The Wealth of Generations*

Luis Bauluz† Timothy Meyer‡

First version: April 2021
Second version: August 2022
This version: June 2025

Abstract

This paper provides the first systematic evidence on life-cycle wealth accumulation across birth cohorts. Using historical U.S. microdata dating back to 1960, we document two shifts in life-cycle dynamics beginning in the 1980s. Relative to their lifetime incomes, recent cohorts accumulate substantially more wealth. They also save more during middle age and have become large dissavers in old age, accounting for the stagnation of the U.S. saving rate. We link this transformation to the post-1980s boom in asset prices and examine its implications for age-wealth inequality and intergenerational welfare. A stylized OLG model reconciles our cohort-level findings with macroeconomic trends.

JEL classification: D15, D31, E21, E44
Keywords: Intergenerational inequality, wealth accumulation, lifecycle

*We thank Miguel Almunia, Francisco Amaral, Miguel Artola Blanco, Alan Auerbach, Alina Bartscher, Pierre Brassac, Claudio Daminato, Mariacristina De Nardi, Antonia Diaz, Juan J. Dolado, Emma Duchini, Ricardo Estrada, Giulio Fella, Julio Gálvez, Alice Henriques Volz, Martin B. Holm, Chi Hyun Kim, Joachim Jungherr, Patrick Kennedy, Moritz Kuhn, Dmitry Kuvshinov, Clara Martínez-Toledano, Benjamin Moll, Salvatore Morelli, Ana Moreno-Maldonado, Catrhin Mohr, Pascal Noel, Jan Palguta, Juan C. Palomino, Borja Petit, Thomas Piketty, Venance Riblier, Bjorn Richter, Sevi Rodríguez Mora, John Sabelhaus, Emmanuel Saez, Moritz Schularick, Alan M. Taylor, Damián Vergara, Gabriel Zucman, as well as participants of the Ninth ECINEQ Conference, the 2nd World Inequality Conference, the UC Davis Economic History Mini-Conference, the 2022 IIPF Conference, the 4th European Midwest Micro/Macro Conference, the NBER Summer Institute 2023, the EEA Congress 2023, the DIW Workshop on Inequality, the SAEe 2023 and seminars at Bonn, Copenhagen Business School, PSE, UC Santa Cruz, UC Berkeley, IRLE (Berkeley), CAF, Universidad de la República de Uruguay, Universidad Nacional de la Plata, UPF, UV, CUNEF, Roma Tre, Lund, UC3M, UPNA and ICAE for their helpful comments. We are particularly grateful to Filip Novokmet for his help with the data and useful suggestions. We thank Alice Henriques-Volz and John Sabelhaus for sharing their code, Jonathan Goupille-Lebret and Bertrand Garbinti for sharing their French wealth series, and Alina Bartscher for help with the SCF+ data. Bauluz acknowledges financial support from the Spanish Ministry of Science and Innovation (PID2022-141254NA-I00) and Madrid's Autonomous Government (2023-T1/PH-HUM-29231).

† CUNEF Universidad, and World Inequality Lab, luis.bauluz@cunef.edu.
‡ University of Bonn, and Kiel Institute, timothy.meyer@uni-bonn.de

1 Introduction

Since the 1980s, rich countries have witnessed a surge in wealth-to-income ratios (Figure 1a) and rising wealth inequality (Figure 1c). These changes have coincided with stagnant—or even declining—private saving, alongside a boom in asset prices (Figure 1b). The evolution and causes of these trends are the subject of great scrutiny by academics and policymakers (Blanchard and Rodrik 2023). While canonical models place life-cycle behavior at the core of saving, wealth accumulation, and inequality (Modigliani 1986), the truth is we know little about how these trends connect to the life-cycle behavior of successive generations.

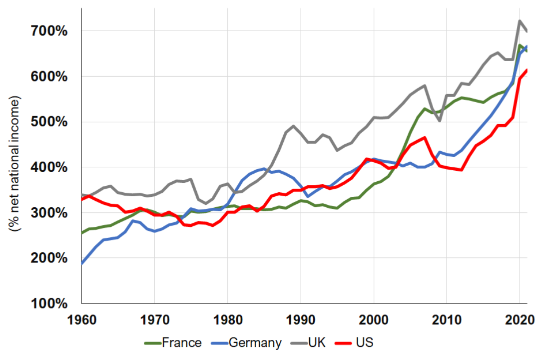
This paper studies, for the first time, the life-cycle wealth accumulation of successive birth cohorts in the U.S. We provide: (i) new facts on the evolution of life-cycle wealth since 1960; (ii) a decomposition of its underlying drivers and an interpretation through an overlapping generations (OLG) model; and (iii) an analysis of the implications of these patterns for aggregate wealth and saving, the age-wealth distribution, and the welfare gains from rising asset prices.

We undertake this analysis using the Survey of Consumer Finances Plus (SCF+; Kuhn et al. 2020), a unique dataset in that it provides detailed, long-run microdata on household assets, debts and income, together with rich demographic information—most importantly, age. We further construct a set of historical distributional financial accounts by harmonizing these microdata with national accounts statistics (Batty et al. 2019; Feiveson and Sabelhaus 2019; Alvaredo et al. 2021). As a result, the distributional results presented in this paper (on wealth, saving, etc.) are fully consistent with macroeconomic aggregates.

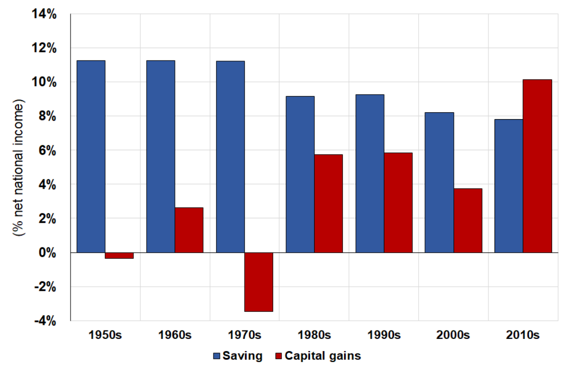
In the first part of the paper, we document how lifetime wealth accumulation has changed across cohorts born after 1900. Two findings emerge. First, recent cohorts retiring after the 1980s accumulated substantially more wealth over their lifetimes than their predecessors, even after adjusting for differences in lifetime income. This reflects a *marked increase in lifetime wealth accumulation* (Finding 1.1). For example, while older cohorts reached wealth levels of 5–6 times their income by retirement age, newer ones reach 8–9 times.[1] Importantly, this pattern cannot be di-

[1]Throughout the paper, we normalize wealth numbers dividing them by the cohort's own income, making the

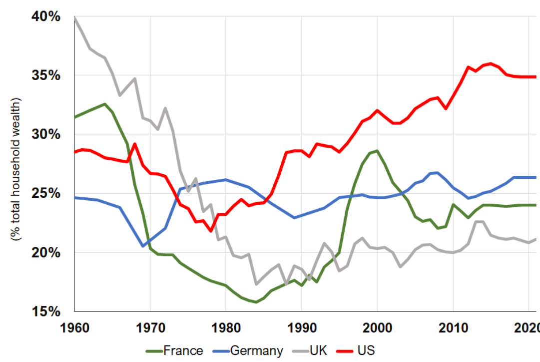
Figure 1: Aggregate wealth, sources of wealth growth and wealth inequality



(a) Aggregate household wealth



(b) Sources of wealth growth: annual saving and capital gains



(c) Top-1% wealth share

Notes: This figure shows results for the U.S. and the three largest European economies: France, Germany and U.K. Panel (a) shows aggregate household wealth, expressed as % of national income (source: World Inequality Database). Panel (b) decomposes annual aggregate household wealth growth into private saving (i.e., household plus corporate saving) and capital gains. Numbers are decennial averages, expressed as a % of national income, and correspond to the unweighted average of the four countries (source: Piketty and Zucman 2014, extended by Bauluz et al. 2022). Panel (c) shows the share of household wealth owned by the wealthiest 1% individuals (source: World Inequality Database based on the works of Albers et al. (2020) for Germany, Garbinti et al. (2020) for France, Alvaredo et al. (2018) for the U.K. and Saez and Zucman (2016) for the U.S.).

rectly inferred from the evolution of aggregate wealth-to-income ratios, which could increase even if life-cycle wealth profiles remained identical across cohorts.[2] This increase in lifetime wealth accumulation is not uniform: it is concentrated in the upper half of the within-cohort wealth dis-

cross-cohort analysis of life-cycle wealth quantitatively comparable. If, alternatively, we would compare the wealth levels of distant cohorts, we would also reach the conclusion that newer cohorts reach higher wealth, but this would conflate long-run income growth with changes in the life-cycle profile of the cohort.

[2]Aggregate wealth-income profiles could rise purely due to compositional factors—for example, if a growing share of the population is older and at the peak of their wealth accumulation, or if a larger share of income accrues to individuals with higher wealth-income ratios, as explored in Auclert et al. (2021) and Mian et al. (2021c).

tribution, particularly among the top 10%, while the bottom 50% of recent cohorts attain lower retirement wealth than earlier generations. As a result, wealth inequality within cohorts is currently at its highest level since World War II.

Second, we find that *wealth growth post-retirement is essentially zero across all cohorts* (Finding 1.2). A well-documented phenomenon is the minimal decline in individuals' wealth holdings after retirement in recent years—a behavior that diverges from the consumption-smoothing prediction of the life-cycle model and is commonly referred to in the literature as the "retirement savings puzzle" (French et al. 2023). We show that this pattern is not unique to recent retirees but rather persists across cohorts, regardless of the level of wealth achieved pre-retirement or the broader economic environment. However, as we explain below, the underlying reasons for the stability in elderly wealth have changed markedly over time.

The second part of the paper studies the drivers of these facts. We employ an accounting framework that decomposes wealth accumulation into saving, capital gains, and inheritances and gifts (Wolff 1999; Saez and Zucman 2016; Feiveson and Sabelhaus 2019). We find that the sources of the life-cycle wealth growth are significantly different for newer and older cohorts, revealing two significant results. First, we find that *capital gains since the 1980s have been a major driver of the increased lifetime wealth accumulation of recent cohorts* (Finding 2.1). In contrast, older cohorts, who accumulated wealth before the 1980s, did so almost exclusively through saving. Through a counterfactual analysis, we find that the life-cycle profiles of more recent cohorts are considerably closer to those of past generations once capital gains are excluded.

Second, we document a shift in the saving profile over the life-cycle: *recent cohorts save more in middle age and dissave substantially more in old age* (Finding 2.2). We term this phenomenon a "convergence towards Modigliani." While prior studies have interpreted the stability of post-retirement wealth as a lack of consumption smoothing (French et al. 2023), we show that elderly individuals in recent decades have engaged in substantial dissaving. However, rising asset prices have offset these drawdowns, leaving overall wealth holdings effectively stable.[3]

[3]Results looking at within-cohort wealth groups indicate that capital gains and saving shifted with different intensities for upper and bottom groups. Capital gains explain a greater share of the wealth accumulation for the bottom-90%

We show that these trends can be rationalized in an OLG model in which agents save during working life and dissave in retirement. The model shows how rising asset demand can endogenously generate the life-cycle shifts we document. Two structural forces—rising longevity and income inequality—emerge as natural drivers of increased asset demand. Longer retirements or higher incomes for top earners (under non-homothetic preferences) increase the asset demand of the young. In both cases, with an inelastic asset supply, asset prices rise. The young increase saving to afford more expensive assets, while the elderly dissave more by selling at higher prices. In the aggregate, the model generates a rise in wealth-to-income ratios led by capital gains, with no change in the private saving rate—in line with the data (Figure 1). The model also highlights intergenerational redistribution through capital gains: the initially old benefit from buying low and selling high, raising their lifetime consumption relative to other cohorts (Fagereng et al. 2024).

The final step of the paper empirically assesses the economic implications of life-cycle dynamics, focusing on their connection to (i) the evolution of aggregate wealth and saving, (ii) changes in the age distribution of wealth, and (iii) the welfare consequences of asset price growth.

Trends in aggregate wealth and saving have been central to debates on macroeconomic developments such as the secular decline in real interest rates and shifts in labor shares (e.g., Piketty and Zucman 2014; Rachel and Smith 2015; Kopecky and Taylor 2022). We build on the shift-share decompositions of Auclert et al. (2021) and Mian et al. (2021b) to quantify the role of changing life-cycle behavior relative to shifts in income inequality and demographic structure. While these decompositions are partial-equilibrium in nature and hold general equilibrium forces constant, they provide a tractable way to detect the most salient factors shaping aggregate trends in the data.

We find that *most of the rise in the U.S. wealth-to-income ratio is explained by the steepening of life-cycle wealth accumulation before retirement and the increasing concentration of income among richer households* (Finding 3.1). Further examination of life-cycle wealth profiles reveals

in recent years while saving has become relatively more important for the top. Moreover, we find that inheritances play a more modest role in the wealth accumulation of different cohorts, but their importance has increased over time. Note, however, that our analysis does not intend to discern the share of lifetime wealth that is inherited relative to self-made, as in the Kotlikoff–Summers–Modigliani controversy (Kotlikoff and Summers (1981); Kotlikoff (1988); Modigliani (1986); Modigliani (1988)). For that purpose, one would need to distinguish capital gains on inherited and self-made assets, which is beyond the scope of our paper.

the pivotal role of large capital gains in recent decades. In contrast, demographic change has played a smaller role, though its influence has grown and is likely to become more prominent going forward.[4]

While U.S. aggregate saving has remained roughly stable over the past sixty years, we document *the emergence of a drastic polarization between middle-aged rich savers and elderly dissavers since the 1980s* (Finding 3.2). Saving has become increasingly concentrated: middle-aged rich households now save roughly 7 percentage points more of national income annually, offset by equally large dissaving among the elderly, both rich and non-rich. Our decomposition shows that changes in life-cycle saving behavior account for nearly all of the decline in elderly saving and about half of the rise in saving among the middle-aged rich, with income inequality explaining the remainder. In essence, we find that (i) the "saving glut of the rich"—as documented by Mian et al. (2021b), Saez and Zucman (2016), and Bauluz et al. (2022)—is more accurately described as a "saving glut of the middle-aged rich," and (ii) dissaving by the elderly has become the key offsetting force, putting downward pressure on aggregate saving.

Taken together, these findings underscore the central role of life-cycle dynamics—namely, the steepening of pre-retirement wealth accumulation and the polarization of saving behavior between young and old—in shaping the rise in the aggregate wealth-to-income ratio alongside the stagnation of private saving.

Beyond aggregate trends, we explore how these life-cycle shifts have affected the distribution of wealth across age groups. We document a *large increase in wealth gap between old and young* (Finding 3.3): the ratio of mean wealth of individuals aged 60–79 to that of young adults aged 20–39 has tripled over the past sixty years, rising from 4 to over 12. We show that the steepening of life-cycle wealth profiles—primarily driven by capital gains—accounts for roughly half of this increase since the 1980s. As a result, wealth concentration has increased not only across individuals, but even more markedly across age groups, with implications for intergenerational equity, political representation, and economic dynamism.

[4]Given current population trends—marked by low fertility and the impending retirement of the baby boom generation—we expect demographics to become a more prominent driver, as anticipated in Auclert et al. (2021).

Finally, we assess the welfare impact of capital gains across cohorts by extending the sufficient statistic introduced by Fagereng et al. (2024) to the U.S. context. We show that *long-run changes in asset price dynamics have led to a reversal in the distribution of welfare gains over the life cycle* (Finding 3.4). Prior to the 1990s, falling asset valuations benefited younger cohorts entering asset markets. In contrast, the post-1990 asset price boom has redistributed welfare from young buyers to older sellers—a pattern further amplified by the shift in life-cycle saving behavior that we document. Taken together, cohorts born in the 1930s emerge as the largest winners in terms of welfare: they purchased housing and equities at depressed prices in the 1970's and 80's and sold them in recent decades at significantly higher valuations. Total welfare gains from asset price changes for these cohorts are almost 2% of total lifetime income. In contrast, later cohorts, even the baby boomers, see smaller welfare gains which turn quite negative for more recent cohorts, which were purchasing housing and equities at high valuations. We consider forecasts for the future development of asset prices. While these forecasts indicate that in the next years baby boomers are likely to realize considerable welfare gains, the same does not hold for younger cohorts who are not forecast to become substantial sellers in the near future.

Our findings have implications for the future and for policymaking. In line with predictions from common life-cycle models, we show that life-cycle wealth and saving profiles are fundamental forces shaping broader macroeconomic trends while redistributing resources across generations. The rise in capital gains since the 1980s (which our model links to rising asset demand) appears at the core of the change in life-cycle profiles. Understanding their key driving forces (such as income inequality, life expectancy, capital regulation, or other relevant factors) becomes of prime importance going forward.

Literature. Our paper is related to four strands in the literature. First, it extends the body of research on wealth accumulation over the life-cycle, aiming to reconcile the life-cycle hypothesis (Modigliani 1986) with observed age-wealth profiles (as summarized, for instance, by Attanasio and Weber (2010)). Building on existing work focusing on life-cycle wealth and saving profiles for single cohorts (Shorrocks 1975; Blundell et al. 1994; Attanasio and Hoynes 2000; Gourinchas and Parker 2002; Dynan et al. 2009; Feiveson and Sabelhaus 2019; Ozkan et al. 2023), we investigate how the life-cycle has evolved over six decades in the U.S.[5] Complementing our analysis, Sturrock (2023) studies the growing wealth gap across cohorts in the U.K. using a quantitative model. Closest to our work is the independent study by Jaeger and Schacht (2022), which uses the SCF+ to document trends in *median* wealth for U.S. cohorts born since the 1940s. In contrast, our analysis covers all cohorts born since 1900, examines within-cohort heterogeneity, incorporates a theoretical model, and connects life-cycle dynamics to aggregates, inequality dynamics and welfare redistribution.

Second, our paper contributes to the literature on consumption and saving behavior after retirement (De Nardi et al. 2016). A central focus in this literature is the observed stability of wealth holdings among recent retirees (e.g., Love et al. 2009; De Nardi et al. 2010; Blundell et al. 2016; Poterba et al. 2018; Ameriks et al. 2020), often interpreted as a lack of dissaving—and, by implication, a deviation from standard consumption-smoothing behavior. Our contribution is threefold. First, we adopt a long-run, cohort-based perspective that allows us to track post-retirement wealth over time and across generations. Second, we decompose post-retirement wealth changes into saving, inheritances, and capital gains—extending the approach of Wolff (1999) and Feiveson and Sabelhaus (2019), who focus on a single cohort.[6] Third, we introduce a theoretical framework that links our findings on growing elderly dissaving in recent decades to asset price dynamics, offering a new lens on the debate over post-retirement consumption behavior.

Third, we contribute to the literature on the long-run dynamics of aggregate wealth and saving, which are often linked to key macroeconomic trends such as the secular decline in real interest rates or the fall of labor shares (e.g., Carvalho et al. 2016; Rachel and Summers 2019;

[5]Looking at recent years (starting in the 1990s or 2000s), various papers document life-cycle wealth profiles for cohorts in various countries, including England (Cribb 2019 or Sturrock 2023), Germany (Bartels and Morelli 2021), Spain (Artola-Blanco et al. forthcoming), and the U.S. (Gale and Pence 2006; Dettling et al. 2014; Gale et al. 2020). Consistent with our long-term data for the U.S., these studies generally find increased wealth around retirement for more recent cohorts. In contrast to these works, our study takes a comprehensive long-term perspective to analyze trends in life-cycle wealth. We also undertake a detailed decomposition of intergenerational wealth differences to discern the relative importance of various drivers, including saving, asset prices, and inheritances.

[6]The definition of saving and income we use is consistent with macroeconomic aggregates. Accordingly, withdrawals of funded pensions (e.g., a 401(k) pension plan) used for consumption are treated as dissaving (i.e., liquidation of existing assets) and not as an income flow (Bosworth et al. 1991; Piketty et al. 2018; Alvaredo et al. 2021).

Eggertsson et al. 2019; Gagnon et al. 2021; Mian et al. 2021b; Kopecky and Taylor 2022; Bauluz et al. 2022; Piketty and Zucman 2014; Karabarbounis and Neiman 2014). Building on a long tradition of shift-share decompositions to understand macroeconomic aggregates (Summers and Carroll 1987; Mankiw and Weil 1989; Auerbach and Kotlikoff 1990; Poterba 2001; Bosworth et al. 1991; Beaudry et al. 2023), we quantify the contribution of shifting life-cycle wealth profiles to the evolution of aggregate wealth and saving. Our work complements Auclert et al. (2021), who assess the effect of age structure on aggregate wealth, and Mian et al. (2021c), who focus on inequality and demographics in shaping saving. In contrast, we highlight the role of changing life-cycle saving and wealth accumulation behavior, which turns out to be quantitatively more important in explaining long-run trends.

Finally, our paper relates to the literature examining the determinants of inequality and welfare dynamics in the United States. We analyze the distribution of wealth across age groups from a long-run perspective, contributing to recent debates on wealth differences between "millennials" and "baby boomers" (e.g., Gale et al. 2020; Sabelhaus and Volz 2022a; Paz-Pardo 2021). We highlight the role of the post-1980s asset price boom in widening the age-wealth gap. In addition, we extend the framework of Fagereng et al. (2024), who estimate welfare gains and losses from asset price changes across cohorts in Norway (1994–2019). We apply this approach to the United States over a long time horizon since 1960. While our data is less granular, the longer time period allows us to cover time periods of both high and low asset valuations, as well as a case in which the stock market was the dominant source of valuation gains (rather than the housing market as in Norway).

The rest of the paper proceeds as follows. Section 2 introduces the key concepts, methods, and data sources. Section 3 presents new facts on the life-cycle wealth profiles of successive generations and on the distribution of wealth within cohorts. Section 4 decomposes cohort wealth growth into saving, capital gains, and inheritances, and introduces a theoretical model that links these drivers across generations. Section 5 examines the connection between life-cycle wealth accumulation and broader trends in aggregate wealth and saving, age-wealth inequality, and welfare gains from asset price growth. Section 6 concludes. An accompanying methodological online appendix discusses the robustness of our results to a range of factors.

2 Concepts, data and methodology

In this paper, we use concepts and definitions of household wealth, income and saving from the international system of national accounts (SNA 2008) and harmonize the distributional data to make it consistent with the balance sheet and flow accounts of the household sector. This section provides an overview of the main concepts used in this paper, the underlying data, and the methodology to decompose changes in cohorts' wealth into saving, asset prices and wealth transfers. In section A, we discuss the robustness of our results to the methods and data used in our analysis.

2.1 Main concepts

Our concept of household wealth follows standard definitions. Household wealth (often referred to as household net wealth or net worth) comprises the total value of non-financial assets and financial assets owned by households, minus any outstanding liabilities. To decompose household wealth into different types of non-financial assets, financial assets and liabilities, we adhere to the classification of asset types in the SNA-2008. In line with the principles of the Distributional National Accounts project (Piketty et al. 2018; Alvaredo et al. 2021), unfunded pensions are excluded from the concept of wealth, as these are not linked to existing assets. Unfunded pensions encompass pay-as-you-go social security pensions and unfunded defined-benefit pensions.[7]

Our concept of saving is commonly known as "private saving" in the literature (e.g., Auerbach 1988; Poterba 2001; Piketty and Zucman 2014; Mian et al. 2021b). It encompasses the saving

[7]While unfunded pensions influence private saving decisions (e.g., Engelhardt and Kumar 2011) and one might consider including them in the definition of wealth, it is important to note that other future government payments also affect private saving behavior, which makes conceptually challenging to delineate a concept of wealth that goes beyond marketable assets and debts. Furthermore, calculations involving unfunded pension assets, which typically involve discounting future payments, are inherently fragile. For these reasons, we do not account for unfunded pensions in our definition of assets, an approach standard in the inequality literature (e.g., Saez and Zucman 2016; Smith et al. 2023; Kuhn et al. 2020; Mian et al. 2021c). Previous studies for the U.S. that impute social security pensions tend to report lower levels of wealth inequality, although the impact on trends varies depending on the specific assumption on the discount rates implemented in these papers (Sabelhaus and Volz 2022b; Catherine et al. 2020; Bönke et al. 2020).

of the household sector (which involves the acquisition of assets net of debt accruals), along with the saving of corporations (both publicly traded and privately held ones). Households essentially own corporations, so corporate saving is considered a saving flow for the equity owners and treated as saving in equity (Miller and Modigliani 1961). We distribute corporate saving to households based on the share of the corporate sector that is ultimately owned by households (as opposed to corporations owned by the government), accounting for global cross-ownership of corporations.[8]

Our definition of household income follows efforts by Fed researchers (Dettling et al., 2015) to align the SCF with national accounts. Household income is pre-tax and post-transfers and includes labor and business income, capital income, and transfer income. Consistent with macroeconomic aggregates, withdrawals of funded pensions used for consumption are treated as dissaving (i.e., liquidation of existing assets) and not as an income flow.

2.2 Data

The main data source we rely on is the Survey of Consumer Finances + (SCF+). This dataset combines and harmonizes historical SCF waves dating back to the 1950s with the contemporary SCF data available since 1989 and administered by the Federal Reserve Board (Kuhn et al. 2020).[9] The contemporary SCF provides an accurate representation of the wealth distribution, particularly for the upper parts of that distribution, due to the oversampling of very wealthy households. While the historical SCF lacks the same oversampling strategy, Kuhn et al. (2020) show that it is still very precise when analyzing larger wealth groups like the top-10% or the bottom-50%.

Our analysis uses survey waves starting from 1960 onwards – before 1960, age is not reported as a continuous variable but in a number of discrete bins.[10] This is crucial for studying the evolution

[8]Specifically, we deduct the portion owed to foreign entities from retained earnings of domestic corporations, while incorporating the share of foreign retained earnings owed to resident households. We carry out this adjustment by leveraging recent data on net reinvested earnings from the World Inequality Database (Alvaredo et al. 2021).

[9]Another dataset with U.S. microdata on individual income, assets and debts is the one from Piketty et al. (2018), which is available on an annual basis since 1962. Unfortunately, the age variable only covers two large age groups until 1978 (20 to 64 and 65+) and three since 1979, not allowing the analysis of birth cohorts over time.

[10]Our main analysis omits the 1977 wave, in which we find an anomalous drop in equity holdings (see also Auclert et al. (2021)). We show this explicitly in Appendix B.3, where we also show our main results including the 1977 wave.

of birth cohorts, which are defined by the age of individuals at the time of the survey. We restrict the sample to adults aged 20 and older and split wealth equally between couples (consistent with Saez and Zucman (2016) or Smith et al. (2023)).[11]

The SCF+ includes data on all major asset categories (cash, deposits, bonds, equity, etc.) except for defined benefit pensions, which are missing for the entire survey, and defined contribution pensions, which are missing in the historical waves. For the years 1989-2019, we impute funded defined benefit pensions using the procedure outlined by Henriques Volz and Sabelhaus (2019).[12] For the historical waves, we take a different approach to impute pension assets (both defined contribution and defined benefit). We use the age - wealth distribution of pension assets in the modern waves and shift it downwards following changes in life expectancy. It is worth mentioning that funded pensions constitute nearly 30% of household wealth today but less than 10% in this period (see Appendix Figures B1a and B1b). As we show in the robustness section A, the treatment of pensions does not alter the trends we document in a significant manner.[13]

In the next step, we harmonize the SCF with macroeconomic aggregates from official balance sheets. Doing so is the aim of several studies, notably the Distributional Financial Accounts (Batty et al. 2019). The SCF is generally found to align well with wealth aggregates. We categorize assets and liabilities using the guidelines established by the international system of national accounts (SNA 2008), distinguishing six broad asset categories: fixed-income assets (including bonds, deposits, and currency), equity, investment funds, pension and life insurance assets, housing and business assets. Additionally, we differentiate two types of liabilities: short-term and long-term debt. The precise mapping of SCF asset categories to their SNA 2008 equivalents is detailed in Appendix Table B1. Subsequently, we rescale the SCF components to be consistent with

[11] To determine individuals' ages, we use the age of the household head for single individuals. In the case of married couples, we assume that both adults are of the same age since only the age of the household head is available in the historical SCF waves. In the modern SCF waves, the average age distance between couples is 2.5 years. In section A we show that our findings also hold when not splitting wealth between couples.

[12] While Henriques Volz and Sabelhaus (2019) imputed both funded and unfunded defined benefit pensions, our interest lies solely on marketable assets. To address this, we set the funded share of defined benefits equal to the share of funded defined benefit pensions among defined benefit pensions in the aggregate.

[13] Investment funds are also not recorded in the data before 1971, constituting less than 1% of total wealth from 1960 to 1970. Given their limited contribution, we opt not to address this missing data. Similarly, offshore assets are absent from both the national accounts and the SCF+, and we do not attempt any corrections in this regard.

their aggregate counterparts. This harmonization process parallels the approach taken by Batty et al. (2019) and Feiveson and Sabelhaus (2019) in reconciling the SCF with macroeconomic data, and several other studies within and outside the United States (e.g., Albers et al. 2020; Blanchet and Martínez-Toledano 2023).

After aligning the survey microdata with macroeconomic accounts, we proceed to "unveil" indirectly held assets through investment and pension funds, an approach used in previous studies (e.g., Saez and Zucman (2016), Mian et al. (2021b) or Bauluz et al. (2022)). We decompose intermediated financial assets into two broad categories: fixed-income assets and equity. This categorization is based on the asset portfolio of pension and investment funds, as documented in the Financial Accounts, and we allocate indirectly held assets in the survey accordingly. This distinction is important for understanding the roles of saving and asset prices in wealth growth dynamics because equity and fixed-income assets exhibit distinct price behaviors.[14] By unveiling indirectly held assets, we simplify the financial portfolio of U.S. households into two primary asset categories: fixed-income assets and equity.

Our concept of household income follows Fed researchers (Dettling et al., 2015) harmonizing the SCF with national accounts. Kuhn et al. (2020) show that the SCF+ income aligns with aggregates household income over time in trend and levels. In particular we subtract from national accounts those components not included in the SCF, most importantly imputed rents on owner occupied housing and supplements to wages. Appendix B.1 provides more details. Our results use income as a denominator only, to show wealth accumulation and its components as a fraction of income earned by the cohort.

