax-based estimates are also available in tabulated form (rather than as microdata), and the brackets are different in each study. We reconstruct complete estimates of the distribution using generalized Pareto interpolation (Blanchet, Fournier, and Piketty, 2021).

Survey Sources Surveys on household wealth used to be relatively rare in Europe, a situation that has improved in recent years under the impetus of the European Central Bank (ECB), which created the Household Finance and Consumption Survey (HFCS). This survey, which started around 2014, collects wealth data at the household level under a common framework. In countries with a preexisting wealth survey (e.g., France, Italy, Spain), the HFCS is a recoding of the existing survey. The HFCS constitutes our primary survey source. We complete it with other surveys for countries that are not part of the HFCS (e.g., the United Kingdom, which has its own wealth survey called the Wealth and Assets Survey, or WAS) or for countries with wealth surveys that predate the HFCS and thus provide more historical coverage (e.g., the Survey of Household Income and Wealth, or SHIW, in Italy).

These different surveys have significant differences, especially in their oversampling of the wealthiest household, which affect their comparability (Vermeulen, 2016). For this reason, we prefer to rely on tax-based estimates as our primary source. Wealth surveys are known to capture some types of assets better than others, so to improve the representativity of each asset, we rescale them to macroeconomic totals.

Adjustments for Missing Components Tax-based estimates typically exclude some tax-exempt assets (e.g., pensions, as in Switzerland or the United Kingdom). In such cases, we estimate the average amount of the asset by wealth percentile in the survey, rescale it to the macroeconomic total from national accounts, and distribute the resulting value to the percentiles of the tax-based estimate.

Adjustments for the Statistical Unit Tax-based estimates report their measurement using either the household or the individual as its statistical unit. Our database, in comparison, uses equal-split adults as its benchmark (i.e., the statistical unit is the individual, with wealth split equally within couples), in line with the international distributional national accounts guidelines.

We, therefore, must consider two types of correction: one to move from couples to equal-split adults, the other to move from individuals to equal-split adults. To move from households to equal-split adults, we estimate a share of married and single people by percentile in the survey. Using this, we can divide the tax-based distribution into two tabulations of wealth by bracket: one for single individuals and the other for couples. We interpolate these tabulations separately using generalized Pareto interpolation (Blanchet, Fournier, and Piketty, 2021), divide wealth levels for couples by two, and combine them back into a single distribution. To move from individuals to equal-split, estimate the ratio between the value of equal-split to individual wealth by percentile in the survey, and use these ratios to correct the tax-based distribution directly.

Inclusion of Missing Parts of the Distribution Some estimates based on inheritance taxes are limited to the top of the distribution due to exemption thresholds (e.g., in the United Kingdom). In that case, we rely on the tax-based estimate for the top of the distribution and on the survey for the bottom. We do so by constraining the survey Lorenz curve at the bottom to match the tax-based estimates, using the procedure described by Blanchet, Chancel, Flores, et al. (2021, section 7.2.3.2).

Estimation of the Wealth Composition and Its Calibration to Macroeconomic Totals We systematically calibrate our distributions of wealth and its composition to match macroeconomic totals. However, two different cases may arise when doing so, and each requires a different type of adjustment.

In the first case, the information on the overall distribution of wealth and its composition comes from the same source, so the discrepancies between the micro and macro totals reflect deficiencies both in the overall distribution of wealth and its composition. This case arises in particular in countries with only survey data. In that situation, we rescale each asset in the survey to match macroeconomic totals, changing the marginal distribution of wealth in the process. This adjustment is desirable as it helps fix the survey's well-documented tendencies to underrepresent certain types of assets (European Central Bank, 2013). That approach corresponds to an *unconstrained* calibration.

In the second case, the information on the wealth distribution and on its composition come from different sources. This case arises in countries where tax-based estimates (potentially augmented with survey data) provide a reliable measurement of the marginal distribution of wealth but where information on its composition is based on relatively lower-quality survey data. Here, it would be undesirable to alter the marginal distribution of wealth based on the data on its composition. So, for this, we proceed with a *constrained* calibration procedure. In this procedure, we consider a matrix whose rows are brackets of the wealth distribution, whose columns are components of wealth, and whose cells are the total value of the component for the bracket. The goal is then to adjust the cells to match row totals (i.e., the marginal distribution of wealth) and columns totals (i.e., macroeconomic aggregate). We do so using a matrix scaling algorithm described in appendix B.

2.3 Joint Distribution of Income and Wealth: Methodology and Data Sources

For all the countries on our wealth database, we also estimate the distribution of income by wealth bracket, which allows us to analyze the role of income inequality dynamics in shaping wealth inequality. For a few countries (France, United States), that information is directly available from the studies we rely on, and in these cases, we use that information.

For the other countries, we produce our own estimate. First, we use data on the distribution of income from the World Inequality Database, which for European countries primarily comes from Blanchet, Chancel, and Gethin (2022). Then, we use survey data to perform a statistical match between the wealth and the income distribution. We compute the rank of each survey observation in the distribution of wealth and in the distribution of income. Then we attribute the value of wealth and income corresponding to each survey rank according to our data on the marginal distributions of wealth and income. Finally, we average the resulting incomes by wealth bracket.

This procedure has the advantage of maintaining consistency of the income distribution with existing distributional national accounts estimates. Like our wealth data, these estimates are consistent with macroeconomic totals. They also capture top incomes through the use of tax information. At the same time, we maintain the empirical copula (i.e., the dependency) between wealth and income observed in the survey.

We further split this income distribution into a labor and a capital component. We do so by estimating asset-specific rates of return using national accounts, and applying these rates of return to the average wealth by bracket. This gives an estimate of capital income, and we obtain labor income as a residual.

2.4 Wealth Accumulation Decompositions

The aim of this paper is to better understand the determinants behind the dynamics of aggregate wealth and the wealth distribution in both Europe and the United States. To do so, we start by decomposing the aggregate wealth series using the following transition equation:

$$W_{t+1}^r = (1 + q_t^r) \cdot [W_t^r + s_t^r \cdot I_t^r], \tag{1}$$

where W_t^r stands for the total real wealth of region r at time t, I_t^r is the total real income of region r at time t, q_t^r is the total rate of real capital gains of region r at time t and s_t^r the total saving rate of region r at time t.[7] By convention, savings are assumed to be made before the asset price effect q_t^g is realized. Hence, the three forces that can affect the dynamics of aggregate wealth are changes in income, savings and/or asset prices.

We follow the same approach as Garbinti, Goupille, and Piketty (2019) and Saez and Zucman (2016) and calculate the rate of capital gain that can account for the evolution of total wealth in each region r as a residual from the previous transition equation. This is a straightforward calculation since we observe variables W_t^r, W_{t+1}^r, I_t^r and s_t^r over time. To calculate the saving rate, we also collect net investment flows for each country, year and asset class. Table 1 (column 2) lists the European countries and time frame for which we have been able to collect aggregate investment flows.[8]

In this paper, we go one step forward and develop a new asset-specific wealth accumulation decomposition by breaking down the previous transition equation by asset class: net housing, business assets and financial assets. The transition equation is as follows:

$$W_{t+1}^r = W_{H,t+1}^r + W_{B,t+1}^r + W_{F,t+1}^r, \tag{2}$$

where

[7] Real capital gains are defined as the excess of average asset price inflation, given average portfolio composition of region r, over consumer price inflation.

[8] For the United States, we rely on the investment flows from the Bureau of Economic Analysis for non-financial assets and from the Flow of Funds for financial assets.

$$W^r_{H,t+1} = (1 + q^r_t) \cdot [W^r_{H,t} + s^r_{H,t} \cdot I^r_t] \tag{3}$$

$$W^r_{B,t+1} = (1 + q^r_t) \cdot [W^r_{B,t} + s^r_{B,t} \cdot I^r_t] \tag{4}$$

$$W^r_{F,t+1} = (1 + q^r_t) \cdot [W^r_{F,t} + s^r_{F,t} \cdot I^r_t] \tag{5}$$

This new asset-specific wealth decomposition makes it possible to quantify not only the relative importance of each channel (i.e., income, savings and asset prices), but also the role played by each asset in explaining the aggregate saving dynamics in each region. By construction, the sum of the saving rates in equations 3-5 adds up to the total saving rate for region r.

We also carry the same standard and asset-specific wealth accumulation decompositions for each wealth group g using the following transition equations:

$$W^{g,r}_{t+1} = (1 + q^{g,r}_t) \cdot [W^{g,r}_t + s^{g,r}_t \cdot (Y^{g,r}_{L_t} + r^{g,r}_t \cdot W^{g,r}_t)], and \tag{6}$$

$$W^{g,r}_{t+1} = W^{g,r}_{H,t+1} + W^{g,r}_{B,t+1} + W^{g,r}_{F,t+1}, \tag{7}$$

where

$$W^{g,r}_{H,t+1} = (1 + q^{g,r}_t) \cdot [W^{g,r}_{H,t} + s^{g,r}_{H,t} \cdot (Y^{g,r}_{L_t} + r^{g,r}_t \cdot W^{g,r}_t)] \tag{8}$$

$$W^{g,r}_{B,t+1} = (1 + q^{g,r}_t) \cdot [W^{g,r}_{B,t} + s^{g,r}_{B,t} \cdot (Y^{g,r}_{L_t} + r^{g,r}_t \cdot W^{g}_t)] \tag{9}$$

$$W^{g,r}_{F,t+1} = (1 + q^{g,r}_t) \cdot [W^{g,r}_{F,t} + s^{g,r}_{F,t} \cdot (Y^{g,r}_{L_t} + r^{g,r}_t \cdot W^{g,r}_t)] \tag{10}$$

In this case, we further decompose total income by wealth group g into labor income $Y^{g,r}_{L_t}$ plus capital income $r^{g,r}_t \cdot W^{g,r}_t$, where $r^{g,r}_t$ is the flow rate of return by wealth group g in each region r. We do so, as this allows us to also analyze another potential force behind wealth inequality: labor income inequality. Note that in this case the saving rate is synthetic because the identity of individuals in wealth group g changes over time due to wealth mobility.

3 Dynamics of Wealth in Europe and the United States

This section presents the main results of the paper. We start by describing the main stylized facts on the evolution of aggregate wealth and its distribution in Europe and the United States. We then use the wealth accumulation decompositions and counterfactual simulations to study the drivers of wealth accumulation and wealth inequality dynamics across the two regions.

3.1 Stylized Facts

Figure 1a compares the average household wealth to income ratios in Europe and the United States one since 1970. The evolution has been quite similar, steadily increasing from 3 times national income in 1970 to nearly 5 times in 2018. The wealth to income ratio is slightly higher in recent years in Europe than in the United States, as the reduction in wealth after the global financial crisis—mainly due to the decline in house prices—was higher in the United States. The European average hides important heterogeneities, as there are European countries which have reached levels of wealth that are more than 6.5 times the national income in the 2010s (e.g., Italy, Spain and Switzerland), and others for which the wealth is lower than 2.5 times the national income (e.g., Lithuania, Poland and Romania).

Figure 1b depicts the average evolution of the top 1% wealth share in Europe and the United States since 1970.[9] Although aggregate household wealth has similarly evolved in Europe and the United States, the dynamics of wealth inequality have been strikingly different in both regions. After an equalizing period during the 1970s, top 1% wealth concentration rose since 1980 in both regions, but much more moderately in Europe than in the United States. Interestingly, there is no single European country with the wealth concentration levels of the United States since the mid-1980s. Nonetheless, the European average hides important heterogeneities (Figure 2). Northern Europe had much lower wealth concentration levels than Western Europe in the 1980s. The gap has declined over time, as wealth concentration has increased faster in Northern than in Western Europe. Wealth concentration in Southern Europe was lower than in Western Europe and slightly higher than in Northern Europe during the 1990s and 2000s, but in the 2010s the levels of wealth concentration have converged to those of Western Europe. Finally, Eastern Europe is the region with the highest average levels of wealth concentration in Europe in the 2010s.

The United States also differs from Europe in the composition of the top 1% wealth share. Figure 3 shows that net housing has become increasingly more important for the top 1% wealth share in Europe at the expense of financial assets. Moreover, net housing and business assets account for a larger share of total wealth for the top 1% in Europe than in the United States throughout the whole period of analysis. Financial assets are thus more important for the top 1% in the United States than in Europe and they have become increasingly more important over time.

[9] For the United States, we rely on the wealth distribution series of Saez and Zucman (2016).

3.2 Understanding the Determinants

To assess the relative importance of volume versus price effects in explaining the aggregate wealth trajectories across the two regions, we rely on the asset-specific wealth accumulation decompositions and the aggregate wealth, income and investment series.

Although wealth to income ratios have evolved similarly in both regions, the relative importance of volume versus price effects and of each asset class has not been the same across the two regions. As shown in Figure 4a, total volume effects have been larger in the United States, while total price effects have been slightly more important in Europe. Prices have grown more in Europe than in the United States due mainly to the larger rise in house prices and the lower decline in business values in Europe relative to the United States, as financial assets have gained slightly more in value in the United States than in Europe. Instead, volume effects have been larger in the United States that in Europe, mainly due to the stronger increase in business investment in the United States relative to Europe (Figures 4b, 4c, and 4d).

To further assess the relative importance of volume versus price effects in explaining the different wealth inequality trajectories across the two regions, we run several counterfactual simulations using these asset-specific wealth accumulation decompositions and the DWAs.

Figure 5 compares the benchmark top 1% wealth share in France and the United States to the counterfactual wealth shares obtained by shutting down one channel at a time over the period 1986-2018.[10] We do so by fixing each force (asset prices, savings, portfolio choice or labor incomes) to be the average of the pre-simulation period 1970-1985.

Figure 5a shows that saving rate inequality seems to be the main driver of the moderate rise in the top 1% wealth share in France since the mid-1980s. The reason is that absent changes in saving rates, the top 1% wealth share would have declined over time. Interestingly, labor income inequality seems to have pushed wealth concentration down, as absent changes in labor income disparities the top 1% wealth share would have been higher. Finally, asset prices and portfolio choice dynamics seem to only have played a role since the 2000s pushing also wealth concentration down. This is largely explain by the outperformance of house prices relative to stock market prices and the increasing importance of housing for middle and bottom wealth groups.

Figure 5a shows that saving rate inequality seems to be the main driver of the moderate rise in the top 1% wealth share in France since the mid-1980s. The reason is that absent changes in saving rates, the top 1% wealth share would have declined over time. Interestingly, labor income inequality seems to have pushed wealth concentration down,

[10] We rely on France and not on the entirety of Europe, since France is the only country for which we have the joint income and wealth distribution since 1970.

as absent changes in labor income disparities the top 1% wealth share would have been higher. Finally, asset prices and portfolio choice dynamics seem to only have played a role since the 2000s pushing also wealth concentration down. This is largely explained by the outperformance of house prices relative to stock market prices and the increasing importance of housing for middle and bottom wealth groups. Instead, Figure 5b shows that in the United States all channels seem to have somehow contributed to rising top wealth concentration since the mid-1980s. Contrary to France, asset prices, portfolio choice and labor income inequality—and not only saving rate inequality—have contributed to the rise in the top 1% wealth share.

In order to better understand the different wealth inequality trajectories between Europe and the United States, Figure 6 applies the dynamics of asset prices and labor income shares of the top 1% wealth group in France to the top 1% wealth share in the United States. Labor income inequality has grown faster in the United States than in France over the period, thus explaining why the level of wealth concentration in the United States would have been lower with the labor income inequality trajectory of France. Furthermore, the dynamics of asset prices seem to have pushed wealth concentration up in the United States and not in France, as wealth concentration in the United States would have not increased with the asset price dynamics of France. This is largely due to the evolution of house prices, as if the United States would have experienced the house price effects of France the top 1% wealth share would have even declined over the period. Taken together, both the different trajectories in asset prices and labor income inequality seem to explain why wealth concentration has risen much less in France than in the United States.

To make sure that the results between France and the United States can be extrapolated to the rest of Europe, we also run similar situations for a weighted average of European countries since 1995.[11] Figure 7 applies the dynamics of asset prices and labor income shares of the top 1% wealth group in the United States to the top 1% wealth share in Europe. All simulations are in line with the ones using only the French distributional series. Labor income inequality has grown faster in the United States than in Europe over the period, thus explaining why the level of wealth concentration in Europe would have been higher with the labor income inequality trajectory of the United States. Moreover, the dynamics of asset prices seem to have pushed wealth concentration up in the United States and not in Europe, as wealth concentration in Europe would have increased much more with the asset price dynamics of the United States. All in all, this evidence indicates that the results for France seem to hold more broadly for Europe.

[11]Note that we start in 1995, as this is the first year for which we have distributional data for a sufficient amount of European countries available.

4 Conclusion

This paper combines national accounts, tax records and surveys to build the first Distributional Wealth Accounts (DWAs) for Europe over the period 1970-2018. Our new database reveals that aggregate wealth relative to national income has evolved similarly in Europe than in the United States, while wealth inequality has grown much faster in the United States than in Europe since the mid-1980s.

Using wealth accumulation decompositions, we find that both the weaker rise in labor income inequality and the stronger rise in house prices relative to stock market prices in Europe versus the United States seem to explain why Europe has experienced a more moderate rise in wealth concentration since the mid-1980s. House prices contribute to smooth wealth concentration, given that housing has a much higher weight in the portfolio of the middle and the bottom of the wealth distribution.

Although this paper has made some progress in better understanding the determinants of aggregate wealth and wealth inequality dynamics in Europe and the United States, the data that we exploit does not allow us to identify the mechanisms that are behind. For instance, why has labor income inequality grown faster and house prices grown slower in the United States than in Europe? Are these effects driven by particular regions or countries? Further research could contribute to stimulating new research in these multiple directions.

Our analysis also shows that cross-regional comparisons can be powerful to understand the drivers of different wealth inequality trajectories. However, as we have seen the determinants are not necessarily the same across regions. We hope our new rich historical database on European aggregate household wealth and its distribution will encourage government agencies to collect and release more wealth information and stimulate new empirical and theoretical research to better understand the determinants of wealth inequalities.

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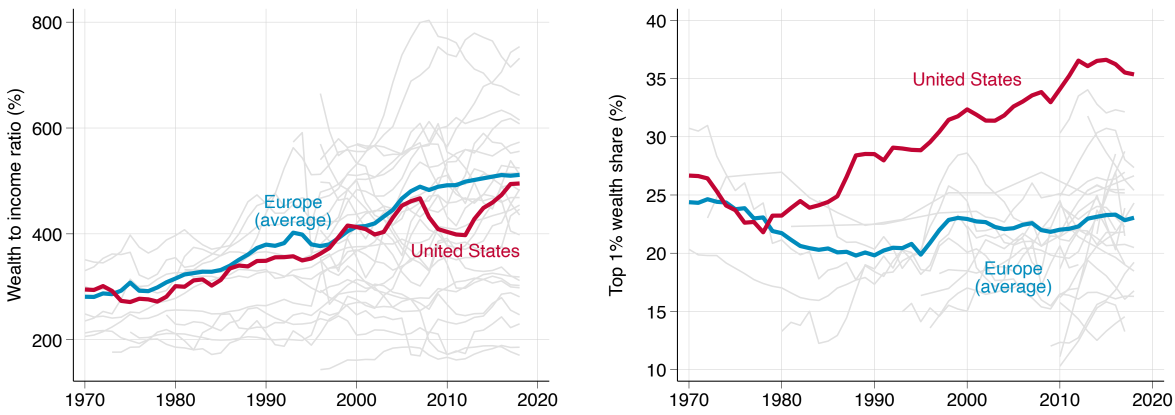
Tables and Figures

	Aggregate household wealth	Aggregate investment flows	Wealth distribution
Austria	1981-2019	1976-2020	2010-2017
Belgium	1981-2020	1980-2020	2010-2017
Bulgaria	1996-2019	1995-2020	
Croatia	1996-2019	1995-2020	2017
Cyprus	1996-2019	1995-2020	2010-2017
Czech Republic	1993-2020	1995-2020	
Denmark	1973-2020	1981-2020	1980-2017
Estonia	1996-2019	1995-2020	2013-2017
Finland	1975-2020	1970-2020	1980-2017
France	1970-2020	1970-2020	1970-2017
Germany	1970-2020	1991-2020	1970-2017
Greece	1996-2020	1995-2020	2009-2017
Hungary	1970-2020	1970-2020	2014-2017
Iceland	1997-2019	2000-2020	2010-2017
Ireland	1996-2019	1995-2020	2013-2018
Italy	1970-2020	1995-2020	1995-2017
Latvia	1996-2019	1995-2020	2014-2017
Lithuania	1996-2019	1995-2020	2016
Luxembourg	1996-2020	1995-2020	2010-2018
Malta	1996-2020	1995-2020	2010-2016
Netherlands	1993-2020	1995-2020	1993-2017
Norway	1979-2020	1976-2020	2010-2017
Poland	1996-2020	1995-2020	2013-2016
Portugal	1970-2020	1995-2020	2010-2017
Romania	1996-2020	1995-2020	
Slovakia	1996-2020	1995-2020	2010-2017
Slovenia	1996-2020	1995-2020	2010-2017
Spain	1970-2020	1970-2020	1984-2017
Sweden	1970-2020	1970-2020	2000-2017
Switzerland	2000-2020	2000-2020	1980-2017
United Kingdom	1970-2020	1987-2020	1995-2017

Table 1: A New Database on Aggregate Household Wealth and the Wealth Distribution in Europe, 1970-2020

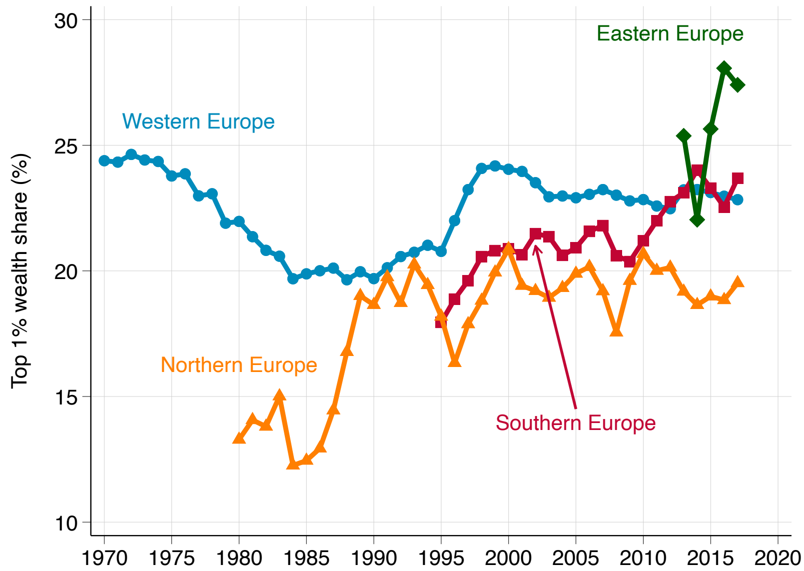
Notes: This table summarizes the country and time coverage of the new database we have built to construct the Distributional Wealth Accounts (DWAs) for Europe.



(a) Wealth to Income Ratios (b) Top 1% Wealth Share

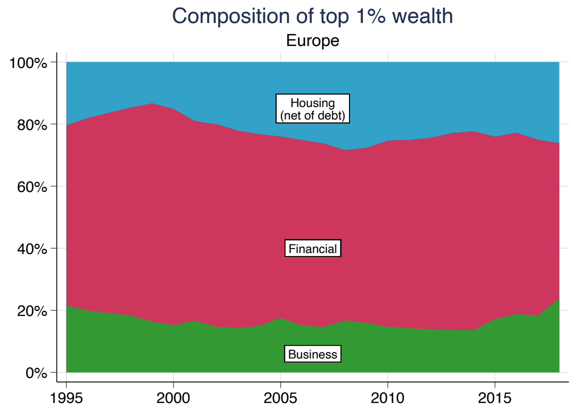
Notes: This figure depicts the evolution of aggregate wealth to income ratios (panel a) and of the top 1% wealth share (panel b) in both Europe and the United States using the Distributional Wealth Accounts (DWAs) for Europe and the United States DWAs of Saez and Zucman (2016). The gray lines depict the country-specific evolutions in Europe. The European estimate is based on a population weighted average.

Figure 1: Aggregate Household Wealth and Top Wealth Concentration, 1970–2018: Europe and the United States

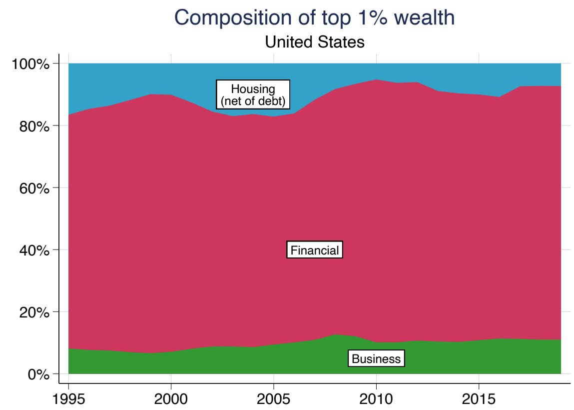


Notes: This figure depicts the evolution of the top 1% wealth share across European regions using the Distributional Wealth Accounts (DWAs). *Eastern Europe*: Estonia, Hungary, Latvia, Lithuania, Poland. *Northern Europe*: Denmark, Finland, Iceland, Norway, Sweden. *Southern Europe*: Croatia, Cyprus, Greece, Italy, Malta, Portugal, Slovenia, Spain. *Western Europe*: Austria, Belgium, France, Germany, Ireland, Luxembourg, Netherlands, Switzerland, United Kingdom. All estimates are based on a population weighted average.

