The Wealth of Generations*

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Abstract

This paper uses microdata to study the life-cycle wealth accumulation across US birth cohorts over the last six decades. We uncover two key trends: a marked steepening of the life-cycle wealth profile and increased dissaving among older adults. Using wealth accumulation decompositions, we argue that the boom in asset prices since the 1980s is a key driver of the two trends: valuation gains led to higher life-cycle wealth and allowed households to consume in face of these gains in retirement. We then explore the implications for aggregate wealth and saving, comparing the role played by shifts in the life-cycle wealth and saving profiles with the secular increase in income inequality and the aging of the baby boom generation. Income inequality and life-cycle wealth both pushed the ratio of aggregate wealth to GDP to its historical peak. On the other hand, shifts in life-cycle saving and inequality have led to a new divide, with a sharp increase in saving among middle-aged rich individuals mirrored by a decline in saving among older adults. So far, demographic shifts have played a minor role in the evolution of the two trends.

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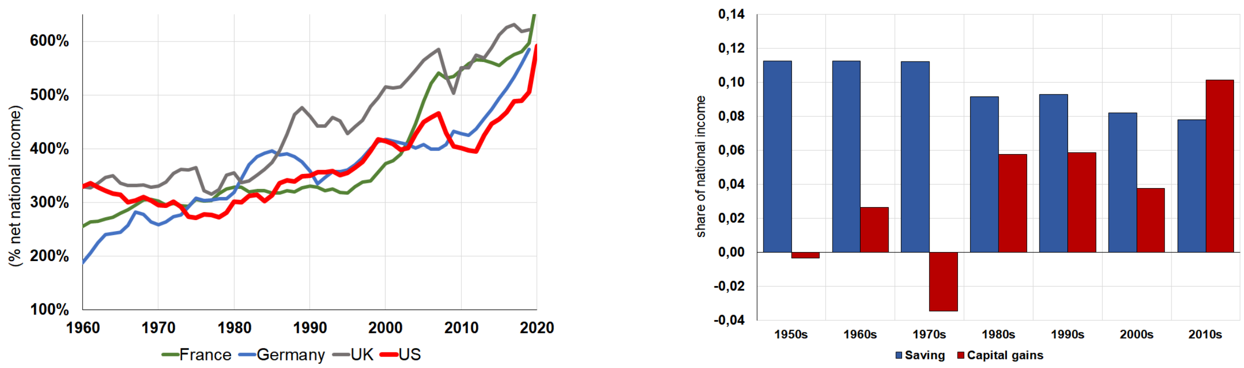
1 Introduction

Since the 1980s, rich countries have seen a rise in wealth-to-income ratios (Figure 1a), wealth inequality, and asset prices relative to saving (Figure 1b). While classic models consider the life-cycle as a key determinant of wealth, saving and inequality (De Nardi and Fella 2017), existing studies lack a long-run perspective on these trends in connection to the life-cycle of consecutive generations.

Figure 1: Aggregate wealth and sources of wealth growth



(a) Aggregate household wealth

(b) Sources of wealth growth

Notes: This figure shows results for the US and the three largest European economies: France, Germany and UK. Panel (a) shows aggregate household wealth, expressed as % of national income (source: World Inequality Database). Panel (b) decomposes household wealth growth into private saving (i.e., household saving plus corporate saving accrued to households) and capital gains, expressed as a % of national income (source: Piketty and Zucman 2014, extended by Bauluz et al. 2022).

This paper studies, for the first time, the life-cycle wealth accumulation of subsequent birth cohorts in the US, providing (i) new descriptive insights on the life-cycle of U.S. households in the past six decades as well as (ii) a micro view on the evolution of aggregate wealth and saving. We undertake this analysis using the Survey of Consumer Finances Plus ('SCF+'), which harmonizes modern waves of the Survey of Consumer Finances -covering the period 1983-2019- with archival data from historical waves available since the 1950s (Kuhn et al. 2020). The SCF+ is unique in that it provides detailed long-run microdata on household assets, debts and income, together with rich demographic characteristics, most importantly age. We adjust these series to make them consistent with official national accounts (Alvaredo et al. 2021; Feiveson and Sabelhaus 2019; Batty et al.

2019). As a result, the distributional results of this paper (on wealth, saving, etc.) map to their corresponding macroeconomic aggregate.

The first part of the paper provides a set of new stylized facts on the life-cycle wealth profile of US birth cohorts born after 1900, including the within-cohort wealth distribution (e.g., top-10%, middle-40% and bottom-50% of a given cohort). We identify a marked steepening of the life-cycle wealth profile for recent cohorts. All cohorts start from approximately similar wealth levels, but the more recent ones (e.g., those born between 1940 and 1960) reach 65% more wealth by retirement.[1] Critically, we identify that the steeper wealth profile reflects only the upper half of the within-cohort wealth distribution (particularly, the wealthiest top-10%), with the bottom-50% of recent cohorts reaching significantly lower levels than their predecessors. As a result, each new cohort is becoming internally more unequal than the previous ones: from the cohorts born in 1900-1919 to those born in 1960-79, the top-10% wealth share has increased by 14pp from 54% to 68%.[2] Overall, we document that wealth inequality between and within generations is at its peak since World War II.

The second part of the paper studies the drivers of these facts by decomposing the wealth accumulation of subsequent cohorts, using an accounting framework that divides wealth growth into saving, capital gains, and inheritances (Saez and Zucman 2016; Wolff 1999). Here we follow Feiveson and Sabelhaus (2019), who do this analysis pooling all adults in the modern waves of the SCF (i.e., from 1989 to 2016). The main innovation of our paper relative to theirs is threefold. First, we analyze *subsequent* cohorts, which we observe since the 1960s. Second, we link the cohort-specific drivers of life-cycle wealth to those changes in wealth accumulation that we documented in the stylized facts. Third, we connect these accumulation patterns to the evolution of aggregate wealth and saving.

Building on this decomposition, we establish several new results. We find that the sources

[1]Throughout the paper, we normalize wealth numbers by income, making the cross-cohort analysis quantitatively comparable.

[2]The increase in inequality across subsequent generations is even stronger than for the US population as a whole, for which the top-10% wealth share increased by around 7pp since 1980, from 65% to around 72% in recent years (e.g., Saez and Zucman 2016; also Figure **??**).

of wealth accumulation have varied markedly for different generations over time. Older cohorts (born in the initial decades of the 20th century), which accumulated wealth before the 1980s, did so almost exclusively through saving, while more recent cohorts (born after the 1920s) have benefited significantly from booming housing and equity prices since the 1980s. Moreover, our findings indicate that the different US generations barely decrease their wealth after retirement, a finding consistent with previous research focusing on the most recent years (e.g., De Nardi et al. 2016). However, the sources of wealth growth after retirement have changed: "Old Cohorts" still saved (or only slightly dissaved) after retirement, but more recent ones dissaved substantially in the presence of rising asset prices. At middle ages, we find that more recent cohorts instead save more than older cohorts. We term this phenomenon as a "life-cycle saving re-shuffling", reflecting a shift towards more saving at middle ages and less when old. We find that inheritances play a relatively minor role in the wealth accumulation of different cohorts, but their importance has increased over time.[3]

Overall, the decomposition analysis shows that capital gains have played a key role in explaining the steeper wealth profile of the more recent cohorts. Yet, the effects are very heterogeneous for different groups of the within-cohort wealth distribution. Capital gains are much more critical for the bottom-90% (that relied largely on capital gains for their wealth growth in recent decades) and less for the top of the distribution. This finding is consistent with Bauluz et al. (2022), who look at the cross-section of US households instead of birth cohorts. Connected to the previous result, we identify a large role for saving in driving up within-cohort wealth inequality in recent years and a moderating role for capital gains. All else equal, our counterfactual analysis indicates that the top-10% wealth share across cohorts would have increased by as much as 24pp if wealth accumulation had depended only on saving, compared to the observed increase in 14pp. The difference between the two numbers captures the moderating impact of asset prices on wealth inequality.

[3] A note of caution on interpreting this result is needed, though. Inheritances in this study are a net flow (outflows minus inflows) for a given group. This means that specific individuals are net givers and others net receivers, with these transfers being sizable for some.

The third and last step of the paper looks at two critical macroeconomic aggregates: the household wealth-national income ratio and the private saving rate. The development of both variables has been linked to the structural decline in natural interest rates (r*). We provide a micro-view of their evolution and use a shift-share methodology to investigate the main drivers of observed changes. Aggregate wealth or saving can be decomposed along the age distribution into three components: the life-cycle wealth (or saving) profile, income inequality across cohorts and the demographic structure (i.e., the population age composition). Our study is closest to Auclert et al. (2021), who focus on the role of the demographic component in shaping wealth-income ratios, and to Mian et al. (2021c), who investigate saving trends across age groups and income groups. We add to these papers in the following way.

Regarding aggregate wealth-income ratios, we focus on the role of demographics (as in Auclert et al. 2021) but also on the two additional components: income inequality and life-cycle wealth profiles. We find that the combined increase in income inequality and age-wealth profiles explain most of the rise in the aggregate wealth-to-income ratio since 1980 (about 80 percent of the increase). By contrast, the demographic component explains a smaller increase.[4]

Concerning private saving, we contribute to the debate on the origins of the "saving glut" (Bernanke 2005) by extending Mian et al. (2021c) across one dimension that turns out important. Namely, we look separately at wealth groups of different ages (e.g., top-10% age 20-39, bottom-90% age 20-39, etc.) instead of comparing age groups, on the one hand, with top/bottom groups of all ages together, on the other. We find an important role of the rich for aggregate saving in recent decades, but only for the rich in the middle ages. By contrast, elderly rich households have increased their dissaving in recent decades. Overall, we document an important new trend. Since the 1980s, a marked saving polarization has emerged with rich-middle age individuals raising their saving greatly and old individuals (both from the top and bottom groups) dissaving substantially. Shift-share results suggest that the rise in middle-aged rich's saving reflects the rise in income inequality (the large shift of income to the top-10%), while the fall in elderly's saving reflects the

[4]Given the current population projections, we expect demographics to play a higher role in the future, as predicted in Auclert et al. (2021).

decline in saving rates out of income (potentially linked to the contemporaneous boom in asset prices since the 1980s). All in all, our study identifies that (i) the "saving glut of the rich" since the 1980s (previously documented by Mian et al. 2021b, Saez and Zucman 2016 and Bauluz et al. 2022) is the "saving glut of the middle-aged rich" and (ii) dissaving by the old has emerged as a critical force putting downward pressure on aggregate saving in recent years.

Literature. This paper relates to several strands of the literature. First, we relate to the literature on wealth accumulation and inequality. We look at the post-1980s wealth boom Piketty and Zucman (2014) and the rise in wealth inequality (Saez and Zucman, 2016; Kuhn et al., 2020; Smith et al., 2022) from a cohort and within-cohort perspectives, quantifying the contribution life-cycle wealth accumulation had on these trends. We take a longer-run perspective, which also informs recent debates about wealth differences between "millenials" and "baby boomers" (Gale et al., 2020; Dettling et al., 2014). We show that the age-wealth gap emerged in the 1980s and is linked to the steepening of the life-cycle wealth profile. In contemporaneous work, Jaeger and Schacht (2022) use the SCF+ to investigate trends in *median* wealth for various cohorts. While their paper looks at how the median wealth of cohorts born after 1950 underperformed the cohort born in the 1940s, we focus on all groups of the wealth distribution for generations born since 1900, and connect the changing pattern of wealth accumulation to long-run shifts in aggregate wealth and private saving.

Second, we relate to studies of wealth accumulation over the life-cycle. Many papers try to reconcile the life-cycle hypothesis (Modigliani 1986) with observed patterns of age-wealth profiles. We complement existing work on wealth accumulation (Gourinchas and Parker, 2002; Carroll, 1997; Lusardi et al., 2017), with evidence of how the life-cycle has changed over time. Consistent with evidence from administrative data (Black et al. 2022), we find only a small role for inheritances in the wealth accumulation of birth cohorts as a whole. Perhaps surprising in light of some evidence (De Nardi et al., 2016; Ameriks et al., 2020; Love et al., 2009), we do find substantial dissaving of elderly households. This is consistent with evidence from Feiveson and Sabelhaus (2019) and Bosworth et al. (1991). We attribute this to the fact that we decompose wealth changes into saving and asset-price gains. While elderly households still slightly grow their wealth in absolute terms, much of this has been due to asset price growth and not saving. Moreover, the definition of saving and income we use is consistent with macroeconomic aggregates: a withdrawal from a 401(k) pension plan will be recorded not as an income flow but as dissaving Bosworth et al. (1991). We emphasize that the dissaving of the elderly is a recent phenomenon, which started since around the 1980s.

Finally, we speak to recent debates about the importance of demographic changes and inequality for the decline of natural interest rates (Mian et al., 2021c; Kopecky and Taylor, 2022; Rachel and Summers, 2019; Carvalho et al., 2016; Eggertsson et al., 2019; Gagnon et al., 2021). We contribute by studying the saving behavior of wealth deciles within age groups. This allows us to understand who in the economy has been saving more and who has been saving less. We find an important role of the rich for aggregate saving (Mian et al., 2021b; Bauluz et al., 2022), but only for the rich at middle ages. Elderly (both rich and poor) households have been dissaving in recent decades. We also investigate the dynamics of aggregate wealth. While Auclert et al. (2021) and Poterba (2001) focus on the role of the age structure of the population for aggregate wealth (holding the age-wealth profile fixed), we highlight that changes in the age-wealth profile and income inequality have been important for the boom in private wealth-to-national income ratios.

The rest of the paper proceeds as follows. Section 2 introduces the key concepts, methods, and data sources being used. Section 3 presents new stylized facts on the life-cycle profile of subsequent generations and on the distribution of wealth within cohorts and age groups. Section 4 decomposes generations' wealth growth across saving, capital gains and inheritances, investigating its role in inequality. We examine the aggregate household wealth-income ratio and the aggregate private saving rate in section 5. Section 6 concludes.

2 Concepts, methodology and data

The main data source we rely on is the Survey of Consumer Finances (SCF) administered by the Federal Reserve Board. We consider all survey waves from 1989 and 2019 and also include the historical waves of the SCF covered by Kuhn et al. (2020). The modern version of the SCF (since 1989) is known to be very representative of U.S. household wealth as its sampling strategy takes the very concentrated wealth distribution into account.[5] While this sampling strategy is not used for the historical SCF,[6] our focus is not on the top percentiles of the wealth distribution, so this is not a strong limitation. Following Kuhn et al. (2020) we pool survey waves in the historical part of the SCF+ by three-year intervals to reduce noise in the data. In accordance with DINA guidelines(Alvaredo et al. 2021), only adults 20 and older are considered. We split wealth equally between couples. We only consider the survey waves after 1960, this also accounts for changes in household composition over time. This is because we find the age structure of households in the 1950s survey waves to be anomalous. It appears that the age variable in the early waves was not reported as a continuous variable but only available in discrete bins, which means we cannot construct synthetic cohorts.

2.1 Macro and Micro Wealth and Income concepts

In this section, we describe our wealth concept as well as the harmonization with national accounts. As this is the focus of our study, we first focus on wealth.

Net wealth is the sum of assets less liabilities. We include all available asset and liability categories except vehicles and other non-financial assets, following the system of national accounts guidelines SNA 2008[7]. The historical SCF covers all major asset categories except defined benefit pensions, which are missing for the entire survey, and defined contribution pensions, which are missing before 1983. We impute defined benefit pensions using the procedure of Henriques Volz and Sabelhaus (2019) for the years 1989-2019. As we only consider the funded component of defined benefit pensions, we set the funded share of defined benefits to be consistent with the share of funded defined benefit pensions (of all defined benefit pensions) in the aggregate. Before 1983,

[5] The other major data source for the wealth distribution in the US, capitalized income tax data of Saez and Zucman (2016) only includes three broad age groups, so we do not make use of it for our study.

[6] Though Kuhn et al. (2020) correct for this.

[7] These assets represent, on average, three percent of net household wealth in the SCF

pension assets are imputed. We impute pension assets to these waves by using the age distribution of pensions in 1983. We roll this age distribution back following the change in life expectancy from earlier survey years to 1983 to account for changes in the age structure of the population. Before 1980 less than 10% of all household wealth was held in pension assets, so errors in this imputation would not affect our conclusions materially. We show the aggregate importance of pension wealth in the appendix figures F1a and F1b. Pension assets are one of the most components of the household wealth portfolio in recent years, precisely when our estimates of pension wealth are most reliable. Investment funds are also not recorded before 1971, but these only account for less than 1% of total wealth from 1950-1970, so we do not attempt to make a correction.

In a next step, we make the SCF consistent with macroeconomic totals from the Financial Accounts (FA) collected by Saez and Zucman (2016), which we also use to compute capital gains.

Making the SCF consistent with macroeconomic data is the goal of many studies, the most prominent being the Distributional Financial Accounts (DFA) Batty et al. (2019). We match asset and liability categories corresponding to the international system of national accounts (SNA 2008) guidelines, distinguishing six broad asset categories: Fixed income assets (bonds, deposits, currency), equity, investment funds, pension funds and life insurances, housing and business assets. Further, we distinguish two types of liabilities, short-term and long-term debt. Mapping the SCF asset categories to their SNA 2008 equivalents is straightforward; the precise matching can be seen in table A1 in the appendix. We then rescale the SCF components to be consistent with their aggregate counterparts. Batty et al. (2019) undertake a similar approach when reconciling the modern SCF with macroeconomic data, which they show to match well.

After making the SCF consistent with macroeconomic accounts for all waves, we further "unveil" the financial portfolio of households. In this step, we decompose intermediated financial assets into fixed income assets and equity. This is done by considering the asset allocation of both pension and investment funds as recorded in the Financial Accounts and then splitting them accordingly. This is important as increasingly large amounts of financial wealth are held in complex financial assets, such as pension and investment funds. Pension funds now constitute around half of the financial portfolio of US households, and the capital gains through indirect equity holdings therein are a major source of wealth accumulation. Hence we are able to decompose the entire financial portfolio into fixed income assets and equity, which allows us to calculate capital gains accordingly.

We further harmonize income in the SCF+ with NIPA incomes in order to be able to determine saving rates out of income. The SCF+ distinguishes three types of income across years: Labor and business income (which are not always clearly distinguished), capital income and transfer income. We match these concepts to their NIPA equivalents while making some adjustments to the NIPA data to ensure comparability. This means removing components of national income that are not captured in the SCF, such as imputed rents of owner-occupiers or income received by NPISH. The exact details of this procedure can be found in Appendix A.2.

2.2 Synthetic Saving

In the first step we decompose the accumulation of personal wealth at the aggregate using asset-specific accumulation equations (Bauluz et al. (2022); Artola-Blanco et al. (2020)). We decompose the growth of a given asset class into a volume effect (saving) and a price effect (capital gains or losses). For a given asset type (e.g., housing, business assets, bonds and deposits, equity, debt), we decompose our series using the following equation:

$$A_{t+1} = A_t(1 + q_{t+1}) + S_{t+1,A}, \tag{1}$$

where A_{t+1} and A_t are the real value at time $t + 1$ and t of a given asset as recorded in the financial accounts. $S_{t+1,A}$ is the net-of-depreciation saving flow in asset-type A during year $t + 1$. Finally, q_{t+1} is the real capital gain or loss from asset-type A between time t and t+1. In the previous equation, the capital gain component is obtained as a residual, since we observe all the other components (i.e., annual stocks of assets and flows of saving) in the national accounts. The capital gains we obtain match external sources. Figures F2b and F2a compare our measures of asset price changes to those from the Jorda-Schularick-Taylor Macrohistory database Jordà et al. (2019), showing that they match up very closely.

We then aggregate the accumulation of each asset class and debt from equation 1 to decompose the accumulation of net wealth into saving and capital gains:

$$W_{t+1} = W_t(1 + q_{t+1}) + S_{t+1} \tag{2}$$

Where W is the sum of all asset categories, net of liabilities, and q the weighted average of the capital gains in each asset type and debt (where the weights are given by the share of each wealth component in total net wealth). The saving S_{t+1} we obtain aggregate private saving, as corporate saving will be included in the saving from equation 1 when considering equity.