2.3 Wealth accumulation: saving, capital gains and intercohort transfers

We employ an established accounting framework to decompose the wealth growth of cohorts into three key components: saving, capital gains (representing asset prices), and wealth transfers (com-

[14]Currently, pension and investment funds represent approximately half of the financial portfolio of U.S. households (Figure C9), with equity held through these funds providing substantial valuation gains in recent decades.

prising inheritances and inter-vivos gifts). This framework is often referred to as the "synthetic saving method" (e.g., Saez and Zucman (2016); Garbinti et al. (2020); Kuhn et al. (2020)). It relies on an accounting identity that decomposes changes in wealth into its components. The central idea is to employ information on capital gains and wealth transfers to obtain saving flows as the residual in the cohort's budget constraint. To ensure the distributional outcomes correspond to macroeconomic aggregates, we follow a two-step process, examining aggregate wealth accumulation and then cohort-level accumulation. Importantly, our measure of saving includes saving by corporations (i.e., retained earnings) and capital gains exclude valuation gains that reflect corporate saving (see Bauluz et al. 2022 or Mian et al. 2021b for further details).

In the initial step, we break down household wealth accumulation at the aggregate level using asset-specific accumulation equations (e.g., Artola-Blanco et al. (2020); Bauluz et al. (2022)). This process decomposes the growth of each asset class into two components: a volume effect, reflecting saving, and a price effect, accounting for capital gains or losses. Specifically, for each asset type (e.g., housing, business assets, bonds and deposits, equity, debt), we employ the equation

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

Here, A_{t+1} and A_t denote the real values at times $t + 1$ and t of a given asset recorded in the national accounts, while $S_{t+1,A}$ represents the net-of-depreciation saving flow in the asset in year $t + 1$. Lastly, q_{t+1} reflects the real capital gain or loss from asset type A between time t and $t + 1$. All components of the equation are derived from national accounts data, specifically the Flow of Funds.[15] In line with Piketty et al. (2018), we adjust the housing and equity saving rates in the national accounts to align housing capital gains with the Case-Shiller house-price index while ensuring consistency between the sum of all saving flows and total private saving.[16] In the robustness checks (subsection A.4), we show that using the unadjusted saving rates does not

[15]In practice, capital gains consist of two items in national accounts: valuation gains and other volume changes. The latter is not strictly a capital gains, but in practice its size is minimal, so it does not affect our results.

[16]Notably, we include corporate saving as part of households' saving in equity, so that increases in equity values due to corporate saving are considered saving and not a price effect.

significantly alter the trends highlighted in this paper. Overall, the capital gains we derive closely align with existing asset-price indices (such as Case-Shiller house-price index or SP-500 index), as displayed in Appendix Figure F34.

In the second step, we extend this framework to analyze wealth accumulation across different birth cohorts, in line with previous work from Wolff (1999) or Feiveson and Sabelhaus (2019). The main difference when looking at cohorts is that we include intergenerational wealth transfers (i.e., inheritances and gifts), to account for the fact that some cohorts are net givers and other cohorts net receivers of wealth transfers at a given point in time.

For a given asset type A (e.g., housing, business assets, etc.), and a specific generation g, we decompose wealth accumulation using the accumulation equation

$$A^g_{t+1} = A^g_t(1 + q_{t+1,A}) + S^g_{t+1} + I^g_{t+1}. \tag{2}$$

Here, A^g_t refers to the real holdings of asset A of generation g at time t and $q_{t+1,A}$ is the real capital gain or loss of asset type A between time t and $t+1$. Finally, I^g_{t+1} reflects the net inheritances and gifts received by generation g in time $t+1$, that is, the inflows of gifts and inheritances received by a generation less the outflows of gifts and inheritances given by a generation.

In terms of measurement, we observe A^g_t directly in the SCF+ on a triannual basis and then interpolate to construct values in between.[17] The capital gains $q_{t+1,A}$ on the other hand, are the ones constructed from macroeconomic accounts in equation 1 and hence correspond to the average of the economy. In other words, we assume that all cohorts experience the same capital gain on a given asset class at a point in time.[18] We discuss this assumption in the robustness checks (subsection A.4) and show that capital gains on specific assets are generally similar across birth cohorts. Then, saving of a given cohort in a specific asset $S^g_{t+1,A}$ is obtained as the residual from all other components in the equation. As a result, this framework distributes aggregate private saving

[17]Concretely, we linearly interpolate the share $x^g_{t,A}$ of an asset A that is owned by cohort g between survey waves. We then multiply the interpolated shares with the aggregates to obtain asset ownership between survey waves. This ensures that we are consistent with macroeconomic aggregates also between survey waves.

[18]With different portfolios, however, different cohorts still experience differing capital gains on their wealth.

and aggregate capital gains, obtained in (1), across different generations over time.[19] [20]

This accounting framework is particularly well-suited for analyzing birth cohorts using repeated cross-sections of survey microdata, because cohorts are consistent over time except in case of death, for which we account through our inheritance estimation. In section 5.1.1, we also examine the saving behavior of within-cohorts wealth groups, such as the top-10% within a cohort. To do this, we compare the same group across two-time points, assuming that households do not change groups in between. This assumption aligns with prior literature that analyzes wealth growth across the wealth distribution using cross-sectional data (e.g., Saez and Zucman (2016); Garbinti et al. (2020); Kuhn et al. (2020); Martínez-Toledano (2020); Mian et al. (2021b)). We further discuss and provide evidence on this assumption in the robustness checks (section A.5).

2.4 Estimation of inheritances and gifts

We estimate inheritances using the mortality multiplier approach (Alvaredo et al. 2017; Feiveson and Sabelhaus 2019). The method predicts post-tax bequests using mortality rates adjusted for wealth differentials and allocates them following the observed density of inheritances in the SCF. To ensure consistency with inheritance receipts, we account for deductions such as charitable giving, funeral costs, and estate taxes. Inter-vivos gifts are treated similarly, with data available from 1989 onward, and earlier flows imputed as a proportion of bequests. Further details on these estimates, including robustness checks and comparisons to existing estimates, are in Appendix B.4.

In the next sections, we document that inheritances make up a small fraction of wealth accumulation when looking at cohorts as a whole (the object of this paper), which needs not be the case

[19]Using this methodology allows us to accurately capture the rise in corporate saving (Bauluz et al. 2022; Chen et al. 2017), which account for a large fraction of aggregate saving in recent years. Corporate saving is treated as saving in equity assets, hence, our methodology assigns saving done by corporations to equity owners (Mian et al. (2021b)).

[20]One may wonder what happens to residual saving if an individual (or cohort) immediately consumes an inheritance instead of fully saving it as wealth. We now explain that the treatment given to inheritances and residual saving remains correct. Consider the following example: An individual has \$1000 of wealth in period 0, \$2000 in period 1, and no capital gains. Between the two periods, the individual receives an inheritance of \$1000, which she fully consumes, and then saves \$1000, leading to \$2000 in total wealth. The accounting decomposition will assign \$1000 to inheritance and \$0 to saving. This is indeed correct. The individual increases her initial wealth in \$1000 due to inheriting. The subsequent consumption of the inheritance is considered negative saving (just as consuming any initial wealth is). Combined with \$1000 of active saving, the result is \$0 in overall saving.

when looking at individuals within cohorts. This result is consistent with evidence from detailed microdata for Norway (Black et al., 2022). Hence, even though the measurement of inheritances and gifts is imperfect, it is unlikely to affect our results in a significant manner.

3 New stylized facts

This section presents stylized facts on long-run trends in life-cycle wealth accumulation across U.S. birth cohorts spanning six decades. We study cohorts born in each decade from 1900 to 1979, whom we observe throughout most of their working lives. We first document life-cycle wealth trajectories across cohorts and then examine how wealth profiles vary within each cohort, distinguishing between the top 10%, middle 40%, and bottom 50%. Appendix C.5 provides an international perspective plus a comparison using data from France—the only other country for which similar long-run data is available.

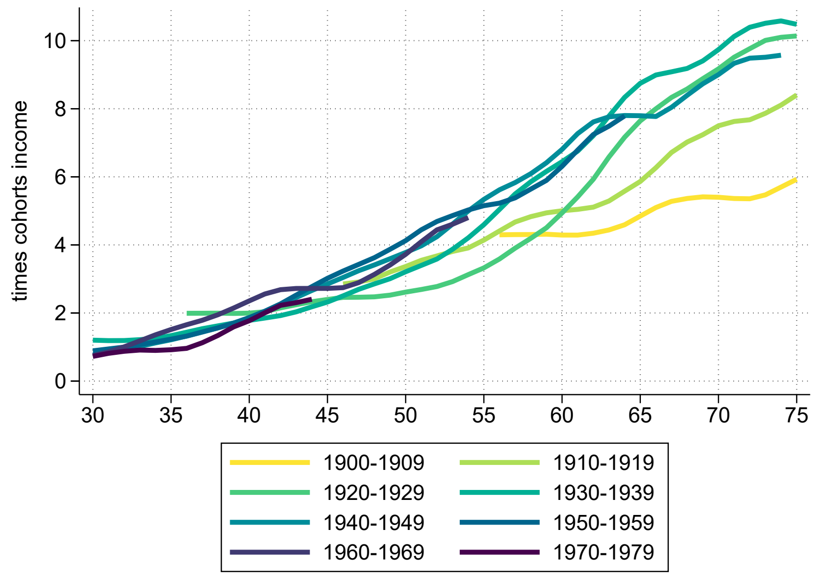
3.1 Life-cycle wealth trends

Figure 2 plots wealth over the life-cycle of the eight generations examined in this paper. It measures cohorts' average wealth from age 30 to 75, normalized by their respective average income at each age.[21] Expressing wealth relative to each group's income enables meaningful comparisons of life-cycle wealth trajectories. Without this normalization, differences in wealth levels could simply reflect variations in income, obscuring any distinctions in wealth behavior over the life cycle.

This chart serves as a key finding. It shows that more recent cohorts attain significantly higher lifetime wealth and display a steeper life-cycle wealth profile. While all cohorts begin their working lives with similar wealth levels—roughly one year's worth of income at age 30—those born between the 1920s and 1950s accumulate substantially more wealth by retirement. Their wealth-to-income ratios rise by around 50%, from 5–6 to roughly 8–9. Moreover, we find a steady

[21] Throughout the text, age refers to the age at the midpoint of the cohort. For example, the average age of the cohort born in 1960-1969 in 2010 is 46 = 2010-1964. Table C2 in the appendix shows the mapping of cohorts to years and the number of observations in each cohort year.

Figure 2: **Life-cycle wealth-income profiles**



Notes: This figure plots the average wealth of eight cohorts during their life cycles, expressed as a share of the cohorts' own average income. Series are 7-year averages.

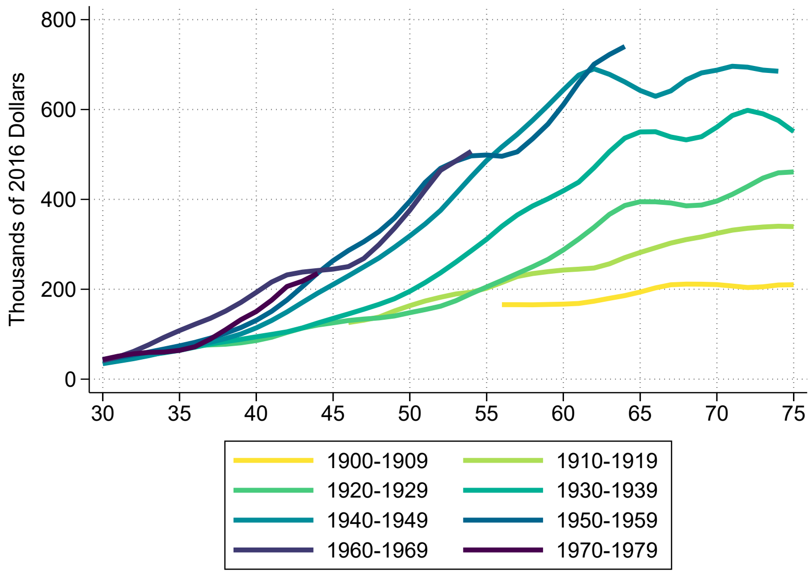
increase in all cohorts' wealth-income ratios throughout their life cycles, contradicting the decline at older ages predicted by the standard life-cycle model.

This finding is robust to alternative data specifications, including the raw SCF+ series, the exclusion defined benefit pensions or using households rather than individual adults as the unit of observation (see section A). Combined with similar evidence from France (Appendix Figure C11), this suggests that shifts in household size or the US-specific institutional setting (such as the pension system) are not the primary drivers explaining this trend.

The rising wealth-income ratio of recent cohorts is not an obvious result inferred from the aggregate wealth-income ratio trends. Aggregate ratios can increase even if life-cycle wealth-income profiles remain unchanged across cohorts. This can occur, for example, if a larger share of income accrues to individuals with higher wealth-income ratios, or if a growing share of the population is older and at the peak of their wealth accumulation. We quantitatively assess the contribution of each channel to the aggregate trend in Section 5.

To gain deeper insights into the dynamics of life-cycle wealth, we present Figure 3 displaying the evolution of wealth only, with values expressed in constant 2016 dollars. This figure provides another key finding of this section: the stability of post-retirement wealth over time.

Figure 3: **Life-cycle wealth in constant prices**



Notes: This figure plots the average wealth and during cohorts' life cycles in constant thousands of 2016 dollars. Series are 7-year averages. For example, the average wealth at age 65 of the cohort born in 1920-29 is around 400,000 dollars at constant prices of 2016.

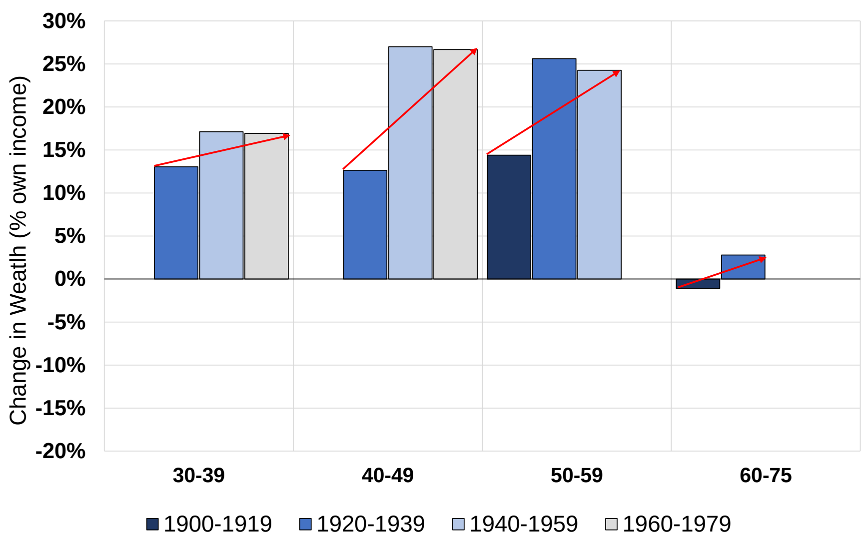
For all cohorts, we observe a consistent pattern: wealth rises until retirement and then remains relatively stable.[22] Extensive research has documented that individuals' wealth holdings decline little after retirement in recent years (French et al. 2023), often interpreted as a lack of dissaving or, equivalently, limited consumption smoothing. Our findings show that this pattern is not new; it has persisted across cohorts, regardless of differences in wealth levels or macroeconomic conditions. This result will be important when decomposing cohort wealth accumulation post-retirement in Section 4, as those living after the 1980s experienced substantial positive valuation gains, unlike earlier cohorts. These differences have important implications for saving flows, wealth inequality, and welfare, as we will discuss in Section 5.

The patterns in Figures 2 and 3 suggest that the rise in life-cycle wealth-income profiles

[22]Equivalently, Appendix Figure C8a displays cohorts' life-cycle income in constant dollars. Throughout all cohorts, income consistently rises until reaching the retirement age, after which it diminishes.

across generations is driven primarily by shifts in wealth accumulation, rather than by changes in income profiles. To confirm this, Figure 4 shows annual real wealth growth as a percentage of income earned by each cohort at a given age. For clarity, we group cohorts into four broader categories: 1900–1919, 1920–1939, 1940–1959, and 1960–1979. All groups exhibit a hump-shaped profile of real wealth growth, with peak accumulation occurring between ages 40 and 59, averaging 15–25% of income annually. After age 60, wealth growth slows and approaches zero. The key difference across cohorts is that more recent ones experience faster wealth growth during middle age—an aspect we explore further in Section 4.[23]

Figure 4: **Annual wealth changes over the life-cycle**



Notes: This figure displays annual changes in real wealth along the life-cycle of four birth cohorts (born in 1900-19, 1920-39, 1940-59 and 1960-79) from age 30 to age 75. The flows are shown as a percentage of the average annual income of the cohort.

3.2 Life-cycle wealth: within-cohort inequality

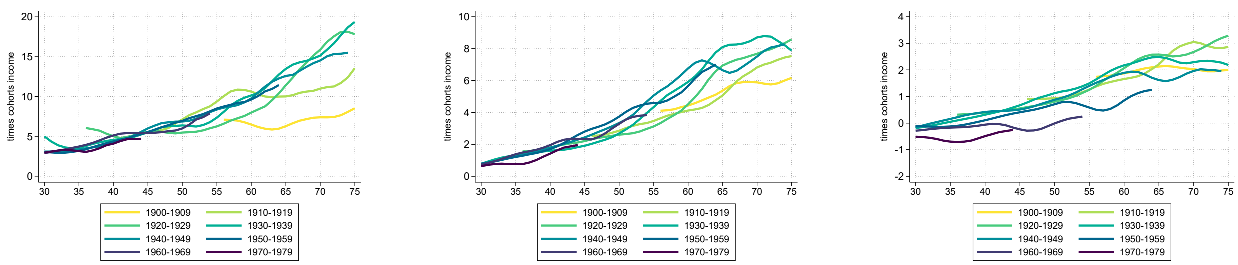
Examining wealth profiles *within* cohorts is important as income and wealth inequality widened in the U.S. in recent decades (e.g., Wolff 2002; Heathcote et al. 2010; Piketty et al. 2018; Smith et al.

[23] In Appendix Figure C8b, we also plot the life-cycle wealth of each cohort normalized by the economy-wide average income, which yields a similar pattern of steeper life-cycle wealth profiles. We normalize wealth profiles by the cohorts' own income instead of economy-wide average income because it corresponds more closely to the resources each cohort has available at a given age.

2023). We look at this trend from a cohort perspective.

Figure 5 illustrates the life-cycle wealth profiles of three distinct wealth groups within birth cohorts: the top-10%, the middle-40% and the bottom-50%. The figure uncovers that the steeper wealth accumulation seen in more recent generations is primarily concentrated within the upper half of the within-cohort distribution. Both the top-10% and the middle-40% in newer cohorts experience increased life-cycle wealth compared to older cohorts. In contrast, the bottom-50% of each new cohort lags behind their predecessors.[24]

Figure 5: **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%

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 their own group's average income. Series are 7-year averages. For example, the average wealth of the top-10% at age 70 of the cohort born in 1910-19 is slightly above 10 times their own average income.

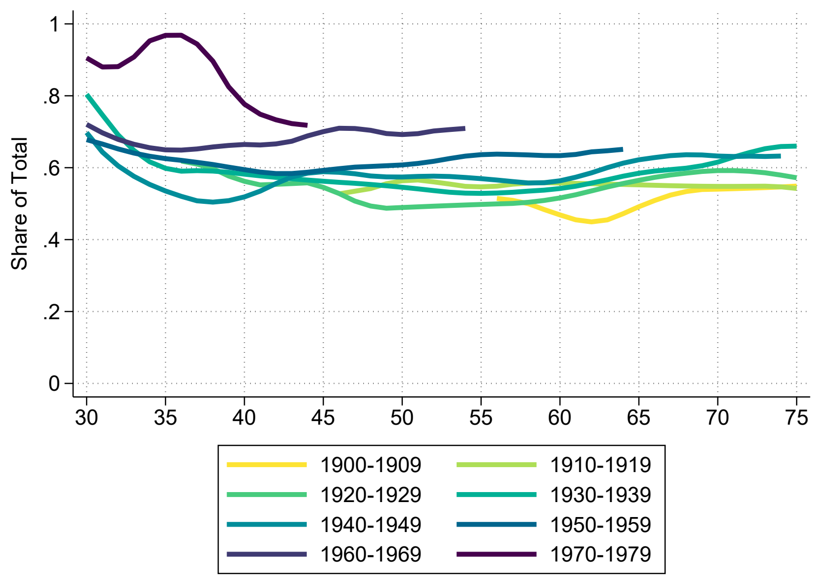
The disparities in wealth *levels* attained throughout individuals' lifetimes are quite substantial, particularly around retirement. For example, the top-10% within birth cohorts accumulate wealth equivalent to 10 to 15 times their income by age 70, whereas the bottom-50% accumulates only two to three times their income. This underscores that a significant portion of the U.S. population holds relatively modest wealth not only in cross-sectional comparisons (Aguiar et al. 2020) but also over the life cycle, even around retirement.

To conclude this section, we shift our perspective and focus on within-cohort wealth inequality across the life cycles, as illustrated in Figure 6. Specifically, we plot the share of wealth

[24]This finding aligns with studies by Gale et al. (2020) and Jaeger and Schacht (2022), who note that the most recent birth cohorts, those born in the 1960s or 1970s, tend to underperform prior generations in terms of median wealth. It also resonates with results from Bauluz et al. (2022), who find that the global wealth boom since the 1980s has primarily favored the top-10% and middle-40% in the cross-section.

owned by the top 10% of each age group within each cohort. Across all cohorts, wealth inequality tends to be somewhat higher during the early stages of their working age, gradually decreasing thereafter. This pattern of higher inequality at younger ages aligns with previous findings in the literature (e.g., Garbinti et al. 2020; Martínez-Toledano 2020). In line with the outcomes depicted in Figure 5, our analysis uncovers that within-cohort inequality was lower for older cohorts and has surged for more recent cohorts.[25] Overall, the rise in wealth inequality in the U.S. in recent decades is a broad phenomenon, reflecting both an increase across as well as within cohorts.

Figure 6: **Within-cohort top-10% wealth share over the life-cycle**



Notes: This figure displays 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%.

[25] Notably, we focus on the comparison of wealth concentration around the age of 50, which encompasses the majority of cohorts (with the exception of those born in 1900-1909 and 1970-1979, for which data is unavailable at that age). Examining this age group, we find that the top 10% of the cohorts born in 1910-1919 and 1920-1929 own approximately 50-55% of the group's wealth, while for the most recent cohorts, this figure approaches 70%.

4 Drivers of life-cycle wealth

This section investigates the drivers of cohorts' life-cycle wealth growth, focusing on two key findings from the previous section: (i) the steeper wealth profiles of recent cohorts and (ii) the stability of wealth after retirement. We proceed in two steps. First, we decompose cohort-level real wealth growth into saving, capital gains, and inheritances/gifts, and discuss the robustness of these results. Second, we interpret the findings through the lens of a life-cycle model. Appendix D.1 provides additional macro-financial context, highlighting the steep rise in housing and equity prices since the 1980s, accompanied by rising aggregate wealth-to-income ratios and stagnant—or even declining—aggregate saving.

4.1 Life-cycle wealth growth decomposition

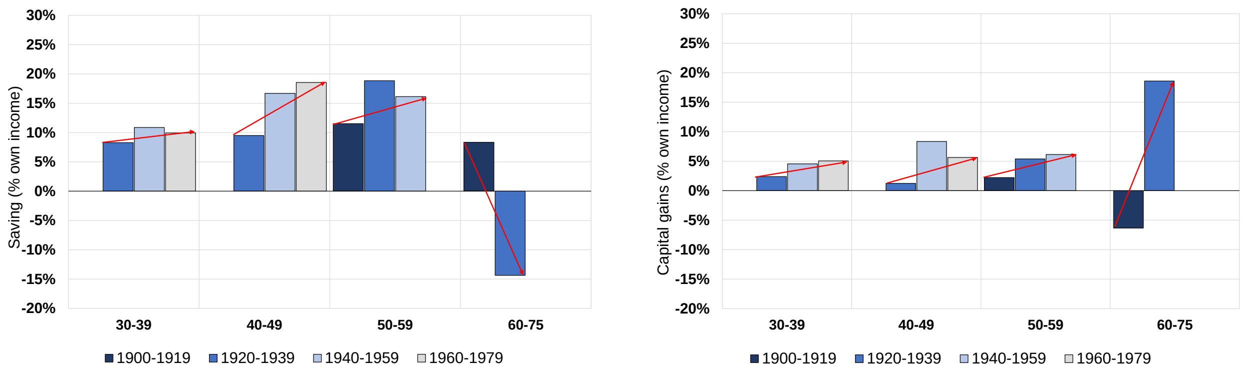
We apply the accounting framework introduced in Section 2.3 to decompose real wealth growth into its three components: saving, capital gains, and inheritances and gifts.[26] Our goal is not to quantify the lifetime share of inherited versus self-made wealth—as in the Kotlikoff–Summers–Modigliani debate[27]—but to document how each channel contributes to cohort-level wealth accumulation over the life cycle.

Figure 7 presents the main results. For clarity, we focus on saving (Figure 7a) and capital gains (Figure 7b) in the main text; the inheritance and gift component is shown in Appendix Figure D14. At each age, these components sum to the total annual change in real wealth in Figure 4. This decomposition is central to our analysis and extends the approach of Feiveson and Sabelhaus (2019), who used SCF data from 1989 onward and pooled multiple cohorts into a single life-cycle profile. In contrast, we separately identify cohort profiles from 1960 onward.

[26] While the flow of inheritances and gifts cancels out in the aggregate, at the cohort level there are net givers and receivers. In advanced economies, aggregate inheritance and gift flows have risen alongside wealth-income ratios. See Alvaredo et al. (2017) for trends in the U.S., France, Germany, and the U.K., and Alvaredo et al. (2024) for more recent cross-country evidence.

[27] See Kotlikoff and Summers (1981), Modigliani (1986), and related exchanges. Differentiating inherited from self-made wealth would require isolating capital gains on inherited versus self-made assets, which is beyond the scope of our analysis.

Figure 7: **Sources of life-cycle wealth growth: saving vs. capital gains**



(a) Saving rates

(b) Capital gains

Notes: This figure displays annual net saving flows (Figure 7a) and capital gains (Figure 7b) along the life-cycle of four birth cohorts (born in 1900-19, 1920-39, 1940-59 and 1960-79) from age 30 to age 75. The third component of the cohorts' wealth growth- net inheritances and gifts- is displayed in Appendix Figure D14. The sum of the three components adds up to annual real wealth growth (Figure 4). 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.

Saving. This component is the main contributor to wealth growth. We document a key transformation over time. Middle-aged saving rates have risen for cohorts born after the 1920s, increasing by about 5–10 percentage points (from 10% to 15–20%). At older ages, however, recent cohorts have become substantial dissavers, in contrast to earlier generations. We refer to this shift—higher midlife saving combined with pronounced old-age dissaving—as a "convergence toward Modigliani," reflecting closer alignment with the life-cycle model. While increased dissaving in old age might seem surprising given the apparent stability of wealth, it aligns with the analysis of pension withdrawals in Poterba et al. (2011) (see Section A.6). This pattern highlights the importance of distinguishing active saving flows from wealth changes, especially for the elderly.

Figures D18 further investigates the change in saving behavior we have identified by decomposing the saving of the middle aged households and the elderly across different asset classes. The rise in saving among the middle-aged is primarily concentrated in increased saving in equities, usually through pension accounts. In contrast, the dissaving by the elderly is driven by housing assets, as well as equity and fixed-income assets (primarily held in pensions accounts).

Capital gains. The role of capital gains has increased substantially across cohorts. For the

1900–1919 cohort, real capital gains were modest or negative —particularly around retirement— reflecting stagnant equity prices and high inflation during the 1970s. In contrast, later cohorts benefited from sustained asset price growth. Most notably, the 1920–1939 cohort experienced annual valuation gains of 10–15% of income in old age, concurrent with a decline in their saving rates. In terms of asset composition, capital gains are driven mostly by the equity market, which saw the largest asset price gains during the period we study.

Net inheritances and inter-vivos gifts. This component represents a steady source of wealth accumulation. However, compared to saving and capital gains, inheritance flows are modest, consistent with prior research (e.g., Black et al. 2020; Ozkan et al. 2023).[28]

Complementing the previous results, Appendix D.2 provides further decomposition by *within-cohort* wealth groups and asset classes. We find that the increase in middle-age saving is concentrated among the top 10%, while elderly dissaving is broad-based. Capital gains benefited both rich and non-rich, primarily via housing and equity price growth.[29]

Given the paramount importance of capital gains since the 1980s, we conduct an additional exercise to assess their influence on life-cycle wealth patterns. Figure 8 compares observed cohort wealth-income ratios to a counterfactual without capital gains.[30] Removing valuation effects compresses the differences across cohorts and lowers retirement-age wealth for post-1920s generations. This suggests that asset price appreciation accounts for much of the rise in cohort wealth accumulation after 1980.[31]

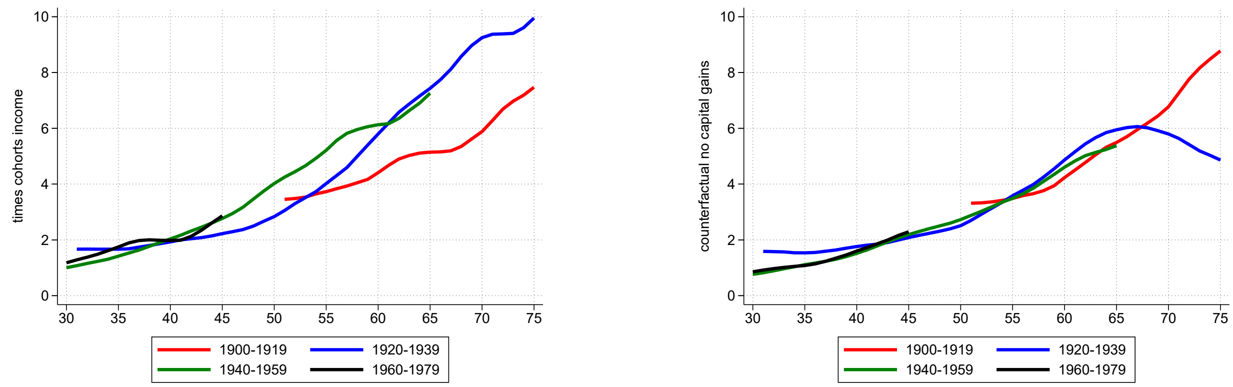
[28] For example, our findings indicate that the net inflow amounts to approximately 2% of cohorts' income around age 40. Yet, it is important to note that, on average, only a few individuals receive an inheritance in a given year. Consequently, this annual flow reflects substantial value for the recipients within the cohort. Second, as explained above, capital gains encompass gains on both inherited and self-made assets. Hence, a joint measure of inheritances and their valuation gains would involve a larger role. 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).