Figure 2: Wealth Concentration in Europe by Region, 1970–2018



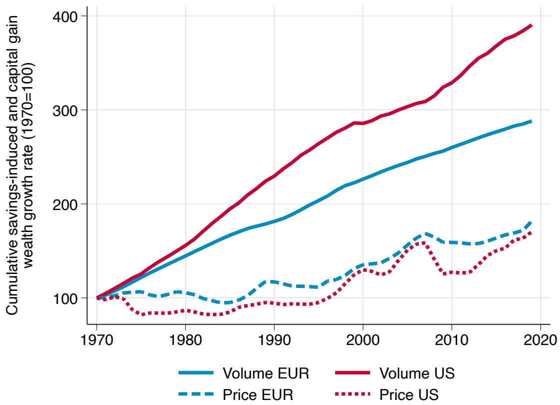
(a) Composition of top 1% wealth share in Europe



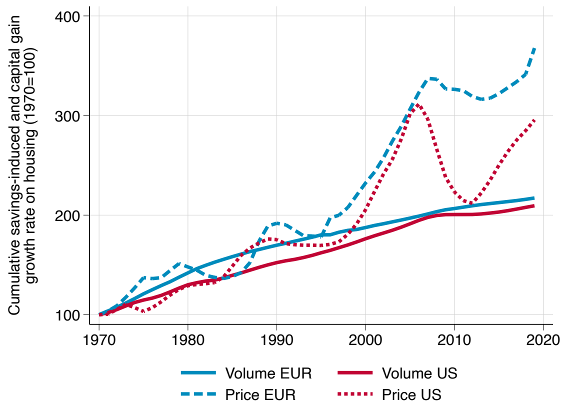
(b) Composition of top 1% wealth share in United States

Notes: This figure depicts the evolution of the asset composition of the top 1% wealth share in both Europe and the United States over the period 1970-2018. Total wealth is decomposed between housing (net of debt), financial assets and business assets using the Distributional Wealth Accounts (DWAs) for Europe and the United States DWAs of Saez and Zucman (2016). The European estimate is based on a population weighted average.

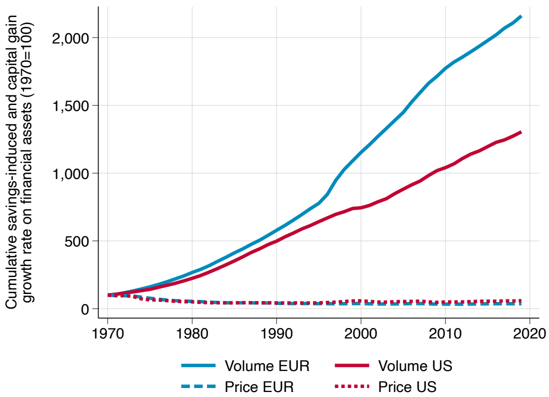
Figure 3: Composition of Top 1% Wealth Share, 1970–2018: Europe and the United States



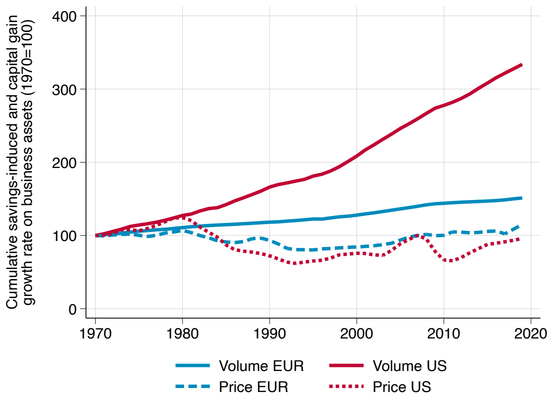
(a) Total wealth



(b) Housing



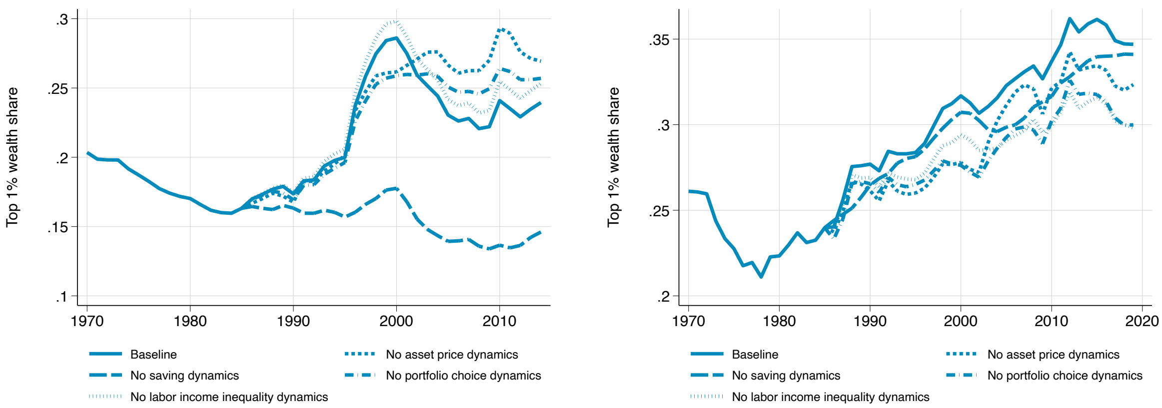
(c) Financial assets



(d) Business assets

Notes: This figure depicts the evolution of volume versus price effects using the wealth accumulation decompositions described in Section 2.4. Panel (a) presents the volume and price effects for total wealth, while panels (b) to (d) present the volume and price effects for housing, financial assets and business assets, respectively. The series are normalized using 1970 as a base year. The European estimates are based on a population weighted average.

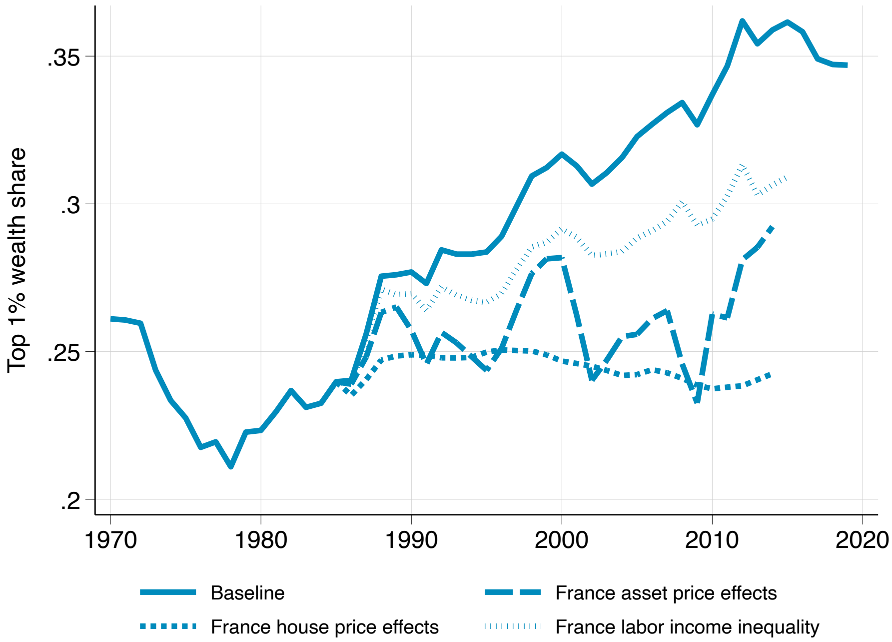
Figure 4: Aggregate Wealth Accumulation Decomposition, 1970–2018: Europe and the United States



(a) Top 1% Wealth Share in France (b) Top 1% Wealth Share in United States

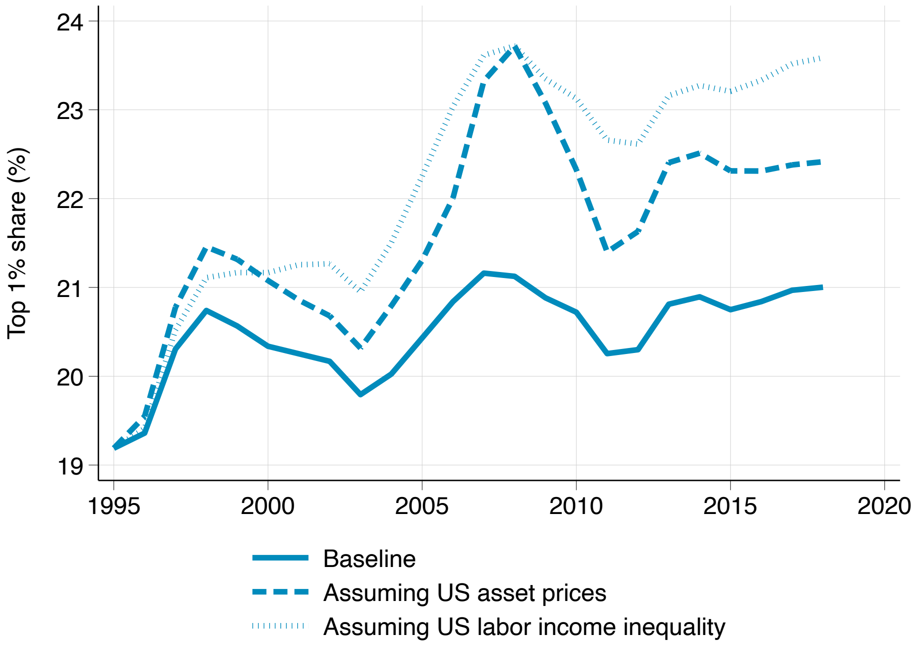
Notes: This figure compares the actual evolution of the top 1% wealth share in both France and the United States over the period 1986-2018 to the counterfactual evolution assuming either no asset price dynamics, no saving dynamics, no portfolio choice dynamics or no labor income inequality dynamics. The simulations are performed by fixing each channel (asset prices, savings, portfolio choice or savings) to be the average of the presimulation period 1970-1985. For instance, for the simulation with no asset price dynamics, we fix the rate of capital gain over the period 1986-2018 to be the average rate of capital gain over the period 1970-1985.

Figure 5: Top 1% Wealth Share Simulations, 1970-2018: Europe and the United States



Notes: This figure compares the actual evolution of the top 1% wealth share in the United States over the period 1986-2018 to the counterfactual evolution assuming either the total or housing asset price effects or the labor income share of the top 1% wealth group in France. The counterfactual simulations follow the methodology described in Section 2.4.

Figure 6: Counterfactual Evolution of Wealth Inequality in the United States using France Parameters



Notes: This figure compares the actual evolution of the top 1% wealth share in Europe over the period 1995-2018 to the counterfactual evolution assuming either the total asset price effects or the labor income share of the top 1% wealth group in the United States. The counterfactual simulations follow the methodology described in Section 2.4. "Europe" for this exercise refers to a population-weighted average of Germany, Denmark, Finland, United Kingdom, Italy, Netherlands, France and Spain. These are countries for which it is possible to obtain a balanced panel with a sufficiently detailed decomposition over the entire period.

Figure 7: Counterfactual Evolution of Wealth Inequality in Europe using United States Parameters

Wealth Inequality Dynamics in Europe and the United States: Understanding the Determinants

Online Appendix

Thomas Blanchet Clara Martínez-Toledano

A Wealth Distribution Data

Contents

A.1 Denmark

In Denmark, the main source to study the distribution of wealth comes from various kinds of wealth taxation. Roine and Waldenström (2015) have used wealth tax information to study the historical evolution of wealth concentration in the 18th, 19th and 20th century. The Danish authorities continued collecting individual wealth information even after the abolition of the wealth tax in 1997. Jakobsen et al. (2020) exploit the Danish wealth registry to build wealth distribution series over the 1980-2012 period.

We use the wealth distribution series of Jakobsen et al. (2020), as they follow the exact same methodology that we use for the rest of countries we analyze in this paper. In particular, their series are fully consistent with National Accounts, they are based on equal-split adults and since they rely on tax records, they have a very good coverage of the top. The register-based data source for wealth has two limitations. First, it only includes individual information on private pension wealth from 2012 onward. They allocate funded pension wealth of workers proportionally to their wage incomes (winsorized at the 99th percentile) and the pension wealth of retirees proportionally to their pension benefits paid out of pension funds. Since they observe that in 2012 about 40% of pension wealth belongs to wage earners while 60% belongs to retirees, they split pension wealth belonging to wage earners and to retirees using the proportions of 2012 for the rest of the period. Second, the registry does not include assets not reported by third parties, in particular it excludes non-corporate business assets and unlisted equities. They compute non-corporate business assets by capitalizing business income (the capitalization rate equals the aggregate stock of business assets from the national accounts divided by the aggregate flow of business income from individual income tax returns) and unlisted equities by capitalizing dividend income.

We extrapolate the wealth distribution series of Jakobsen et al. (2020) forward up to 2020 by fixing the asset composition by percentile to 2012, so that changes in portfolio composition over time only come from changes in the composition of aggregate wealth. We end up with fully homogeneous wealth distribution series by percentile and asset composition from 1980 to 2020.[12]

A.2 Finland

In Finland, there are three different sources which have been used to measure the wealth distribution: wealth tax records, estate tax records and wealth surveys. Roine and Waldenström (2015) use wealth and estate tax records to estimate the wealth distribution in from 1800 up to 2005. Jäntti (2006) uses the wealth surveys from Statistics Finland to

[12] Jakobsen et al. (2020) do not provide the wealth distribution by percentile, so that we use the Generalized Pareto interpolation method to obtain it.

analyze the dynamics of wealth inequality in the 1980s and 1990s.

We rely on the same wealth surveys used by Jäntti (2006) to build our wealth distribution series. The surveys are available over the 1987-2016 period and since 2009 are also part of the HFCS. To ensure consistency with the rest of countries, we build the wealth distribution based on equal-split adults and rescale the survey wealth components so as to match national accounts. We finally extrapolate the wealth distribution series forward up to 2020 by fixing the asset composition by percentile to 2016, so that changes in portfolio composition over time only come from changes in the composition of aggregate wealth. We end up with fully homogeneous wealth distribution series by percentile and asset class from 1987 to 2020.

A.3 France

In France, there are three different sources which have been used to measure the wealth distribution: estate tax records, wealth surveys and income tax records. Piketty, Postel-Vinay, and Rosenthal (2006) use large samples of estate tax returns and the mortality multiplier method to construct series on wealth concentration in Paris and France from 1807 to 1994. Kessler and Wolff (1991), Cordier and Girardot (2007) and Durier, Richet-Mastain, and Vanderschelden (2012) rely on the wealth surveys elaborated by *Banque de France* (*Enquêtes Patrimoine*), which are part of the HFCS since 2010, to study how wealth is distributed across French households. Finally, Garbinti, Goupille-Lebret, and Piketty (2021) develop a new method combining income tax records with household surveys – hereinafter referred to as the Mixed Income Capitalization-Survey (MICS) method – to derive French wealth distribution series from 1970 up to 2014.

We use the wealth distribution series of Garbinti, Goupille-Lebret, and Piketty (2021), as they follow the exact same methodology that we use for the rest of countries we analyze in this paper. In particular, their series are fully consistent with National Accounts, they are based on equal-split adults and since they rely on tax records, they have a very good coverage of the top. Garbinti, Goupille-Lebret, and Piketty (2021) run several robustness checks and sensitivity tests with the estate tax records and wealth surveys and show that their method is very robust to estimate the wealth distribution.

We extrapolate the wealth distribution series of Garbinti, Goupille-Lebret, and Piketty (2021) forward up to 2020 by fixing the asset composition by percentile to 2014, so that changes in portfolio composition over time only come from changes in the composition of aggregate wealth. We rely on the Generalized Pareto interpolation method to generate the wealth distribution by percentile.

We end up with fully homogeneous wealth distribution series by percentile and asset class from 1970 to 2020.

A.4 Germany

In Germany, there are two different sources which have been used to measure the wealth distribution: wealth tax records and wealth surveys. Baron (1988) and Dell (2008) use wealth tax data to estimate the wealth distribution in West Germany since the end of the II World War up to 1980 and 1995, respectively. On top of the HFCS, Germany has two additional household surveys including information on wealth. The Income and Expenditure Survey (*Einkommens- und Verbrauchsstichprobe, EVS*) starts in 1978 and incorporates partial information on assets and liabilities and the Socio-Economic Panel (SOEP) starting in 1984 incorporates wealth since 2002. The EVS has been used by Frick, Grabka, and Hauser (2010) and Fuchs-Schündeln, Krueger, and Sommer (2010) and the SOEP by Grabka and Frick, 2007, Westermeier and Grabka, 2015 and Grabka and Halbmeier, 2019.

Albers, Bartels, and Schularick (2020) combine tax data, surveys, national accounts and rich lists to study the distribution of wealth in Germany from 1895 to 2018. We rely on these series in this paper, as they ensure consistency with National Accounts and cover better the top than the available wealth surveys. The series up to 1989 are based on tax units and since 1993 on household units. To ensure consistency with the rest of countries, we adjust them so that they are based instead on equal-split adults.

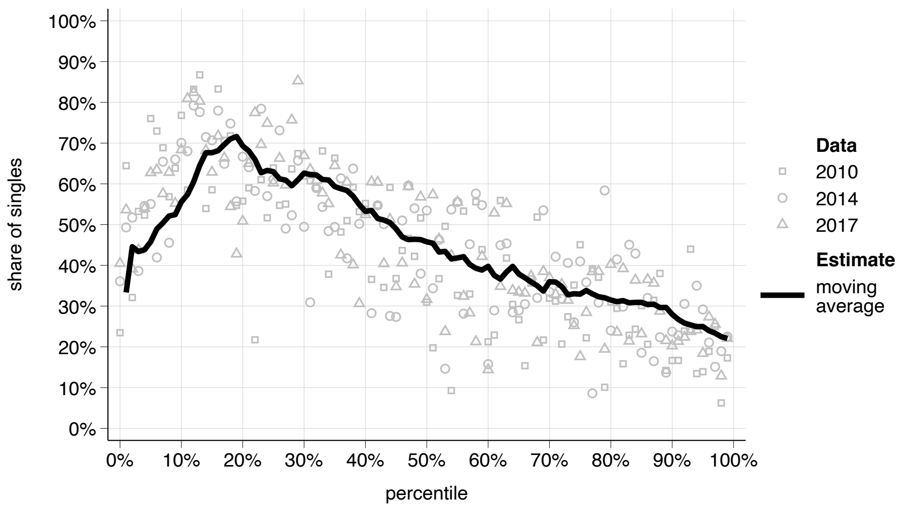


Figure 8: Share of Singles by Household Wealth Percentile, Germany

To do so, we estimate the share of single by percentile of the wealth distribution raked by households in the German part of the HFCS survey (see figure 8). Based on this estimate we split each g-percentile into singles and couples, a re-interpolate the resulting tabulations using generalized Pareto interpolation (Blanchet, Fournier, and Piketty, 2021).

We finally extrapolate the wealth distribution series of Albers, Bartels, and Schularick (2020) forward up to 2020 by fixing the asset composition by percentile to 2018, so that changes in portfolio composition over time only come from changes in the composition of aggregate wealth. We end up with fully homogeneous wealth distribution series by percentile and asset class from 1895 to 2020.

A.5 Italy

In Italy, there are two different sources which have been used to measure the wealth distribution: wealth surveys and inheritance tax records. Brandolini et al. (2006) and Cannari and D'Alessio (2018) rely on wealth surveys elaborated by *Banca d'Italia* (*Indagine sui bilanci delle famiglie italiane*)—which are available from 1965-2016 and are also part of the HFCS since 2010—to estimate the wealth distribution. Acciari, Alvaredo, and Morelli (2020) rely on inheritance tax records and the mortality multiplier method to estimate the wealth distribution between 1995 and 2016.

We use the wealth distribution series of Acciari, Alvaredo, and Morelli (2020), since they provide the best coverage of the top as they rely on tax records. In particular, they find higher wealth concentration levels after 2000 than Cannari and D'Alessio (2018) using wealth surveys. The series of Acciari, Alvaredo, and Morelli (2020) are built using individuals as unit of observation. To ensure consistency with the rest of countries, we adjust the series so that they are based instead on equal-split adults.

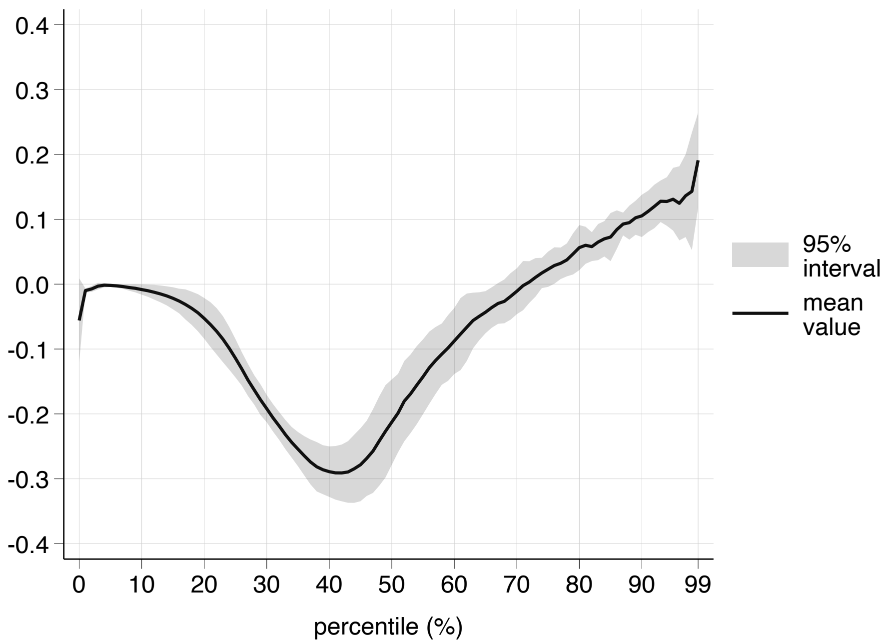


Figure 9: Equal-split/Individuals Adjustment Factor by Percentile, Italy

To do so, we estimate an adjustment factor by percentile from survey data. We individualize wealth in the Italian wealth survey following the recommendations of D'Alessio (2018). We then estimate, by percentile of wealth, the following quantity:

$$k_p = \text{ashin}\left(\frac{\text{wealth of percentile p, individuals}}{\text{average wealth}}\right) - \text{ashin}\left(\frac{\text{wealth of percentile p, equal-split}}{\text{average wealth}}\right)$$

which gives the profile shown in figure 9. We then apply a adjustment factor to out wealth series as:

$$\frac{\text{wealth of percentile p, equal-split}}{\text{average wealth}} = \sinh\left[\text{ashin}\left(\frac{\text{wealth of percentile p, individuals}}{\text{average wealth}}\right) - k_p\right]$$

We arrive at the results show in figure 10.

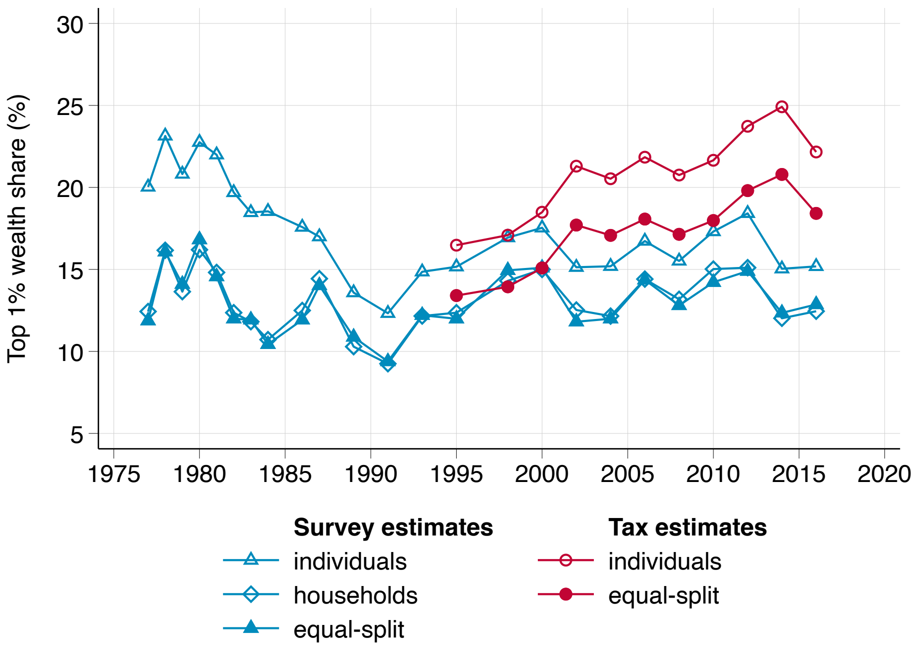


Figure 10: Comparison of Statistical Units, Italy

We finally extrapolate the wealth distribution series of Acciari, Alvaredo, and Morelli (2020) forward up to 2020 by fixing the asset composition by percentile to 2016, so that changes in portfolio composition over time only come from changes in the composition of aggregate wealth. We end up with fully homogeneous wealth distribution series by percentile and asset class from 1995 to 2020.

A.6 Netherlands

In the Netherlands, there are two different sources which have been used to measure the wealth distribution: wealth tax records and wealth surveys. Roine and Waldenström (2015) rely on wealth tax records—including the wealth-tax based registry published since 1993 by Statistics Netherlands (CBS)—to estimate wealth concentration at the top from 1894 up to 2011. Van Bavel and Frankema (2017) use both wealth tax records and the

Dutch Central Bank household surveys (DHS) which are available from 1993-2020 to study wealth inequality from 1950 to 2015. Toussaint (2021) also builds wealth distribution series using the wealth tax records from Statistics Netherlands for 1993-2019.

We use the wealth distribution series of Toussaint (2021), as they follow the exact same methodology that we use for the rest of countries we analyze in this paper. In particular, their series are fully consistent with National Accounts, they are based on equal-split adults and since they rely on tax records, they have a very good coverage of the top. One limitation of the register-based data source for wealth is that it does not include information on private pension wealth, so that funded pension wealth is imputed proportionally to wages and pension benefits.

