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The Wealth of Generations, with Special Attention to the Millennials

William G. Gale, Hilary Gelfond, Jason J. Fichtner, and Benjamin H. Harris

5.1 Introduction

The patterns and determinants of household wealth accumulation have long been of interest to economists, with seminal contributions dating back at least to Ando and Modigliani (1963), Friedman (1957), and Modigliani and Brumberg ([1954] 2005). Recent work by Piketty (2014) and Saez and Zucman (2019) has sparked a new generation of research interest in this topic.

Wealth accumulation is of interest for several reasons. At the household level, wealth provides a source of future consumption, as well as insurance

against adverse economic shocks. At the aggregate level, wealth finances domestic and foreign investment, affects current consumption spending, and influences the efficacy of monetary and fiscal interventions. More broadly, as discussed further below, the sheer magnitude of changes in aggregate household wealth relative to GDP in recent decades merits attention.

Documenting and determining the causes of changes in the level and distribution of household wealth and its components across generations and over time is an extraordinarily ambitious goal. This chapter takes several initial steps in that general direction, building on Gale, Gelfond, and Fichtner (2019), Gale and Harris (2020), and Gale and Pence (2006), and using data from the 1989 to 2016 waves of the Federal Reserve Board's Survey of Consumer Finances (SCF). We obtain several key results.

First, while the Great Recession in 2007–9 reduced wealth in all age groups, the broader long-term trend has been that the wealth of older age groups has increased while the wealth of successive cross-sections of younger age groups has fallen. A significant share of these changes, in both directions, can be explained by the evolution of household demographic and economic characteristics. Second, we show that the millennial generation— people who were born between 1981 and 1996 and hence were between the ages of 20 and 35 in 2016—had less median and mean wealth in 2016 than any similarly aged cohort between 1989 and 2007.

Predicting future wealth accumulation patterns is difficult, but we note that the millennials have certain advantages over previous generations in terms of wealth accumulation. They are the most educated generation in history and generally have higher earnings than their predecessors. Because of the evolution of the pension system toward defined contribution (DC) plans, millennials may well work longer than any previous generation, giving them additional years to save. And millennials may well end up inheriting more than any prior generation.

Millennials also face numerous disadvantages. Their careers had rocky starts because of the financial crisis and Great Recession. They will be employed in contingent workforce jobs (which are more uncertain and have weaker benefits than traditional jobs) to a greater extent than previous generations. They are marrying, buying homes, and having children later. Longer lifespans mean that they have to accumulate more wealth, all else equal, to maintain preretirement living standards in retirement. Because their parents are living longer than previous generations did, millennials will also receive inheritances later in life. They will face increased burdens from any eventual resolution of the government's long-term fiscal shortfalls in general, and the financial imbalances in Social Security and Medicare in particular. They face an economic future with projections of lower rates of return and economic growth than in the past.

Third, we highlight the role that minorities will play in determining wealth prospects for millennials. Minorities constitute a substantially larger share

of the millennial population than they do in any previous generation. Using cross-section and pooled regressions, we show that minority status is negatively associated with net worth, controlling for other household characteristics. The difference in wealth between Black and white households appears to be growing over time, controlling for other factors.

One overarching caveat to all of the results and analysis is that the chapter applies to the period before the COVID-19 pandemic, an enormous shock that will clearly have significant impacts on wealth accumulation patterns for a wide range of birth cohorts. The chapter is thus best interpreted as addressing generational wealth patterns through 2016 and providing a pre-COVID benchmark against which future studies can be compared.

The rest of the chapter is organized as follows. Section 5.2 describes the SCF data. Section 5.3 analyzes wealth accumulation over time for a wide range of birth cohorts. Section 5.4 discusses the status of the millennials as of 2016 and the advantages and disadvantages they face relative to prior generations. Section 5.5 addresses issues related to minorities and wealth accumulation. Section 5.6 concludes.

5.2   Survey of Consumer Finances

The SCF is a triennial household survey that is generally considered to provide the most reliable and complete survey-based measures of household wealth (or net worth, terms we use interchangeably below).[1] The surveys covering the period 1989 to 2016 follow a generally consistent methodology. Raw sample sizes vary from about 3,100 to about 6,200 in surveys during that period. The survey includes information on characteristics of household demographics, income, assets, debts, and others.

To capture how assets and debts are held broadly in the population, about two-thirds of the unweighted sample are drawn from a stratified, nationally representative random sample. The remainder of the sample is randomly selected from statistical records derived from tax returns, using a stratification technique that oversamples households likely to have substantial wealth. This sample design allows for more efficient and less biased estimates of wealth than are generally feasible through simpler designs. In particular, oversampling the wealthy is an important component of the survey, because wealth is so highly concentrated. All of the data presented in this chapter represent weighted statistics, using the sample weights provided by the SCF, which correct for selection probabilities and nonresponse.

