

# The Great Divergence: Intergenerational Wealth Inequality in the U.S. and France\*

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May 23, 2021

## Abstract

This paper studies the evolution of intergenerational wealth inequality in the U.S. and France since 1950 and 1970, respectively. Across both countries there is a stark wealth divergence between old and young adults since the 1980s, most strongly in the U.S. The driver of the divergence is the increasing wealth holdings of older adults, while the wealth of young households has remained stagnant. Using microdata for the U.S., we explore the reasons for this divergence and decompose wealth accumulation of different birth cohorts into three components: saving, capital gains, and inheritances. While saving was the single most important component of wealth accumulation for cohorts born at the beginning of the 20th century, capital gains play a prominent role for more recent generations. In absolute terms, the boom in capital gains since the 1980s benefited older households as they hold substantial amounts of assets. In relative terms measured by wealth shares, the rising dispersion of saving across age groups accounts for most of the divergence. The fact that capital gains do not play a significant role in explaining relative wealth differences is because young adults have increased their leverage dramatically over the last decades, making them more exposed to rising housing and equity prices, two assets that have accumulated substantial positive gains since the early 1980s. Inheritances have played a relatively minor role in the wealth accumulation of different cohorts, but their importance has increased over time.

**JEL classification:** D31, E21, E44, N32

**Keywords:** Income and wealth inequality, household portfolios, historical micro data

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\*We thank Francisco Amaral, Alina Bartscher, Miguel Artola Blanco, Pierre Brassac, Markus Schick, and Moritz Schularick for 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, and Alina Bartscher for help with the SCF+ data

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# 1 Introduction

The past decades have witnessed a global wealth boom, associated with a saving glut and an explosion in housing and equity prices (Piketty and Zucman, 2014; Jordà et al., 2019; Mian et al., 2020). The interplay between the aggregate wealth boom and its distribution across households has received substantial attention in the literature. Most studies adopt a cross-sectional perspective, highlighting the importance of inequality between the rich and the poor (Saez and Zucman, 2016; Bauluz et al., 2021; Kuhn et al., 2020). However, we know surprisingly little about how the global wealth boom emerged from the life-cycle accumulation of subsequent generations and its implications for the distribution of wealth across age groups. This paper fills this gap.

We study the distribution of wealth across age groups in the U.S. and France since 1950 and 1970, respectively. This analysis is possible thanks to two recently available datasets. For the U.S., we rely on the Historical Survey of Consumer Finances (SCF+), which harmonizes modern waves of the Survey of Consumer Finances -which covers the period 1983-2019- with archival data from historical waves available since 1950 (Kuhn et al. (2020)). The key advantage of the SCF+ is that it provides long-run detailed series of household assets and debts, together with rich demographic characteristics, such as age or race. We adjust these series to make them consistent with the official aggregate wealth accounts (Alvaredo et al. (2020a); Feiveson and Sabelhaus (2019)). For France, we rely on Garbinti et al. (2020), which provides series of adult wealth by age, which are consistent with official balance sheets, and are available since 1970.

This paper makes two key contributions to the existing literature. The first contribution is to provide new evidence on the distribution of wealth across age groups from a long-run perspective. We find a stark divergence between the share of total wealth owned by old adults (i.e., those around the age of retirement) and young adults (those in their mid-thirties) since 1980, while the age wealth distribution was stable beforehand.

To further understand these results, we investigate the evolution of age-specific wealth shares, disentangling two components that drive their evolution: (i) a demographic factor, which reflects the changing size of different age groups over time, and (ii) a relative wealth component, which

captures differences in the mean wealth across age groups. We find that changes in the age composition of the U.S. and France due to population aging explain only a small part of the observed age-wealth shares. In contrast, the relative wealth component has been a substantially more important driver of the observed wealth dispersion between the old and the young.

Descriptive results on the wealth-to-income ratios of young and old adults further reveal that the main driver of the documented differences in mean wealth are mostly caused by the increasing wealth of the old. Importantly, we find that wealth-income ratios after the age of retirement do not fall, in contrast with the basic predictions of standard life-cycle models (Modigliani (1986); Garbinti et al. (2020)). The wealth-income ratios of young adults, on the other hand, barely experienced any increase (France) or even declined (U.S.). In numbers, the distance between the mean wealth of old and young adults used to be 2-to-3 times per adult national income until the early 1980s, and has increased to reach levels as high as 6 in France and 9 in the U.S. in recent years. To put it differently, the spectacular rise in aggregate household wealth in recent decades (Piketty and Zucman (2014)) largely reflects an equally spectacular aging of wealth. We then turn to study these trends from a cohort perspective, examining how different cohorts accumulated wealth over their life-cycle.

The second contribution of this paper is to analyze the wealth accumulation of different generations in the U.S., using an accounting framework that decomposes wealth growth into saving, capital gains, and inheritances (Saez and Zucman (2016), Wolff (1999), Feiveson and Sabelhaus (2019)).<sup>1</sup> This way, we quantify which mechanisms mattered most for the wealth increase of different generations over their life-cycle. Since our data is fully consistent with national accounts, it allows us to assign macroeconomic flows such as investment or bequests to different cohorts.

Importantly, we unveil the indirect ownership of assets through investment and pension funds, which have been the two most important assets driving financial wealth accumulation over the last decades (Mian et al. (2020); Saez and Zucman (2016); Bauluz et al. (2021)). This way, we provide a comprehensive view of the assets held by different age groups over time. Moreover,

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<sup>1</sup>We only perform this analysis in the U.S. since it is the only country where we have individual wealth microdata.

only through unveiling can we study the substantial capital gains households earn on equity held indirectly, primarily through pension funds. As a result, we can investigate the influence of saving, capital gains and inheritances in explaining (i) the rise in absolute inequality across age groups over time (i.e., differences in wealth-to-income ratios) and (ii) the increase in relative mean wealth differences.

We establish a number of new results. First, we find that wealth accumulation has varied markedly for different generations over time. Cohorts born before the Great Depression, which accumulated wealth mostly before the 1980s, did so almost exclusively through saving, while more recent cohorts have benefited significantly from booming housing and equity prices since the 1980s.<sup>2</sup> Our findings indicate that the all generations did not incur in negative wealth growth after retirement. To achieve this, the early generations continued to save after retirement, while more recent generations were able to dissave while still keeping much of their wealth in face of substantial capital gains on their remaining assets. Moreover, we find that inheritances play a relatively minor role in the accumulation of wealth of different cohorts, but its importance has increased over time.

Second, we find that the ‘unveiled’ portfolio of ‘old adults’ (those around age 65) has remained relatively stable over the whole period since 1950. Their wealth-income ratio has increased substantially, but this is because all asset types expanded in similar proportions. In contrast, ‘young adults’ (those in their mid-thirties) have become substantially more leveraged, with both housing and debt representing a much larger fraction of their net wealth compared to their parents at the same age. As a consequence, ‘young adults’ have become progressively much more exposed to changes in asset prices than ‘old adults’. Interestingly, we find that ‘young adults’ are not only more exposed to changes in house prices, but also in other assets.

Third, we analyze the role of asset prices (capital gains) vs. quantities (saving and inheritances) for the evolution of wealth-income ratios of both different age groups and different cohorts.

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<sup>2</sup>This is consistent with the aggregate wealth growth, which shows a prominent role of capital gains for the wealth accumulation since the 1980s (Bauluz et al. (2021)). Saving and capital gains, respectively, contributed to around half of the increase in the aggregate wealth in the U.S. In the earlier decades, aggregate wealth accumulation was almost exclusively driven by saving.

Our findings indicate that capital gains explain a large part of the increase in absolute wealth differences (as measured by the distance in wealth-income ratios) across age groups over time. Moreover, once we exclude capital gains, we do find a moderate decline in wealth to income ratios after retirement, making these results closer to the basic predictions of the standard life-cycle model.

Finally, we evaluate the role of both asset prices and quantities for relative wealth inequality. We find that most of the drastic divergence in relative wealth differences has its fundamental cause in the saving component of wealth accumulation (and, potentially, in the inheritance component too). On the other hand, capital gains do not explain the substantial increase in relative inequality. This is due to the fact that ‘young adults’ have become progressively more exposed to rising housing and equity prices, and therefore benefited more from the boom in these assets’ prices, at least in relative terms.

**Literature.** Most directly, our paper relates to a nascent strand of research on intergenerational wealth inequality. Evidence from the U.S. (Gale et al., 2020; Detting et al., 2014) suggests that since 1989 younger households are stagnating or even lagging behind their parents when it comes to wealth accumulation, with Cribb (2016) finding similar developments in the UK. Bartscher et al. (2020) investigate the role of housing and debt for different U.S. generations, finding a sustained increase in the leverage of young U.S. households since 1950, that accelerated in the 1980s. Our paper explores the drivers of intergenerational wealth inequality from a long-run perspective, examining household portfolios across all asset classes, and decomposing the contribution of asset-specific prices, saving, and inheritances for the accumulation of wealth of different U.S. generations.

Our methodological contribution to the literature on inequality is to extend the “Synthetic Savings” framework widely used to separate capital gains and savings (Saez and Zucman, 2016; Kuhn et al., 2020; Martínez-Toledano, 2020; Garbinti et al., 2020; Bauluz et al., 2021). Such an extension was first proposed by Wolff (1999) but has not found much use since then. We use data fully consistent with macroeconomic accounts that covers all asset classes and thereby link this work to the more modern DINA project (Alvaredo et al., 2020a). Consistent with work for other countries

we find a major role for capital gains (Fagereng et al., 2019; Bach et al., 2017), while inheritances are not a fundamental driver of wealth accumulation (Black et al., 2020). Methodologically, our paper is most similar to Feiveson and Sabelhaus (2019), who are interested in wealth accumulation along the lifecycle since 1989, but do not consider heterogeneity in wealth accumulation between generations or relate their results to the wealth inequality between generations.

Finally, we relate to the literature on lifecycle wealth accumulation and its aggregate effects. A long standing puzzle in the literature is reconciling Modigliani’s lifecycle hypothesis with observed age wealth profiles (Modigliani, 1986; Banks et al., 1998). We show that capital gains are a strong source of positive wealth growth at old age, thereby complementing alternative explanations focusing on savings behavior (De Nardi et al., 2010) and differential mortality (Attanasio and Hoynes, 2000). We add to recent discussions on the aggregate effects of population aging (Auclert et al., 2020; Rachel and Summers, 2019). Complementary to this work that highlights the present and future consequences of population aging, we highlight how past changes in life-cycle wealth dynamics have lead to an increasing contribution of savings by old households.

The rest of the paper proceeds as follows. Section 2 exhibits the general trends in wealth inequality between old and young adults in the US and France. Section 3 introduces the key concepts, methods, and sources being used. Section 4 presents the most important long-term trends in the evolution of intergenerational wealth inequality in the U.S. and performs a quantitative analysis of the sources of wealth growth of different generations since 1950. Section 5 concludes.

## 2 New stylized facts

This section presents a set of new stylized facts on the evolution of wealth inequality across age groups in the U.S. and France since 1950 and 1970, respectively. To the best of our knowledge, we are the first to document these facts from a long-run perspective.<sup>3</sup> Wealth refers to net wealth and is measured on a per adult level. We take data for France directly from Garbinti et al. (2020) and

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<sup>3</sup>Gale et al. (2020) document the evolution of wealth inequality across age groups in the U.S. since 1989. Bartscher et al. (2020) document the debt owed and housing owned by different U.S. generations since 1950.

US data from the SCF+ (Kuhn et al., 2020), but only after making the latter data source consistent with national accounts as is described in section 3.

We proceed in two steps. First, we document the evolution of wealth inequality across age groups using two indicators: the share of total wealth owned by different age groups and age-specific wealth-income ratios. Second, we investigate the primary factors driving the evolution of different age groups' wealth shares. We conduct a counterfactual exercise to disentangle the role of two channels: changes in the population size of different age groups and wealth differences.

## 2.1 Wealth shares and wealth-income ratios across age groups

In this subsection, we investigate wealth inequality across age groups in the U.S. and France since 1950 and 1970, respectively, and put our results into the context of the accumulation of aggregate household wealth. We compare aggregate wealth and intergenerational inequality in Figure 1. The left panel shows the evolution of aggregate household wealth-to-national income ratio in the U.S. and France.<sup>4</sup> The right panel shows the share of total net wealth owned by two age groups: those aged 25 to 44 and 55 to 74.

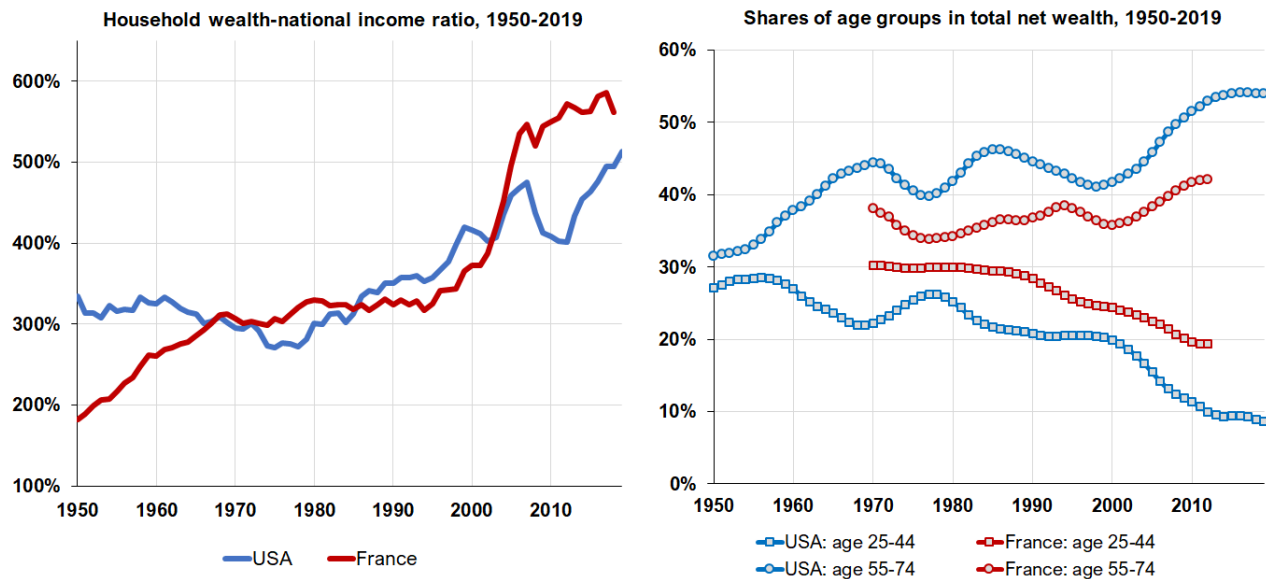
More concretely, the right panel shows the share of total household wealth owned by 'young adults' (those between 25 and 44 years old) and the share owned 'old adults' (those between 55 and 74 years old). We choose these two groups that are centered around age 35 and 65 for two reasons. First, the number of years between two consecutive generations is around thirty (Piketty and Zucman (2015)), which is the same number of years between 35 and 65 years old adults. As a result, Figure 1 approximates changes in the share owned by two consecutive generations over time. Second, in this paper we focus on the wealth gap that emerges from accumulating wealth during work age until the immediate years after retirement.<sup>5</sup> The share of these two groups combined (i.e., the share of household wealth owned by age groups 25-44 and 55-74) in total

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<sup>4</sup>The academic literature has extensively analyzed this ratio in recent years (e.g. Piketty and Zucman (2014); Waldenström (2021); Bauluz et al. (2021)).

<sup>5</sup>Both in the U.S. and France individuals have retired approximately at age 60 to 65 over the last decades, with only marginal changes in this trend.

Figure 1: **Aggregate wealth accumulation and age-wealth shares**



Notes: The left panel of this figure shows the ratio of aggregate household wealth over net national income, expressed as a percentage. The right panel shows the share of household net wealth owned by selected age groups. Results in the right panel are smoothed using 5-year moving averages. Appendix figures 16 and 21 show results for the figure in the right panel using two alternative sets of age groups: (i) 30 to 39 and 60 to 69, and (ii) 20 to 49 and 50 to 79. For an explanation of sources and methods, see section 3.

household wealth has remained approximately constant over time at around two-thirds of total wealth. In the Appendix, we show results for alternative age groups, where we also include all age groups (e.g., those above age 74, below age 25, and between 45 and 54).<sup>6</sup>

It is important to note that these two age groups (25-44 and 55-75) have (i) different population sizes and (ii) that their population size has changed over time, so changes in wealth shares may be related to population size. We will tackle this aspect in the second subsection of this section and show that the population size is not driving this divergence.