[29] Dissaving among the elderly primarily entails pension withdrawal (in equity and fixed-income assets) and housing, while larger middle-aged top-10% saving took the form of equity acquisitions. Regarding capital gains, most of the increase stemmed from higher housing and equity prices, Consistent with macro-financial trends.

[30] To conduct this simulation, we rely on the accounting decomposition in equation 2. For each cohort, we simulate their wealth based only on the flow of saving and inheritances and gifts. Needless to say, this analysis does not consider general equilibrium effects. Still, given the sizeable rise in asset prices, it can be suggestive of their effect.

[31] Counterfactuals for within-cohort wealth groups indicate that capital gains and saving shifted with different intensities for upper and bottom groups. Capital gains explain a greater share of the wealth accumulation for the bottom-90% in recent years, as shown in Appendix Figure D19. This result is explained by the larger relative exposure

Figure 8: **Cohort life-cycle wealth accumulation before and after excluding capital gains**



(a) Observed series

(b) Counterfactual without capital gains

Notes: This figure shows the average wealth-to-average income ratio of four generations over their life-cycle 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 D19 for the same chart for within-cohort wealth groups.

In sum, the higher retirement wealth of recent cohorts reflects a combination of rising asset prices since the 1980s and increased midlife saving. The apparent stability of post-retirement wealth (the "retirement-saving puzzle"; French et al. 2023), however, masks contrasting behaviors: while recent cohorts actually dissave significantly amid rising valuation gains, earlier cohorts sustained their wealth primarily through modest saving. We explore the interaction between saving and asset prices—and their broader implications—in the next parts of the paper.

4.2 Main Robustness Checks

The measurement of wealth entails inherent difficulties, so we check the robustness of our results in detail. In particular, our analysis centers around the accumulation equation (2), which involves three main sources of uncertainty: (i) the asset and debt stock, (ii) the flows of inheritances and gifts, and (iii) the capital gains. We address those issues in detail in Appendix A, which contains the main robustness checks and summarize here. Further robustness checks and additional results can be found in the remaining appendices.

of bottom groups to house prices, which have increased importantly in recent decades. This result is consistent with Kuhn et al. (2020) and Bauluz et al. (2022), who look at the cross-section of U.S. households instead of birth cohorts.

Measurement of Assets and Debts. Our baseline analysis harmonizes the SCF with national accounts. We study the facts that we document in unadjusted SCF data in Figures A16 a and A14. The facts we document continue to hold, this is because the SCF aggregates line up well with national accounts in most cases.

Allocation of Inheritances. In our main analysis, the flow of inheritances (especially at young ages) is relatively small, driven by the fact that only 18% of inheritances of couples with are surviving partner go to the next generation, following Fahle (2023). We vary this assumption in Figure A16 d, and consider a scenario in which that fraction is 50%. Although this lowers saving at middle ages slightly, these changes are quantitatively small (saving rates change by around 1-2%).

Capital Gains. We construct capital gains from the national gains from the national accounts, correcting housing and equity capital gains, to make them consistent with the Case-Shiller price index, as in Piketty et al. (2018). Substituting (i) the unadjusted national-account capital-gain series or (ii) the Jordà–Schularick–Taylor asset-price series for our baseline, macro-adjusted gains leave the shape and level of saving virtually unchanged (Figure A16 b,c). This is because these capital gains do not differ substantially from the capital gains we construct, see Figure F34. Beyond that, capital gains may differ age or wealth groups within a certain asset class.[32] We provide original evidence on heterogeneity in housing capital gains in Figure A.4, which computes capital gains in housing across age groups in the American Housing Survey. In the U.S., we find that within housing, capital gains are very similar across age groups, supporting our assumption of homogeneous capital gains.

We further validate our results on saving by comparing our saving flows (which are inferred as a residual) to direct estimates of pension withdrawal rates reported by Poterba et al. (2011) (Figure A18). Our estimates are comparable and only a bit smaller, so that we may understate dissaving among the elderly. Finally, the computation of saving rates of wealth groups within age

[32] Fagereng et al. (2020) document that returns across Norwegian wealth groups vary at the asset class level. Since returns are the sum of capital gains and income flows, we asked the authors if the capital gain component drives the observed variation in returns. In an email exchange, the authors suggested that differences in returns mostly stemmed from income flows since 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.

groups over time (e.g. the top 10% at middle ages), we implicitly assume that there is no mobility between these wealth groups. Persistence estimates from the PSID show that wealth groups within cohorts remain relatively stable over time (Appendix F.3).

4.3 A Model of Life-Cycle Wealth Accumulation

We now provide a conceptual framework to interpret our empirical findings: the steepening of life-cycle wealth-income profiles, the shift in saving behavior toward higher saving in middle age and greater dissaving in old age, and the growing role of capital gains. We show that these life-cycle patterns naturally emerge in an overlapping generations (OLG) model with inelastic asset supply (a feature supported by recent evidence from Finance and Real Estate, which finds that asset markets are remarkably inelastic and have become more so in recent years (Gabaix and Koijen, 2021; Aastveit et al., 2023)) combined with rising asset demand. This setup is also consistent with the contemporaneous macroeconomic trends—namely, the rise in aggregate wealth-to-income ratios alongside a stagnant private saving rate. The full model is presented in Appendix D.3; here, we summarize its key mechanisms and implications.

We consider a standard OLG model in which individuals live for two periods: they save during working age and dissave during retirement. In equilibrium, the young purchase assets for retirement, while the elderly sell them to finance consumption. We focus on two well-documented structural shifts as potential sources of higher asset demand: rising longevity and increasing income inequality. However, we remain agnostic about whether these are the dominant forces. Other mechanisms—such as increased foreign demand for domestic assets, or lower capital taxation—could also raise asset demand. What matters for our framework is how life-cycle wealth accumulation, as well as aggregate wealth and saving, respond to this increase in demand.

Rising longevity. We first examine an increase in the length of retirement, consistent with rising life expectancy (e.g., Blundell et al. 2016; Carvalho et al. 2016). Longer retirements increase desired saving among the young. With asset supply fixed, this drives up equilibrium prices. These price effects reshape life-cycle behavior. Young cohorts now purchase assets at elevated prices, resulting in steeper wealth accumulation during working life. Concurrently, the old sell these assets at high prices, enabling them to finance increased consumption. Dissaving by the elderly thus grows in tandem with saving by the young. This results in (i) higher asset prices, (ii) steeper life-cycle wealth accumulation, and (iii) a polarization in saving behavior—with young cohorts saving more and older cohorts dissaving more. In the aggregate, wealth-to-income ratios rise, but the private saving rate does not—precisely as we observe in the data.

Rising income inequality. Second, we consider a rise in within-cohort permanent income, as documented by (e.g., Guvenen et al. 2022). To capture this mechanism, we extend the model to feature non-homothetic preferences, whereby higher-income individuals save a greater share of their earnings (e.g., Straub 2019). A shift in income toward top earners thus increases aggregate saving demand. The resulting dynamics parallel those under longevity: asset prices rise, the young accumulate wealth more rapidly, and the elderly decumulate more as they sell assets at higher valuations—consistent with the patterns in our empirical analysis.

Welfare and Future Dynamics. The model further illustrates inter-generational welfare redistribution through capital gains: As shifts occur, the 'initially old' generation is the recipient of windfall capital gains on their assets that allow them to expand their consumption, even in the absence of changes in income (Fagereng et al. 2024). Below, we use a sufficient statistic to quantify the size of these welfare gains across cohorts (Section 5.3). For the young, their welfare dynamics depend crucially on future asset-price movements. If no further increase in asset demand occurs, today's young—who purchased assets at high prices—will also sell at high prices when old, breaking even in lifetime utility terms.

5 Aggregate, Distributional and Welfare Implications

This section links the life-cycle shifts documented in earlier sections—rising lifetime wealth, growing elderly dissaving, and increasing capital gains—with broader economic outcomes. We focus on three key trends: (i) the evolution of aggregate wealth and saving, (ii) changes in the age distribution of wealth, and (iii) the welfare implications of asset price growth. While the development of these trends is connected to life-cycle behavior, it also responds to other drivers. For example, aggregate wealth and saving can change due to shifts in income distribution or demographic composition, even if life-cycle wealth-income profiles are identical over time. We use our empirical decomposition of wealth accumulation to assess the extent to which changing life-cycle dynamics across cohorts have contributed to these broader patterns.

5.1 Aggregate wealth and saving

We begin by examining the evolution of aggregate household wealth and private saving since the 1960s. These trends have been central to debates on the structural decline in natural interest rates, changes in factor shares, and the global saving glut (e.g., Mian et al. 2021b; Auclert et al. 2021; Piketty and Zucman 2014).[33] We contribute to this literature by bringing long-run data to bear on the question: to what extent have shifts in life-cycle behavior driven changes in aggregate saving and wealth? This micro-to-macro approach complements recent quantitative models linking demographics and inequality to macroeconomic trends (Kopecky and Taylor 2022; Sturrock 2023).

5.1.1 Aggregate private saving

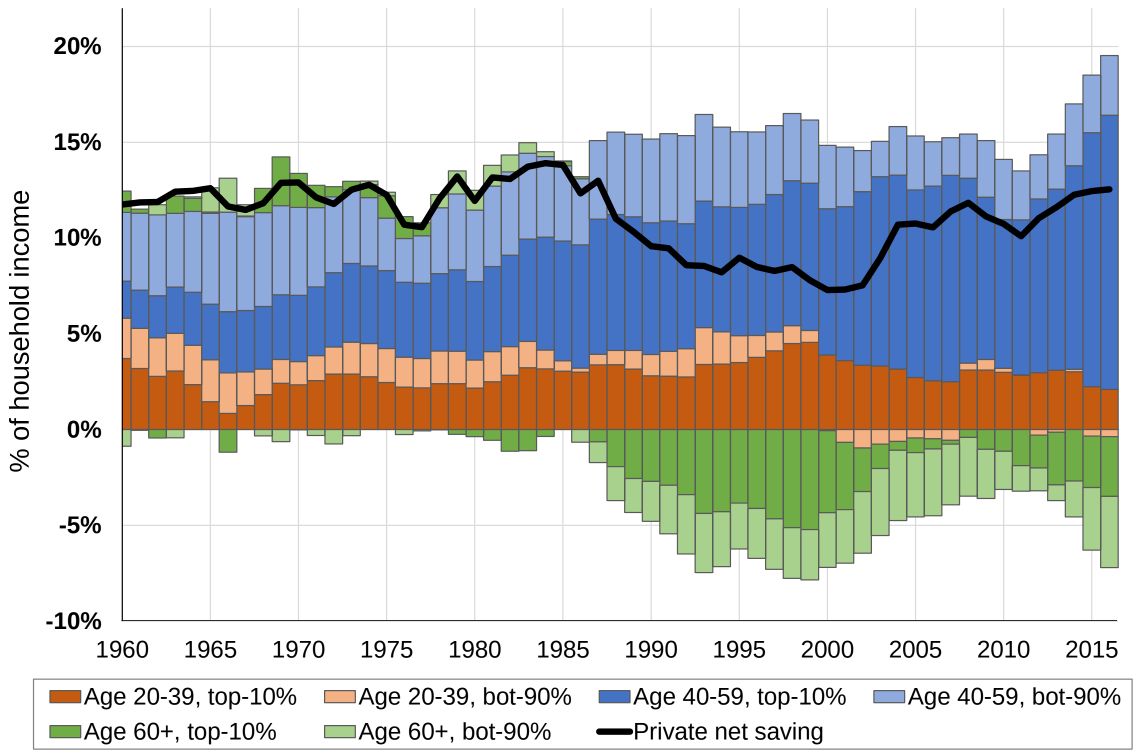
We examine the evolution of the U.S. private saving rate. A longstanding literature has debated its stagnation—or even decline—since the 1980s (e.g., Summers and Carroll 1987; Bosworth et al. 1991; Auerbach and Kotlikoff 1990), despite evidence that high-wealth individuals significantly raised their saving over the same period ("the saving glut of the rich," Mian et al. 2021b). Yet, who is saving less, and why, remains a puzzle. We provide new evidence on both fronts.

Who saves more and less over time? We explore this question in Figure 9, Figure 10, and Table 1. Figure 9 decompose private saving by age-wealth groups from 1960 to 2018. We distinguish the

[33] A key debate in macroeconomics revolves around the factors driving the decline in natural interest rates in recent decades (Rachel and Smith 2015). A large literature attributes the decline in natural interest rates to rising income inequality—leading to excess saving by the rich (Mian et al. 2021a; Mian et al. 2021c)—and demographic trends (Auclert et al. 2021; Kopecky and Taylor 2022; Carvalho et al. 2016; Gagnon et al. 2021).

top 10% and bottom 90% within three broad age groups: young (20–39), middle-aged (40–59), and elderly (60+). Figure 10 tracks the evolution of saving relative to the initial period (subtracting the 1960-69 period for each series), focusing solely on age groups for simplicity. Finally, Table 1 contains the numbers underlying these figures, presenting average saving at the beginning (1960-1979) and end (2000-2019) of the period, also showing the middle-40% and bottom-50%.

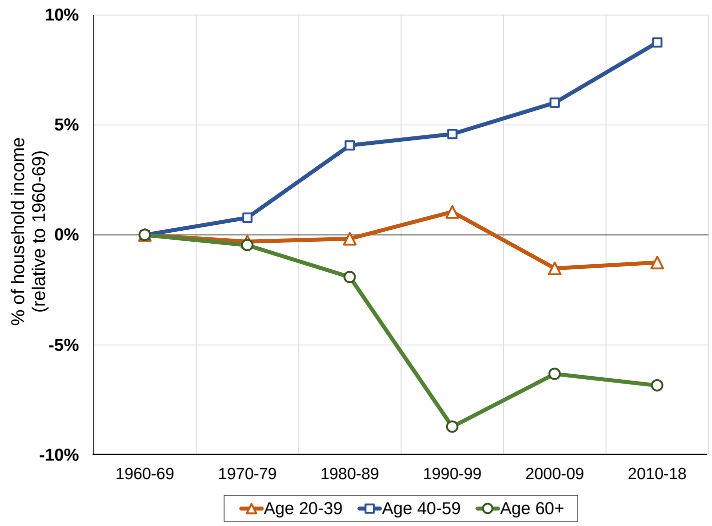
Figure 9: **Private saving by age-wealth groups, 1960-2016**



Notes: This figure shows annual net saving of within-age wealth groups expressed as a percentage of total household income. Results are obtained using the budget constraint of each age-wealth group across two survey waves (equation 2), as explained in section 2.3. Given the harmonization of SCF+ microdata with macroeconomic aggregates, the sum of each group's saving in a given year adds up to aggregate private saving. Series are 7-year moving averages.

While the aggregate saving rate declined in the 1980s and 1990s before partially recovering, our decomposition uncovers a striking polarization: saving has surged among the middle-aged rich and declined sharply among the elderly. The middle-aged top 10% increased their saving by 7.4 percentage points of household income from the 1960s–70s to the 2000s–2010s. Over the same period, the elderly's saving fell by 6.1 points, turning negative in recent decades. Other groups saw

Figure 10: **Private saving by age groups, 1960-2018**



Notes: This figure shows annual net saving of age groups expressed as a percentage of total household income, relative to 1960-69. Results are obtained using the budget constraint of each age-wealth group across two survey waves (equation 2), as explained in section 2.3. Given the harmonization of SCF+ microdata with macroeconomic aggregates, the sum of each group's saving in a given year adds up to aggregate private saving.

Table 1: Saving as a percentage of total household income: 2000-2019 vs. 1960-1979

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	20-39 top-10	20-39 mid-40	20-39 bot-50	40-59 top-10	40-59 mid-40	40-59 bot-50	60+ top-10	60+ mid-40	60+ bot-50	Total
1960–1979	2.5	1.7	–0.2	3.3	2.6	1.0	1.4	0.1	–0.4	11.9
2000–2019	2.8	0.8	–1.1	10.6	3.2	–0.4	–1.8	–2.3	–0.9	11.0
Difference	0.3	–0.9	–0.9	7.4	0.6	–1.3	–3.2	–2.4	–0.5	–1.0

Notes: This table shows the average annual saving of 9 within-age wealth groups as a percentage of total household income in two periods (1960-1979 and 2000-2019), and the difference between these two periods (2000-2019 minus 1960-1979). The 9 groups are categorized into three age brackets: "young" (ages 20-39), "middle-aged" (ages 40-59), and "elderly" (age 60+). Within each age category, there are three wealth groups: top-10%, middle-40% and bottom-50%. For instance, the top-10% within the age group 40-59 saved the equivalent of 3.3% of household income in the 1960-1979 period, which increased to 10.6% in 2000-2019.

smaller changes.[34] Results are robust to alternative specifications; see Appendix E.

In essence, our findings indicate that (i) the "saving glut of the rich" since the 1980s—previously

[34]The bottom-90% from the young and middle-aged groups reduced their saving by approximately 2.5 percentage points of household income over these periods, while the top-10% from the young increased it by 0.3 percentage points. Although the dynamics of these groups are also important for aggregate saving, they experienced lesser variation than those that occurred for the middle-age rich and elderly groups.

documented by Mian et al. (2021b), Saez and Zucman (2016), and Bauluz et al. (2022)—is concentrated among the *middle-aged* rich; and (ii) dissaving by the elderly has become the key force dragging down aggregate saving in recent decades.[35]

Drivers of the shifts. To understand these trends, we apply a shift-share decomposition of the aggregate private saving rate.[36] Specifically, we isolate the roles of (i) life-cycle saving rates, (ii) income inequality, and (iii) the population's age structure.

At each point in time τ, the aggregate saving-to-income ratio (S_τ/Y_τ) can be expressed as the sum of group-specific saving normalized by total household income ($\sum_i \frac{S_{i\tau}}{Y_\tau}$), which can be further expanded and broken down into three components:

$$\frac{S_\tau}{Y_\tau} = \sum_i \frac{S_{i\tau}}{Y_\tau} = \sum_i \frac{\bar{s}_{i\tau}}{\bar{y}_{i\tau}} \cdot \frac{\bar{y}_{i\tau}}{\bar{y}_\tau} \cdot \frac{N_{i\tau}}{N_\tau}, \tag{3}$$

where $\frac{\bar{s}_{i\tau}}{\bar{y}_{i\tau}}$ is group's i average saving-to-average income ratio (*life-cycle saving rate*), $\frac{\bar{y}_{i\tau}}{\bar{y}_\tau}$ is the ratio of group's i average income to the average income of all adults (*income inequality*) and $\frac{N_{i\tau}}{N_\tau}$ is group's share in the adult population (*age structure*). Figures E24, E26, and E27 illustrate the evolution of each term over time.

We use a shift-share decomposition to measure the contribution of each component in explaining changes in each group's i ratio of saving-to-household income between two periods. Holding two of the three components fixed at their base-period (1960–79) values, we let the third vary to isolate its impact. This yields:

[35] The latter result is consistent with Bosworth et al. (1991) and Gokhale et al. (1996), who studied a shorter period (from the early 1960s to late 1980s) and found the elderly to be the driver of the decline in private saving in the 1980s.

[36] Our analysis is closest to Bosworth et al. (1991) and Mian et al. (2021c), who study the evolution of the U.S. private saving rate. They follow a similar approach to measure group-specific saving, and use shift-shares to investigate potential mechanisms. Our approach differs because it distinguishes saving 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. This is important, because households belonging to the same wealth decile exhibit very different behavior over the life-cycle. For example, we find opposing trends in the behavior of the top decile before and after retirement.

$$\frac{S_\tau}{Y_\tau} - \frac{S_0}{Y_0} = \sum_i \left(\frac{S_{i\tau}}{Y_\tau} - \frac{S_{i0}}{Y_0}\right) = \sum_i \underbrace{\left[\frac{\bar{s}_{i\tau}}{\bar{y}_{i\tau}} - \frac{\bar{s}_{i0}}{\bar{y}_{i0}}\right]}_{\text{S-Y profiles}} \cdot \frac{\bar{y}_{i0}}{\bar{y}_0} \cdot \frac{N_{i0}}{N_0} + \sum_i \frac{\bar{s}_{i0}}{\bar{y}_{i0}} \cdot \underbrace{\left[\frac{\bar{y}_{i\tau}}{\bar{y}_\tau} - \frac{\bar{y}_{i0}}{\bar{y}_0}\right]}_{\text{income inequality}} \cdot \frac{N_{i0}}{N_0}$$
$$+ \sum_i \frac{\bar{s}_{i0}}{\bar{y}_{i0}} \cdot \frac{\bar{y}_{i0}}{\bar{y}_0} \cdot \underbrace{\left[\frac{N_{i\tau}}{N_\tau} - \frac{N_{i0}}{N_0}\right]}_{\text{age structure}} + \gamma \tag{4}$$

where γ captures interaction effects across the three components. Each term reflects the partial-equilibrium impact of changes in only one channel. As such, while this is not a general equilibrium exercise, it clarifies the mechanisms present in the data and serves to focus on potentially essential explanations for shifts in aggregate saving and wealth.

Our results (Table 2) reveal two key insights. First, the rise in saving among the middle-aged rich is explained by both higher saving rates (+3.1 p.p.) and rising income shares (+2.3 p.p.). This aligns with the mechanism proposed by Mian et al. (2021b), in which rising top-income shares generate a saving glut. Our innovation is to isolate this behavior within the middle-aged top 10%, revealing that this group simultaneously experienced rising saving rates and incomes.

Second, the decline in elderly saving is almost entirely driven by falling saving rates, with demographic composition and relative income playing only minor roles. This reveals a novel dimension of the "asset market meltdown" hypothesis (Poterba 2001; Abel 2001), which predicts dissaving as baby boomers retire. We show that this dissaving has already occurred over recent decades—and stems not just from an aging population, but fundamentally from a significant shift in saving behavior among the elderly.[37] Among possible explanations—such as rising out-of-pocket medical costs, a broader menu of leisure options, better elderly health, or fewer descendants—our findings in section 4 point to the post-1980s asset-price surge as a key driver. Appendix E shows similar shift-share results across alternative periods and population partitions.

Conclusion. We uncover a striking polarization in saving behavior since the 1980s: while middle-

[37] The "asset market meltdown hypothesis" suggests that as societies age and the proportion of retired individuals increases, aggregate saving is likely to decline due to lower saving rates among the elderly compared to younger and middle-aged adults (Poterba 2001; Abel 2001; Goodhart and Pradhan 2020).

Table 2: Shift-share decomposition: 1960-1979 vs. 2000-2018 (9 age-wealth groups)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	20-39 top-10	20-39 mid-40	20-39 bot-50	40-59 top-10	40-59 mid-40	40-59 bot-50	60+ top-10	60+ mid-40	60+ bot-50	Total
Saving rate	0.1	–0.6	–1.4	3.1	0.6	–1.4	–2.6	–1.9	–0.5	–4.5
Income inequality	0.4	–0.3	0.0	2.3	0.0	–0.2	0.6	–0.1	0.0	2.6
Age structure	–0.1	–0.1	0.0	0.1	0.0	0.0	0.2	–0.1	–0.1	–0.1
Residual	–0.1	0.2	0.4	1.8	0.0	0.3	–1.4	–0.3	0.1	1.0
Total	0.3	–0.9	–0.9	7.4	0.6	–1.3	–3.2	–2.4	–0.5	–1.0

Notes: This table presents the components of the shift-share decomposition for the private saving-to-household income ratio, using 1960-1979 and 2000-2018 as base years. We apply the shift-share method (see equation 3) to 9 within-age wealth groups, represented in columns 1 to 9. Column 10 provides the sum of each component across age-wealth groups. For example, the private saving rate declined by -1 percentage point of household income, with saving rates contributing to a decline of -4.5 percentage points and income inequality contributing to an increase of 2.6 percentage points. Additionally, the last row in the table breaks down each age-wealth group's contribution to changes in the aggregate private saving rate across components. For instance, the top-10% within the elderly (age 60+) contributed to a decline of -3.2 percentage points in household income, with -2.6 percentage points attributed to the life-cycle saving rate component. Appendix E.2 explores alternative population partitions and time periods.

aged high-wealth households have increased their saving, the elderly (both rich and non-rich) have become large dissavers. These opposing forces are the primary reason for the stagnation of aggregate private saving. Both trends are driven by a shift in life-cycle saving behavior, likely tied to the post-1980s boom in asset prices (Section 4). This behavioral shift has redefined who saves and when, with deep implications for macroeconomic fundamentals (Rachel and Smith (2015)) and welfare (see section 5.3).

5.1.2 Aggregate wealth-income ratios

We next examine the rise in aggregate household wealth-income ratios, a central macroeconomic trend since the 1980s.[38] As with saving, we innovate by applying a shift-share decomposition across three channels: (i) life-cycle wealth-income profiles, (ii) income inequality and (iii) the population's age structure. Our closest reference is Auclert et al. (2021), who focus on the role of

[38]Previous studies typically decompose aggregate wealth growth into saving and capital gains (Piketty and Zucman 2014; Waldenström 2017; Artola-Blanco et al. 2020) or use quantitative models (Brun and González 2017; Kopecky and Taylor 2022; Eggertsson et al. 2021).

age structure; we expand their framework by comparing it to the other two forces. Furthermore, we break down changes in life-cycle wealth-income profiles that are due to capital gains relative to saving and inheritances.

The decomposition begins with the identity

$$\frac{W_\tau}{Y_\tau} = \sum_i \frac{\bar{w}_{i\tau}}{\bar{y}_{i\tau}} \cdot \frac{\bar{y}_{i\tau}}{\bar{y}_\tau} \cdot \frac{N_{i\tau}}{N_\tau}, \tag{5}$$

where $\frac{\bar{w}_{i\tau}}{\bar{y}_{i\tau}}$ is group's i average wealth-to-average income ratio (*life-cycle wealth-income profiles*), $\frac{\bar{y}_{i\tau}}{\bar{y}_\tau}$ is the ratio of group's i average income to the average income of all adults (*income inequality*) and $\frac{N_{i\tau}}{N_\tau}$ is group's share in the adult population (*age structure*).

Following the shift-share method (equation 4), we isolate the contribution of each component to the increase in the aggregate wealth-income ratio between 1960–1979 and 2000–2019, holding the other two constant. As with saving (Section 5.1.1), this is a partial-equilibrium decomposition that clarifies key mechanisms. To align with our earlier results, we define nine groups—three age categories (20–39, 40–59, 60+) and three within-age wealth groups (top 10%, middle 40%, bottom 50%). Appendix E confirms robustness to alternative partitions and time periods.

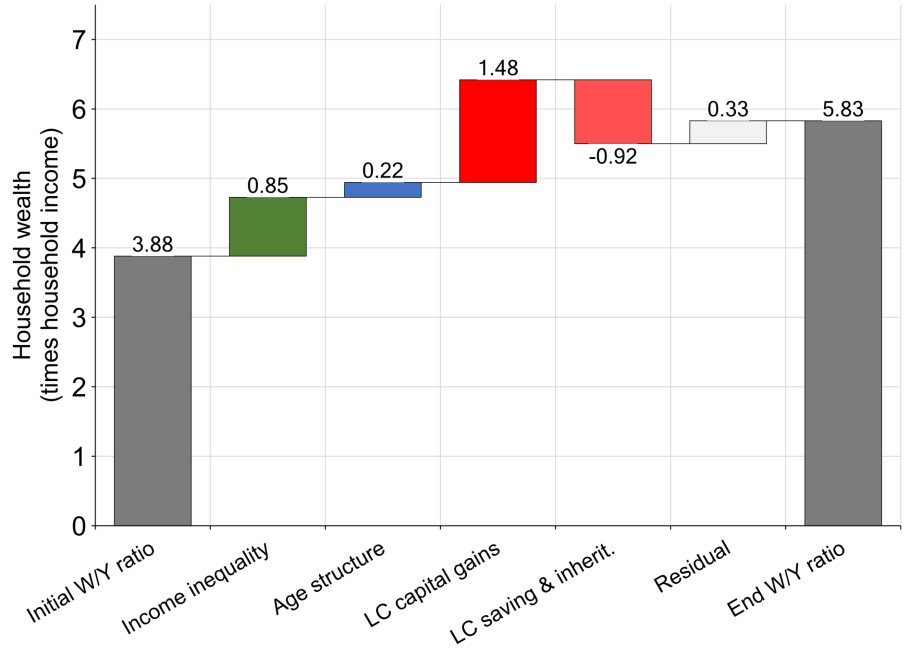
Figure 11 summarizes the results. The aggregate wealth-income ratio rose from 3.88 to 5.83, a 195 p.p. increase.[39] Each block quantifies the impact of a component as specified in equation 5.[40] The results for life-cycle wealth-income profiles are broken down into capital gains on the one hand and saving and inheritances on the other using the wealth accumulation decomposition from section 4 (see also equation 2).

Overall, life-cycle capital gains and income inequality emerge as the main drivers of the rise in wealth-income ratios, contributing 149 and 85 percentage points (p.p.), respectively. In contrast, life-cycle saving and inheritances reduced the ratio by 92 p.p., largely reflecting increased dissav-

[39] A note on the comparison of Figures 1a and 11. Both display aggregate household wealth over time in the U.S. However, Figure 1a employs national income as the denominator, while Figure 11 uses household income (i.e. income recorded in the SCF), which is somewhat smaller (see section 2). As a result, the ratio in Figure 11 is slightly higher, but the trends are similar (Appendix Figure E22).

[40] Appendix Figures E29, E26 and E27 show the evolution of each of the three components in equation 5 (wealth-income profiles, relative income and population shares) since 1960.