The SCF uses a multiple imputation procedure to fill in missing data. Five implicates form an approximate distribution of the missing data, creating

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1. The SCF is conducted by the nonpartisan and objective research organization NORC at the University of Chicago on behalf of the Federal Reserve Board and with the cooperation of the Department of the Treasury.

a sample that is five times larger than the actual sample. For descriptive statistics, we use all five implicates by dividing the sample weights by five. In our regressions, we use the first implicate only.

5.3   Wealth across Generations

5.3.1   Framework

We analyze the influence of changes in demographic characteristics on wealth accumulation across cohorts by utilizing basic median and ordinary least squares (OLS) regressions, in the absence and presence of demographic variables. We run median (least absolute deviation, or LAD) regressions and OLS regressions, pooling data from the 1989 and 2016 SCFs. We break the data into four age-category subsets, one for 25-to-34-year-olds, one for 35-to-44-year-olds, one for 45-to-54-year-olds, and one for 55-to-64-year-olds. For each household i in each age category k, we specify wealth as a function of a constant and a survey year indicator variable:

$$(5.1) \qquad w_{k1} = \alpha_{k1} + \beta_{k1}(\text{year} = 2016)_i + \varepsilon_{k1i}.$$

In this model, the coefficient β_{k1} captures the change in median or mean wealth between the 1989 and 2016 samples of each age category. In a second basic regression specification, we add a vector of demographic indicators, denoted by X. This demographic specification is described in detail below:

$$(5.2) \qquad w_{k2} = \alpha_{k2} + \beta_{k2}(\text{year} = 2016)_i + \gamma_{k2}X_i + \varepsilon_{k2i}.$$

If demographic changes explain most of the difference in wealth between 1989 and 2016 for age category k, β_{k2} should be close to zero, and the coefficients for the variables in the demographic vector should be statistically significant. For example, if $\beta_{k1} = \$100,000$ and $\beta_{k2} = \$20,000$ (and both are estimated precisely), we would say that demographics variables explained 80 percent of the rise in wealth accumulation. This approach could be expanded to account for the range of possible outcomes that exist to statistical imprecision, but in this chapter we take a "first cut" at looking at how demographic factors matter. Notably, the specifications above assume that the relationship between wealth and demographic characteristics is the same in both years (other than a shift in the intercept).[2]

5.3.2   Specification of Demographic Characteristics

The survey respondent and the household head are not necessarily the same person in the SCF. The SCF designates the household head to be the

2. Gale and Pence (2006) implement a similar approach, as well as a Blinder-Oaxaca decomposition (Blinder 1973; Oaxaca 1973) and counterfactual distributions based on DiNardo, Fortin, and Lemieux (1996) and Machado and Mata (2005). These different approaches generated similar conclusions.

male in a mixed-gender relationship and the older partner in a same-gender relationship, while the respondent is (supposed to be) the person most familiar with the family's finances. As a result, demographic characteristics do not always map neatly onto households, our unit of observation.[3]

We employ data on race, marital status, sex, educational attainment, and income category.[4] Race applies to the respondent and is reported as indicator variables for non-Hispanic white, Black, Hispanic, or other (including those of Asian and Native descent). Marital status reflects whether the household consists of a single financially independent adult or two interdependent adults. Two financially interdependent unmarried people living together are considered a married couple. We control for the sex of the household head. We control for the educational attainment of the household head using indicators for less than a high school diploma, high school diploma, some college, bachelor's degree, and graduate degree. We control for household income using indicators for income categories, with cut-offs at $20,000, $50,000, $100,000, and $200,000.

5.3.3   Specification of the Dependent Variable

The SCF covers all household assets and liabilities, with two notable exceptions. First, the survey excludes households in the Forbes 400, who would be easily identifiable in the data. Second, because the SCF defines net worth (assets minus debt) as resources that a household may access and control immediately, the survey does not report defined benefit (DB) pension wealth—the present value of future income (minus future contributions) that households expect to receive from DB pension plans. To present a more complete analysis of household wealth, we add to the SCF definition of net worth a measure of the present value of DB wealth, following Sabelhaus and Volz (2019). Our resulting wealth definition, like the SCF's, does not include future Social Security or Medicare benefits (or taxes), which often comprise a significant share of households' resources in retirement.[5]

We employ two different wealth specifications: one that uses the level of wealth and one that uses the inverse hyperbolic sine transformation of wealth. The results derived from the level- of-wealth analysis describe absolute changes in wealth over the period, while the results from the inverse hyperbolic sine specification describe proportional changes in

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3. Lindamood, Hanna, and Bi (2007).