Results in the right panel of Figure 1 show a striking shift of the shares owned by old and young adults. While these groups' wealth shares were relatively close in the years before 1980, they have diverged ever since. Starting the 1980s, the share of net wealth owned by old adults

<sup>6</sup>Adults over age 74, below age 25 and between 45 and 54, together, own around one third of total wealth. Their relative shares have also changed, but changes are less pronounced. Concretely, adults over 74 years old have increased their share in total wealth in about 5 percentage points (at the expense of those adults below 25, and between 45 and 54 years old).

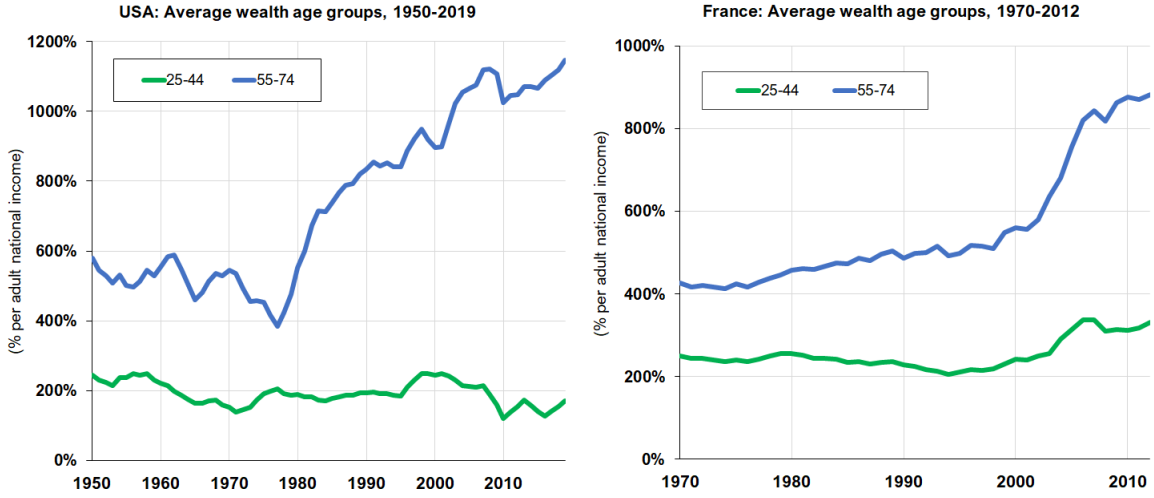
in the U.S. and France has increased by about 15 and 10 percentage points, respectively. By contrast, young adults' share of net wealth evolved in the opposite direction and declined in the same proportions.

While these broad trends are common to both France and the U.S., there are notable differences between the two. Wealth shares of old and young adults are more equally distributed in France and have experienced less pronounced changes. In the following subsection, we will show that the main reason for this difference is not caused by differences in the population structure but by the more egalitarian wealth distribution in France. This finding is in line with distributional patterns documented in previous research that has looked at the cross-section of households in France and the U.S., without focusing on the age dimension (e.g., [Saez and Zucman \(2016\)](#); [Garbinti et al. \(2020\)](#); [Bauluz et al. \(2021\)](#)). Consistently, inequality in France is lower than in the US, as in other European countries.

In [Figure 1](#), we put the evolution of wealth across age groups in the perspective of aggregate household wealth-income ratios. [Figure 2](#) shows the average wealth of each age group as a percentage of per-adult national income. It provides another indication of a divergent pattern between old and young adults.

Before the 1980s, the wealth-income ratios of young and old adults followed a relatively constant pattern. The older groups had cumulated the equivalent of 4-to-6 years of per-adult income over their lifecycle. Younger individuals had, on average, wealth holdings around 2-3 times the average annual income. Hence the distance between the two groups was roughly 2-to-3 years of per-adult income. Starting in the 1980s, however, this wealth gap saw a sustained increase. Old adults increased their wealth-income ratios substantially, reaching levels as high as 9 in France and 12 in the U.S. Yet, young adults barely experienced any increase since 1980 (U.S.) or only a mild one (France). As a result, the two groups' absolute distance grew from 2-to-3 times per adult income to 6-to-10 times. Overall, results indicate that most of the post-1980 divergence in wealth shares occurred because old adults gradually accumulated more wealth than young adults. These trends were more substantial in the U.S. than in France.

Figure 2: **Wealth-income ratios of selected age groups**



Notes: This figure shows the ratio of the average wealth of selected age groups over per adult national income. Green lines refer to age group 25 to 44, and blue lines to age group 55 to 74. The left panel shows results for the U.S. and the right panel for France. Appendix figures 17 and 22 show the same indicator for two alternative sets of age groups: (i) 30 to 39 and 60 to 69, and (ii) 20 to 49 and 50 to 79.

As we explain in the following subsection, inequality between the two groups did not only increase in absolute terms. In relative terms, the ratio of the average wealth of old to young adults remained relatively constant at levels of 2 before 1980. Since 1980, this ratio has reached a value of 6 in the U.S. (1200% over 200%) and 3 in France (900% over 300%).

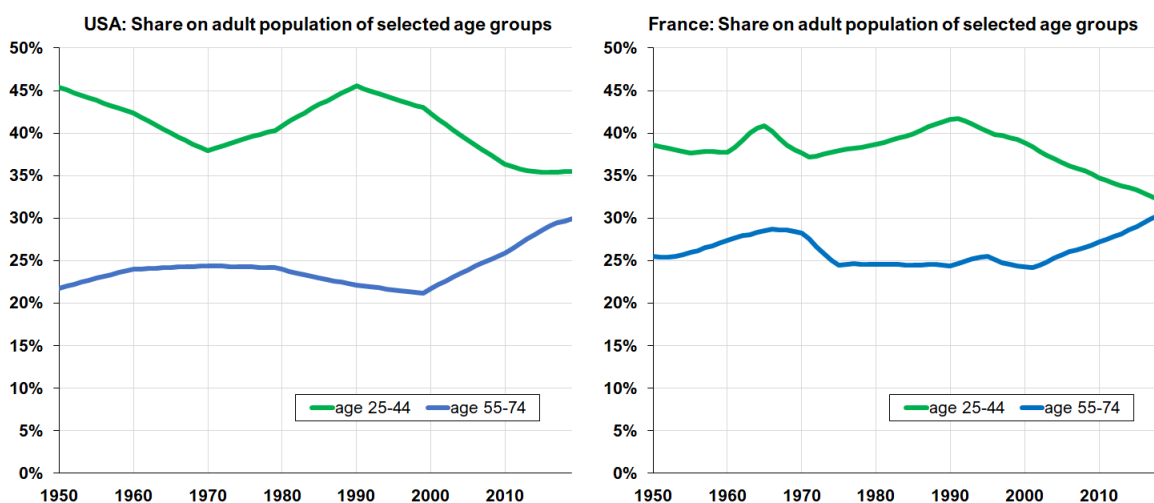
## 2.2 Changes in age-wealth shares: demographics vs. relative wealth differences

In light of the previous findings, we investigate if changes in the share of net wealth owned by age groups 25-44 and 55-75 result from changes in population composition or differences in the two groups' average wealth. Formally, we define the wealth share of a given age group  $i$  ( $shw_i$ ) as the population share (i.e., the number of adults of age group  $i$  ( $N_i$ ) over the total number of adults ( $N$ )) multiplied by the average wealth of group  $i$  ( $w_i$ ) over the average wealth of all adults ( $w$ ):

$$shw_i = \frac{N_i w_i}{N w} \quad (1)$$

Figures 3 and 4 show the evolution of these two components separately. Regarding population structure (Figure 3), it can be seen that the share of these two age groups in the total population has followed very similar trends in the two countries: the young adults' share in total population increased during the period 1970-1990 (i.e., when the baby boom generation, born in the 1950s and 1960s, became young adults) and has declined since the 1990s as a result of continuous population aging. Today, in both countries, young and old adults represent approximately the same share of the adult population: around 30-35% of the total.

Figure 3: **Population shares of selected age groups**

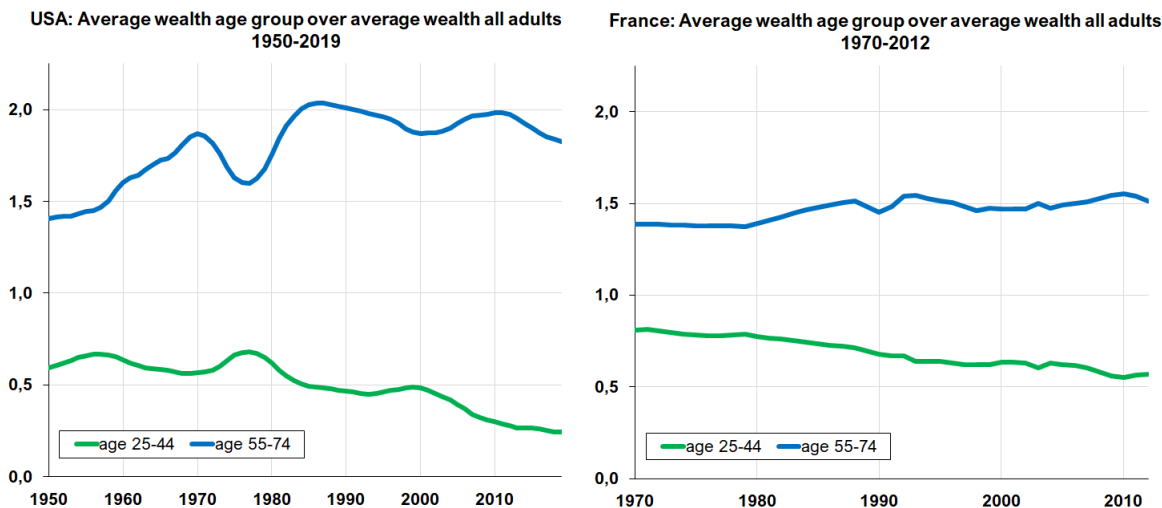


Notes: This figure shows the share in total adult population of selected age groups. Green lines refer to age group 25 to 44, and blue lines to age group 55 to 74. The left panel shows results for the U.S. and the right panel for France. Appendix figures 18 and 23 show the same indicator for two alternative sets of age groups: (i) 30 to 39 and 60 to 69, and (ii) 20 to 49 and 50 to 79. Source: national population censuses.

Figure 4 looks at the average wealth of these two groups, expressed as a percentage of per adult wealth. This indicator reflects differences in the relative wealth of the two population groups. There is a sustained decline in young adults' average wealth in both countries relative to all adults' average wealth, and an increase for old adults. Interestingly, the divergence is more substantial for young adults. This aspect reflects that all adults' average wealth progressively approximates the average wealth of older groups. Figure 4 also shows that the distancing in relative wealth intensified after 1980. Moreover, when comparing France with the U.S., Figure 4 shows much

higher inequality across age groups in the U.S. than in France. This finding is consistent with results from Figure 2.

Figure 4: **Relative wealth inequality across age groups**



Notes: This figure shows the ratio of the average wealth of selected age groups over the average wealth of old adults. Green lines refer to age group 25 to 44, and blue lines to age group 55 to 74. The left panel shows results for the U.S. and the right panel for France. Results are smoothed using 5-year moving averages. Appendix figures 19 and 24 show the same indicator for two alternative sets of age groups: (i) 30 to 39 and 60 to 69, and (ii) 20 to 49 and 50 to 79.

The next step in our analysis is to distinguish the importance of these two forces (population size and average wealth across age groups) shaping the evolution of the wealth shares of age groups 25-44 and 55-74 (Figure 1, right panel). We conduct a counterfactual exercise investigating the relative importance of both.

Our counterfactual simulates the evolution of age-specific wealth shares since 1980. The years around 1980 are an inflection point for numerous indicators of wealth: aggregate wealth-income ratios (e.g. Piketty and Zucman (2014); Bauluz et al. (2021)), wealth inequality (Saez and Zucman (2016); Garbinti et al. (2020)) and, most importantly, trends in age-specific wealth (Figure 1, 2 and 4).

To conduct our counterfactual analysis, we use equation 1. We simulate the evolution of the age-specific wealth shares under two scenarios. In the first scenario, we keep the population structure (the first component of the right-hand side of equation 1 constant as in 1980 and let the

average wealth of each age group (the second component of the right-hand side of equation 1) evolve as observed in the data. We conduct the opposite exercise in the second scenario: we let the population share of different age groups evolve as observed in the data but keep the average wealth differences across age groups constant at their 1980 values.

Figure 5 shows the results of this exercise. The upper and lower panels present results for the U.S. and France, respectively. The left panels show results for the age group 25-44, and the right panel for the age group 55-74. The black line represents the observed wealth shares of each age group. The red line simulates wealth shares where the average wealth of the different age groups changes (but not the population structure). The green line keeps relative wealth differences constant at their 1980 level, and let population change.

Results from Figure 5 reveal that differences in average wealth across age groups are the most critical predictor of wealth shares' evolution. By contrast, changes in the population size of different age groups predict a much smaller variation in the share of net wealth owned by the two age groups. These results are not a general equilibrium exercise but reveal a prominent role of wealth differences across age groups in driving the observed wealth shares. In section 4, we investigate the main mechanisms behind of the growing age-wealth inequality by looking at the determinants of wealth growth of different U.S. generations over time.

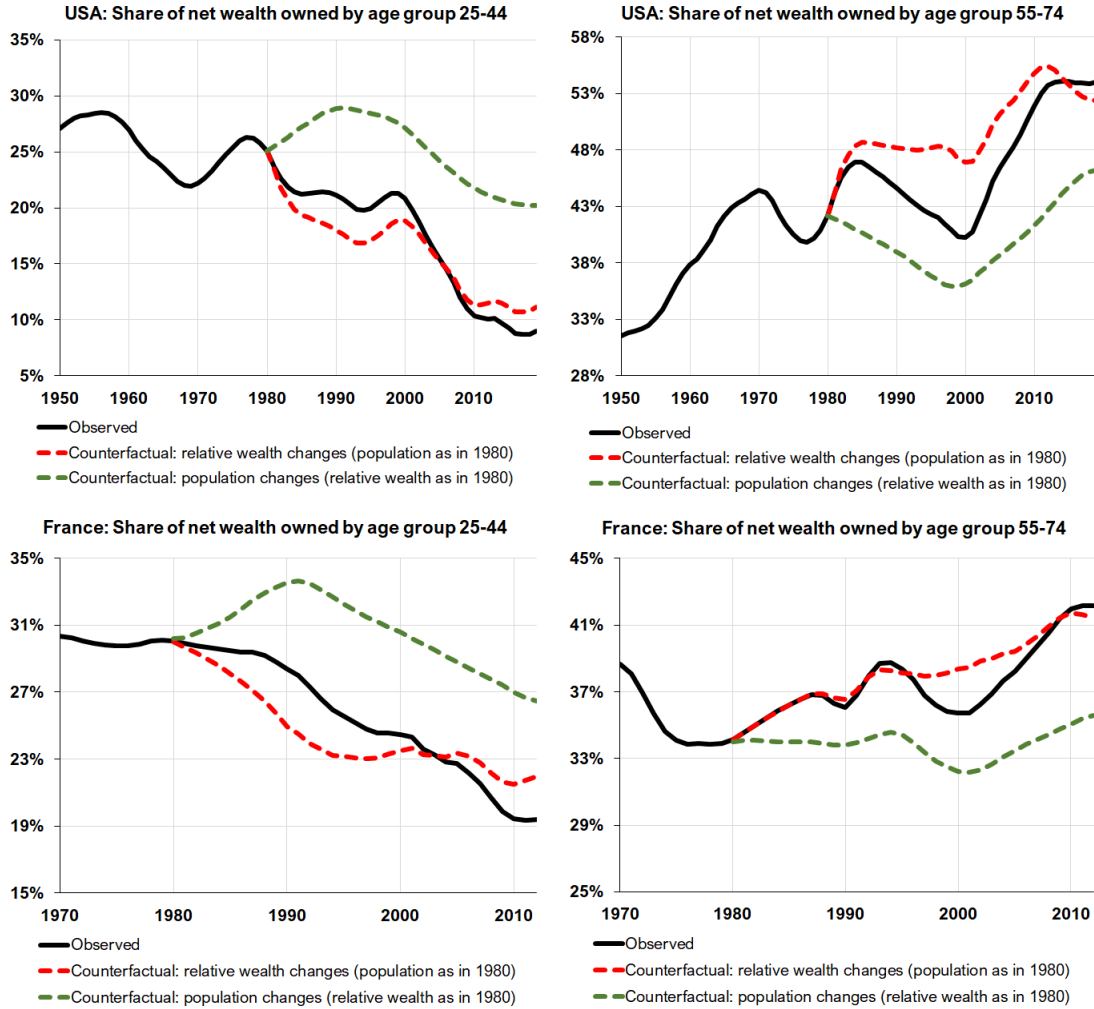
### 3 Concepts, methodology and data

The main data source we rely on is the Survey of Consumer Finances (SCF) administered by the Federal Reserve Board. We consider all survey waves from 1989 and 2019, and also include the historical waves of the SCF covered by [Kuhn et al. \(2020\)](#). The modern version of the SCF (since 1989) is known to be very representative of the US wealth distribution as its sampling strategy takes into account the unequal wealth distribution through oversampling<sup>7</sup>. While this sampling

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<sup>7</sup>The other major data source for the wealth distribution in the US, capitalized income tax data of [Saez and Zucman \(2016\)](#) only includes three age groups, so we do not rely on this as our main data source

Figure 5: Drivers of age-wealth shares: demographics vs. relative wealth differences



Notes: This figure shows the share of net wealth owned by selected age groups and to counterfactual scenarios. Black lines refer to the observed evolution of age-wealth shares. Red-dotted lines refer to the counterfactual scenario where the population structure is kept constant as in 1980, and relative wealth inequality changes as observed in the data. Green lines refer to the counterfactual scenario where relative wealth differences are kept constant as in 1980, and the population changes as observed in the data. The upper panel shows results for the U.S. and the lower panel for France. Results are smoothed using 5-year moving averages. Appendix figures 20 and 25 show the same indicator for two alternative sets of age groups: (i) 30 to 39 and 60 to 69, and (ii) 20 to 49 and 50 to 79.

strategy is not used for the historical SCF<sup>8</sup>, our focus is not on the top percentiles of the wealth distribution, so this is not a strong limitation. Following (Kuhn et al., 2020) we pool survey waves in the historical part of the SCF by three-year intervals to reduce noise in the data. In accordance with DINA guidelines (Alvaredo et al., 2020b) only adults 20 and older are considered. We split

<sup>8</sup>Though Kuhn et al. (2020) correct for this.

wealth equally between couples.