Figure 11: **Shift-share decomposition of the rise in aggregate wealth-income ratios: wealth-income profiles vs. income inequality vs. age structure**



Notes: The leftmost column and the rightmost column plot the aggregate household wealth-income ratio averaged across the periods 1960-1979 and 2000-2019, respectively. During this timeframe, the aggregate household wealth-income ratio increased by 195 percentage points, rising from 3.88 times income to 5.85. The blocks between the two columns decompose the 195 percentage points rise in the wealth-income ratio into subcomponents (income inequality, population's age structure, life-cycle wealth-income profiles and a residual), using a shift-share approach based on Equation 4. The results for life-cycle wealth-income profiles are broken down separately into the part due to capital gains ("LC capital gains") and the part due to saving and inheritances ("LC saving & inherit.").

ing (i.e. higher consumption) from elderly in recent decades (see Section 4). The net contribution of life-cycle wealth-income profiles—combining asset-price gains with reduced saving and inheritances—is an increase of 56 p.p. Demographic changes account for a more modest 22 p.p. of the total rise.

Table 3 sheds further light looking at (i) within-period trends as well as (ii) future projections based on aging trends. Sub-period results (columns 2 and 3) show that the role of capital gains intensified in recent years, while income inequality has remained equally important since 1980. The contribution of savings and inheritances turned increasingly negative, driven by elderly dissaving. Demographic shifts were negative in 1980–1999 (as boomers entered working life) and positive in 2000–2019 (as they entered retirement). Moreover, forward-looking projections (col-

Table 3: Shift-share decomposition 1960-1979 vs. 2000-2019 (including subperiods)

	(1)	(2)	(3)	(4)
	1960-1979 vs 2000-2019			2000-19 vs 2040-60
	Total Increase	*Of which: 1980-89*	*Of which: 2000-19*	Increase
W-Y Profiles	56	*26*	*29*	.
of which: capital gains	148	*46*	*102*	.
of which: saving and inheritance	–92	*–20*	*–73*	.
Income Inequality	85	*41*	*43*	.
Age Structure	22	*–8*	*30*	77
Residual	33	*–6*	*39*	.
Total	195	*53*	*142*	77

Notes: This table presents the components of the shift-share decomposition of the wealth-to-income ratio using 1960-1979 and 2000-2019 as base years and 9 within-age wealth groups: three age categories, each further divided into three wealth groups within every age category; as detailed in the text. Column 1 decomposes the total increase into the 3 components (life-cycle wealth-income profiles, income inequality and the age structure of the population) and a residual term. Columns 2 and 3 decompose the overall increase between 1960-1979 and 2000-2019 into two subperiods: 1980-1999 and 2000-2019. Column 4 presents shift-share results derived from demographic projections by the U.S. Census Bureau, available until 2060, starting from 2000-2019 and ending in 2040-2060. Shifts in wealth-income profiles are further broken down into capital gains and saving and inheritances. Appendix E.2 provides alternative population partitions and time periods.

umn 4) suggest that demographics alone may push wealth-income ratios by 77 p.p. between 2020 and 2060—consistent with Auclert et al. (2021).[41]

Conclusion. The surge in wealth-income ratios since 1960 is primarily explained by asset price growth and rising income inequality. Demographics have played a secondary but growing role. Notably, growing dissaving by the elderly—absent in most macro models—has exerted downward pressure on aggregate wealth. These results indicate that any structural account of aggregate wealth must incorporate evolving life-cycle behavior and its interaction with capital gains.

[41] Our results for the population's age structure are similar to the analysis in Auclert et al. (2021). Their central estimates are displayed in Table 2 of their paper. The shape of the age-composition effect in their retrospective analysis for the U.S. (looking at the decades before 2016) follows the same evolution as in our results (initial decrease, subsequent rise), although their overall effect appears slightly larger. This difference can be explained to a large extent by Auclert et al. (2021) shifting the age composition of the population (both forward and backward) while fixing the inequality and life-cycle wealth parameters in equation 4 based on data from 2016, a period of historically high-income inequality and steep life-cycle wealth profiles. Auclert et al. (2021) show in their Appendix Table A.3 that the effect reduces by around half when fixing parameters in the 1960-1970 period, as we have done. The projections for 2060 are nearly identical since both studies fix the parameters in recent periods (2016 in their case and 2000-2019 in ours).

5.2 Age-wealth gap

We have shown that more recent cohorts accumulate substantially more lifetime wealth and also dissave more in retirement. This behavioral shift has contributed to the polarization of saving across age groups and to the rise in aggregate wealth. We now examine how these dynamics have reshaped the distribution of wealth across age groups—a dimension of inequality that has drawn increasing attention due to its implications for equity, political influence, and economic productivity.[42]

We document how wealth evolved across age groups and how it is connected and its connection to the upswing in asset prices since the 1980s. Figure 12 shows a divergent pattern across age groups. It tracks the age-wealth gap over time, measured as the ratio of average wealth among the elderly (aged 60–79) to that of young adults (aged 20–39). This age-wealth gap has experienced as impressive rise, tripling over the past six decades. It rose from around 4 to 14 in the most recent decade—a clear sign of increasing age-based wealth inequality.

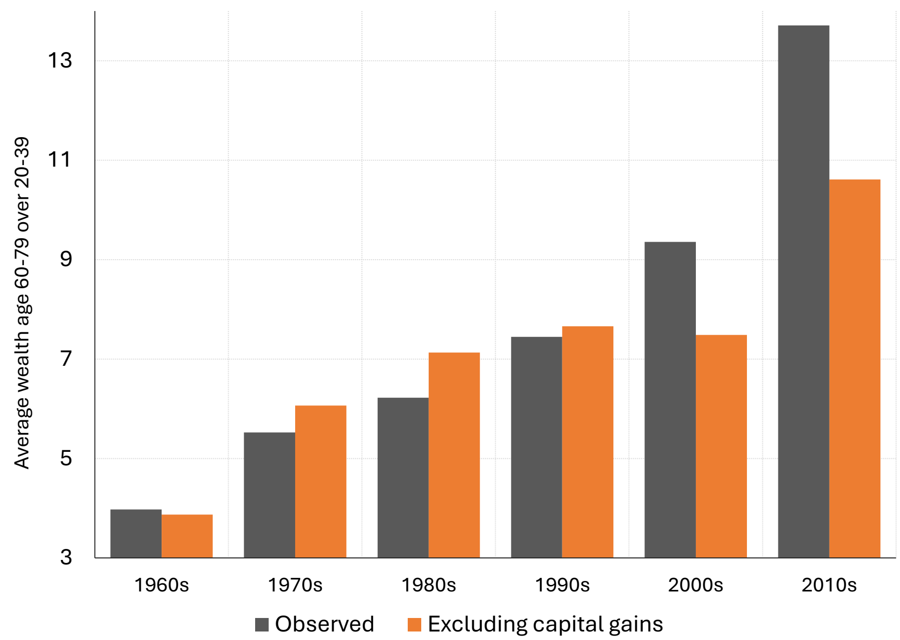
Given the central role of capital gains in shaping life-cycle wealth, Figure 12 also presents a counterfactual exercise that removes capital gains from wealth accumulation (following the method used in Figure 8). In the early decades, capital gains played a limited role. Since the 1980s, however, they account for much of the widening age-wealth gap: while the observed ratio rose by 8 points (from 6 to 14), the counterfactual without capital gains increased by only 4 points (from 7 to 11). This suggests that asset price growth explains roughly half of the total increase in the age-wealth gap since the 1980s.

The fact that capital gains have widened the age-wealth gap contrasts with their effect on other forms of wealth inequality, which are not necessarily exacerbated by capital gains. For instance, Kuhn et al. (2020) show that capital gains in housing tend to reduce top wealth shares, as they disproportionately accrue to the middle class. Our results on the age-wealth distribution thus

[42]Older individuals tend to hold more conservative policy preferences and have higher voter turnout than younger groups. Rising wealth concentration among the elderly may amplify their political influence; see Page et al. (2013). From a productivity perspective, the concentration of wealth in older age groups may have a negative impact if younger individuals—such as entrepreneurs—are more likely to contribute to economic growth by owning and deploying wealth; see Piketty (2020).

align more closely with the popular perception that capital gains have widened inequality, albeit in terms of the age distribution of wealth, rather than in the overall cross-section of households.

Figure 12: **Age-wealth gap, 1960s-2010s**



Notes: This figure shows the observed ratio of the average wealth of the elderly (age 60-79) to the wealth of the young (age 20-39), together with a counterfactual scenario which removes capital gains from the accumulated wealth of both the young and the elderly.

Appendix E.3 provides a deeper decomposition of these patterns. Consistent with the previous result, we find that the share of total household wealth owned by individuals aged 60 and above increased from one-third in the 1960s to over half today. This shift is primarily driven by the upper half of the elderly distribution; the bottom 50% of older households have seen no meaningful improvement in their relative wealth.

In sum, the U.S. has experienced a pronounced aging of wealth. While aggregate wealth has expanded, it has become increasingly concentrated among older households—particularly those at the top. These trends have potential implications for intergenerational equity, political representation, and economic dynamism.

5.3 Welfare Redistribution

We now study the welfare consequences of the large changes in asset prices and saving behavior we have documented in the previous sections. We show that the observed changes in saving behavior and asset price developments have led to a redistribution of welfare from the young towards the old in recent years, which we trace across specific birth cohorts.

In studying welfare, we implement the sufficient statistic of Fagereng et al. (2024), who study Norwegian data, in our panel of U.S. cohorts. We sketch the main idea below, and refer to that paper for the full details. The sufficient statistic builds on the optimization problem of a household that maximizes consumption and has multiple assets available for investment. It then considers the welfare effects from a perturbation of the path of asset prices (holding cash-flows constant). In this setting, the welfare impact of a change in asset prices is the discounted sum of *asset transactions* multiplied by the change in valuation of the different assets. The key intuition for this result is that only realized asset price gains loosen the household budget constraint.

More concretely, the welfare change for a given cohort i can be computed as

$$\begin{aligned}
\text{Welfare Gain}_i &= \sum_{k \in \{\text{housing, equity, fixed income, debt}\}} \text{Welfare Gain}_{i,k}, \\
\text{Welfare Gain}_{i,\text{housing}} &= \sum_{t=0}^{T} R^t \big(N_{i,H,t} - N_{i,H,t-1}\big)\, P_{H,t}\, \frac{PD_{H,t} - \overline{PD}_H}{PD_{H,t}}, \\
\text{Welfare Gain}_{i,\text{equity}} &= \sum_{t=0}^{T} R^t \big(N_{i,E,t} - N_{i,E,t-1}\big)\, P_{E,t}\, \frac{PD_{E,t} - \overline{PD}_E}{PD_{E,t}}, \\
\text{Welfare Gain}_{i,\text{debt}} &= \sum_{t=0}^{T} R^t \big(-B_{i,M,t}\, Q_{M,t}\big)\, \frac{Q_{M,t} - \overline{Q}_M}{Q_{M,t}}, \\
\text{Welfare Gain}_{i,\text{fixed income}} &= \sum_{t=0}^{T} R^t \big(-D_{i,D,t}\, Q_{D,t}\big)\, \frac{Q_{D,t} - \overline{Q}_D}{Q_{D,t}}.
\end{aligned} \tag{6}$$

The total welfare gain is the sum of the welfare gains across the welfare gains stemming from the different assets for each cohort i. For each asset class, the welfare gain is the present discounted value of the sum of future transactions, where R^t discounts the future asset transactions. Holdings of equity and housing are denoted by $N_{i,H,t}$ (resp. $N_{i,E,t}$), so that the transactions are the computed by multiplying by the respective prices $P_{H,t}$ and $P_{E,t}$. Debt and fixed income assets are rolled over every period in the baseline model so that transactions and holdings coincide. For all components, the transactions are multiplied by the price deviation, which measures the change in prices of these assets relative to an initial reference period. Importantly, for housing and equity, the price deviation corresponds to a change in prices holding cashflows constant, so that the price deviation is computed using deviations from a baseline level of the price-dividend ratio.

The implementation of the sufficient statistic requires data on transactions as well as price deviations. We consider Housing, Equity, Debt and fixed income assets as the asset types, which also correspond to the assets for which we construct transactions over the life-cycle in section 2.3 (see also Figure D18). Next, we construct price deviations across assets, extending the measurement of price deviations in Fagereng et al. (2024) to the U.S. using data from Shiller (2000) and the macrohistory database (Jordà et al., 2019). Details on the construction of price deviations are in Appendix E.4, which also shows the price deviations in Figure E31. In contrast to the Norwegian case, the major valuation changes in the U.S. come from the stock market and not the housing market; this is because in the U.S., the price of equities has risen strongly relative to earnings, whereas in the case of housing, the price of housing has not risen as much relative to rents.

We begin by computing the welfare gain across cohorts, considering two different periods, 1960-1990, as well as 1990-2020, taking the asset valuations at the start of the periods as the initial reference prices. These periods correspond to periods with large differences in the movement of asset prices as well as transactions over the life-cycle. In the first period, real interest rates rose (i.e. price of safe assets decreased), and prices of risky assets fell. On the other hand, the latter period sees a boom in the price of risky assets and a decline in interest rates. At the same time, the change in saving behavior we document implies more saving at younger ages and more dissaving when older. We study the impact of these changes on welfare gains over the lifecycle.

First, Figure 13a shows the implied welfare gains across cohorts, which are computed using the observed transactions and asset price movements.[43] For each cohort, we normalize the total welfare gains, which are the discounted sum of welfare gains across periods in constant dollars by the total income of the cohort over the period to facilitate comparisons across time periods. As is clear from Figure 13a, across the two periods, welfare gains from asset price movements have reversed across generations. In the period 1960-1990, the young gained in welfare terms while the old lost. Whereas in the initial period, the initially young (those born in the 1930s and 1940s), experienced welfare gains on the order of 1% of the total income they earned over the period, the initially young in the more recent period experienced welfare losses on the order of 2%.

In contrast, for the initially old, asset price movements have benefited the initially old in the more recent period. Concretely, this allowed for welfare gains of up to 4% of total period income for those cohorts who were already in retirement at the start of the asset price boom. In the earlier period from 1960 to 1990, welfare effects were negative for the elderly who were selling equity assets at a loss. Figure E32 in the appendix decomposes welfare gains across different assets, and shows that the main driver of welfare gains in the recent period are valuation changes in equity, together with the decline in real interest rates, which hurt unlevered holders of safe assets in recent years.

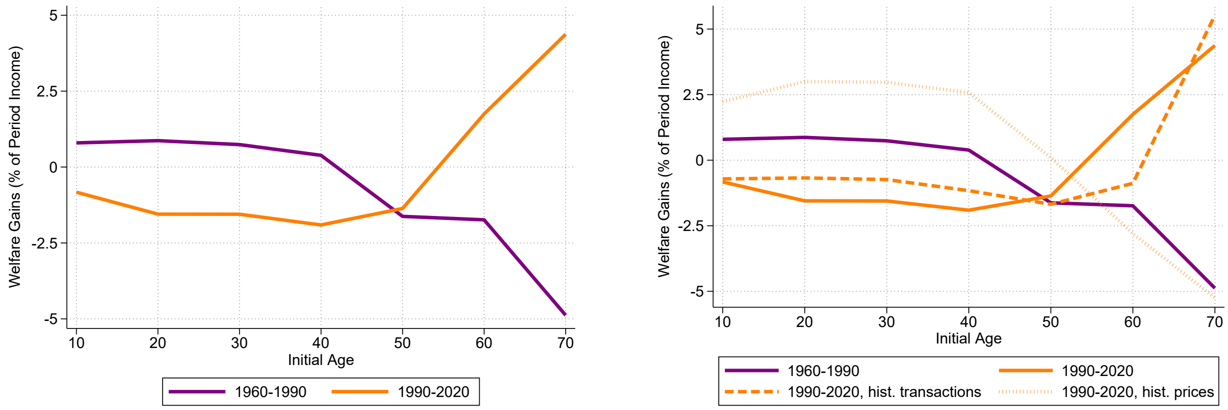
Figure 13b decomposes the change in welfare gains across cohorts into components driven by price movements and asset transactions. Specifically, we apply the sufficient statistic (6) to recent cohorts, replacing the observed 1990–2020 price and transaction paths with those from the 1960–1990 period.[44] The figure shows that the reversal in asset price dynamics is the primary force behind the shift in welfare gains across generations. In addition, changes in asset transactions exacerbate these distributional effects: Younger cohorts have increased their saving in recent decades amid rising asset prices, while older cohorts have become net sellers. This effectively transferred more resources from younger buyers to older sellers, amplifying the redistribution of welfare gains.

Life-time welfare gains/losses. In a final step, we compute the cumulative life-time welfare gains

[43] We fix the discount factor in the sufficient statistic (6) at $R = .98$.

[44] For asset transactions, we use the average transaction profiles relative to income from the earlier period, disaggregated by the four asset categories defined in the sufficient statistic.

Figure 13: **Comparison of Welfare Gains across Periods**



(a) Welfare Gains across Time Periods

(b) Welfare Gains including 2nd order Effects

Notes: This Figure shows welfare gains across different cohorts computed using the sufficient statistic (6). Panel (a) shows baseline welfare gains for the 1960–1990 and 1990–2020 periods; Panel b) isolates price-versus transaction-driven effects by recomputing 1990–2020 cohorts under the 1960–1990 price and transaction paths. Welfare Gains are normalized by the total income earned by each age group.

across birth cohorts. For comparability, we set the price deviation to 0 in 1960 and then compute the total welfare gains using (6) with a discount factor of $R = 1$, so that recent asset price deviations are not weighted downwards for older cohorts. We then compute the resulting 'life-time' welfare gains across birth cohorts and show them in Table 4. Column (1) presents life-time welfare gains as a percentage of total lifetime income. For many older cohorts, these lifetime welfare gains from asset price changes are substantial, on the order of 1.8% of life-time income. This is because, as can be seen in Figure 13, these cohorts were accumulating assets mostly during the 1960's-1990's at depressed valuations and then experienced the asset price boom during their retirements. These generations correspond to the initially old in the OLG model in section 4.3, who experience windfall gains that expand their budget constraint when asset prices rise.

The welfare calculations imply that the baby boomers have not yet seen large welfare gains; in fact their implied lifetime welfare gains are slightly negative. This is because these cohorts also accumulated many assets during the 1990s and 2000s, when asset valuations were high, and only recently started to retire and dissave. A natural limitation of computing life-time welfare gains is that the baby boomers and other more recent cohorts are not observed for a long time

Table 4: Lifetime Welfare Gains

	(1)	(2)	(3)
Birth Cohort	Welfare Gains, 1960-2019	Forecast, Constant Valuations	Forecast, Mean Reversion
1920	1.77%	1.77%	1.77%
1930	1.86%	2.00%	1.97%
1940	–0.13%	0.61%	0.35%
1950	–1.04%	0.08%	–0.36%
1960	–1.00%	–0.20%	–0.59%
1970	–1.14%	–1.01%	–0.85%

Notes: This Table shows welfare gains for different birth cohorts over their lifetime computed following (6) using a discount factor $\beta = 1$. Column (1) considers all Welfare Gains during the period 1960–2019, for cohorts entering the sample after 1960, this computation starts at age 20. Column (2) considers welfare gains up to 2050, holding asset valuations constant after 2019 and replacing future transactions with historical transactions. Column (3) lets valuations decay to their baseline levels at a rate of 5% every year. For details see text.

period in retirement in our data. Therefore, to understand what the potential welfare impacts for these cohorts going forward are, we consider forecasts for the valuation of assets and transactions until 2050 in columns (2) and (3) of Table 4. Column (2) presents the simplest forecast, which holds asset valuations fixed at their level in 2019. Asset transactions and income growth after 2019 are forecast to follow the trends from 1990-2019.[45] Column (3) presents a forecast following Fagereng et al. (2024), in which asset prices are forecast to decay to their initial values at a rate of 5% annually. These scenarios imply welfare gains across the board, but in particular for the baby boom generations, which are forecast to start becoming important sellers of assets in the next years. For the cohorts of the baby boom, born in the 1940s and 1950s, forecasts indicate positive life-time welfare gains going forward, though the 1950s cohort would only experience these if valuations do not mean-revert sufficiently fast. In contrast, more recent cohorts cannot make up for the negative welfare gains they experience when young. Overall, we find that the 1920s and 1930s cohorts are the largest beneficiaries of asset price trends, followed by the 1940s and 1950s cohorts (though

[45]Concretely, we consider average income growth over the life-cycle from 1990-2019 and use it to extrapolate income growth after 2019. For transactions, we compute the transactions as a percentage of income over this period and apply it to the years in the forecast.

their gains are smaller and more sensitive to future price dynamics). In contrast, cohorts born in the 1960s and 1970s are projected to experience lifetime welfare losses. This is because empirically, in our life-cycle profiles cohorts accumulate assets on net and die with positive wealth. Therefore, the high cost of purchasing assets when young does not cancel out by sales at old age.

6 Conclusion

The main contribution of our paper is to examine the life-cycle wealth accumulation across cohorts in the U.S. since 1960, revealing some striking facts. Wealth is rapidly aging. This is strongly linked to a steepening of the age-wealth profile, itself reflecting the asset-price boom since the 1980s. We further find what we call a "convergence towards Modigliani" in recent decades since more saving occurs in the middle ages and substantial dissaving in old age. We show that a life-cycle model reconciles these facts with two shifts over the last decades: the rise in life expectancy and the polarization of income. Both trends are predicted to raise asset prices, steepen the wealth-age profile, and polarize saving across asset buyers and sellers.

We note several implications of the change in life-cycle behavior on macroeconomic outcomes, the age wealth gap and welfare. Increased life-cycle wealth accumulation is a key mechanism behind the rise in aggregate wealth-to-income ratios, largely due to rising capital gains. When it comes to saving, two forces are at play. Our decomposition reveals that private saving is increasingly the saving of rich individuals in middle ages. By contrast, old individuals, both rich and poor, have become large dissavers, pushing down both aggregate wealth and aggregate saving. In welfare terms, we show that the observed changes in asset prices and household saving behavior imply a transfer of resources from young savers to old dissavers (Fagereng et al. 2024).

A key question for future work is a full quantification of the key drivers behind changes in the life-cycle of U.S. households. The rise in capital gains since the 1980s appears to be at the core of the change in life-cycle profiles. Is the changing age-wealth profile a result of one-off capital gains, or is it here to stay?

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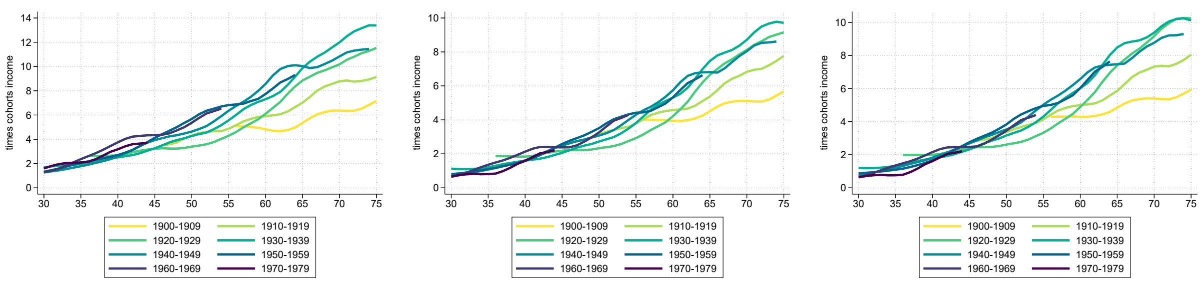
Appendices: For Online Publication

A Appendix: Main Robustness Checks

A.1 Mapping national accounts

We harmonize the SCF+ microdata with national accounts following three main steps: (i) aligning assets, debt, and income categories in the survey with their national account counterparts, (ii) imputing funded Defined Benefit (DB) pensions, and (iii) using equally-split married couples as the unit of observation. To illustrate the impact of these adjustments, we replicate Figure 2 of the paper under three alternative data treatments: using the raw SCF+ data (Figure A14a), employing the harmonized survey while excluding DB-funded pensions (Figure A14b), and using households as the unit of observation in the harmonized survey (Figure A14c). In addition, Appendix Figure F33 replicates cohorts' life-cycle wealth profiles in constant dollars (e.g., Figure 3) based on the raw SCF+ microdata. None of these steps significantly alters the main trends we have documented.[46]

Figure A14: **Life-cycle wealth accumulation: alternative versions**



(a) Raw SCF+ (b) Excluding DB funded pensions (c) Household as observation

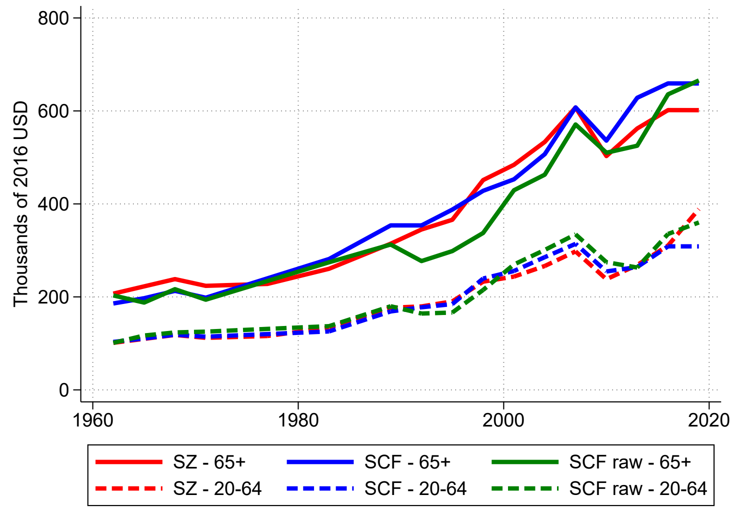
This figure presents the life-cycle wealth-income profiles of eight birth cohorts, as depicted in Figure 2, under three alternative data treatments: raw (unadjusted) SCF+ microdata (Figure A14a), harmonized survey data to macroeconomic aggregates while excluding DB-funded pensions (Figure A14b), and employing households as the unit of observation in the harmonized survey instead of equal split-adults (Figure A14c). The y-axis represents cohorts' average wealth over average income, while the x-axis denotes age. For a detailed explanation of the harmonization of the survey data to aggregates, see section 2.

Comparison with other sources. As we noted in the introduction, there is no other data source covering wealth by age over a long horizon. The main other dataset covering wealth over a long horizon in the U.S. is the data of Saez and Zucman (2016), which only contains two age bins, above and below age 65. We verify in Figure A15 that the SCF+ and SZ measures of wealth are close over time in levels and trends, including in the historical waves of the 1960s and 1970s.

In this paper, we decompose cohorts' life-cycle wealth growth into saving, capital gains, and inheritances based on their intertemporal budget constraints, as reflected in Equation 2, which is

[46] The raw SCF+ data further accentuates the steepening of the life-cycle wealth-income profile. This is mostly because income (the denominator) is captured less well in the survey than wealth relative to national accounts.

Figure A15: Average wealth of old and young – comparison



Notes: This figure plots average wealth in 2016 USD for the two age bins available in the data of Saez and Zucman (2016) and the SCF+. The solid lines correspond to the 65+ bin, while dashed lines correspond to adults aged 20-64. The red line corresponds to Saez and Zucman (2016), the blue line to the SCF data (aligned with national accounts), and the green line to the raw SCF data.

specific to each cohort's asset or debt type. We then derive saving flows by subtracting capital gains and inheritances from the changes in the stock of a specific asset type or debt. As a result, this measurement exercise involves three sources of uncertainty: (i) the asset and debt stocks, (ii) the flows of inheritances and gifts, and (iii) the capital gains. Furthermore, when applying this method to within-cohort wealth groups (e.g., the top-10% wealth group) instead of entire cohorts, we additionally assume that the same individuals remain within a given group between periods.

In what follows, we examine these assumptions and replicate the life-cycle saving profiles of cohorts (e.g., Figure 7a) under alternative data sources and methods. We present comparable results for cohorts' life-cycle capital gains and inheritances in Appendix F.2.

A.2 Cohorts' assets and debts

Our first analysis is on the evolution of cohorts' assets and debts. To assess the role of harmonizing the SCF+ to macroeconomic aggregates, in Figure A16a we present life-cycle saving profiles derived from the raw survey microdata.[47] The overall pattern of life-cycle wealth accumulation is qualitatively similar between the raw and harmonized microdata. In both cases, there's a consistent trend towards increased saving during middle ages and more pronounced dissaving at older ages.

A.3 Inheritances and the surviving spouse

In section 2 and Appendix B.4, we have documented that our aggregate flow of inheritances and gifts is consistent with existing estimates. While we then use the observed density of inheritances

[47]Results for life-cycle capital gains are shown in Figure F35a.

from the SCF to allocate these, in an intermediate step we need to distribute inheritances to the surviving spouse and the offspring. In our baseline estimates, we allocate 18% of the inheritance left by couples with a surviving spouse to flow to the next generation, following evidence in Fahle (2023). We vary this assumption in figure A16d, which presents results on saving when allocating 50% of these estates to the next generation. This leads to lower saving at middle ages (a larger share of changes in wealth is attributed to transfers) and more saving for the old. However, the main trends we document are unchanged, as inheritances are generally small from year to year.

A.4 Capital gains and returns heterogeneity

Capital gains in national accounts. To achieve consistency between the distributional analysis of saving, wealth, and macroeconomic aggregates, we obtain capital gains data for each asset type from the national accounts (see section 2).[48] Additionally, we implement a correction to housing and equity capital gains in the national accounts, to make them consistent with the Case-Shiller price index, as implemented in Piketty et al. (2018).

We display in Appendix Figure F34 the evolution of three versions of capital gains: (i) the adjusted national accounts (this paper), (ii) the raw (unadjusted) national accounts and (iii) the Jordà-Schularick-Taylor Macrohistory Database (Jordà et al. 2019). The main finding is that all capital gains exhibit a notable level of consistency, with national accounts displaying a strong correlation with well-established asset price indexes.[49]

To further understand the influence of capital gains, we replicate the analysis of life-cycle wealth growth decomposition under the two series for capital gains: unadjusted national accounts and the Jordà-Schularick-Taylor Macrohistory Database. The saving profiles are displayed in Figure A16 (panels b and c), while those for capital gains are in Appendix Figure F35. In essence, we find that the life cycle saving profile follows a similar trend when computed from the three distinct versions of capital gains.