We apply the same framework to analyze the accumulation of wealth of different generations. Concretely, we adapt the synthetic saving method (Saez and Zucman (2016)) to the analysis of different birth cohorts, in line with previous work from Wolff (1999). Specifically, for a given asset type A (for instance, housing, business assets...) and a generation g, we can decompose wealth accumulation by the transition equation

$$A^g_{t+1} = A^g_t(1 + q_{t+1,A}) + S^g_{t+1}. \tag{3}$$

Here A^g_t refers to the real holdings of asset A of generation g at time t. The variable $q_{t+1,A}$ is the real capital gain or loss of asset type A between time t and $t+1$. We observe A^g_t directly in the SCF+ on a triannual basis and then interpolate to construct values in between. [8] The capital gains $q_{t+1,A}$ on the other hand, are the ones constructed from macroeconomic accounts in equation 1. Then the saving of generations in a specific asset are defined as the residual $S^g_{t+1,A}$, so that the synthetic saving equation holds. This framework allows us to decompose aggregate private saving, obtained in 1 into the saving done by different age groups. Using this methodology allows us to accurately capture the rise in corporate saving (Bauluz et al., 2022; Chen et al., 2017), which

[8] We interpolate the share of an asset component held by a given birth cohort. This means that we are consistent with aggregates also in the interpolated years.

account for a large fraction of aggregate saving in recent years. Our methodology assigns saving done by corporations to equity owners.

This accounting framework is widely used in the inequality literature to study wealth dynamics (Garbinti et al. (2020); Kuhn et al. (2020); Martínez-Toledano (2020); Piketty et al. (2018)). In these applications, one limitation is the lack of cohort stability, as households transition between cohorts. For our purpose, this is not a limitation as birth cohorts are made up by the same households over time - the only transition may be the exit of households through death, for which we account through our inheritance estimation. However, we will later also look at wealth groups within cohorts, for example, the top decile of wealth holders within a cohort. The extension of equation 3 to this setting is straightforward. Here the synthetic saving decomposition assumes that there is no transition between wealth groups between two years. In practice, there is always some mobility between wealth groups, but as the groups that we choose (bottom 50%, middle 40% and the top decile) are large, the persistence within these groups is relatively high. We present evidence on wealth group persistence in the PSID in appendix C and show that it is generally high and comparable to magnitudes found in Kuhn et al. (2020).

Our decomposition assumes that different age groups experience the same capital gain for a given asset. With different portfolios, different cohorts may, however, still experience differing capital gains on their wealth. Whether capital gains for a given asset class vary substantially across age groups is an open question. While recent research suggests that returns vary systematically across wealth groups Fagereng et al. (2020), this variation in returns could be coming from either the income flow component of returns or the revaluation component. Available evidence from the US Mian et al. (2021b) and Norway suggests Fagereng et al. (2020) that most variation comes from the income flow component.[9]

Finally, we aggregate these equations over all asset classes. We also amend the asset accu-

[9]Since returns are the sum of capital gains and income flows, we asked the authors of Fagereng et al. (2020) if the capital gain component drives the observed variation in their returns. In an email exchange, the authors suggested that differences in asset-specific capital gains across wealth groups are fairly small, at least for housing and public equity (the two assets they could check). We are grateful to the authors for sharing this information.

mulation equations by adding the net inheritances and gifts[10] received by generation g in time $t+1$, which are denoted by I^g_{t+1}. Doing so reflects the fact that inheritances and gifts amount to transfers between generations. This yields a simple accumulation equation

$$W^g_{t+1} = W^g_t(1 + q_{t+1}) + S^g_{t+1} + I^g_{t+1} \tag{4}$$

in which W^g_t is the net wealth of a given generation and q_{t+1} are the aggregate capital gains. Again, the variables W^g_t and q_{t+1} are determined by the microdata (resp. macrodata). The estimation of I is more involved and is described in the next section. The saving S_{t+1} are "synthetic" in the sense that they are not computed directly from the data but rather as residuals of the accumulation equations.

2.3 Estimation of Inheritances and Gifts

We estimate inheritances using the mortality multiplier approach (Alvaredo et al., 2017; Feiveson and Sabelhaus, 2019), complemented with estate tax and SCF data. Our estimates are constructed by using mortality rates and wealth holdings to forecast the bequests left by different households in a given year. In this section, we outline the estimation, details are given in Appendix B, where we also show that our estimates compare well to existing approaches in the literature. In the next sections, we will document that inheritances make up only a very small part of wealth accumulation, as is also found using detailed inheritance tax data from Norway (Black et al., 2022). Hence, even though our measure of inheritances and gifts is imperfect, we conclude that any changes in measurement are unlikely to affect results.

We take mortality rates from the Social Security Administration (SSA) and adjust for the mortality-wealth gradient using the adjustment of Saez and Zucman (2016). To those bequests, we make two further deductions, as in Feiveson and Sabelhaus (2019). We first subtract charitable giving and funeral costs from the inheritance flow, as this does not pass to the next generation.

[10] That is, the gifts and inheritances received by a generation less the gifts and inheritances given by a generation.

The amount of charitable giving follows the observed amounts in US estate tax data.[11] Then we calculate the estate tax on the remaining estate and subtract it from the inheritance flow. To do so, we collect estate tax schedules since 1950. The total flow of inheritances compares well to available estimates from Feiveson and Sabelhaus (2019) and Alvaredo et al. (2017) as we show in figure B19 in the Appendix.

We distribute inheritances following the observed density of reported inheritance in the SCF. The SCF records inheritances in a separate module, which is available since 1989. The inheritances reported include only those received from outside of the households. In particular, inheritances from a deceased spouse will not be included in these reports. This means we need to take a stance on the share of inheritances going to the spouse and the share going to subsequent generations. We assume that inheritance go to surviving spouses if these exist and go to the next generation only when both partners die as in Feiveson and Sabelhaus (2019).

Finally, inter-vivos transfers also transfer wealth between generations. We account for these in a similar way, taking the total amount of gifts given from the SCF after 1989 and assuming that the gift flow is 20% of the bequest flow before 1989 following Alvaredo et al. (2017).[12] We again distribute the gift flow following the observed density of gifts received in the SCF.

3 New stylized facts

This section presents new stylized facts on the wealth accumulation of different U.S. cohorts. To the best of our knowledge, we are the first to document these facts from a long-run perspective.[13]. Wealth refers to net wealth and is measured on a per adult level. We take the US data from the SCF+ Kuhn et al. (2020), but only after making the latter data source consistent with national accounts as is described in section 2.

We proceed in two steps. First, we document the wealth accumulation of subsequent birth

[11] Estate Tax Data is available at https://www.irs.gov/businesses/small-businesses-self-employed/estate-tax

[12] The observed ratio of gifts to the bequest flow in the SCF is very close at 21 %.

[13] Gale et al. (2020) document the evolution of wealth inequality across age groups in the U.S. since 1989. Bartscher et al. (2020) document the debt owed and housing owned by different U.S. generations since 1950.

cohorts. We track the wealth holdings of these cohorts over their life-cycle and discuss differences in their evolution. Throughout, we will be using four birth cohorts: 1900-19, 1920-39, 1940-59 and 1960-79. We observe these birth cohorts throughout most of their working lives and they evenly split the 20th century. In a second step, we turn from birth cohorts to fixed age groups and show the evolution of wealth inequality between age groups.

3.1 Life-cycle wealth accumulation across generations

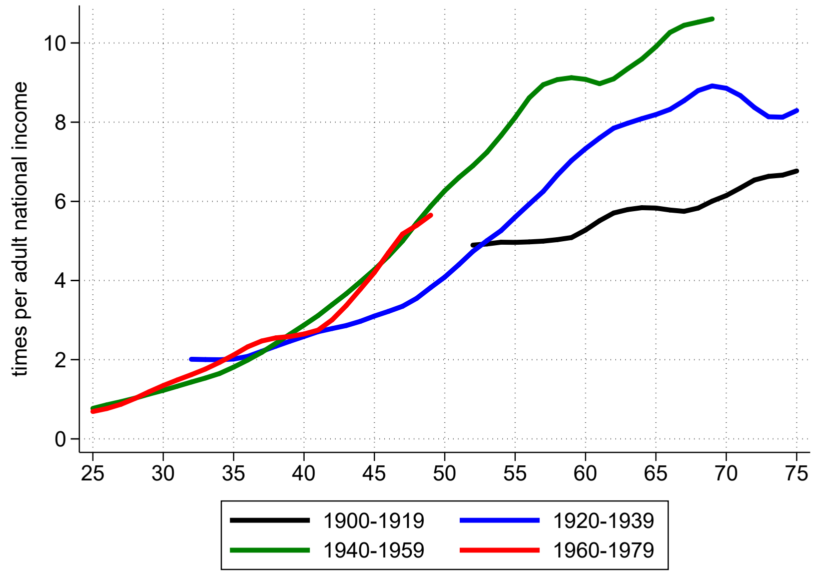
In this subsection, we investigate the life-cycle wealth accumulation of different birth cohorts in the US since 1960.[14]Figure 2 plots the evolution of the average wealth (normalized by per adult national income)[15] from age 25 to 70 for the four generations. It illustrates a key result of this paper. In all cases, we observe an increase in cohorts' wealth-income ratios up to age 60, followed by stagnation from age 60 onward. This stagnation after age 60+ contradicts the decline predicted by the standard life-cycle model. Importantly, the accumulation pattern has not been stable across time. We identify a much steeper life-cycle wealth accumulation profile for recent cohorts. All cohorts start from similar wealth levels (1 to 2 times per adult income at age 30), but the more recent ones (e.g., those born between 1940 and 1960) reach much higher wealth by retirement. These more recent cohorts are approximately 65% wealthier when old than their predecessors. In other words, the boom in aggregate wealth-income ratios (Piketty and Zucman 2014) is the boom of the generations born around 1950 (e.g., the baby boomers).

In line with Gale et al. (2020), we also observe that the most recent birth cohorts (those born in the 1960s or 1970s) underperform prior generations. This is particularly visible around age 30-35 and is consistent with substantially larger leveraging of newer cohorts, who need to obtain larger mortgage debt to buy a house (Bartscher et al. 2020). This much larger leveraging is

[14]While the SCF+ in principle starts in the 1950's, we exclude the first ten years, as reporting of age in the first 10 years is not exact. For details see appendix A.3.

[15]We show wealth as a percentage of per adult national income to account for the economic growth. Moreover, wealth as a percentage of per adult national income is directly comparable to the aggregate wealth to income ratio, so the link to the macroeconomic aggregates we analyze is made clear visually. We show wealth as a percentage of the group's own income in the appendix. The downside here is that income of the elderly is generally low, so the denominator changes a lot after age 60+.

Figure 2: **Life-cycle wealth accumulation**



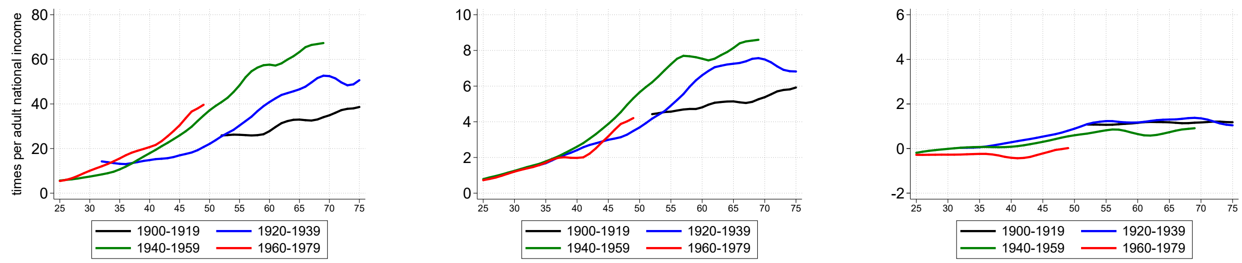
This Figure plots the average wealth of four cohorts during their life cycles, expressed as a share of per adult income. Series are 7-year averages. Figure Appendix F3 shows the same results expressed as a share of their own group's average income.

explicitly shown in Figure Appendix F7, which shows asset composition over cohorts' life-cycle.

Looking at the life-cycle wealth profile *within* cohorts is equally essential as it is a well-established fact that income and wealth inequality widened substantially in the US in recent decades (e.g., Piketty et al. 2018; Figure 1). We do this in Figure 3. We find that the steeper wealth accumulation for subsequent generations almost entirely reflects the development of the upper half of the within-cohort distribution. By contrast, the bottom-50% of each new cohort does worse than their predecessors. Our results for subsequent generations align with findings in Bauluz et al. (2022), whom show that the global wealth boom since the 1980s went to the top-10 and middle-40%, by-passing the lower half of the population.

It is also very important to reflect on the wealth *levels* the different cohorts reach. For all cohorts and within-cohort groups, we find that adults around the age of retirement hold more wealth than younger ones. Yet, the amount of wealth around retirement varies dramatically among them. While the top-10% reaches as much wealth as 40 to 60 times per adult income, in the case of the bottom-50% older adults barely get the equivalent of 1 time per adult income. In other words, half the US population holds little wealth (Aguiar et al. 2020), even around retirement (Poterba, Venti and Wise, 2011).

Figure 3: Life-cycle wealth accumulation of the top-10%, middle-40% and bottom-50%-



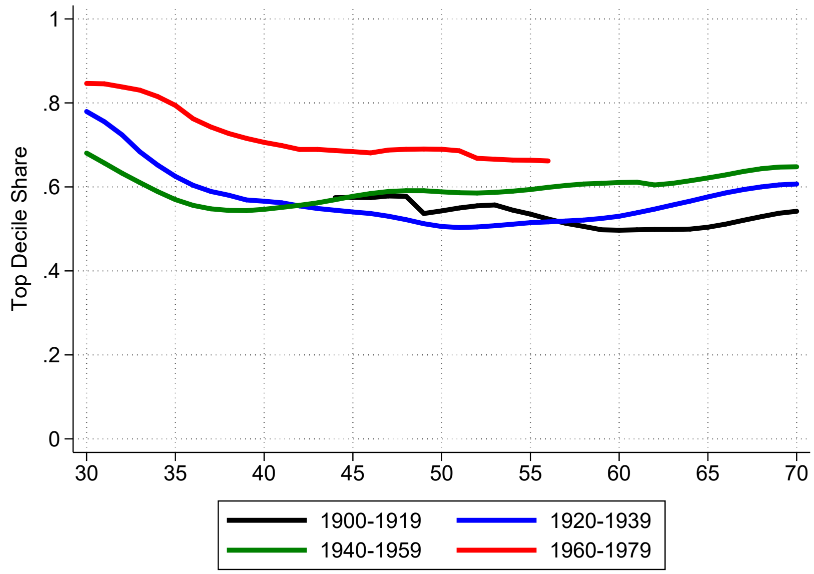
(a) Wealth of the top-10% (b) Wealth of the middle-40% (c) Wealth of the bottom 50%

This Figure plots the average wealth of three within-birth cohort wealth groups (top-10%, middle-40% and bottom-50%) during their life cycles, expressed as a share of per adult income. Series are 7-year averages. For example, the average wealth of the top%10 at age 70 of the cohort born in 1900-19 is slightly below 40 times per adult income. Figure Appendix F4 shows the same results expressed as a share of their own group's average income.

We conclude the within-cohort analysis from a different perspective. Figure 4 shows the wealth inequality within each cohort over their life-cycles. Concretely, for each cohort, we plot the share of the wealth owned in a given age group by the top-10% of that age group.[16] For all cohorts, wealth inequality is somewhat higher at the beginning of their working age, slightly compressing thereafter (this pattern of higher inequality at lower ages is a well-known fact; see, for example, Garbinti et al. 2020 or Martínez-Toledano 2020). Consistent with findings in Figure 3, we document that the within-cohort inequality was lower for older cohorts and has increased substantially for the new ones. The Figure shows that we observe the four cohorts in middle age (e.g., around age 50). To put in number the increase in top-10% wealth shares, we compare the numbers in those years. While the average wealth owned by the top-10% of the cohort born in 1900-19 was 54%, it is 68% for the cohort born in 1960-79. This is an increase of 14pp, which is twice the increase for the national top-10% since 1980 (i.e., the top-10% of all households – irrespective of age or cohort; see Figure **??**).

[16]Figure Appendix F8 shows the same results for the middle-40% and bottom-50%.

Figure 4: **Within-cohort top-10% wealth share over the life-cycle**



Notes: This Figure display the share of a cohort's wealth owned by the top-10% at a given age. For example, the share of the wealth of the cohort born in 1940-59 at age 50 owned by the richest top-10% of that age is approximately 60%.

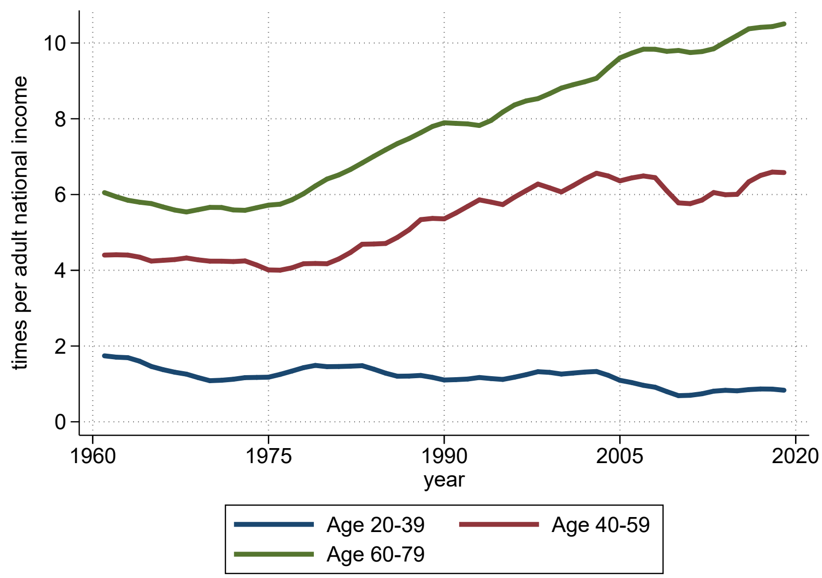
3.2 Wealth inequality across age groups

Previously we saw that more recent cohorts reach higher wealth levels when old than their predecessors despite starting their working lives from similar levels. This, in turn, should have impacted the distribution of wealth across age groups over time. This subsection looks at this question.

Figure 5 clearly shows a divergent pattern across age groups previously not documented. The Figure shows the average wealth as a percentage of per-adult national income for three age groups: 20-39, 40-59 and 60-79. Before the 1980s, the wealth-income ratios of different groups followed a relatively constant pattern. The older groups (e.g., those after age 60) had cumulated the equivalent of 5-to-6 years of per-adult income over their life-cycle, the middle-aged groups attained levels of 4 times per adult income, while the young (i.e., at age 20 to 40) had, on average, wealth holdings around 1.5 times the average annual income.

Starting in the 1980s, however, the wealth gap across age groups experienced a sustained increase. Old and middle-aged adults increased their wealth-income ratios substantially, reaching levels as high as 10 and 6, respectively. By contrast, young adults barely experienced any increase since 1980 and even some decline.[17] These results indicate a substantial widening of the age-wealth gap since the 1980s. For instance, the average wealth distance between old and young individuals was around four times per adult income in the 1960s-1970s, while it is closer to nine times today.

Figure 5: **Wealth-income ratios of selected age groups**



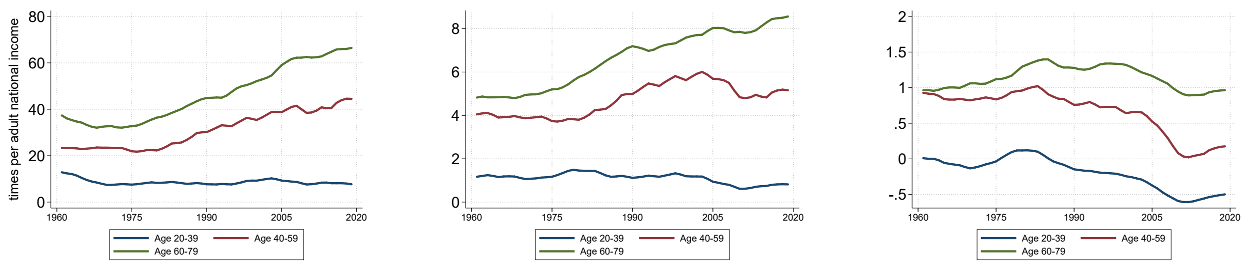
Notes: This figure shows the ratio of the average wealth of selected age groups over per adult national income. Series are 7-year averages. Figure Appendix F9 shows the same results over own group's average income.