### 3.1 Macro and Micro Wealth and Income concepts

In this section we describe how we harmonize the data from the SCF+ with national accounts. As this is the focus of our study, we first focus on wealth.

Net wealth is the sum of assets less liabilities. We include all available asset and liability categories except vehicles and other non-financial assets, following the system of national accounts guidelines SNA 2008<sup>9</sup>. The historical SCF covers all major asset categories except defined benefit pensions and defined contribution pensions before 1983. We impute defined benefit pensions using the procedure of [Henriques Volz and Sabelhaus \(2019\)](#) for the years of 1989-2019. For the year of 1983 we assume that defined benefit pensions follow the age distribution of defined contribution pensions. For the year of 1983 we assume that defined benefit pensions follow the age distribution of defined contribution pensions. For the years before 1983 we impute pension wealth using the distribution of pension wealth in 1983 but shifting this downward following the difference in life expectancy in order to capture demographic trends<sup>10</sup>. Investment funds are also not recorded before 1971, but these only account for less than 1% of total wealth from 1950-1970. In a next step we make the SCF consistent consistent with macroeconomic totals from the Financial Accounts (FA) collected by [Saez and Zucman \(2016\)](#), which we also use to compute capital gains.

Making the SCF consistent with macroeconomic data is the goal of many studies, the most prominent being the Distributional Financial Accounts (DFA) ([Batty et al., 2019](#)). For international comparability we match the asset and liability categories to correspond to the ESA 2010 categories. We distinguish six broad asset categories: Fixed income assets (Bonds, Deposits, Currency), equity, investment funds, pension funds and life insurances, housing and business assets. Further we distinguish two types of liabilities, short term and long term debt. Mapping the SCF asset categories to their ESA 2010 equivalents is straightforward, the precise matching can be seen

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<sup>9</sup>These assets represent, on average, three percent of net household wealth in the SCF

<sup>10</sup>For this time period, 12% of total wealth is held in form of pensions, the remaining wealth holdings are not imputed. Results are qualitatively similar if we do not impute pension wealth.

in Table 2 in the Appendix.

After making the SCF consistent with macroeconomic accounts for all waves we are further able to ‘unveil’ the financial portfolio of households. In this step, we decompose the financial portfolio into fixed income assets and equity. This is done by considering the asset allocation of both pension and investment funds as recorded in the Financial Accounts and then splitting them accordingly. This is important as increasingly large amounts of financial wealth are held in complex financial assets, such as pension and investment funds. Pension funds now (2020) constitute around half of the financial portfolio of US households (Saez and Zucman, 2020), and the capital gains through indirect equity holdings in these pension funds are a major source of wealth accumulation. Hence we are able to decompose the entire financial portfolio into fixed income assets and equity, which allows us to calculate capital gains accordingly.

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

## 3.2 Synthetic Savings

In the first step we decompose the accumulation of personal wealth at the aggregate using the asset-specific accumulation equations (Bauluz et al. (2021); Artola Blanco et al. (2021)), which decompose the growth of a given asset class into a volume effect (saving) and a price effect (capital gains or losses). For a given asset type (e.g. housing, business assets, bonds and deposits, equity, debt), we decompose our series using the following equation:

$$A_{t+1} = A_t(1 + q_{t+1}) + S_{t+1,A} \quad (2)$$

Where  $A_{t+1}$  and  $A_t$  are the real value at time  $t + 1$  and  $t$  of a given asset type from the households' wealth.  $S_{t+1,A}$  is the net-of-depreciation saving flow in asset-type A during year  $t + 1$ . Finally,  $q_{t+1}$  is the real capital gain or loss from asset-type A between time  $t$  and  $t+1$ . In the previous equation, the capital gain component is obtained as a residual, since we observe all the other components (i.e. annual stocks of assets and flows of net savings) in the national accounts.

We then aggregate the accumulation of each asset class and debt from equation 2 to decompose the accumulation of net wealth into saving and capital gains:

$$W_{t+1} = W_t(1 + q_{t+1}) + S_{t+1,A} \quad (3)$$

Where  $W$  is the sum of all asset categories, net of liabilities, and  $q$  the weighted average of the capital gains in each asset type and debt (where the weights are given by the share of each wealth component in total net wealth).

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

$$A_{t+1}^g = A_t^g(1 + q_{t+1}) + S_{t+1}^g \quad (4)$$

Here  $A_t^g$  refers to the real holdings of asset  $A$  of generation  $g$  at time  $t$ . The variable  $q_{t+1,A}$  is the real capital gain or loss of asset type  $A$  between time  $t$  and  $t + 1$ . We observe  $A_t^g$  directly in the SCF+ on a triannual basis and then linearly interpolate to construct values in between. The capital gains  $q_{t+1,A}$  on the other hand are constructed from macroeconomic accounts in equation 2. Then the saving of generations in a specific asset are defined as the residual  $S_{t+1,A}^g$ , so that the synthetic savings equation holds. This accounting framework is widely used in the inequality literature to study wealth dynamics (Piketty et al. (2018); Kuhn et al. (2020); Martínez-Toledano (2020);

Garbinti et al. (2020)). In these applications, one limitation is the lack of consistent cohorts, as these studies do not focus on generational cohorts, but for instance on wealth deciles, which change over time.

In a next step, we aggregate these equations over all asset classes. We also amend the asset accumulation equations by adding the net inheritances and gifts<sup>11</sup> received by generation  $g$  in time  $t + 1$ , which are denoted by  $I_{t+1}^g$ . This yields a simple accumulation equation

$$W_{t+1}^g = W_t^g(1 + q_{t+1}) + S_{t+1}^g + I_{t+1}^g \quad (5)$$

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

### 3.3 Estimation of Inheritances

There are many difficulties associated with studying inheritances in the US, which lead us to estimate estates via the mortality multiplier method. The estate tax exemption in the US has been moving upwards significantly in the past years, standing at 11,58 million dollars currently, which means that very few estates are taxed in practice. The tax data on these estates is only available in aggregate form and we later use it to estimate deductions from the estate for charitable giving and funeral costs. Nevertheless, due to the high exemptions for the estate tax, this data is unlikely to be representative both in size and distribution of the inheritance flow.

Moreover the US estate tax is assessed on the wealth of the decedent, so we do not observe the inheritors in the estate tax data. We instead look to the SCF to study the distribution of inheritances. It is a well known problem that surveys suffer from under reporting of inheritances on part

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<sup>11</sup>That is, the gifts and inheritances received by a generation less the gifts and inheritances given by a generation.

of the inheritors, leading to aggregate inheritance flows that are implausibly small. When comparing estate flows estimated using mortality rates authors analyzing multiple countries such as [Schinke \(2012\)](#) for Germany or [Feiveson and Sabelhaus \(2019\)](#) for the US have found the reported inheritances to be far lower than plausible values. Hence we simulate the flow of inheritances following this method.

### 3.4 Estimating the flow of inheritance

Bequests are modeled using the mortality multiplier method, which means computing for each individual the probability of dying in a given year. Traditionally, mortality multipliers have been used to compute the wealth distribution from inheritance tax data, for instance by [Alvaredo et al. \(2018\)](#) for the UK.

We now apply them inversely to compute the wealth of the deceased from the wealth of the living. To this end, let  $d(s, a, t)$  be the probability of dying in year  $t$  for an individual of sex  $s$  with age  $a$ . Mortality rates are available from the Social Security Administration by age, sex and gender since 1900<sup>12</sup>. 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<sup>13</sup> 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 require an estate to settle its own debts, so debts of the deceased are deducted from the amount transferred to the inheritors.

Next we refine this method by correcting for differential mortality, estate taxes and other deductions from the estate and adding gifts. Applying uniform mortality rates overstates the mortality of the rich, who tend to live longer lives ([Chetty et al., 2016](#)). Therefore we adjust mortality rates

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<sup>12</sup>These are available at <https://www.ssa.gov/OACT/HistEst/Death/2020/DeathProbabilities2020.html>

<sup>13</sup><https://www.irs.gov/businesses/small-businesses-self-employed/estate-tax>

$d(s_i, a_i, t)$  by multiplying with a mortality multiplier  $\alpha(x_{i,t})$  where  $x_{i,t}$  is a vector describing other characteristics of the household (such as income, wealth etc.). We use the mortality multipliers of [Saez and Zucman \(2016\)](#) to correct for differential mortality of top wealth holders.<sup>14</sup>

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

Finally, we apply the estate tax after making the deductions outlined above (charitable bequests and funeral costs). The estate tax has been a topic of hot debate in the US for many years. For the past 50 years tax rates have been lowered and the exemption increased. This is especially true for the top tax rate, which has declined from 77% (in the period of 1940 to 1977) to only 40% today. But not only the extremely wealthy have seen a lowering of their estate taxes. [Jacobson et al. \(2007\)](#) report that the share of deaths subject to the estate tax fell from around 8% in 1975 to less than 1% in 2004. We collect precise estate tax schedules since 1946 and apply the tax to all inheritances not passed to the spouse, as these are tax free. Adding all deductions and taxes reduces the flow of inheritances by on average 20%, with yearly values ranging from 15-25%. There is no trend in the size of these deductions.

### 3.5 Inter-vivos gifts

Wealth can also be passed between households by inter-vivos transfers. These are significantly harder to estimate than bequests, since they don't occur at a fixed point in time. Instead we make use of the gift module in the SCF to study the size of the inter-vivos gifts flow. In this module

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<sup>14</sup>Using other multipliers, such as the ones of the Congressional Budget Office yields very similar results, as our comparisons with [Feiveson and Sabelhaus \(2019\)](#) in [Figure 6b](#) show.

both transfers received and transfers given by the household are recorded.<sup>15</sup> In the aggregate, households in the SCF report that they gave 3.5 times as many transfers than they received. This indicates that gifts received are again strongly underreported in the survey and the gifts given are the more reliable estimate. In turn, we use the aggregate gifts given in the SCF for the size of our gift flow. Before 1989 we cannot rely on the SCF to tell us about the aggregate of gifts. Following [Alvaredo et al. \(2017\)](#) we estimate the flow of inter-vivos gifts to be 20% of all bequests. This is an approximation that is validated by the gift flow since 1989, which is on average 21% of the total bequest flow.

**Discussion of estimation** Our estimation is robust to other specifications (for instance of mortality multipliers) and in line with other evidence from the literature. Comparing our results with those of [Feiveson and Sabelhaus \(2019\)](#) and [Alvaredo et al. \(2017\)](#)<sup>16</sup> yields very similar trends and levels.

In their paper, [Alvaredo et al. \(2017\)](#) estimate bequests as a share of national income without taking into account deductions for gifts or the estate tax. They then report their results as a fraction of national income. Repeating the same exercise, but with our methodology yields similar trends, with a more pronounced U shaped form, as can be seen in [Figure 6a](#). This U shaped form is closer to what [Alvaredo et al. \(2017\)](#) find in European countries. In conclusion, our paper supports their results by replicating them through a different methodology. Our estimation relies on the underlying microdata, whereas theirs is computed through macroeconomic aggregates.

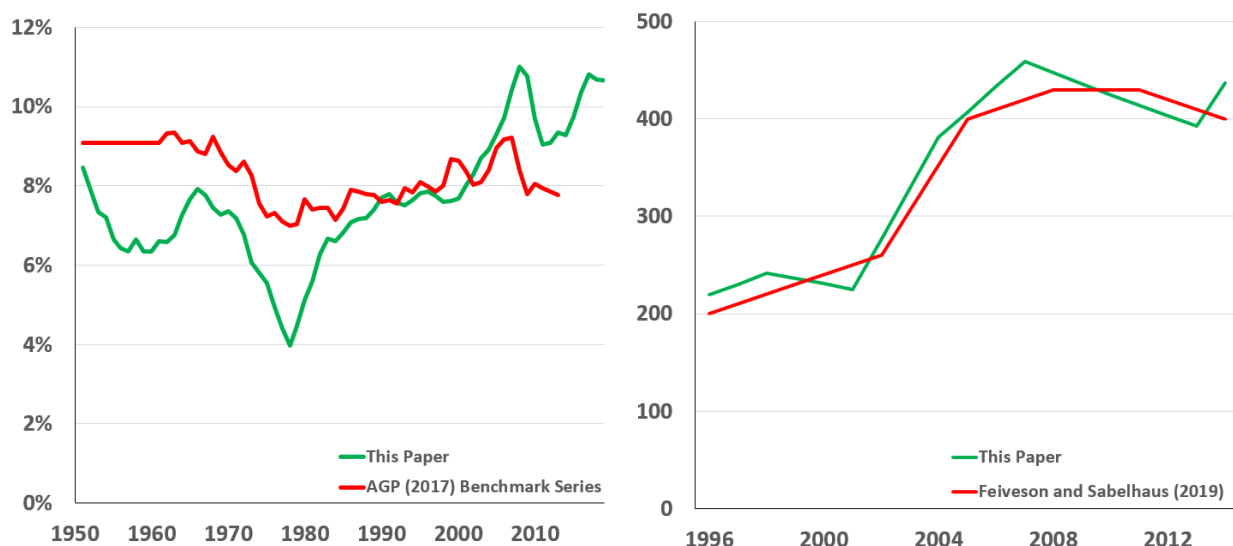
[Feiveson and Sabelhaus \(2019\)](#) undertake an estimation using the mortality multiplier method and arrive at virtually the same result as shown in [Figure 6b](#). Overall these comparison show that projecting the flow of bequests through the mortality multipliers is a robust method that yields values comparable to other ways of estimation.

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<sup>15</sup>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

<sup>16</sup>Further evidence for the size of the inheritance and gift flow in Italy is given by [Acciari and Morelli \(2020\)](#), who also find similar levels to ours.

Figure 6: Comparison with other sources



(a) Bequests and gifts as percentage of national in- (b) Bequests flowing out of the Household, in billions come of 2016 USD

Notes: This figure compares our estimates of the inheritances and gift flow with those of [Alvaredo et al. \(2017\)](#) and [Feiveson and Sabelhaus \(2019\)](#). The results of [Feiveson and Sabelhaus \(2019\)](#) are not available in tabulated form, so we estimate their numbers based on their graphs.

### 3.6 Assigning the Inheritance

The next key step is to analyze the inheritors of the estates. Many bequests do in fact not flow to other households, but to the spouse of the deceased. To differentiate those two types of bequests, we partition the population in to single  $I_{\text{single}}$  and married  $I_{\text{married}}$  households. We know the age of the spouse from the SCF for the modern SCF waves so it is clear how bequests to spouses redistribute wealth across generations. For the historical period we assume marriages to be between mixed sex partners of the same age. The second component of bequests are those that flow out of the household to the offspring.