We extrapolate the wealth distribution series of Toussaint (2021) forward up to 2020 by fixing the asset composition by percentile to 2019, so that changes in portfolio composition over time only come from changes in the composition of aggregate wealth. We end up with fully homogeneous wealth distribution series by percentile and asset class from 1993 to 2020.

A.7 Norway

In Norway, the main source to study the distribution of wealth comes from various kinds of wealth taxation. Roine and Waldenström (2015) have used wealth tax information to study the historical evolution of wealth concentration in the 18th, 19th and mid 20th century. Epland and Kirkeberg (2012) and Iacono and Palagi (2021) have used registered-based wealth information from wealth tax records to study the dynamics of wealth inequality since 2010.

We use the wealth distribution series of Iacono and Palagi (2021) covering the 2010-2019 period, as they follow the exact same methodology that we use for the rest of countries we analyze in this paper. In particular, their series are fully consistent with National Accounts, they are based on equal-split adults and since they rely on tax records, they have a very good coverage of the top. One limitation of the register-based data source for wealth is that it does not include information on private pension wealth. They impute funded pension wealth in Norway proportionally to wages and pension benefits.

We extrapolate the wealth distribution series of Iacono and Palagi (2021) forward up to 2020 by fixing the asset composition by percentile to 2019, so that changes in portfolio composition over time only come from changes in the composition of aggregate wealth. We end up with fully homogeneous wealth distribution series by percentile from 2010 to 2020.

A.8 Spain

In Spain, there are three different sources which have been used to measure the wealth distribution: wealth tax records, wealth surveys and income tax records. Alvaredo and Saez (2009) use wealth tax returns and the Pareto interpolation method to construct long run series of wealth concentration for the period 1982 to 2007. Anghel et al. (2018) rely on the wealth surveys elaborated by *Banco de España* (*Encuesta Financiera de las Familias*), which are also part of the HFCS since 2010, to study how wealth is distributed across Spanish households between 2002 and 2014.[13] Finally, Martínez-Toledano (2020) combines income tax records with household surveys to build wealth distribution series for the 1984-2015 period using the Mixed Income Capitalization-Survey (MICS) method developed by Garbinti, Goupille-Lebret, and Piketty (2021).

We use the wealth distribution series of Martínez-Toledano (2020), as they follow the exact same methodology that we use for the rest of countries we analyze in this paper. In particular, their series are fully consistent with National Accounts, they are based on equal-split adults and since they rely on tax records, they have a very good coverage of the top. Martínez-Toledano (2020) runs several robustness checks and sensitivity tests with the wealth surveys and shows that their method is very robust to estimate the wealth distribution.

We extrapolate the wealth distribution series of Martínez-Toledano (2020) forward up to 2020 by fixing the asset composition by percentile to 2015, so that changes in portfolio composition over time only come from changes in the composition of aggregate wealth. We end up with fully homogeneous wealth distribution series by percentile and asset class from 1984 to 2020.

A.9 Switzerland

Regarding the availability of wealth data in Switzerland, the situation is mixed. On the one hand, Switzerland is one of the rare country that levies a fairly comprehensive wealth tax, and has done so (albeit irregularly) over most of the 20th and 21st century (Dell, Piketty, and Saez, 2005). The tax authority publishes tabulations showing the number and wealth of taxpayers over about ten brackets, with the last bracket covering less than 0.5% of the population. This provides a solid basis on which to construct wealth inequality statistics, and which has been exploited before (Dell, Piketty, and Saez, 2005; Foellmi and Martínez, 2016).

On the other hand, Switzerland does not conduct any proper wealth survey. This creates problems because the wealth tax statistics exclude private pension wealth, bottom-code

[13] There is a new wealth survey wave available for 2017.

wealth at zero, and relate to tax units rather than individuals. Therefore, to create series that are comparable with other countries, we must perform corrections and adjustments that in principle require survey data. Furthermore the aggregate household balance sheets produced by Switzerland are incomplete, because they exclude business assets.

However, there are some surveys of Swiss residents that include information on wealth, even if these surveys are not wealth surveys in the sense that wealth measurement is their primary focus. Ravazzini et al. (2019) found three such surveys. They all have limitations that actual wealth surveys do not have, but they remain a useful piece of information. Two of these surveys measure wealth across the entire population, but include little or no evidence on how this wealth is decomposed between asset types: the Swiss Household Panel (SHP) and the Statistics on Income and Living Conditions (CH-SILC).[14] A third survey contains much more details on the decomposition of wealth, but only contains individuals aged 50 and older: the Survey of Health, Ageing and Retirement in Europe.

Our estimate of the wealth distribution in Switzerland are the result of a triangulation of the evidence included in the wealth tax statistics, the SHP and the SHARE data. This estimation is composed of four broad steps.

Step 1 We interpolate wealth tax statistics using the generalized Pareto interpolation method, which gives us the full distribution of taxable wealth across all tax units.

Step 2 We use the SHP data to get the number of couples and singles for each wealth percentile, and use it to transform the distribution of wealth across tax units into a distribution of wealth across equal-split individuals.

Step 3 We create a synthetic survey dataset of wealth and its decomposition between asset types. To create this dataset, we first isolate the 50 and older in the SHP sample. Then we match statistically this subsample to the SHARE data (which is already restricted to the 50 and older). We pool this data together with the SHP data of individuals below 50, and with survey data for the rest of Europe from the HFCS, and run regressions to impute the asset ownership patterns by asset type across the 50 and younger in Switzerland. This gives us a synthetic dataset that contains the decomposition of wealth for all individuals in Switzerland.

Step 4 We use this synthetic dataset to impute private pension wealth and negative wealth to individuals in the tax data, and to decompose their wealth.

We detail these four steps and their impact on the final estimates below.

[14]Note that CH-SILC is distinct from the EU-SILC survey, although the survey objectives are similar.

A.9.1 Step 1: Wealth Tax Data Interpolation

The wealth tax statistics are publicly available online through the tax authorities' website, annually since 2003 and at a lower frequency before that. These statistics cover the entire population of taxpayers, but in the form of tax units: i.e., two people who file jointly count as only one person. These statistics exclude private pension wealth, which is untaxed. Wealth is also bottom coded at zero, even though liabilities are deduced from taxable wealth, so that in principle some people can have negative wealth.

The data is published in tabulated form: taxpayers are grouped into about ten brackets, with the last bracket corresponding to tax units with more than 10 000 000 CHF of taxable wealth, or about 0.3% of all tax units in 2017.

We interpolate these data into a complete, continuous distribution using the generalized Pareto interpolation method (**blanchet_generalized_2017**). This method is an improvement over the standard Pareto interpolation method (Piketty, 2003; Piketty and Saez, 2003) which yields better results and can be applied to the entire distribution, not only the top. Our results are extremely close to those of earlier work on this data (Dell, Piketty, and Saez, 2005; Foellmi and Martínez, 2016), but provide a view of the entire distribution.

A.9.2 Step 2: Adjusting the Statistical Unit

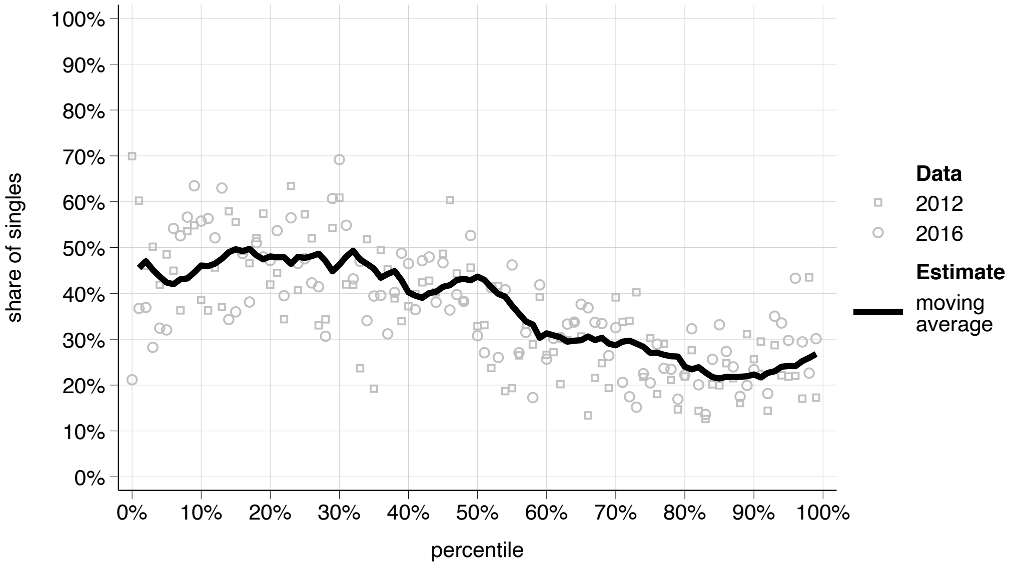
The Swiss wealth tax data relates to tax units (i.e., households). We transform that household distribution into an equal-split adults distribution using the two waves of the SHP that collected information on total wealth: 2012 and 2016.

First, we estimate a share of singles by percentile of household wealth, as shown in Figure 11. We first estimate, separately for 2012 and 2016, the share of singles in each percentile of household wealth. We average this information over the two years of data available, and further smooth the estimate using a moving average with a window of nine percentiles.

Based on this estimate, we split the estimate of the distribution of wealth from Step 1 into two distributions: one for singles, and one for couples. We leave the distribution of wealth among singles unchanged. For couples, we divide their wealth and multiply their bracket size by two. We aggregate these distribution again, which yields an estimate of the wealth distribution among equal-split adults.

A.9.3 Step 3: Creation of Synthetic Survey Datasets

The creation of a synthetic survey dataset in Switzerland, which we can use to infer certain missing pieces of information, is the main challenge. To that end, we mobilize



Source: Author's calculations using the Swiss Household Panel (SHP) in 2012 and 2016. *Notes:* Data points are the shares by percentile obtained directly from the two survey waves. We estimate the moving average value by first averaging the raw over the two available years, and then performing a moving average with a window of nine percentiles.

Figure 11: Share of Singles by Percentile of Household Wealth, Switzerland, 2012 and 2016

three different surveys. Two of them provide partial information for Switzerland: the SHP covers the full population with no information on the decomposition by asset type, while the SHARE contains a detailed decomposition but only for people aged 50 and older. The third one if the HFCS survey, which provide complete information for many European countries but not Switzerland.

We combine these three data sources to create an imputation model that estimates asset ownership patterns vary by country, marital status, education, income and total wealth. We then use that imputation model to distribute the different wealth components to individuals younger that 50 (assets for individuals 50 or older are directly observable in the SHARE survey).

Statistical Matching of SHARE and SHP We statistically match the SHP and the SHARE surveys to create a single sample sample out of both datasets. From each dataset, we select the following variables for every household: education of the reference person (ISCED classification), age of the reference person, gross household income, and total household wealth. We transform income and wealth using the inverse hyperbolic sine function (asinh), which is similar to the logarithm for high values, but also supports zero and negative values.

We center and standardize these variables in both datasets. For every household $i \in$

$\{1,\dots,n\}$ in the SHP, let $(z_{1i}^{\text{SHP}},\dots,z_{ki}^{\text{SHP}})$ be the set of these variables. Similarly, for every household $j\in\{1,\dots,m\}$ in SHARE, let $(z_{1j}^{\text{SHARE}},\dots,z_{kj}^{\text{SHARE}})$ be the set of these variables. We define a simple squared Euclidean distance between household i (in SHP) and j (in SHARE) as:

$$d_{ij}=\sum_{\ell=1}^{k}\left(z_{\ell i}^{\text{SHP}}-z_{\ell j}^{\text{SHARE}}\right)^2$$

and then we seek to find a way to match observations between the two datasets so as to minimize the overall distance (Ridder and Moffitt, 2007). That is, we solve the following optimization problem:

$$\min_{f_{ij}}\sum_{i=1}^{n}\sum_{j=1}^{m}f_{ij}d_{ij}\quad\text{subject to}\quad\begin{cases}\forall i\in\{1,\dots,n\} & \sum_{j=1}^{m}f_{ij}=w_i^{\text{SHP}}\\ \forall j\in\{1,\dots,m\} & \sum_{i=1}^{n}f_{ij}=w_j^{\text{SHARE}}\\ \forall i\in\{1,\dots,n\} & \forall j\in\{1,\dots,m\}\quad f_{ij}\geq 0\end{cases}$$

where w_i^{SHP} and w_j^{SHARE} are the weights of households i and j in SHP and SHARE, respectively (we consider that the sum of these weights is the same in both samples). The matrix (f_{ij}) that solves the problem can be found using standard optimal transport algorithms (Schuhmacher et al., 2020). The resulting dataset is made of all nonzero entries of (f_{ij}), and the value f_{ij} is the weight of each corresponding observation. The solution is known to be sparse, so that the resulting matched dataset will have at most $m+n-1$ observations.

We perform this operation for the two waves (2012 and 2016) of the SHP that contain wealth information. Because the SHP and the SHARE waves do not coincide exactly, we match the 2012 SHP with the 2013 wave of SHARE, and the 2016 SHP with the 2015 wave of SHARE. We separately match households made up of singles and of couples, and restrict the SHP sample to people aged 50 and older before matching it to SHARE (which is already restricted to that population). After matching, we pool the matched dataset with the SHP sample of people below age 50.

Estimation of Asset Ownership Patterns We pool the matched dataset with the HFCS data that covers the rest of Europe. (We use the second wave of the HFCS for the SHP 2012/SHARE 2013 dataset, and the third wave of the HFCS for the SHP 2016/SHARE 2015 dataset.) Then, we estimate statistical models that decompose asset ownership patterns as a function of countries, age, education, marital status, income and wealth. The idea is to use everything we know about Switzerland (for people 50 and older) and the rest of Europe (for the whole adult population) to infer what happens for people aged 50 and younger in Switzerland.

There are two dimensions of asset ownership: the extensive margin (do you own the

	$\mathbb{P}(>0)$	$\tau=5\%$	$\tau=10\%$	$\tau=20\%$	$\tau=30\%$	$\tau=40\%$	$\tau=50\%$	$\tau=60\%$	$\tau=70\%$	$\tau=80\%$	$\tau=90\%$	$\tau=95\%$
Intercept	-5.69	5.99	6.69	7.60	8.38	9.02	9.70	10.26	10.67	11.04	11.42	11.80
country												
Austria	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Belgium	0.93	0.40	0.26	0.14	0.10	0.03	0.00	-0.00	-0.06	-0.08	-0.17	-0.24
Switzerland	-0.28	0.34	0.42	0.52	0.62	0.65	0.72	0.76	0.82	0.91	1.06	1.20
Cyprus	1.37	-0.10	-0.09	-0.07	0.01	-0.04	-0.05	-0.03	-0.06	-0.00	-0.01	-0.03
Germany	0.04	-0.42	-0.33	-0.40	-0.37	-0.39	-0.34	-0.33	-0.30	-0.24	-0.19	-0.17
Estonia	2.13	-1.75	-1.58	-1.48	-1.42	-1.43	-1.43	-1.42	-1.39	-1.30	-1.14	-1.07
Spain	2.02	-0.22	-0.25	-0.29	-0.30	-0.35	-0.37	-0.40	-0.39	-0.39	-0.37	-0.42
Finland	1.51	-0.19	-0.21	-0.28	-0.30	-0.36	-0.37	-0.36	-0.37	-0.34	-0.34	-0.39
France	0.68	-0.02	-0.05	-0.10	-0.10	-0.16	-0.19	-0.21	-0.23	-0.21	-0.21	-0.25
Greece	1.62	-0.65	-0.74	-0.83	-0.87	-0.94	-0.99	-1.00	-1.01	-0.97	-0.93	-0.96
Hungary	2.74	-1.59	-1.59	-1.62	-1.67	-1.77	-1.80	-1.82	-1.81	-1.75	-1.75	-1.80
Ireland	2.17	-0.16	-0.16	-0.20	-0.20	-0.26	-0.25	-0.24	-0.22	-0.18	-0.14	-0.22
Italy	1.02	0.04	-0.02	-0.08	-0.09	-0.16	-0.17	-0.18	-0.17	-0.14	-0.11	-0.15
Luxembourg	0.71	0.97	0.88	0.82	0.82	0.78	0.78	0.77	0.77	0.77	0.77	0.74
Latvia	2.51	-2.55	-2.44	-2.33	-2.32	-2.32	-2.28	-2.31	-2.22	-2.04	-1.80	-1.57
Malta	1.42	0.16	0.05	-0.01	-0.01	-0.09	-0.11	-0.14	-0.16	-0.16	-0.14	-0.21
Netherlands	0.82	0.50	0.34	0.18	0.10	0.01	-0.01	-0.04	-0.03	-0.03	-0.09	-0.23
Poland	1.80	-0.73	-0.83	-0.95	-1.01	-1.05	-1.04	-1.03	-1.02	-0.97	-0.88	-0.92
Portugal	1.70	-0.67	-0.52	-0.52	-0.51	-0.58	-0.61	-0.63	-0.62	-0.60	-0.60	-0.68
Slovenia	1.64	-0.47	-0.53	-0.66	-0.69	-0.75	-0.78	-0.80	-0.83	-0.79	-0.77	-0.82
Slovakia	2.42	-0.98	-0.96	-1.06	-1.11	-1.23	-1.28	-1.32	-1.33	-1.33	-1.29	-1.38
marital status												
married	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
single	-0.84	-0.20	-0.19	-0.15	-0.15	-0.14	-0.13	-0.13	-0.16	-0.19	-0.19	-0.18
education												
ISCED 0–1	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
ISCED 2	-0.16	0.14	0.10	0.12	0.12	0.12	0.07	0.06	0.05	0.05	0.05	0.08
ISCED 3	0.19	0.10	0.11	0.09	0.12	0.15	0.09	0.11	0.11	0.13	0.16	0.21
ISCED 4	0.03	-0.02	0.00	0.04	0.09	0.13	0.08	0.10	0.13	0.14	0.19	0.23
ISCED 5	0.23	0.05	0.03	0.05	0.12	0.16	0.13	0.15	0.18	0.18	0.22	0.27
ISCED 6	-0.58	0.02	0.01	0.05	0.11	0.15	0.13	0.17	0.20	0.24	0.30	0.37
age												
20-29	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
30-39	1.05	-0.06	-0.09	-0.03	0.02	0.11	0.08	0.09	0.13	0.15	0.23	0.28
40-49	1.60	0.19	0.14	0.14	0.14	0.14	0.13	0.10	0.11	0.11	0.14	0.14
50-59	1.77	0.30	0.24	0.25	0.25	0.25	0.24	0.23	0.25	0.24	0.26	0.26
60-69	1.87	-0.24	-0.00	0.38	0.43	0.28	0.39	0.35	0.49	0.42	0.38	0.57
70-79	1.98	0.41	0.38	0.40	0.41	0.42	0.43	0.42	0.46	0.47	0.55	0.59
>80	1.91	-0.08	-0.15	-0.10	-0.09	-0.09	-0.01	0.04	0.10	0.11	0.05	0.01
income and wealth												
asinh(income)	0.13	0.13	0.14	0.15	0.17	0.17	0.14	0.12	0.10	0.08	0.06	0.05
asinh(wealth)	0.25	0.28	0.24	0.17	0.11	0.07	0.05	0.04	0.04	0.03	0.03	0.03

Source: Author's calculations using SHARE, SHP and HFCS. *Notes:* The first column refers to the coefficients of the logistic regression that model the extensive margin (i.e., the probability of owning the asset or liability). The other columns refer to the coefficients of quantiles regressions for quantiles τ. The dependent variable in that regression is the logarithm of the value of the asset (or liability), in EUR.

Table 2: Switzerland Imputation Model Coefficients, Main Residence, 2012

	$\mathbb{P}(>0)$	$\tau=5\%$	$\tau=10\%$	$\tau=20\%$	$\tau=30\%$	$\tau=40\%$	$\tau=50\%$	$\tau=60\%$	$\tau=70\%$	$\tau=80\%$	$\tau=90\%$	$\tau=95\%$
Intercept	-6.57	5.31	5.90	6.98	7.66	8.62	9.61	10.38	10.80	11.25	11.60	11.86
country												
Austria	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Belgium	1.04	0.28	0.23	0.14	0.12	0.10	0.07	0.02	-0.00	-0.10	-0.18	-0.25
Switzerland	-0.13	0.17	0.33	0.56	0.72	0.87	0.98	1.03	1.11	1.16	1.26	1.34
Cyprus	1.19	-0.20	-0.04	-0.06	-0.06	-0.05	-0.06	-0.01	0.08	0.07	0.06	0.10
Germany	0.07	-0.32	-0.28	-0.24	-0.21	-0.16	-0.16	-0.16	-0.12	-0.15	-0.07	-0.09
Estonia	2.23	-1.55	-1.45	-1.30	-1.22	-1.19	-1.22	-1.28	-1.26	-1.23	-1.10	-1.10
France	0.78	-0.05	-0.04	-0.06	-0.06	-0.09	-0.14	-0.17	-0.17	-0.22	-0.21	-0.26
Greece	1.79	-0.86	-0.90	-0.95	-0.96	-1.03	-1.10	-1.14	-1.12	-1.19	-1.15	-1.15
Croatia	2.98	-0.93	-0.81	-0.81	-0.83	-0.91	-0.95	-0.98	-0.96	-0.96	-0.84	-0.82
Hungary	2.91	-1.26	-1.24	-1.31	-1.34	-1.41	-1.49	-1.54	-1.51	-1.56	-1.55	-1.59
Ireland	1.36	0.05	0.06	0.03	0.04	0.03	0.03	0.01	0.03	0.01	-0.00	-0.02
Italy	1.19	-0.04	-0.08	-0.17	-0.17	-0.20	-0.22	-0.24	-0.22	-0.28	-0.22	-0.23
Lithuania	3.96	-1.16	-1.05	-1.08	-1.09	-1.19	-1.24	-1.30	-1.28	-1.32	-1.24	-1.13
Luxembourg	0.76	0.84	0.81	0.78	0.78	0.83	0.88	0.87	0.91	0.83	0.82	0.76
Latvia	2.59	-1.88	-1.84	-1.79	-1.72	-1.76	-1.82	-1.91	-1.91	-1.95	-1.91	-1.77
Malta	1.49	-0.09	-0.02	-0.05	-0.07	-0.07	-0.07	-0.09	-0.05	-0.11	-0.08	-0.09
Netherlands	0.99	0.28	0.30	0.24	0.23	0.19	0.14	0.07	0.07	0.06	0.09	0.06
Poland	2.02	-0.75	-0.80	-0.92	-0.96	-1.05	-1.11	-1.15	-1.11	-1.12	-1.09	-1.11
Portugal	1.79	-0.38	-0.39	-0.41	-0.44	-0.50	-0.57	-0.62	-0.62	-0.67	-0.63	-0.66
Slovenia	1.98	-0.50	-0.46	-0.56	-0.60	-0.66	-0.71	-0.73	-0.72	-0.72	-0.68	-0.70
Slovakia	2.77	-0.75	-0.74	-0.81	-0.85	-0.93	-1.02	-1.10	-1.09	-1.13	-1.07	-1.10
marital status												
married	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
single	-0.82	-0.18	-0.16	-0.15	-0.13	-0.15	-0.19	-0.19	-0.19	-0.19	-0.19	-0.23
education												
ISCED 0–1	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
ISCED 2	-0.01	0.13	0.10	0.12	0.12	0.13	0.12	0.14	0.16	0.13	0.14	0.14
ISCED 3	0.20	0.17	0.18	0.18	0.19	0.21	0.22	0.24	0.25	0.21	0.22	0.23
ISCED 4	0.94	0.13	0.40	0.38	0.48	0.39	0.29	0.37	0.42	0.43	0.49	0.56
ISCED 5	0.22	0.27	0.31	0.33	0.33	0.36	0.39	0.43	0.46	0.47	0.50	0.53
ISCED 6	-0.59	-0.15	-0.05	-0.08	-0.01	0.06	0.06	0.15	0.19	0.08	0.16	-0.02
age												
20-29	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
30-39	0.92	0.43	0.22	0.12	0.11	0.06	0.05	0.05	0.04	0.03	0.08	0.07
40-49	1.35	0.39	0.17	0.07	0.05	0.04	0.06	0.11	0.11	0.09	0.11	0.12
50-59	1.53	0.29	0.09	0.01	-0.02	-0.01	0.04	0.10	0.11	0.13	0.18	0.19
60-69	1.68	0.26	0.08	-0.00	-0.04	-0.03	0.02	0.09	0.12	0.13	0.18	0.20
70-79	1.67	0.24	0.08	-0.01	-0.03	-0.02	0.05	0.13	0.16	0.15	0.19	0.25
>80	1.68	0.25	0.02	-0.10	-0.10	-0.07	0.00	0.10	0.15	0.17	0.21	0.22
income and wealth												
asinh(income)	0.06	0.10	0.10	0.08	0.09	0.09	0.09	0.08	0.07	0.06	0.05	0.05
asinh(wealth)	0.40	0.35	0.34	0.29	0.25	0.19	0.12	0.07	0.05	0.05	0.04	0.04

Source: Authors' calculations using SHARE, SHP and HFCS. *Notes:* The first column refers to the coefficients of the logistic regression that model the extensive margin (i.e., the probability of owning the asset or liability). The other columns refer to the coefficients of quantiles regressions for quantiles τ. The dependent variable in that regression is the logarithm of the value of the asset (or liability), in EUR.