We now turn to analyze wealth holdings within age groups over time. Consistent with Figure 3 (which, instead, looked at birth cohorts), we identify that the upper half of the within-age distribution (in particular, the top-10%) drives the previous results (Figure 6). Namely, the top-10 and middle-40% attain much higher levels when old today than 40 or 60 years ago. This is not true for the poorest half of the population, which used to achieve higher wealth levels in the earlier decades than today. Figure 6 also conveys additional insights into the wealth into the wealth attained by different within-age groups. For example, it is striking that the "young top-10%" start

[17] This decline is partly driven by higher leverage from young adults in recent years, for which acquiring a house involves a much higher debt burden than decades ago (see Appendix Figure F11, with the asset-portfolio shares for age groups over time).

their working lives with more wealth than the "old bottom-50%". This suggests that the starting conditions are important to how much wealth is accumulated over the life-cycle (in line with studies on wealth mobility; see Black et al. 2020b, Adermon et al. 2018, Boserup et al. 2013 or Pfeffer and Killewald 2015.).

Figure 6: Wealth-income ratios of selected age-wealth groups



(a) Wealth of the top-10% (b) Wealth of the middle-40% (c) Wealth of the bottom 50%

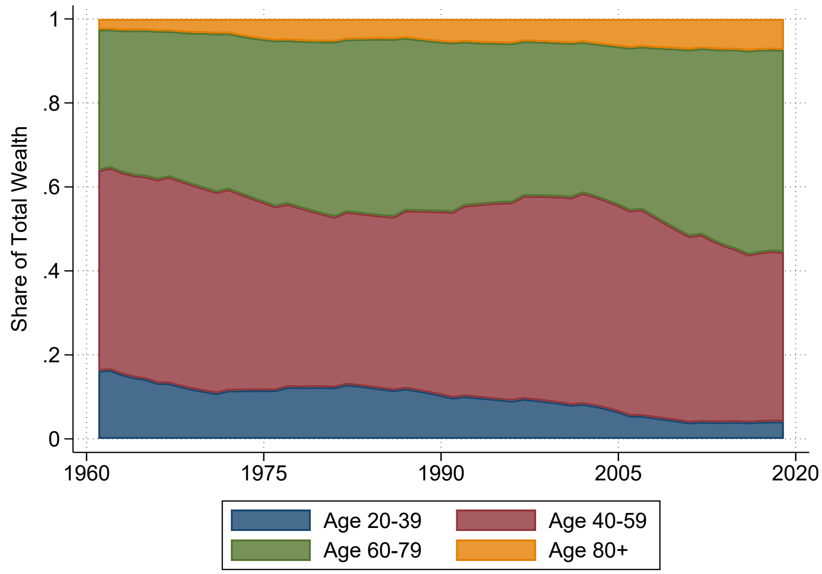
Notes: This Figure shows the ratio of the average wealth of selected within-age groups (e.g., top-10% age 20-39, middle-40% age 20-39, etc.) over per adult national income. Series are 7-year averages. Figure Appendix F10 shows the same results over own group's average income.

To better understand the extent of the growing age-wealth gap, Figure 7 shows the share of total household wealth owned by different age groups since 1960. Consistent with the analysis above, we observe a drastic increase in the percentage of total wealth owned by old adults. While adults 60+ held around one-third of total wealth in the 1960s, their share has increased to more than half of total wealth.

Of course, the share of wealth owned by a given population group (e.g., the young) depends not only on their mean wealth (Figure 5) but also on the size of the group. For this reason, we shed additional light on the role of the two components in driving age-wealth shares, as demographic changes have also been important in the last decades (e.g., Poterba 2001). In Appendix E, we carry a simple counterfactual exercise where one component is fixed as in 1980, and only the other varies. This simple shift-share decomposition reveals that changes in mean wealth (and not the demographic structure) account for most of the rise in the share of total wealth owned by old adults.

All in all, this subsection documents the strong aging of wealth that happened in recent

Figure 7: **The distribution of household wealth across age groups**



Notes: This figure plots the share of total household wealth owned by four age groups (20-39, 40-59, 60-79 and 80+) over time. Series are 7-year averages.

decades and that is mostly concentrated in the upper half of the within-age distribution (the old top-10% and the old middle-40%). The next two sections investigate the main drivers behind the divergent accumulation patterns.

4 Deconstructing life-cycle wealth growth and inequality

Given the varying patterns of wealth accumulation for subsequent generations, it is natural to ask about the drivers of their life-cycle wealth growth. In this section, we do three things. First, we explore macroeconomic trends in wealth accumulation over the last decades. Second, we link them to the wealth accumulation of different generations. Third, we investigate the role of each component in explaining cohort-specific wealth-income ratios and wealth inequality. This decomposition, in turn, will allow us to investigate the main drivers of aggregate wealth and private saving in section 5.

4.1 Macroeconomic trends and their relationship to wealth accumulation

Two of the most important macroeconomic trends across rich countries since 1980 are the strong increase in household wealth-to-income ratios (as seen in figure 1a) and a boom in asset prices (e.g., Knoll et al. 2017; Kuvshinov and Zimmermann 2021). In this subsection, we establish the size of these trends for the US and describe how they will be linked to the wealth accumulation of subsequent cohorts. We use an accounting framework (e.g., Piketty and Zucman 2014) to decompose wealth accumulation in the US into two components: saving and capital gains. Our benchmark definition of saving is private saving, which sums corporate and personal saving[18].

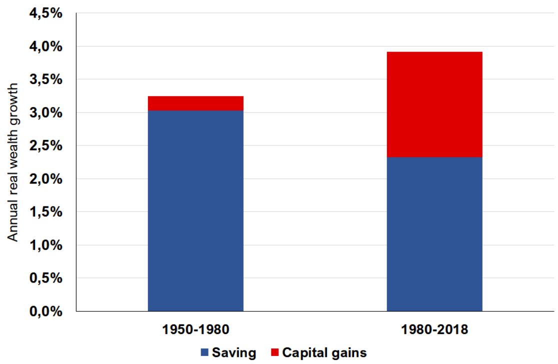
Figure 8a shows annual wealth growth decomposed into saving and capital gains for the periods from 1950 to 1980 and 1980 to 2018. There are two important things to notice. First, wealth growth rates have increased markedly between the two time periods, from around 3.2 percent to nearly 4 percent.[19]

Importantly, the nature of wealth growth has also changed between these time periods. Asset prices now play a central role in shaping wealth-income ratios in the aggregate and account for nearly half of their rise. Before that, capital gains played a comparatively minor role. To have a better sense of the magnitude of saving and capital gains over time, we plot in Figure 8b the decennial average saving and capital gains, expressed as a share of national income. It clearly conveys the growing importance of capital gains in recent years, whose value has been even higher than saving in the 1990s and the 2010s. Rising capital gains are linked to both an increase in housing and equity prices. As shown in Figure 8c, equity and housing capital gains have followed a sustained increase since 1980, in contrast with the mild increase that happened in the years before. In Appendix Figure F12 we also show capital gains on fixed-income assets. As the valuation of these assets largely depends on changes in consumer inflation, the moderation of consumer prices since the mid-1980s has implied lower negative gains in these (largely nominal) assets.

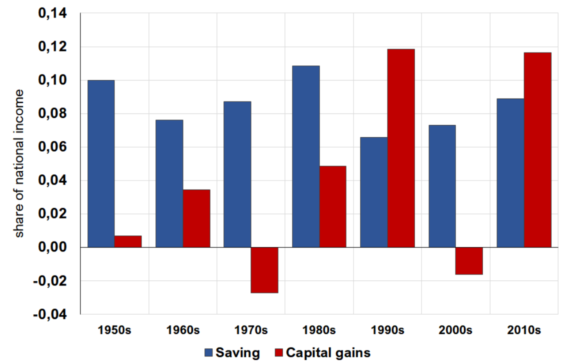
[18] More concretely, we include the share of corporate saving accrued to households as part of their saving in equity. As a result, our measure of equity capital gains does not include the increase due to retained earnings (Saez and Zucman 2016;Mian et al. 2021b; Bauluz et al. 2022). See section 2.

[19] In particular, wealth growth has been stronger than income growth, as can be seen from the rising wealth-to-income ratios during this time frame.

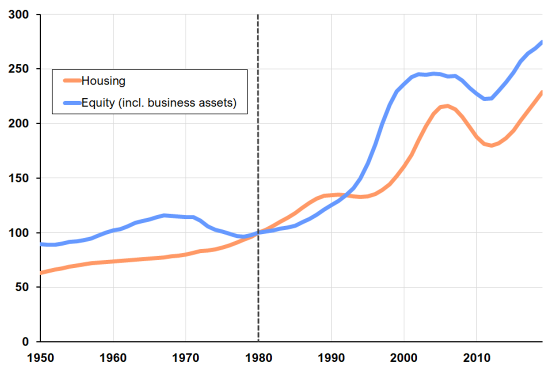
Figure 8: Macroeconomic trends in wealth accumulation, 1950-2019



(a) Annual household wealth growth: two periods



(b) Saving and capital gains (as a share of national income): decennial averages



(c) Capital gains index, 1980=100

Notes: Figure 8a decomposes the household sector's real average annual wealth growth into the contribution from saving and capital gains. Results are computed over the sub-periods 1950-1980 and 1980-2019. Figure 8b shows decennial averages for saving and capital gains expressed as a share of national income. Figure 8c shows the evolution of housing and capital gains over time, expressed as an index taking the value of 100 in 1980. Results in all cases use the asset-specific accumulation equations (see section 2).

In the next subsection, we link these facts to the life-cycle accumulation of different cohorts. Since our microdata are consistent with macroeconomic accounts (see section 2), any distributional flow we estimate can be directly matched with the corresponding macroeconomic aggregate (following the spirit of the Distributional National Accounts project of Alvaredo et al. (2021) and the Distributional Financial Accounts of Batty et al. (2019)). In addition to saving and capital gains, at the cohort level, we also estimate the role of inheritances and gifts, a flow that cancels out at the aggregate household level but for which net givers and net receivers exist.[20]

[20] At the aggregate level, the flow of inheritances and gifts has increased in advanced economies, in parallel to the rise in wealth-income ratios. See Alvaredo et al. (2017) for a comparison of the trends in the US, France, Germany and UK.

4.2 Life-cycle wealth growth decomposition

The next step in our analysis is to investigate how life-cycle wealth accumulation evolved over time and how this impacted the distribution of wealth within generations.

As we saw in Figure 2, newer cohorts (e.g., those born in 1940-1959) are substantially wealthier by the age of retirement than previous cohorts were.[21] To understand these results, we decompose life-cycle wealth growth across three components: saving, capital gains and inheritances. We use the accounting framework introduced in section 2 (Equation 4), previously used in the literature by Wolff (1999) or Feiveson and Sabelhaus (2019).[22]

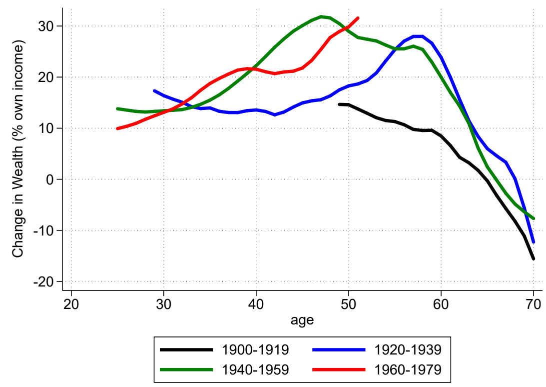
Figure 9 shows the results of this exercise. Annual flows are shown as a percentage of the income earned by different cohorts at a given age to allow for a more accurate comparison. Note that both income and wealth are re-scaled to match macroeconomic totals, as described in section 2. The Figure shows annual wealth growth (Figure 9a) and its three sub-components: saving rate (Figure 9b), capital gains rate (Figure 9c) and net inheritance flows (inheritance outflows minus inflows; Figure 9d). Note that, at a given age, the sum of saving, capital gains and inheritances adds to wealth growth. This analysis is a core contribution of our paper. To the best of our knowledge, no previous study decomposes the sources of wealth growth of different generations in the US. In Feiveson and Sabelhaus (2019), a similar analysis is undertaken by pooling all adults in the modern waves of the SCF (i.e., from 1989 to 2016), hence, not comparing the wealth accumulation of different cohorts. Our results for the most recent cohorts (those captured in their study) are largely consistent with those in their paper.

We note a number of new insights. First, all cohorts follow an inverted-U shape pattern of wealth growth (in line with basic predictions of the life-cycle model), with the highest growth happening in the middle ages (age 40-60). Importantly, we find that each new cohort reaches higher wealth growth at middle age than the previous ones, consistent with the steeper wealth-income ratios for newer cohorts previously shown in Figure 2 (see also Figure Appendix F3 where

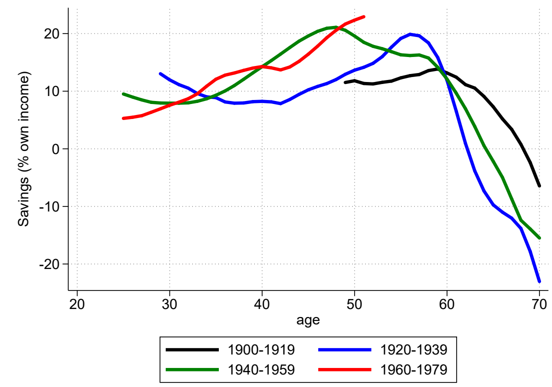
[21] This, in turn, generated a pronounced increase in the inequality across age groups since the 1980s (Figure 5)

[22] Mian et al. (2021c) also use a similar methodology in a subsequent study after our first working paper.

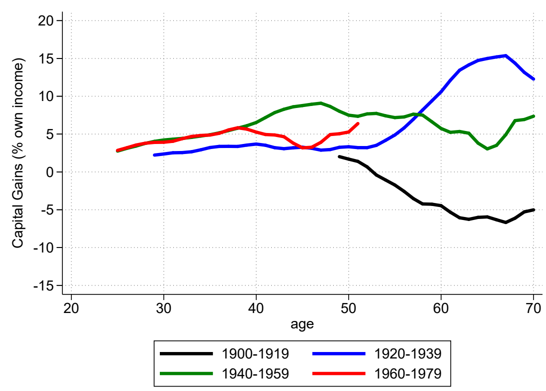
Figure 9: Life-cycle wealth growth and its decomposition (saving vs. capital gains vs. inheritances)



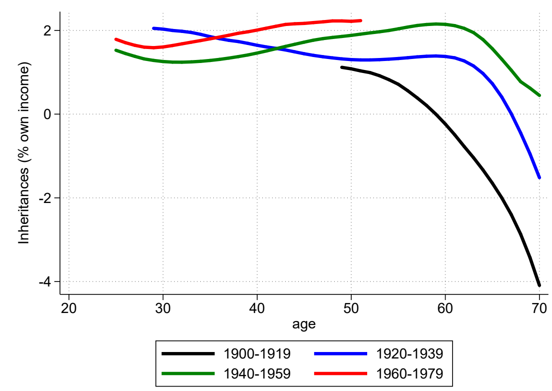
(a) Wealth changes over the life-cycle



(b) Saving rate over the life-cycle



(c) Capital gains over the life-cycle



(d) Net inheritances and gifts over the life-cycle

This Figure displays annual changes in wealth (Figure 9a) decomposed into the contribution of saving (Figure 9b), capital gains (Figure 9c) and inheritances and gifts (Figure 9d) along the life-cycle of four birth cohorts (born in 1900-19, 1920-39, 1940-59 and 1960-79) from age 25 to age 70. The flows are shown as a percentage of the average annual income of the cohort and are computed using the methodology outlined in section 2.

cohort-specific average wealth is divided by its own income, instead of per adult income).

Saving is the most critical component of wealth accumulation, but it has experienced notable changes over time. We find that recent cohorts save more in the middle ages and dissave much more when old. We refer to this phenomenon as a "life-cycle saving re-shuffling", reflecting a lifetime rebalancing towards more saving in the middle ages and less when old. As we see in section 5, this changing pattern has significantly impacted the evolution of aggregate saving, producing a marked polarization of saving.

Capital gains played an extremely limited role and were, in fact, negative for the oldest cohorts (e.g., those born in 1900-19). Not only were house and equity prices not growing in the 1960s and 70s, but inflation also led to a negative revaluation of nominal assets, explaining the negative capital gains. However, those born in the 1920s and onward experienced substantial capital gains during their lives. These more recent cohorts spent their working lives and initial retirement in the post-1980 period, coinciding with the structural rise in asset prices (Figure 8a). In particular, newer cohorts saw large gains in their holdings of equity and housing. Moreover, the moderation of consumer inflation from the mid-1980s also reduced the negative capital gains in fixed-income assets.

Inheritances (including inter-vivos gifts) constitute a constant and steady source of wealth accumulation for these cohorts. In terms of size, inheritances are, however, not yet a major source of wealth accumulation for these cohorts. This would be consistent with evidence for Norway suggesting a relatively limited role of inheritances in shaping lifetime wealth, although for some these can be substantial (Black et al. 2020a).[23] However, a note of caution on the interpretation of our results is needed. Inheritances in this study are a net flow (outflows minus inflows) for a given group. This means that certain individuals are net givers and others net receivers, with these transfers being sizable for some of them.

Interestingly, including capital gains in profiles of life-cycle wealth accumulation here explains to a large extent the observed deviations from theoretical Modigliani life-cycle smoothing (Modigliani 1986). The key empirical challenge to this has been the stable or only slightly declining wealth after retirement, also called the 'retirement-saving puzzle' (De Nardi et al. 2016). Our analysis shows that distinguishing saving and capital gains can explain this puzzle. Namely, capital gains on existing assets go a long way in explaining why wealth growth is close to zero at the end of the life-cycle. These cohorts are, in fact, dissaving but still holding their wealth constant.

Why a similar pattern cannot be observed for the prior cohorts remains a puzzle. One possibility is that households at older ages do not aim to reduce their wealth holdings significantly and

[23]On the other hand, there is growing evidence inheritances are important in shaping other dimensions of economic welfare, such as income (Morelli et al. 2021). Inheritances are also much larger in absolute terms for rich heirs than for poorer ones, and the likelihood of receiving an inheritance increases with wealth (Elinder et al. 2018; Boserup et al. 2016; Nekoei and Seim 2022).

target a certain level of wealth (De Nardi et al. 2010). For the older cohorts (born in 1900-19), this was possible only by not dissaving significantly. The younger cohorts, by contrast, are able to dissave since this is compensated by sizable asset price gains.[24] Overall, our findings for the four cohorts confirm a basic prediction of the life-cycle model regarding saving. That is, households save substantially more when they are in the middle of their working life and then reduce their saving significantly when they reach retirement age.

4.3 Decomposing cohort-specific wealth-income ratios and inequality

The previous decomposition allows us to shed further light on the drivers behind the varying wealth accumulation patterns we documented in section 3. More concretely, we investigate the role that saving, capital gains and inheritances had for subsequent cohorts on two dimensions: cohort-specific wealth-income ratios (Figure 10a) and within-cohort wealth inequality (Figure 4).

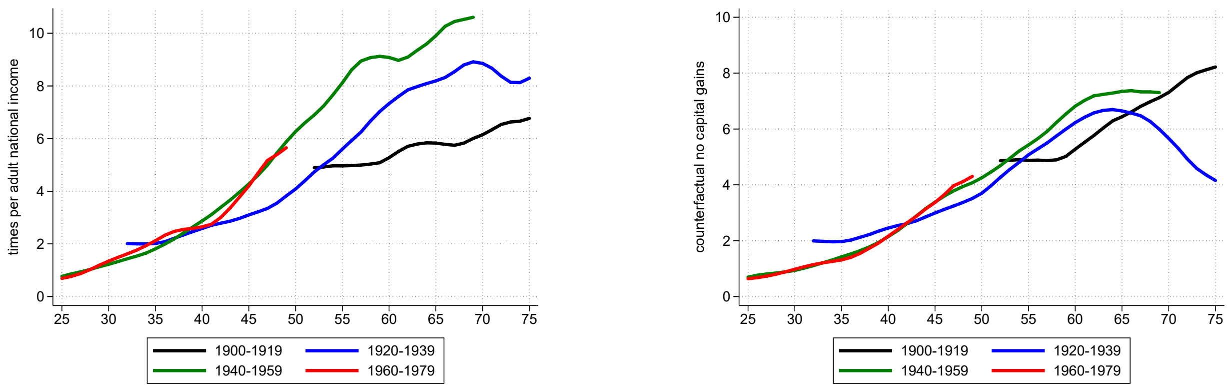
A natural starting point is to investigate the extent to which higher wealth-income ratios reflect the boom in asset prices that happened since the 1980s. To estimate these effects, we consider a simple counterfactual exercise: suppose there had been no capital gains in assets since the 1950s; how would this have affected the documented wealth-income ratios?[25] This is what is depicted in Figure 10. The left panel shows the observed wealth-income ratios (i.e., Figure 2) while the right panel displays the counterfactual results absent capital gains.