Heterogeneous capital gains on individual asset classes. The method also assumes that different age groups experience the same capital gain for individual assets (e.g., housing, equity, etc.).[50] At first, this assumption might look strong, given the well-known result that returns (i.e., the sum of the income flow and the capital gain) for individual assets differ across wealth groups (Fagereng et al. 2020, Bach et al. 2020, Xavier 2021). However, available evidence for the U.S., Spain and Norway suggests rather small within-asset class heterogeneity of capital gains rates (Mian et al. 2021b; Martínez-Toledano 2020; Fagereng et al. 2020), with most variation in returns stemming from variation in income yields.[51]

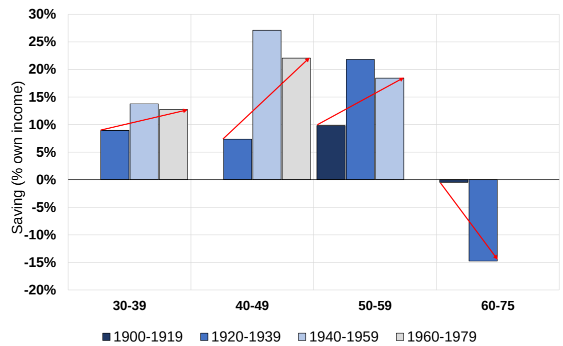
[48]This approach mirrors that of previous studies harmonizing the distribution of saving in microdata with national accounts, including Saez and Zucman (2016) for the US, Garbinti et al. (2020) for France, Martínez-Toledano (2020) for Spain or Bauluz et al. (2022) for a handful of rich countries and China.

[49]One reason for the difference in equity capital gains is that national accounts include both listed and unlisted shares, while equity price indexes focus only on listed stocks. Another reason is that the national accounts measure is net of changes due to retained earnings, while common stock market-price indices are not.

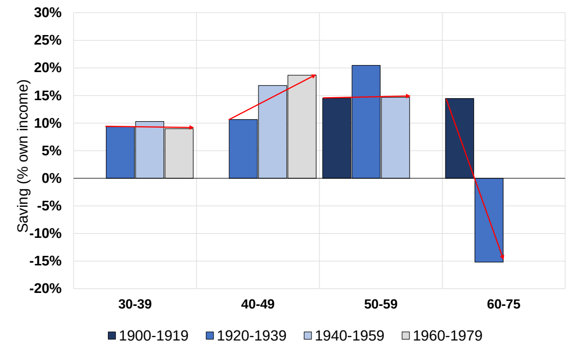
[50]As a result, variation in capital gains across wealth groups reflects portfolio heterogeneity. Figure C10 documents large portfolio differences across age groups.

[51]Fagereng et al. (2020) document that returns across Norwegian wealth groups vary at the asset class level. Since returns are the sum of capital gains and income flows, we asked the authors if the capital gain component drives the observed variation in returns. In an email exchange, the authors suggested that differences in returns mostly stemmed from income flows since asset-specific capital gains across wealth groups are fairly small, at least for housing and

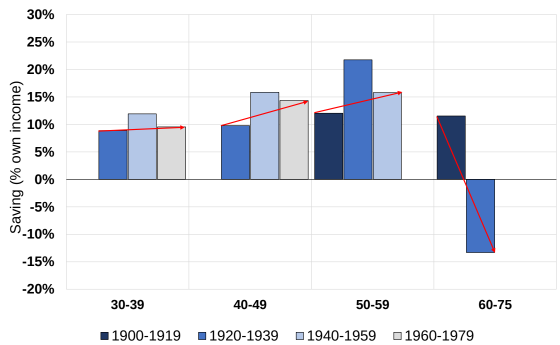
Figure A16: **Life-cycle saving across cohorts: alternative estimates**



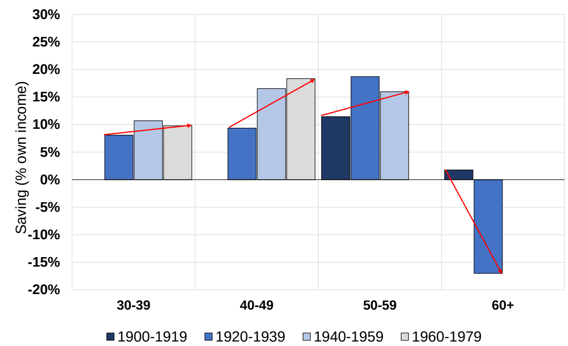
(a) Raw SCF+



(b) Unadjusted national accounts' capital gains



(c) Capital gains from JST Database



(d) Alternative distribution of inheritances

This figure illustrates the annual saving flows of four birth cohorts (born in 1900-19, 1920-39, 1940-59, and 1960-79) from ages 30 to 75, obtained under four different specifications. Figure A16a uses the raw SCF+ microdata on debt, assets and income. Figure A16b uses the unadjusted capital gains from the national accounts. Figure A16c uses capital gains on housing and equity from the Jordà-Schularick-Taylor Macrohistory Database. Figure A16d obtains saving flows assuming that 50% of inheritances of couples with a surviving spouse pass to the next generation, deviating from the benchmark estimate of 18% in Fahle (2023). The saving flows depicted in these figures are presented as a percentage of the cohort's average annual income and calculated using the methodology outlined in section 2.

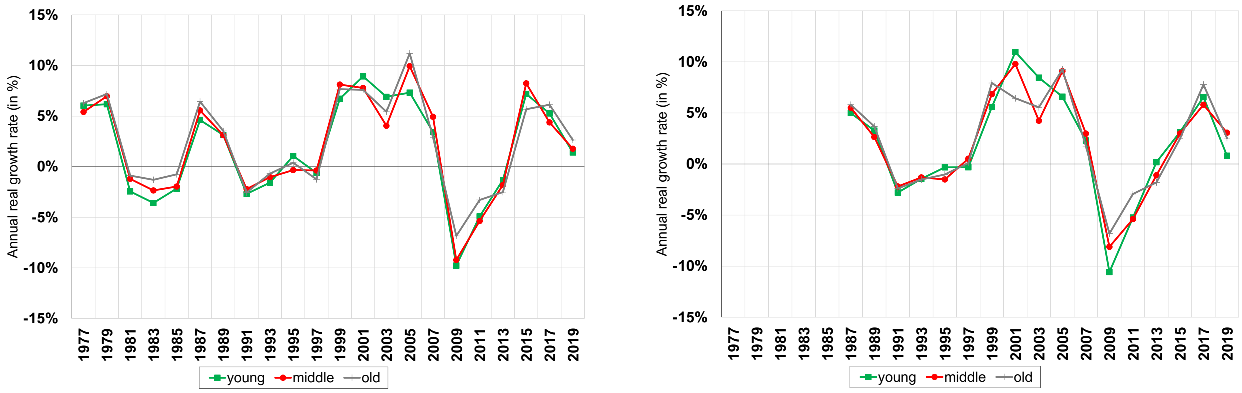
We provide original evidence on capital gain heterogeneity in housing in Figure A17a. Arguably, this is the single asset for which differences across groups might affect our estimates most.[52] Importantly, our results indicate that housing capital gains have been largely consistent across age groups over the past decades, with minimal differences across them.[53]

public equity (the two assets they could check). We are grateful to the authors for sharing this information. Moreover, Xavier (2021) analyses returns along the wealth distribution in the U.S., finding large variations across wealth groups within asset classes. Her measure of return assumes (as we do) that capital gains in individual asset classes are the same across household groups.

[52]Deviations from the national average in this asset could significantly affect our estimates for two key reasons. Firstly, housing represents a central asset in households' portfolios, making up a substantial portion of their total assets. Secondly, it is widely shared between the top 10% and the middle 40% of the distribution. In contrast, equity and business assets are highly concentrated at the top of the distribution. This means that the aggregate capital gains in these assets are more reflective of the evolution of the top group and less pertinent to the dynamics of the bottom groups, which hold minimal wealth in these asset categories.

[53]This finding aligns with the analysis conducted by Mian et al. (2021b) for the U.S., which extends the synthetic

Figure A17: **Annual Real Growth of House Values by Age Group**



(a) Per Room (1977–2019)

(b) Per Square Meter (1987-2019)

Notes: This figure shows annualized real growth rates of house values across three age groups—young (20–39), middle-aged (40–59), and elderly (60+)—using data from the American Housing Survey. Panel (a) presents house values per room over the period 1977–2019. Panel (b) shows analogous results based on house values per square meter, which are only available since 1987.

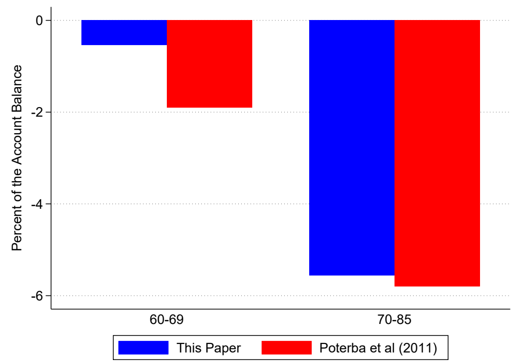
A.5 Intergroup mobility

The main focus of the paper when decomposing life-cycle wealth growth into saving, asset prices and inheritances is on birth cohorts as a whole. However, in section 5.1.1, we also distinguish saving across within-age wealth groups, following "synthetic" groups over time, under the assumption that the same individuals remain in a given group across two survey waves (Saez and Zucman (2016), Garbinti et al. (2020) or Mian et al. (2021b)). In practice, however, there is some mobility so that individuals will move between groups. We focus on large groups, such as the top-10% or the bottom-50%, for which mobility is relatively limited over shorter periods (Kuhn et al. 2020). In Appendix F.3, we test this assumption by computing persistence within birth cohorts in the Panel Study of Income Dynamics (PSID) as in Kuhn et al. (2020), who compute this persistence across the population as a whole (see Table C.2 in their paper). Overall, we find that the level of persistence is similar in both cases.

The finding for which within-cohort saving rates are most important is the result that the rise in saving at middle ages predominantly reflects the top decile. In contrast, we find that the dissaving of the elderly is not specific to any part of the wealth distribution. While mobility may induce some upward bias to these figures, we think its impact to be limited. The main mechanism for this potential upward bias would be an increase in entrants to the top decile due to transitory income shocks. However, the available evidence suggests that the rise in U.S. income inequality in recent decades is predominantly driven by permanent differences (Guvenen et al. 2022). In addition, our within-cohort analysis ranks households by wealth and not income. Wealth rankings are more stable and less sensitive to transitory income shocks.

saving method using variation in house prices across wealth groups and finds no substantial differences compared to their benchmark saving rates, which use uniform capital gains for individual assets.

Figure A18: **Annual dissaving in pensions: comparison to Poterba et al. (2011)**



Notes: This figure compares the annual dissaving in pension accounts obtained using our methodology with Poterba et al. (2011) across two age periods: 60-69 and 70-85. Pension withdrawals as a percentage of the value of the retirement account are taken from the description of Poterba et al. (2011), Figure 4-1. The estimates in this paper pertain to the cohort 1920-1939, ensuring consistency in the cohorts and time period covered in the two studies.

A.6 Comparison to direct estimates of saving

Our methodology infers saving through households' intertemporal budget constraint. Data directly on saving in the U.S. is notably scarce, but there are estimates for certain asset classes that we can use to benchmark our results. Specifically, Poterba et al. (2011) study withdrawals from personal retirement accounts from 1997 to 2010. They document that retirement account balances remain relatively constant, with withdrawals being offset by positive capital gains. We compare the dissaving in pension assets implied by our methodology with their data in Figure A18. Note that our methodology considers pension withdrawals as dissaving, consistent with the treatment in the U.S. financial accounts. Our figures closely align, with the implied dissaving in pension assets obtained by Poterba et al. (2011) being slightly larger than in our figures.

B Appendix to Section 2

B.1 Matching SCF to Macro Categories

Wealth. We harmonize wealth with macroeconomic aggregates to analyze aggregate behavior with distributional data. Table B1 gives details on the mapping of SCF+ variables to aggregate data.

Regarding funded pension assets, the SCF+ lacks information on defined benefit pensions for the entire survey and defined contribution pensions in the historical waves. As explained in section B, we impute these two types of pensions in the missing periods. Figure Appendix B1 displays the value of funded pensions in the U.S. While funded pensions constitute nearly 30% of household wealth today, they accounted for less than 10% in the early period.

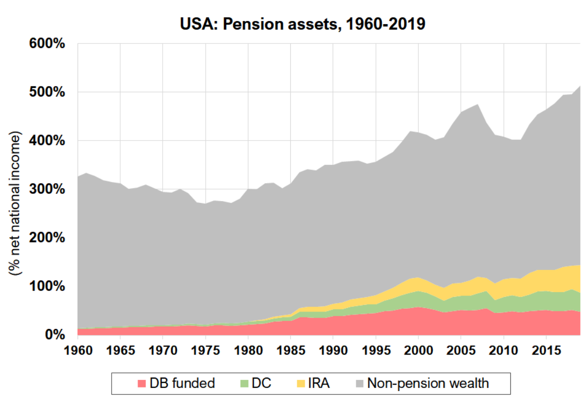
Income. Our goal is to measure flows of saving, capital gains and interfamily transfers as percent of gross income. National income in NIPA and income surveyed in the SCF differ from each other in some respects. We follow Dettling et al. (2015) and Kuhn et al. (2020) in constructing a counterpart to the SCF+ income concept. Not all parts of NIPA income are covered in the SCF, with the most important omissions being supplements to wages and salaries (NIPA line 2.1.6), imputed interests received (NIPA line 7.11.63) as well

Table B1: **Matching SCF to Macro Categories**

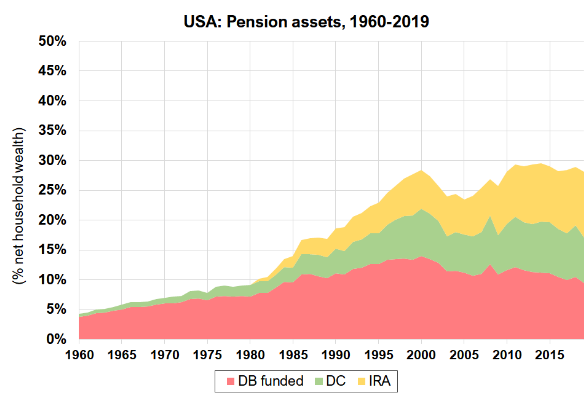
	SCF+ Asset Category	Macroeconomic data category [a]
Assets	Primary residence + Residential property excl. primary residence	Housing
	Businesses	Business assets
	All types of transaction account (Liq), Certificates of deposit, Savings Bonds, Directly held bonds	Fixed-income assets
	Directly held stocks	Equities (excluding held through funds)
	Directly held pooled investment funds	Investment funds
	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

Figure B1: Pension assets



(a) Household wealth: pension assets and non-pension wealth (% nat. income)



(b) Pension assets (% household wealth)

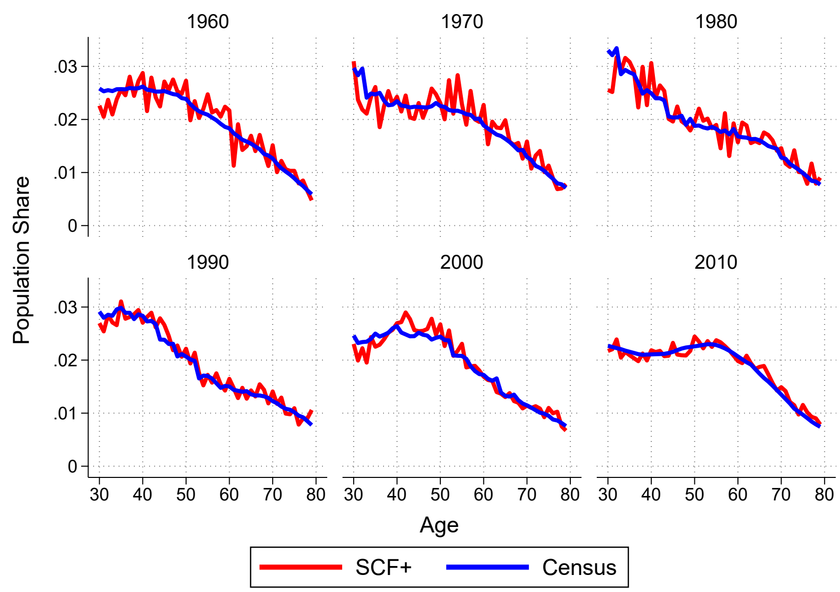
Notes: This figure shows funded pension assets decomposed into three types: Define Benefits (DB funded), Defined Contribution (DC) and Individual Retirement Arrangement (IRA). Pension assets are expressed as a percentage of national income (Figure B1a) and as a percentage of aggregate household wealth (Figure B1b).

as imputed rents (NIPA line 7.9.9). Capital gains are not included in our income measure and income is pre-tax but post-transfers. We then rescale income to the survey consistent concept, with SCF and NIPA incomes then aligning quite well in trends and size (Kuhn et al., 2020).

B.2 The Age Structure in the SCF+

In general, the age structure in the SCF+ is close to the general population. One important exception is the 1950s when the age in the SCF+ is only reported in discrete bins. After 1960, the age structure from the SCF is aligned with the general population. We show this explicitly in figure B2, which compares the population shares in the SCF+ and the U.S. census by decade. The SCF+ tracks the population composition in the census closely.

Figure B2: **Age density in the SCF+**

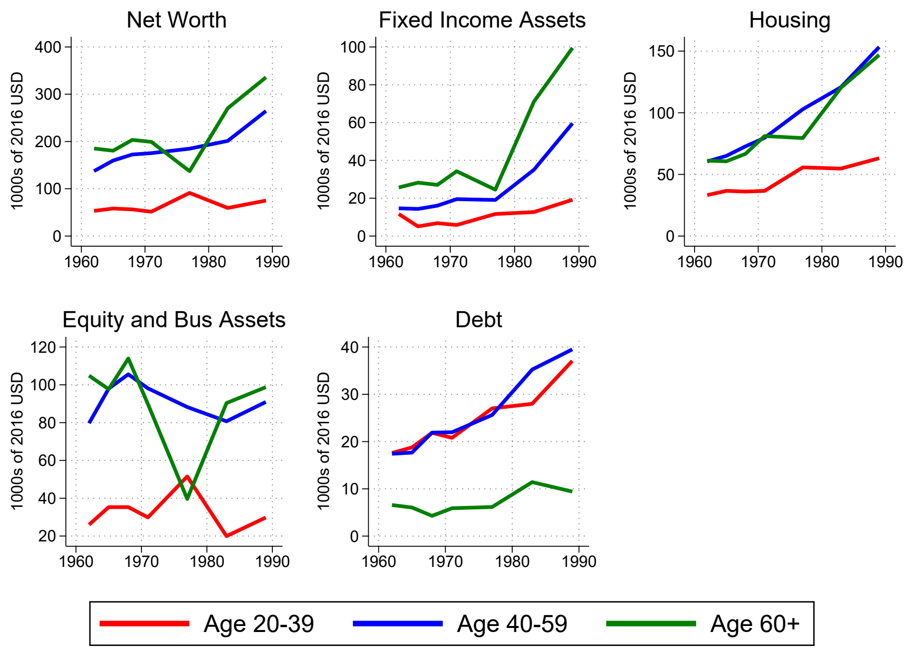


Notes: This figure compares the population composition in the SCF and the census.

B.3 Undercoverage in the 1977 Wave

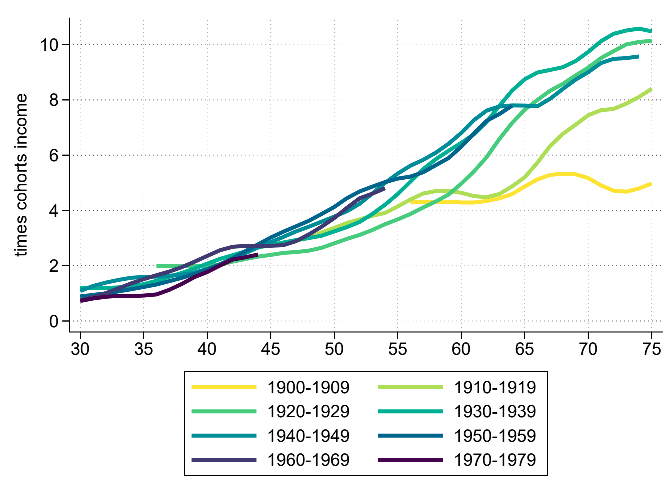
In our baseline analysis, we exclude the 1977 wave due to an implausible drop in elderly wealth, as also noted in Auclert et al. (2021). In the 1977 survey, we find a large drop in holdings of equity and business assets by the elderly, with the value of total holdings of these assets dropping by over 60%. Figure B3 shows the mean dollar holdings of different assets (in constant prices) for age groups in the raw SCF+ data. Although this period sees a large fall in equity prices, the drop in holdings is observed only for the elderly generations. Moreover, although equity prices remained low into the early 1980's, holdings do not remain low but recover immediately. We, therefore, regard the fall in equity holdings as implausible. For our methodology, the sharp fall in equity holdings would appear as a large dissaving in equity assets with a large increase in saving in these assets thereafter as holdings recover. For young cohorts, the picture is reversed: the young increased their equity holdings by almost 50% in 1977, only to then see them drop sharply. However, the main trends we document in the paper hold if including the 1977 wave, as we show in Figures B4 and B5.

Figure B3: Average real holdings of assets by age groups



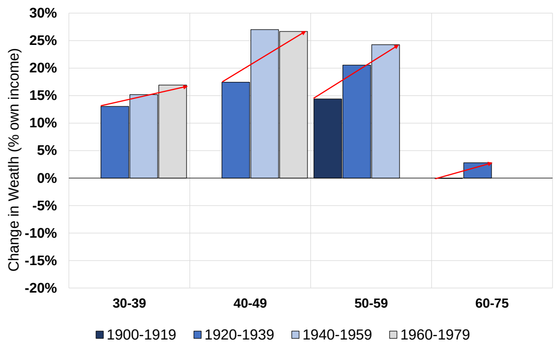
Notes: This figure illustrates the coverage of different asset classes by age group for the 1977 wave.

Figure B4: Life-cycle wealth accumulation: including the 1977 wave

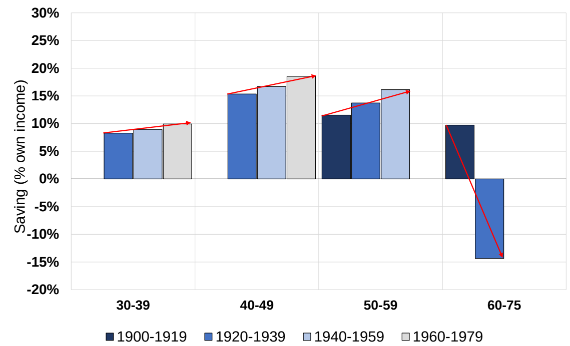


Notes: This figure reproduces the chart on life-cycle wealth-income profiles (e.g., Figure 2 of the main text) in a sample including the 1977 wave.

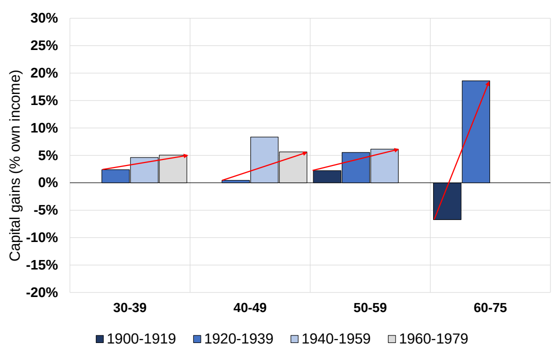
Figure B5: Life-cycle wealth growth and its decomposition (saving vs. capital gains vs. inheritances): including the 1977 wave



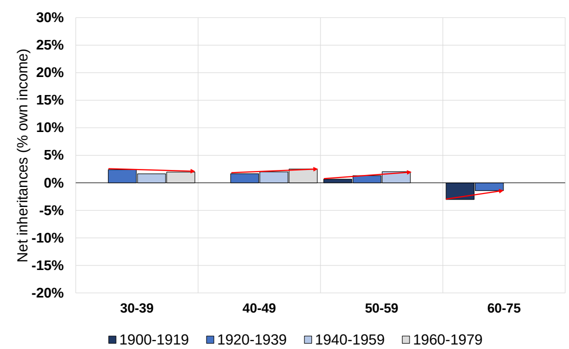
(a) Wealth changes over the life-cycle



(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 real wealth (Figure B5a) decomposed into the contribution of net saving flows (Figure B5b), capital gains (Figure B5c) and inheritances and gifts (Figure B5d) along the life-cycle of four birth cohorts (born in 1900-19, 1920-39, 1940-59 and 1960-79) from age 30 to age 75. It uses the 1977 wave of the SCF+, while the corresponding Figure 7 of the main text does not. 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.

B.4 Construction of Inheritances and Transfers

In this section, we explain the construction of inheritances and gifts in detail. 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[54]. 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 regulation requires an estate to settle its debts, so debts of the deceased are deducted from the amount transferred to the inheritors.

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

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 rates 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 Saez and Zucman (2016) mortality multipliers to correct for differential mortality of top wealth holders.[55]

We next apply estate taxes and deductions to the estate. 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 publicly 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). U.S. estate taxes have undergone many changes in the past years. For the past 50 years tax rates have been generally 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 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%.

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 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. Fahle (2023) finds that in the U.S., a share sh_{next} = 18% of bequests of partners with a surviving spouse do not go to that surviving spouse but directly to the next generation. Hence, we distribute 18% of the bequest not to the surviving spouse but to the next generation. 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

$$B_t^{\text{intergen}} = \sum_{i \in I_{\text{single}}} w_{i,t} d(s_i, a_i, t) + \sum_{i \in I_{\text{married}}} w_{i,t} d(s_{i_1}, a_{i_1}, t) d(s_{i_2}, a_{i_2}, t) + \sum_{i \in I_{\text{married}}} sh_{\text{next}} w_{i,t} d(s_{i_1}, a_{i_1}, t)(1 - d(s_{i_2}, a_{i_2}, t)). \quad (7)$$

and are comprised of bequests from single households, married households in which both partners die and bequests passing to the next generations from married households in which only one partner dies. $w_{i,t}$ represents the bequested wealth (after taxes and deductions). For those bequests that flow to the spouse it is clear from the microdata how they redistribute wealth across generations as we have the age of the spouse to which the inheritance flows.

Wealth can also be passed between households by inter-vivos transfers. These are 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 gift flow. In this module both transfers received and transfers given by the household are recorded.[56] 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

[55] 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.

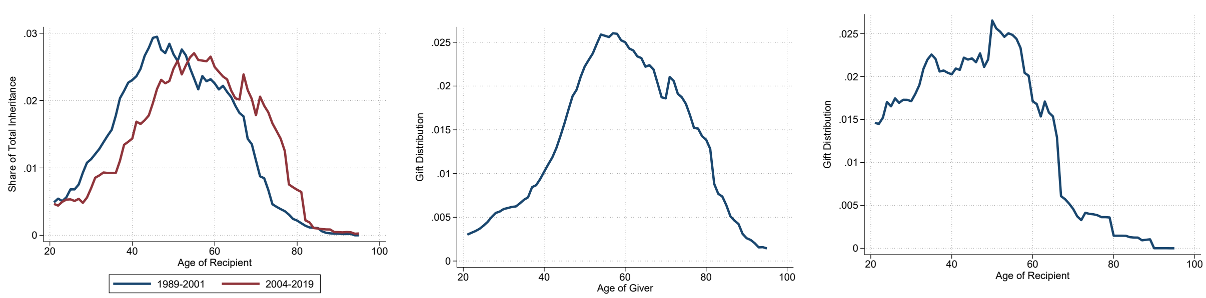
[56] The precise question is: During the past year, did you (or anyone in your family living here) provide any (other) financial support for relatives or friends who do not live here? The interviewer is asks respondents to also include any substantial gifts given in the answer to this question.

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 for the aggregate of gifts. Following Alvaredo et al. (2017) we assume the flow of inter-vivos gifts to be 20% of all bequests. This approximation is validated by the gift flow since 1989, which is on average 21% of the total bequest flow.

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 remainder goes to the spouse. 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 distributions of bequests.[57] 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.[58] We show the distribution of inheritances received in figure B6a. 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 by age group. We could use the SCF to compute gifts given 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 B6. Gifts are a primary way of distributing wealth from parents to grown up children; most gifts are given by around 60-year olds and received by those under the age of 40.

Figure B6: **Distribution of inheritances and gifts in the SCF**



(a) Inheritances received (b) Age distribution of gift givers (c) Age distribution of gift recipients

Notes: The figure pools SCF waves since 1989. Panel (a) shows the age distribution of inheritances received; panels (b) and (c) display the age distributions of gift givers and recipients, respectively.

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 inheritances is slightly more equal than the distribution of wealth in general. This fact underlies our result that inheritances have an equalizing

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

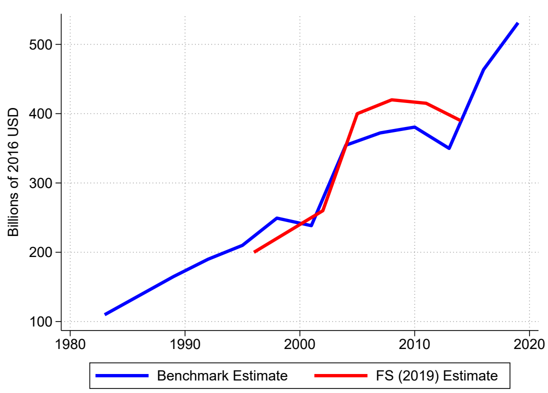
[58]In practice, in the public use files of the SCF, the exact year is often not given for confidentiality reasons, but the year reported as a 5-year interval. We then use the closest interval.

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.