The relative sizes of those intergenerational bequests and bequests to the spouse is not known. Here the SCF does not allow for an estimation as bequests from deceased spouses never leave the household and so are not covered in the inheritance module. Following [Feiveson et al. \(2018\)](#) we assume that all inheritance flows first to a surviving spouse and only thereafter to the next generation. In fact, there is a strong tax incentive for giving the entire estate to the spouse since it

allows couples to pass wealth tax free. Hence intergenerational bequests  $B_t^{\text{intergen}}$  are defined as

$$B_t^{\text{intergen}} = \sum_{i \in I_{\text{single}}} w_{i,t} d(s_i, a_i, t) + \sum_{i \in I_{\text{married}}} w_{i,t} d(s_{i_1}, a_{i_1}, t) d(s_{i_2}, a_{i_2}, t). \quad (6)$$

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

### **Distribution of Inheritances and Gifts by Age Group**

In a last step we distribute the inheritance and gift aggregates computed in the last section to the heirs. For this we make use of the inheritance module to find the age distribution of heirs and gift recipients.

The inheritance module asks households to report the value (at time of receipt) and year that they received an inheritance. The unit of observation of the SCF is the household, so transfers generated by the death of a spouse living in the household are not counted as an inheritance received, consistent with our formulation above. Inheritances are only reported sparsely, with only 25% of households in the SCF reporting to ever receive an inheritance. We only use those households who have received an inheritance since the last wave of the SCF to avoid overlap. Given the sparseness of inheritance we pool the survey waves since 1989 to produce more robust results<sup>17</sup>.

The empirical distribution of inheritances by age of the recipient pooled over the survey waves after 2010 is shown in Figure 7. As one would expect, the majority of inheritances are received during the ages of 50-65, when most people inherit from their parents. However, there is a still a significant number of people who receive inheritances at earlier or later stages in their life. Checking the sources of inheritance in the SCF reveals that a significant amount of inheritances come from grandparents (for young inheritors) or siblings (for old inheritors). In fact, more than half of

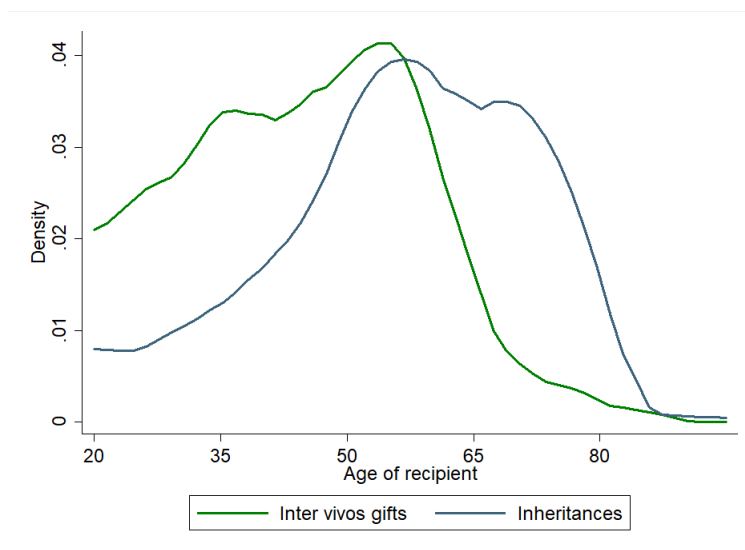
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<sup>17</sup>Specifically, we distinguish 3 time periods: 1989-1995, 1998-2007 and 2010-2019.

all inheritances are received by inheritors over the age of 50. Inheritances are therefore most likely not the primary means through which wealth is transmitted between generations at younger ages.

Turning to inter-vivos gifts, the data indicates that gifts function as a ‘premature’ inheritance, consistent with the findings of [Piketty \(2011\)](#). To find the distribution of gifts, we turn to the gift module to find the age distribution of gift givers and gift recipients. As inter-vivos gifts are even rarer than inheritances in the data, we pool the survey waves from 1989 to 2016 to find out how gifts transfer wealth between generations. The density estimate is shown in figure 7. Clearly, the receivers of gifts are younger than the receivers of inheritances as most gifts are received below the age of 50. [Piketty \(2011\)](#) rationalizes this finding by calling inter-vivos gifts ‘premature’ inheritances, through which wealth is passed between generations before death. While in the US, the estate tax is unlikely to be the reason for this behavior, there are still strong reasons to believe that gifts fulfill this function. As life expectancy has increased, it is likely that many parents want to transfer some of their wealth to the next generations before they die.

**Figure 7: Distribution of inter-vivos gifts and inheritances, by age of recipient**



Notes: This figure shows kernel density estimates of the distribution of inter-vivos gifts and inheritances (during the period of 2010-2019) by the age of the recipient.

Unfortunately, the historical part of the SCF (before 1989) does not include data on inheritances or gifts. Therefore, we assume that the distribution of inheritances and gifts along age groups is

shifted downward following changing life expectancy.<sup>18</sup>

## 4 Drivers of intergenerational wealth inequality in the US

Given the sizable increase in intergenerational inequality as seen in section 2, it is natural to ask why inequality increased. This section explains the rise in inequalities using the accumulation framework introduced in section 3. We analyze the U.S. (and not France) since this is the only country where we have wealth microdata to conduct our analysis. We proceed in three steps. We first start exploring macroeconomic trends in the accumulation of wealth. We link them to wealth accumulation of different generations and age groups in a second step. We analyze the drivers of intergenerational inequality in a final step.

### 4.1 Macroeconomic trends and their relationship to wealth accumulation

Two of the most important macroeconomic trends since 1980 are both the strong increase in household wealth-to-income ratios (as seen in figure 1) and an explosion of asset prices. In this section we establish the size of these trends for the U.S. and describe qualitatively how they will be linked to intergenerational wealth inequality.

Since 1980, the wealth-to-income ratio<sup>19</sup> in the U.S. has increased strongly from around 300% and reached levels of more than 500% in recent years.<sup>20</sup> Qualitatively, this means that wealth is becoming more important, so the role and size of inheritances is expected to rise accordingly. This is formalized theoretically and shown empirically for the case of France in [Piketty \(2011\)](#). A similar rise of the importance of inheritances in the aggregate is found in [Alvaredo et al. \(2017\)](#), who also document this for the U.S., among other countries. Our own methodology of estimating inheritances confirms this increase (see section 3). However, it is so far not clear how strongly

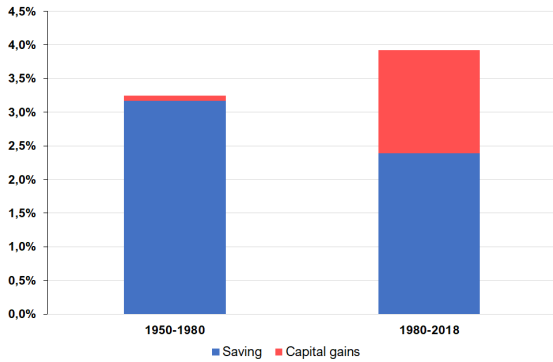
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<sup>18</sup>We take life expectancy data from FRED: <https://fred.stlouisfed.org/series/SPDYNLE00INUSA>

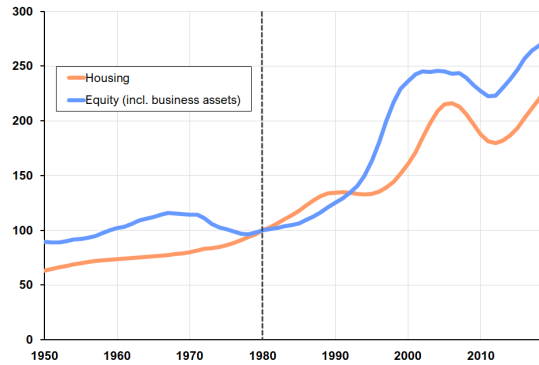
<sup>19</sup>This ratio has been extensively analyzed by the academic literature in recent years (e.g. [Piketty and Zucman \(2014\)](#); [Waldenström \(2021\)](#); [Bauluz et al. \(2021\)](#)).

<sup>20</sup>Wealth growth and income growth seem to have followed different patterns over time. It is well-known that income growth was particularly high in the decades after World War II but decelerated since the 1980s (e.g. [Piketty \(2014\)](#))

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



(a) Sources of annual wealth growth of U.S. households



(b) Capital gains index, 1980=100

Notes: Figure 8a decomposes the real average annual wealth growth of the household sector into the contribution from saving and from capital gains. Results are computed over the subperiods 1950-1980 and 1980-2019. Figure 8b shows the evolution of housing and capital gains over time, expressed as an index taking value 100 in 1980. Results in both cases use the asset-specific accumulation equations (see section 3).

inheritances affect different cohorts in their wealth accumulation. Our accumulation framework allows us to consider both givers and recipients of inheritances. We find an increase in the importance of inheritances, but inheritances do not yet play the key role for the cohorts analyzed in our study.

Similarly, asset prices of both equities (Kuvshinov and Zimmermann, 2020) and housing (Knoll et al., 2017) have experienced strong increases since 1980.<sup>21</sup> Using the asset specific wealth accumulation equations at the aggregate level in equation 2 (see also Piketty and Zucman (2014) and Bauluz et al. (2021)), we can decompose aggregate growth into savings (volume effect) and capital gains (price effect). Note that inheritances and gifts play no role since they are transfers within the household sectors. Figure 8a shows the growth captured by both saving and capital gains for the two periods from 1950 to 1980 and 1980 to 2018. There are two important things to notice here. First, wealth growth rates have increased markedly between the two time periods, from around 3.2 percent to nearly 4 percent.<sup>22</sup>

But importantly, the nature of wealth growth has also changed between these time periods.

<sup>21</sup> See also Jordà et al. (2019) for more evidence on both house and equity prices.

<sup>22</sup> In particular, wealth growth has been stronger than income growth, as can be seen from the rising wealth to income ratios during this timeframe.

Asset prices now play a central role in shaping wealth-income ratios at the aggregate and account for nearly half of their rise. Before that, capital gains played only a tiny role. This is linked to both an increase in housing and equity prices. As shown in 8b, both housing and equity capital gains have followed a sustained increase since 1980, in contrast with the mild increase that happened in the years before.<sup>23</sup>

We link these facts to intergenerational inequality by capturing their importance for wealth accumulation of different generations, demonstrating that capital gains for more recent cohorts are indeed a very important component here. Specifically, at old age, capital gains constitute the larger part of wealth accumulation for households and allow them to in fact dissave while still accumulating wealth through capital gains.<sup>24</sup>

## 4.2 Changes in lifecycle wealth accumulation

The next step in our analysis is to investigate how lifecycle wealth accumulation evolved over time. As we saw in Figure 1, the age-wealth gap and household wealth-income ratios both increased since around 1980, after being relatively stable during the 1950-1980 period. For this reason, we separately analyze wealth accumulation of two cohorts. The first cohort we consider is those born between 1900 and 1929, the second is those born 1930-1959. We choose those cohorts for two reasons. First, their working lives, during which they accumulate the majority of their wealth, correspond closely to the subperiods of 1950-1980 and 1980-today. These periods correspond to those in which we find changes in macroeconomic trends. We choose not to focus further on younger cohorts, as we find the increase in intergenerational inequality to be mostly driven by increasing wealth of the elderly, as will become clear in this section. In contrast, the wealth of younger cohorts has remained stagnant (see also figure 2).<sup>25</sup>

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<sup>23</sup>In appendix figure 26 we also show capital gains on fixed-income assets. As these assets largely depend on changes in consumer inflation, the fact that CPI moderated since the mid-1980s has also implied lower negative gains in these asset types since then.

<sup>24</sup>The channel of savings through capital gains is also explored for Norway in Fagereng et al. (2019), where including capital gains significantly increase savings rates of rich households.

<sup>25</sup>At the end of this subsection, we look at the wealth evolution of the same age groups over time. This allows us to analyze younger cohorts (e.g. those born in the 1970s-1990s) in recent years.

Secondly, these generations correspond closely to cultural definitions of generations in the U.S. Namely, the generation born from 1900-1927 is often called the “Greatest Generation”, while those born from 1928-1964 fall either into the “Silent Generation” or the “Baby Boomers”. The wealth holdings of these generations compared to younger generations is at the heart of many recent public debates.

In a first step, we analyze wealth-to-income ratios to gain insights into wealth growth and asset portfolios of different generations. <sup>26</sup> In Figure 9 we show the average portfolio composition of the cohorts born in 1900-1929 and 1930-1959 during their lifecycle, scaled by per adult national income. The first thing to note, echoing the increasing absolute and relative inequality explored in section 2, is the strong contrast in the amount of wealth held by old and newer generations during their lifecycle, with the more recent cohorts accumulating significantly more wealth. This divergence, however, is only one that starts at a later point in the lifecycle, and in fact up to age 39 the earlier cohorts have a higher wealth-to-income ratio than cohorts born from 1930-1959.

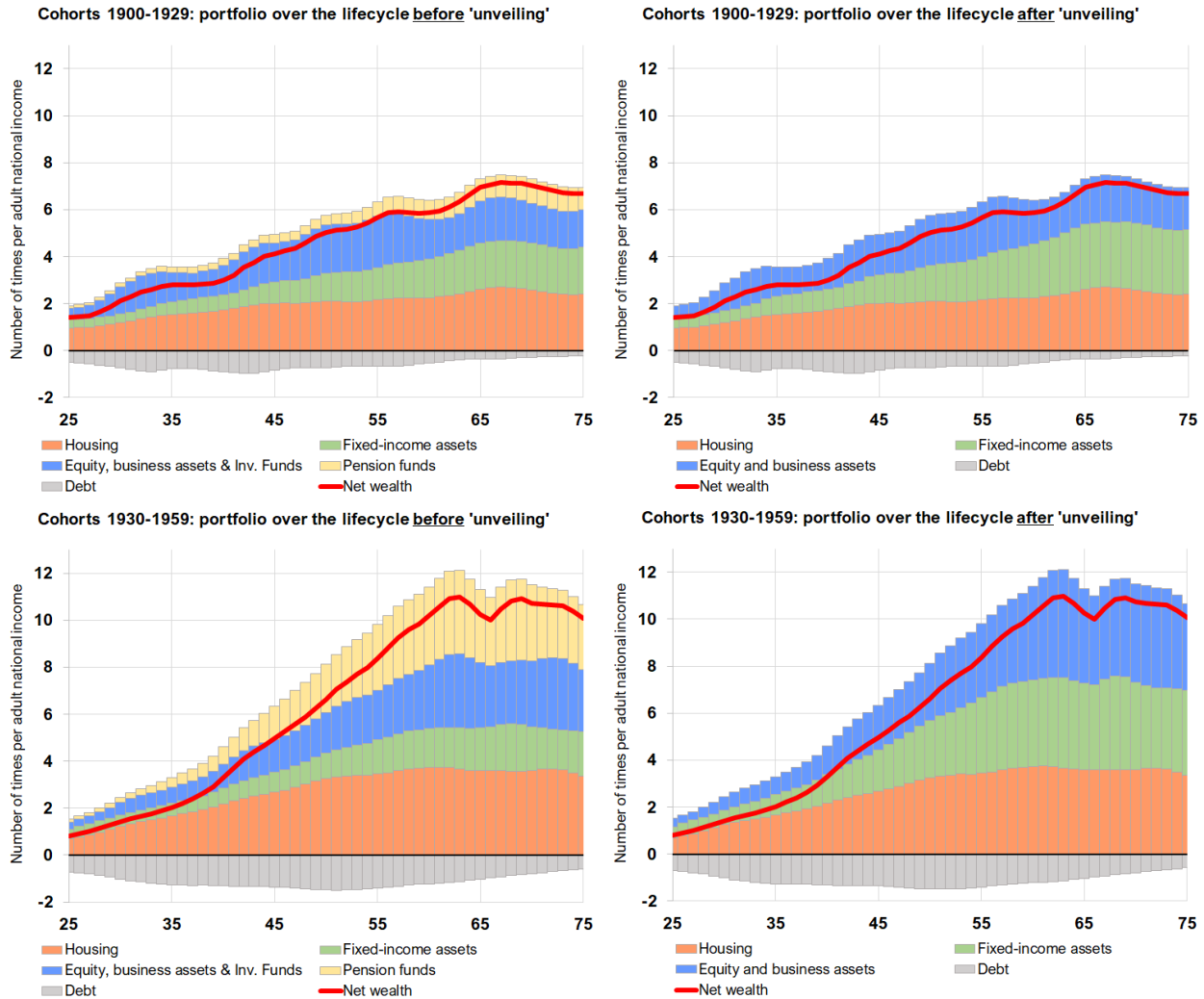
The assets most central to this discrepancy are pensions, which have been increasing strongly since 1950 and have a natural lifecycle component in the way that they are set up institutionally. Additionally, there has been a growth in housing assets, part of which may be financed by the increasing debt (Bartscher et al., 2020).