Table 3: Switzerland Imputation Model Coefficients, Main Residence, 2016

	$\mathbb{P}(>0)$	$\tau=5\%$	$\tau=10\%$	$\tau=20\%$	$\tau=30\%$	$\tau=40\%$	$\tau=50\%$	$\tau=60\%$	$\tau=70\%$	$\tau=80\%$	$\tau=90\%$	$\tau=95\%$
Intercept	-8.99	-0.19	2.72	2.21	3.01	4.30	5.99	6.83	8.04	9.32	9.75	10.52
country												
Austria	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Belgium	0.22	-0.13	0.01	0.15	0.22	0.25	0.25	0.33	0.18	0.14	0.19	0.24
Switzerland	-0.03	-0.71	-0.03	0.38	0.61	0.65	0.70	0.77	0.85	0.89	1.15	1.13
Cyprus	2.05	-0.16	-0.01	0.10	0.36	0.44	0.44	0.53	0.58	0.63	0.88	1.01
Germany	0.76	-0.95	-0.75	-0.56	-0.33	-0.27	-0.26	-0.21	-0.17	-0.17	0.00	0.03
Estonia	1.89	-1.10	-1.45	-0.99	-0.78	-0.84	-0.95	-0.94	-1.05	-1.09	-0.92	-1.02
Spain	1.78	-0.15	-0.44	-0.18	0.05	0.05	-0.01	-0.01	-0.11	-0.13	-0.10	-0.16
Finland	1.31	-0.80	-0.45	-0.02	0.06	-0.01	-0.09	-0.14	-0.24	-0.31	-0.24	-0.33
France	0.91	-0.89	-0.73	-0.29	-0.05	-0.02	-0.00	-0.00	-0.06	-0.09	0.04	-0.07
Greece	1.95	-0.48	-0.64	-0.41	-0.32	-0.40	-0.49	-0.48	-0.53	-0.56	-0.41	-0.38
Hungary	1.55	-0.92	-1.29	-1.04	-0.93	-1.04	-1.17	-1.26	-1.44	-1.63	-1.57	-1.74
Ireland	0.94	0.99	0.82	0.66	0.67	0.70	0.75	0.86	0.84	0.82	0.87	0.75
Italy	0.89	-0.52	-0.56	-0.40	-0.22	-0.24	-0.22	-0.17	-0.25	-0.28	-0.23	-0.23
Luxembourg	0.45	0.11	0.36	0.63	0.73	0.69	0.70	0.83	0.83	0.99	1.18	1.33
Latvia	2.69	-1.06	-1.37	-1.20	-1.17	-1.35	-1.61	-1.62	-1.64	-1.77	-1.71	-1.72
Malta	1.33	0.02	-0.20	-0.24	0.04	0.09	0.03	0.06	-0.07	-0.05	0.13	0.00
Netherlands	-0.42	-0.34	-0.32	-0.26	0.01	0.13	0.22	0.14	0.25	0.45	0.51	0.46
Poland	0.99	-0.96	-1.18	-1.08	-0.86	-0.84	-0.95	-0.95	-1.05	-1.15	-1.12	-1.23
Portugal	1.65	-1.13	-1.07	-0.62	-0.36	-0.29	-0.30	-0.27	-0.41	-0.43	-0.31	-0.29
Slovenia	1.62	-1.79	-1.56	-1.29	-0.99	-0.90	-0.92	-0.80	-0.82	-0.88	-0.72	-0.82
Slovakia	1.08	-1.55	-1.72	-1.73	-1.72	-1.70	-1.67	-1.65	-1.50	-1.50	-1.52	-1.63
marital status												
married	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
single	-0.17	-0.04	-0.16	-0.05	0.06	0.13	0.05	-0.01	-0.08	-0.09	-0.14	-0.16
education												
ISCED 0–1	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
ISCED 2	-0.12	-0.61	-0.63	-0.40	-0.25	-0.25	-0.22	-0.22	-0.10	-0.08	0.09	0.13
ISCED 3	0.03	-0.40	-0.46	-0.24	-0.17	-0.18	-0.15	-0.16	-0.06	0.04	0.30	0.20
ISCED 4	0.18	-0.88	-0.54	-0.33	-0.23	-0.18	-0.15	-0.13	0.01	0.06	0.25	0.20
ISCED 5	0.33	-0.71	-0.64	-0.36	-0.22	-0.12	-0.08	-0.04	0.10	0.19	0.34	0.38
ISCED 6	-0.32	-0.55	-0.62	-0.39	-0.31	-0.20	-0.13	-0.07	0.09	0.16	0.43	0.49
age												
20-29	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
30-39	-0.00	-1.62	-1.22	-0.88	-0.54	-0.38	-0.13	-0.07	0.13	0.20	0.49	0.58
40-49	0.17	0.12	0.12	0.32	0.33	0.28	0.22	0.30	0.24	0.13	0.07	0.16
50-59	0.48	0.12	0.08	0.30	0.42	0.40	0.40	0.42	0.35	0.30	0.27	0.36
60-69	0.57	1.09	1.16	0.75	0.55	0.33	0.21	0.03	0.29	0.09	0.20	0.27
70-79	0.46	0.23	0.25	0.42	0.57	0.57	0.58	0.62	0.58	0.57	0.55	0.67
>80	0.11	0.03	-0.18	-0.09	-0.15	-0.13	0.01	0.15	0.23	0.26	0.04	0.04
income and wealth												
asinh(income)	0.27	0.39	0.26	0.30	0.30	0.33	0.31	0.29	0.23	0.17	0.15	0.13
asinh(wealth)	0.30	0.45	0.39	0.39	0.33	0.23	0.14	0.11	0.09	0.07	0.06	0.05

Source: Author's calculations using SHARE, SHP and HFCS. *Notes:* The first column refers to the coefficients of the logistic regression that model the extensive margin (i.e., the probability of owning the asset or liability). The other columns refer to the coefficients of quantiles regressions for quantiles τ. The dependent variable in that regression is the logarithm of the value of the asset (or liability), in EUR.

Table 4: Switzerland Imputation Model Coefficients, Other Real Estate, 2012

	$\mathbb{P}(>0)$	$\tau=5\%$	$\tau=10\%$	$\tau=20\%$	$\tau=30\%$	$\tau=40\%$	$\tau=50\%$	$\tau=60\%$	$\tau=70\%$	$\tau=80\%$	$\tau=90\%$	$\tau=95\%$
Intercept	-10.39	0.82	0.49	0.86	1.92	3.26	4.73	5.80	6.54	7.81	9.77	10.77
country												
Austria	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Belgium	0.10	-0.28	0.14	0.21	0.25	0.23	0.26	0.29	0.19	0.06	-0.08	-0.28
Switzerland	-0.06	0.24	0.36	0.53	0.70	0.93	1.11	1.21	1.38	1.45	1.37	1.28
Cyprus	1.92	0.01	0.13	0.12	0.21	0.33	0.34	0.46	0.51	0.63	0.68	0.58
Germany	0.78	-0.87	-0.34	-0.45	-0.30	-0.12	-0.10	-0.07	-0.10	-0.19	-0.15	-0.39
Estonia	1.85	-1.02	-0.86	-0.79	-0.77	-0.79	-0.86	-0.86	-0.88	-0.99	-1.20	-1.38
France	0.79	-1.03	-0.56	-0.25	-0.04	0.02	0.01	0.01	-0.07	-0.19	-0.25	-0.50
Greece	2.13	-0.29	-0.12	-0.16	-0.25	-0.34	-0.42	-0.49	-0.57	-0.72	-0.81	-1.15
Croatia	1.45	-2.87	-1.80	-1.51	-1.29	-1.07	-0.94	-0.86	-0.75	-0.89	-0.82	-1.15
Hungary	1.40	-0.55	-0.46	-0.60	-0.73	-0.80	-0.95	-1.01	-1.05	-1.25	-1.44	-1.68
Ireland	0.31	0.83	0.83	0.55	0.54	0.59	0.62	0.63	0.56	0.52	0.59	0.27
Italy	0.69	-0.39	-0.37	-0.44	-0.30	-0.22	-0.14	-0.19	-0.27	-0.40	-0.39	-0.65
Lithuania	1.44	-1.16	-0.94	-0.99	-0.91	-0.90	-0.92	-0.80	-0.80	-0.69	-0.28	-0.84
Luxembourg	0.19	-0.06	0.34	0.34	0.48	0.55	0.61	0.68	0.67	0.71	0.80	0.84
Latvia	2.58	-0.61	-0.68	-0.76	-0.98	-1.11	-1.20	-1.19	-1.22	-1.37	-1.61	-2.03
Malta	1.22	-0.08	-0.27	-0.41	-0.34	-0.13	-0.12	-0.00	-0.01	-0.05	-0.07	-0.12
Netherlands	-0.81	-1.28	-0.91	-1.03	-0.50	-0.36	-0.29	-0.19	-0.20	-0.18	-0.38	-0.53
Poland	1.29	-0.88	-0.78	-0.92	-0.99	-0.94	-0.96	-0.98	-1.10	-1.30	-1.42	-1.76
Portugal	1.52	-1.12	-0.83	-0.58	-0.44	-0.39	-0.33	-0.30	-0.37	-0.49	-0.55	-0.87
Slovenia	1.45	-1.06	-0.90	-0.95	-0.92	-0.79	-0.73	-0.68	-0.72	-0.86	-0.96	-1.16
Slovakia	1.38	-1.51	-1.35	-1.28	-1.33	-1.31	-1.35	-1.39	-1.41	-1.47	-1.62	-1.88
marital status												
married	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
single	-0.11	-0.11	-0.05	-0.01	-0.00	0.01	-0.00	-0.03	-0.06	-0.06	-0.07	-0.10
education												
ISCED 0–1	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
ISCED 2	0.03	0.25	0.32	0.30	0.28	0.10	0.17	0.30	0.25	0.28	0.20	0.22
ISCED 3	0.13	0.27	0.36	0.35	0.44	0.27	0.24	0.29	0.26	0.28	0.28	0.32
ISCED 4	0.27	0.63	-0.00	-0.29	0.26	0.12	0.09	0.37	0.76	0.59	0.47	-0.02
ISCED 5	0.41	0.72	0.58	0.60	0.65	0.54	0.51	0.53	0.54	0.56	0.62	0.63
ISCED 6	-0.34	-0.07	0.04	-0.30	-0.22	-0.48	-0.44	-0.26	-0.32	-0.39	-0.31	-0.40
age												
20-29	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
30-39	0.15	-0.41	-0.26	-0.00	0.20	0.21	-0.04	-0.17	-0.01	-0.04	-0.21	0.05
40-49	0.48	-0.33	-0.26	-0.10	0.11	0.11	-0.10	-0.21	-0.05	-0.11	-0.17	0.07
50-59	0.62	-0.42	-0.27	-0.24	-0.05	0.07	-0.13	-0.23	-0.06	-0.06	-0.16	0.04
60-69	0.69	-0.47	-0.39	-0.27	-0.04	-0.01	-0.15	-0.20	0.02	0.09	0.04	0.17
70-79	0.66	-0.68	-0.45	-0.21	0.03	0.07	-0.09	-0.16	-0.03	-0.02	-0.09	0.13
>80	0.45	-1.80	-0.95	-0.48	-0.22	-0.20	-0.31	-0.25	0.02	0.06	-0.12	0.16
income and wealth												
asinh(income)	0.26	0.20	0.28	0.28	0.27	0.25	0.24	0.25	0.21	0.21	0.18	0.14
asinh(wealth)	0.40	0.50	0.48	0.49	0.43	0.37	0.31	0.23	0.23	0.16	0.08	0.07

Source: Authors' calculations using SHARE, SHP and HFCS. *Notes:* The first column refers to the coefficients of the logistic regression that model the extensive margin (i.e., the probability of owning the asset or liability). The other columns refer to the coefficients of quantiles regressions for quantiles τ. The dependent variable in that regression is the logarithm of the value of the asset (or liability), in EUR.

Table 5: Switzerland Imputation Model Coefficients, Other Real Estate, 2016

	$\mathbb{P}(>0)$	$\tau = 5\%$	$\tau = 10\%$	$\tau = 20\%$	$\tau = 30\%$	$\tau = 40\%$	$\tau = 50\%$	$\tau = 60\%$	$\tau = 70\%$	$\tau = 80\%$	$\tau = 90\%$	$\tau = 95\%$
Intercept	-6.85	5.45	4.11	5.67	6.08	7.16	7.87	8.17	8.55	9.17	10.36	11.90
country												
Austria	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Belgium	-0.47	-4.20	-2.38	-2.17	-1.91	-1.67	-1.59	-1.69	-1.56	-1.11	-0.69	-0.45
Switzerland	0.49	-8.51	-7.84	-4.23	-2.93	-2.18	-1.55	-1.11	-0.61	-0.35	-0.09	-0.12
Cyprus	0.32	-0.72	-1.01	-1.59	-1.41	-1.48	-1.32	-0.79	-0.38	-0.89	-1.34	-0.90
Germany	0.39	-2.14	-2.44	-2.04	-1.74	-1.65	-1.59	-1.47	-1.36	-1.54	-1.15	-1.10
Estonia	-0.49	-1.95	-2.61	-2.37	-2.19	-2.39	-2.54	-2.18	-1.98	-1.87	-2.25	-1.78
Spain	0.33	-0.72	-1.11	-1.29	-1.23	-1.37	-1.28	-1.27	-1.17	-1.35	-1.33	-1.54
Finland	-0.35	-2.65	-2.92	-2.90	-2.76	-2.93	-2.86	-2.78	-2.69	-2.72	-2.72	-2.88
France	0.24	-1.45	-1.55	-1.47	-1.42	-1.12	-1.02	-0.89	-0.53	-0.54	-0.77	-0.85
Greece	1.36	-0.62	-0.75	-1.25	-1.31	-1.52	-1.65	-1.61	-1.65	-1.93	-2.11	-2.34
Hungary	1.05	-2.51	-2.50	-1.76	-1.77	-1.96	-2.12	-2.21	-2.31	-2.61	-2.95	-3.19
Ireland	0.86	-0.60	-0.95	-1.29	-1.35	-1.44	-1.57	-1.59	-1.56	-1.77	-1.93	-2.16
Italy	0.97	-0.70	-0.80	-1.06	-1.06	-1.24	-1.39	-1.42	-1.37	-1.53	-1.59	-1.66
Luxembourg	-2.25	0.57	-0.84	-0.90	-0.89	-1.16	-0.03	-0.02	-0.01	0.28	0.14	0.70
Latvia	0.58	-2.91	-3.42	-4.03	-3.30	-3.08	-2.59	-2.27	-1.62	-1.43	-1.38	-2.01
Malta	0.83	1.63	0.65	-0.25	-0.59	-1.02	-1.29	-1.45	-1.59	-1.71	-1.65	-1.93
Netherlands	-1.28	-1.82	-2.42	-0.01	0.67	0.28	0.02	0.00	-0.05	-0.30	1.87	0.85
Poland	1.50	-0.63	-1.00	-1.19	-1.15	-1.25	-1.22	-1.14	-1.07	-1.42	-1.77	-2.11
Portugal	0.29	-1.37	-1.77	-1.93	-1.82	-1.88	-1.94	-1.74	-1.62	-1.62	-1.72	-1.76
Slovenia	0.65	-4.26	-3.11	-2.92	-2.64	-2.48	-2.19	-1.90	-1.60	-1.52	-1.57	-1.80
Slovakia	0.64	-6.75	-5.41	-3.95	-3.78	-3.72	-2.98	-2.82	-2.62	-2.65	-2.74	-2.62
marital status												
married	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
single	-0.56	0.30	0.20	-0.22	-0.11	-0.07	-0.02	-0.19	-0.38	-0.29	-0.12	-0.31
education												
ISCED 0–1	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
ISCED 2	-0.22	0.48	0.85	1.02	0.73	0.46	0.23	0.24	0.11	0.18	0.01	0.14
ISCED 3	-0.09	0.24	0.55	0.89	0.63	0.44	0.30	0.24	0.08	0.24	0.23	0.39
ISCED 4	-0.48	0.03	0.35	0.76	0.63	0.43	0.32	0.34	0.16	0.30	0.27	0.49
ISCED 5	-0.07	0.12	0.17	0.34	0.29	0.17	0.03	0.16	0.12	0.32	0.24	0.48
ISCED 6	-0.52	-2.71	-0.41	0.49	0.59	0.18	0.42	0.37	0.28	0.47	0.65	0.90
age												
20-29	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
30-39	0.37	-0.22	-0.69	0.09	0.23	0.32	0.25	0.16	0.14	0.54	0.29	0.54
40-49	0.35	-0.11	-0.18	-0.18	0.14	0.16	0.19	0.15	0.15	0.16	0.03	0.16
50-59	0.30	-0.05	-0.05	-0.02	0.26	0.24	0.23	0.31	0.29	0.32	0.30	0.39
60-69	-0.43	7.20	5.68	3.69	2.87	1.77	0.94	0.34	0.86	0.60	-0.29	-0.67
70-79	-1.29	-0.41	-0.53	-0.43	-0.08	-0.18	-0.16	-0.08	-0.04	0.08	0.18	0.49
>80	-2.13	-0.88	-2.37	1.50	1.38	0.64	0.35	0.68	0.17	0.12	0.20	0.77
income and wealth												
asinh(income)	0.19	0.12	0.26	0.15	0.15	0.16	0.17	0.18	0.18	0.15	0.10	0.04
asinh(wealth)	0.19	0.12	0.17	0.20	0.20	0.16	0.14	0.13	0.14	0.14	0.15	0.11

Source: Author's calculations using SHARE, SHP and HFCS. *Notes:* The first column refers to the coefficients of the logistic regression that model the extensive margin (i.e., the probability of owning the asset or liability). The other columns refer to the coefficients of quantiles regressions for quantiles τ. The dependent variable in that regression is the logarithm of the value of the asset (or liability), in EUR.

Table 6: Switzerland Imputation Model Coefficients, Other Non-financial Assets, 2012

	$\mathbb{P}(>0)$	$\tau = 5\%$	$\tau = 10\%$	$\tau = 20\%$	$\tau = 30\%$	$\tau = 40\%$	$\tau = 50\%$	$\tau = 60\%$	$\tau = 70\%$	$\tau = 80\%$	$\tau = 90\%$	$\tau = 95\%$
Intercept	-7.43	4.31	3.16	2.42	4.00	5.32	6.82	7.32	8.05	8.98	10.92	11.63
country												
Austria	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Belgium	0.11	-5.60	-2.65	-2.01	-2.43	-2.61	-2.46	-2.39	-1.75	-1.49	-0.94	0.55
Switzerland	0.70	-8.26	-7.27	-3.70	-2.84	-1.84	-1.36	-0.97	-0.46	-0.05	0.10	0.61
Cyprus	0.18	-3.12	-1.74	0.10	-0.16	0.07	0.09	-0.16	-0.01	0.19	0.45	0.89
Germany	0.40	-1.69	-1.59	-1.02	-1.37	-1.32	-1.46	-1.37	-1.33	-0.93	-0.93	-0.48
Estonia	-0.44	-1.91	-2.02	-1.92	-2.65	-2.29	-2.28	-2.33	-2.16	-2.38	-2.20	-1.43
France	0.32	-2.24	-1.79	-1.36	-1.74	-1.55	-1.48	-1.40	-1.20	-1.24	-1.21	-1.13
Greece	1.56	-0.08	-0.13	-0.10	-0.64	-0.86	-1.19	-1.34	-1.38	-1.55	-1.79	-1.79
Croatia	-0.80	-2.58	-1.01	-0.84	-1.30	-1.75	-1.91	-1.96	-1.67	-2.04	-2.40	-2.87
Hungary	0.80	-1.37	-1.47	-1.42	-1.98	-2.27	-2.68	-2.70	-2.66	-2.76	-2.83	-2.41
Ireland	0.75	0.16	-0.08	-0.28	-0.93	-0.92	-1.06	-1.10	-1.12	-1.28	-1.44	-1.30
Italy	0.93	-0.51	-0.44	-0.20	-0.70	-0.70	-0.96	-1.07	-1.10	-1.34	-1.60	-1.56
Lithuania	-0.26	-0.44	-1.27	-1.75	-2.03	-2.67	-2.99	-3.24	-2.22	-1.42	-0.02	-0.50
Luxembourg	-1.82	-6.47	-7.97	-0.69	0.31	0.24	0.24	-0.00	-0.20	-0.05	-0.36	0.85
Latvia	0.20	-7.94	-7.95	-3.35	-3.74	-4.27	-4.09	-3.73	-3.62	-2.90	-2.46	-2.70
Malta	0.44	0.27	-0.50	-0.35	-0.26	-0.36	-0.52	-0.74	-0.58	-0.33	-0.52	0.00
Netherlands	-0.63	-0.96	-0.77	-0.13	-0.63	-0.64	-0.54	-0.23	-0.12	-0.21	-0.51	-0.79
Poland	1.70	-0.11	-0.15	-0.08	-0.55	-0.75	-1.08	-1.19	-1.32	-1.63	-2.15	-2.19
Portugal	0.51	-1.67	-1.67	-1.22	-1.63	-1.78	-1.79	-1.76	-1.67	-1.75	-2.15	-1.56
Slovenia	0.69	-4.54	-3.69	-2.07	-2.16	-1.75	-1.91	-1.83	-1.72	-1.20	-1.21	-1.13
Slovakia	0.86	-6.81	-4.45	-3.76	-3.38	-3.06	-3.16	-3.24	-2.63	-2.41	-2.13	-2.18
marital status												
married	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
single	-0.28	-0.07	0.01	0.27	0.09	0.17	0.05	-0.04	-0.03	-0.04	0.02	-0.03
education												
ISCED 0–1	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
ISCED 2	-0.10	0.35	0.26	0.16	0.26	0.26	0.26	0.31	0.09	0.09	-0.21	-0.33
ISCED 3	0.00	0.15	-0.16	0.10	0.09	0.20	0.33	0.38	0.21	0.14	-0.05	-0.03
ISCED 4	0.28	1.61	1.51	2.17	2.14	1.32	0.68	0.37	0.85	1.61	0.40	0.92
ISCED 5	-0.07	-0.58	-0.62	-0.55	-0.38	-0.18	0.05	0.21	0.07	-0.01	-0.14	-0.10
ISCED 6	-0.59	0.13	0.14	-2.04	1.10	0.33	0.19	-0.31	-0.52	-0.43	-0.65	-1.24
age												
20-29	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
30-39	0.41	-0.67	0.31	0.38	0.12	-0.11	0.13	0.32	0.25	0.21	0.18	0.24
40-49	0.37	-0.10	0.22	0.29	0.20	0.04	0.10	0.27	0.17	0.17	0.22	0.59
50-59	0.33	-0.28	0.17	0.17	-0.11	-0.16	0.02	0.33	0.26	0.27	0.37	0.54
60-69	-0.53	-0.63	-0.02	0.04	0.03	-0.07	0.08	0.30	0.24	0.22	0.37	0.62
70-79	-1.25	-1.81	-0.44	-0.28	-0.09	-0.36	-0.01	0.21	0.27	0.25	0.64	0.45
>80	-1.90	-2.25	-2.45	-3.74	-1.19	-0.98	-0.20	0.35	0.23	0.26	0.12	-0.15
income and wealth												
asinh(income)	0.13	0.22	0.20	0.26	0.24	0.20	0.16	0.12	0.12	0.11	0.08	0.04
asinh(wealth)	0.27	0.13	0.27	0.32	0.30	0.27	0.21	0.22	0.21	0.19	0.14	0.13

Source: Authors' calculations using SHARE, SHP and HFCS. *Notes:* The first column refers to the coefficients of the logistic regression that model the extensive margin (i.e., the probability of owning the asset or liability). The other columns refer to the coefficients of quantiles regressions for quantiles τ. The dependent variable in that regression is the logarithm of the value of the asset (or liability), in EUR.