4. In the dataset, these variables correspond to categorical variables "RACE," "MAR-RIAGE," "HHSEX," an "EDCL" categorical variable adjusted with information from "EDUC" to provide more granularity with less than high school and graduate school specifications, and a household income category variable generated from "INCOME," all as defined in https://www.federalreserve.gov/publications/files/scf17.pdf. See also https://www.federalreserve.gov/econres/files/Networth%20Flowchart.pdf.

5. Social Security provides about 90 percent or more of the income for one-third of retirees and 50 percent or more of the income for two-thirds of retirees (Social Security Administration 2019).
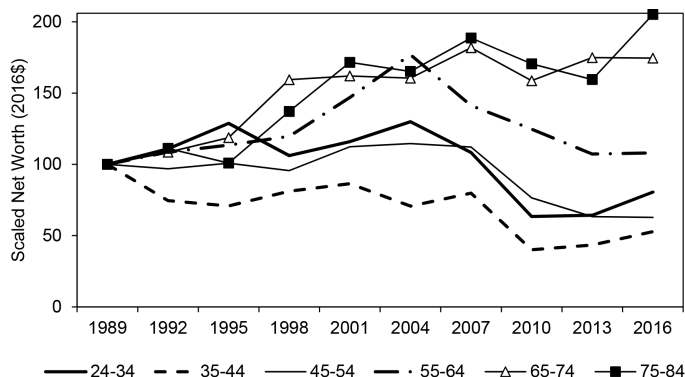
Fig. 5.1   Median age-wealth profiles by constant-age group (scaled, 1989 = 100)
Source: Federal Reserve Board of Governors Survey of Consumer Finances (1989–2016).

wealth over the period. We use this transformation, instead of the more traditional logarithmic transformation, because it approximates the logarithm while remaining defined for the nonpositive values common in wealth data.

More formally, if θ is a scaling parameter and w is a measure of wealth, the inverse hyperbolic sine of wealth can be written as $\theta^{-1} \sin h^{-1}(\theta w) = \theta^{-1} \ln[\theta w + \theta^2 w^2 + 1)^{1/2}]$. This symmetric function is linear around the origin but approximates the logarithm for larger values of wealth. To see this, note that if w is large, $\ln[\theta w + (\theta^2 w^2 + 1)^{1/2}] \approx \ln 2\theta + \ln w$, which is simply a vertical displacement of the logarithm. Following previous research, we set $\theta = 0.0001$.[6] When multiplied by this scaling parameter, coefficients and standard errors from an inverse hyperbolic sine specification, like logarithmic coefficients and standard errors, can be interpreted as the percentage change in wealth implied by a change in a particular demographic characteristic, assuming that wealth values are sufficiently large.[7]

5.3.4   Results

Figure 5.1 shows median age-wealth profiles for constant-age groups across birth cohorts. The data are scaled so that each generation's 1989 value is set to 100. The graph demonstrates two points. First, the Great Recession in 2007–9 significantly reduced household wealth in all age groups. Sec-

6. Burbidge, Magee, and Robb (1988) find the optimal value of θ to be 0.0000872 (within rounding distance of our choice). Pence (2002) finds that 0.0001 is the optimal value of θ, a value also used by Kennickell and Sundén (1997). See Gale and Pence (2006) for author's prior work conforming to this methodology.

7. See Pence (2006) for further explanation of the logarithmic approximation, and Burbidge, Magee, and Robb (1988) for more information about the inverse hyperbolic sine transformation itself.
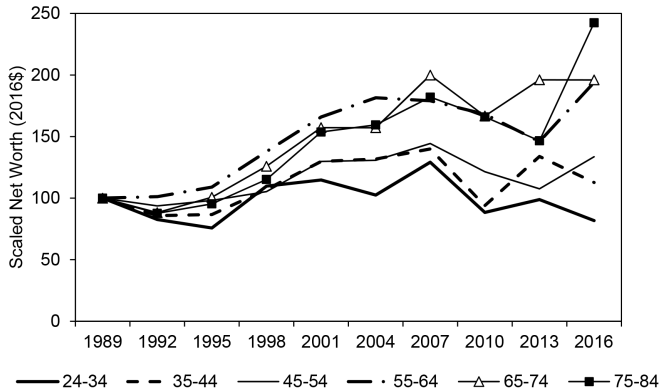
Fig. 5.2   Average age-wealth profiles by constant-age group (scaled, 1989 = 100)
Source: Federal Reserve Board of Governors Survey of Consumer Finances (1989–2016).