Absent capital gains, the wealth-to-income ratios of the generations born after 1920 change strongly. In fact, all cohorts' wealth-income ratios virtually look the same once capital gains are excluded from wealth accumulation. Especially after the age of 50, when many assets have been accumulated, the absolute effect of these capital gains is particularly striking. For the earlier cohorts (i.e., those born in 1900-19), eliminating capital gains makes little difference, as they mainly accumulated wealth during 1960-1980, when capital gains were generally low or even

[24] The channel of saving through capital gains is also explored for Norway in Fagereng et al. (2021), where including capital gains significantly increase gross saving rates of rich households (where gross saving is defined as the sum of saving and capital gains).

[25] Needless to say, this is a simplistic exercise, as it does not consider general equilibrium effects. Still, given the sizeable rise in asset prices, it can be suggestive of their effect.

Figure 10: Life-cycle wealth accumulation of selected birth cohorts before and after excluding capital gains



(a) Observed series

(b) Counterfactual without capital gains

Notes: This Figure shows the average wealth-to-per adult national income ratios of four generations as observed (left panel) and in a counterfactual without capital gains since 1960 (right panel). See section 2 for details on the methodology. See Appendix Figure F5 for the same chart expressed as a share of the cohort's own income (instead of per adult income).

negative.[26]

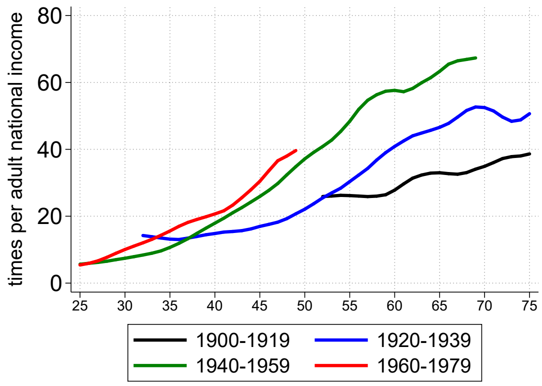
While the previous result is true for cohorts, it is not for within-cohort wealth groups (Figure 11). Strikingly, once we exclude capital gains, we find that differences for the bottom-50% across subsequent cohorts widen markedly (Figure 11f) instead of approaching. In the observed series (Figure 11e), the bottom half in more recent cohorts holds less wealth than in previous cohorts. However, this worsening is even worse in the absence of positive capital gains. Our results indicate that for the bottom-50% of the cohorts born after 1940, wealth would be negative during their whole life-cycle if not for the rise in asset prices. By contrast, the top-10% from the newer cohorts still reaches higher wealth-income ratios than previous generations after excluding capital gains, reflecting the important role of saving.[27] These results are in line with Bauluz et al. (2022), who document a similar pattern for wealth groups but look at the cross-section of the total population (instead of looking at individual birth cohorts).

[26]Appendix Figure F6 shows the wealth-income ratios of the four cohorts using as denominator the cohort-specific income instead of per adult income. Trends are broadly the same, with wealth-income ratios becoming even more similar once we exclude capital gains.

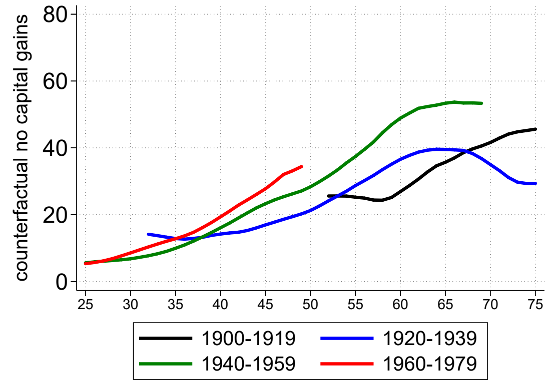
[27]This result primarily reflects the fact that income inequality increased over the period. If we use cohort-specific income instead of per adult income, the wealth-income ratios of the top-10% of subsequent cohorts virtually converge. See Appendix Figure F6.

Next, we turn to wealth inequality within cohorts. As we saw in section 3 (Figure 4), within-cohort wealth inequality has increased in recent decades, being higher in more recent cohorts than in those born in the first decades of the 20th century. In our microdata, we observe all four cohorts at age 45-55. In Table 1, we show the wealth share of the top-10% from within each generation at around age 50, making it possible to compare the development of inequality across the four cohorts at the same age. It reflects a marked increase in top-10% wealth shares over time, of around 14pp (from 54% to 68%). To put this number in perspective, it is twice the increase observed in the population as a whole since the 1980s (Figure **??**).

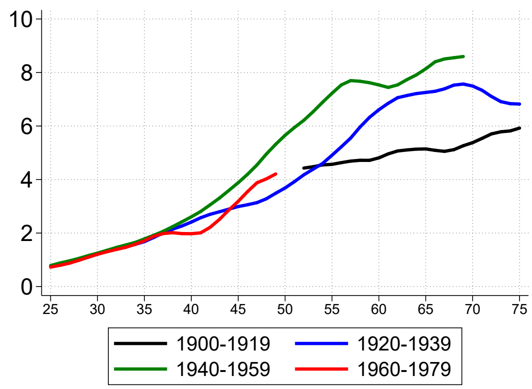
Figure 11: Life-cycle wealth accumulation of selected birth cohorts before and after excluding capital gains (within-cohort)



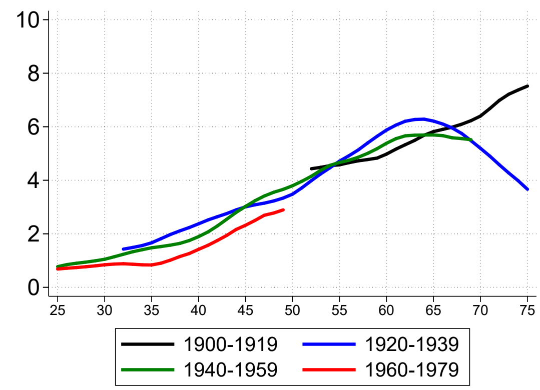
(a) Top-10%: observed series



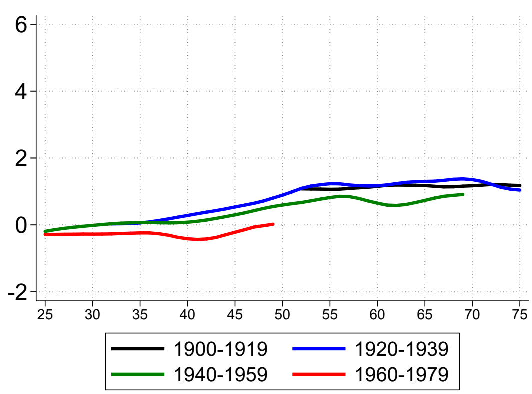
(b) Top-10%: counterfactual without capital gains



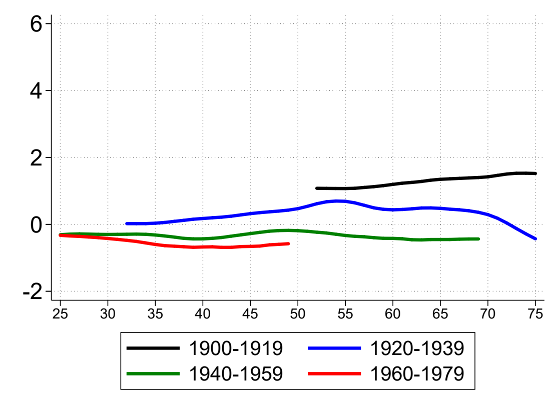
(c) Middle-40%: observed series



(d) Middle-40%: counterfactual without capital gains



(e) Bottom-50%: observed series



(f) Bottom-50%: counterfactual without capital gains

Notes: This Figure plots the average wealth of three within-birth cohort wealth groups (top-10%, middle-40% and bottom-50%) during their life cycles, expressed as a share of per adult income as observed (left panel) and in a counterfactual without capital gains since 1960 (right panel). See section 2 for details on the methodology. See Appendix Figure F6 for the same chart expressed as % of the group-specific income (instead of per adult income).

Table 1: Observed and counterfactual wealth shares within birth cohorts

	Observed	Only savings	Only savings + inheritances
1900–1919	.54	.54	.54
1920–1939	.53	.57	.57
1940–1959	.58	.69	.68
1960–1979	.68	.82	.79

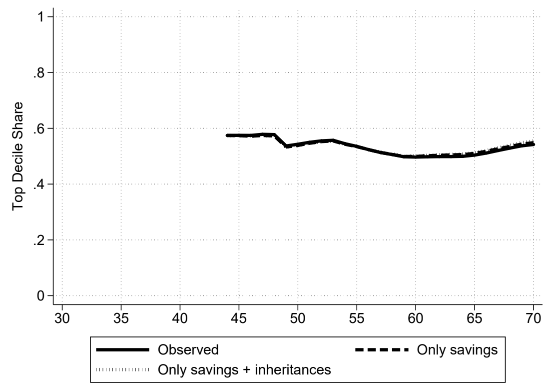
Notes: This table shows the top decile share of the 4 birth cohorts as observed (left column) and in two counterfactuals. The first counterfactual assumes that all wealth accumulation happens through savings, the second one assumes only savings and inheritances. Savings and inheritances are constructed as in section 2. We compute observed and counterfactual wealth shares between ages 45 and 55 as we observe all cohorts during most of these ages.

To understand the relative contribution of saving, capital gains and inheritances to within-cohort wealth inequality, we conduct a counterfactual exercise. More concretely, we simulate the evolution of wealth shares in two scenarios, where we simulate the accumulation of wealth for all within-cohort wealth groups based on: (i) saving only (e.g., assuming no inheritances or capital gains) and (ii) saving and inheritances only. We then compare these results with the observed series, which include saving, inheritances and capital gains. Results are presented at different life-cycle stages in Figure 12 and around age 50 in Table 1.

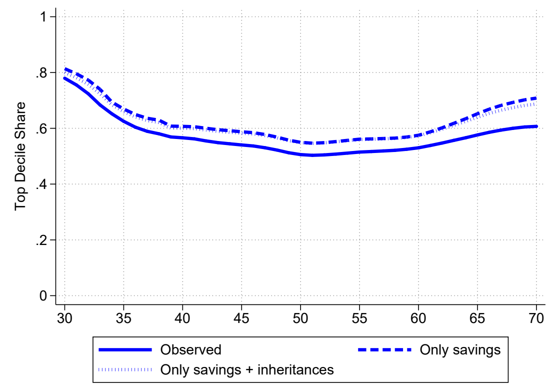
The most important result from this exercise is that saving has put upward pressure on wealth inequality in recent decades. The predicted top-10% wealth share based on saving only for the cohort born in 1960-79 is 82%, compared to 54% for those born in 1900-19. Taken at face value, this exercise predicts an increase in top-10% wealth shares of about 28pp, which is precisely twice as much as the actual increase of 14pp. This reflects the growing concentration of saving within the richest of the distribution (Mian et al. 2021b; Mian et al. 2021c; Bauluz et al. 2022). As we show in subsection 5.2, the higher top-10% saving of recent cohorts until the age of retirement largely reflects their growing household income share and no significant changes in their saving rates.

Inheritances, on the other hand, seem to have had a relatively limited role in shaping the evolution of wealth shares, as almost no difference is perceived between the counterfactual share based on saving only and the one with saving and inheritances. They have a slightly moderating

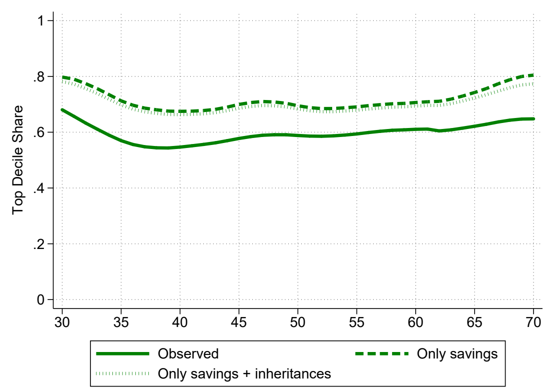
Figure 12: Top-10% wealth share within birth cohorts, over their life-cycle: counterfactual exercise



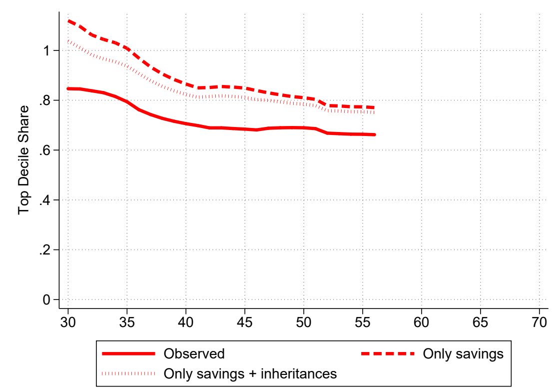
(a) Cohort born in 1900-19



(b) Cohort born in 1920-39



(c) Cohort born in 1940-59



(d) Cohort born in 1960-79

This Figure shows the top decile share during the life-cycle of the 4 birth cohorts as observed and in two counterfactuals. The first counterfactual assumes that all wealth accumulation happens through saving; the second one assumes only saving and inheritances. Saving and inheritances are constructed as in section 2. We compute observed and counterfactual wealth shares.

role in more recent years, due to the fact that the distribution of inheritances is less concentrated than the distribution of wealth among inheritors. A similar result is found in Sweden by Elinder et al. (2018). Capital gains are the great moderator in the sense of relative wealth inequality, pushing downwards the predicted wealth inequality based on saving only. The growing gap between the counterfactual and observed wealth shares reflects the growing concentration of saving at the top and the large reliance of bottom groups on capital gains for their own growth. This is driven, to a large extent, by the higher exposure of bottom groups to capital gains in housing (Kuhn et al.

2020), an asset that has increased its value substantially in recent years.[28]

5 Aggregate wealth-income ratio, the private saving rate and r*

A key question in macroeconomics is what drives the decline in natural interest rates happened over the last decades (Holston et al. 2017; Rachel and Smith 2015). Two prominent explanations put forward are the rise in income inequality leading to an excess in saving from the rich (Mian et al. 2021a; Mian et al. 2021c; Klein and Pettis 2020) and demographic changes pushing upwards aggregate wealth-income ratios (Auclert et al. 2021; Kopecky and Taylor 2022) and private saving (Gagnon et al. 2021; Carvalho et al. 2016). However, a fundamental limit to studying the previous channels is the absence of microdata on saving and wealth holdings decomposed by population groups and covering a relatively long period.[29]

In this section, we provide a micro view of the rise in household-wealth national income ratios and the evolution of private saving since the 1960s. We follow a long tradition and adopt a shift-share methodology to identify the main drivers behind changes in wealth-income and saving-income ratios (e.g., Auerbach and Kotlikoff 1990; Bosworth et al. 1991; Poterba 2001; Mian et al. 2021c; Auclert et al. 2021).

5.1 Aggregate wealth-income ratios

A substantial body of research has investigated the rise in aggregate wealth-income ratios in recent years. Most works relies on decomposing aggregate wealth growth across saving and capital gains (Piketty and Zucman 2014; Waldenström 2017; Artola-Blanco et al. 2020) or on quantitative macro models (Grossmann et al. 2021; Brun and González 2017; Kopecky and Taylor 2022; Eg-

[28]Appendix Tables F4 and F5 show the role of saving, capital gains and inheritances for different cohorts and within-cohorts wealth groups during their life-cycles.

[29]Two important exceptions are Mian et al. 2021c and Auclert et al. 2021. We delineate our contribution relative to these studies in subsections 5.1 and 5.2, respectively.

gertsson et al. 2021). Our microdata allow us to enrich the previous analyses by decomposing the rise in aggregate wealth-income ratios across three components: (i) group-specific wealth-income profiles, (ii) income inequality and (iii) varying demographic structure. Namely, we defined the aggregate household wealth-to-national income ratio in the following form:

$$\frac{W_t}{Y_t} = \sum_i \frac{\bar{w}_{it}}{\bar{y}_{it}} \cdot \frac{\bar{y}_{it}}{\bar{y}_t} \cdot \frac{N_{it}}{N_t} \tag{5}$$

Where $\frac{\bar{w}_{it}}{\bar{y}_{it}}$ is the group's-specific average wealth-to-average income ratio, $\frac{\bar{y}_{it}}{\bar{y}_t}$ is the ratio of the average income of the group-to-average income of all households (the income inequality component) and $\frac{N_{it}}{N_t}$ is the share of the group in the population of all adults (the demographic component).

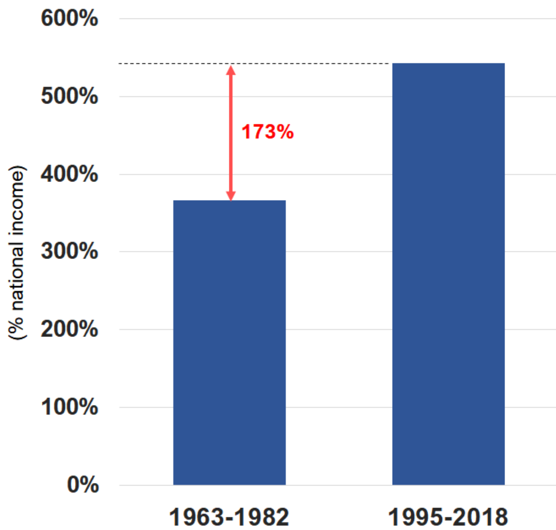
In their study, Auclert et al. 2021 investigate the role of demographics in the evolution of wealth-income ratios across various countries and the US. They conduct a retrospective analysis to understand the role of demographics in driving up the US wealth-income ratio in recent decades. Still, their primary focus is on the projections from now on to 2100 (when population aging is expected to accelerate). On the other hand, our analysis aims to understand the role of demographic changes, group-specific wealth-income ratios and income inequality in explaining the observed increase in wealth-income ratios in the past 60 years.

Our analysis is based on six age-wealth groups: top-10% age 20-39, bottom-90% age 20-39, top-10% age 40-59, bottom-90% age 40-59, top-10 age 60+ and bottom-90% age 60+. As we have documented throughout the paper, these two dimensions (age and wealth) are good cuts to understanding wealth accumulation and saving. Appendix Figures F10, F13 and E20a show the evolution of each of the three components (wealth-income profiles, relative income and population shares) since 1960.

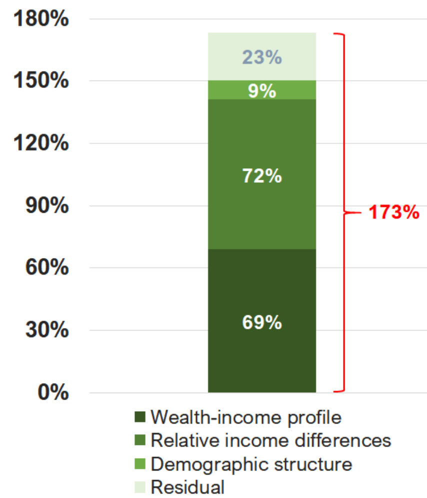
Figure 13 summarizes the results of this exercise. On the left panel (Figure 13a), we plot the observed household wealth-to-national income ratio across two representative sub-periods 1963-1982 and 1995-2019.[30] While aggregate wealth was 372% of national income in the earliest period,

[30]These are also the two sub-periods used in Mian et al. (2021c)'s shift-share analysis of saving across age and

Figure 13: Shift-share decomposition of the rise in aggregate wealth-income ratios: wealth-income profiles vs. income inequality vs. demographics



(a) Wealth-income ratio in two periods



(b) Decomposing the increase of the wealth-income ratio

Notes: The left panel of this Figure plots the average household wealth-to-national income ratio across two periods: 1963-1982 and 1995-2019. The difference between the average wealth-income ratio in 1995-2019 and 1963-1982 is 173pp. The right panel of the Figure decomposes the 173pp increase in wealth-income ratios using a shift-share approach based on Equation 5.

it has increased by 173pp to 546% in recent years. We next evaluate the role of each of the three sub-components of Equation 5 in driving the observed increase. Namely, we fix two sub-components in the first period (1963-1982) and let only one change according to its value in the second period (1995-2018). On the right panel (Figure 13b), we decompose the increase in the wealth-income ratio across the three components of Equation 5 plus a residual component that captures the interaction of the three components changing simultaneously (hence, reinforcing the overall increase in the ratio).