Unveiling the portfolio of pension and investment funds using the methodology shown in section 3 leads to a clearer picture of the assets households are invested in. The unveiled portfolios of households are shown in the right panel of figure 9. For old adults, there are no significant portfolio differences between generations, even though the total amount of each asset class has risen very significantly. That is, old adults of the different generations held approximately the same proportions of different assets, out of their wealth. For young adults, however, there are important differences. Most notably, young adults have increased their leverage (share of debt in their wealth), mainly due to housing, which has also increased its proportion in their portfolio. This

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<sup>26</sup>Pension funds also include insurance assets. The sum of these two assets makes the category AF.6 in the SNA-2008. For simplicity, in the left panel we group investment funds together with equity and business assets. Investment funds represent less than 30% the value of pension funds.

Figure 9: Portfolio composition of cohorts 1900-1929 and 1930-1959



Notes: This figure decomposes the portfolio over the lifecycle of the cohorts born in 1900-1929 and 1930-1959 into its components. The portfolio compositions are averaged over the cohorts from 1900-1929 and 1930-1959 respectively. Asset holdings are shown in relation to per adult national income, as in figure 2. In the right panels, the indirect asset ownership through investment and pension funds is unveiled using the methodology described in section 3.

makes young households of the younger cohort more exposed to price movements in housing. For the most part, this exposure has been quite beneficial in recent years (we explore this aspect in more detail below).

We now explore the accumulation of wealth across the lifecycle by again comparing the two cohorts introduced above. For this, we make use of the accumulation framework as introduced in equation 5, which allows us to decompose wealth accumulation into saving, capital gains, and

inheritances. At this stage, we also make a further correction to the data. Namely, we correct the average wealth holdings of each generation for differential mortality. Differential mortality increases average wealth holdings at old age, as richer individuals tend to live longer lives. This bias is sizable, as has been documented by [Attanasio and Hoynes \(2000\)](#). It is strongest for earlier cohorts, as for these cohorts differential mortality affects age wealth profiles already at an earlier age, around 60 years, due to the generally lower life expectancy.

We correct for differential mortality following the method proposed by [Attanasio and Hoynes \(2000\)](#), namely we reweight adults by their survival probabilities.<sup>27</sup> In doing this correction, we need to assume something about the past rank in the wealth distribution of different households. As differential mortality rates are only available for the top 10, 5 and 1% of households we assume that a household within the top decile (vingtile, percentile) of the cohort has been in this position since age 30. In [Attanasio and Hoynes \(2000\)](#), this is called the no-crossing assumption. It is also shown in their paper that this method is robust to violations of this assumption.

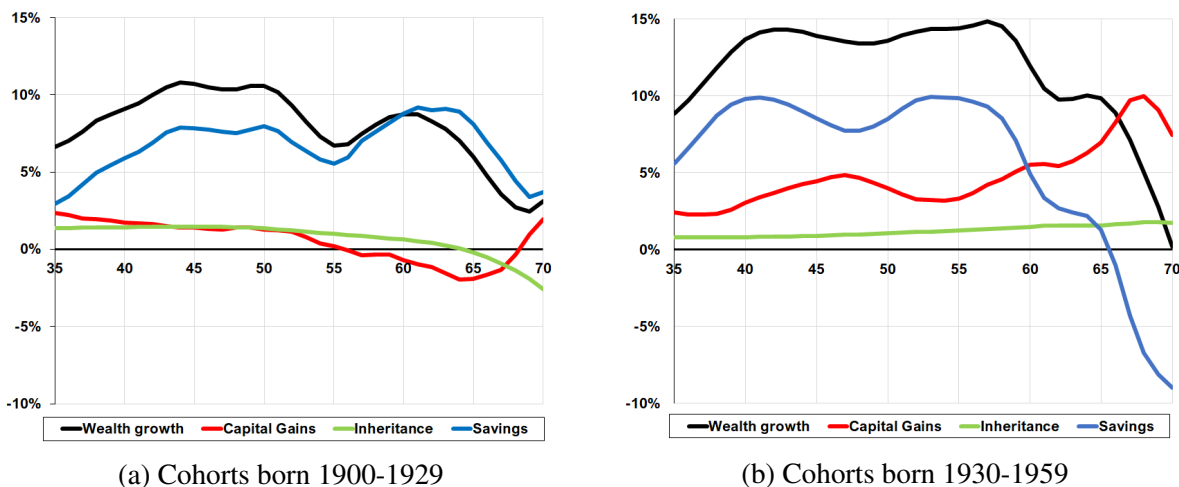
Results of the decomposition are shown in figure 10. Annual flows are shown as a percentage of the income earned by this cohort at that age to allow for a more accurate comparison. Note that both income and wealth are uprated to match macroeconomic totals, as described in the last section. This analysis is a core contribution of our paper. To the best of our knowledge, there is no previous study decomposing the sources of wealth growth of different generations in the U.S. In [Feiveson and Sabelhaus \(2019\)](#), a similar analysis is undertaken pooling all adults in the modern waves of the SCF (i.e., from 1989 to 2016). However, their analysis does not allow for a comparison of the wealth accumulation of different cohorts nor does it correct age-wealth profiles for differential mortality. This understates the role of dissaving at old age as age wealth profiles are corrected for selection through differential mortality.

Figure 10a, shows the pattern of lifecycle wealth accumulation for the cohorts of 1900-1929. Clearly, savings are by far the most important component of wealth accumulation for these cohorts, with the net saving rate being slightly under 10% of income for the most part of their working lives.

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<sup>27</sup>We take data on differential mortality from [Saez and Zucman \(2016\)](#).

Figure 10: Wealth accumulation along the lifecycle as percentage of income



Notes: This figure compares the contribution of savings, inheritances and gifts and capital gains to total wealth accumulation along the lifecycle of the cohorts born from 1900-1929 and 1930-1959 from age 35 to age 70. The flows are shown as percentage of average annual income of the cohort and are computed using the methodology outlined in section 3, using asset specific accumulation equations and inheritances estimated using the mortality multiplier method. Both lifecycle wealth and income profiles are corrected using the method of [Attanasio and Hoynes \(2000\)](#), see the text for more details.

Capital gains play an extremely limited role and are in fact negative for some years.<sup>28</sup> They only become a positive influence late in their lifecycle, when these cohorts start to benefit from the rise in capital gains since the 1980s. Inheritances and gifts play a role early in life but in fact become a negative force for wealth accumulation after age 65, as these cohorts tended to live shorter lives.

Figure 10b shows the same decomposition but for the cohorts born 1930-1959. For these cohorts, savings also constitute the largest part of their wealth accumulation and are relatively constant at about 10% of annual income for the largest part of their lifecycle. However, a significant proportion of wealth accumulation also happens in the form of capital gains, which are in fact increasing over the lifecycle. This reflects large gains of these cohorts in their holdings of equity and housing, which saw very important positive capital gains since the 1980s. Moreover, the moderation of consumer inflation from the mid-1980s also reduced the negative capital gains in fixed-income assets.

<sup>28</sup>These negative gains are largely explained by high consumer inflation in the 1970s, which eroded the real value of financial assets (housing prices, on the other hand, kept up with inflation over these years).

Inheritances constitute a constant and steady source of wealth accumulation for these cohorts. In terms of size, inheritances are, however, not yet a major source of wealth accumulation for these cohorts. Interestingly, including capital gains in profiles of lifecycle wealth accumulation here explains to a large extent the observed deviations from theoretical Modigliani lifecycle smoothing (Modigliani, 1986). The key empirical challenge to this has been the absence of a decline in wealth-income ratios after retirement. Our analysis shows that distinguishing saving and capital gains can explain this puzzle.<sup>29</sup> Namely, capital gains on existing assets go a long way in explaining why wealth growth is positive at the end of the lifecycle.

It remains a puzzle why a similar pattern cannot be observed for the prior cohorts. One possibility is that households at older ages do not aim to reduce their wealth holdings significantly (De Nardi et al. (2010)). For the older cohorts (born in 1900-2929), this was possible only by keeping a slightly positive saving rate. The younger cohorts, by contrast, are able to dissave since this is compensated by sizable gains from the rise in asset prices. Overall, our findings for the two cohorts confirm a basic prediction of the lifecycle model regarding saving. That is, households save substantially more when they are at the middle of their working life, and then reduce their saving significantly when they reach the age of retirement.

Comparing the two cohorts directly yields further insights, as we show in table 1. In this table, we decompose the average wealth growth of the two cohorts between age 30 (when households have already accumulated some wealth) and age 70 (that is, immediately after retirement). Here, we further decompose net saving between the accumulation of assets (gross saving) and the incurrance of debts. Overall, the accumulation of wealth by younger cohorts has been higher (11.2% vs. 8.1%) and is almost exclusively the result of capital gains. It also becomes clear that the nature of wealth accumulation has changed in other dimensions. Namely, net savings are of roughly equal importance for both cohorts, but there is a trend among young cohorts to accumulate more debt (Bartscher et al., 2020). As we show below, this pattern of higher debt accumulation has been accentuated when looking at even more recent cohorts (e.g. young adults in the 1990s and 2000s).

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<sup>29</sup>Another suggestion to resolve this is in fact the bias of differential mortality(Attanasio and Hoynes, 2000), for which we also correct in this paper.

**Table 1: Wealth accumulation sources for cohorts born 1900-1929 and 1930-1959, age 30-70**

	Annual wealth growth	Capital Gains	Inheritance	Net saving	Gross saving	Debt accumulation
1900-1929	8,1%	0,8%	0,9%	6,4%	8,4%	-2,1%
1930-1959	11,2%	4,5%	1,2%	5,6%	8,1%	-2,7%

Notes: This table shows the average annual wealth growth of birth cohorts 1900-1929 and 1930-1959 over their age 30 to 70. Wealth growth is decomposed into: (i) capital gains, (ii) inheritance, and (iii) net saving. Net saving is further decomposed into gross saving (accumulation of assets) and debt accumulation. Numbers are shown as percentage of average annual income for both cohorts. For further details see notes under figure 10.

### **Wealth holdings of age groups over time**

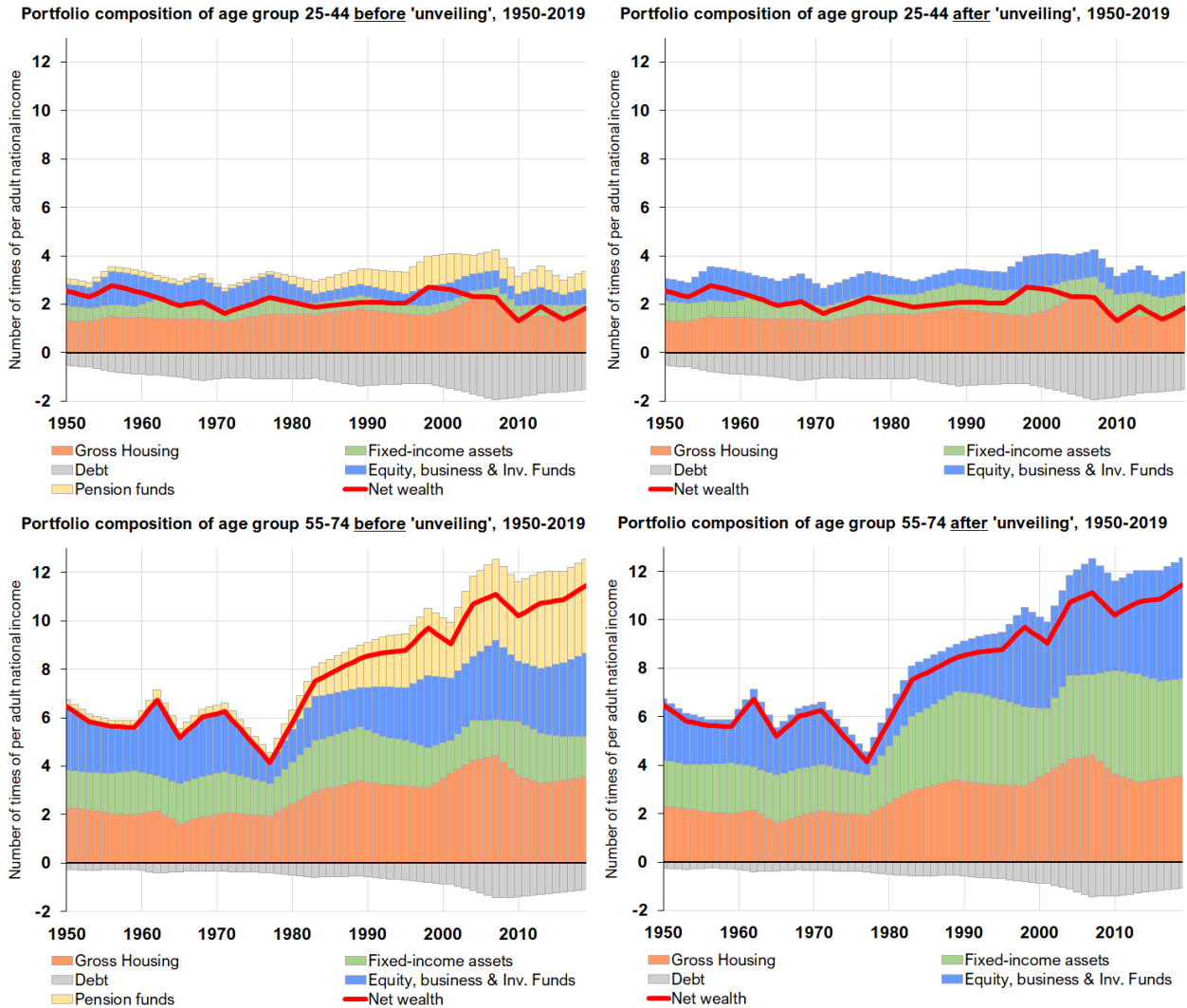
We now look at the evolution of wealth for the repeated cross-section of age groups. That is, instead of looking at the evolution of wealth owned by a given cohort over time, we analyze changes in the cross-section of the same age group over time, consistent with results shown in section 2.

Figure 11 shows the evolution of wealth decomposed into asset types and debt for age groups 25-44 ('young adults') and 55-74 ('old adults'). Results are expressed as a percentage of per adult national income. Left and right panels differ in that the left panel shows the asset portfolio of the given age group before 'unveiling' the indirect asset ownership through investment and pension funds, while the right panel shows their 'unveiled' portfolio.

As explained in section 2, the wealth-income ratio of young adults remained relatively constant (or slightly declined) since 1950. By contrast, the same indicator for old adults experienced a sharp increase starting the 1980s. A closer look at the portfolio of these two groups reveals important changes. First, in both cases there is an important rise of pension wealth, particularly since the 1980s. Moreover, both groups have accumulated more debt and become more leveraged, particularly since the 1990's.