Table 5.1	Pooled (least absolute deviations), 1989–2016			
	25–34	35–44	45–54	55–64
	(1)	(2)	(3)	(4)
Constant	28,344***	165,024***	267,826***	303,986***
	(4,933)	(17,388)	(27,166)	(31,336)
Year 2016	−3,504	−77,124***	−96,826***	14,777
	(5,971)	(19,188)	(31,389)	(39,818)
Observations	1,250	1,712	1,848	2,015

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

ond, younger age groups have been doing worse than older age groups. For example, in 2016, all groups aged 55 and older had more median wealth than their 1989 counterparts. Households aged 25–34 in 2016—roughly the millennial generation—held about 12 percent less wealth than did households who were the same age in 1989.

Figure 5.2 shows scaled mean age-wealth profiles. Due to the growth of income and wealth at the top of the distribution, the mean increases exceed the median increases, but they follow the same general pattern, with wealth rising more slowly for younger age groups than for older age groups. Appendix figures 5A.1 and 5A.2 report median and mean net worth levels by age and year.

Table 5.1 reports results from median regressions. The first specification follows equation (5.1), explaining the level of household wealth as a function of only a constant and an indicator of whether the observation occurred in 2016. The 2016 indicator shows that median wealth was substantially lower in 2016 than in 1989 for households aged 35–44 and 45–54—by about

$77,000 and $97,000, respectively. Median wealth for 25-to-34-year-olds and 55-to-64-year-olds was not significantly different in the two sample years.[8]

The effects shown in table 5.1 could be due to changes in the general economic environment and/or to changes in specific household characteristics. To isolate the impact of these two groups of determinants, the second specification includes several household-level demographic variables, following equation (5.2). We then (implicitly) assign the residual impact to the general economic environment. The results show that changes in household characteristics reduced wealth for households aged 25–54 in 2016 relative to 1989 but raised wealth for households aged 55–64 over the same period. For example, for households aged 35–44, the coefficient on the 2016 indicator was about −$54,000, compared to about −$97,000 in the first specification. This implies that changes in household characteristics explain about 45 percent of the decline in wealth for this age group over time.

Likewise, for households aged 35–44, the 2016 effect reduced wealth by $77,000 when demographic variables were excluded but by only $15,000 when demographic variables were included. Thus, more than 80 percent of the decline in wealth for that group can be explained by demographic factors.

In contrast, for households aged 55–64, the coefficient on the 2016 indicator is about −$29,000, which is lower (algebraically) than the coefficient in the first equation—which is about $15,000 but not significantly different from zero.

The coefficients on the demographic variables (not shown) are consistent with much prior work. Households that are Black or Hispanic have lower wealth than other households, even after controlling for observables. Households where the head has more formal education and/or higher income accumulate more wealth. To some extent, married households have more wealth and female-headed households often have lower wealth.

Table 5.2 repeats the exercise using mean (OLS) regressions. The first specification shows that average wealth rises substantially in the 45–54 and 55–64 age groups. Coupled with the changes in median wealth shown in table 5.1, these figures suggest a substantial widening of the distribution of wealth in those age groups over time.

The second specification shows, again, that changes in household demographic variables served to raise wealth substantially in the 55–64 age group. More than two-thirds of the increase in wealth in that age group documented in the first specification can be explained by changes in demographic characteristics in the second specification. Including demographic variables

8. Because we are analyzing changes among age groups within years, our sample sizes are fairly limited, ranging from 452 to 1,446 people per age group per year. Notably, 2016 sample sizes for each age group are about two to three times the size of the sample sizes of the same age groups in 1989. This will manifest in standard errors and significance levels, which are reported in our results.

Table 5.2	Pooled (least squares), 1989–2016			
	25–34	35–44	45–54	55–64
	(1)	(2)	(3)	(4)
Constant	137,580***	324,112***	642,123***	720,288***
	(19,883)	(21,669)	(43,958)	(50,043)
Year 2016	−29,057	51,286	239,161***	678,944***
	(21,870)	(34,665)	(72,015)	(85,037)
Observations	1,250	1,712	1,848	2,015
R-squared	0.001	0.000	0.001	0.003

Notes: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

reduced the 2016-year effect on wealth from \$678,944 to \$228,623 in the age cohort approaching retirement.

The impact of the individual demographic variables is qualitatively similar to those found in the median regressions in table 5.1—minorities and female-headed households have less wealth; households where the head is married or has more formal education, or where income is higher, tend to have higher wealth. (Appendix tables 5A.1 and 5A.2 provide regression results using the hyperbolic sine of wealth as the dependent variable and generate broadly similar conclusions.)