This exercise provides new critical insights. Namely, we identify a prominent role in the increase of wealth-income ratios for income inequality of around 72pp. This is of the same magnitude as the increase due to varying group-specific wealth-income ratios, which the exercise quantifies in 69pp. Regarding population shares, we find a relatively limited role in driving the increase in the ratio in the recent decades, predicting an increase of 9pp. The fact that the strong increase

income groups

in income inequality in the US (e.g., Piketty et al. 2018) caused an increase in aggregate-wealth income ratios is intuitive but, to the best of our knowledge, was not quantified previously in the literature. All else equal, if those individuals with high wealth-income ratios (i.e., the top groups) obtain a higher income share, aggregate wealth-income ratios would increase.

5.2 Aggregate private saving

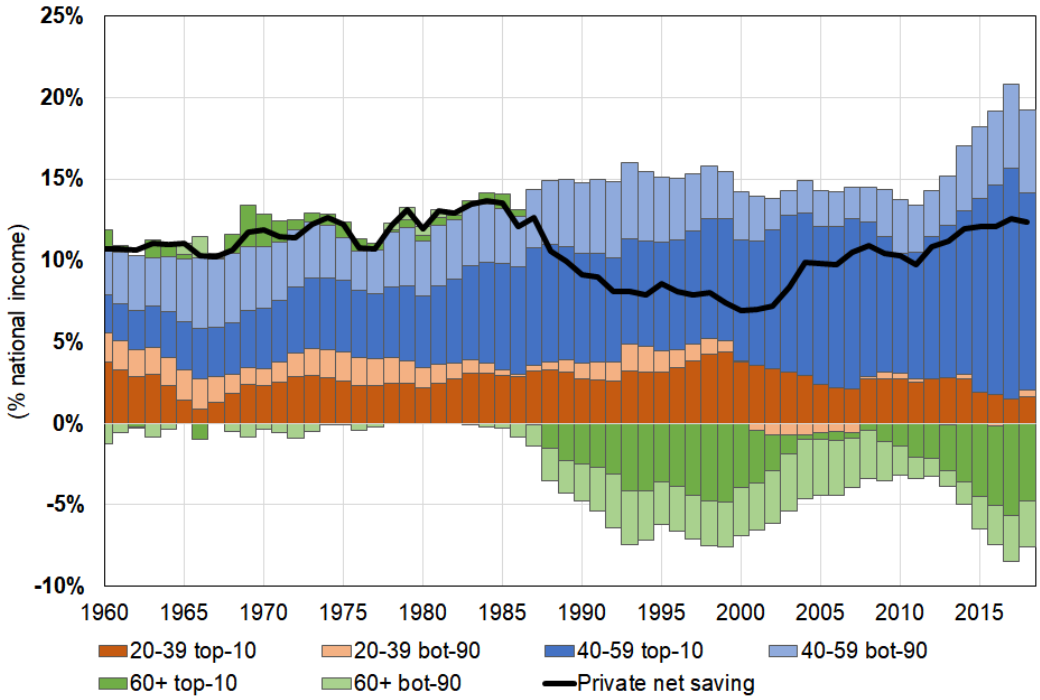
We next examine the evolution of the US private saving rate (the sum of personal and corporate saving rates). Despite being the object of great scrutiny and debate in the last decades (e.g., Summers and Carroll 1987; Bosworth et al. 1991; Auerbach and Kotlikoff 1990; Mian et al. 2021b, etc.), it is still unclear which population groups and mechanisms drive trends in aggregate saving (Rachel and Smith 2015). We shed new light on this critical question.

Our analysis is closest to Bosworth et al. (1991) and Mian et al. (2021c). These two studies analyze the evolution of the US private saving rate, asking two essential questions: who saves more and less over time and why? These two papers follow a similar approach to ours to measure group-specific saving, and use a shift-share methodology to investigate potential mechanisms. We innovate in one specific dimension that turns out very important. Namely, we look separately at the top and bottom groups of different ages instead of comparing age groups, on the one hand, with top/bottom groups of all ages together on the other. We break down our data into six age-wealth groups: top-10% age 20-39, bottom-90% age 20-39, top-10% age 40-59, bottom-90% age 40-59, top-10 age 60+ and bottom-90% age 60+.

Figure 14 presents our results regarding the first of the two questions: who is saving more and less over time? It decomposes the US private saving rate (straight line) across age-wealth groups (bars) since 1960. We define the private saving-to-national income ratio ($\frac{S_t}{Y_t}$) as the sum of the saving from each group i divided by national income: $\frac{S_t}{Y_t} = \sum_i \frac{S_{it}}{Y_t}$. As well-known, the aggregate private saving rate was high in the 1960s and 1970s, collapsed in the 1990s and 2000s, and increased again in recent years.[31]

[31] The collapse in private saving around the 1990s primarily reflects personal saving. Corporate saving, on the other

Figure 14: **Private saving by age-wealth groups, 1960-2018**



Notes: This figure shows annual net saving of age-wealth groups expressed as a percentage of national income. All series are 7-year moving averages. See section 2 for details on the methodology.

This decomposition uncovers an important trend in the evolution of private saving since the 1980s. More concretely, we document the emergence of a marked saving polarization across population groups. We identify that saving from the middle-aged rich increased dramatically since the 1980s, mirrored by an even more spectacular saving decline from the elderly (both the elderly rich and poor). In numbers, our results indicate that the middle-aged top-10% used to save the equivalent of 4% of national income in 1962-1983 and 9.3% of national income in 1995-2018, involving an increase of 5.3 pp of national income over time. In contrast, the saving from the elderly has declined by the equivalent of 6.3pp of national income across the two periods, from 0.4% to -6.2%.

We identify that (i) the "saving glut of the rich" since the 1980s (previously documented by Mian et al. 2021b, Saez and Zucman 2016 and Bauluz et al. 2022) is the "saving glut of the middle-aged rich" and (ii) the dissaving by the old is the most critical force putting downward pressure on

hand, has trended upwards since the 1980s both in the US and elsewhere (Chen et al. 2017; Bauluz et al. 2022).

aggregate saving in recent decades. The latter result is consistent with findings from Bosworth et al. (1991), who looked at a shorter period (1962-87).[32]

The second part of our analysis investigates the drivers of these previous trends. We follow a similar shift-share approach as in subsection 5.1 which allows us to evaluate the role of three factors: relative income differences across age-wealth groups, demographic trends, and saving rates out of income. Concretely, we define the aggregate private saving rate as:

$$\frac{S_t}{Y_t} = \sum_i \frac{\bar{s}_{it}}{\bar{y}_{it}} \cdot \frac{\bar{y}_{it}}{\bar{y}_t} \cdot \frac{N_{it}}{N_t} \tag{6}$$

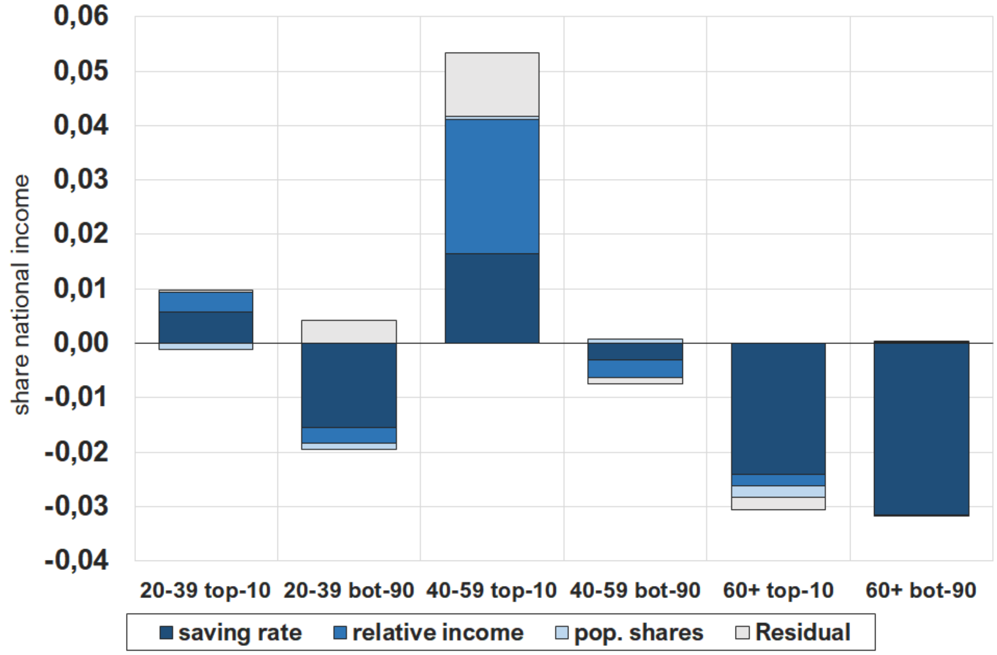
where $\frac{\bar{s}_{it}}{\bar{y}_{it}}$ is the group's-specific average saving-to-average income ratio (i.e., group i's saving rate), $\frac{\bar{y}_{it}}{\bar{y}_t}$ is the ratio of the average income of the group-to-average income of all households (the income inequality component) and $\frac{N_{it}}{N_t}$ is the share of the group in the population of all adults (the demographic component). The evolution of each of the three components for the six age-wealth groups is shown in Figures Appendix F14, F13 and E20a.

To evaluate the role of each sub-component of Equation 6 in driving changes in saving across age-wealth groups, we fix two sub-components in the first period (1963-1982) and let only one change according to its value in the second period (1995-2018). Figure 15 shows the results from this exercise.

Two main insights emerge. Regarding the rise in the middle-aged rich's saving, we find that the increase in the relative income of this group accounts for most of its saving boom. This result would be consistent with the mechanism posited by Mian et al. (2021a), according to whom the substantial increase in income inequality since 1980 caused a saving glut among the rich. However, we circumscribe it to the middle-aged rich. By contrast, the decline in the old's saving seems to reflect almost exclusively a reduction in saving rates (i.e., an increase in consumption propensities), as both the relative income and demographic components barely account for meaningful changes.

[32] The bottom-90% from the young and middle-aged groups reduced their saving throughout these two periods in the equivalent of 2.2 pp of national income, while the top-10% from the young increased it by 0.9 pp. While the dynamics of these groups are also important for aggregate saving, they experienced substantially less variation than those occurred for the rich middle-aged and elderly groups.

Figure 15: **Shift-share results, within-age wealth groups**



Notes: This Figure presents the results of the shift-share methodology as outlined in Equation 6 across the within-age wealth distribution. The Table reflects the change in a given group's saving between 1962-1983 and 1995-2018, expressed as a share of national income. For example, the Table indicates that the saving of the bottom-90% of the age 60+ has declined by approximately 3pp of national income and that the decline is almost exclusively explained by the saving rate component.

The decline in the saving rates of the old is consistent with previous studies (e.g., Gokhale et al. 1996). Among the many reasons that could explain the fall in saving rates (e.g., out-of-pocket medical expenses), the boom in asset prices that happened since the 1980s would fit well with the observed trends (Poterba 2000; Chodorow-Reich et al. 2021). As we saw in Figure 9, the elderly in recent decades consume their assets (i.e., dissave) without reducing their wealth holdings significantly, given that substantial valuation gains on their wealth holdings co-occur.

All in all, our analysis suggests that rising income inequality and the boom in asset prices are potentially important mechanisms behind the marked saving polarization happening since the 1980s.[33] This said, we do not take a strong stance on the specific force behind the observed trends. The main goal of this sub-section is to bring in new evidence on saving patterns across population

[33] It is also possible that the boom in asset prices has its root on the rise of income inequality, which would lower natural interest rates, raising asset prices (Mian et al. 2021a).

groups in the US. Quantifying the relative importance of various potential channels is a much-needed and fruitful avenue for future research.

6 Conclusion

Wealth in the U.S. is aging. We uncover that this is strongly linked to a steepening of the age-wealth profile, mainly driven by booming asset prices in the past decades. We further find a shift in the saving profile of US households, with more saving happening at middle ages and less when old. Household-lifecycle behavior differs strongly across the distribution, with the upper half being richer than previous generations and the lower half becoming poorer. We note several implications of the change in life-cycle behavior. It increases aggregate wealth, but the effects on aggregate saving are less clear, as two forces are at play. Our decomposition reveals that household saving are increasingly the saving of rich households at middle ages. Old households, both the rich and the poor are increasingly dissaving, pushing down aggregate saving.

A key question for future work is why the life-cycle of US households has changed. Many factors may contribute here, such as changes in life expectancy, birth rates and bequest motives, the pension and health care system or the asset price boom. Our analysis of drivers suggest that incorporating asset valuation is key to understanding the saving behavior along the life-cycle. Understanding their contribution will also help us forecast the consequences of the life-cycle for macroeconomic aggregates going forward. Is the changing age-wealth profile a function of one-off capital gains or here to stay?

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A Matching SCF to Macro Categories

A.1 Wealth

Table A1: **Matching SCF to Macro Categories**

	SCF asset categories	**Macroeconomic data category** [a]
Assets	Primary residence, Residential property excl. primary residence	Housing
	Businesses	Business assets
	All types of transaction account (Liq), Certificates of deposit, Savings Bonds, Directly held bonds	Fixed-income assets
	Directly held stocks	Equities (excluding held through funds)
	Directly held pooled investment funds	Investment funds[b]
	Cash Value of Life insurance, quasi-liquid retirement accounts	Pensions & Life insurance
Liabilities	Debt secured by primary residence, Debt secured by other residential property	Mortgages, tenant and owner-occupied
	Other lines of credit, credit card balances after last payment, installment loans, other debt	Non-mortgage debt

[a] Based on Saez and Zucman (2020), Table TB1

[b] See the Appendix of Saez and Zucman (2020), Sheet DataWealth, Column AU

A.2 Income

Our goal is to measure flows of saving, capital gains and interfamily transfers as percent of gross income. National income in NIPA and income recorded in the SCF differ from each other in some respects. Firstly, NIPA income includes incomes of both the household sector and the non-profit institutions serving households (NPISH) sector. We remove all income flows pertaining to the NPISH sector. Secondly, imputed rents of owner-occupiers are not recorded in the SCF, so we deduct them as well. In general, the SCF captures the evolution of national income quite well (Kuhn et al., 2020, Figure 3a). Some components of income, such as labor and business income, are captured extremely well (and even overrepresented in the survey), while others are captured poorly (capital income, transfers), see also the discussion in Feiveson and Sabelhaus (2019). The mapping is summarized in Table A2

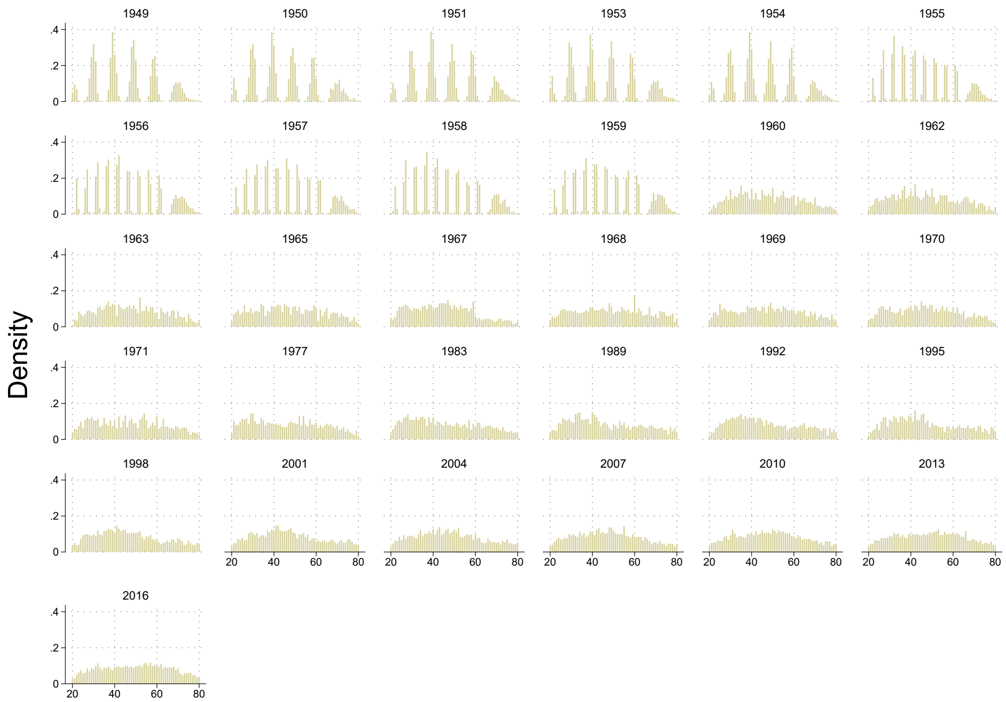
Table A2: **Matching SCF to NIPA**

SCF+ income categories	**Macroeconomic Category**	**NIPA codes**
income from wages & salaries, self employment and professional practice	Wages and Salaries, Mixed (Business) income	Table 2.1, Line 3 + Table 2.1, Line 9
capital income	Capital income (including rental income of landlords), excl. imputed rents and capital income received by NPISH	Table 2.1, Line 12 - Table 2.9, Line 50 - Table 2.9, Line 51 + Table 7.9, Line 2
transfer, social security and other	Personal current transfer receipts	Table 2.1, Line 16 - Table 2.1, Line 25

A.3 The Age Structure in the SCF+

In general, the age structure in the SCF+ is quite close to the general population. One important exception is the 1950s when the age in the SCF+ is not reported exactly. We show this in figure A16, where it can be clearly seen that in this decade, the age of respondents spikes around certain peaks. Therefore we do not consider the 1950's waves for our analysis. After 1960, the age structure from the SCF is quite closely aligned with the general population.

Figure A16: **Age Density in the SCF+**



Notes: This figure presents the density of ages in the SCF+ for all survey waves.

B Construction of Inheritances and Transfers

In this appendix, we give further details on the construction of inheritances and gifts. First, we describe more closely the mortality multiplier method used to construct inheritances.

We use death rates from the Social Security Administration by age, sex and gender since 1900[34]. Then the bequests B_t in a given year t can be estimated via

$$B_t = \sum_{i \in I} w_{i,t} d(s_i, a_i, t),$$

where I is the set of adults, $w_{i,t}$ is their wealth in t and s_i, a_i refer to the sex and age of individual i. Following US tax law, estates with negative net wealth are dropped, as debts can't be inherited. For those estates with positive net wealth we consider net wealth instead of gross wealth as tax

[34]These are available at https://www.ssa.gov/OACT/HistEst/Death/2020/DeathProbabilities2020.html

regulation require an estate to settle its own debts, so debts of the deceased are deducted from the amount transferred to the inheritors.

Next we refine this method by correcting for differential mortality, estate taxes and other deductions from the estate and adding gifts. Applying uniform mortality rates overstates the mortality of the rich, who tend to live longer lives (Chetty et al., 2016). Therefore we adjust mortality rates $d(s_i, a_i, t)$ by multiplying with a mortality multiplier $\alpha(x_{i,t})$ where $x_{i,t}$ is a vector describing other characteristics of the household (such as income, wealth etc.). We use the mortality multipliers of Saez and Zucman (2016) to correct for differential mortality of top wealth holders.[35]

We next apply estate taxes and deductions to the estate. The US estate tax is applied to net wealth, including all community property. Hence we compute the tax flow by considering the household as a unit. From this, costs that pertain to the death (such as funeral and attorney costs) and charitable contributions are deducted from the estate before applying the estate tax. We deduct these in a procedure following Feiveson and Sabelhaus (2019), that is based on the publically available tax files of the IRS and the deductions recorded in them.

Finally, we apply the estate tax after making the deductions outlined above (charitable bequests and funeral costs). The estate tax has been a topic of hot debate in the US for many years. For the past 50 years tax rates have been lowered and the exemption increased. This is especially true for the top marginal tax rate, which has declined from 77% (in the period of 1940 to 1977) to only 40% today. But not only the extremely wealthy have seen a lowering of their estate taxes. Thresholds have been lowered, such that fewer estates are taxed in total. We collect precise estate tax schedules since 1946 and apply the tax to all inheritances not passed to the spouse, as these are tax free. Adding all deductions and taxes reduces the flow of inheritances by on average 20%, with yearly values ranging from 15-25%. There is no trend in the size of these deductions.