Table 7: Switzerland Imputation Model Coefficients, Other Non-financial Assets, 2016

	$\mathbb{P}(>0)$	$\tau=5\%$	$\tau=10\%$	$\tau=20\%$	$\tau=30\%$	$\tau=40\%$	$\tau=50\%$	$\tau=60\%$	$\tau=70\%$	$\tau=80\%$	$\tau=90\%$	$\tau=95\%$
Intercept	-0.44	-4.07	-2.48	-0.78	0.43	1.62	2.64	3.57	4.43	5.31	6.11	7.12
country												
Austria	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Belgium	0.41	-1.16	-1.00	-0.74	-0.58	-0.42	-0.35	-0.24	-0.10	0.03	0.14	0.15
Switzerland	0.14	-1.25	-1.05	-0.76	-0.46	-0.23	0.04	0.26	0.43	0.67	0.90	1.02
Cyprus	-2.25	-1.52	-0.95	-0.28	0.06	0.04	0.15	0.22	0.24	0.34	0.44	0.51
Germany	-0.22	-0.79	-0.84	-0.82	-0.69	-0.60	-0.47	-0.40	-0.26	-0.15	-0.02	0.14
Estonia	0.40	-3.78	-3.29	-2.77	-2.30	-1.98	-1.72	-1.51	-1.28	-1.21	-0.96	-0.86
Spain	-0.02	-1.05	-1.23	-1.17	-1.02	-0.91	-0.78	-0.54	-0.43	-0.27	-0.13	-0.09
Finland	1.05	-1.16	-1.18	-1.11	-0.97	-0.87	-0.75	-0.60	-0.53	-0.36	-0.18	-0.13
France	2.02	-0.52	-0.70	-0.73	-0.65	-0.54	-0.45	-0.34	-0.31	-0.27	-0.20	-0.25
Greece	-1.85	-3.14	-2.44	-2.03	-1.77	-1.63	-1.47	-1.34	-1.21	-1.11	-0.91	-0.85
Hungary	-1.36	-1.77	-1.83	-1.76	-1.45	-1.16	-1.03	-1.03	-1.13	-1.28	-1.32	-1.30
Ireland	-0.58	-1.59	-1.61	-1.39	-1.22	-0.98	-0.80	-0.61	-0.41	-0.25	-0.09	-0.01
Italy	-1.31	0.09	-0.22	-0.38	-0.44	-0.51	-0.55	-0.55	-0.59	-0.60	-0.55	-0.53
Luxembourg	-0.08	-0.86	-0.65	-0.57	-0.42	-0.22	-0.05	0.10	0.27	0.45	0.57	0.66
Latvia	-1.90	-3.02	-3.04	-2.93	-2.90	-2.93	-2.86	-2.80	-2.66	-2.32	-2.04	-1.82
Malta	-0.02	0.49	0.29	0.21	0.25	0.23	0.21	0.16	0.10	0.05	0.12	0.14
Netherlands	0.71	-0.53	-0.50	-0.44	-0.34	-0.26	-0.17	-0.08	-0.04	0.09	0.18	0.23
Poland	-1.54	-2.13	-2.02	-2.04	-2.08	-2.05	-1.99	-1.90	-1.80	-1.63	-1.47	-1.58
Portugal	0.62	-1.55	-1.30	-1.09	-0.98	-0.79	-0.60	-0.42	-0.27	-0.14	0.01	0.00
Slovenia	-0.77	-3.83	-3.62	-3.20	-2.84	-2.56	-2.25	-1.98	-1.73	-1.35	-0.97	-0.82
Slovakia	-1.32	-1.65	-1.59	-1.61	-1.57	-1.55	-1.39	-1.35	-1.39	-1.36	-1.37	-1.42
marital status												
married	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
single	-0.26	-0.01	-0.07	-0.15	-0.16	-0.15	-0.15	-0.18	-0.17	-0.15	-0.15	-0.16
education												
ISCED 0–1	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
ISCED 2	-0.09	-0.04	-0.08	-0.16	-0.20	-0.19	-0.13	-0.08	-0.07	0.02	0.12	0.15
ISCED 3	0.73	-0.33	-0.24	-0.27	-0.21	-0.20	-0.16	-0.12	-0.04	0.04	0.11	0.27
ISCED 4	-0.04	-0.31	-0.25	-0.29	-0.17	-0.10	-0.07	-0.01	0.11	0.22	0.41	0.52
ISCED 5	1.22	-0.05	0.00	0.03	0.07	0.18	0.24	0.30	0.39	0.49	0.68	0.72
ISCED 6	0.56	0.31	0.38	0.37	0.39	0.50	0.46	0.48	0.53	0.61	0.74	0.76
age												
20-29	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
30-39	-0.73	0.64	0.68	0.64	0.66	0.75	0.69	0.71	0.74	0.79	0.90	0.88
40-49	-0.81	0.04	0.13	0.07	0.11	0.12	0.09	0.10	0.14	0.13	0.10	0.06
50-59	-0.82	0.54	0.53	0.55	0.52	0.53	0.46	0.43	0.44	0.40	0.37	0.31
60-69	-0.74	0.19	0.15	0.64	0.90	0.89	0.78	0.55	0.35	0.23	0.28	0.06
70-79	-0.69	0.96	1.01	1.02	1.05	1.06	1.01	0.99	0.97	0.93	0.84	0.82
>80	-0.86	-0.13	-0.03	0.03	0.08	0.14	0.15	0.05	0.04	-0.07	-0.09	-0.13
income and wealth												
asinh(income)	0.25	0.73	0.67	0.60	0.56	0.48	0.43	0.38	0.33	0.28	0.25	0.20
asinh(wealth)	0.12	0.21	0.19	0.18	0.15	0.15	0.13	0.12	0.12	0.11	0.10	0.09

Source: Author's calculations using SHARE, SHP and HFCS. *Notes:* The first column refers to the coefficients of the logistic regression that model the extensive margin (i.e., the probability of owning the asset or liability). The other columns refer to the coefficients of quantiles regressions for quantiles τ. The dependent variable in that regression is the logarithm of the value of the asset (or liability), in EUR.

Table 8: Switzerland Imputation Model Coefficients, Deposits, 2012

	$\mathbb{P}(>0)$	$\tau = 5\%$	$\tau = 10\%$	$\tau = 20\%$	$\tau = 30\%$	$\tau = 40\%$	$\tau = 50\%$	$\tau = 60\%$	$\tau = 70\%$	$\tau = 80\%$	$\tau = 90\%$	$\tau = 95\%$
Intercept	-0.10	-3.28	-1.89	-0.56	0.98	2.01	3.63	4.45	5.35	6.28	7.22	8.08
country												
Austria	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Belgium	-0.05	-1.64	-1.21	-0.97	-0.70	-0.52	-0.39	-0.26	-0.09	0.05	0.15	0.15
Switzerland	1.16	-1.19	-0.91	-0.54	-0.17	0.13	0.39	0.65	0.88	1.12	1.36	1.50
Cyprus	-2.78	-2.26	-1.97	-1.74	-1.34	-0.81	-0.71	-0.64	-0.39	-0.23	-0.01	-0.13
Germany	-0.51	-0.93	-0.87	-0.67	-0.50	-0.43	-0.37	-0.22	-0.12	-0.06	-0.04	-0.10
Estonia	0.35	-3.47	-3.12	-2.39	-2.01	-1.64	-1.55	-1.27	-1.10	-0.95	-0.92	-0.95
France	1.05	-0.83	-0.92	-0.86	-0.75	-0.60	-0.48	-0.35	-0.23	-0.16	-0.20	-0.25
Greece	-0.63	-5.87	-5.08	-3.44	-2.78	-2.37	-2.22	-1.95	-1.69	-1.49	-1.40	-1.35
Croatia	-2.47	-3.83	-3.51	-2.93	-2.74	-2.47	-2.42	-2.25	-2.13	-1.93	-1.61	-1.37
Hungary	-2.12	-2.71	-2.59	-2.36	-2.32	-2.14	-2.06	-1.81	-1.43	-1.13	-0.89	-0.89
Ireland	-0.81	-2.33	-2.01	-1.68	-1.42	-1.22	-1.07	-0.92	-0.78	-0.58	-0.37	-0.25
Italy	-1.35	-0.23	-0.29	-0.40	-0.42	-0.46	-0.51	-0.49	-0.46	-0.44	-0.49	-0.51
Lithuania	-0.62	-2.71	-2.73	-2.39	-2.44	-2.27	-2.24	-2.00	-1.80	-1.69	-1.62	-1.67
Luxembourg	-0.38	-1.32	-1.01	-0.58	-0.39	-0.17	0.08	0.31	0.45	0.57	0.62	0.56
Latvia	-0.83	-5.90	-5.39	-3.96	-3.64	-3.47	-3.37	-3.20	-3.00	-2.77	-2.52	-2.50
Malta	0.09	-0.31	-0.18	-0.03	0.05	0.08	0.10	0.18	0.17	0.16	0.13	0.09
Netherlands	1.29	-0.27	-0.21	-0.08	0.03	0.10	0.13	0.19	0.31	0.35	0.41	0.42
Poland	-1.63	-1.45	-1.35	-1.28	-1.29	-1.22	-1.22	-1.11	-1.03	-1.01	-1.16	-1.31
Portugal	0.67	-1.48	-1.27	-1.14	-1.03	-0.87	-0.69	-0.51	-0.35	-0.22	-0.19	-0.17
Slovenia	-1.36	-3.20	-2.71	-2.39	-2.28	-2.08	-1.96	-1.67	-1.47	-1.28	-1.26	-1.16
Slovakia	-1.34	-2.23	-2.24	-1.90	-1.74	-1.59	-1.61	-1.54	-1.42	-1.35	-1.30	-1.29
marital status												
married	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
single	-0.28	-0.00	-0.07	-0.16	-0.16	-0.21	-0.26	-0.26	-0.24	-0.23	-0.22	-0.21
education												
ISCED 0–1	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
ISCED 2	0.14	0.30	0.22	0.28	0.32	0.33	0.30	0.19	0.17	0.17	0.15	0.19
ISCED 3	0.79	0.53	0.55	0.54	0.63	0.62	0.59	0.50	0.49	0.53	0.49	0.51
ISCED 4	0.66	1.08	0.79	1.03	0.99	1.12	1.02	0.92	0.95	1.37	1.45	1.43
ISCED 5	1.41	1.09	1.08	1.02	1.11	1.13	1.16	1.05	1.03	0.99	0.94	1.03
ISCED 6	0.24	0.58	0.34	0.15	0.29	0.33	0.38	0.31	0.26	0.24	0.11	-0.01
age												
20-29	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
30-39	-0.63	-0.64	-0.42	-0.28	-0.31	-0.20	-0.17	-0.02	-0.02	-0.01	0.14	0.20
40-49	-0.88	-0.66	-0.44	-0.31	-0.26	-0.21	-0.15	-0.02	0.04	0.10	0.28	0.32
50-59	-1.11	-0.70	-0.43	-0.31	-0.25	-0.19	-0.06	0.13	0.17	0.27	0.42	0.52
60-69	-0.98	-0.41	-0.13	0.03	0.10	0.19	0.27	0.43	0.44	0.53	0.70	0.75
70-79	-1.00	-0.11	0.06	0.18	0.23	0.30	0.39	0.49	0.49	0.53	0.67	0.76
>80	-0.96	-0.27	0.10	0.31	0.43	0.54	0.57	0.59	0.59	0.68	0.81	0.91
income and wealth												
asinh(income)	0.23	0.68	0.63	0.57	0.48	0.43	0.32	0.28	0.23	0.17	0.14	0.11
asinh(wealth)	0.13	0.24	0.20	0.19	0.18	0.16	0.14	0.13	0.13	0.12	0.11	0.10

Source: Authors' calculations using SHARE, SHP and HFCS. *Notes:* The first column refers to the coefficients of the logistic regression that model the extensive margin (i.e., the probability of owning the asset or liability). The other columns refer to the coefficients of quantiles regressions for quantiles τ. The dependent variable in that regression is the logarithm of the value of the asset (or liability), in EUR.

Table 9: Switzerland Imputation Model Coefficients, Deposits, 2016

	$\mathbb{P}(>0)$	$\tau = 5\%$	$\tau = 10\%$	$\tau = 20\%$	$\tau = 30\%$	$\tau = 40\%$	$\tau = 50\%$	$\tau = 60\%$	$\tau = 70\%$	$\tau = 80\%$	$\tau = 90\%$	$\tau = 95\%$
Intercept	-7.98	-1.48	-0.93	0.69	1.45	2.33	2.92	3.64	4.75	5.78	7.57	8.01
country												
Austria	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Belgium	1.58	0.64	0.65	0.54	0.42	0.37	0.37	0.28	0.15	0.12	-0.25	-0.23
Switzerland	1.03	1.55	1.53	1.50	1.50	1.55	1.64	1.59	1.58	1.59	1.38	1.44
Cyprus	0.34	-0.91	-0.69	-0.45	-0.26	-0.01	0.20	0.36	0.49	0.94	0.49	0.59
Germany	1.93	0.24	0.24	0.36	0.40	0.40	0.51	0.40	0.38	0.30	-0.01	0.02
Estonia	0.87	-1.20	-0.76	-0.89	-0.99	-1.13	-1.08	-1.25	-1.40	-1.60	-2.08	-1.97
Spain	0.81	-0.38	-0.16	-0.11	-0.06	-0.02	0.10	0.00	-0.03	0.03	-0.03	0.28
Finland	0.65	-1.66	-1.22	-0.83	-0.67	-0.61	-0.50	-0.56	-0.59	-0.59	-0.86	-0.78
France	1.55	-0.81	-0.35	-0.06	0.07	0.13	0.31	0.31	0.37	0.45	0.32	0.56
Greece	-2.30	-1.12	-0.74	-1.44	-1.39	-0.64	-0.76	-0.55	-0.65	-0.86	-0.80	-0.84
Hungary	0.73	-0.04	-0.11	-0.04	-0.09	-0.09	-0.03	-0.24	-0.38	-0.57	-1.18	-1.19
Ireland	-0.47	1.57	1.31	1.25	1.36	1.38	1.43	1.31	1.28	1.35	1.03	0.92
Italy	-0.33	0.45	0.44	0.49	0.38	0.30	0.34	0.19	0.05	-0.06	-0.32	-0.35
Luxembourg	0.65	0.27	0.32	0.48	0.44	0.43	0.49	0.49	0.51	0.54	0.37	0.43
Latvia	0.07	-2.06	-2.25	-2.14	-2.46	-2.40	-1.96	-1.92	-1.92	-1.76	-2.01	-2.09
Malta	0.91	1.30	1.23	0.85	0.64	0.60	0.59	0.52	0.35	0.26	-0.05	-0.18
Netherlands	1.36	1.33	1.34	1.37	1.42	1.51	1.51	1.46	1.34	1.20	0.74	0.57
Poland	2.43	-0.68	-0.86	-1.25	-1.47	-1.64	-1.71	-1.97	-2.17	-2.37	-2.86	-2.98
Portugal	0.72	-0.78	-0.57	-0.63	-0.66	-0.64	-0.53	-0.60	-0.66	-0.62	-0.82	-0.63
Slovenia	0.34	-1.81	-0.90	-0.60	-0.58	-0.57	-0.59	-0.73	-0.85	-0.99	-1.34	-1.40
Slovakia	0.46	-0.75	-0.51	-0.51	-0.66	-0.72	-0.69	-0.77	-0.97	-0.91	-1.37	-1.36
marital status												
married	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
single	-0.17	0.39	0.21	0.05	0.03	0.00	0.05	0.01	0.01	0.01	-0.07	-0.10
education												
ISCED 0–1	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
ISCED 2	-0.01	0.21	0.25	0.41	0.33	0.34	0.31	0.42	0.36	0.22	0.30	0.25
ISCED 3	0.29	0.79	0.79	0.78	0.74	0.65	0.68	0.76	0.68	0.52	0.51	0.38
ISCED 4	0.13	1.04	1.03	1.05	0.97	0.95	0.94	1.04	0.94	0.78	0.78	0.52
ISCED 5	0.38	1.23	1.15	1.14	1.05	1.02	1.03	1.11	1.04	0.86	0.85	0.68
ISCED 6	0.08	1.02	0.98	1.02	0.90	0.92	0.91	1.11	1.07	0.89	1.01	0.74
age												
20-29	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
30-39	0.30	0.97	1.00	1.18	1.11	1.01	1.03	1.18	1.13	1.21	1.19	0.90
40-49	0.42	-0.27	-0.18	-0.23	-0.18	-0.11	-0.17	-0.13	-0.04	0.05	0.11	0.09
50-59	0.45	0.03	0.08	0.15	0.14	0.13	0.07	0.15	0.17	0.22	0.27	0.26
60-69	-0.11	-0.09	0.32	0.38	0.42	0.48	0.24	0.42	0.53	0.65	1.09	0.90
70-79	-0.93	0.08	0.18	0.33	0.28	0.30	0.23	0.34	0.40	0.47	0.57	0.58
>80	-0.88	-0.54	-0.44	-0.35	-0.34	-0.26	-0.35	-0.28	-0.16	0.02	-0.01	0.10
income and wealth												
asinh(income)	0.44	0.56	0.54	0.44	0.42	0.39	0.37	0.32	0.27	0.23	0.14	0.16
asinh(wealth)	0.08	0.09	0.11	0.11	0.12	0.10	0.10	0.10	0.09	0.08	0.07	0.07

Source: Author's calculations using SHARE, SHP and HFCS. *Notes:* The first column refers to the coefficients of the logistic regression that model the extensive margin (i.e., the probability of owning the asset or liability). The other columns refer to the coefficients of quantiles regressions for quantiles τ. The dependent variable in that regression is the logarithm of the value of the asset (or liability), in EUR.

Table 10: Switzerland Imputation Model Coefficients, Pensions and Life Insurance, 2012

	$\mathbb{P}(>0)$	$\tau=5\%$	$\tau=10\%$	$\tau=20\%$	$\tau=30\%$	$\tau=40\%$	$\tau=50\%$	$\tau=60\%$	$\tau=70\%$	$\tau=80\%$	$\tau=90\%$	$\tau=95\%$
Intercept	-8.72	-2.62	-0.35	-0.53	0.78	0.79	1.77	2.86	3.74	5.44	6.42	7.34
country												
Austria	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Belgium	1.73	1.19	0.72	0.61	0.55	0.49	0.34	0.18	0.15	0.02	-0.08	-0.26
Switzerland	1.46	2.39	2.16	1.82	1.94	1.89	1.90	1.87	1.98	2.04	2.09	1.99
Cyprus	1.03	2.16	1.39	1.23	1.06	1.12	1.02	0.87	0.91	0.94	0.64	0.24
Germany	1.94	1.35	1.07	0.84	0.86	0.83	0.78	0.65	0.60	0.52	0.39	0.20
Estonia	0.94	-0.79	-0.90	-0.70	-0.70	-0.70	-0.79	-1.00	-1.08	-1.33	-1.43	-1.50
France	1.83	-0.29	-0.14	-0.01	0.19	0.31	0.34	0.33	0.49	0.52	0.59	0.61
Greece	-3.36	3.73	2.87	2.12	1.82	1.38	1.08	0.68	0.62	-0.01	-0.15	-0.52
Croatia	0.05	1.63	0.83	0.35	0.32	0.28	-0.01	-0.06	-0.05	-0.25	-0.62	-0.86
Hungary	-0.19	-0.02	-0.39	-0.41	-0.45	-0.40	-0.59	-0.70	-0.65	-0.83	-0.95	-1.18
Ireland	0.10	1.49	1.48	1.50	1.48	1.47	1.41	1.40	1.60	1.60	1.69	1.76
Italy	-0.17	0.96	0.52	0.47	0.46	0.41	0.37	0.29	0.22	0.02	-0.06	-0.24
Lithuania	0.46	0.98	0.05	0.07	-0.30	0.22	0.31	0.39	0.21	-0.27	-0.37	-0.43
Luxembourg	0.01	1.32	0.93	0.74	0.64	0.53	0.53	0.42	0.60	0.55	0.42	0.38
Latvia	1.54	-1.57	-1.64	-1.68	-1.80	-1.77	-1.80	-1.94	-1.94	-2.20	-2.08	-2.08
Malta	0.76	2.42	2.10	1.83	1.64	1.50	1.25	1.06	0.88	0.61	0.63	0.55
Netherlands	1.09	1.70	1.47	1.41	1.46	1.55	1.59	1.53	1.61	1.57	1.55	1.43
Poland	2.15	-0.07	-0.70	-0.86	-1.01	-1.10	-1.33	-1.59	-1.73	-2.06	-2.26	-2.47
Portugal	0.62	-1.28	-1.04	-0.65	-0.46	-0.53	-0.52	-0.63	-0.62	-0.72	-0.61	-0.83
Slovenia	0.76	-1.63	-2.09	-1.26	-0.70	-0.38	-0.35	-0.46	-0.43	-0.59	-0.45	-0.29
Slovakia	0.66	0.71	-0.01	-0.11	-0.20	-0.22	-0.43	-0.59	-0.68	-0.76	-0.90	-1.21
marital status												
married	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
single	-0.07	0.40	0.18	0.22	0.07	0.10	-0.03	-0.07	-0.09	-0.11	-0.04	-0.15
education												
ISCED 0–1	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
ISCED 2	-0.05	-0.77	-0.67	-0.37	-0.31	-0.26	-0.07	-0.06	0.15	0.23	0.14	0.04
ISCED 3	0.22	-0.22	-0.29	-0.04	-0.08	-0.06	0.06	0.17	0.23	0.29	0.35	0.34
ISCED 4	0.18	0.15	-0.14	-0.17	0.13	0.05	0.51	0.51	1.01	0.98	0.96	0.96
ISCED 5	0.32	-0.08	-0.11	0.15	0.17	0.10	0.25	0.35	0.42	0.51	0.59	0.54
ISCED 6	-0.30	-0.37	-0.56	-0.45	-0.39	-0.44	-0.32	-0.12	-0.02	-0.05	-0.14	-0.05
age												
20-29	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
30-39	0.19	0.34	0.65	0.44	0.44	0.48	0.52	0.52	0.58	0.38	0.24	0.39
40-49	0.31	0.68	0.86	0.79	0.90	0.84	0.91	0.93	0.97	0.81	0.76	0.88
50-59	0.36	1.08	1.29	1.15	1.18	1.12	1.25	1.29	1.33	1.18	1.09	1.21
60-69	-0.26	1.20	1.34	1.35	1.29	1.21	1.27	1.28	1.31	1.12	1.05	1.18
70-79	-0.86	1.27	1.03	1.28	1.30	1.21	1.32	1.28	1.35	1.17	1.16	1.30
>80	-0.90	1.37	1.23	1.40	1.33	1.20	1.53	1.58	1.67	1.42	1.35	1.69
income and wealth												
asinh(income)	0.50	0.60	0.46	0.52	0.46	0.49	0.43	0.38	0.32	0.22	0.18	0.16
asinh(wealth)	0.07	0.09	0.11	0.12	0.11	0.11	0.10	0.09	0.09	0.09	0.08	0.07

Source: Authors' calculations using SHARE, SHP and HFCS. *Notes:* The first column refers to the coefficients of the logistic regression that model the extensive margin (i.e., the probability of owning the asset or liability). The other columns refer to the coefficients of quantiles regressions for quantiles τ. The dependent variable in that regression is the logarithm of the value of the asset (or liability), in EUR.

Table 11: Switzerland Imputation Model Coefficients, Pensions and Life Insurance, 2016

	$\mathbb{P}(>0)$	$\tau=5\%$	$\tau=10\%$	$\tau=20\%$	$\tau=30\%$	$\tau=40\%$	$\tau=50\%$	$\tau=60\%$	$\tau=70\%$	$\tau=80\%$	$\tau=90\%$	$\tau=95\%$
Intercept	-7.02	-5.72	-3.79	-3.58	-3.78	-4.88	-2.63	-0.98	1.74	3.08	5.49	6.03
						country						
Austria	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Belgium	0.54	-0.29	0.63	0.40	0.36	0.33	0.54	0.61	0.77	0.91	0.86	0.60
Switzerland	0.13	0.63	0.89	0.80	0.72	0.69	0.88	1.04	1.37	1.56	1.66	1.71
Cyprus	0.66	-3.69	-3.43	-2.88	-2.34	-1.71	-0.55	0.04	0.29	0.67	1.34	1.84
Germany	0.73	-0.52	-0.57	-0.65	-0.61	-0.55	-0.48	-0.38	-0.11	-0.03	-0.03	-0.07
Estonia	0.50	-1.08	-1.11	-0.91	-0.79	-0.48	-0.42	-0.26	-0.04	0.40	0.50	0.46
Spain	0.42	0.48	0.57	0.46	0.48	0.64	0.61	0.72	0.78	0.91	0.89	0.68
Finland	1.11	-1.03	-0.82	-0.87	-0.90	-0.81	-0.77	-0.62	-0.42	-0.18	-0.17	-0.14
France	0.44	-1.43	-0.97	-0.67	-0.54	-0.35	-0.31	-0.24	-0.18	-0.06	-0.05	0.05
Greece	-1.33	-0.12	-0.35	-0.70	-0.68	-0.54	-0.46	-0.51	-0.62	-0.31	-0.68	-1.03
Hungary	1.83	-18.97	-18.92	-18.09	-17.33	-16.55	-16.27	-3.21	-1.85	-1.18	-1.03	-1.09
Ireland	0.04	-2.70	-1.76	-1.33	-0.85	-0.44	-0.27	-0.21	-0.09	0.02	0.06	0.03
Italy	0.84	-16.60	-16.33	-16.14	-15.80	-2.47	-0.48	-0.15	0.04	0.09	-0.18	-0.33
Luxembourg	0.01	-0.07	0.30	0.27	0.24	0.31	0.54	0.68	0.89	1.08	1.10	1.18
Latvia	-0.21	-1.14	-1.36	-1.63	-1.41	-0.88	-0.58	-0.47	-0.84	-0.60	0.25	0.09
Malta	1.00	1.27	1.37	1.15	1.01	1.05	0.87	0.75	0.70	0.78	0.49	0.33
Netherlands	0.85	-15.47	-14.93	-14.74	-14.09	-2.41	-1.33	-1.02	-0.69	-0.39	-0.01	-0.21
Poland	2.19	-18.16	-18.27	-18.45	-18.47	-18.19	-18.31	-18.28	-17.96	-4.37	-3.27	-3.11
Portugal	0.45	-1.74	-0.86	-0.36	0.26	0.63	0.52	0.57	0.60	0.90	0.87	0.87
Slovenia	0.23	-1.15	-0.92	-0.69	-0.60	-0.30	-0.42	-0.48	-0.53	-0.29	-0.36	-0.11
Slovakia	-0.21	-1.43	-2.07	-1.43	-1.04	-0.89	-0.91	-1.05	-1.08	-0.96	-0.85	-1.26
						marital status						
married	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
single	0.09	0.37	0.14	0.12	0.14	0.41	0.21	0.11	0.01	-0.04	-0.18	-0.22
						education						
ISCED 0–1	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
ISCED 2	0.21	0.06	-0.07	0.18	0.31	0.23	0.32	0.43	0.48	0.59	0.56	0.79
ISCED 3	0.43	0.08	-0.01	0.30	0.40	0.37	0.48	0.69	0.70	0.77	0.70	0.96
ISCED 4	0.45	0.44	0.25	0.66	0.89	0.81	0.91	1.04	1.02	1.09	1.07	1.25
ISCED 5	0.95	0.67	0.67	1.02	1.27	1.20	1.28	1.45	1.28	1.34	1.27	1.26
ISCED 6	0.08	0.94	0.87	1.10	1.46	1.50	1.61	1.76	1.59	1.57	1.41	1.46
						age						
20-29	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
30-39	-0.20	1.37	1.00	1.10	1.43	1.33	1.46	1.59	1.42	1.48	1.55	1.63
40-49	-0.12	0.08	0.24	0.21	0.37	0.40	0.29	0.30	0.29	0.28	0.30	0.34
50-59	-0.10	0.41	0.58	0.56	0.75	0.81	0.72	0.73	0.77	0.75	0.68	0.64
60-69	-0.01	1.07	0.85	0.97	1.02	0.98	0.71	0.69	1.15	1.33	1.27	0.78
70-79	-0.06	0.68	1.00	1.09	1.24	1.28	1.15	1.21	1.26	1.17	1.18	1.19
>80	-0.34	-0.11	-0.06	-0.24	-0.07	-0.25	-0.40	-0.35	-0.19	0.04	-0.06	-0.23
						income and wealth						
asinh(income)	0.41	0.83	0.72	0.77	0.80	0.90	0.75	0.63	0.43	0.36	0.23	0.24
asinh(wealth)	0.07	0.14	0.13	0.12	0.12	0.15	0.14	0.14	0.14	0.13	0.13	0.13

Source: Author's calculations using SHARE, SHP and HFCS. *Notes:* The first column refers to the coefficients of the logistic regression that model the extensive margin (i.e., the probability of owning the asset or liability). The other columns refer to the coefficients of quantiles regressions for quantiles τ. The dependent variable in that regression is the logarithm of the value of the asset (or liability), in EUR.