5.4   Millennials

The millennial generation includes individuals born between 1981 and 1996.[9] Between the Great Recession and the COVID pandemic (the latter of which is not covered in the data presented here), millennials have already experienced two major economic disruptions during their adulthood. Substantial economic inequality has been an enduring fixture of millennials' adulthood. While every generation faces its own unique opportunities and challenges, many people feel that the obstacles facing the millennial generation are especially acute.[10]

5.4.1   Current Status

Focusing first on their current status (that is, as of 2016), today's young adults have accumulated less wealth than most previous generations at the same age. Figure 5.3 shows tabulations from each wave of the SCF from 1989 to 2016. In the 2016 survey year, millennials were between the ages of 20 and 35. We examine net worth accumulation among 20-to-35-year-olds

9. Dimock (2018). Various definitions of the millennial generation include those born between the early 1980s and the early 2000s. The Census Bureau (unofficially) defines millennials as the cohort born between 1982 and 2000 (US Census Bureau 2015).
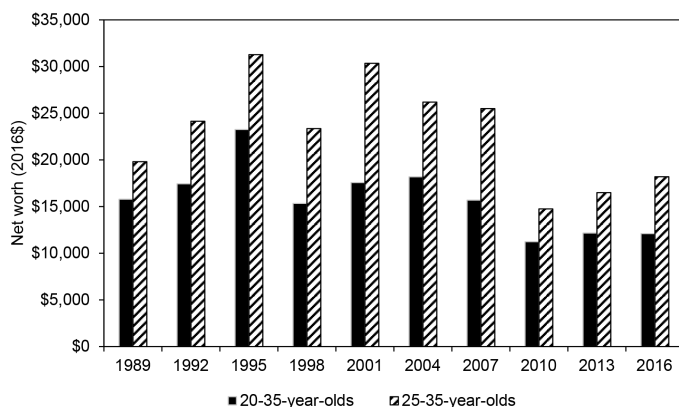
10. Pew Research Center (2012).

Fig. 5.3   Median net worth among young households, 1989–2016
Source: Federal Reserve Board of Governors Survey of Consumer Finances (1989–2016).

in each of the SCF years (with all wealth data reported in 2016 dollars). Because wealth accumulation patterns may not be particularly informative for people who are still in college, we also examine wealth patterns among 25-to-35-year-olds in each year.

The figure shows that, using either age-group comparison, median wealth among millennials in 2016 was lower than among similarly aged cohorts in any year from 1989 to 2007. As noted above, the Great Recession in 2007–9 significantly reduced household wealth, which has been slowly recovering since then. Median wealth among millennials was about 25 percent lower in 2016 than among similarly aged households in 2007. The percentage declines in mean wealth are even larger.[11]

Focusing on retirement wealth, figure 5.4 shows that, relative to similarly aged people, millennials have about the same coverage rate for DB pensions and DC plans from 2004 on, but lower DC coverage than the 1995–2001 cohort and sharply lower DB coverage relative to that in the late 1980s. Median DC balances among account holders has fallen since 2007.[12]

All of the results above likely overstate the relative wealth position of millennials because of the interaction of three factors. First, the SCF does not survey dependent members of households, including millennials who live

11. Dettling, Hsu, and Llanes (2018) provide further detail on wealth accumulation trends between 2007 and 2016. Considering components of wealth, millennials had more debt than similarly aged people in 1989 but have about the same level as the 2001 cohort. The latter result may be surprising, given the well-publicized growth of student loans, but millennials have less credit card and other debt than prior generations (Looney and Yannelis 2018).

12. Dettling and Hsu (2014) examine retirement saving trends for people aged 18–31 in the successive SCFs. They find that millennials in 2013 were just as likely to have a DC retirement account as similarly aged people in 2001. Millennials had higher median balances, conditional on ownership (by about $2,000), but they had lower participation in defined benefit plans.
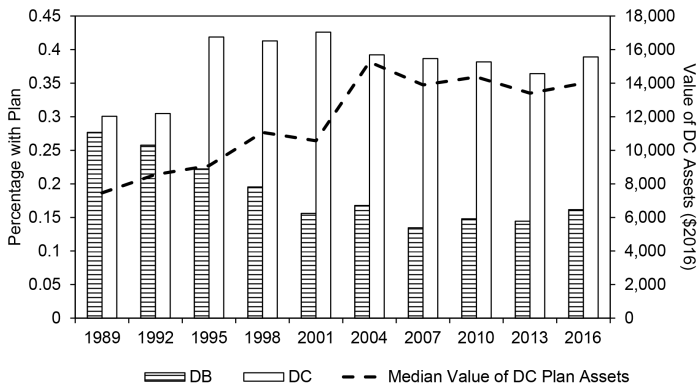
Fig. 5.4   Defined benefit and defined contribution plan ownership among 25–34 cohort, 1989–2016

Note: Retirement account assets include the value of IRAs, Keoghs, thrift-type accounts, and future and current account–type pensions.