As we first estimate a total flow and then distribute according to the observed distribution of bequests received we must decide which parts of the inheritance go to the spouse and which parts

[35]Using other multipliers, such as the ones of the Congressional Budget Office yields very similar results, which can be seen from the fact that our numbers are close to (Feiveson and Sabelhaus, 2019). We choose the multipliers of Saez and Zucman (2016) as they also go back in time, reflecting changes in differential mortality.

go to subsequent generations. This is because the SCF survey module only records inheritance received from outside of the households, so that bequests received from the spouse will not be recorded. We assume that deceased spouses with a surviving partner leave all of their inheritance to their spouse (as in Feiveson and Sabelhaus (2019); Mian et al. (2021c). This would be consistent with tax exemptions made for surviving spouses. If both spouses die, then the inheritances flows to the next generation. Hence intergenerational bequests B_t^{intergen} (those passing to the next generation) are defined as

$$B_t^{\text{intergen}} = \sum_{i \in I_{\text{single}}} w_{i,t} d(s_i, a_i, t) + \sum_{i \in I_{\text{married}}} w_{i,t} d(s_{i_1}, a_{i_1}, t) d(s_{i_2}, a_{i_2}, t). \tag{7}$$

and are comprised of bequests from single and married households in which both partners die. Note that now $w_{i,t}$ represents household wealth (after taxes and deductions), which also fits the SCF framework more closely. For those bequests that flow to the spouse it is clear from the microdata how they redistribute wealth across generations as we observe the age of the spouse to which the inheritance flows.

Wealth can also be passed between households by inter-vivos transfers. These are significantly harder to estimate than bequests, since they don't ocurr at a fixed point in time. Instead we make use of the gift module in the SCF to study the size of the inter-vivos gifts flow. In this module both transfers received and transfers given by the household are recorded.[36] In the aggregate, households in the SCF report that they gave more transfers than they received. This indicates that gifts received are underreported in the survey and the gifts given are the more reliable estimate. In turn, we use the aggregate gifts given in the SCF for the size of our gift flow. Before 1989 we cannot rely on the SCF to tell us about the aggregate of gifts. Following Alvaredo et al. (2017) we estimate the flow of inter-vivos gifts to be 20% of all bequests. This is an approximation that is validated by the gift flow since 1989, which is on average 21% of the total bequest flow.

[36]The precise question is: During the past year, did you (or anyone in your family living here) provide any (other) financial support for relatives or friends who do not live here? The interviewer is asks respondents to also include any substantial gifts given in the answer to this question

Distribution of Bequests and Gifts. We distribute gifts and inheritances following observed densities from the SCF. Recall that we only distribute those bequests that flow to the next generation from equation 7 using these densities, the rest of the bequests goes to the spouse. We know the age of the spouse from the SCF for the modern SCF waves so it is clear how bequests to spouses redistribute wealth across generations. For the historical period we assume marriages to be between mixed sex partners of the same age. Inheritances are only reported sparsely, with only 25% of households in the SCF reporting ever receiving an inheritance. Given this, we pool the survey waves since 1989 to produce more robust densities.[37] The SCF asks respondents about all inheritances they ever received. As our goal is to capture only the distribution in a given year, we only include inheritances received in the past 3 years.[38] We show the distribution of inheritances received in figure B17. As the population ages, the distribution of inheritance recipients has moved upwards. Many inheritances are now reported by people over the age of 60. While this may seem surprising, many respondents in the survey also report receiving inheritances from siblings.

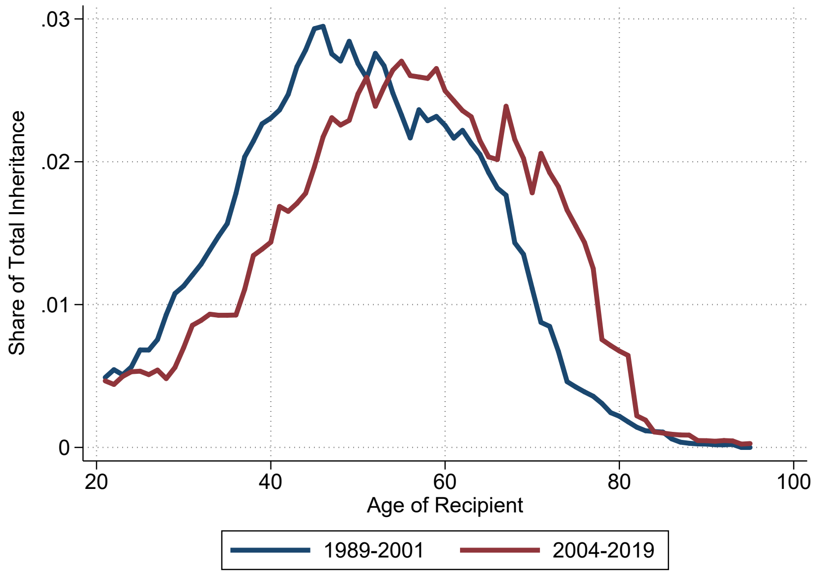
For gifts we follow a similar procedure. The biggest difference is that, unlike for inheritances, we do not have a 'predicted outflow' of gifts. We could use the SCF question on gifts given to assign a gift outflow to each age group. However, as gifts are even rarer than inheritances, we choose to pool the survey waves since 1989 to compute the distribution of gift outflows. We then apply this distribution to the total flow of gifts. We compute the distribution of gift inflows similarly. Both are shown in figure B18. Gifts seem to be primary way of distribution wealth from parents to grown up children. Many gifts are given by around 60-year olds and received by those under the age of 40.

We further use the SCF to distribute gifts and inheritances to wealth deciles within these age groups. To do so, we pool all survey waves to get the distribution of gifts and inheritances. There is no trend in the distribution of inheritances or gifts received across wealth deciles. Given the small amount of inheritance and gifts we pool all survey waves. In general, the distribution of gifts and

[37] Specifically, we distinguish 2 time periods: 1989-2001 and 2004-2019.

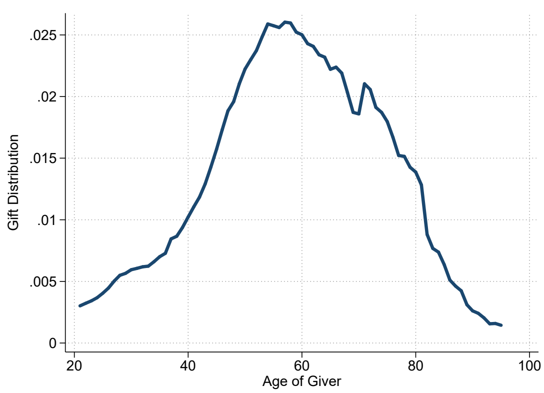
[38] In practice, in the public use files of the SCF, the exact year is often not given for confidentiality reasons, but the year reported as a 5-year interval. We then use the closest interval.

Figure B17: **Distribution of inheritances received**

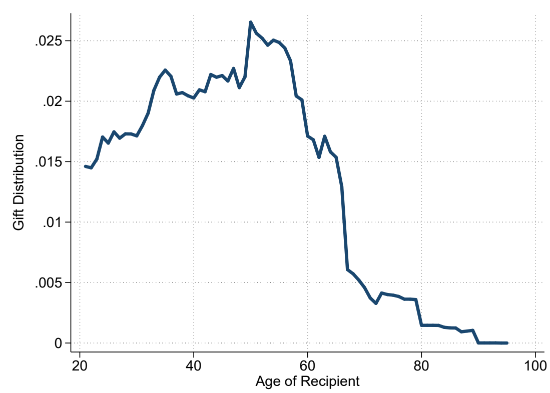


Notes: This figure shows the distribution of the inheritances in the SCF received by the age of the recipient over the two periods considered.

Figure B18: Distribution of Gifts in the SCF



(a) Age Distribution of Gift Givers



(b) Distribution of Gift Recipients

Notes: This figure shows the age distribution of gift givers and gift recipients in the SCF, pooling all survey waves since 1989.

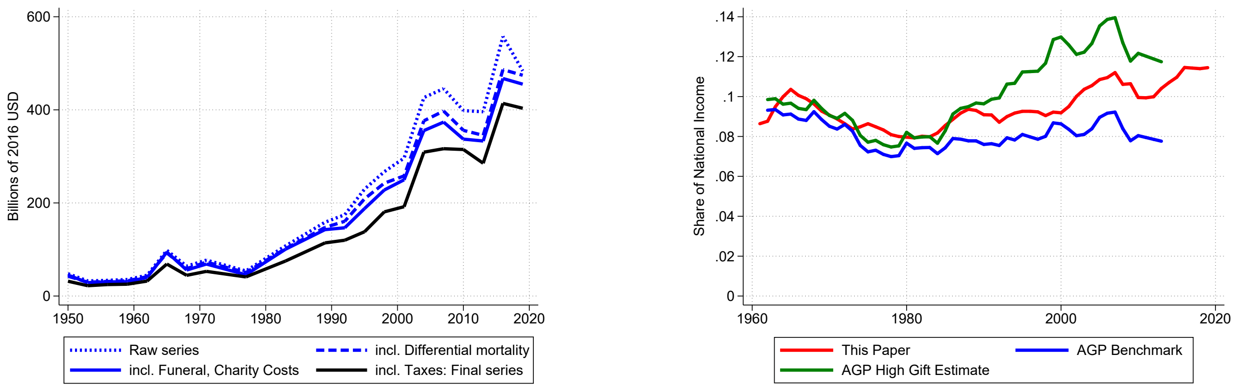
inheritances is slightly more equal than the distribution of wealth in general. This fact underlies our result that inheritances have an equalizing effect on within-cohort wealth shares. Although inheritances are very unequally distributed, as long as their distribution is more equal than wealth in general they will have an equalizing impact.

Unfortunately, the historical part of the SCF (before 1989) does not include data on inheritances or gifts. Therefore, we assume that the distribution of inheritances and gifts along age groups is shifted downward following changing life expectancy.[39]

Discussion. Unfortunately, there is very little evidence on the size of the aggregate inheritance flow in the US. This is due to the fact that the estate tax is only levied on very few estates (though the estate tax on these estates can be substantial, up to 40 % in recent years). We compare our estimates to existing numbers from Feiveson and Sabelhaus (2019) and Alvaredo et al. (2017) in figure B19. The paper by Feiveson and Sabelhaus (2019) is closest to our methodology. They report the aggregate inheritance flow only for a few select years. We show our inheritance flow in 2016 dollars in figure B19a, in addition to the effect the corrections we make to the flow. The flow we is quite close to the numbers in Feiveson and Sabelhaus (2019), but it is a bit lower. We also compute the flow of bequests and gifts as calculated by Alvaredo et al. (2017), who exclude taxes and deductions. It also does not distinguish between bequests going to the spouse or going to the next generation. When comparing, we hence also do not include taxes and other deductions. The comparison is shown in figure B19b. Our estimates are a bit lower in the early years but in between the benchmark and the high-gift estimate for the later years. The difference between the benchmark and the high gift estimate in their paper is that in the high-gift estimate the flow of gifts is growing over time and up to 80% of all inheritances in recent years, based of French data.

[39] We take life expectancy data from FRED: https://fred.stlouisfed.org/series/SPDYNLE00INUSA

Figure B19: Inheritance and Gift Flow



(a) Impact of Adjustments for Inheritance Flow

(b) Comparison with Alvaredo et al. (2017)

Notes: The left figure shows the flow of inheritances flowing to the next generation in billions of 2016$. The black line represents our benchmark number, the blue lines show the impact of the various corrections we make. The right figure shows the total inheritance and gift flow as a fraction of national income. It compares our estimate to that of Alvaredo et al. (2017).

C Wealth Group Persistence

When we apply the synthetic savings method to wealth groups within birth cohorts, we follow the literature by making the assumption that wealth group persistence is high. We test this assumption by computing persistence in the PSID as in Kuhn et al. (2020), who compute this persistence not within birth cohorts but a across population. Table C3 shows for the three wealth groups we consider within birth cohorts the probability that a household belongs to a wealth group, conditional on belonging to the same within cohort wealth group in the last survey wave. Persistence is relatively high, especially for the bottom 50 percent and the middle 40 percent, with our numbers comparable to those found by Kuhn et al. (2020). Persistence for the bottom half of the within cohort wealth distribution is generally above 80%. For the middle 40 it is around 75% and for the top decile around 68%. On closer inspection of the data we find that there are some respondents located at the 'fringes' of the wealth groups that we define. These switch a lot between wealth groups and account for a good part of the nonpersistence.

This is reassuring, especially given the limitation of wealth coverage in the PSID: Many wealth variables are imputed, which induces sampling error into our persistence computation. The

Table C3: Wealth Persistence in the PSID

Birth cohort	bottom 50	middle 40	top 10
1920-39	87%	77%	67%
1940-59	85%	76%	68%
1960-79	80%	72%	68%

This table shows the wealth persistence for the different within cohort wealth groups we consider. Wealth persistence in the PSID is computed as the fraction of households in a wealth group in $t+1$ that were in the same wealth group in t. Numbers shown are averages over PSID survey waves. Following Kuhn et al. (2020), we restrict ourselves to the SRC sample.

top of the wealth distribution is also not covered well, which likely accounts for part of the lower persistence in the top decile. Finally, the PSID only covers wealth every five years at the beginning of our sample and only later covers it biannually.

D Appendix: Life-Cycle Model

This section presents a stylized Modigliani (1986)-style model to rationalize our findings. The model is adapted from Bartscher et al. (2020) and Berger et al. (2017).

E Appendix: Age-wealth shares decomposition

The share of total wealth owned by a population group (the younger individuals) depends on their relative mean wealth and its population share. Formally, we define the wealth share of a given age group i (shw_i) as its population share (i.e., the number of adults of age group i (N_i) over the total number of adults (N)) times the average wealth of group i (w_i) over the average wealth of all adults (w):

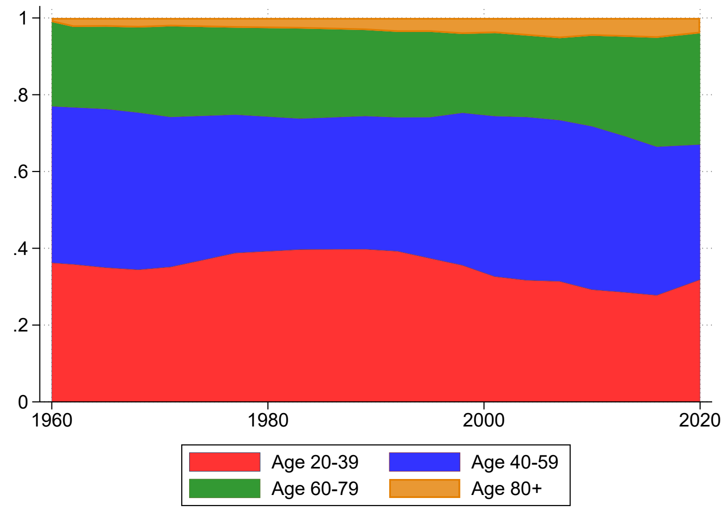
$$shw_i = \frac{N_i}{N}\frac{w_i}{w} \tag{8}$$

Figures Appendix E20a and E20b, show the evolution of population shares and relative mean wealth across age groups, respectively. Regarding population structure (Figure E20a), it can be seen that the young adults' share in total population increased during the period 1970-1990 (i.e., when the baby boomers became young adults) and has declined since the 1990s. In recent years, the share of old individuals has experienced a notable increase as the first cohorts of the baby boomers (e.g., those born around 1945-1955) started retiring. Consistent with Figure 5, Appendix Figure E20b shows a decline in the relative mean wealth of young adults and a sustained increase in that of old individuals.

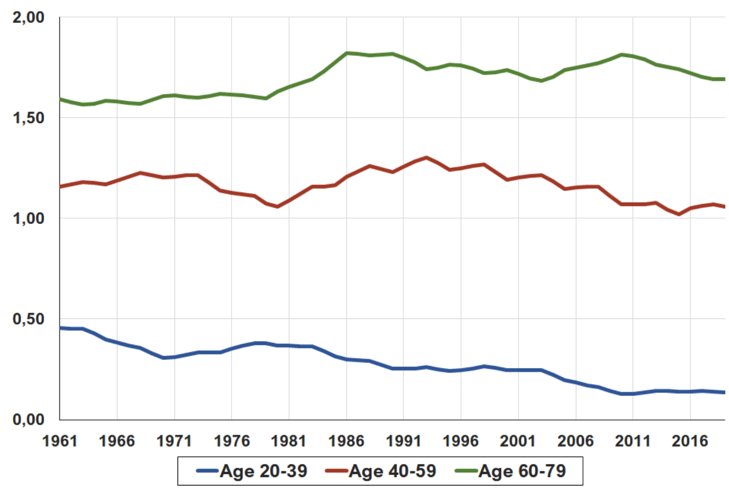
The years around 1980 are an inflection point for numerous indicators of wealth: aggregate wealth-income ratios (e.g. Piketty and Zucman (2014); Bauluz et al. (2022); Figure 1), wealth inequality (Saez and Zucman (2016); Figure 1) and, most importantly, trends in age-specific wealth (Figure 2 and Figure 5).

To shed light on which of the two factors (mean wealth differences and population shares) explains the evolution of age-wealth shares, we conduct a counterfactual exercise using equation 8. We simulate the evolution of the age-specific wealth shares under two scenarios. In the first scenario, we keep the population structure (the first component of the right-hand side of equation 8) constant as in 1980 and let the average wealth of each age group (the second component of the right-hand side of equation 8) evolve as observed in the data. We conduct the opposite exercise in

Figure E20: Age-wealth shares decomposition: population shares and mean wealth differences



(a) Share on adult population of different age groups



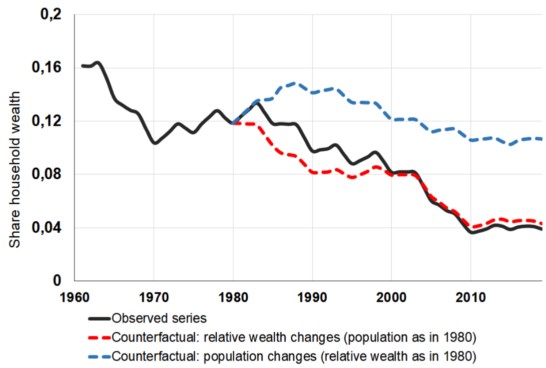
(b) Average wealth age group over average wealth all adults

Notes: Figure E20a) shows the share in the total adult population of selected age groups. Figure E20b shows the ratio of the average wealth of selected age groups over the average wealth of old adults. Series are 7-year moving averages.

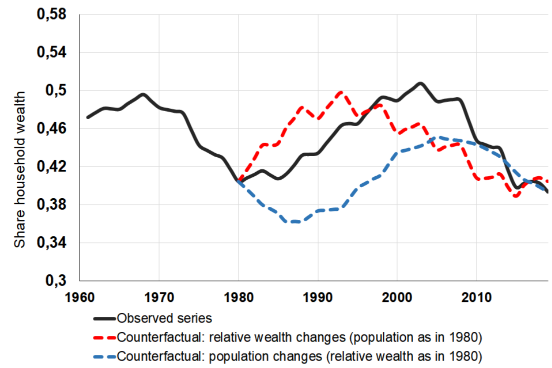
the second scenario: we let the population share of different age groups evolve as observed in the data but keep the average wealth differences across age groups constant at their 1980 values.

Figure E21 shows the results of this exercise for three age groups: age 20-39 (Figure E21a), age 40-59 (Figure E21b) and age 60-79 (Figure E21c). The black line represents the observed wealth shares of each age group. The red line simulates wealth shares where the average wealth of the different age groups changes (but not the population structure). The blue line keeps relative wealth differences constant at their 1980 level and lets the population change.