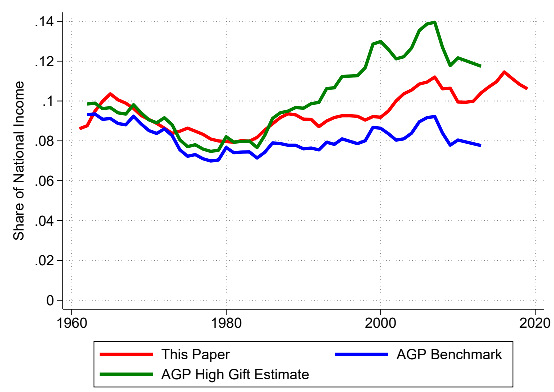
The historical part of the SCF (before 1989) does not include data on inheritances or gifts. Therefore, we assume that the distribution of inheritances and gifts along age groups is shifted downward following changing life expectancy.[59]

Discussion. 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). To ensure the validity of our approach we compare our estimates to existing numbers from Feiveson and Sabelhaus (2019) and Alvaredo et al. (2017) in figure B7. 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 B7a, in addition to their estimate; the flow we obtain is very close to theirs. 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. Our comparison that follows these same definitions is shown in figure B7b. Our estimates are close in the early years and between the AGP 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 on French data.

Figure B7: Inheritance and Gift Flow



(a) Comparison to Feiveson and Sabelhaus (2019)



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

Notes: Figure B7a shows the flow of inheritances flowing to the next generation in billions of 2016$ in our paper and in Feiveson and Sabelhaus (2019). Numbers from their paper are estimated from the figure 'Estimated Bequests vs Reported Inheritances' in their paper. Figure B7b shows the total inheritance and gift flow as a fraction of national income. It compares our estimate to that of Alvaredo et al. (2017).

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

C Appendix to Section 3

C.1 Cohort – Age – Observation summary statistics

Table C2 illustrates the number of observation by each pooled survey year and cohort. It further shows the average age of each cohort in the survey years.

Table C2: Illustration: Number of Observations and Age at Different Survey Waves

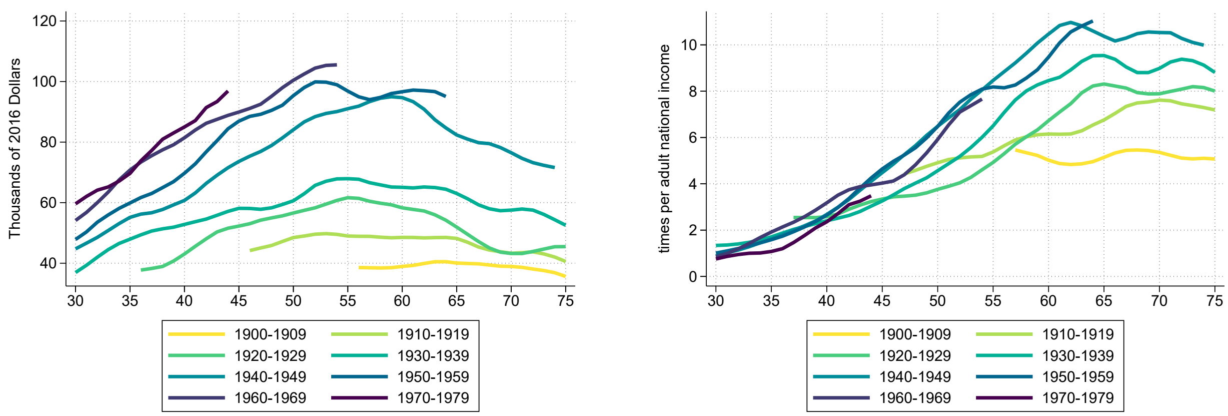
	1900		1910		1920		1930		1940		1950		1960		1970		1980		1990	
Year	Obs	*Age*	Obs	*Age*	Obs	*Age*	Obs	*Age*	Obs	*Age*	Obs	*Age*	Obs	*Age*	Obs	*Age*	Obs	*Age*	Obs	*Age*
1960	457	*56*	599	*46*	658	*36*	437	*26*												
1962	298	*58*	404	*48*	476	*38*	346	*28*												
1963	316	*59*	363	*49*	406	*39*	323	*29*												
1965	222	*61*	251	*51*	275	*41*	258	*31*	135	*21*										
1967	366	*63*	652	*53*	754	*43*	638	*33*	448	*23*										
1968	285	*64*	558	*54*	620	*44*	551	*34*	433	*24*										
1969	242	*65*	488	*55*	534	*45*	536	*35*	494	*25*										
1970	326	*66*	441	*56*	545	*46*	457	*36*	502	*26*										
1971	179	*67*	235	*57*	245	*47*	233	*37*	261	*27*										
1977	253	*73*	402	*63*	474	*53*	382	*43*	545	*33*	398	*23*								
1983	277	*79*	553	*69*	678	*59*	680	*49*	800	*39*	848	*29*								
1989			342	*75*	545	*65*	593	*55*	686	*45*	571	*35*	273	*25*						
1992			306	*78*	619	*68*	608	*58*	814	*48*	811	*38*	555	*28*						
1995					551	*71*	653	*61*	870	*51*	933	*41*	732	*31*	231	*21*				
1998					450	*74*	594	*64*	894	*54*	965	*44*	722	*34*	437	*24*				
2001					418	*77*	544	*67*	853	*57*	1086	*47*	798	*37*	543	*27*				
2004					292	*80*	515	*70*	918	*60*	1082	*50*	886	*40*	575	*30*	178	*20*		
2007							435	*73*	836	*63*	1056	*53*	868	*43*	606	*33*	301	*23*		
2010							510	*76*	995	*66*	1484	*56*	1402	*46*	1097	*36*	705	*26*		
2013							417	*79*	875	*69*	1298	*59*	1310	*49*	1015	*39*	768	*29*		
2016									853	*72*	1370	*62*	1299	*52*	1062	*42*	878	*32*	327	*22*

Notes: This table shows the number of households and the average age of each birth cohort across survey waves. Following Kuhn et al. (2020), we pool the 1960-62; 1963-1965; 1967-1968 and 1969-1971 waves.

C.2 Additional figures

We provide additional descriptive results on the life-cycle profile of cohorts. Figure C8a shows the life-cycle income profile of eight cohorts in constant prices. It complements Figure 3 from the main text, which displays the life-cycle wealth in constant prices instead of income. Next, figure C8b plots cohort wealth normalized by average income, instead of the cohorts own income as in figure 2. We also fine a steepening of the life-cycle wealth profiles measured as a fraction of economy-wide average income.

Figure C8: Income and Wealth over the Life-Cycle



(a) Life-cycle income in constant prices

(b) Cohort wealth to average income

Notes: Panel (a) shows average income over the life cycle for each cohort, measured in thousands of 2016 constant dollars. Panel (b) plots cohort wealth over the life cycle, normalized by economy-wide average income. Both series are smoothed as 7-year moving averages.

C.3 The impact of unveiling on cohort portfolios

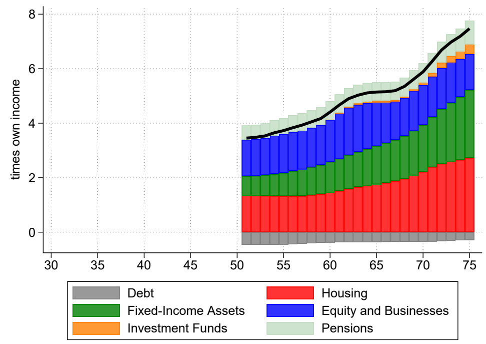
Our methodology unveils the financial portfolio of households into equity and fixed-income assets. In particular, we unveil assets held indirectly through investment or pension funds. Figure C9 shows the portfolios for the birth cohorts we cover before and after unveiling.

C.4 Cohorts' life-cycle portfolio trends

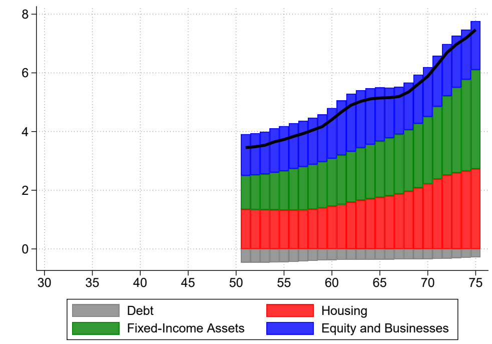
This subsection briefly explores the evolution of portfolio composition as individuals progress through different life stages. In Figure C10, we break down the cohort portfolios into four main categories: housing, fixed-income assets, and equity and business assets, and debt. These asset categories are expressed as percentages of net wealth at various ages. This is made possible through the unveiling of indirectly held assets through investment and pension funds, as discussed in section 2. Portfolios before unveiling are in Appendix Figure C9.

The unveiled portfolios reveal meaningful shifts that have occurred across generations. In particular, newer cohorts display substantially larger leveraging, with housing and debt taking up a larger share of their wealth in the early stages of their life cycles, particularly before ages 40 to 45 (see Bartscher et al. 2020 for further discussion). Consistent with prior research, we also observe a recurring pattern where the

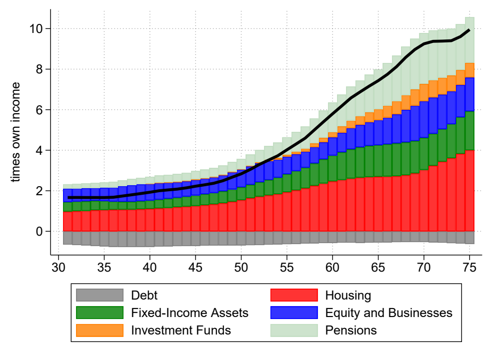
Figure C9: Cohort life-cycle portfolios before and after unveiling



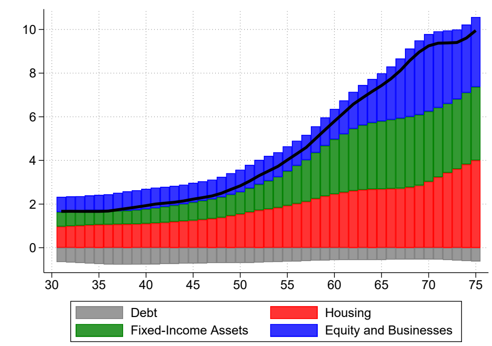
(a) 1900-1919 cohort before unveiling



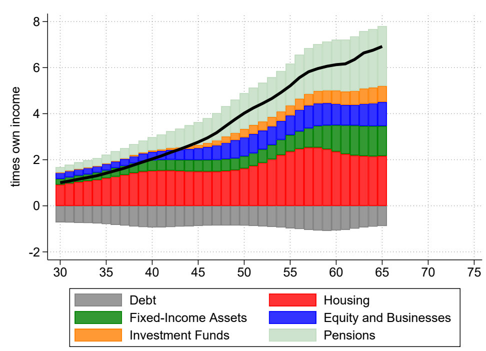
(b) 1900-1919 cohort after unveiling



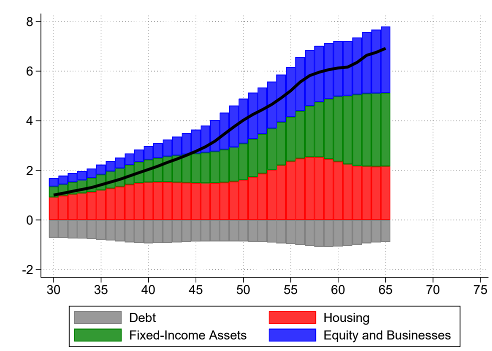
(c) 1920-1929 cohort before unveiling



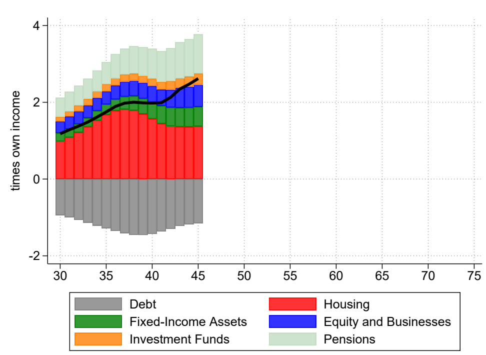
(d) 1920-1929 cohort after unveiling



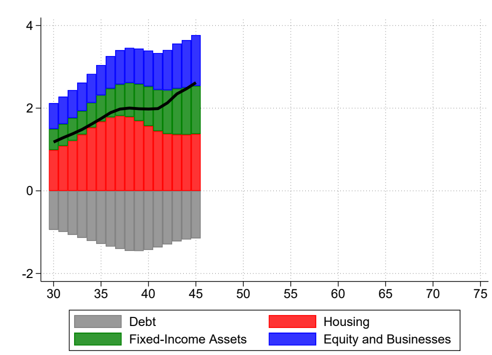
(e) 1940-1959 cohort before unveiling



(f) 1940-1959 cohort after unveiling



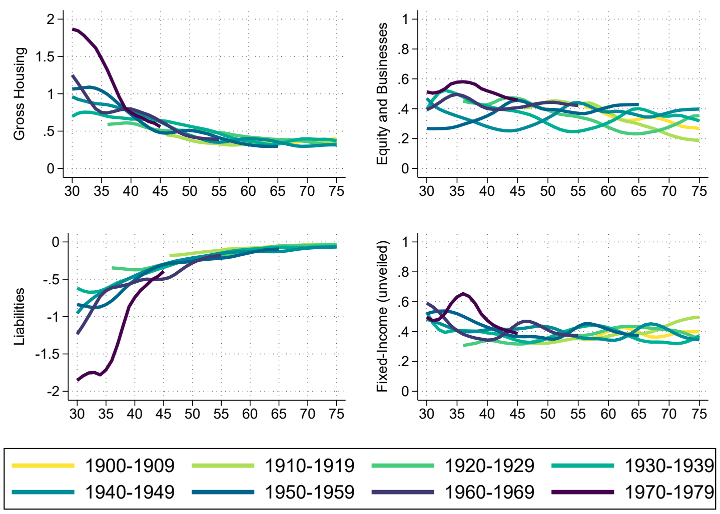
(g) 1960-1979 cohort before unveiling



(h) 1960-1979 cohort after unveiling

Notes: This figure illustrates the effect of unveiling as described in section 2. Series are 7-year moving averages.

Figure C10: **Portfolio shares over the life-cycle across birth cohorts**



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. Holdings of assets are shown as a percentage of net wealth of the cohort at that age. Series are 7-year averages.

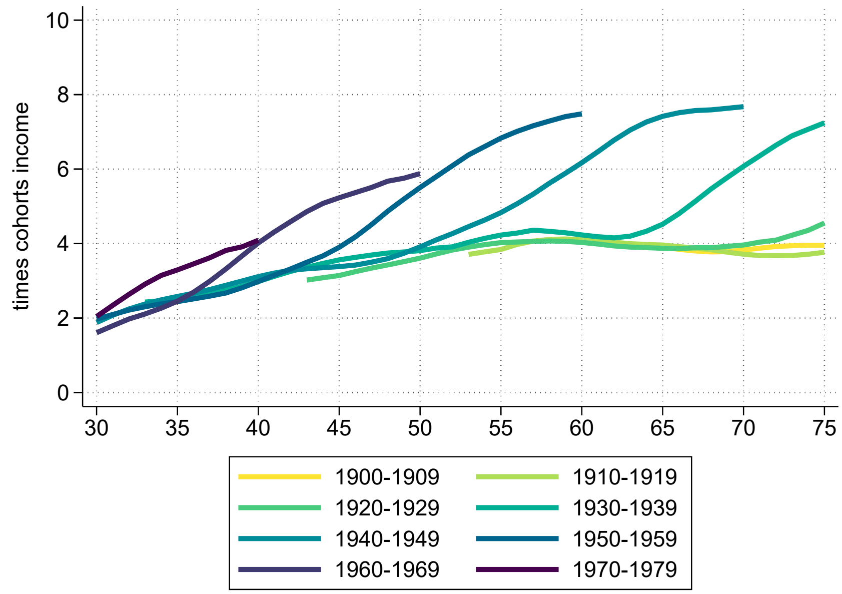
proportion of equity and housing gradually decreases as individuals progress through their life cycles, while fixed-income assets experience a slight rise after age 50 (e.g., Ameriks and Zeldes 2004; Cocco et al. 2005; Fagereng et al. 2017).[60]

C.5 Comparison with other countries

Our key stylized facts hold not only in the U.S. but also in other countries. In this appendix, we present results for France using Distributional National Accounts produced by Garbinti et al. (2020). The data starts in 1970, so early cohorts are captured only at the end of their lives. In other work subsequent to the first version of our paper, Sturrock (2023) and Bartels and Morelli (2021) document similar trends for the U.K. and Italy and Germany, respectively, although for a shorter period (generally starting in the mid-1990s). In Figure C11, we present life-cycle wealth profiles for French cohorts. We observe a similar steepening of wealth profiles in France. In Figure C12, we study life-cycle wealth profiles across the within-cohort distribution. The trend towards steeper life-cycle wealth profiles holds across the groups in the wealth distribution, in contrast to the US, where this steepening is only observed for the top half. Nevertheless, the steepening of life-cycle wealth profiles is more pronounced at the top of the distribution, as in the U.S..

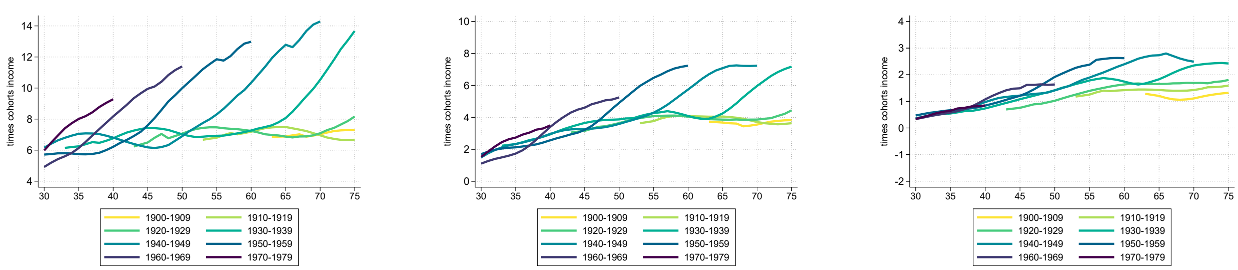
[60]However, a more detailed look at the data shows that more recent cohorts have increased their equity shares in the years before retirement at the expense of fixed-income assets, a behavior distinct from what the older generations did. This finding aligns with Catherine (2022), who studies the behavior of recent cohorts using modern SCF data.

Figure C11: Life-cycle wealth accumulation in France



Notes: This figure plots the average wealth of birth cohorts in France during their life cycles, expressed as a share of the cohorts' own average income using data from Garbinti et al. (2020). Series are 7-year averages.

Figure C12: Life-cycle wealth accumulation of the top-10%, middle-40% and bottom-50% in France



(a) Wealth of the top-10%

(b) Wealth of the middle-40%

(c) Wealth of the bottom 50%

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 their own group's average income. Series are 7-year averages.

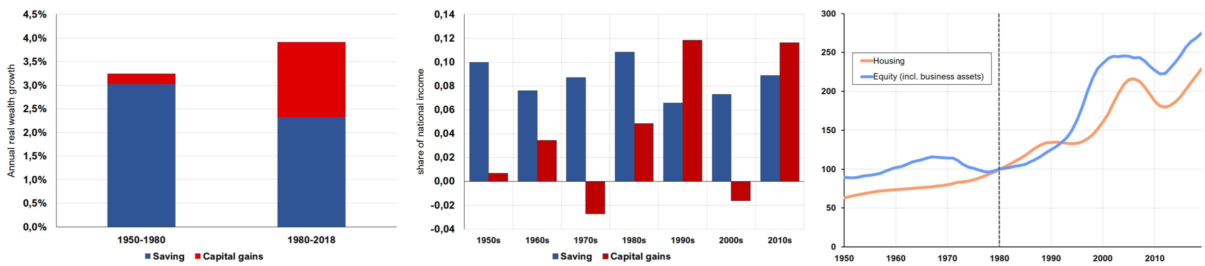
D Appendix to Section 4

D.1 Macroeconomic context: wealth growth and its sources

Two important macroeconomic trends across rich countries since 1980 are the strong increase in household wealth-to-income ratios (shown in Figure 1a) and a consistent rise in risky asset prices (e.g., Jordà et al. 2019; Kuvshinov and Zimmermann 2021). This section outlines the scale of these trends in the U.S., providing context for the wealth accumulation of subsequent generations.

Figure [D13a](#) shows real household wealth growth decomposed into saving and capital gains for the broader periods 1950-1980 and 1980-2019, based on the accounting framework for aggregate wealth in section 2.3.[61] Two notable observations emerge: real wealth growth rates increased over the periods from about 3.2% to nearly 4%. Additionally, a shift in wealth dynamics occurred: asset prices became central in the second period, contributing nearly half of the increase since the 1980s, contrasting with the earlier minor role of capital gains.

Figure D13: **Macroeconomic trends in wealth accumulation, 1950–2019**



(a) Household wealth growth (b) Saving and capital gains (c) Capital gains, 1980=100

Notes: Figure D13a 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 D13b shows decennial averages for saving and capital gains expressed as a share of national income. Figure D13c shows the evolution of housing and equity values over time, expressed as an index. Results use the asset-specific accumulation equations (see section 2).

To assess the changing significance of saving and capital gains, we plot in Figure D13b the decennial average of annual saving and capital gains relative to national income. Capital gains have gained prominence in recent years, even surpassing saving during the 1990s and 2010s. Saving was around 9-10% of national income in the early period, then declined in the 1990s and 2000s averaging 7-8% and started to recover thereafter. Rising capital gains largely reflect an increase in both housing and equity prices, as shown in Figure D13c, which displays a sustained rise since 1980 compared to the more moderate increase preceding this era.

D.2 Life-cycle wealth growth decomposition

We present supplementary results regarding the life-cycle wealth growth decomposition.

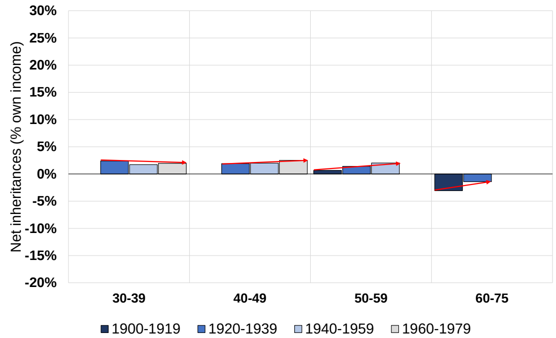
Figure D14 displays the life-cycle profile of net inheritance flows. The flows are shown as a percentage of the average annual income of the cohort and are computed using the methodology outlined in section 2. It complements the results shown in Figure 7, which shows saving and capital gains.

Figures D15, D16 and D17 show the life-cycle wealth growth decomposition (into saving, capital gains and inheritances and gifts), for three distinct wealth groups within cohorts: the top-10%, middle-40%, and bottom-50%. These figures correspond to four birth cohorts: 1900-1919, 1920-1939, 1940-1959, and 1960-1979. They complement Figure 7 in the main text, which presents a similar decomposition but for entire cohorts without distinguishing between various wealth groups within each cohort.

Finally, Figure D19 provides counterfactual life-cycle wealth profiles excluding capital gains for within-cohort wealth groups, complementing Figure 8 in the main text for entire cohorts.

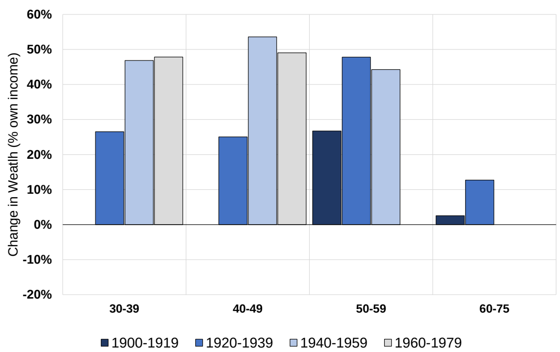
[61] Analogous decomposition for eight advanced economies, including the U.S., is detailed by Piketty and Zucman (2014). Saving is private saving, combining corporate and personal saving as is standard in the literature (e.g., Saez and Zucman 2016; Mian et al. 2021b; Bauluz et al. 2022). Saving is net of depreciation.

Figure D14: **Life-cycle wealth growth – Inheritances**

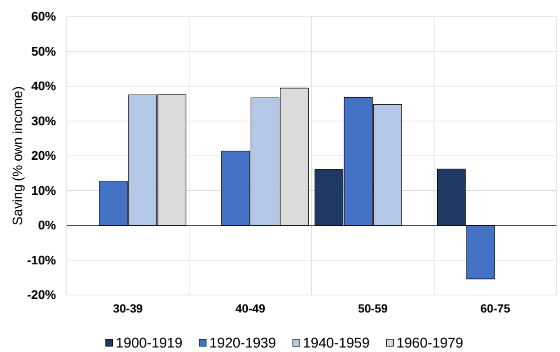


Notes: This figure displays net inheritances and gifts along the life-cycle of four birth cohorts (born in 1900-19, 1920-39, 1940-59 and 1960-79) from age 30 to age 75. The flows are shown as a percentage of the average annual income of the cohort and are computed using the methodology outlined in section 2.

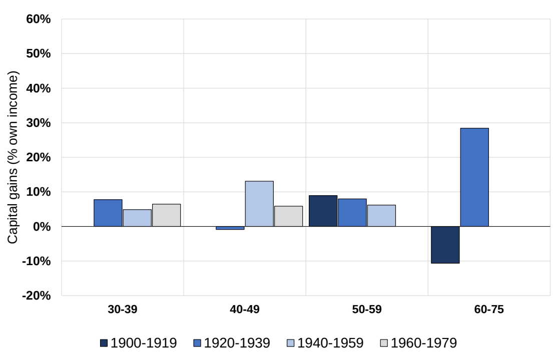
Figure D15: Life-cycle wealth growth and its decomposition (saving vs. capital gains vs. inheritances): top-10% within-cohort wealth group



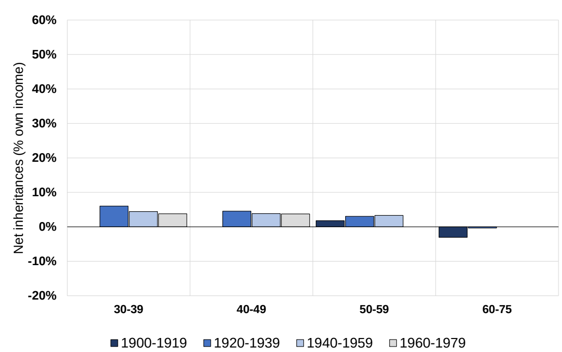
(a) Wealth changes over the life-cycle



(b) Saving rate over the life-cycle



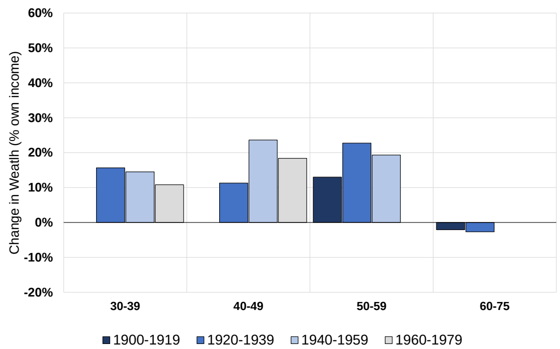
(c) Capital gains over the life-cycle



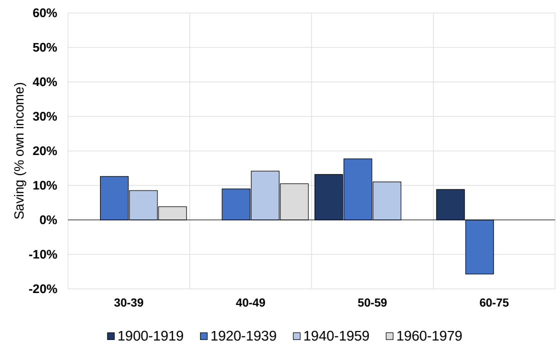
(d) Net inheritances and gifts over the life-cycle

Notes: This figure displays annual changes in real wealth (Figure D15a) decomposed into the contribution of net saving flows (Figure D15b), capital gains (Figure D15c) and inheritances and gifts (Figure D15d) along the life-cycle of the top-10% within-cohort wealth group of four birth cohorts (born in 1900-19, 1920-39, 1940-59 and 1960-79) from age 30 to age 75. The flows are shown as a percentage of the average annual income of the within-cohort wealth group and are computed using the methodology outlined in section 2.

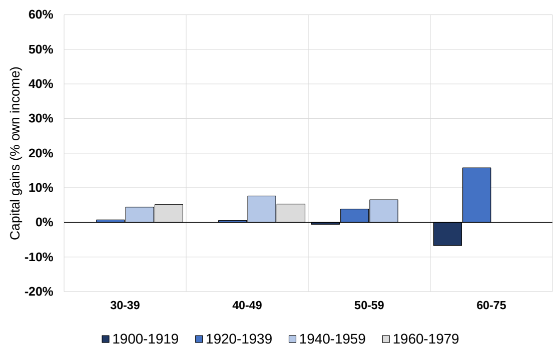
Figure D16: Life-cycle wealth growth and its decomposition (saving vs. capital gains vs. inheritances): middle-40% within-cohort wealth group



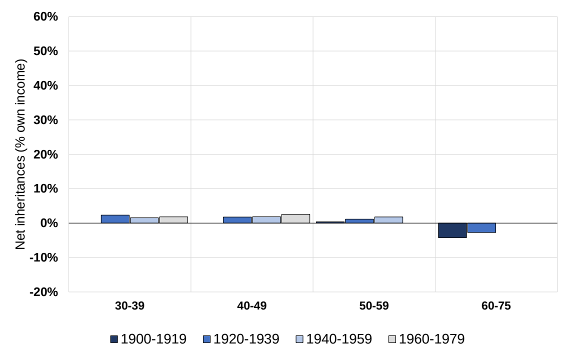
(a) Wealth changes over the life-cycle



(b) Saving rate over the life-cycle



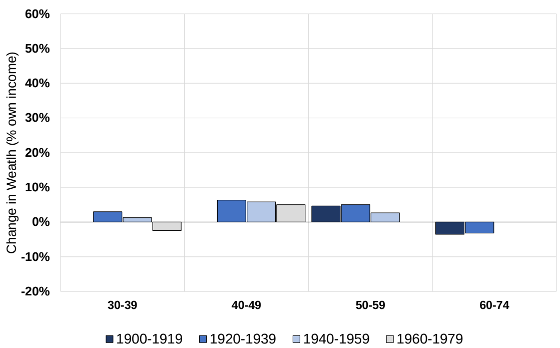
(c) Capital gains over the life-cycle



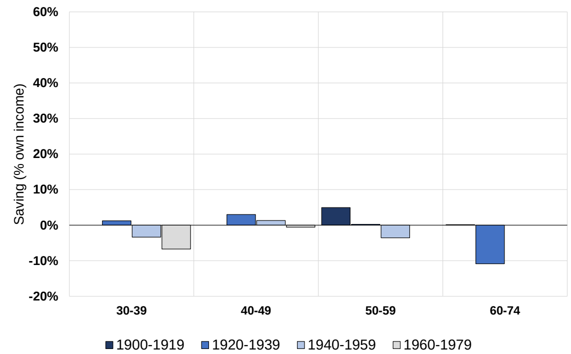
(d) Net inheritances and gifts over the life-cycle

Notes: This figure displays annual changes in real wealth (Figure D16a) decomposed into the contribution of net saving flows (Figure D16b), capital gains (Figure D16c) and inheritances and gifts (Figure D16d) along the life-cycle of the middle-40% within-cohort wealth group of four birth cohorts (born in 1900-19, 1920-39, 1940-59 and 1960-79) from age 30 to age 75. The flows are shown as a percentage of the average annual income of the within-cohort wealth group and are computed using the methodology outlined in section 2.