Figure 12 sheds further light on the transformation of portfolios over time. It shows the value of each asset class and debt as a share of the net wealth of the corresponding age group. Three main results emerge from this exercise. First, there is a dramatic increase in the leverage of young adults. This is reflected by the share of both housing and debt in the portfolio of this age group. While housing used to represent around half of young adults' wealth in the 1950s, today this figure is close to 1. Debt is the mirror image of housing. Today debt-to-net wealth ratios are close to 1,

Figure 11: Wealth-income ratios by asset class of selected age groups



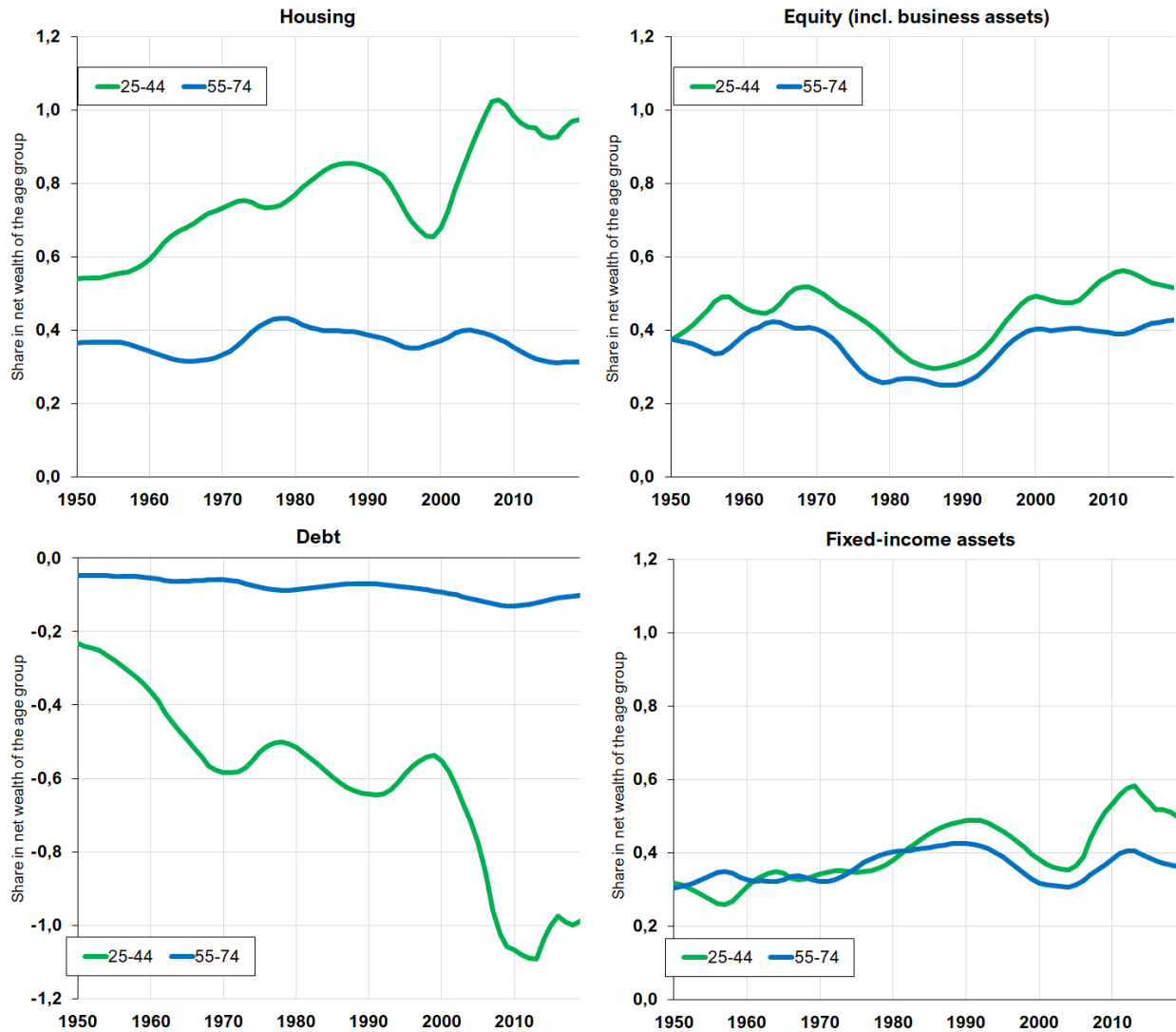
Notes: Notes: This figure decomposes the portfolio of selected age groups, over time. Asset holdings are shown shown in relation to per adult national income, as in figure 2. In the right panels, the indirect asset ownership through investment and pension funds is unveiled using the methodology described in section 3.

but used to be much smaller in the 1950s. This means that young households hold the equivalent of half of their asset portfolio in debts. These results are consistent with the historical trends in the accumulation of housing and debt across age groups documented by (Bartscher et al., 2020).<sup>30</sup>

The second finding pertains to the portfolio of old adults. After unveiling the indirect asset ownership, we find that the share of equity, fixed-income assets, housing and debt has remained

<sup>30</sup>For ease of exposition, we do not show separate results for mortgage and other debt. This is because most of the rise in total debt reflects mortgage debt.

Figure 12: Share of asset classes in the net wealth of selected age groups



Notes: This figure shows the share of each asset type in the net wealth of selected age groups. Equity and business assets are shown together in the upper-right panel. Results are based on the ‘unveiled’ portfolio of households and, hence, account for the indirect asset ownership through investment and pension funds. See section 3 and figure 11.

relatively stable over time. In other words, the rise of pension assets has not entailed a significant reshuffling of the portfolio of old adults, which ultimately own similar proportions of fixed-income assets and equity, when expressed as a percentage of their net wealth.

The third important result is the relative share of each asset type in the portfolio of the two age groups, from a comparative perspective. We find that young adults have a higher share of each asset type (and debt) than old adults. While the share of fixed-income assets and equity in the portfolio

of the two age-groups evolved in very similar ranges (being approximately 40 to 60% of the net wealth of each group), this is not the case for housing and debt. The huge rise in the leverage of young adults has entailed a drastic divergence in the share of these two wealth components in the portfolio of the young, when compared to old adults.

The previous trends in the portfolio composition have entailed a markedly different evolution in the exposure to changes in asset prices for the two age groups. As is explained in [Kuhn et al. \(2020\)](#), the elasticity of net wealth with respect to changes in the price of a given asset equals the share of this asset in net wealth. Therefore, the previous findings entail that young adults have increased drastically their exposure to asset prices during the last decades. The higher exposure is particularly important for housing, with an elasticity that is close to 1 for young adults and around one third for older ones. In fact, young adults are also more exposed to price fluctuations in equity as this also makes up a larger share of their portfolio as seen in [figure 12](#).

Moreover, capital gains in fixed-income assets and debt largely depend on consumer inflation. Here too, an increase in consumer prices leads to higher wealth gains for young adults, as their portfolio is relatively more biased towards debt than fixed-income assets. In other words, a given increase in consumer inflation, would lead to a decline in the real value of debt (a positive gain for debt holders) that would outpace the negative loss in the real value of fixed income assets. From this perspective, the lowering of inflation since the 1980s has been more beneficial for old adults ([Doepke and Schneider \(2006\)](#)).

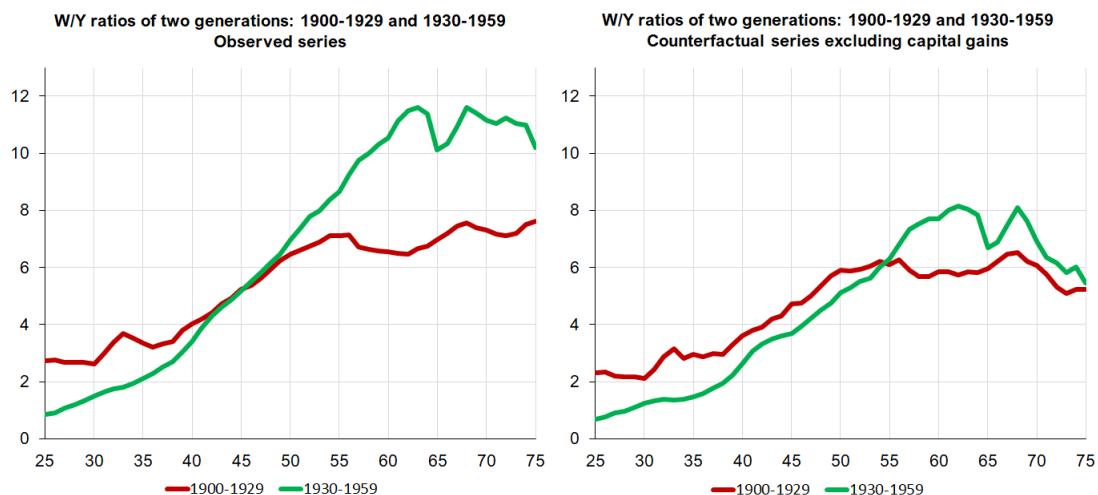
### **4.3 Differential wealth accumulation and changes in intergenerational inequality**

In this subsection, we link the rise in intergenerational wealth inequality in the U.S. since 1950 to the change in wealth accumulation patterns explored in the last subsection. We find that capital gains contributed significantly to changes in absolute wealth inequality (measured by the distance in wealth between cohorts) but had very little effect on relative wealth inequality (as measured by wealth shares).

To estimate these effects we consider a simple counterfactual exercise: Suppose there had been no capital gains in assets since 1950, how would this have affected intergenerational inequality?

First, we take a look at wealth-to-income ratios. In section 2 we showed that the wealth of older households has been increasing. Figure 13 plots the wealth-to-income ratios for the two cohorts considered in this section. Note that in comparison to figure 10, wealth is now shown as a percentage of per adult national income and not the income of the respective group. It is clear from the left panel that there has been a strong increase in wealth accumulation at old age for the more recent cohorts. Again, these cohorts accumulate wealth even after retirement.

Figure 13: **Wealth-income ratios of selected birth cohorts before and after excluding capital gains**



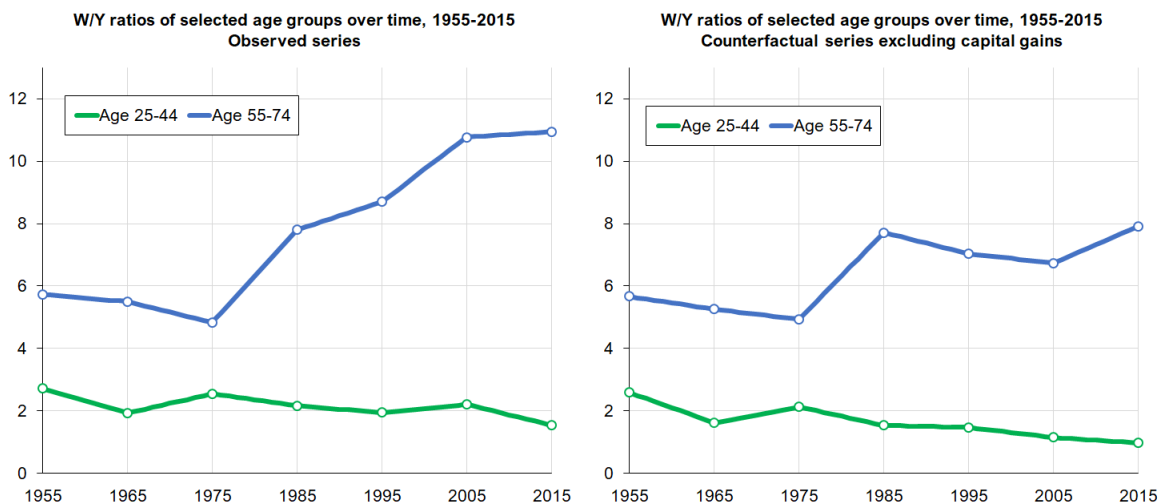
Notes: This figures shows the average wealth-to-per adult national income ratios of the two generations born from 1900-1929 and 1930-1959 as observed (left panel) and in a counterfactual (red panel) without capital gains since 1950. See section 3 for details on the methodology.

Absent capital gains the wealth-to-income ratio of the generation born from 1930-1959 changes strongly, as seen in the right panel of figure 13. In fact the lifecycle wealth profile now matches the previous generation. Especially after the age of 50, when many assets have been accumulated, the absolute effect of these capital gains is particularly striking. For the earlier cohorts, instead, eliminating capital gains makes virtually no difference, as they mostly accumulated wealth during the time from 1950-1980, when capital gains were low in general. It is also noteworthy that for much of their lives as young adults, the more recent generation had lower wealth holdings than

their predecessors. This pattern continues for more recent cohorts born after 1959. Interestingly, we find indications of a decline in the wealth-income ratio after the age of retirement, once we exclude capital gains.<sup>31</sup>

In figure 14, we carry out the same counterfactual exercise but we look at the evolution of wealth-income ratios of selected age groups instead. In line with results in figure 13, we find that capital gains explain a very substantial part of the increase in absolute wealth inequality, as measured by the distance between the wealth of young and old adults in terms of per adult income (see also figure 2 in section 2). In other words, the strong increase in the aggregate wealth-income ratio, (Figure 1) due to large capital gains (Figure 8a), has also entailed a strong increase in old adults' wealth-income ratio. Our results suggest that the wealth-income ratio of old adults would be 7.7 times per adult income in 2015 in the absence of capital gains, instead of 11 times.

**Figure 14: Wealth-income ratios of selected age groups before and after excluding capital gains**



Notes: This figures shows the average wealth-to-per adult national income ratios of selected age groups. The left panel shows the observed wealth-income ratios, while the right panel shows counterfactual ratios without capital gains since 1950. See section 3 for details on the methodology.

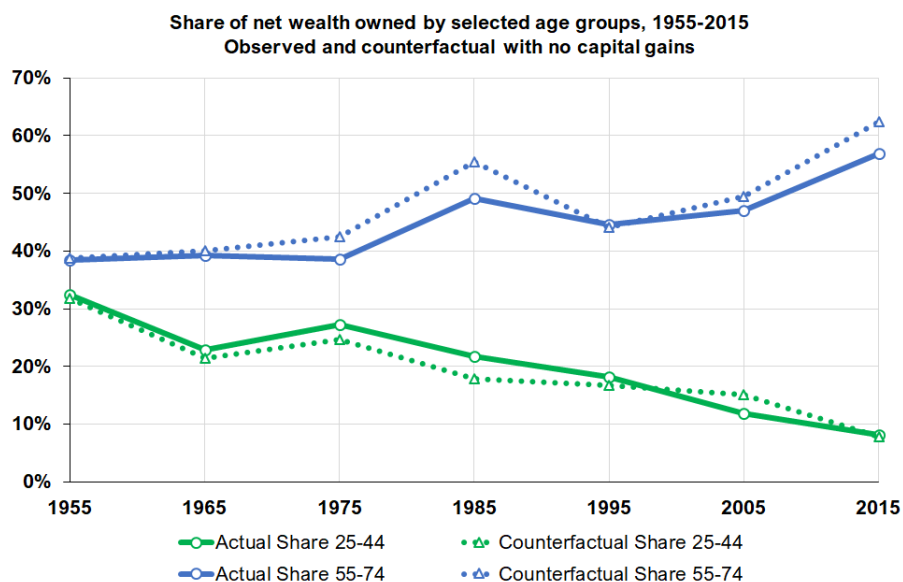
Young adults also experienced wealth increases through capital gains. This increase, however, is significantly more moderate than for old adults as they hold less assets in total. By 2015, the

<sup>31</sup>This is the result of two effects. First, as shown in figure 10, capital gains are a major driver of wealth growth after retirement (in particular, for the most recent cohorts). Moreover, figure 13 is expressed as a percentage of per adult income. Hence, it also reflects that income growth after retirement tends to be lower than the average of all ages.

counterfactual wealth-income ratio excluding capital gains is around 1 time per adult income, as compared to around 1.6 times in the actual wealth series. It is also important to note that the positive capital gains accrued to young adults were not sufficient to revert the stagnation, or even decline, of their wealth-income ratios since the 1980s. Overall, these results indicate that positive capital gains have been a central driver of the divergent evolution between young and old adults since the 1980s, when looking at their wealth-income ratios.

Finally, we analyze effects on relative wealth inequality as measured by the share of wealth held by an age group, thereby complementing the analysis on stylized facts in section 2. Results are shown in figure 15. Contrary to our analysis of wealth-income ratios, we find almost no effect of capital gains for wealth shares. If anything, we find that the evolution of wealth shares would have been even more skewed towards old adults, with the exception of the years around 2005.

Figure 15: **Wealth shares of selected age groups before and after excluding capital gains**



Notes: This figure shows the share of net wealth owned by selected age groups. Solid lines capture observed age-wealth shares, while the dotted lines show the counterfactual shares without capital gains since 1950. See section 3 for details on the methodology.

To explain this seemingly paradox result, it is important to keep in mind that wealth shares are a relative inequality measure. To use the example of 2015, we showed that counterfactual wealth-income ratios for young adults was around 1, while the observed ratio was 1.6. This means that the

wealth of young adults would be 60% higher in 2015 because of this mechanism. For old adults, the increase would increase by 40%, as their wealth to income ratio would have increased from 7.7 to 11. As a result, the counterfactual wealth shares of 2015 indicate a slightly higher gap between the two age groups if capital gains are excluded.

To understand why young adults tend to benefit more from capital gains (in relative terms) than old adults, it is important to consider the portfolio composition in figure 12. This figure showed that young adults have a higher elasticity of their net wealth with respect to changes in asset prices than old adults. This is particularly true for housing, but also for equity. In both cases, these assets experienced strong positive gains since 1980, which explain their strong impact for the wealth holdings of young adults. In appendix figure 27, we show the evolution of the ratio of observed over counterfactual wealth for the two age groups. Whenever this ratio is higher for young adults, their share in net wealth would increase vis a vis old adults.<sup>32</sup>

Overall, our analysis reveals a strong impact of capital gains in absolute wealth inequality but a very minor one for relative wealth differences. This implies that the drastic divergence in the age-wealth shares has its fundamental cause in the saving component of wealth accumulation (and, potentially, in the inheritance component too).

## 5 Conclusion

This paper studies the evolution of intergenerational wealth inequality in the U.S. and France since 1950 and 1970, respectively. We provide the first analysis of the longer-term patterns of wealth accumulation for different age groups in the two countries.