Table 12: Switzerland Imputation Model Coefficients, Other Financial Assets, 2012

	$\mathbb{P}(>0)$	$\tau=5\%$	$\tau=10\%$	$\tau=20\%$	$\tau=30\%$	$\tau=40\%$	$\tau=50\%$	$\tau=60\%$	$\tau=70\%$	$\tau=80\%$	$\tau=90\%$	$\tau=95\%$
Intercept	-5.65	-2.53	-1.59	-0.78	-0.46	-1.15	-3.38	-0.76	1.63	3.25	4.87	5.50
country												
Austria	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Belgium	0.68	-0.87	-0.26	-0.00	0.11	0.39	0.51	0.67	0.82	0.88	0.83	0.63
Switzerland	0.68	2.01	1.84	1.55	1.64	1.67	1.57	1.90	2.15	2.42	2.82	3.39
Cyprus	0.58	-2.78	-2.54	-2.38	-1.56	-0.60	0.70	1.25	1.49	1.87	2.27	1.96
Germany	1.05	-0.37	-0.29	-0.63	-0.47	-0.30	-0.15	-0.02	0.08	0.17	0.21	0.10
Estonia	0.41	-1.70	-1.53	-1.39	-1.07	-0.86	-0.32	-0.13	-0.07	-0.06	0.58	0.90
France	0.54	-1.34	-0.89	-0.71	-0.44	-0.20	0.01	0.08	0.20	0.32	0.63	0.78
Greece	-1.27	0.29	-0.25	-1.12	-1.29	-0.87	-0.90	-1.02	-1.18	-0.74	-0.60	-0.65
Croatia	-0.12	-1.47	-0.66	-0.53	-0.24	0.04	0.10	0.23	-0.16	-0.10	0.49	0.55
Hungary	0.93	-15.75	-16.05	-16.44	-15.99	-14.86	-2.10	-1.40	-1.03	-0.79	-0.52	-0.51
Ireland	0.05	-2.60	-2.15	-1.47	-0.84	-0.51	-0.22	-0.05	0.21	0.32	0.45	0.51
Italy	1.04	-16.84	-16.66	-16.82	-16.43	-15.88	-2.49	-0.37	0.02	0.08	-0.11	-0.24
Lithuania	-0.39	-30.62	-1.59	-1.35	-0.98	-0.64	-0.12	-0.30	-0.51	-0.54	-0.15	0.16
Luxembourg	0.09	0.18	0.29	-0.01	0.36	0.65	0.61	0.82	0.98	1.20	1.23	1.63
Latvia	-0.63	-1.93	-2.12	-1.93	-1.67	-1.22	-0.50	-0.73	-1.24	-0.89	-0.40	-0.66
Malta	1.37	-13.87	-13.99	-3.56	0.29	0.75	1.12	1.17	1.00	0.82	0.70	0.87
Netherlands	1.13	-16.40	-16.14	-16.01	-15.39	-14.56	-2.62	-1.13	-0.49	-0.21	0.00	0.36
Poland	1.98	-17.95	-18.15	-18.52	-18.39	-18.09	-17.68	-17.70	-17.62	-16.74	-3.15	-2.79
Portugal	0.45	-14.92	-1.01	-0.27	0.08	0.63	1.18	1.05	1.14	1.17	1.22	1.54
Slovenia	0.25	-1.75	-0.96	-0.74	-0.44	-0.15	0.04	0.16	0.01	0.09	0.09	0.10
Slovakia	-0.17	-0.64	-0.31	-0.84	-0.34	-0.06	0.06	0.06	-0.03	0.09	0.45	0.43
marital status												
married	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
single	0.14	0.48	0.27	0.12	0.07	0.07	0.20	0.06	-0.04	0.01	-0.03	-0.04
education												
ISCED 0–1	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
ISCED 2	0.11	0.61	0.49	0.16	0.12	0.53	0.58	0.41	0.41	0.56	0.32	0.27
ISCED 3	0.42	0.52	0.65	0.50	0.59	0.85	1.36	0.84	0.80	0.84	0.74	0.77
ISCED 4	0.79	0.38	0.46	0.58	0.47	0.80	1.19	0.63	0.93	1.29	1.52	1.54
ISCED 5	0.83	1.15	1.28	1.12	1.35	1.64	1.96	1.45	1.42	1.49	1.29	1.35
ISCED 6	0.21	0.51	0.63	0.47	0.51	0.64	0.80	0.27	0.25	0.26	0.07	-0.49
age												
20-29	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
30-39	-0.15	0.05	0.12	0.17	0.20	0.13	0.04	0.12	0.38	0.48	0.29	0.34
40-49	-0.17	0.24	0.42	0.31	0.45	0.45	0.30	0.50	0.75	0.83	0.59	0.78
50-59	-0.10	0.11	0.40	0.49	0.68	0.72	0.74	0.83	1.08	1.21	0.96	0.94
60-69	-0.12	0.09	0.50	0.63	0.88	1.01	1.10	1.11	1.37	1.43	1.14	1.00
70-79	-0.24	0.35	0.82	0.77	0.97	1.05	1.13	1.22	1.46	1.50	1.08	0.98
>80	-0.40	0.65	0.90	0.66	1.08	1.27	1.34	1.40	1.65	1.69	1.39	1.33
income and wealth												
asinh(income)	0.25	0.49	0.46	0.52	0.51	0.57	0.75	0.58	0.41	0.29	0.25	0.25
asinh(wealth)	0.09	0.17	0.15	0.14	0.13	0.14	0.15	0.16	0.14	0.15	0.15	0.15

Source: Authors' calculations using SHARE, SHP and HFCS. *Notes:* The first column refers to the coefficients of the logistic regression that model the extensive margin (i.e., the probability of owning the asset or liability). The other columns refer to the coefficients of quantiles regressions for quantiles τ. The dependent variable in that regression is the logarithm of the value of the asset (or liability), in EUR.

Table 13: Switzerland Imputation Model Coefficients, Other Financial Assets, 2016

	$\mathbb{P}(>0)$	$\tau=5\%$	$\tau=10\%$	$\tau=20\%$	$\tau=30\%$	$\tau=40\%$	$\tau=50\%$	$\tau=60\%$	$\tau=70\%$	$\tau=80\%$	$\tau=90\%$	$\tau=95\%$
Intercept	-3.49	-3.40	-1.19	0.14	1.32	2.99	4.18	5.60	6.52	8.08	9.01	10.36
country												
Austria	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Belgium	0.78	0.88	1.18	1.21	0.88	0.78	0.59	0.40	0.34	0.27	0.19	0.06
Switzerland	1.04	2.49	3.23	3.17	2.86	2.79	2.58	2.38	2.16	1.88	1.48	1.21
Cyprus	1.25	1.08	1.52	2.02	1.70	1.48	1.30	1.14	1.17	1.04	1.16	1.05
Germany	0.42	-0.51	-0.10	0.22	0.10	0.19	0.18	0.18	0.16	0.18	0.16	0.04
Estonia	0.39	-3.78	-1.15	-0.76	-0.75	-0.70	-0.67	-0.65	-0.56	-0.67	-0.63	-0.79
Spain	0.94	1.31	1.48	1.48	1.26	1.15	0.93	0.71	0.63	0.49	0.31	0.01
Finland	1.09	1.09	1.30	1.25	0.99	0.90	0.77	0.62	0.53	0.38	0.24	0.07
France	0.79	0.40	0.63	0.66	0.54	0.54	0.53	0.44	0.41	0.31	0.23	0.06
Greece	-0.25	0.48	0.41	0.27	0.04	-0.04	-0.05	-0.13	-0.10	-0.13	-0.23	-0.52
Hungary	0.44	0.35	0.16	0.08	-0.16	-0.39	-0.51	-0.75	-0.86	-1.05	-1.14	-1.37
Ireland	0.72	0.26	0.30	0.53	0.65	0.84	0.87	0.83	0.89	0.74	0.57	0.40
Italy	-0.37	0.63	0.67	0.54	0.35	0.31	0.25	0.17	0.17	0.03	-0.02	-0.28
Luxembourg	0.86	1.12	1.33	1.28	1.14	1.28	1.23	1.14	1.15	1.03	1.06	0.95
Latvia	0.09	-0.46	-0.46	-0.69	-0.77	-0.87	-0.77	-0.69	-0.55	-0.50	-0.70	-0.89
Malta	0.51	-0.22	-0.44	-0.40	-0.06	-0.04	0.04	0.05	0.08	-0.08	-0.18	-0.26
Netherlands	1.26	0.79	1.54	2.10	1.92	1.76	1.61	1.37	1.23	0.99	0.86	0.61
Poland	0.30	-0.25	-0.52	-0.78	-1.16	-1.37	-1.47	-1.54	-1.39	-1.24	-1.02	-1.21
Portugal	1.02	1.19	1.46	1.81	1.55	1.36	1.10	0.80	0.66	0.38	0.17	-0.07
Slovenia	0.46	-0.25	-0.17	-0.36	-0.62	-0.77	-0.91	-1.07	-1.04	-1.09	-0.87	-0.84
Slovakia	0.27	0.42	-0.03	-0.41	-0.47	-0.67	-0.71	-0.87	-0.84	-0.84	-0.91	-1.13
marital status												
married	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
single	-0.65	-0.60	-0.60	-0.59	-0.50	-0.49	-0.53	-0.48	-0.38	-0.34	-0.31	-0.32
education												
ISCED 0–1	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
ISCED 2	0.32	0.21	0.73	0.86	0.90	0.99	1.05	1.15	0.96	0.47	0.35	0.29
ISCED 3	0.65	0.32	0.68	0.87	0.78	0.76	0.78	0.89	0.73	0.32	0.24	0.28
ISCED 4	0.81	0.27	0.51	0.52	0.23	0.20	0.24	0.45	0.38	0.01	0.06	0.14
ISCED 5	0.80	0.11	0.39	0.26	-0.02	-0.17	-0.17	-0.01	-0.02	-0.32	-0.23	-0.08
ISCED 6	0.57	-0.67	-0.27	-0.18	-0.43	-0.49	-0.51	-0.32	-0.34	-0.70	-0.24	-0.23
age												
20-29	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
30-39	0.64	-0.99	-0.72	-0.72	-0.97	-0.95	-0.53	-0.68	-0.76	-0.98	-0.66	-0.40
40-49	0.75	-0.27	-0.09	0.19	0.14	0.24	0.24	0.22	0.23	0.17	-0.03	0.01
50-59	0.44	0.07	0.14	0.41	0.35	0.40	0.40	0.36	0.39	0.29	0.09	0.10
60-69	-0.14	0.73	0.16	0.63	0.64	0.59	0.44	0.41	0.38	0.33	-0.03	-0.12
70-79	-0.82	0.43	0.74	1.08	0.96	0.94	0.89	0.83	0.77	0.61	0.39	0.47
>80	-1.84	0.34	0.29	0.40	0.24	0.25	0.28	0.18	0.19	0.11	-0.05	-0.03
income and wealth												
asinh(income)	0.30	0.85	0.66	0.58	0.56	0.45	0.40	0.31	0.27	0.23	0.22	0.14
asinh(wealth)	-0.10	-0.03	-0.02	0.01	0.02	0.03	0.03	0.03	0.02	0.01	0.00	-0.00

Source: Author's calculations using SHARE, SHP and HFCS. *Notes:* The first column refers to the coefficients of the logistic regression that model the extensive margin (i.e., the probability of owning the asset or liability). The other columns refer to the coefficients of quantiles regressions for quantiles τ. The dependent variable in that regression is the logarithm of the value of the asset (or liability), in EUR.

Table 14: Switzerland Imputation Model Coefficients, Debt, 2012

	$\mathbb{P}(>0)$	$\tau=5\%$	$\tau=10\%$	$\tau=20\%$	$\tau=30\%$	$\tau=40\%$	$\tau=50\%$	$\tau=60\%$	$\tau=70\%$	$\tau=80\%$	$\tau=90\%$	$\tau=95\%$
Intercept	-3.07	-1.47	-1.07	0.11	0.78	2.36	3.84	5.51	6.77	7.84	9.55	10.65
							country					
Austria	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Belgium	0.91	0.87	0.97	1.13	0.95	0.84	0.77	0.69	0.37	0.17	0.15	0.05
Switzerland	1.27	3.50	3.55	3.60	3.20	3.01	2.84	2.69	2.40	2.09	1.75	1.49
Cyprus	1.26	0.85	1.14	1.63	1.61	1.47	1.35	1.18	0.93	0.84	0.91	0.69
Germany	0.57	-0.07	0.11	0.52	0.46	0.44	0.40	0.36	0.19	0.04	0.08	0.06
Estonia	0.96	-1.43	-0.83	-0.73	-0.85	-0.93	-0.94	-0.86	-1.00	-0.96	-0.90	-0.97
France	0.83	0.80	0.86	0.98	0.81	0.68	0.65	0.58	0.36	0.21	0.15	0.03
Greece	-0.63	0.39	0.19	0.30	0.47	0.56	0.42	0.24	0.09	0.04	-0.05	-0.14
Croatia	0.87	-0.22	-0.39	-0.33	-0.59	-0.90	-1.06	-1.20	-1.37	-1.41	-1.30	-1.50
Hungary	0.18	-0.56	-0.46	-0.39	-0.42	-0.56	-0.71	-0.96	-1.19	-1.27	-1.35	-1.51
Ireland	0.79	0.15	0.24	0.43	0.46	0.45	0.58	0.60	0.43	0.35	0.37	0.28
Italy	-0.33	0.97	0.74	0.77	0.59	0.33	0.27	0.20	0.03	-0.13	-0.16	-0.23
Lithuania	0.26	-0.17	-0.21	-0.55	-0.62	-0.54	-0.67	-0.72	-0.95	-0.97	-0.82	-0.89
Luxembourg	0.91	1.28	1.19	1.30	1.03	1.12	1.20	1.30	1.11	1.01	1.01	0.90
Latvia	0.55	-0.82	-0.85	-0.84	-1.03	-1.13	-1.07	-1.26	-1.31	-1.29	-1.19	-1.26
Malta	0.41	0.38	0.69	0.98	0.68	0.63	0.62	0.42	0.17	0.07	-0.08	-0.07
Netherlands	1.19	1.89	2.30	2.68	2.40	2.09	1.89	1.72	1.45	1.23	1.01	0.81
Poland	0.58	-1.62	-1.41	-1.33	-1.33	-1.42	-1.38	-1.30	-1.31	-1.34	-1.28	-1.37
Portugal	1.13	1.37	1.50	1.70	1.52	1.23	0.99	0.75	0.39	0.18	-0.03	-0.22
Slovenia	0.27	-0.59	-0.37	-0.25	-0.45	-0.67	-0.64	-0.73	-0.82	-0.83	-0.98	-1.03
Slovakia	0.28	0.06	0.30	0.33	0.18	-0.06	-0.16	-0.35	-0.58	-0.66	-0.75	-0.95
							marital status					
married	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
single	-0.72	-0.39	-0.46	-0.34	-0.21	-0.22	-0.22	-0.25	-0.29	-0.27	-0.29	-0.25
							education					
ISCED 0–1	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
ISCED 2	0.32	0.58	0.33	-0.13	0.11	0.09	0.30	0.39	0.44	0.38	0.38	0.21
ISCED 3	0.57	0.75	0.62	0.34	0.38	0.43	0.52	0.58	0.60	0.53	0.48	0.40
ISCED 4	0.69	1.45	0.91	0.69	0.89	0.85	0.94	0.96	0.98	0.98	0.79	0.68
ISCED 5	0.77	1.40	1.47	1.11	1.06	0.99	1.01	1.01	1.01	0.90	0.86	0.82
ISCED 6	0.51	0.78	0.81	0.35	0.26	0.30	0.35	0.41	0.45	0.49	0.56	0.48
							age					
20-29	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
30-39	0.56	0.30	0.24	0.77	0.87	1.00	0.93	0.88	0.81	0.49	0.30	0.33
40-49	0.68	0.69	0.61	0.93	0.81	0.86	0.69	0.65	0.65	0.32	0.19	0.30
50-59	0.32	0.39	0.30	0.57	0.45	0.44	0.28	0.30	0.33	0.04	0.08	0.23
60-69	-0.29	0.16	0.12	0.24	0.12	0.13	-0.12	-0.22	-0.19	-0.40	-0.30	-0.12
70-79	-0.89	-0.05	-0.16	-0.05	-0.24	-0.32	-0.56	-0.64	-0.60	-0.78	-0.58	-0.33
>80	-2.08	-0.76	-1.03	-0.85	-1.10	-1.05	-1.11	-1.01	-0.82	-0.86	-0.58	-0.39
							income and wealth					
asinh(income)	0.26	0.57	0.61	0.57	0.57	0.48	0.40	0.29	0.23	0.22	0.13	0.08
asinh(wealth)	-0.09	-0.00	0.00	0.01	0.03	0.03	0.04	0.04	0.04	0.03	0.01	0.00

Source: Authors' calculations using SHARE, SHP and HFCS. *Notes:* The first column refers to the coefficients of the logistic regression that model the extensive margin (i.e., the probability of owning the asset or liability). The other columns refer to the coefficients of quantiles regressions for quantiles τ. The dependent variable in that regression is the logarithm of the value of the asset (or liability), in EUR.

Table 15: Switzerland Imputation Model Coefficients, Debt, 2016

	$\mathbb{P}(>0)$	$\tau=5\%$	$\tau=10\%$	$\tau=20\%$	$\tau=30\%$	$\tau=40\%$	$\tau=50\%$	$\tau=60\%$	$\tau=70\%$	$\tau=80\%$	$\tau=90\%$	$\tau=95\%$
Intercept	-1.65	0.87	1.53	2.50	3.42	4.40	5.26	5.86	6.54	6.99	7.77	8.38
country												
Austria	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Belgium	-0.10	-0.20	-0.20	-0.22	-0.19	-0.18	-0.13	-0.11	-0.07	-0.05	-0.00	-0.09
Switzerland	-0.62	-1.03	-0.99	-0.78	-0.67	-0.53	-0.40	-0.35	-0.29	-0.22	-0.21	-0.26
Cyprus	0.66	0.47	0.44	0.15	0.09	0.07	0.09	0.08	0.06	0.06	0.09	-0.06
Germany	-0.30	-0.45	-0.40	-0.35	-0.23	-0.13	-0.06	-0.05	-0.07	-0.01	0.03	0.04
Estonia	-1.32	-0.32	-0.39	-0.38	-0.43	-0.45	-0.46	-0.45	-0.48	-0.38	-0.32	-0.35
Spain	0.19	0.03	-0.09	-0.16	-0.17	-0.16	-0.15	-0.17	-0.18	-0.14	-0.11	-0.13
Finland	-0.29	0.05	-0.06	-0.10	-0.07	-0.01	0.03	0.03	0.04	0.10	0.10	0.05
France	17.86	0.57	0.61	0.58	0.54	0.53	0.53	0.49	0.48	0.54	0.56	0.50
Greece	-0.35	-0.22	-0.37	-0.42	-0.45	-0.43	-0.46	-0.48	-0.52	-0.47	-0.43	-0.43
Hungary	-1.44	-0.49	-0.51	-0.73	-0.83	-0.92	-0.94	-0.99	-1.06	-1.01	-1.01	-1.07
Ireland	1.24	0.12	0.07	0.08	0.06	0.07	0.11	0.09	0.10	0.19	0.22	0.21
Italy	2.16	0.31	0.26	0.25	0.21	0.15	0.10	0.04	-0.03	-0.04	-0.06	-0.15
Luxembourg	0.72	0.78	0.75	0.65	0.68	0.76	0.78	0.75	0.75	0.83	0.84	0.74
Latvia	-1.73	-0.84	-1.01	-0.97	-1.05	-0.99	-1.02	-1.05	-1.00	-0.96	-0.94	-0.94
Malta	0.50	0.11	-0.09	0.02	0.04	0.04	0.04	0.04	0.03	0.10	0.13	0.21
Netherlands	0.79	-0.67	-0.41	-0.20	-0.17	-0.11	-0.05	-0.06	-0.07	-0.08	0.00	-0.01
Poland	-0.80	-0.70	-0.79	-0.75	-0.79	-0.84	-0.89	-0.88	-0.89	-0.84	-0.82	-0.87
Portugal	0.07	-0.22	-0.31	-0.17	-0.10	-0.03	0.06	0.05	0.03	0.11	0.13	0.15
Slovenia	-0.08	-0.55	-0.60	-0.49	-0.39	-0.42	-0.39	-0.43	-0.45	-0.37	-0.40	-0.47
Slovakia	-0.78	-0.84	-0.88	-0.75	-0.78	-0.81	-0.78	-0.75	-0.81	-0.71	-0.70	-0.69
marital status												
married	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
single	-1.45	-0.67	-0.62	-0.60	-0.54	-0.51	-0.48	-0.43	-0.41	-0.38	-0.34	-0.34
education												
ISCED 0–1	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
ISCED 2	0.28	0.02	-0.06	0.04	0.02	0.04	0.06	0.03	0.09	0.13	0.09	0.15
ISCED 3	0.97	-0.03	-0.09	0.03	0.04	0.08	0.12	0.08	0.12	0.15	0.12	0.19
ISCED 4	0.67	-0.10	-0.00	0.11	0.12	0.17	0.21	0.16	0.23	0.26	0.23	0.36
ISCED 5	1.21	-0.02	-0.05	0.06	0.11	0.16	0.20	0.17	0.21	0.28	0.29	0.37
ISCED 6	0.79	-0.16	-0.25	-0.17	-0.12	-0.06	-0.04	-0.04	0.05	0.17	0.20	0.39
age												
20-29	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
30-39	0.42	-0.68	-0.69	-0.53	-0.53	-0.47	-0.32	-0.34	-0.28	-0.08	-0.05	0.06
40-49	0.45	0.42	0.32	0.38	0.35	0.37	0.37	0.33	0.28	0.32	0.30	0.24
50-59	0.40	0.70	0.60	0.59	0.56	0.55	0.54	0.50	0.47	0.49	0.46	0.41
60-69	0.09	0.41	0.56	0.46	0.34	0.52	0.42	0.33	0.35	0.49	0.54	0.34
70-79	-0.04	0.84	0.72	0.77	0.74	0.73	0.72	0.69	0.65	0.68	0.66	0.65
>80	-0.82	0.37	0.31	0.25	0.19	0.29	0.32	0.29	0.22	0.34	0.34	0.21
income and wealth												
asinh(income)	0.21	0.45	0.44	0.40	0.35	0.30	0.24	0.22	0.19	0.16	0.13	0.10
asinh(wealth)	0.07	0.05	0.06	0.05	0.05	0.04	0.04	0.03	0.03	0.03	0.03	0.03

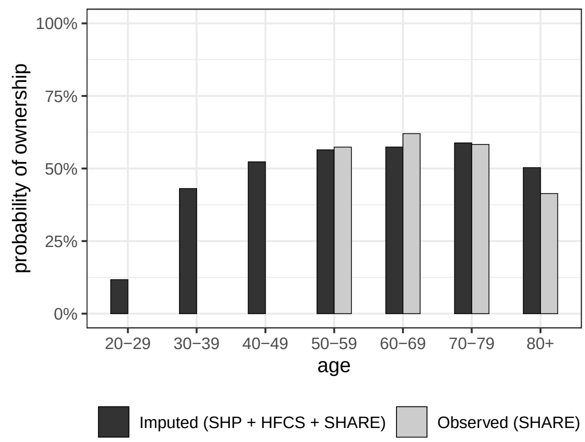
Source: Author's calculations using SHARE, SHP and HFCS. *Notes:* The first column refers to the coefficients of the logistic regression that model the extensive margin (i.e., the probability of owning the asset or liability). The other columns refer to the coefficients of quantiles regressions for quantiles τ. The dependent variable in that regression is the logarithm of the value of the asset (or liability), in EUR.