Source: Federal Reserve Board of Governors Survey of Consumer Finances (1989–2016).

with their parents. Second, the share of millennials living with their parents is higher than the share of similarly aged people in prior generations. Among 25-to-34-year-olds, 16 percent lived with their parents in 2016, compared to 11 percent in 1990 and 10 percent in 2000.[13] Third, some formal evidence (as well as casual observations) suggests that young adults who are living at their parents' home are doing less well economically than other young adults. Among those aged 25–34 and living at home in 2016, 26 percent were neither employed nor attending school.[14] Less-educated people are less likely to live independently and those with higher wages are more likely to do so.

Between 1989 and 2016, the distribution of wealth widened significantly. For example, for 25-to-35-year-olds, average net worth in the bottom 25 percent of the distribution fell from about −$1,200 in 1989 to −$5,000 in 2007 and to −$20,000 in 2016. Over the same period, average wealth in the top 10 percent of the distribution skyrocketed, rising from $1.9 million in 1989 to $3.3 million in 2007 to $4.8 million in 2016. These patterns are consistent with the heterogeneity in preparation for retirement seen for other generations and noted above.

5.4.2   Future Status

The millennials also face a distinctive set of issues and circumstances that will affect their ability to save for retirement, including both advantages

13. Fry (2017). In our analysis of SCF data, we use 20-to-35-year-olds in 2016 to represent millennials (or 25-to-35-year-olds, given that wealth accumulation of households where the head is less than 25-year-olds may be difficult to model). Many other analyses, focusing on different issues or time frames, use a more standard age classification of 25-to-34-year-olds.

14. Fry (2017), and St. Clair (2016).

and disadvantages compared to prior generations. The disruption to health, careers, and the economy due to the COVID-19 pandemic looms large in this regard but is not discussed further below as the relative effects on different generations is extremely hard to assess at this point.

5.4.2.1 Advantages

5.4.2.1.1 Education

Millennials start out with the advantage of having the greatest amount of formal education of any generation in history. Over 60 percent of adult millennials have attended at least some college, compared to 46 percent of the baby boomer generation when they were the same age.[15] Rising educational attainment among women drives this difference.[16] As a result of increased educational attainment and other factors, median wages for employed women are generally higher for millennials than for earlier generations, controlling for age. Among men, the wages of employed millennials typically do not surpass wages of older generations until millennial workers reach their mid-30s.[17]

Having more education will make it easier to save for retirement. First, the higher wages that come with higher education will give households more opportunities to save. Second, people with more education tend to save more of their income, controlling for income.[18] Third, people with higher education levels tend to have later retirement ages since they tend to have less physically demanding jobs, are healthier, and receive fringe benefits in addition to wages that may incentivize them to stay in the labor force.[19] The overarching societal trend toward white-collar work may further increase average retirement ages for similar reasons. Good health status is also highly correlated with decisions to work longer.[20] Working longer, of course, makes it easier to finance adequate retirement saving.

On the other hand, higher education and income may make adequate saving more difficult to achieve in some ways. For example, Social Security benefits are progressive, replacing a smaller amount of average lifetime earnings as average lifetime earnings rise. And those who are better educated, and in better health, tend to live longer, meaning that they have a longer retirement period to finance, holding retirement age constant.

5.4.2.1.2 Longer careers due to change in type of retirement plan

Since the 1980s, the share of people participating in DB plans has decreased while participation in DC plans has increased (figure 5.4). At the

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15. Council of Economic Advisers (2014).
16. Johnson et al. (2017).
17. Percheski (2019).
18. Dynan, Skinner, and Zeldes (2004).
19. Burtless (2013).
20. Munnell (2015).

same time, the overall share of the workforce participating in any plan has remained relatively constant.[21]

This trend is expected to continue, implying that today's younger workers will have higher DC coverage than previous generations and lower DB coverage. This will likely lead to later retirement for millennials relative to previous generations, which would make it easier to accumulate funds necessary to finance retirement. Evidence suggests that DB plans often encourage comparatively early retirement through built-in incentives that maximize pension wealth at relatively early retirement ages.[22] Since the 1980s the average retirement age has risen after decades of decline, consistent with the decline of DB plans and rise of DC plans.

As with better education, however, the shift to DC is not an unambiguous gain for retirement saving adequacy. Greater DC coverage and less DB coverage shifts much of the planning burden and investment risk from the employer to the employee, as discussed further below.