We make two main contributions. First, we show that the wealth gap between young and old adults has experienced a marked increase since the 1980s, more strongly in the U.S. We analyze two key indicators. We first look at the distance between the mean wealth of young (those aged 25

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<sup>32</sup>Note that share of age groups 25-44 and 55-74 in adults' net wealth also depends on the remaining age groups (i.e., those below 25, between 45 and 54, and above 75). In appendix figure 28 we replicate figure 15 including only the wealth owned by age groups 25-44 and 55-74. In this case, the share of each age group is the mirror image of the other.

to 44) and old adults (those aged 55 to 74) in terms of per adult income. Namely, we look at an absolute inequality measure. We find that the growing distance between young and old adults is the result of old adults becoming much richer in recent decades, with young adults stagnating. Next, we look at the distribution of wealth across age groups, focusing on the share of total household wealth owned by young and old adults. We find that the drastic increase in the wealth share owned by old adults is primarily driven by a sharp increase in the ratio of mean wealth of old over young adults, and not by old adults becoming a larger population group. In other words, we find that the evolution of age-wealth shares reflects differences in relative inequality.

Our second contribution is to analyze the drivers of this divergence in the U.S. We decompose the wealth accumulation of different U.S. cohorts into three components: saving, capital gains, and inheritances. Our results suggest that, while saving were the single most important component of wealth accumulation in the post-war decades, capital gains started to play a central role for the generation of the baby boomers. We also find a growing role for inheritance in the wealth accumulation in recent years, but its contribution to overall wealth growth is still relatively moderate.

In a counterfactual analysis, we find that the boom in asset prices since the 1980s explains most of the increase in absolute inequality between old and young adults. This is because capital gains benefit those who already hold many assets. In contrast, we find that capital gains play almost no role in explaining the divergence in relative inequality. This is explained by the fact that young adults today are heavily leveraged, and therefore have benefitted slightly more (in relative terms) from the rise in housing and equity prices. These findings imply that the drastic increase in relative wealth inequality has its primary cause in the saving component of wealth accumulation (and, perhaps, in the inheritance component too).

Our results indicate directions for future research. The documented heterogeneity in life-cycle wealth accumulation of U.S. generations in the last 70 years calls for reassessment of standard assumptions in standard macroeconomic models to place further emphasis on capital gains. In light of decreasing homeownership rates among young households, the inequality within generations may also increase as fewer people are able to accrue capital gains on their home. The rising wealth-

income ratio of the baby-boomers also calls attention to a potentially increased role of inheritance for wealth accumulation in the future.

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## A Matching SCF to Macro Categories

### A.1 Wealth

Table 2: Matching SCF to Macro Categories

	SCF asset categories	Macroeconomic data category <sup>a</sup>
<i>Assets</i>	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 <sup>b</sup>
	Cash Value of Life insurance, quasi-liquid retirement accounts	Pensions & Life insurance
<i>Liabilities</i>	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

<sup>a</sup>Based on [Saez and Zucman \(2020\)](#), Table TB1

<sup>b</sup>See the Appendix of [Saez and Zucman \(2020\)](#), Sheet DataWealth, Column AU

### A.2 Income

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

poorly (capital income, transfers), see also the discussion in [Feiveson and Sabelhaus \(2019\)](#). The mapping is summarized in Table 3

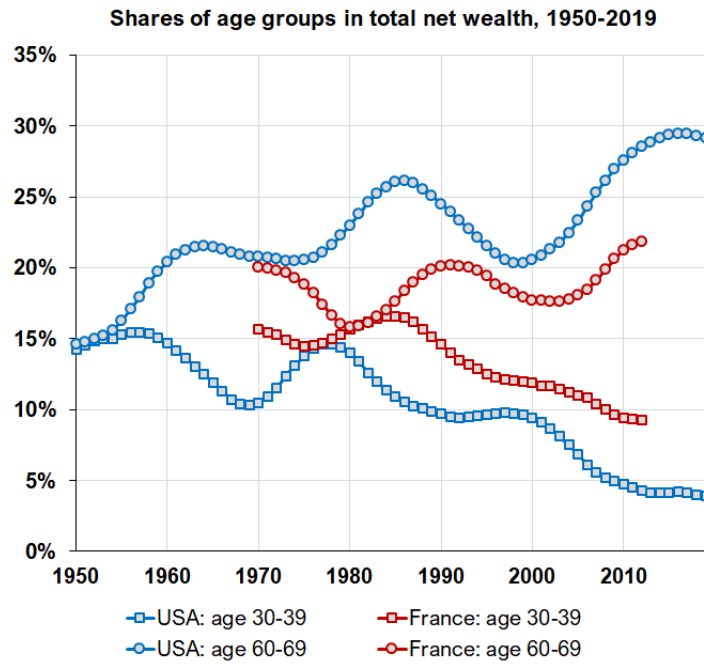
Table 3: **Matching SCF to NIPA**

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

## B Appendix Figures

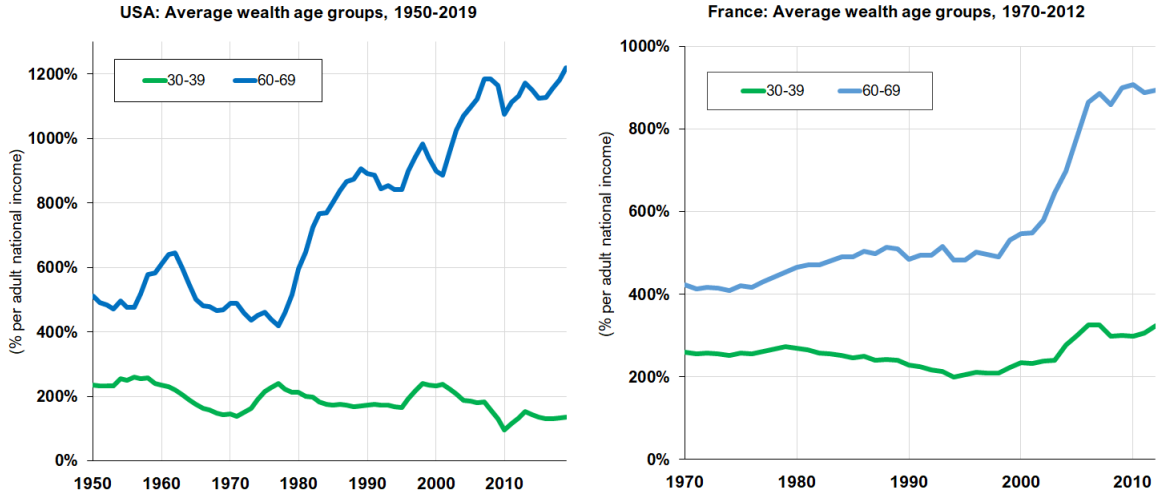
### B.1 Stylized facts: age groups 30-39 and 60-69

Figure 16: Age-wealth shares



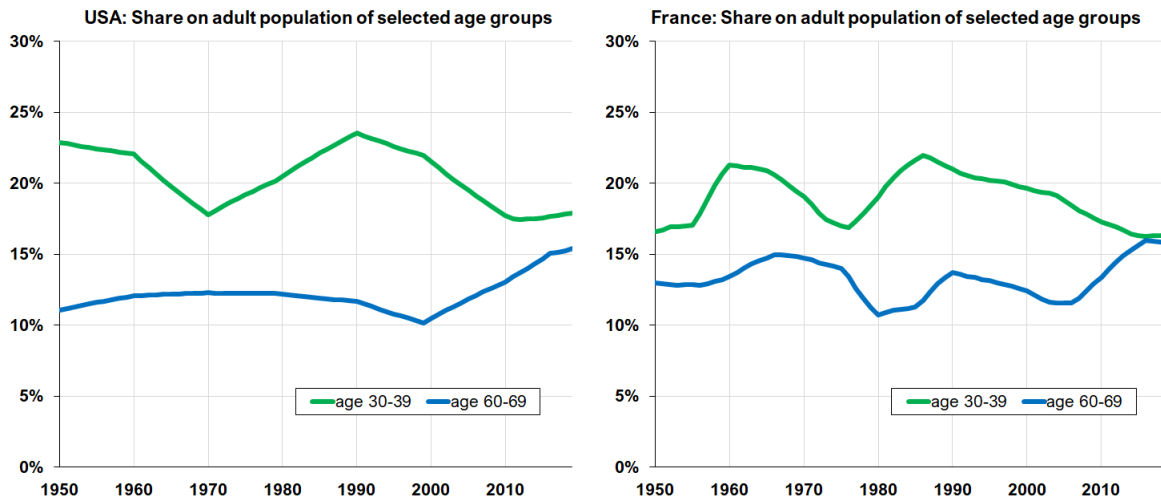
Notes: This figure shows the share of household net wealth owned by selected age groups. Results are smoothed using 5-year moving averages. For an explanation of sources and methods, see section 2.

Figure 17: Wealth-income ratios of selected age groups



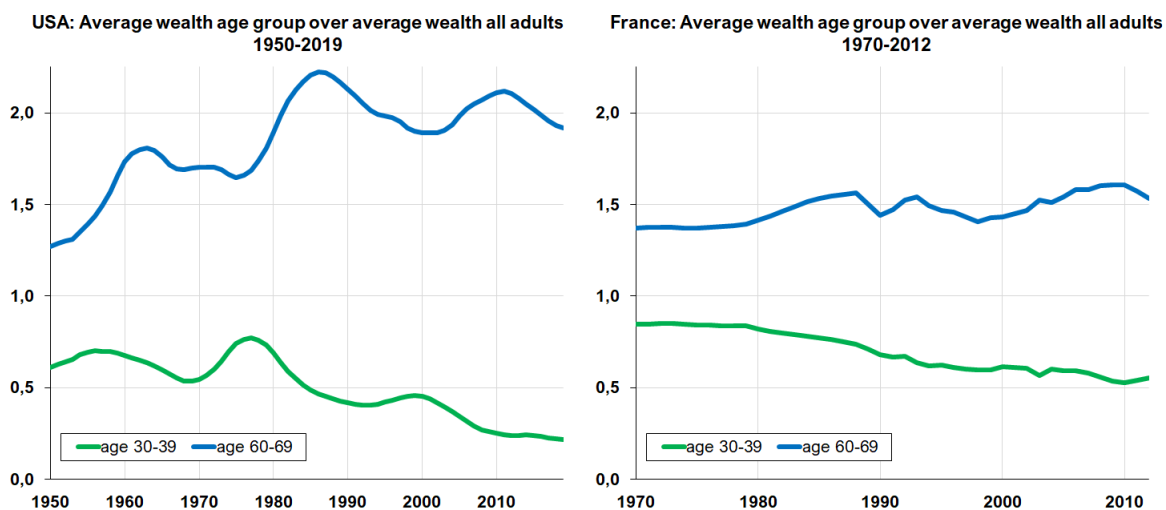
Notes: This figure shows the ratio of the average wealth of selected age groups over per adult national income. Green lines refer to age group 30 to 39, and blue lines to age group 60 to 69. The left panel shows results for the U.S. and the right panel for France. See section 2 for explanations on the sources and methods used to construct these two ratios.

Figure 18: Population shares of selected age groups



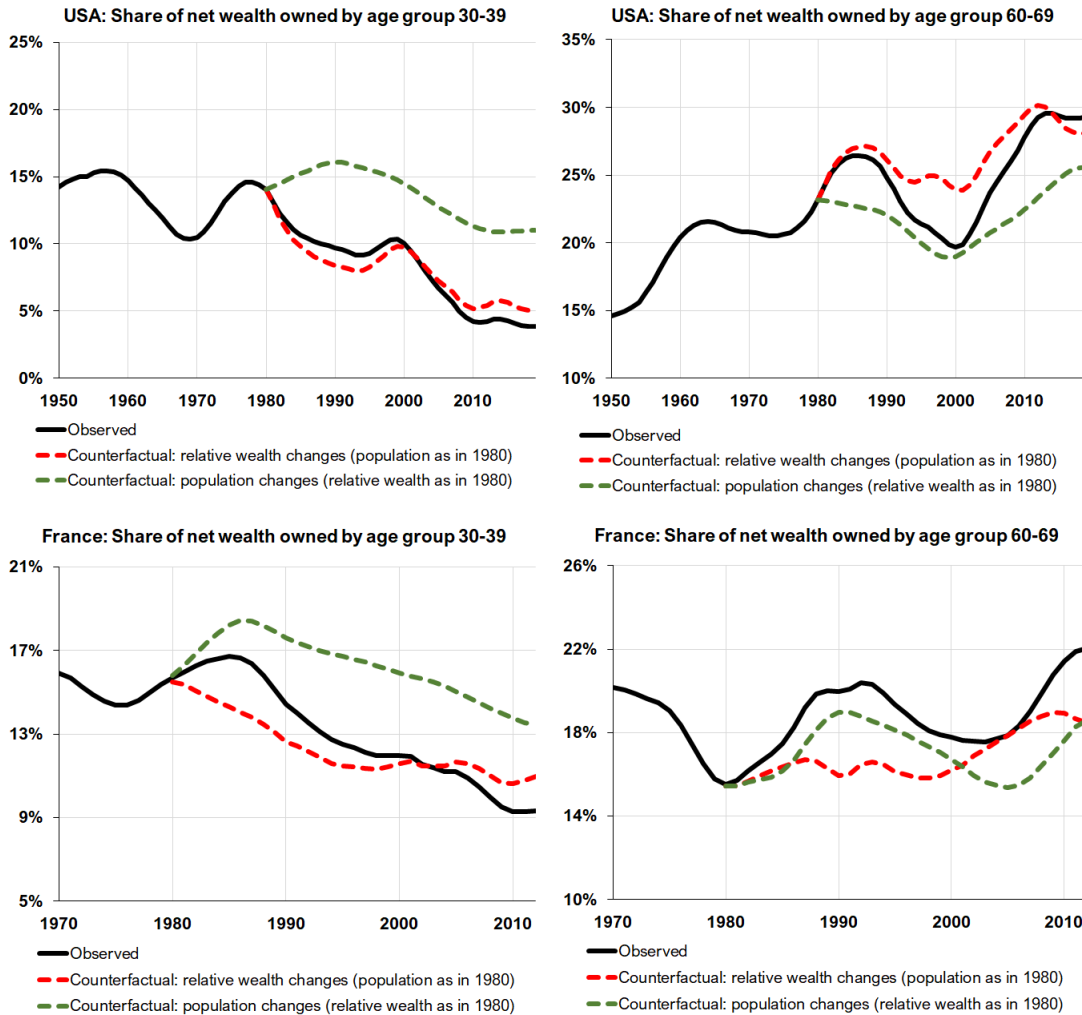
Notes: This figure shows the share in total adult population of selected age groups. Green lines refer to age group 30 to 39, and blue lines to age group 60 to 69. The left panel shows results for the U.S. and the right panel for France. Source: national population censuses.

Figure 19: **Relative wealth inequality across age groups**



Notes: This figure shows the ratio of the average wealth of selected age groups over the average wealth of old adults. Green lines refer to age group 30 to 39, and blue lines to age group 60 to 69. The left panel shows results for the U.S. and the right panel for France. Results are smoothed using 5-year moving averages. For an explanation of sources and methods, see section 2.

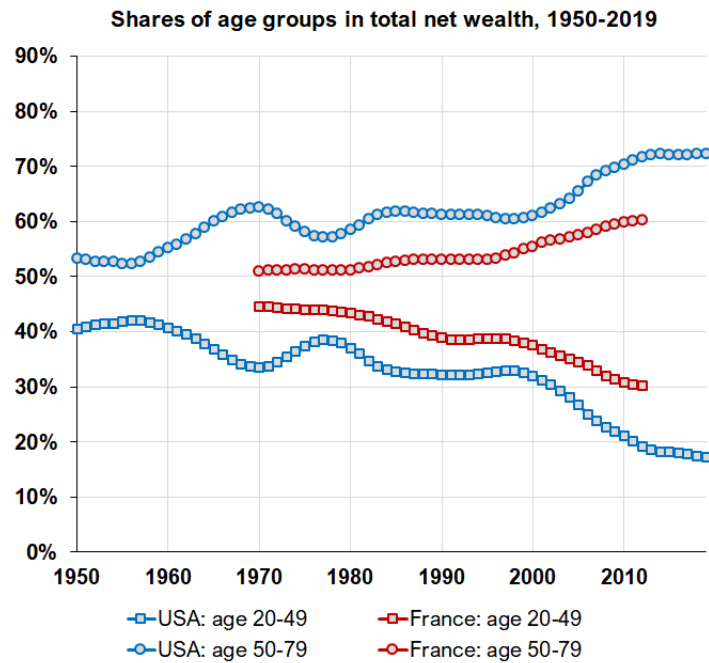
Figure 20: Drivers of age-wealth shares: demographics vs. relative wealth differences



Notes: This figure shows the share of net wealth owned by selected age groups and to counterfactual scenarios. Black lines refer to the observed evolution of age-wealth shares. Red-dotted lines refer to the counterfactual scenario where the population structure is kept constant as in 1980, and relative wealth inequality changes as observed in the data. Green lines refer to the counterfactual scenario where relative wealth differences are kept constant as in 1980, and the population changes as observed in the data. The upper panel shows results for the U.S. and the lower panel for France. Results are smoothed using 5-year moving averages. For an explanation of sources and methods, see section 2.