Table 16: Switzerland Imputation Model Coefficients, Consumer Durables, 2012

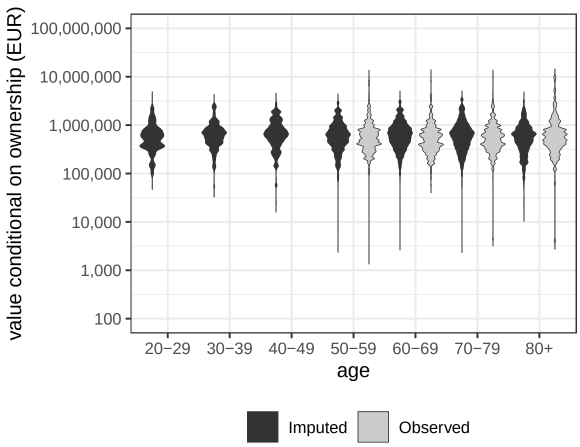
	$\mathbb{P}(>0)$	$\tau = 5\%$	$\tau = 10\%$	$\tau = 20\%$	$\tau = 30\%$	$\tau = 40\%$	$\tau = 50\%$	$\tau = 60\%$	$\tau = 70\%$	$\tau = 80\%$	$\tau = 90\%$	$\tau = 95\%$
Intercept	-1.27	0.47	1.51	2.44	3.77	4.49	5.04	5.70	6.50	7.13	8.05	8.56
country												
Austria	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
Belgium	-0.20	-0.59	-0.61	-0.39	-0.26	-0.19	-0.20	-0.16	-0.10	-0.06	0.06	-0.13
Switzerland	-0.46	-1.20	-1.15	-0.95	-0.70	-0.54	-0.42	-0.30	-0.22	-0.13	-0.12	-0.25
Cyprus	0.93	0.39	0.31	0.21	0.13	0.16	0.10	0.07	0.03	0.02	-0.07	-0.20
Germany	-0.27	-0.43	-0.43	-0.38	-0.26	-0.18	-0.11	-0.03	0.00	0.07	0.08	0.01
Estonia	-1.40	-0.72	-0.98	-0.96	-0.93	-0.87	-0.85	-0.79	-0.79	-0.71	-0.65	-0.66
France	17.69	0.25	0.27	0.33	0.39	0.42	0.42	0.43	0.45	0.47	0.45	0.32
Greece	-0.36	-0.27	-0.41	-0.44	-0.50	-0.50	-0.54	-0.53	-0.52	-0.52	-0.53	-0.59
Croatia	-0.57	-0.35	-0.56	-0.41	-0.47	-0.45	-0.48	-0.49	-0.50	-0.46	-0.49	-0.56
Hungary	-1.42	-0.52	-0.72	-0.82	-0.88	-0.89	-0.90	-0.85	-0.87	-0.82	-0.74	-0.76
Ireland	1.14	0.08	0.07	0.07	0.20	0.30	0.36	0.43	0.46	0.54	0.53	0.42
Italy	1.72	0.01	-0.06	-0.02	0.01	0.06	0.05	0.06	0.03	-0.00	-0.10	-0.26
Lithuania	-0.60	-0.20	-0.43	-0.59	-0.76	-0.74	-0.72	-0.72	-0.70	-0.68	-0.69	-0.67
Luxembourg	0.55	0.70	0.61	0.61	0.64	0.65	0.66	0.71	0.78	0.81	0.83	0.78
Latvia	-1.52	-0.51	-0.77	-0.86	-0.92	-0.92	-0.87	-0.78	-0.77	-0.75	-0.80	-0.91
Malta	0.50	-0.19	-0.20	-0.09	-0.04	0.02	0.08	0.08	0.12	0.10	0.20	0.06
Netherlands	-0.13	-0.12	-0.22	-0.24	-0.16	-0.11	-0.11	-0.11	-0.06	-0.03	-0.01	-0.14
Poland	-0.71	-0.90	-0.96	-0.87	-0.91	-0.90	-0.89	-0.89	-0.89	-0.86	-0.89	-0.92
Portugal	0.06	-0.31	-0.32	-0.26	-0.18	-0.05	0.02	0.05	0.08	0.06	0.08	-0.06
Slovenia	0.02	-0.56	-0.62	-0.48	-0.40	-0.34	-0.32	-0.29	-0.29	-0.24	-0.28	-0.38
Slovakia	-0.92	-0.73	-0.85	-0.72	-0.71	-0.60	-0.54	-0.52	-0.48	-0.44	-0.34	-0.43
marital status												
married	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
single	-1.45	-0.72	-0.69	-0.58	-0.60	-0.53	-0.48	-0.45	-0.42	-0.40	-0.36	-0.31
education												
ISCED 0–1	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
ISCED 2	0.42	0.39	0.52	0.41	0.38	0.39	0.38	0.40	0.34	0.30	0.22	0.21
ISCED 3	0.98	0.83	0.83	0.70	0.66	0.67	0.64	0.63	0.61	0.53	0.49	0.43
ISCED 4	0.99	0.54	0.76	0.78	0.70	0.51	0.58	0.69	0.85	0.82	0.77	0.60
ISCED 5	1.25	0.86	0.91	0.81	0.79	0.81	0.78	0.76	0.74	0.67	0.64	0.61
ISCED 6	0.64	0.67	0.58	0.44	0.51	0.51	0.44	0.42	0.42	0.44	0.39	0.31
age												
20-29	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)	(ref.)
30-39	0.37	0.10	0.12	0.15	0.12	0.07	0.10	0.08	0.09	0.09	0.09	0.03
40-49	0.38	0.15	0.16	0.19	0.16	0.10	0.19	0.15	0.13	0.13	0.11	0.16
50-59	0.34	0.09	0.17	0.15	0.16	0.15	0.19	0.19	0.23	0.21	0.23	0.25
60-69	0.32	0.27	0.28	0.27	0.24	0.21	0.25	0.23	0.25	0.24	0.26	0.26
70-79	-0.07	-0.04	0.06	0.09	0.05	0.03	0.11	0.11	0.14	0.15	0.20	0.22
>80	-0.58	-0.34	-0.32	-0.29	-0.30	-0.33	-0.29	-0.24	-0.18	-0.08	-0.01	0.08
income and wealth												
asinh(income)	0.18	0.46	0.41	0.40	0.31	0.28	0.25	0.23	0.18	0.15	0.12	0.11
asinh(wealth)	0.05	0.07	0.07	0.05	0.06	0.05	0.04	0.04	0.03	0.03	0.02	0.02

Source: Authors' calculations using SHARE, SHP and HFCS. *Notes:* The first column refers to the coefficients of the logistic regression that model the extensive margin (i.e., the probability of owning the asset or liability). The other columns refer to the coefficients of quantiles regressions for quantiles τ. The dependent variable in that regression is the logarithm of the value of the asset (or liability), in EUR.

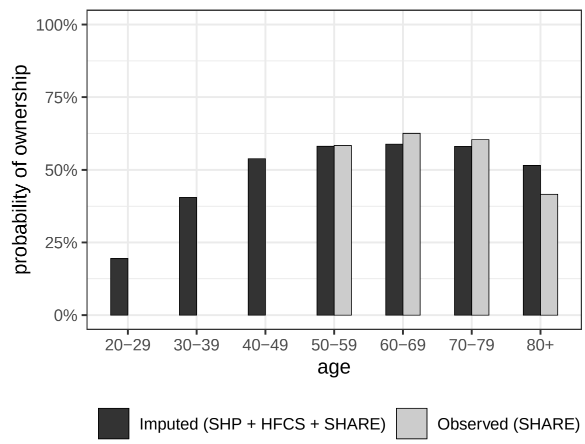
Table 17: Switzerland Imputation Model Coefficients, Consumer Durables, 2016



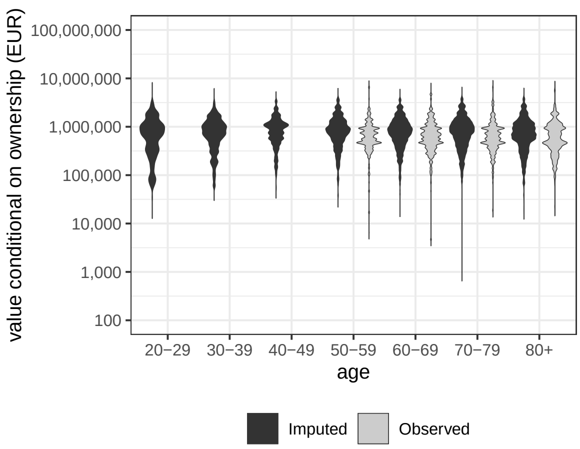
(a) Extensive Margin, 2012



(b) Intensive Margin, 2012



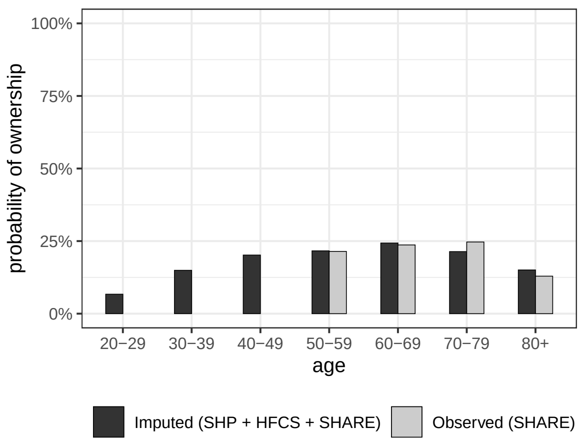
(c) Extensive Margin, 2016



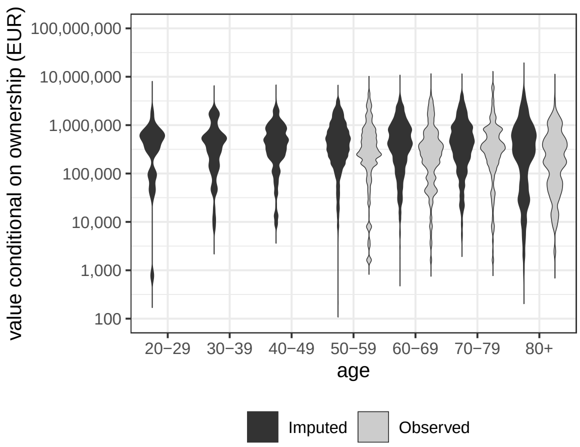
(d) Intensive Margin, 2016

Source: Authors' calculations using SHARE, SHP and HFCS. *Notes:* The extensive margin captures the probability of owning a given asset (or liability). The intensive margin captures the value of the asset (or liability) for those who own it. The observed distributions come from the SHARE data and are only available for people aged 50 and older. The imputed distributions are estimate for the whole distribution (but only used for people below 50), and combine information from SHARE, the SHP and the HFCS (see main text for the imputation procedure).

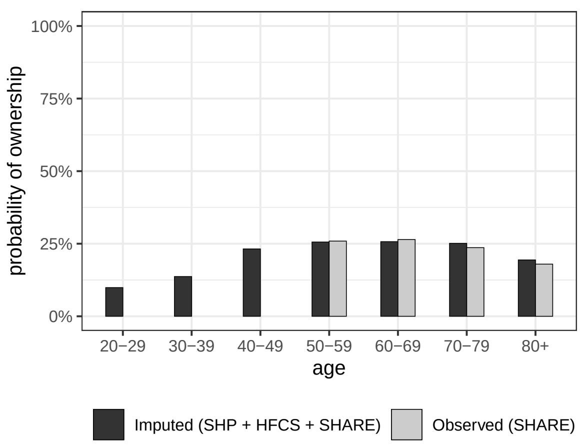
Figure 12: Ownership of Main Residence, Switzerland, 2012 and 2016



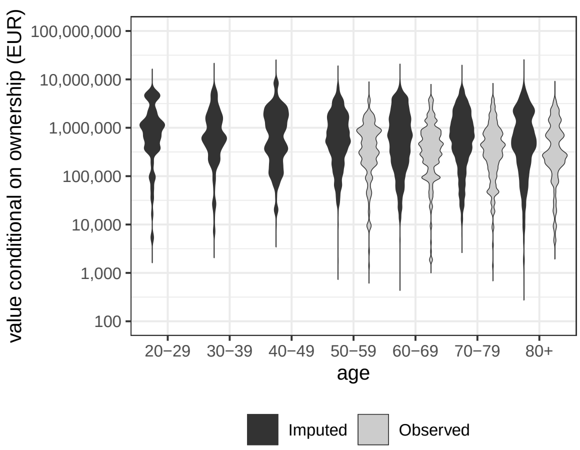
(a) Extensive Margin, 2012



(b) Intensive Margin, 2012



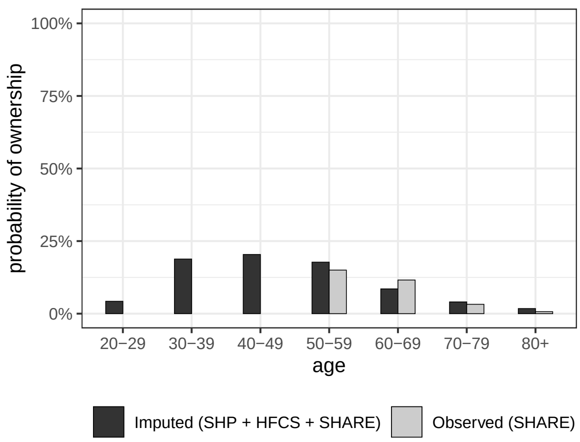
(c) Extensive Margin, 2016



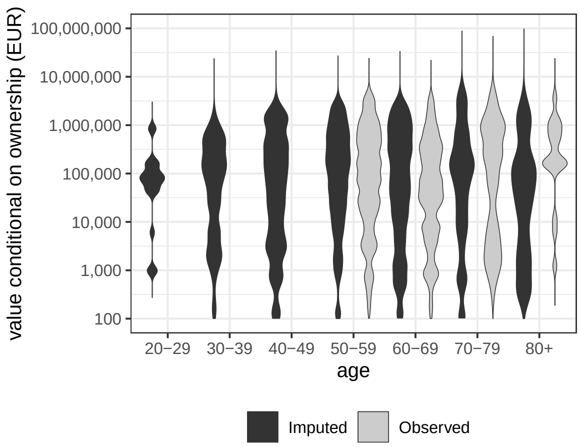
(d) Intensive Margin, 2016

Source: Authors' calculations using SHARE, SHP and HFCS. *Notes:* The extensive margin captures the probability of owning a given asset (or liability). The intensive margin captures the value of the asset (or liability) for those who own it. The observed distributions come from the SHARE data and are only available for people aged 50 and older. The imputed distributions are estimate for the whole distribution (but only used for people below 50), and combine information from SHARE, the SHP and the HFCS (see main text for the imputation procedure).

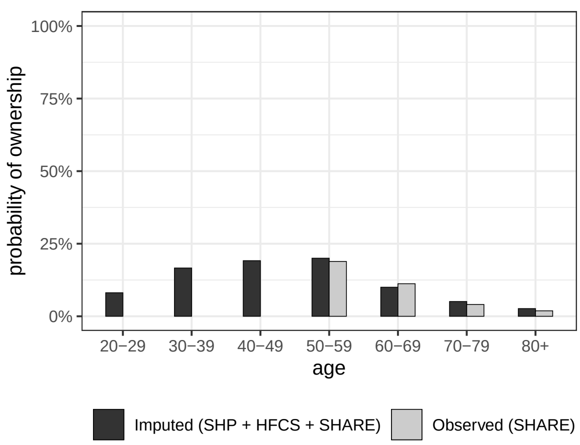
Figure 13: Ownership of Other Real Estate, Switzerland, 2012 and 2016



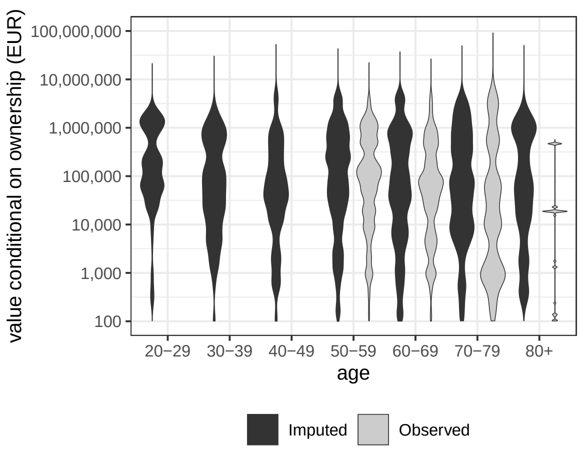
(a) Extensive Margin, 2012



(b) Intensive Margin, 2012



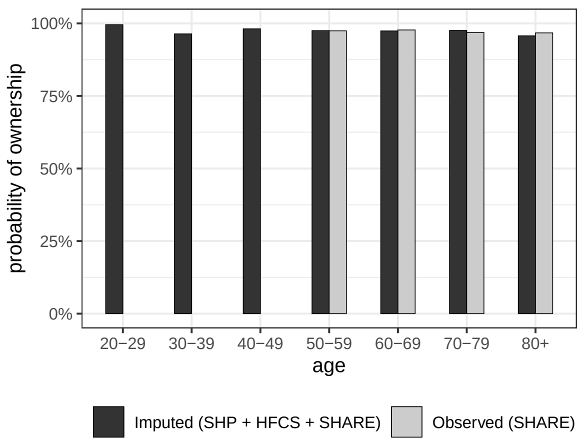
(c) Extensive Margin, 2016



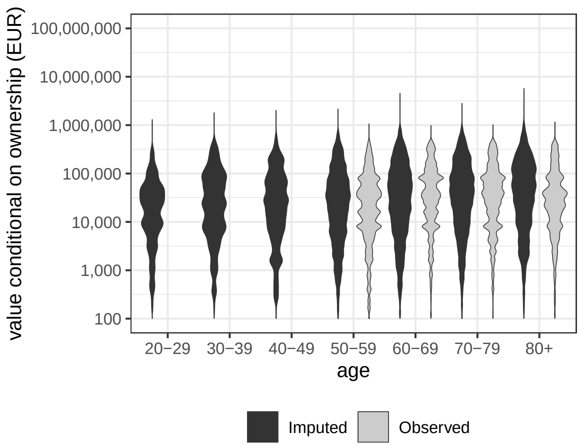
(d) Intensive Margin, 2016

Source: Authors' calculations using SHARE, SHP and HFCS. *Notes:* The extensive margin captures the probability of owning a given asset (or liability). The intensive margin captures the value of the asset (or liability) for those who own it. The observed distributions come from the SHARE data and are only available for people aged 50 and older. The imputed distributions are estimate for the whole distribution (but only used for people below 50), and combine information from SHARE, the SHP and the HFCS (see main text for the imputation procedure).

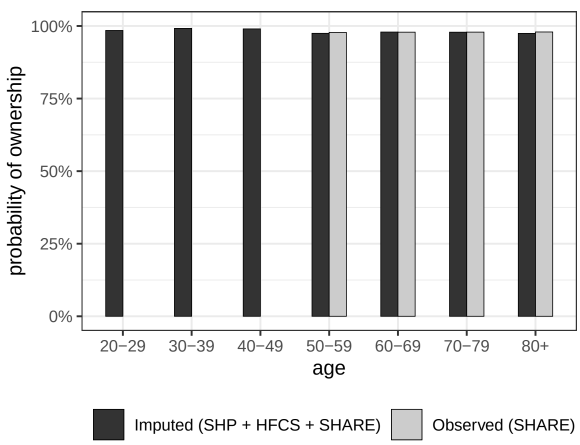
Figure 14: Ownership of Other Non-financial Assets, Switzerland, 2012 and 2016



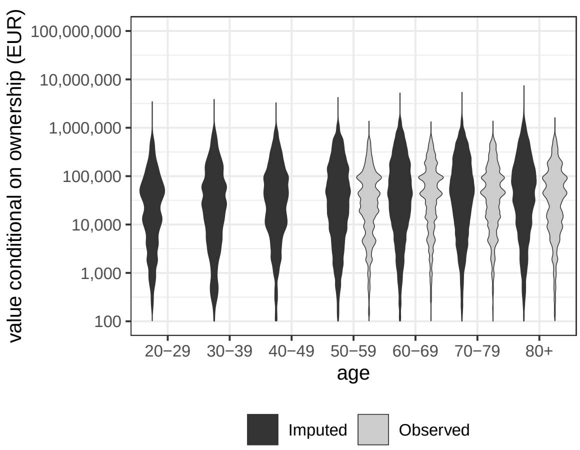
(a) Extensive Margin, 2012



(b) Intensive Margin, 2012



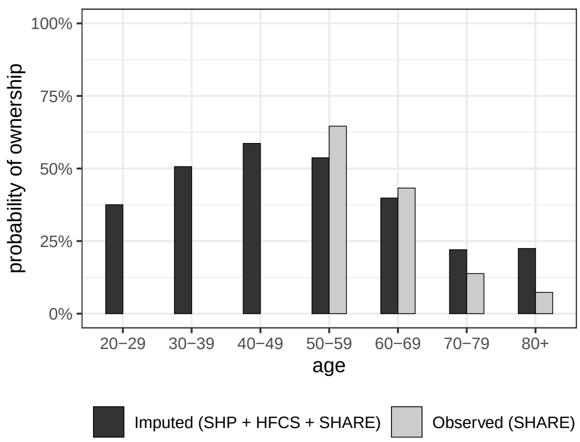
(c) Extensive Margin, 2016



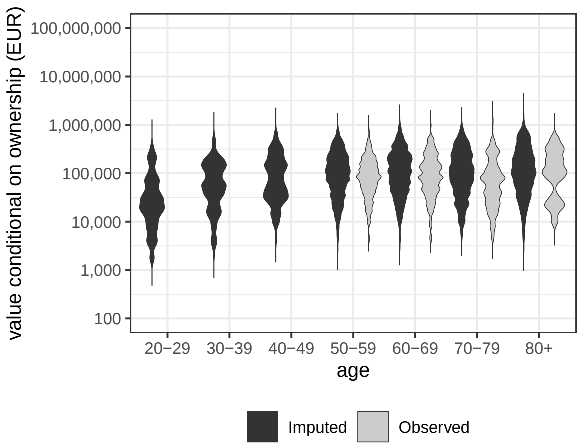
(d) Intensive Margin, 2016

Source: Authors' calculations using SHARE, SHP and HFCS. *Notes:* The extensive margin captures the probability of owning a given asset (or liability). The intensive margin captures the value of the asset (or liability) for those who own it. The observed distributions come from the SHARE data and are only available for people aged 50 and older. The imputed distributions are estimate for the whole distribution (but only used for people below 50), and combine information from SHARE, the SHP and the HFCS (see main text for the imputation procedure).

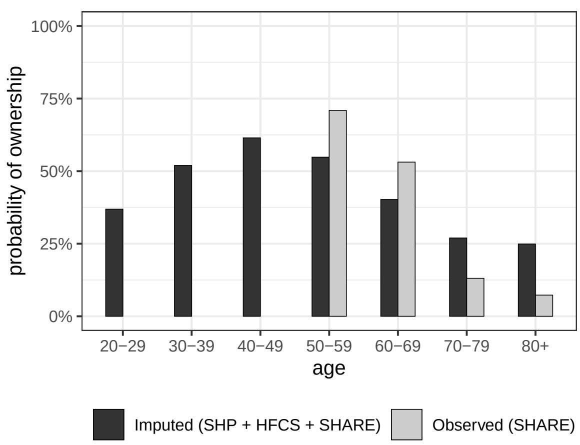
Figure 15: Ownership of Deposits, Switzerland, 2012 and 2016



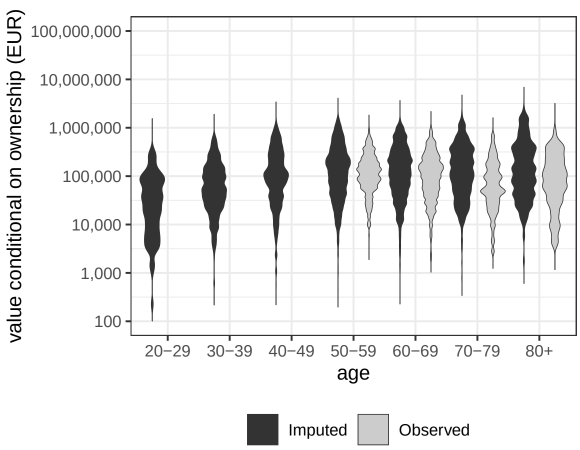
(a) Extensive Margin, 2012



(b) Intensive Margin, 2012



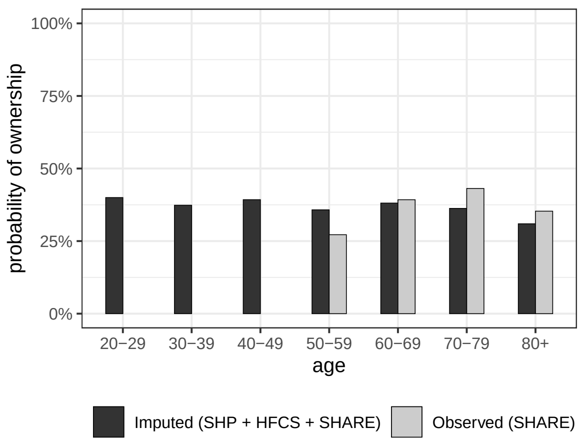
(c) Extensive Margin, 2016



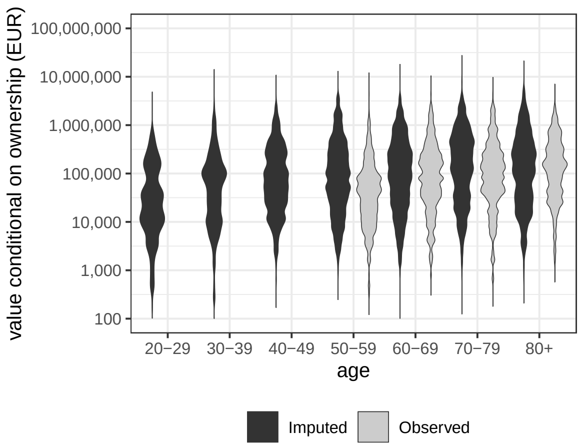
(d) Intensive Margin, 2016

Source: Authors' calculations using SHARE, SHP and HFCS. *Notes:* The extensive margin captures the probability of owning a given asset (or liability). The intensive margin captures the value of the asset (or liability) for those who own it. The observed distributions come from the SHARE data and are only available for people aged 50 and older. The imputed distributions are estimate for the whole distribution (but only used for people below 50), and combine information from SHARE, the SHP and the HFCS (see main text for the imputation procedure).