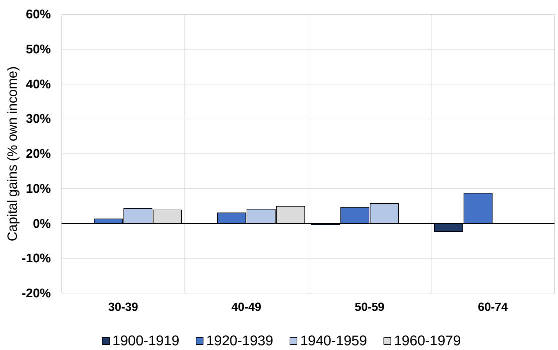
Figure D17: Life-cycle wealth growth and its decomposition (saving vs. capital gains vs. inheritances): bottom-50% within-cohort wealth group



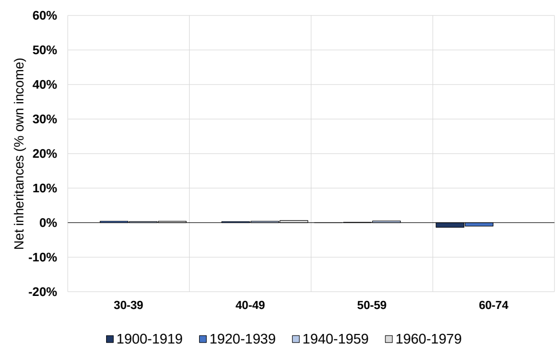
(a) Wealth changes over the life-cycle



(b) Saving rate over the life-cycle



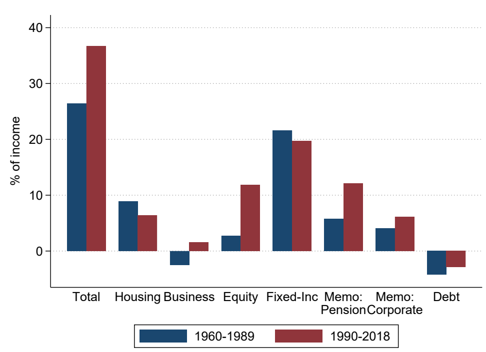
(c) Capital gains over the life-cycle



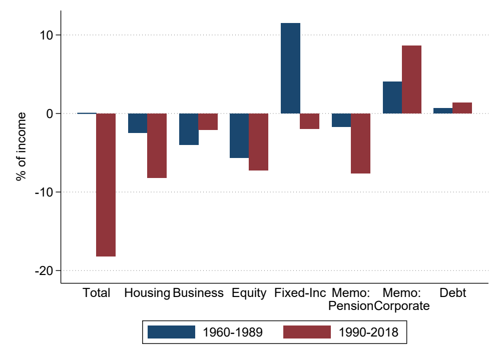
(d) Net inheritances and gifts over the life-cycle

Notes: See figure D16.

Figure D18: Saving by Asset Class Across Age Groups and Time Periods



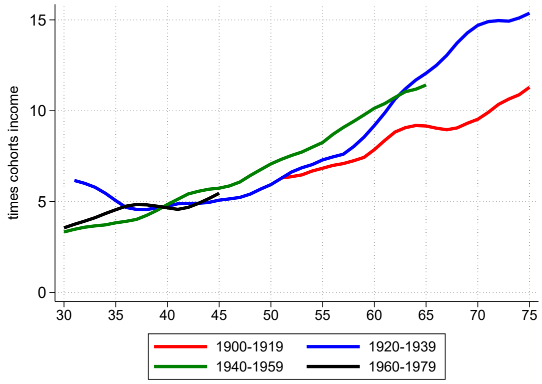
(a) 1960–89 vs 1990–2018 (Age 40–59)



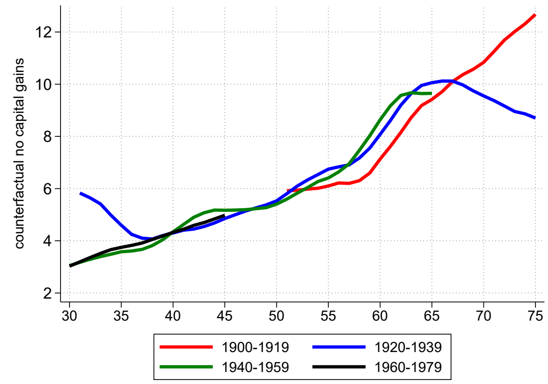
(b) 1960–89 vs 1990–2018 (Age 60–75)

Notes: This figure decomposes the average annual saving of two groups into asset classes. Each panel compares the saving behavior from 1960-89 to 1990-2018 for two age groups: the middle-aged (40–59) on the left and the elderly (60–75) on the right. Memo items detail corporate saving (a component of equity saving) and saving in pension assets. All values are expressed relative to the respective groups income. See section 2 for details on the methodology.

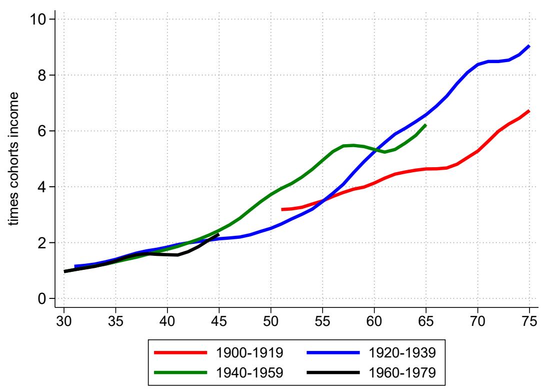
Figure D19: Life-cycle wealth accumulation of selected birth cohorts before and after excluding capital gains (within-cohort)



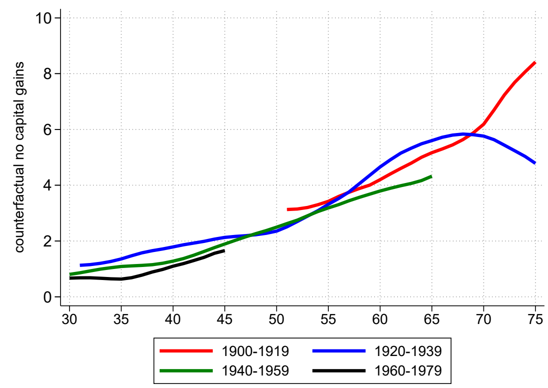
(a) Top-10%: observed series



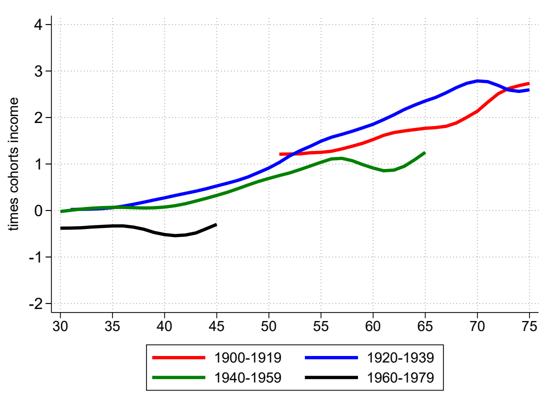
(b) Top-10%: counterfactual without capital gains



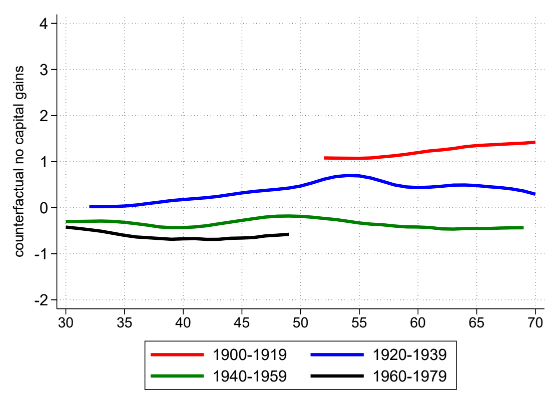
(c) Middle-40%: observed series



(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 their own group's average income as observed (left panel) and in a counterfactual without capital gains since 1960 (right panel). See section 2 for details on the methodology.

D.3 Theoretical Framework

We build a simple overlapping generations (OLG) model to interpret our empirical results. In the main text, we identified two key trends in life-cycle wealth profiles: (i) a steepening of the life-cycle wealth profile and (ii) a convergence towards Modigliani, where the young save more and the old dissave more amid high capital gains.

Consider an OLG model in which households live for two periods and there is only one long-lived asset. At each year $t \geq -1$, a new cohort is born. Every cohort lives for two periods and only earns income Y in the first period. The utility function of the initially young is given by

$$U(c_t, c_{t+1}) = (1-\beta)\log c_t + \beta \log c_{t+1},$$

where c_{t+1} denotes consumption when old. The only vehicle for saving is the long-lived asset, of which there are N units available and which trades at the endogenous price P_t. Therefore, the full problem for the initially young becomes

$$\max(1-\beta)\log c_t + \beta \log c_{t+1} \qquad \text{s.t.}$$
$$c_t + P_t N = Y_t \text{ and } c_{t+1} = P_{t+1} N.$$

The young will find it optimal to consume a fraction $(1-\beta)$ of their income.

The old will dissave all assets in the last period. Hence, market clearing in the asset market requires that $N_t P_t = \beta Y$, so that the equilibrium price is equal to $P_t = \frac{\beta Y}{N}$. Hence we get that the saving rate of the young (out of income) is equal to β. Increasing longevity β leads to an increase in asset prices and to an increasing saving rate of the young. For the initially old this manifests as a windfall gain, which leads them to decumulate more wealth. The life-cycle wealth profile also steepens, driven by increases in asset prices, not because the young are purchasing more assets, as these are held in fixed supply.

Figure D20 illustrates the mechanism graphically. An increase in longevity increases the asset demand of the young (panel (a)), driving up asset prices. For the old, this results in an ex-post shift in the budget constraint (panel (b)), so that consumption when old increases.

Non-homothetic preferences. We now consider a rise in permanent inequality among incoming cohorts. We now show how this effect works in our simple model augmented with non-homothetic preferences (Mian et al., 2021a; Straub, 2019).[62] We show in this setting that an increase in permanent income inequality can trigger the changes in life-cycle profiles we document.

Consider now that all households have utility ν when old. Later, these preferences will generate non-homothetic saving behavior, such that households with higher permanent incomes will tend to save more, consistent with the data. Further assume that there are types of households in each cohort: A rich one, who makes up a share μ of all households earning a share $\gamma \geq \mu$ of total income and a poor household earning the rest.[63] The optimization problem of the rich household then becomes (with the poor household having the symmetric problem)

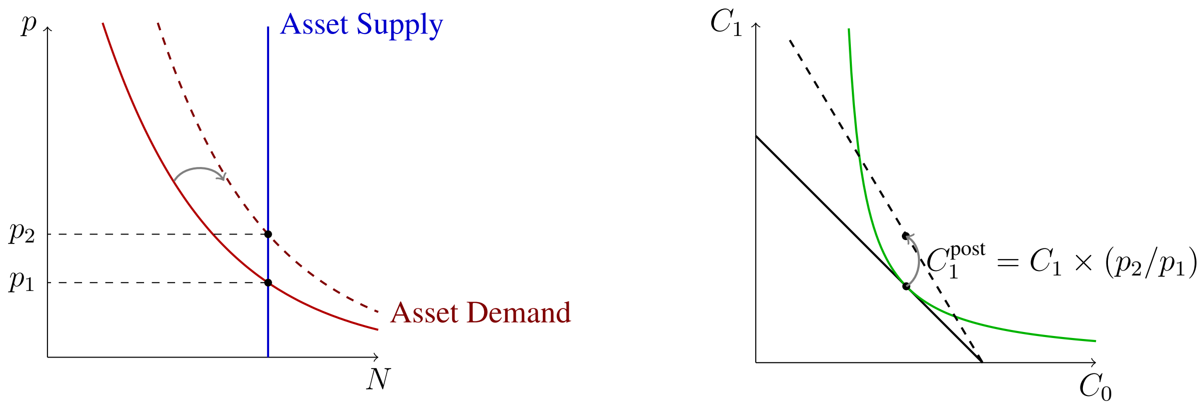
$$\max_{N_t}(1-\beta)\log\left(\frac{\gamma Y - N_t P_t}{\mu}\right) + \beta\nu\left(\frac{N_t P_t}{\mu}\right)$$

We define $\eta(a) := a \cdot \nu'(a)$, the deviation of the marginal utility relative log utility, so that when ν is equal

[62] These preferences capture the fact that saving rate increase in permanent income, for evidence on this see Straub (2019) and the references therein.

[63] Both households have the same preferences.

Figure D20: **Illustration of the model's mechanism**



(a) Increasing Asset Demand of the Young

(b) Effect on the Old

Notes: This figure illustrates the mechanism at the heart of our model. Panel (a) illustrates an increase in asset demand, which is generated by either rising longevity or rising inequality among the younger generations. This raises the equilibrium asset price faced by the old when they sell their assets. Panel (b) illustrates the effect this has on the initially old. As they sell their assets at a higher price, this allows them to increase their consumption proportionally to the price increases. Therefore, their budget constraint shifts ex-post (when they are old).

to log, then $\eta = 1$ and we recover the standard case. The first order condition of the rich is

$$\frac{(1-\beta)P_t}{P_tN_t - \gamma Y} = -\frac{\beta}{N_t}\eta(P_tN_t/\mu).$$

Therefore, the saving demand of the rich household solves $N_t(1 + (\eta(P_tN_t/\mu) - 1)\beta) = \beta\gamma Y/P_t$. In total, given an asset supply of N that is owned by the elderly, the equilibrium holdings of the rich, poor, and the equilibrium asset price are pinned down by the following equations

$$\begin{aligned} N_t^{\text{rich}}(1 + (\eta(P_tN_t^{\text{rich}}/\mu) - 1)\beta) &= \frac{\beta\gamma Y}{P_t}, \\ N_t^{\text{poor}}(1 + (\eta(P_tN_t^{\text{poor}}/(1-\mu)) - 1)\beta) &= \frac{\beta(1-\gamma)Y}{P_t}, \\ N_t^{\text{rich}} + N_t^{\text{poor}} &= N. \end{aligned}$$

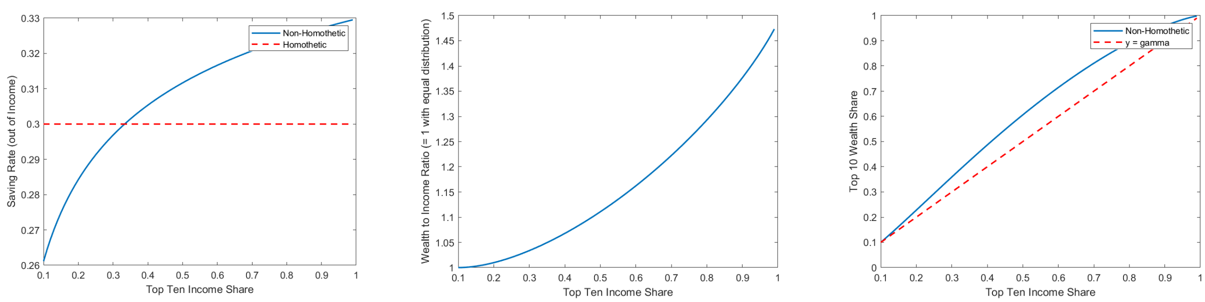
We now investigate how the saving of the rich, poor and the elderly will change with an increase in inequality γ. For this, we specify $\nu(a) = \frac{(a)^{1-\sigma}-1}{1-\sigma}$. We choose $\sigma > 1$, so that the saving rate of the rich is increasing in their income.[64]

To generate the illustrative plots below, we set the share of the rich to $\mu = 0.1$, total income Y and asset supply N to 1, the non-homotheticity $\sigma = 1.3$ and the share of life spent when old β to 0.3. Figure D21 presents the impact of increasing inequality, that is varying the top ten income share γ. In panel (a) we show how the saving rate of the rich increases with income, in a partial equilibrium exercise in which the asset price is fixed. The non-homotheticity leads to a saving rate that increases in income, consistent

[64]This is a deviation from Straub (2019), in which there is a distinction between the short and long-run saving supply schedule. In our model, there is no such distinction, as each household is assumed to live for two periods only. The saving supply of the young should be interpreted as the saving rate out of their lifetime income.

with the empirical evidence. In panels (b) and (c) we solve for the equilibrium for different levels of income inequality γ. Panel (b) presents the wealth to income ratio. With an increase in income inequality, the saving supply of affluent households rises, leading to an increase in the equilibrium asset price. This pushes up the wealth-to-income ratio through rising asset prices. As young cohorts accumulate this wealth, their saving rate rises, while the older cohorts, who sell the assets, experience dissaving. Panel (c) illustrates the effect on wealth inequality. With non-homothetic preferences, wealth inequality is larger than income inequality. Again, for the elderly there is a windfall gain when their assets are revalued. As they sell to consume their assets, this allows them to sustain higher consumption levels, as is also illustrated in figure D20 in the main text.

Figure D21: Economy with non-homothetic preferences



(a) Saving Supply (b) Wealth to Income Ratio (c) Wealth Inequality

The mechanism above is related to the one stressed in Fagereng et al. (2024), who clarify that asset price increases loosen the budget constraint of sellers. We show that this benefits the initially old, while it increases the saving rates (as well as wealth-income ratios) of the younger generations purchasing the assets. Finally, we point out potential sources of these asset price increases: both an aging population or an increase in inequality matches the life-cycle trends we document.

E Appendix to Section 5

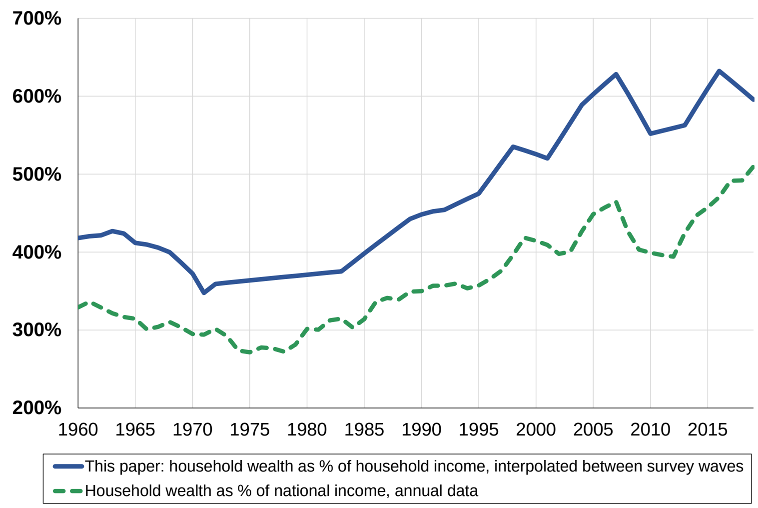
E.1 Trends

The income concept we use throughout the paper harmonizes household income from the SCF to national accounts, as explained in section 2. Therefore total income in our data is slightly lower than national income, a commonly used concept for displaying the evolution of aggregate household wealth-income ratio (as displayed in Figure 1) or the private saving rate. This constitutes a level shift, but the trends are the same. This is shown in Figure E22, comparing the aggregate household wealth-to-household income ratio (this paper) with the aggregate household wealth-to-national income ratio. Note that the shift-share analysis concerns only trends, not levels.

The shift-share analysis investigates the role of three components in the evolution of aggregate household wealth-to-income ratio and aggregate private saving rate. The three components are: (i) life-cycle saving (or wealth) profiles, (ii) income inequality and (iii) the population age structure. For details, see equations 5 and 3 and the corresponding explanation in section 5.1. In what follows, we provide the main trends for these three components.

The evolution of life-cycle wealth-income profiles is displayed in Figures E28 and E29 for age groups and within-age wealth groups, respectively (and the trends are described in Appendix section E.3). Similarly,

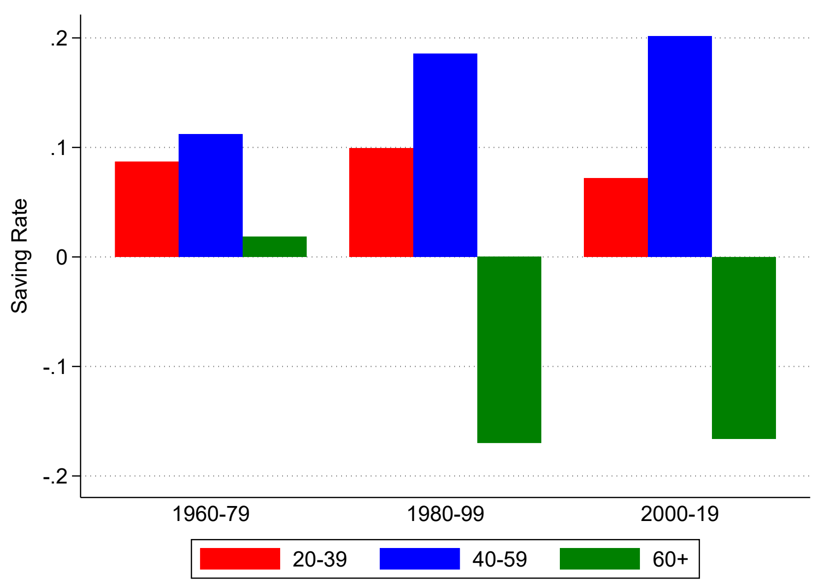
Figure E22: **Household wealth-income ratio: alternative denominator**



This figure plots (i) aggregate household wealth divided by household income and interpolated across survey waves (what we use in this paper) and (ii) aggregate household wealth divided by net national income using annual data (what is displayed in the international comparison of Figure E22).

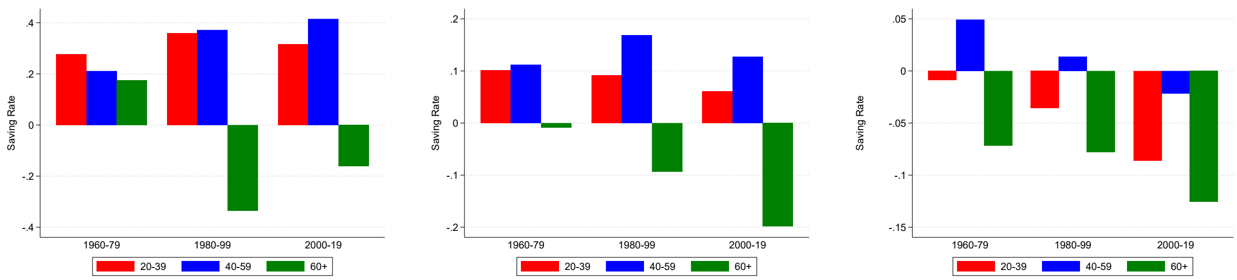
the evolution of life-cycle saving rates is shown in Figures E23 and E24, while that of income inequality is shown in Figures E25 and E26. Finally, Figure E27 shows the evolution of the age structure of the adult population.

Figure E23: **Saving rates for age groups**



Notes: This figure shows saving rates (the ratio of average saving-to-average income) of age groups over time. Time frames are chosen to match those in the shift-share analysis.

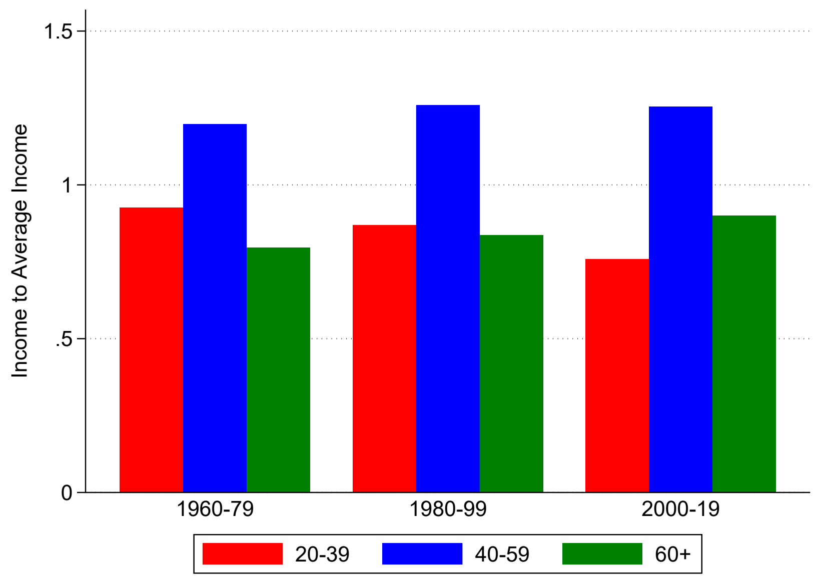
Figure E24: Saving rates for age-wealth groups



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

Notes: This figure shows saving rates (the ratio of average saving-to-average income) of age-wealth groups over time. Time frames are chosen to match those in the shift-share analysis.

Figure E25: **Relative income of age groups**



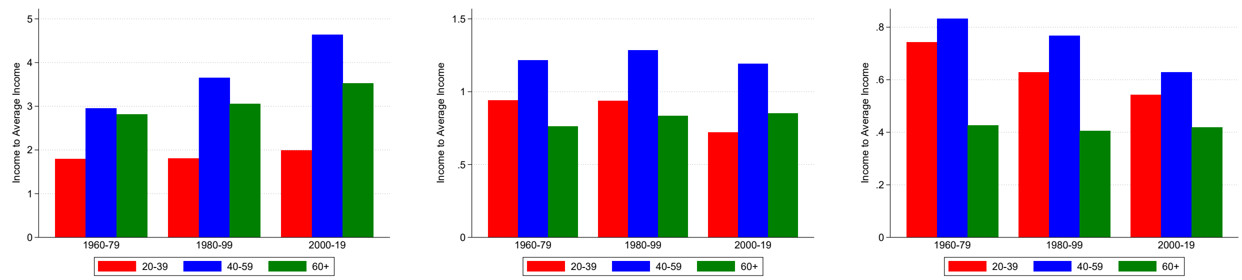
Notes: This figure shows the ratio of age groups' average income to the average income in the economy over time. Time frames are chosen to match those in the shift-share analysis.

E.2 Shift-share decomposition

We explore the robustness of the shift-share analysis (Tables 3 and 2 of the main text) to alternative time periods and population groups. Our benchmark results compare the initial period 1960-1979 with the end period 2000-2019 and use 9 within-age wealth groups: 3 age categories (young, ages 20-39; middle-aged, ages 40-59; and old, ages 60+) and 3 within-age wealth groups (top-10%, middle-40% and bottom-50%).

In robustness tests, we compare results using two alternative time frames: (i) 1960-1989 vs. 1990-2019 (which splits the 60-year sample into equal parts) and (ii) 1963-1982 vs. 1995-2019, corresponding to Mian et al. (2021c). In terms of population groups, we use two alternative partitions: (i) 6 within-age wealth groups, corresponding with 3 age categories (young, ages 20-39; middle-aged, ages 40-59; and old,

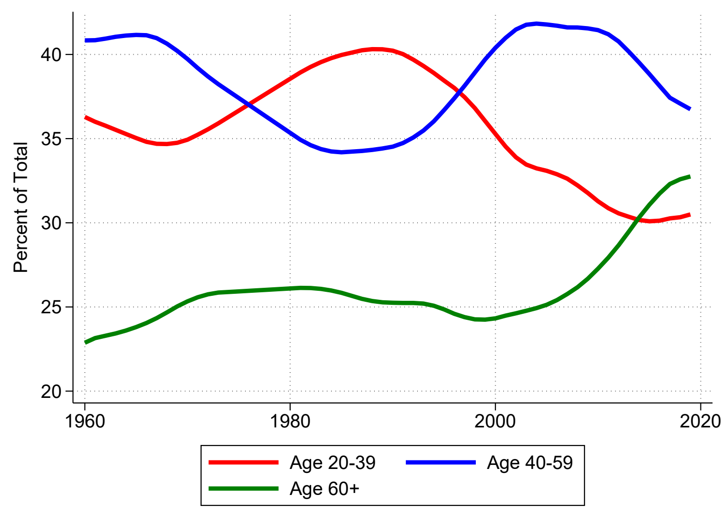
Figure E26: Relative income of age-wealth groups



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

Notes: This figure shows the ratio of age-wealth groups' average income to the average income in the economy. Groups refer to within-age wealth groups (e.g., top-10% at age 20-39). Time frames are chosen to match those in the shift-share analysis.