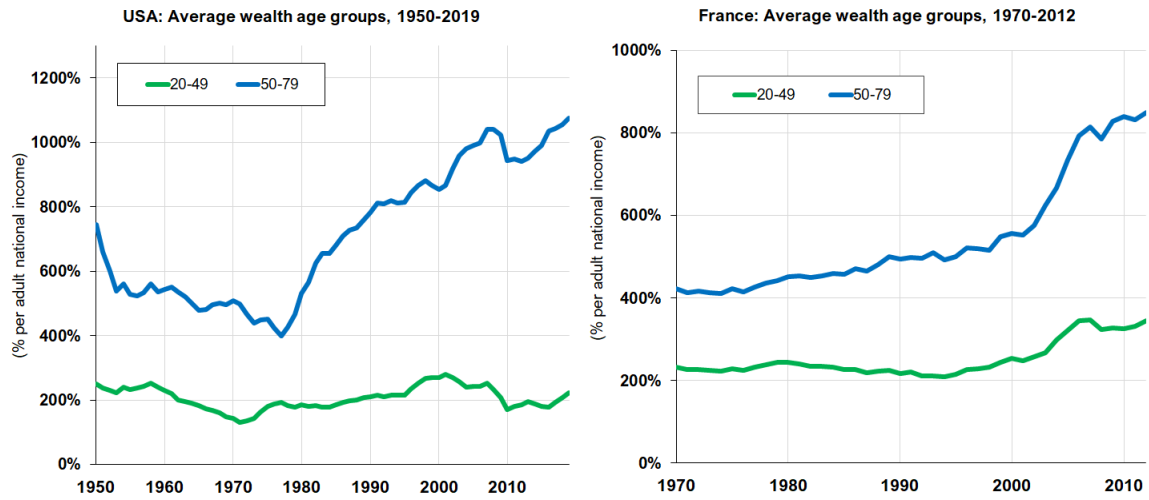
## B.2 Stylized facts: age groups 20-49 and 50-79

Figure 21: Age-wealth shares



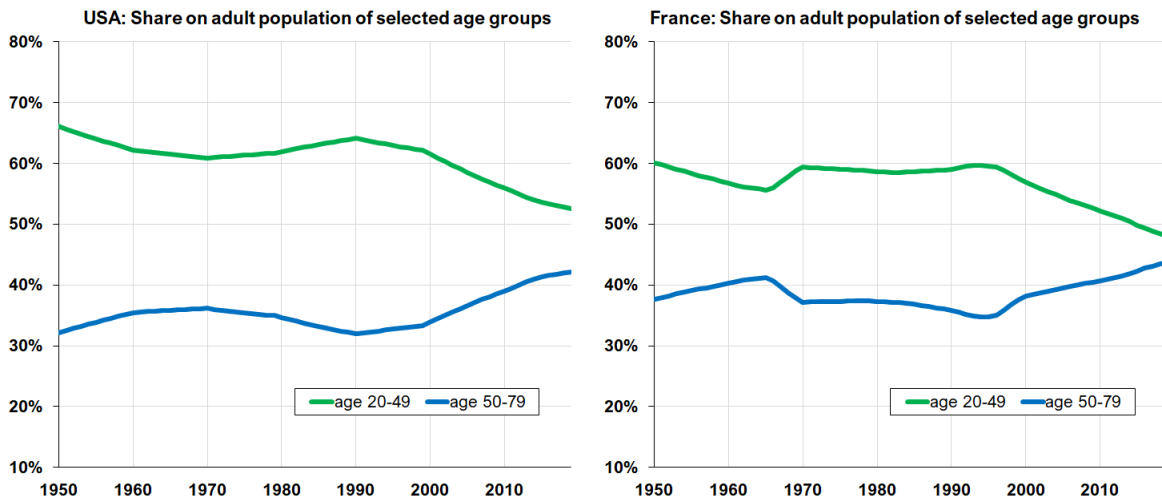
Notes: This figure shows the share of household net wealth owned by selected age groups. Results are smoothed using 5-year moving averages. For an explanation of sources and methods, see section 2.

Figure 22: **Wealth-income ratios of selected age groups**



Notes: This figure shows the ratio of the average wealth of selected age groups over per adult national income. Green lines refer to age group 20 to 49, and blue lines to age group 50 to 79. The left panel shows results for the U.S. and the right panel for France. See section 2 for explanations on the sources and methods used to construct these two ratios.

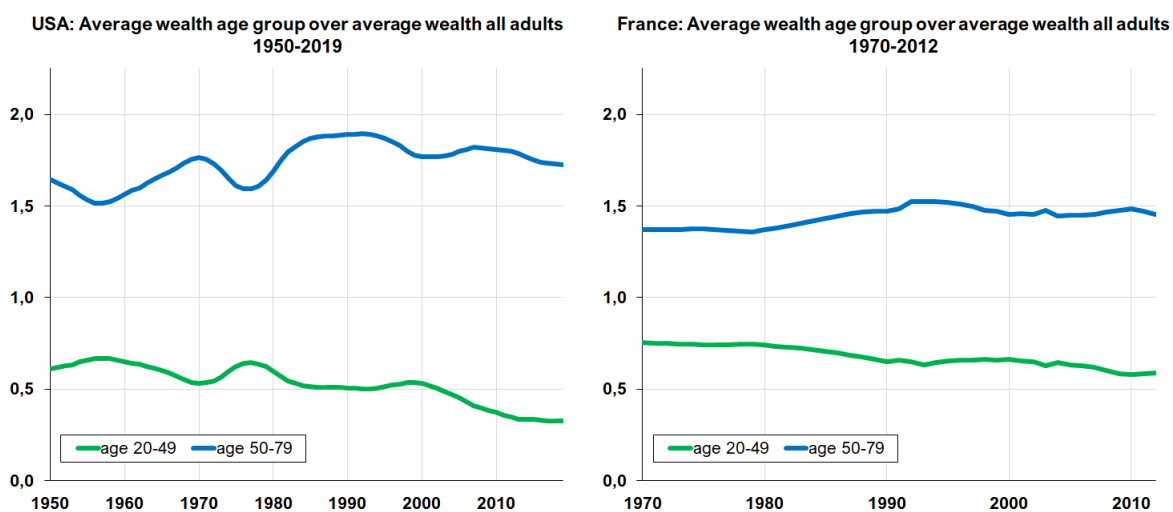
Figure 23: **Population shares of selected age groups**



Notes: This figure shows the share in total adult population of selected age groups. Green lines refer to age group 20 to 49, and blue lines to age group 50 to 79. The left panel shows results for the U.S. and the right panel for France.

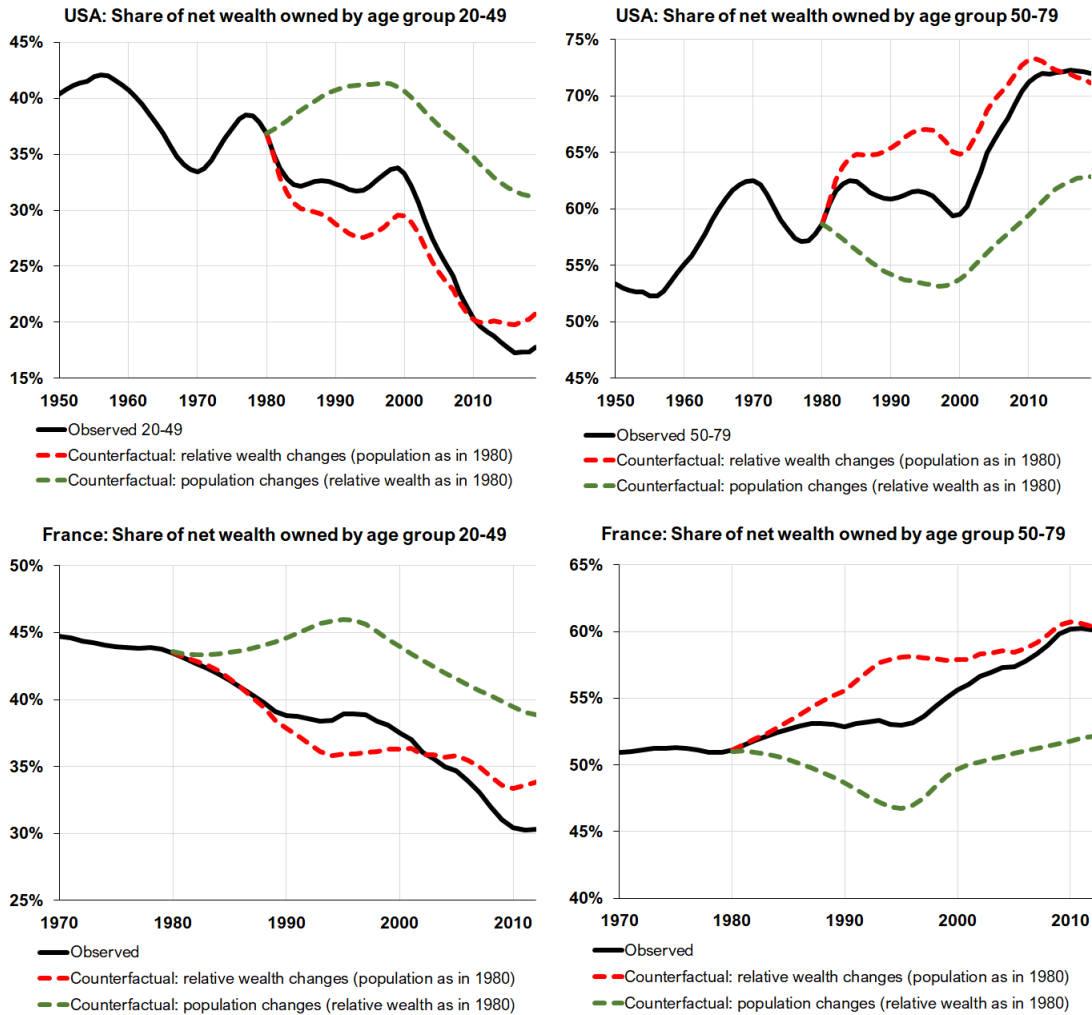
Source: national population censuses.

Figure 24: **Relative wealth inequality across age groups**



Notes: This figure shows the ratio of the average wealth of selected age groups over the average wealth of old adults. Green lines refer to age group 20 to 49, and blue lines to age group 50 to 79. The left panel shows results for the U.S. and the right panel for France. Results are smoothed using 5-year moving averages. For an explanation of sources and methods, see section 2.

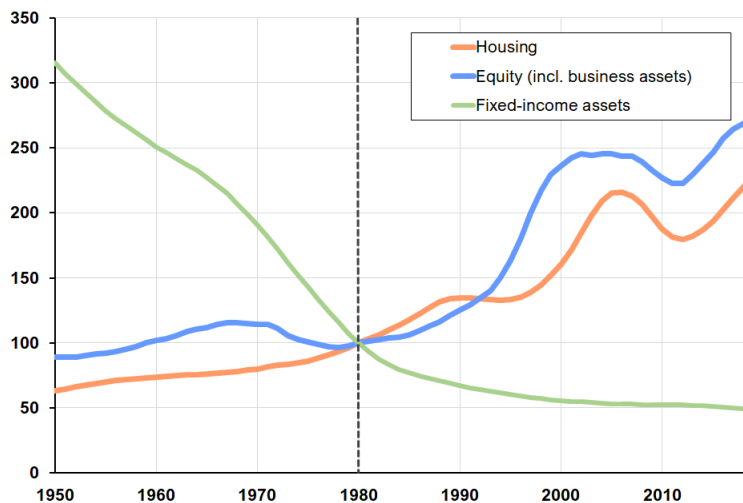
Figure 25: Drivers of age-wealth shares: demographics vs. relative wealth differences



Notes: This figure shows the share of net wealth owned by selected age groups and to counterfactual scenarios. Black lines refer to the observed evolution of age-wealth shares. Red-dotted lines refer to the counterfactual scenario where the population structure is kept constant as in 1980, and relative wealth inequality changes as observed in the data. Green lines refer to the counterfactual scenario where relative wealth differences are kept constant as in 1980, and the population changes as observed in the data. The upper panel shows results for the U.S. and the lower panel for France. Results are smoothed using 5-year moving averages. For an explanation of sources and methods, see section 2.

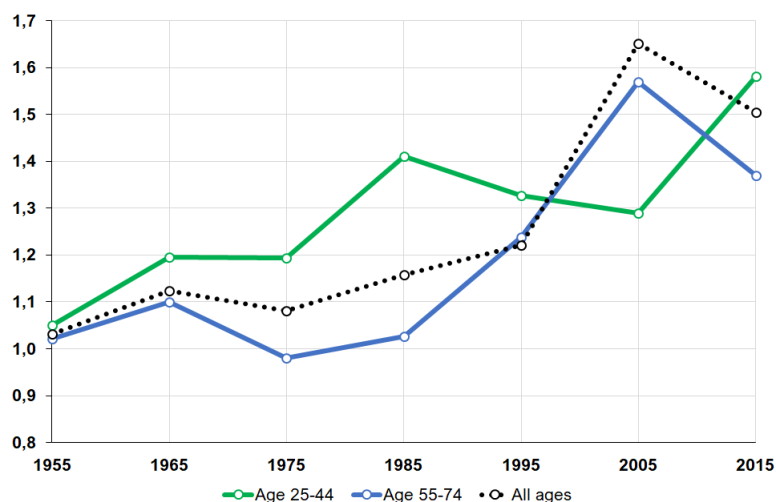
### B.3 Other figures

Figure 26: Capital gains index



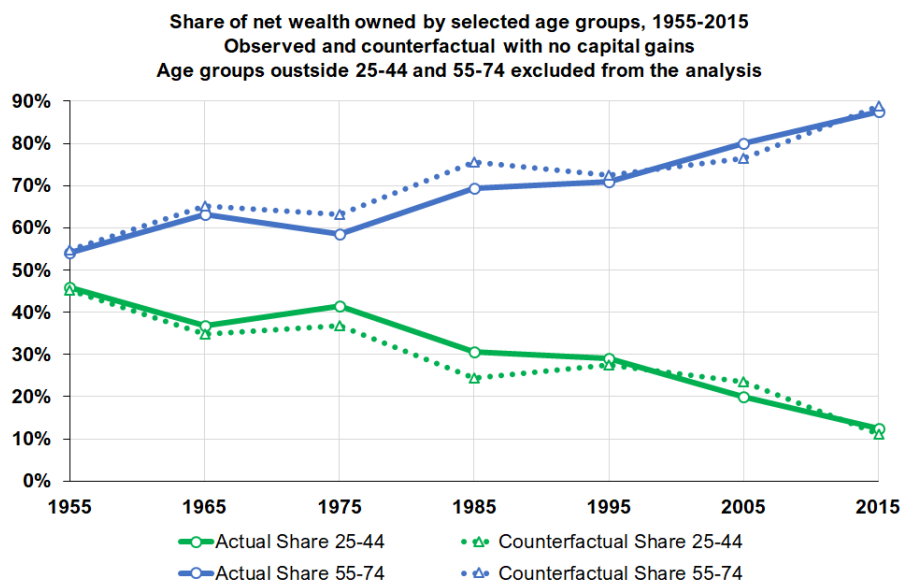
Notes: This figure shows the evolution of capital gains for the following asset classes: housing, equity (including business assets), and fixed-income assets. Results are expressed as an index taking value 100 in 1980, and are obtained using the asset-specific accumulation equations (see section 3).

Figure 27: Ratio actual over counterfactual wealth of selected age groups, 1955-2015



Notes: This figure shows the ratio of observed wealth over the counterfactual wealth excluding capital gains. Results are presented for two age groups (25-44 and 55-74) and for the average of all adults. For an explanation of sources and methods, see section 3.

Figure 28: Wealth shares of selected age groups before and after excluding capital gains



Notes: This figures shows the share of net wealth owned by selected age groups. By contrast with figure 15, in this figure age groups below age 25, between age 45 and 54, and above 75 are excluded. That is, wealth shares are estimated within only to age groups: 25-44 and 55-74. Solid lines capture observed age-wealth shares, while the dotted lines show the counterfactual shares without capital gains since 1950. See section 3 for details on the methodology.