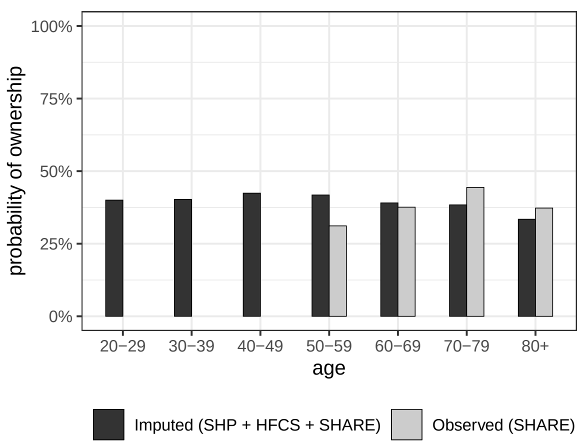
Figure 16: Ownership of Pensions and Life Insurance, Switzerland, 2012 and 2016



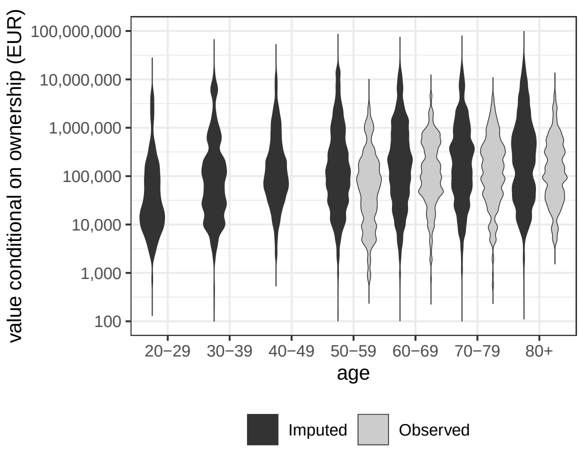
(a) Extensive Margin, 2012



(b) Intensive Margin, 2012



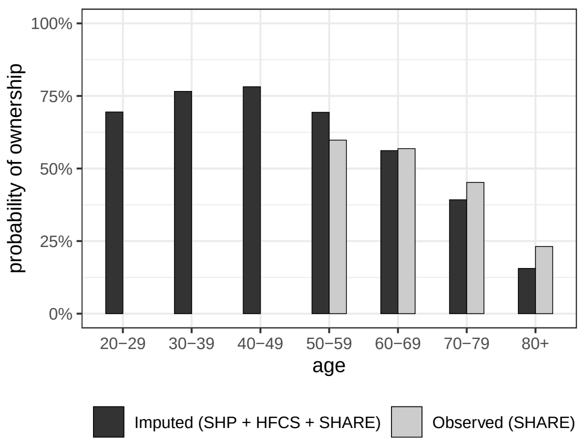
(c) Extensive Margin, 2016



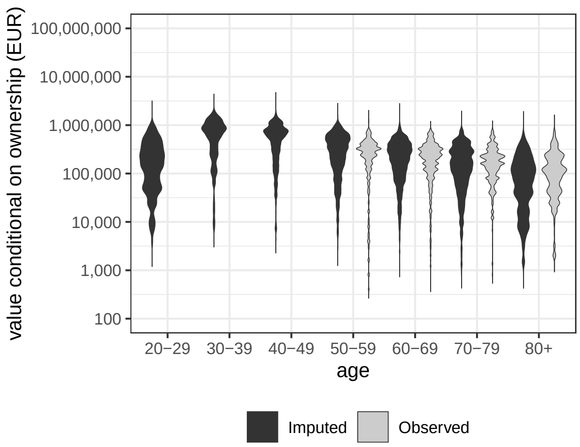
(d) Intensive Margin, 2016

Source: Authors' calculations using SHARE, SHP and HFCS. *Notes:* The extensive margin captures the probability of owning a given asset (or liability). The intensive margin captures the value of the asset (or liability) for those who own it. The observed distributions come from the SHARE data and are only available for people aged 50 and older. The imputed distributions are estimate for the whole distribution (but only used for people below 50), and combine information from SHARE, the SHP and the HFCS (see main text for the imputation procedure).

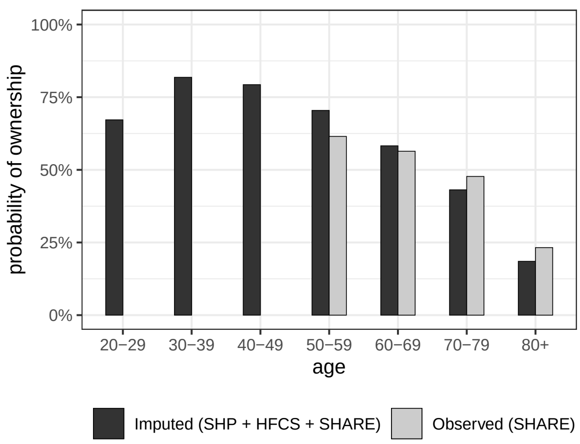
Figure 17: Ownership of Other Financial Assets, Switzerland, 2012 and 2016



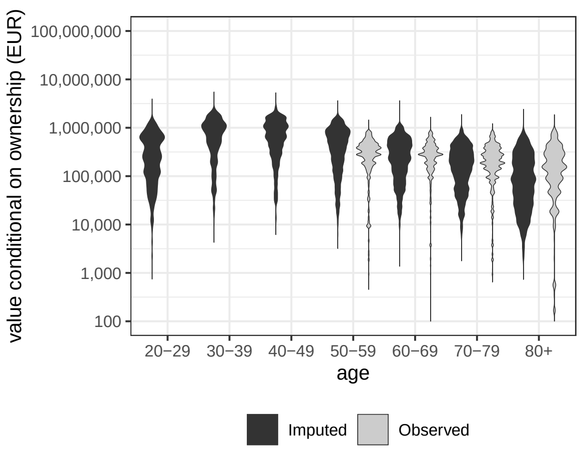
(a) Extensive Margin, 2012



(b) Intensive Margin, 2012



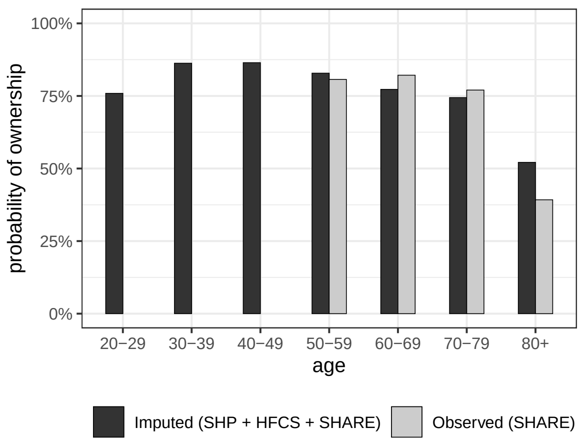
(c) Extensive Margin, 2016



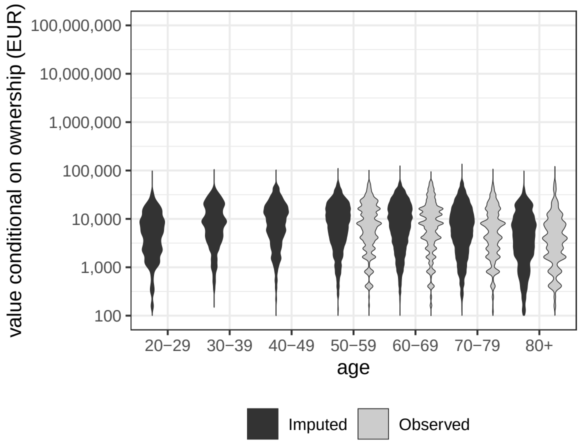
(d) Intensive Margin, 2016

Source: Authors' calculations using SHARE, SHP and HFCS. *Notes:* The extensive margin captures the probability of owning a given asset (or liability). The intensive margin captures the value of the asset (or liability) for those who own it. The observed distributions come from the SHARE data and are only available for people aged 50 and older. The imputed distributions are estimate for the whole distribution (but only used for people below 50), and combine information from SHARE, the SHP and the HFCS (see main text for the imputation procedure).

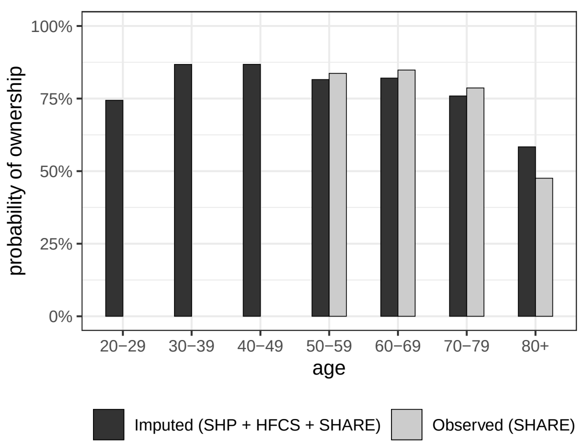
Figure 18: Ownership of Debt, Switzerland, 2012 and 2016



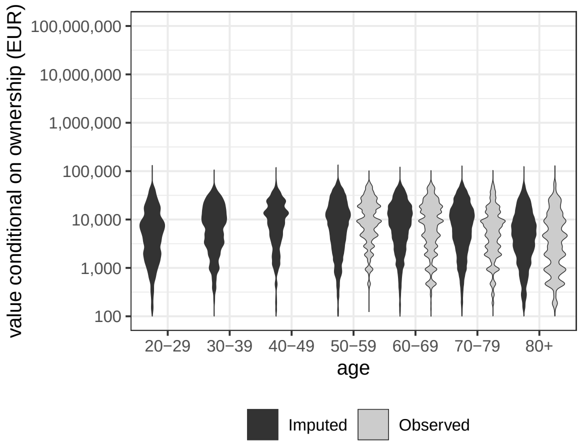
(a) Extensive Margin, 2012



(b) Intensive Margin, 2012



(c) Extensive Margin, 2016



(d) Intensive Margin, 2016

Source: Authors' calculations using SHARE, SHP and HFCS. *Notes:* The extensive margin captures the probability of owning a given asset (or liability). The intensive margin captures the value of the asset (or liability) for those who own it. The observed distributions come from the SHARE data and are only available for people aged 50 and older. The imputed distributions are estimate for the whole distribution (but only used for people below 50), and combine information from SHARE, the SHP and the HFCS (see main text for the imputation procedure).

Figure 19: Ownership of Consumer Durables, Switzerland, 2012 and 2016

asset or not?) and the intensive margin (how much of the asset do you own?) For the extensive margin, we perform a logistic regression of whether an household holds the asset as function of the explanatory variables. For the intensive margin, we perform quantile regressions of the log-transformed value of the asset (for the subsample of people that own the asset). We perform the quantile regression for every ventile, from $\tau = 5\%$ to $\tau = 95\%$. We fit the model separately for the two waves of survey data. We consider eight asset categories: main residence, other real estate, other non-financial assets, deposits, pensions and life insurance, other financial assets, debt and consumer durables. Tables 2 to 17 summarize the coefficients for every model.

To impute the assets, we first simulate the extensive margin by drawing at random from a binomial variable according the predicted probability of owning the asset for every household. Then, we deal with the intensive margin by selecting one of the predicted ventile from the quantile regressions at random, at choosing it at the the value of the asset for the household, assuming it owns the asset. Following the basic inverse transform principle (Robert and Casella, 2004), the simulated variable will (approximately) follow the desired distribution.

How well does the imputation procedure performs? Figures 12 to 19 address that question. Given that the information for Switzerland is missing for all people 50 and younger, the key question is whether results are consistent for the different age groups. We present, side-by-side, how well we reproduce the distributions of the extensive and the intensive margins with our imputations for the different age groups in Switzerland. For people younger than 50, we only present the imputation since there is no observed. We are able to reproduce observed patterns fairly well. The simulated probabilities of ownership are close to reality. The quantile regression model can reproduce the general dispersion of asset values too. But the imputation isn't perfect, in particular in the tails, so that the synthetic survey dataset probably shouldn't be used to measure inequality directly. But we will use sparingly in our estimates, always making sure that results are meaningful, and to that end it constitutes a useful resource.

We then extend the survey dataset to the entire period covered by the national accounts. To that end, we make identical copies of the 2012 dataset for years before 2012, and identical copies of the 2016 dataset for the years after 2016. For the years between 2012 and 2016, we mix the two dataset in proportion of their proximity to each of the two years. We age those datasets by rescaling the different wealth variables to their macroeconomic totals in each year.

A.9.4 Step 4: Distribution of Nontaxable Wealth

We distribute the aggregate amount of private pensions from the national accounts to individuals in the the tax data using the distribution from the synthetic survey datasets.

We rank survey observation by their wealth (excluding pensions) and attribute to them the wealth of the corresponding rank in the survey data. We rescale pension wealth and wealth excluding pensions to their macroeconomic totals and sum them at the individual level. This gives us the new wealth distribution.

A.9.5 Discussion and Comparison with Foellmi and Martínez (2016)

According to the tax data alone, the concentration of wealth in Switzerland seems extremely high, especially by European standards. But accounting for nontaxable assets makes a very sizable difference on the level of wealth inequality, even though the trends are not meaningfully affected. This conclusion is in line with the findings of Foellmi and Martínez (2016). Figure 20 describes these findings in more details.

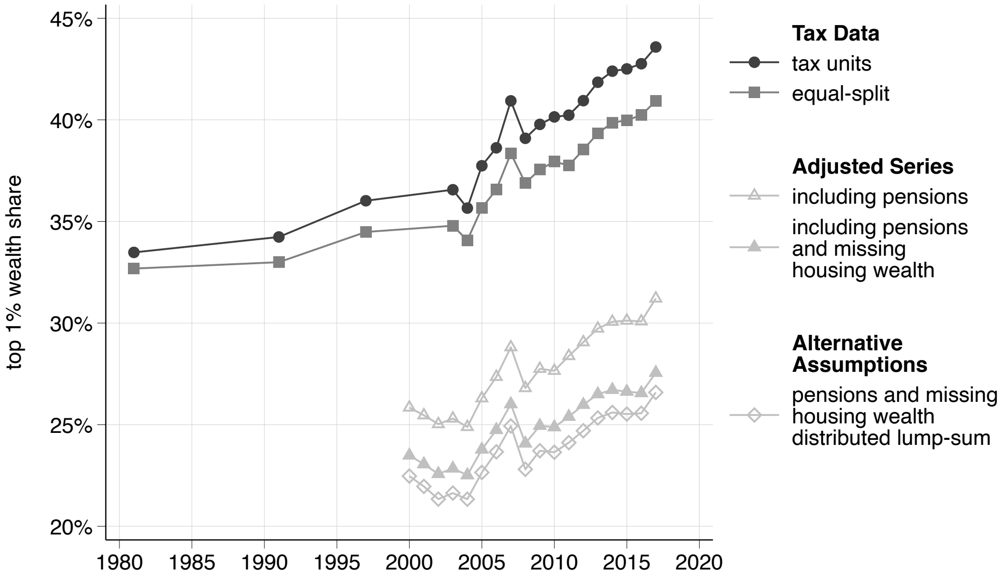


Figure 20: Top 1% Wealth Shares in Switzerland

Moving from tax units to equal-split individuals reduces the top 1% wealth share by about 2.5 pp in 2017. Adding private pension wealth has the largest effect and reduces it by 10 pp. Finally adding missing real estate wealth further reduces it by 3 pp. Overall, the top 1% wealth goes from 43.5% to 27.5%.

Our results are extremely close to Foellmi and Martínez (2016) (especially to their "average" variant), even though we use fairly different data. However, the reasons why we arrive at our result are slightly different.

There are three main sources of discrepancy between the tax data and national accounts. First, private pension wealth is not included in the tax data. Second, business wealth is included in the tax data, but not measured by the Swiss national accounts. Third, real estate wealth is undervalued in the tax data, because real estate is valued at between 70% and 100% of its market value (Foellmi and Martínez, 2016).

We tentatively value business assets at 5% of total wealth based on our synthetic survey dataset to complete the national accounts. Then, we get that the wealth tax only captures about 45–50% of total household wealth. Private pension wealth represents about 30% of household wealth. Assuming, following (Foellmi and Martínez, 2016), that real estate in the tax data is valued at 80% of its true value, the real estate wealth missing from the tax data represents 10% of total wealth. This leaves 10% to 15% of wealth unaccounted for, possibly due to tax evasion.

For their estimate, Foellmi and Martínez (2016) focus on pension wealth: they distribute the aggregate amount of pension wealth to the tax data. They do not explicitly account for types of missing wealth. As a result their estimate includes a higher proportion of pension wealth than the national accounts.

We, on the other hand, distribute both private pensions and missing real estate wealth. We also rescale observed taxable wealth to its corresponding amount in the national accounts. Assuming this gap is due to tax evasion, this probably lead us to understate inequality somewhat: see Alstadsæter, Johannesen, and Zucman (2019).

As a robustness check, we compare our benchmark result (based on our synthetic survey dataset) with a simpler method that distributes all pension wealth and missing real estate wealth lump-sum. This arguably constitutes a lower bound on wealth inequality. Figure 20 shows that this variant has the same trend as our benchmark, and is only a few percentages point lower.

A.10 United Kingdom

In the UK, there are three different sources which have been used to measure the wealth distribution: estate tax records, income tax records and wealth surveys. Lindert (2000) use scattered samples of probate records and occasional tax assessments to estimate the wealth distribution in 1740, 1810 and 1875. A. J. Harrison, M. Atkinson, et al. (1978) rely on both estate tax records and the mortality multiplier method and on income tax records and the capitalization method to estimate the wealth distribution in 1911-1913. A. B. Atkinson, Gordon, and A. Harrison (1989) also use estate tax records to build wealth distribution series for the period 1923-1977. Alvaredo, A. B. Atkinson, and Morelli (2018) use the same historical estate tax records and the recent estate tax records published by Inland Revenue Statistics available since 1978 to study the dynamics of wealth inequality from 1895-2013.

There exist two surveys including information on wealth: the British Household Panel Survey (BHPS) and the Wealth and Assets Survey (WAS). The BHPS is a survey carried out at the Institute for Social and Economic Research of the University of Essex. It contains annual information on individual and household income and employment as well as a complete set of demographic variables between 1991 and 2008. In 1995, 2000 and 2005 the BHPS survey included an individual wealth module. Banks, Blundell, and Smith (2003) use the 1995 BHPS to estimate the wealth distribution. The WAS is a biennial longitudinal wealth survey which has been conducted between 2006-2018 by the Office for National Statistics (ONS). Advani, Bangham, and Leslie (2020) rely on all the WAS waves to study the evolution of wealth inequality in the UK between 2006-2018. We combine the series of Alvaredo, A. B. Atkinson, and Morelli (2018) and the WAS surveys to built harmonized full wealth distribution series for 1995-2020.

To that end, we apply the following steps:

- We use the WAS survey to estimate a ratio between equal-split and individual wealth for each percentile in the top 10%, and use that ratio to transform tax-based series and estimates from individual to equal-split.
- We rescale wealth components of the WAS to national accounts. Then we combine that rescaled survey (for the bottom 95%) and the tax data (for the top 5%) be stitching Lorenz curve together, following the "constrainting" procedure described in Blanchet, Chancel, et al. (section 7.2.3.2 2021)
- We distribute (funded) pension wealth (which is absent from the tax data) to each percentile assuming the share of pension wealth held by each percentile is the same as in the survey.
- We perform one last rescaling of each component to national accounts totals.

Figure 21 shows how our final series compare to that Alvaredo, A. B. Atkinson, and Morelli (2018).

A.11 Household Finance and Consumption Survey

We finally rely on the Household Finance and Consumption Survey (HFCS) to cover the rest of countries for which we do not have tax records or previous solid estimates consistent with our methodology. The HFCS is built and administered by the European Central Bank and it collects information on the assets, liabilities, income and consumption of households for a wide set of European countries. The fieldwork took place for most countries in 2010 and 2011 for the first (2010) wave, between 2013 and the first half of

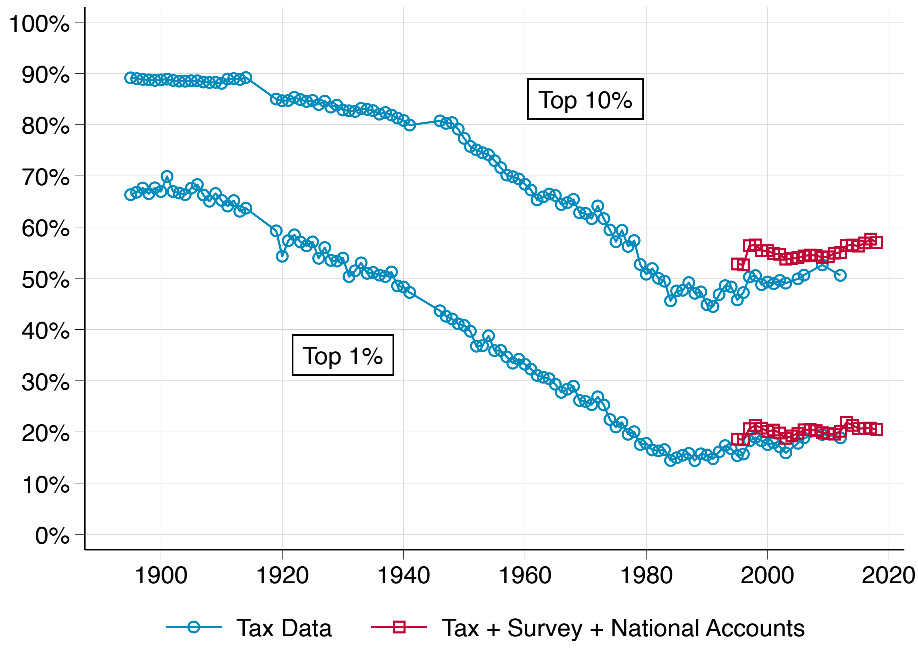


Figure 21: Comparison of Pure Tax-based and DINA Series, United Kingdom

2015 for the second (2014) wave and in 2017 for the third (2017) wave.

The countries for which we use the HFCS are the following: Austria (2010, 2014, 2017), Belgium (2010, 2014, 2017), Cyprus (2010, 2014, 2017), Croatia (2017), Estonia (2013, 2017), Greece (2009, 2014, 2018), Hungary (2014, 2017), Ireland (2013, 2018), Latvia (2014, 2017), Lithuania (2016), Luxembourg (2010, 2014, 2018), Malta (2010, 2013, 2016), Poland (2013, 2016), Portugal (2010, 2013, 2017), Slovakia (2010, 2014, 2017) and Slovenia (2010, 2014, 2017).

To ensure consistency with the methodology used for the rest of countries, we rescale the wealth components so as to match the macroeconomic aggregates from national accounts. The HFCS is based on household units. We individualize the survey and split the wealth equally across household members so that our results are based on equal-split units. We extrapolate the wealth distribution series forward up to 2020 by fixing the asset composition by percentile to the last available year of data, so that changes in portfolio composition over time only come from changes in the composition of aggregate wealth. We end up with fully homogeneous wealth distribution series by percentile and asset class from 2010 to 2020.

B Calibration of Asset and Liability Decomposition

We often face the following issue: we have the distribution of overall net wealth from one source, the macroeconomic amount of each asset from a second source, and a decomposition of net wealth by wealth bracket and by asset type from a third source. For example, the distribution of net wealth may come from tax data that does not decompose wealth, the macroeconomic asset totals may come from the national accounts, and the decomposition by percentile and asset type may come from survey data.

In general, there will be discrepancies between these three sources. To ensure consistency and improve accuracy, we need to adjust them. The complexity of the problem comes from the two sets of related constraints. We can rescale the asset decomposition to the amount of net wealth in each percentile, but then the total amount of each asset will not match the macroeconomic aggregates. Or we can rescale the asset decomposition to the macroeconomic aggregates, but then the total amount of net wealth in each bracket will not match the tax data. To correctly solve the problem, we need to consider the two sets of constraints simultaneously.

Partition the wealth distribution into n brackets, and decompose net wealth into m assets (or liabilities). Let x_{ij} be the aggregate amount of asset j held by bracket i (liabilities can be coded as an asset with a negative value). Let y_i be the total wealth held by bracket i, and let z_j be the aggregate amount of asset j in the economy. In principle, we must have:

$$\forall i \in \{1, \dots, n\} \qquad \sum_{j=1}^{m} x_{ij} = y_i \tag{11}$$

$$\forall j \in \{1, \dots, m\} \qquad \sum_{i=1}^{n} x_{ij} = z_j \tag{12}$$

To perform the adjustment, we solve the following optimization problem:

$$\min_{x_{ij}^*} \sum_{i=1}^{n} \sum_{j=1}^{m} \frac{(x_{ij}^* - x_{ij})^2}{|x_{ij}|} \tag{13}$$

subject to the equality constraints (11) and (12), and to the inequality constraints that $x_{ij} \geq 0$ if j is an asset, and $x_{ij} \leq 0$ if j is a liability. The values x_{ij}^* that are solution of that problem for the new wealth decomposition by bracket and asset type. Note that we set up the distance in (13) so that deviations from the original values of x_{ij} are more heavily penalized for smaller x_{ij}, so that the method seeks adjustments that are somewhat uniform in relative terms.

The problem (13) is a sparse quadratic programming, which we solve using the algorithm of Stellato, Banjac, Goulart, Bemporad, et al. (2020), as implemented in R (R Core Team, 2020) by Stellato, Banjac, Goulart, and Boyd (2019).

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