5.4.2.1.3   Health insurance

Millennials have higher rates of health insurance than prior generations, due largely to the Affordable Care Act. Among 19-to-25-year-olds in 2014, about 79 percent had coverage under a health insurance policy, 13.2 percentage points higher than earlier generations at that age.[23]

5.4.2.2   Disadvantages

Despite having some advantages relative to previous generations, the millennials face a variety of obstacles and concerns that increase their chances—in absolute terms and relative to previous generations—of saving too little.

5.4.2.2.1   Early-career labor market

The early-career labor market experienced by many of the millennials has been dominated by the Great Recession and the tepid pace of recovery for several years after. The growth path of GDP has never recovered to the full-employment trend that existed before the Great Recession.[24] The weak job market and low overall labor force participation that existed at the beginning of their careers has probably adversely affected millennials' career earnings paths. Research shows that entering the labor force during an economic downturn depresses long-run earnings.[25] Evidence from the Great Depression further reveals that those who experience poor macroeconomic trends

21. Gale and John (2017).
22. Kotlikoff and Wise (1984); Stock and Wise (1990).
23. Council of Economic Advisers (2014).
24. CBO (2018).
25. Kahn (2010); Welch (1979).

while they are young are less likely to take on significant financial risk, invest in the stock market, or own bonds.[26]

5.4.2.2.2   *The rise of contingent jobs*

The evolution of the labor force toward contingent jobs will also complicate retirement saving for millennials.[27] In traditional employer-employee relationships, workers earn a salary or wage and receive fringe benefits, potentially including employer contributions to retirement plans. Contingent workers, on the other hand, work on an ad hoc basis and are paid based on the service or good they provide. They may or may not work full-time. Examples include Uber drivers, consultants, and contractors. Using a broad definition, there could be almost 20 million contingent workers in the United States.[28] Among full-time workers, these individuals have median weekly earnings about 30 percent lower than traditional workers and face a variety of barriers to retirement saving. Conventional retirement savings mechanisms, such as payroll deductions and employer matching contributions, are not readily available. As a result, they are half as likely to have access to a work-provided retirement plan.[29] While non-employer-based retirement options such as individual retirement accounts (IRAs) are available to this group, only a small percentage participate.[30] Although a recent survey suggests that contingent work is not rising as fast as some had thought, it is nevertheless the case that millennials face higher probabilities of doing contingent work than previous generations.[31]

5.4.2.2.3   *The added risks and responsibility of defined contribution plans*

As noted above, participants in DC plans tend to work longer than participants in DB plans; other things equal, longer working careers should improve the adequacy of retirement saving. But other structural features of DC plans may lead to lower retirement incomes. First, to establish a DC plan, employees must make significantly more decisions regarding contribution levels, asset allocations, and asset drawdown. This freedom may actually serve to undermine retirement security if retirees make poor financial decisions.[32] Automatic mechanisms that govern enrollment, escalation of contributions, investment allocation, and rollovers can mitigate these problems. Second, workers bear all the investment risk in most DC plans, which can undermine retirement security if savers' retirement portfolios underperform.

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26. Malmendier and Nagel (2011).
27. Gale, Holmes, and John (2018); Harris and Krueger (2015); Katz and Krueger (2016).
28. Gale, Holmes, and John (2018).
29. Gale, Holmes, and John (2018).
30. GAO (2015).
31. US Bureau of Labor Statistics (2018).
32. Poterba (2014).
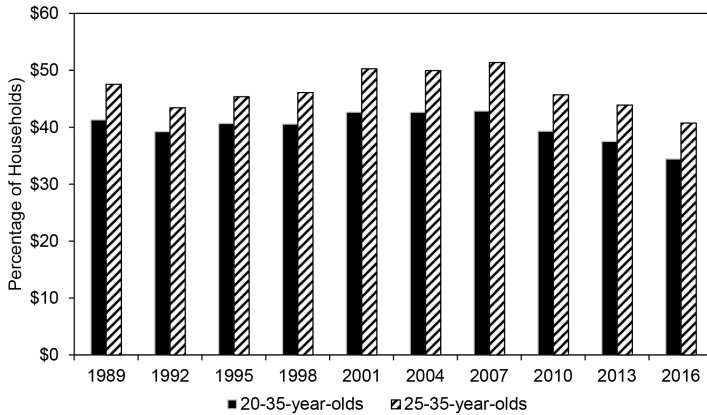
Fig. 5.5   Share of young households owning a home, 1989–2016
Source: Federal Reserve Board of Governors Survey of Consumer Finances (1989–2016).
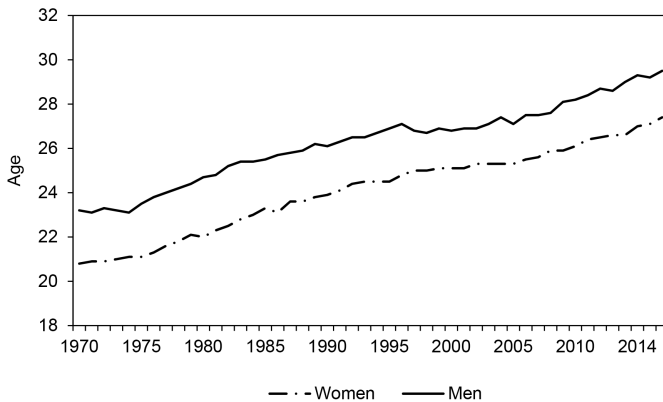
Fig. 5.6   Median age of first marriage, 1970–2016
Source: US Census Bureau (2017).