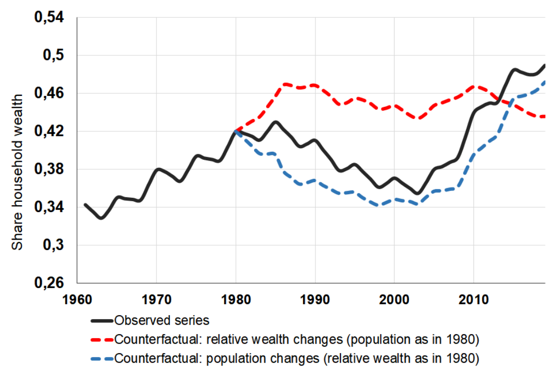
Figure E21: Age-wealth shares counterfactual: population shares vs. mean wealth differences



(a) Age group 20-39



(b) Age group 40-59



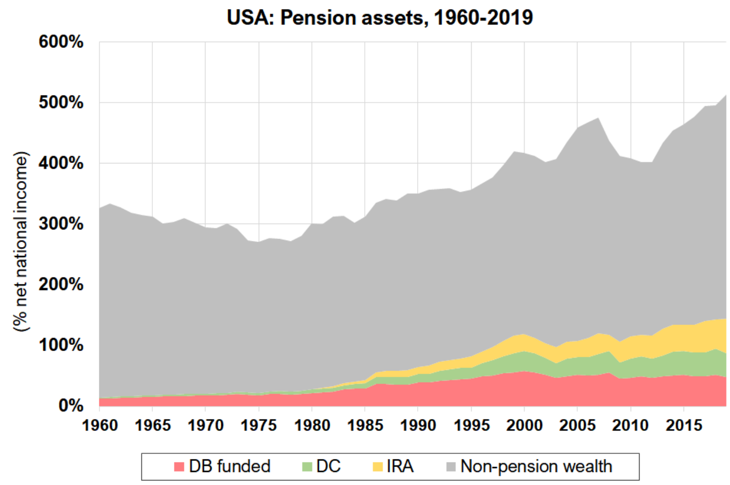
(c) Age group 60-79

Notes: This figure shows the share of net wealth owned by selected age groups and in counterfactual scenarios. Black lines refer to the observed evolution of age-wealth shares. Red-dotted lines refer to the counterfactual scenario where the population structure is kept constant as in 1980 and relative wealth inequality changes as observed in the data. Blue lines refer to the counterfactual scenario where relative wealth differences are kept constant as in 1980 and the population changes as observed in the data.

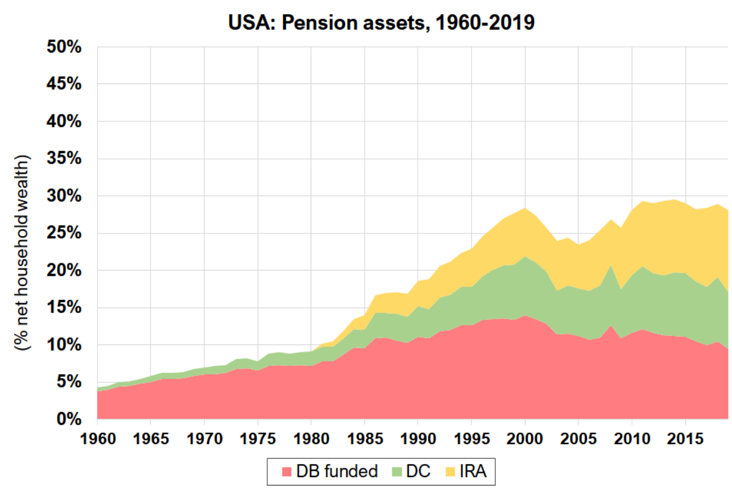
Results from Figure E21 reveal that differences in average wealth across age groups are the most important predictor of wealth shares' evolution, particularly for the young (Figure E21a). Changes in the population size of different age groups predict a smaller variation, although it is still important, in particular, for the old (Figure E21c) in the share of net wealth owned by the two age groups. These results are not a general equilibrium exercise but reveal a prominent role of wealth differences across age groups in driving the observed wealth shares. In section 4, we investigate the main mechanisms behind the growing age-wealth inequality by looking at the determinants of wealth growth of different US generations over time.

F Appendix Figures and Tables

Figure F1: Pension assets



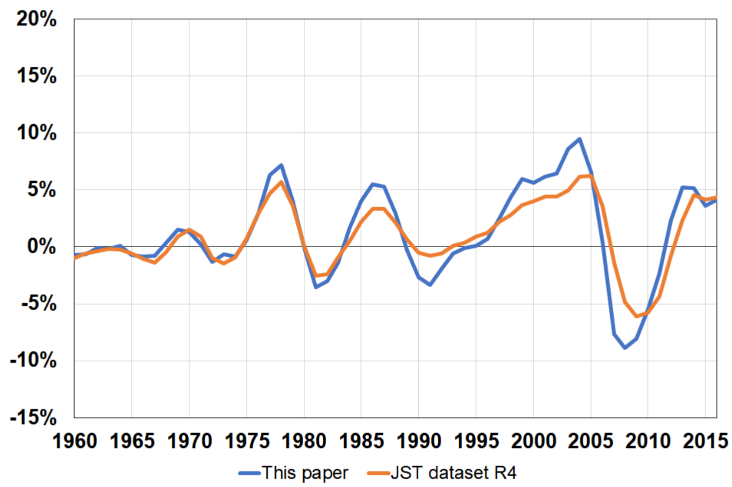
(a) Pensions (% nat. income)



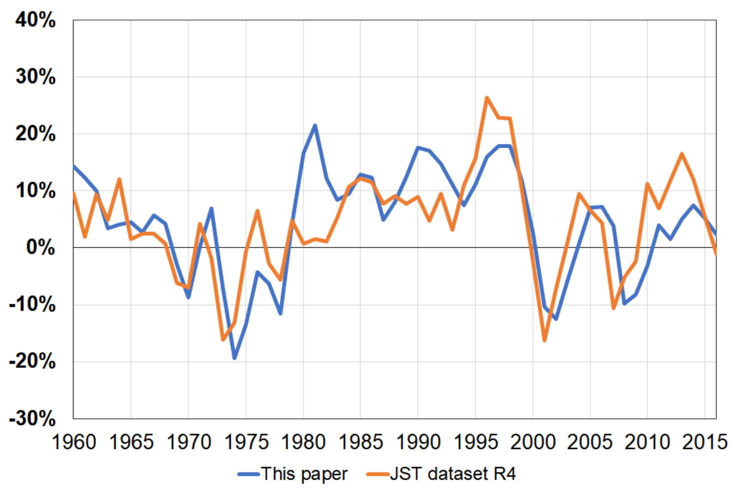
(b) Pensions (% household wealth)

Notes: This figure shows funded pensions decomposed into three types: Define Benefit (DB funded", Defined Contribution (DC) and Individual Retirement Arrangement (IRA). Pensions are expressed as a percentage of national income (Figure F1a) and as a percentage of aggregate household wealth (Figure F1b).

Figure F2: Housing and equity capital gains: alternative estimates



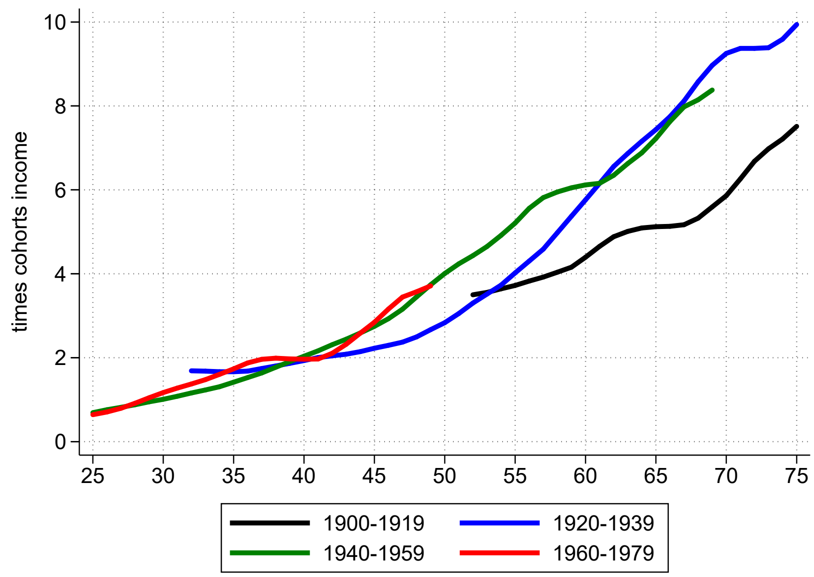
(a) Housing capital gains



(b) Equity capital gains

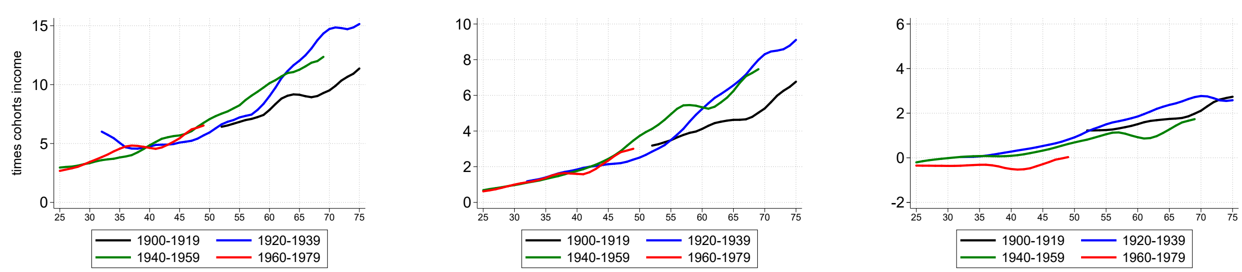
Notes: This Figure compares the annual real capital gains in housing and equity in this paper with those from the Jordà-Schularick-Taylor Macrohistory Database (JST Macrohistory Database). Note that equity capital gains from JST refer to listed firms and include valuation changes due to corporate retained earnings. By contrast, equity capital gains in this paper are net of valuation changes driven by corporate saving and cover both listed and unlisted firms. Series are 3-year moving averages.

Figure F3: **Life-cycle wealth accumulation**



This Figure plots the average wealth of four cohorts during their life cycles, expressed as a share of their own average income. Series are 7-year averages. Figure 2 shows the same results expressed as a share of per adult income.

Figure F4: Life-cycle wealth accumulation of the top-10%, middle-40% and bottom-50%-



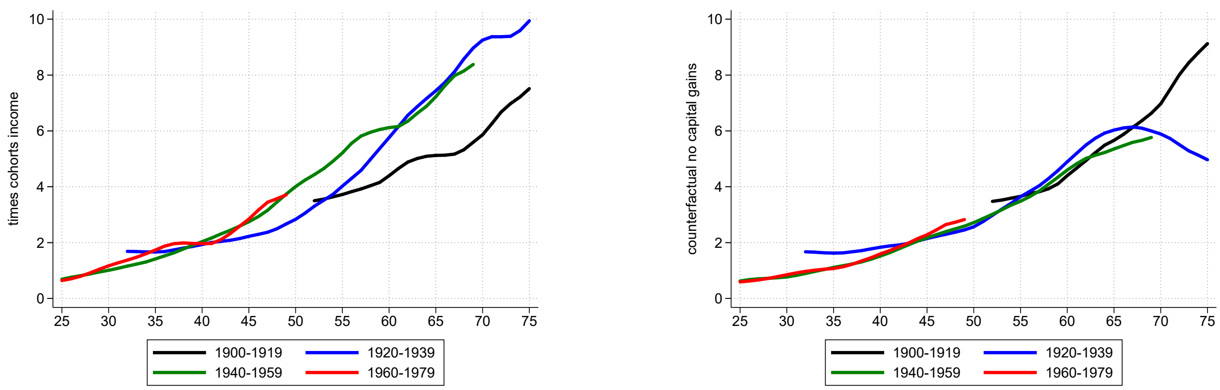
(a) Wealth of the top-10%

(b) Wealth of the middle-40%

(c) Wealth of the bottom 50%

This Figure plots the average wealth of three within-birth cohort wealth groups (top-10%, middle-40% and bottom-50%) during their life cycles, expressed as a share of their own average income. Series are 7-year averages. For example, the average wealth of the top-%10 at age 70 of the cohort born in 1900-19 is slightly below 40 times per adult income. Figure 3 shows the same results expressed as a share of per adult income.

Figure F5: Life-cycle wealth accumulation of selected birth cohorts before and after excluding capital gains

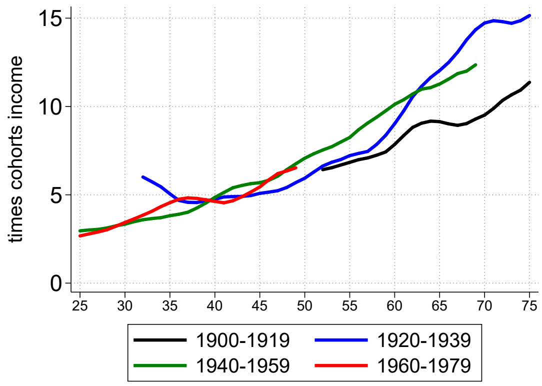


(a) Observed series

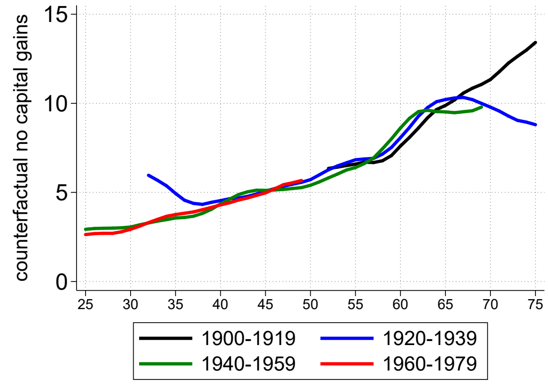
(b) Counterfactual without capital gains

Notes: This Figure shows the average wealth-to-income ratios of four generations as observed (left panel) and in a counterfactual assuming no capital gains since 1960 (right panel), where income is the average income of the cohort. See Figure 10 for the same chart expressed as a share of per adult income. See section 2 for details on the methodology.

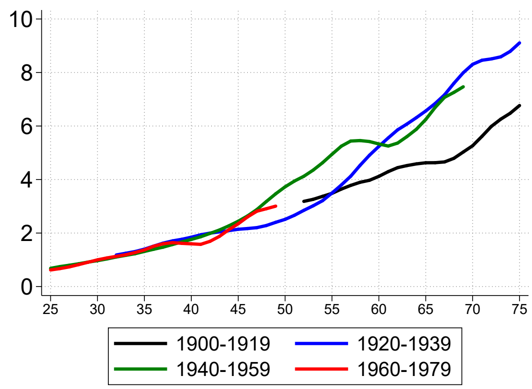
Figure F6: Life-cycle wealth accumulation of selected birth cohorts before and after excluding capital gains (within-cohort)



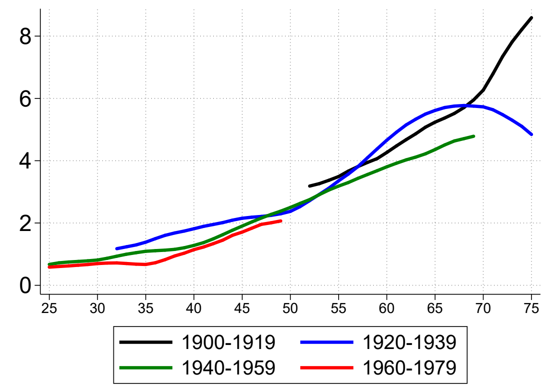
(a) Top-10%: Observed series



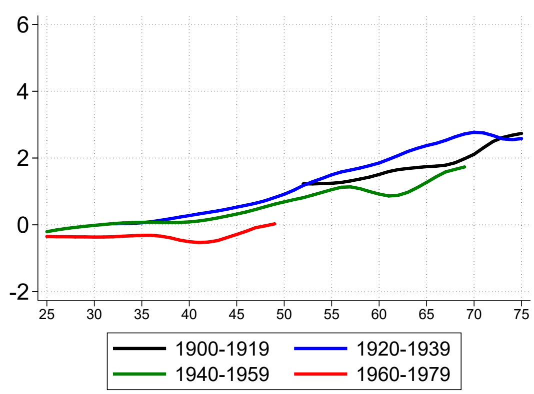
(b) Top-10%: Counterfactual without capital gains



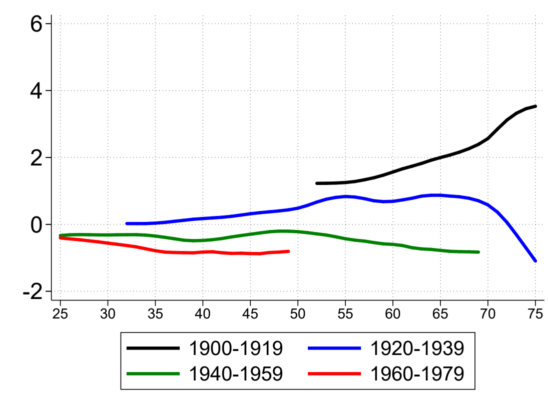
(c) Middle-40%: Observed series



(d) Middle-40%: Counterfactual without capital gains



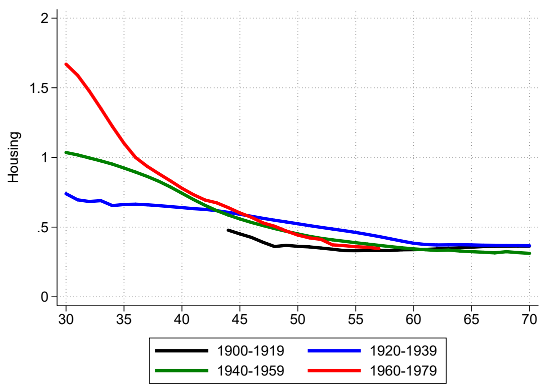
(e) Bottom-50%: Observed series



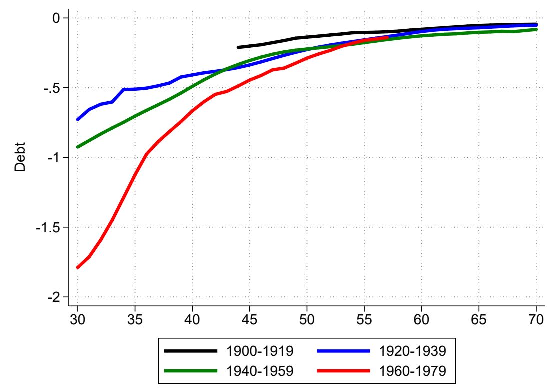
(f) Bottom-50%: Counterfactual without capital gains

Notes: This Figure plots the average wealth of three within-birth cohort wealth groups (top-10%, middle-40% and bottom-50%) during their life cycles expressed as a share of the group's own average income. The left panel shows the wealth-income ratios as observed in the microdata and the right panel in a counterfactual without capital gains since 1960. See Figure 11 for the same chart expressed as a share of per adult income (instead of group-specific income).