Figure E27: **Age Composition of Adult Population, 1960-2019**



Notes: This figure shows age composition of the U.S. adult population in the SCF+ since 1960, using equal split households. Series are 7-year averages.

ages 60+) and 2 within-age wealth groups (top-10%, middle-40% and bottom-50%), and (ii) 3 age groups only (young, ages 20-39; middle-aged, ages 40-59; and old, ages 60+). Moreover, we also present results for saving by looking at two wealth groups. Following Mian et al. (2021c), these wealth groups are obtained by combining, at a given point in time, the top-10% and bottom-90% from each age group (e.g., the top-10% from the young, the top-10% from the middle age, and the top-10% from the elderly). The idea is "to compare high and low [wealth] households within the same birth cohort, thereby eliminating life cycle factors that are common to households based on the age of the household head" (Mian et al. 2021c).[65]

We report results of the alternative shift-share analysis below. In the interest of space, we report

[65] Mian et al. (2021c) look at income groups within age, while we prefer to sort individuals by wealth instead, given that the synthetic saving method is more robust to the latter sorting of groups (see section A).

Table E3: Shift-share decomposition: 1960-1979 vs. 2000-2018 (3 age groups)

	(1)	(2)	(3)	(4)
	20-39	40-59	60+	Total
Saving rate	–0.8	5.7	–5.2	–0.4
Income inequality	–0.6	0.6	0.0	0.1
Age structure	–0.3	0.1	0.0	–0.2
Residual	0.3	0.3	–0.9	–0.3
Total	–1.4	6.7	–6.1	–0.8

Notes: This table presents the components of the shift-share decomposition for the private saving-to-household income ratio, using 1960-1979 and 2000-2018 as base years. We apply the shift-share method (see equation 3) to 3 age groups, represented in columns 1 to 3. Column 4 provides the sum of each component across age groups. For example, the private saving rate declined by -0.8 percentage points of household income, with saving rates contributing to a decline of -0.4 percentage points and income inequality contributing to an increase of 0.1 percentage points. Additionally, the last row in the table breaks down each age-wealth group's contribution to changes in the aggregate private saving rate across components. For instance, the elderly (age 60+) contributed to a decline of -6.1 percentage points in household income, with -5.2 percentage points attributed to the life-cycle saving rate component.

robustness on the shift-share anylsis for saving only, results on aggregate wealth are available on request. Results remain similar across all the options, except when using age groups only or wealth groups only.[66] When looking at age groups, the influence of income inequality diminishes while the significance of life-cycle wealth (or life-cycle saving) profiles increases: see Tables E3, E6 and E9. This result is not surprising, given the increase in within-age income inequality, with top groups within-cohorts following a different path than bottom groups within-cohorts over time (see, for example, Figure 5). The opposite is true when looking at wealth groups only: see Tables E4, E7 and E10. In that case, the life-cycle dimension is muted since the same wealth group at different ages followed opposing trends, particularly for saving (see, for example, the opposite trajectory followed by the top-10% at middle ages and when old in Figure 9 or Table 1). Once we look at within-age wealth groups, results are quite similar across the various data specifications: see Tables E5 and E8. Overall, we highlight the importance of distinguishing within-age wealth groups separately when carrying out the shift-share analysis.

[66]Due to rounding, there are some minor discrepancies in the numbers reported across tables.

Table E4: Shift-share decomposition: 1960-1979 vs. 2000-2018 (2 wealth groups)

	(1)	(2)	(3)
	Top-10	Bottom-90	Total
Saving rate	0.9	–5.6	–4.6
Income inequality	3.3	–0.6	2.7
Age structure	0.1	0.0	0.1
Residual	0.3	0.7	1.0
Total	4.6	–5.5	–0.9

Notes: This table presents the components of the shift-share decomposition for the private saving-to-household income ratio, using 1960-1979 and 2000-2018 as base years. We apply the shift-share method (see equation 3) to 2 wealth groups (top-10% and bottom-90% of all within-age groups), represented in columns 1 to 2. Column 3 provides the sum of each component across income groups. For example, the private saving rate declined by -0.9 percentage points of household income, with saving rates contributing to a decline of -4.6 percentage points and income inequality contributing to an increase of 2.7 percentage points. Additionally, the last row in the table breaks down each wealth group's contribution to changes in the aggregate private saving rate across components. For instance, the bottom-90% contributed to a decline of -5.5 percentage points in household income, with -5.5 percentage points attributed to the life-cycle saving rate component.

Table E5: Shift-share decomposition: 1960-1989 vs. 1990-2018 (9 age-wealth groups)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	20-39 top-10	20-39 mid-40	20-39 bot-50	40-59 top-10	40-59 mid-40	40-59 bot-50	60+ top-10	60+ mid-40	60+ bot-50	Total
Saving rate	0.1	–0.2	–0.9	2.0	0.2	–0.8	–3.3	–2.4	–0.2	–5.5
Income inequality	0.3	–0.2	0.1	2.1	0.1	–0.2	0.3	–0.1	0.0	2.4
Age structure	0.0	0.0	0.0	0.1	0.1	–0.1	0.2	–0.1	–0.1	0.1
Residual	0.0	0.1	0.3	0.9	–0.1	0.2	–0.8	–0.1	0.1	0.7
Total	0.5	–0.4	–0.6	5.1	0.3	–0.8	–3.5	–2.7	–0.2	–2.3

Notes: This table presents the components of the shift-share decomposition for the private saving-to-household income ratio, using 1960-1989 and 1990-2018 as base years. We apply the shift-share method (see equation 3) to 9 within-age wealth groups, represented in columns 1 to 9. Column 10 provides the sum of each component across age-wealth groups. For example, the private saving rate declined by -2.3 percentage points of household income, with saving rates contributing to a decline of 5.5 percentage points and income inequality contributing to an increase of 2.4 percentage points. Additionally, the last row in the table breaks down each age-wealth group's contribution to changes in the aggregate private saving rate across components. For instance, the top-10% within the elderly (age 60+) contributed to a decline of -3.5 percentage points in household income, with -3.3 percentage points attributed to the life-cycle saving rate component.

Table E6: Shift-share decomposition: 1960-1989 vs. 1990-2018 (3 age groups)

	(1)	(2)	(3)	(4)
	20-39	40-59	60+	Total
Saving rate	–0.2	3.6	–6.2	–2.7
Income inequality	–0.5	0.9	0.0	0.4
Age structure	–0.1	0.2	0.0	0.1
Residual	0.2	–0.1	–0.1	0.0
Total	–0.5	4.6	–6.4	–2.3

Notes: This table presents the components of the shift-share decomposition for the private saving-to-household income ratio, using 1960-1989 and 1990-2018 as base years. We apply the shift-share method (see equation 3) to 3 age groups, represented in columns 1 to 3. Column 4 provides the sum of each component across age groups. For example, the private saving rate declined by -2.3 percentage points of household income, with saving rates contributing to a decline of -2.7 percentage points and income inequality contributing to an increase of 0.4 percentage points. Additionally, the last row in the table breaks down each age-wealth group's contribution to changes in the aggregate private saving rate across components. For instance, the elderly (age 60+) contributed to a decline of -6.4 percentage points in household income, with -6.2 percentage points attributed to the life-cycle saving rate component.

Table E7: Shift-share decomposition: 1960-1989 vs. 1990-2018 (2 wealth groups)

	(1)	(2)	(3)
	Top-10	Bottom-90	Total
Saving rate	–0.3	–4.4	–4.8
Income inequality	2.4	–0.4	1.9
Age structure	0.1	0.0	0.1
Residual	0.0	0.5	0.5
Total	2.2	–4.4	–2.3

Notes: This table presents the components of the shift-share decomposition for the private saving-to-household income ratio, using 1960-1989 and 1990-2018 as base years. We apply the shift-share method (see equation 3) to 2 wealth groups (top-10% and bottom-90% of all within-age groups), represented in columns 1 to 2. Column 3 provides the sum of each component across income groups. For example, the private saving rate declined by -2.3 percentage points of household income, with saving rates contributing to a decline of -4.8 percentage points and income inequality contributing to an increase of 1.9 percentage points. Additionally, the last row in the table breaks down each wealth group's contribution to changes in the aggregate private saving rate across components. For instance, the bottom-90% contributed to a decline of -4.4 percentage points in household income, with -4.4 percentage points attributed to the life-cycle saving rate component.

Table E8: Shift-share decomposition: 1963-1982 vs. 1995-2018 (9 age-wealth groups)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	20-39 top-10	20-39 mid-40	20-39 bot-50	40-59 top-10	40-59 mid-40	40-59 bot-50	60+ top-10	60+ mid-40	60+ bot-50	Total
Saving rate	0.8	–0.7	–1.3	2.1	–0.1	–1.5	–2.0	–2.8	–0.7	–6.0
Income inequality	0.4	–0.4	0.0	2.5	0.0	–0.2	–0.2	0.0	0.0	2.1
Age structure	0.0	0.0	0.0	0.0	0.0	0.0	–0.1	–0.1	0.0	–0.2
Residual	0.0	0.2	0.4	1.3	0.0	0.3	0.0	–0.3	0.1	1.9
Total	1.2	–0.9	–0.8	6.0	0.0	–1.4	–2.3	–3.2	–0.7	–2.2

Notes: This table presents the components of the shift-share decomposition for the private saving-to-household income ratio, using 1963-1982 and 1995-2018 as base years. We apply the shift-share method (see equation 3) to 9 within-age wealth groups, represented in columns 1 to 9. Column 10 provides the sum of each component across age-wealth groups. For example, the private saving rate declined by -2.2 percentage points of household income, with saving rates contributing to a decline of 6 percentage points and income inequality contributing to an increase of 2.1 percentage points. Additionally, the last row in the table breaks down each age-wealth group's contribution to changes in the aggregate private saving rate across components. For instance, the top-10% within the elderly (age 60+) contributed to a decline of -2.3 percentage points in household income, with -2 percentage points attributed to the life-cycle saving rate component.

Table E9: Shift-share decomposition: 1963-1982 vs. 1995-2018 (3 age groups)

	(1)	(2)	(3)	(4)
	20-39	40-59	60+	Total
Saving rate	–0.2	3.6	–5.8	–2.4
Income inequality	–0.6	0.8	–0.1	0.1
Age structure	–0.1	0.0	–0.2	–0.2
Residual	0.2	0.2	–0.1	0.3
Total	–0.6	4.7	–6.2	–2.1

Notes: This table presents the components of the shift-share decomposition for the private saving-to-household income ratio, using 1963-1982 and 1995-2018 as base years. We apply the shift-share method (see equation 3) to 3 age groups, represented in columns 1 to 3. Column 4 provides the sum of each component across age groups. For example, the private saving rate declined by -2.1 percentage points of household income, with saving rates contributing to a decline of -2.4 percentage points and income inequality contributing to an increase of 0.1 percentage points. Additionally, the last row in the table breaks down each age-wealth group's contribution to changes in the aggregate private saving rate across components. For instance, the elderly (age 60+) contributed to a decline of -6.2 percentage points in household income, with -5.8 percentage points attributed to the life-cycle saving rate component.

Table E10: Shift-share decomposition: 1963-1982 vs. 1995-2018 (2 wealth groups)

	(1)	(2)	(3)
	Top-10	Bottom-90	Total
Saving rate	1.8	–7.2	–5.3
Income inequality	2.3	–0.8	1.6
Age structure	0.1	0.0	0.1
Residual	0.6	0.8	1.5
Total	4.9	–7.1	–2.2

Notes: This table presents the components of the shift-share decomposition for the private saving-to-household income ratio, using 1963-1982 and 1995-2018 as base years. We apply the shift-share method (see equation 3) to 2 wealth groups (top-10% and bottom-90% of all within-age groups), represented in columns 1 to 2. Column 3 provides the sum of each component across income groups. For example, the private saving rate declined by -2.2 percentage points of household income, with saving rates contributing to a decline of -5.3 percentage points and income inequality contributing to an increase of 1.6 percentage points. Additionally, the last row in the table breaks down each wealth group's contribution to changes in the aggregate private saving rate across components. For instance, the bottom-90% contributed to a decline of -7.1 percentage points in household income, with -7.2 percentage points attributed to the life-cycle saving rate component.

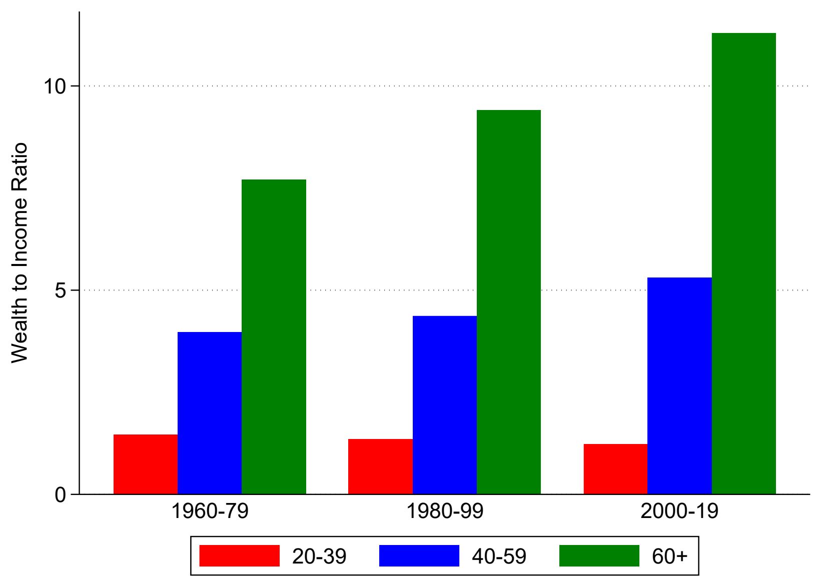
E.3 Wealth inequality across age groups

We describe the age-wealth distribution in more detail in this section.

Figure E28 shows a divergent pattern across age groups. The Figure shows the average wealth-to-average income ratio for three age groups: 20-39, 40-59 and 60+. Before the 1980s, the older groups (e.g., those after age 60) had cumulated the equivalent of 7-to-8 their own income, the middle-aged groups attained levels of 4 times, while the young (i.e., at age 20 to 40) had, on average, wealth holdings around 1.5 times the average annual income.

The wealth gap across age groups substantially increased over the years. Old and middle-aged adults increased their wealth-income ratios substantially, reaching levels as high as 11 and 5.5, respectively. By contrast, young adults barely experienced any increase.[67] These results indicate a substantial widening of the age-wealth gap since the 1980s. Figure 12 in the main text illustrates the age-wealth gap by plotting the ratio of the average wealth of the elderly to the average wealth of young adults. This ratio more than doubled between the early period and the last decade.

Figure E28: **Wealth-income ratios for age groups**

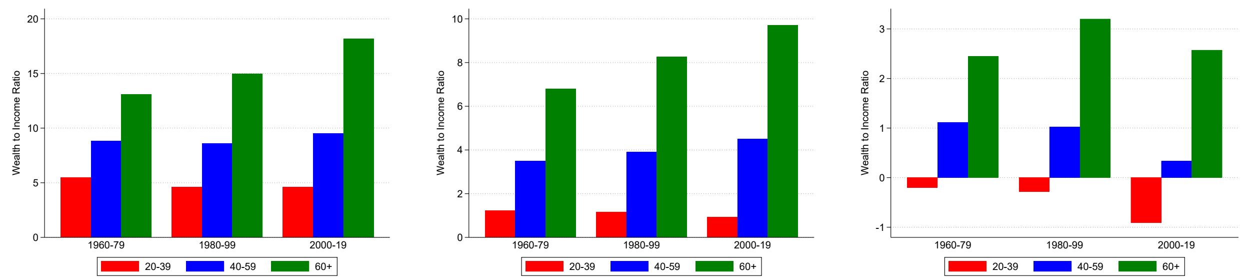


Notes: This figure shows the ratio of average wealth-to-average income age groups over time. Time frames are chosen to match those in the shift-share analysis (section 5.1).

We now turn to analyze wealth holdings of within-age wealth groups over time. Consistent with Figure 5 in the main text (which, instead, looked at birth cohorts), Figure E29 shows that the upper half of the within-age wealth distribution (in particular, the top-10%) drives the previous results for age groups as a whole. Namely, the top-10 and middle-40% attain much higher levels when old today than in the 1960s-1970s period. This is not true for the poorest half of the population, which has not improved its wealth-income ratio over time (and, indeed, does worse in the 2000-2019 period than in the two decades before).

[67] This stability hides higher leverage from young adults in recent years, for which acquiring a house involves a much higher debt burden than decades ago (see Figure C10).

Figure E29: Wealth-income ratios for age-wealth groups

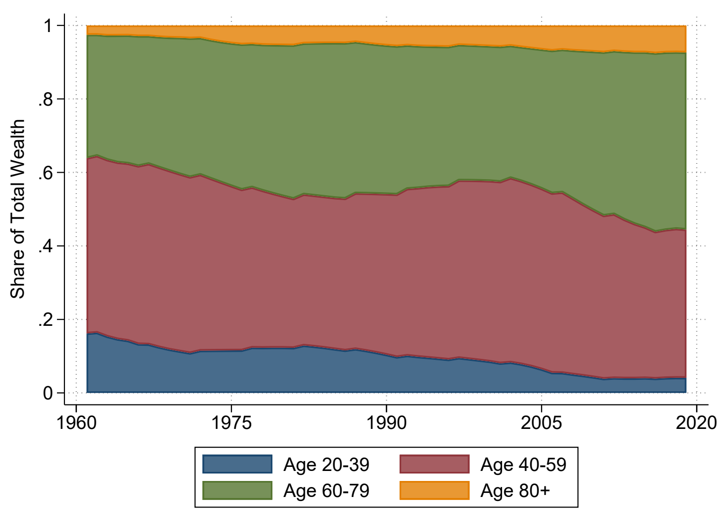


(a) Wealth of the top-10% (b) Wealth of the middle-40% (c) Wealth of the bottom 50%

Notes: This figure shows the ratio of average wealth-to-average income of within-age wealth groups over time. Time frames are chosen to match those in the shift-share analysis (section 5.1).

To better understand the extent of the growing age-wealth gap, Figure E30 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.

Figure E30: **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.

Overall, this subsection documents a strong aging of wealth in recent decades, with the most pronounced changes occurring in the upper half of the within-age wealth distribution (specifically, among the old top-10% and the old middle-40%).

E.4 Details on the Sufficient Statistic

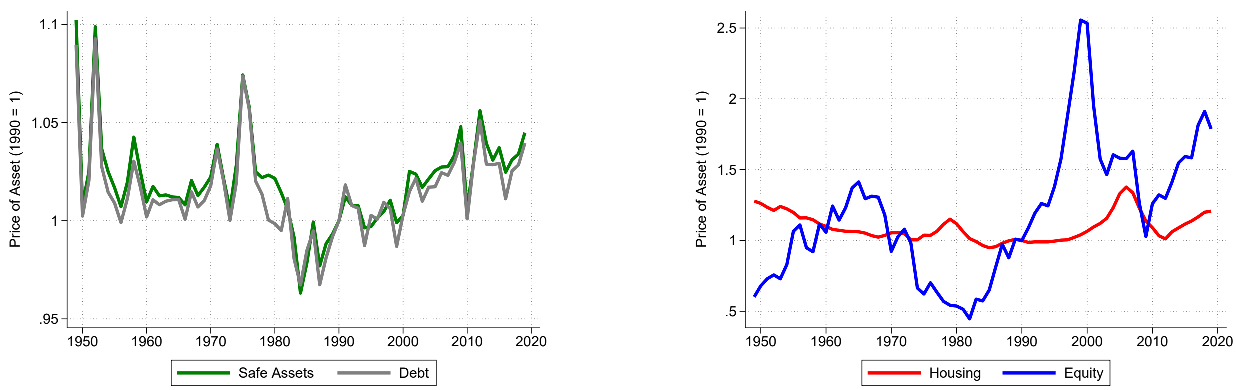
We provide details on the construction of the sufficient statistic.

Price Deviations. We measure price deviations using standard data sources on U.S. asset prices.

For risky assets, we follow Fagereng et al. (2024) and measure the price-earnings ratio for equities (resp. the price-rent ratio for housing). For the price-earnings ratio, we use the cyclically-adjusted PE ratio from Shiller (2000), the price-rent ratio is from taken from Jordà et al. (2019). Figure E31b displays those price deviations over time, normalizing to a value to 1 in 1990. Equity valuations have been fluctuating strongly over the time period we study: They are low in the 1960's and 1980's, and very high since the year 2000. In contrast, housing has been less volatile and has seen smaller increases in valuations. This is because although the real price of housing has increased strongly in the past decades, so have rental returns, such that the price-rent ratio has not increased to the same extent, as detailed in Jordà et al. (2019).

For safe assets, we compute the real interest rate on both safe assets and debt. For safe assets, we use return on safe assets in Jordà et al. (2019), for debt we use the interest rate on 30-year mortgages from FRED. Following Fagereng et al. (2024), we compute real rates by subtracting the lag of inflation. The interest rate corresponds to the inverse of the price of bonds in our theory, which we plot in figure E31a. Consistent with the decline in real interest rates, the price deviation is positive and risking since 1990.

Figure E31: Price Deviations for Fixed Income and Risky Assets



(a) Fixed Income Assets and Debt

(b) Equity and Housing

Notes: This figure presents the deviations in asset prices relative to a base year (e.g., 1990 = 1). The left panel displays the price series for fixed income assets and debt, the right panel shows the corresponding series for equity and housing.

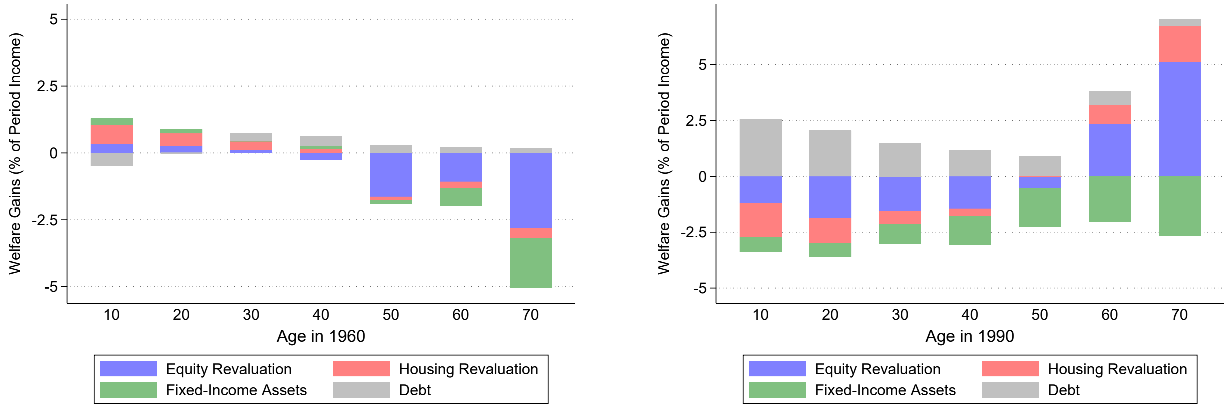
Additional Results. Complementing the results in the main text, figure E32 shows the welfare gains for the two periods by asset class. Each asset class is one component of the sufficient statistic (6), such that their sum is the total welfare gain that accrues to the cohort.

F Appendix to Section A

F.1 Mapping national accounts

Figure F33 shows the evolution of cohorts's life-cycle wealth (panel a) and life-cycle income (panel b) in constant prices based on the raw SCF+ microdata.

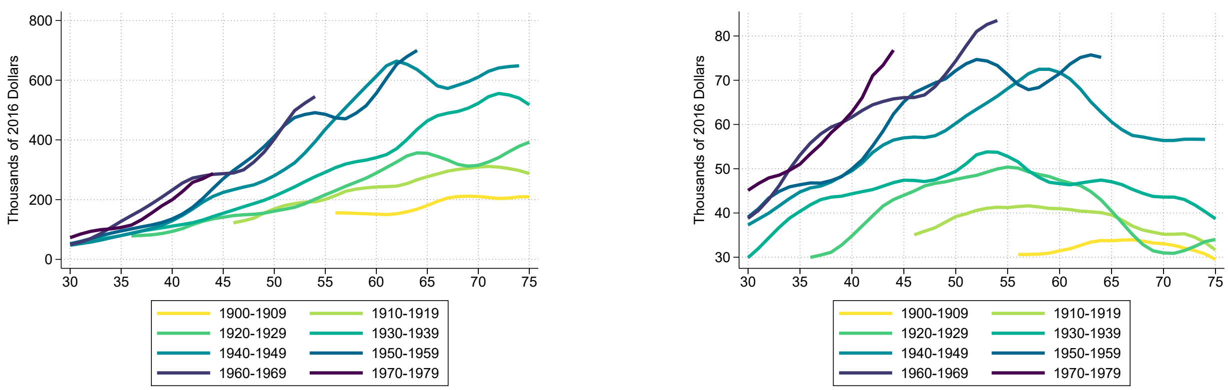
Figure E32: Welfare Gains by Asset Class



(a) Welfare Gains by Asset Class, 1960-1990 (b) Welfare Gains by Asset Class, 1960-1990

Notes: This figure shows the welfare gains obtained using the sufficient statistic (6) by asset class. Welfare Gains are normalized by the total income earned by each age group. The sum of welfare gains across asset classes is the total welfare gain shown in figure 13.

Figure F33: Life-cycle wealth and life-cycle income in constant prices: raw SCF+



(a) Cohorts' average wealth (b) Cohorts' average income

Notes: This figure plots the average wealth and the average income during cohorts' life cycles in constant thousands of 2016 dollars using the raw SCF+ microdata. Series are 7-year averages.

F.2 Wealth accumulation decomposition

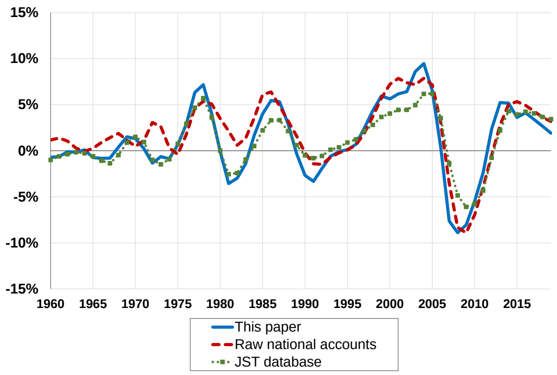
In section A, we analyze how the decomposition of cohorts' life-cycle wealth growth into saving, capital gains, and inheritances varies depending on the specific data treatment. Here, we provide additional insights.

In Figure F34, we compare the evolution of housing and equity capital gains according to three different types of data sources: (i) the adjusted national accounts (this paper), (i) the unadjusted national accounts and (iii) the Jordà-Schularick-Taylor Macrohistory Database (JST Macrohistory Database). The main result is that all capital gains exhibit a notable level of consistency.

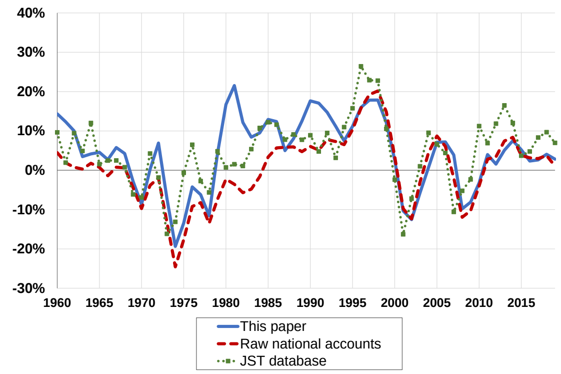
In addition, Figure F35 displays cohorts' life-cycle capital gains under alternative data treatments.

Figure F35a uses raw SCF+ microdata on debt, assets, and income, combined with adjusted capital gains in the national accounts. Figure F35b utilizes harmonized SCF+ to national accounts data for debt, assets, and income, but with raw (unadjusted) capital gains in the national accounts. Finally, Figure F35c relies on harmonized SCF+ to national accounts data for debt, assets, and income, along with capital gains from the Jordà-Schularick-Taylor Macrohistory Database.

Figure F34: Housing and equity capital gains: alternative estimates



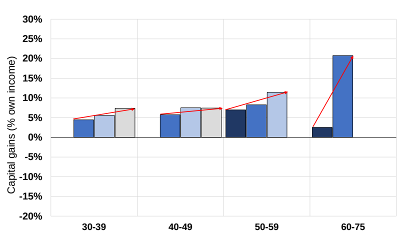
(a) Housing capital gains



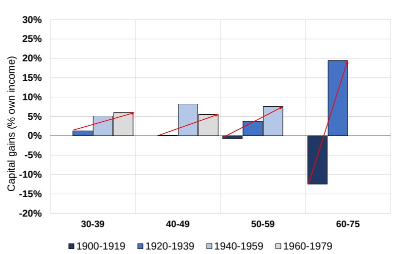
(b) Equity capital gains

Notes: This figure compares the annual real capital gains in housing and equity in this paper with those from (i) the raw (unadjusted) national accounts and (ii) 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 retained earnings. By contrast, equity capital gains in the national accounts are net of valuation changes driven by corporate saving and cover both listed and unlisted firms. Housing capital gains in JST splice the following series: Case-Shiller (1960-1974), Federal Housing Finance Agency (1975-2012) and OECD housing prices database (2013-2019). Equity prices in JST correspond to those in Shiller (2000), which is based on the S&P Composite Stock Price Index. Series are 3-year moving averages.

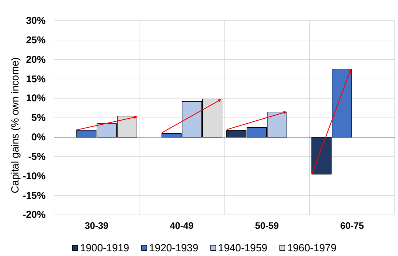
Figure F35: **Life-cycle capital gains across cohorts: alternative estimates**



(a) Raw SCF+



(b) Unadjusted national accounts



(c) JST capital gains

Notes: This figure illustrates the annual capital gains of four birth cohorts (born in 1900–19, 1920–39, 1940–59, and 1960–79) from ages 30 to 75, obtained under three different specifications. Figure F35a uses the raw SCF+ microdata on debt, assets, and income. Figure F35b uses unadjusted capital gains from the national accounts. Figure F35c uses capital gains on housing and equity from the Jordà-Schularick-Taylor Macrohistory Database. All values are expressed as a percentage of each cohort's average annual income and calculated using the methodology outlined in section 2.

F.3 Intergroup Mobility

When we apply the synthetic saving method to wealth groups within birth cohorts, we make the implicit assumption that there is little mobility between wealth groups within birth cohorts at short horizons. 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 across populations. Table F11 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 large part of the transitions.

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

Table F11: 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%

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