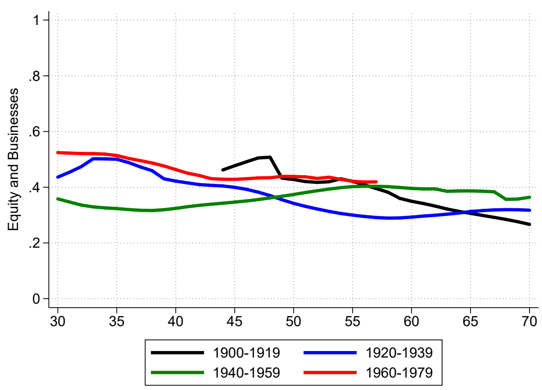
Figure F7: Portfolio shares over the life-cycle across birth cohorts



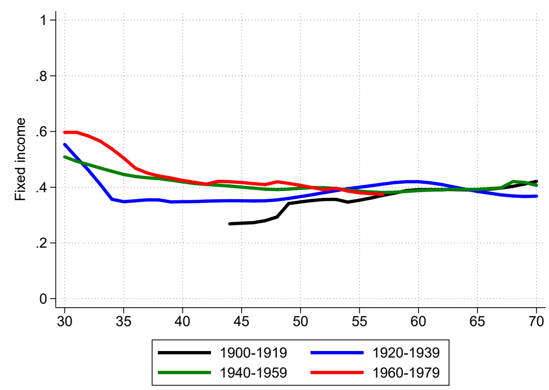
(a) Housing (out of wealht)



(b) Liabilities (out of wealth)



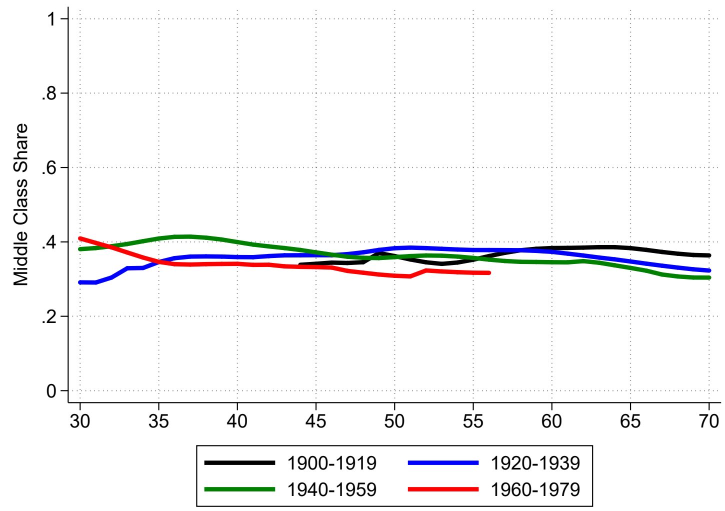
(c) Equity and business assets (out of wealth)



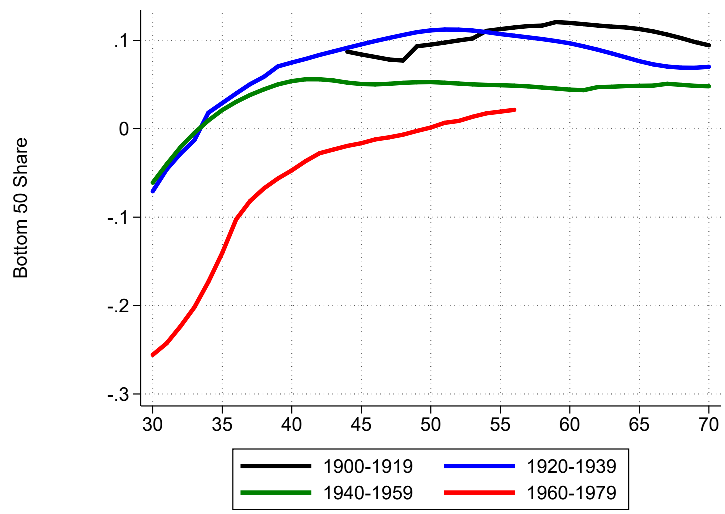
(d) Fixed-income assets (out of wealth)

Notes: This figure shows the share of three assets (housing, fixed-income assets, and equity (including businesses)) and liabilities in the wealth of various cohorts at different points of their life-cycles. The figure shows that, e.g., housing owned by cohorts born in 1960-79 accounts for around 1.6 times their own wealth by age 30.

Figure F8: Within-cohort middle-40% and bottom-50% wealth shares over the life-cycle



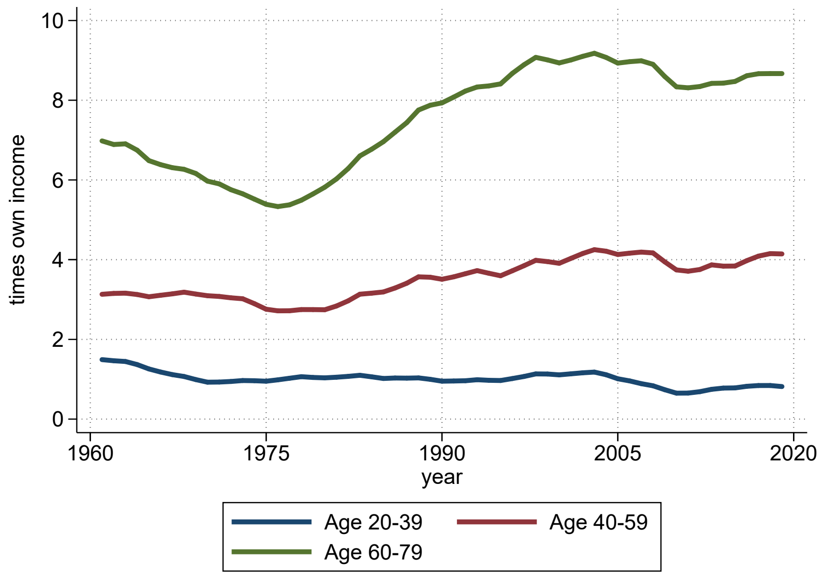
(a) Middle-40%



(b) Bottom-50%

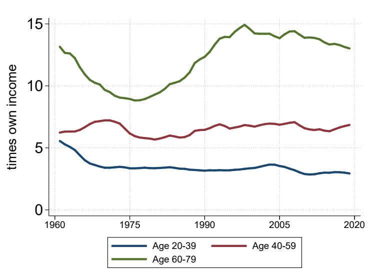
Notes: This Figure display the share of a cohort's wealth owned by the middle-40% (Figure F8a) and bottom-50% (Figure F8b) at a given age. For example, the share of the wealth of the cohort born in 1920-39 at age 50 owned by the bottom-50% of that age is approximately 10%.

Figure F9: **Wealth-income ratios of selected age groups**

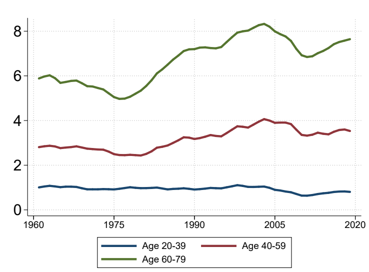


Notes: This figure shows the ratio of the average wealth of selected age groups over their own average income. Series are 7-year averages. Figure 5 shows the same results over per adult income.

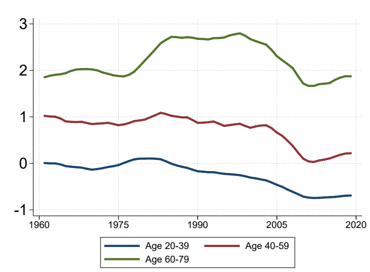
Figure F10: Wealth-income ratios of selected age-wealth groups



(a) Wealth of the top-10%



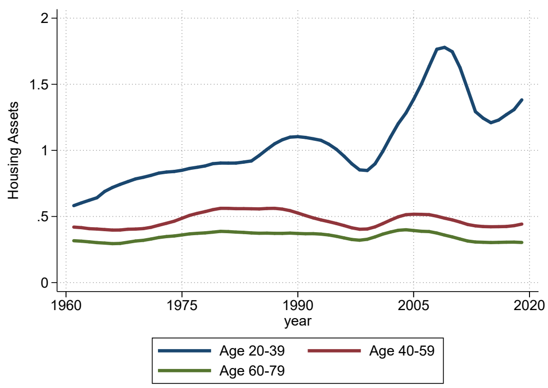
(b) Wealth of the middle-40%



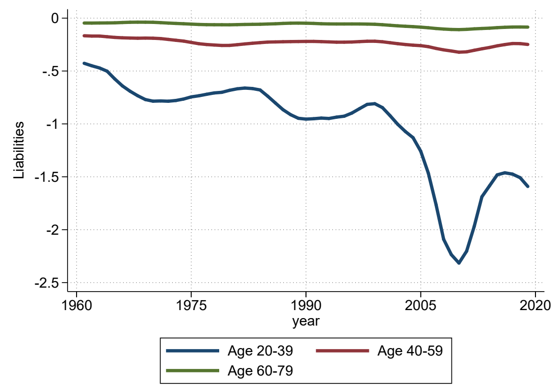
(c) Wealth of the bottom 50%

Notes: This Figure shows the ratio of the average wealth of selected within-age groups (e.g., top-10% age 20-39, middle-40% age 20-39, etc.) over their average income. Series are 7-year averages. Figure 6 shows the same results over per adult income.

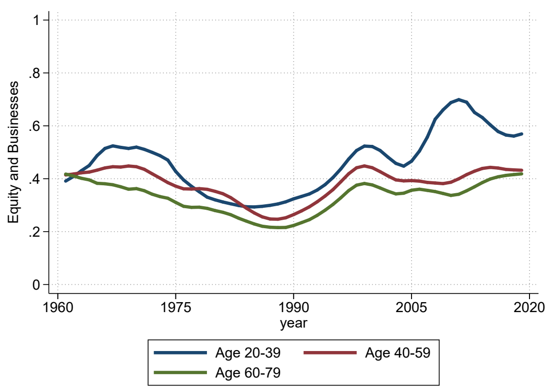
Figure F11: Portfolio shares across age groups over time



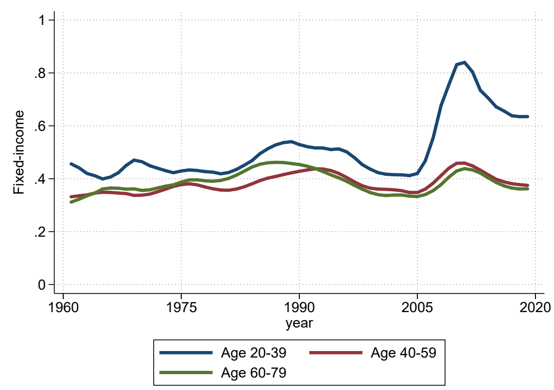
(a) Housing (out of wealth)



(b) Liabilities (out of wealth)



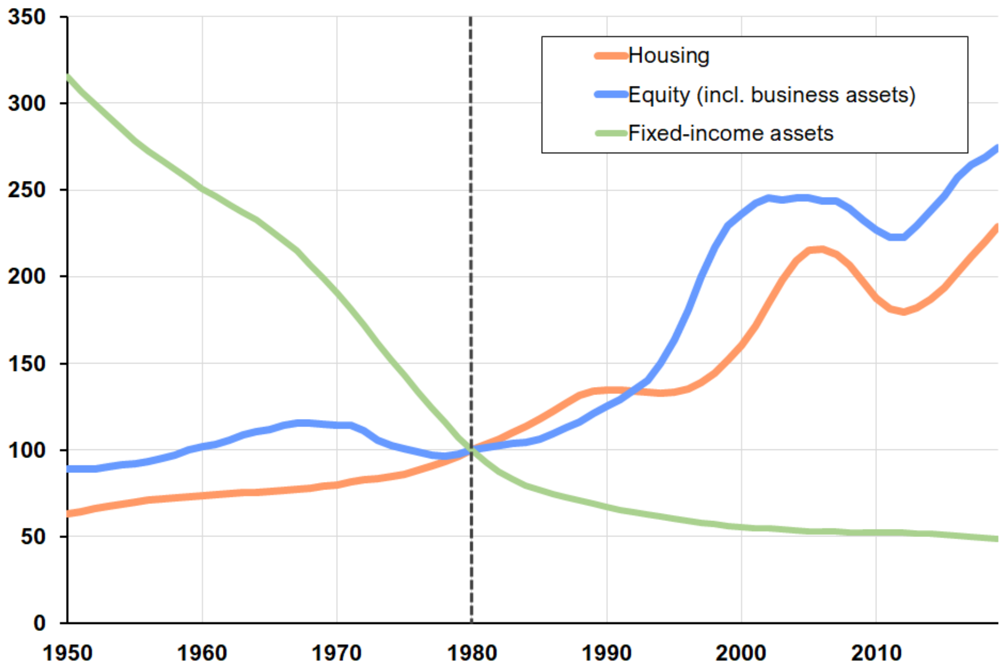
(c) Equity and business assets (out of wealth)



(d) Fixed-income assets (out of wealth)

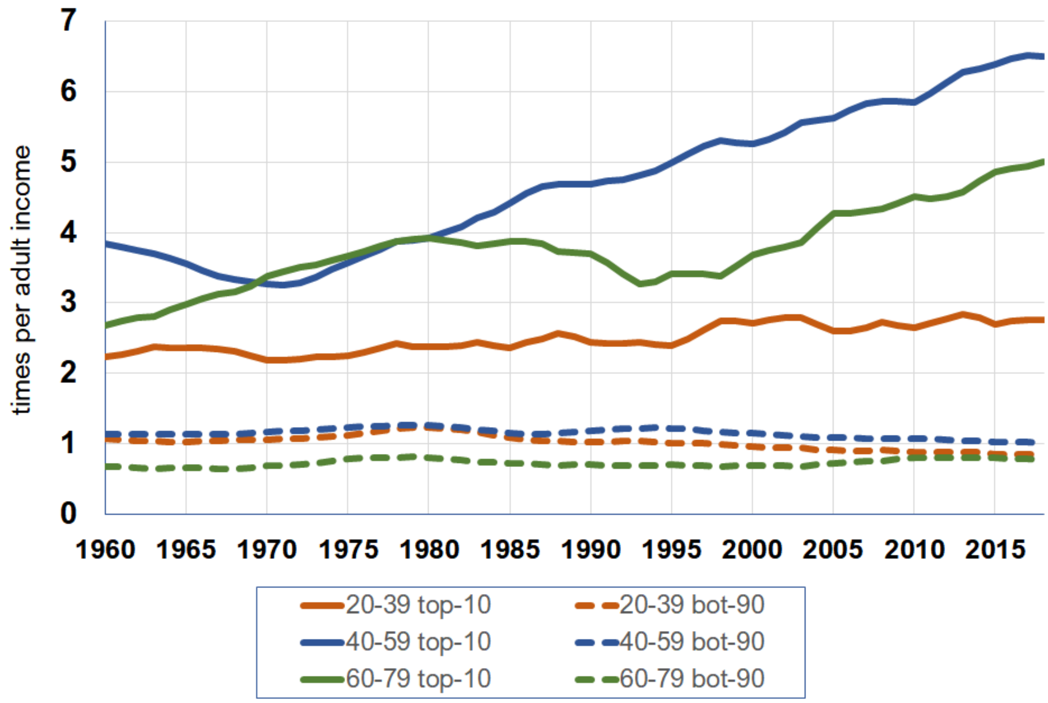
Notes: This figure shows the share of three assets (housing, fixed-income assets, and equity (including businesses)) and liabilities in the wealth of different age groups over time. The figure shows that, e.g., housing owned by the age group 20-39 accounts for around 1.4 times their own wealth in 2018.

Figure F12: **Capital gains index: 1950-2018**



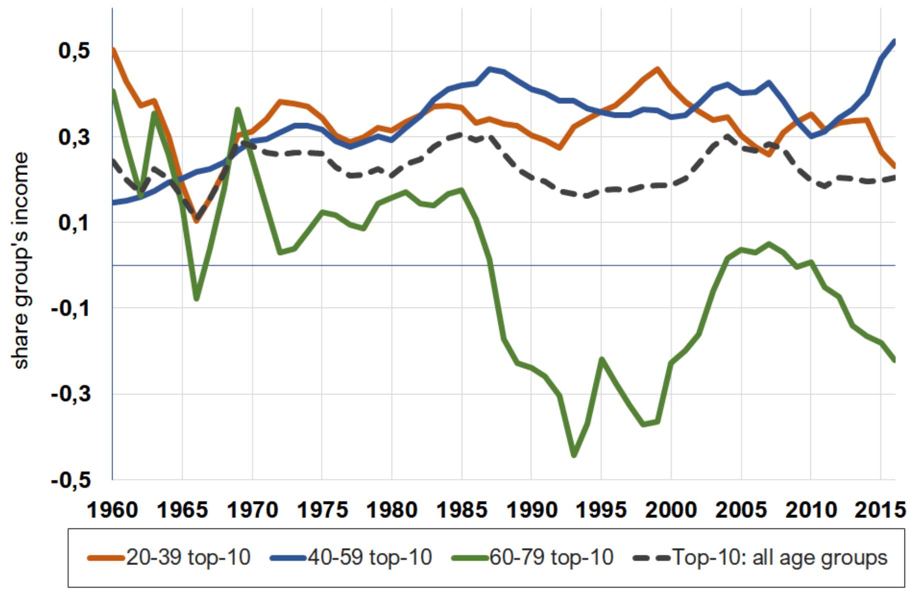
Notes: This Figure shows the evolution of capital gains in the US for the following asset classes: housing, equity (including business assets), and fixed-income assets. Results are expressed as an index, taking a value of 100 in 1980 and are obtained using the asset-specific accumulation equations (see section2).

Figure F13: **Relative income differences, 1960-2018**

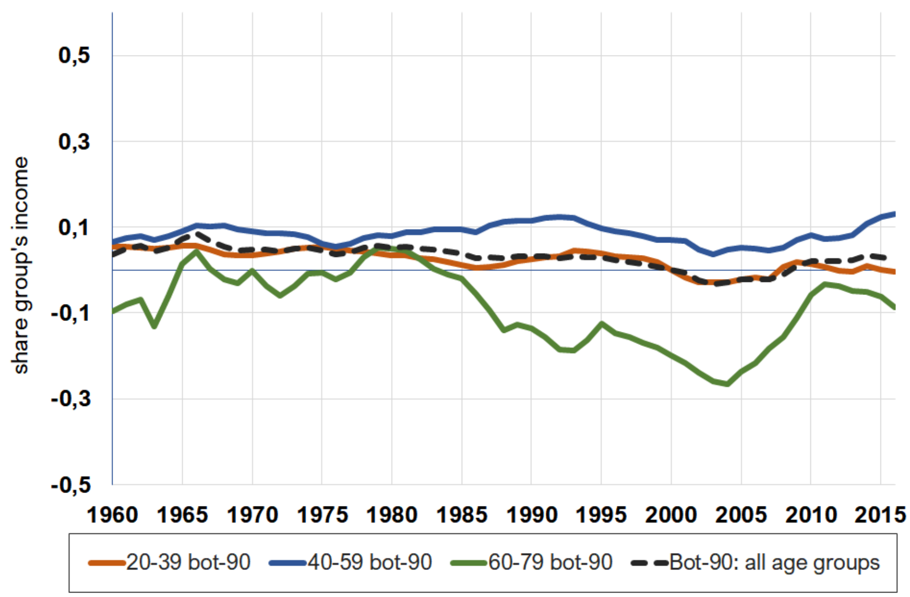


Notes: This Figure shows the income of various wealth groups as a share of per adult income. The wealth groups are the top-10% (Figure F14a) and the bottom-90% (Figure F14a) from within-age groups (20-39, 40-59, 60+). Series are 7-year averages.

Figure F14: Saving rate of within-age wealth groups: top-10% and bottom-90%, 1960-2016



(a) Top-10%



(b) Bottom-90%

Notes: This Figure displays the saving of top-10% (Figure F14a) and the bottom-90% (Figure F14a) from within-age groups (20-39, 40-59, 60+, all combined) as a share of the group's income (i.e., the group-specific saving rate). Series are 7-year averages.

Table F4: Sources of wealth growth by birth cohort and wealth decile, **age 30-50**

	Change in Wealth	Saving	Capital Gains	Inheritances
1920–1939	14.6	9.8	3.1	1.7
Bottom 50	5.3	1.9	3.1	.3
Middle 40	15.1	11.1	2.4	1.6
Top 10	30.1	21.8	4.3	4.1
1940–1959	22.5	14.3	6.6	1.5
Bottom 50	4.4	-1.2	5.3	.3
Middle 40	19.8	11.9	6.6	1.4
Top 10	48.3	37	8	3.4
1960–1979	20.9	14.3	4.7	2
Bottom 50	2.6	-2.2	4.4	.4
Middle 40	16.9	10.2	4.7	2
Top 10	43.4	34.3	5.5	3.6

Notes: This table shows the average contribution of each component to wealth growth between age 30 and age 50 for those cohorts that we observe during these ages. The numbers are as given as a percentage of the groups' income. Numbers are given for each birth cohort and for wealth groups within those birth cohorts (bottom 50% of wealth holders, the middle 40 and the top decile). The construction of saving, capital gains and inheritances is as described in section 2.

Table F5: Sources of wealth growth by birth cohort and wealth decile, **age 50-70**

	Change in Wealth	Saving	Capital Gains	Inheritances
1900–1919	4.6	8.9	-3.7	-.6
Bottom 50	.1	1.5	-1.1	-.3
Middle 40	3.5	7.3	-2.7	-1.1
Top 10	12.8	21.3	-8.3	-.2
1920–1939	14.8	4.3	9.7	.8
Bottom 50	.5	-5	5.4	.1
Middle 40	9.2	.2	8.2	.8
Top 10	31.4	15.9	13.9	1.6
1940–1959	14.9	6.9	6.3	1.7
Bottom 50	2.4	-2.9	4.9	.5
Middle 40	9.6	1.7	6.4	1.5
Top 10	27.3	16.9	7.8	2.6

Notes: This table shows the average contribution of each component to wealth growth between age 50 and age 70 for those cohorts that we observe during these ages. The numbers are as given as a percentage of the groups' income. Numbers are given for each birth cohort and for wealth groups within those birth cohorts (bottom 50% of wealth holders, the middle 40 and the top decile). The construction of saving, capital gains and inheritances is as described in section 2.