5.4.2.2.4   Delayed life decisions

Compared to previous generations, millennials are more likely to delay home ownership, marriage, and childbearing. Young adults currently have the lowest home ownership rate of any similarly aged generation since at least 1989 (figure 5.5). The average age of first marriage has increased from age 21 for women (24 for men) in 1975 to age 27 (29) in 2016 (figure 5.6).[33] The age at which parents have their first child has increased over time as well,

33. US Census Bureau (2017).

from 22 in 1975 to 26 in 2014.[34] The changes in these behavioral patterns are so large that there is debate over whether to label "emerging adulthood" as a new stage of life between childhood and adulthood.[35] These trends, in turn, may delay the onset of retirement saving if people feel the need to "get settled" by purchasing a house and raising children before beginning to think about saving for retirement.

5.4.2.2.5   *Increasing lifespan*

Just as delayed life choices may postpone substantial retirement saving, increasing lifespans make it harder to maintain standards of living in retirement, other things equal. Over the past five decades, the average life expectancy at birth has increased from 67 to 76 for males and from 73 to 81 for females. These increases are not borne equally, however. Those at the top of the income distribution have received almost all of the increase, while life expectancy for those at the bottom has remained constant or has possibly even declined slightly.[36] If households live longer and plan to maintain their preretirement standard of living in retirement, they will either need to work longer or save more.

5.4.2.2.6   *Long-term federal fiscal imbalances*

The federal government faces a long-term debt problem that will create pressure to cut spending and raise taxes. Even before the COVID-19 pandemic, the federal government faced a long-term fiscal shortfall that will require spending cuts or tax increases at some point.[37] Low interest rates, discussed below, will make this problem less severe, but the COVID-19 pandemic, and the associated policies and economic downturn, made the long-term fiscal situation significantly worse.[38]

The longer policymakers wait to institute fiscal adjustments, the larger the adjustments will have to be in each given year, and the greater sacrifices millennials will have to make. Changes to Social Security, Medicare, and taxes will be particularly relevant to addressing the long-term fiscal imbalance. If such fiscal adjustments are made over the next few decades, it seems highly likely that millennials, who will then be in their prime earning years, will bear a significant amount of the burden.

5.4.2.2.7   *Low rates of return*

Real interest rates fell steadily from the mid-1990s, though they have risen slightly in the last few years. Many reasons have been put forward for the

34. Matthews and Hamilton (2016); US Census Bureau (2017).
35. Vespa (2017).
36. National Academies of Sciences, Engineering, and Medicine (2015).
37. Auerbach, Gale, and Krupkin (2018), and Gale (2019).
38. To be clear, we are not criticizing the size of the relief and stimulus packages. They were a necessary response to COVID-19.

decline, and most of them suggest the low rates will persist somewhat.[39] One explanation, popularized by former treasury secretary Larry Summers, involves a lack of aggregate demand due to the Great Recession and secular stagnation postrecession.[40] Other explanations include a worldwide savings glut and a flight to safety.[41]

To the extent that such trends continue or do not reverse, and display themselves in lower overall asset returns, it will prove harder for millennials to accumulate sufficient retirement wealth.[42] With a given pattern of retirement contributions over time, a lower rate of return will result in a smaller accumulation of balances during the accumulation phase of retirement saving. With a given balance at the point of retirement, lower interest rates will result in smaller feasible payouts—for example, through an annuity—during the withdrawal phase of retirement saving.

5.4.2.2.8   *Slower wage growth*

Earnings trajectories—or "age-earnings profiles"—have been flattening over time. A college-educated worker turning 25 in 1940 could expect annual earnings to be 4.0 times as high by their 55th birthday compared to their earnings in 1940. For college-educated workers turning age 25 in 1980, this ratio had fallen to just 2.6. For workers with a high school diploma only, the same ratio fell from 3.6 for the 1940 cohort to 1.5 for the 1980 cohort.[43] This decline in wage growth over time will reduce future income for millennials and make it harder for them to accumulate wealth over the life cycle.

5.5   Wealth Accumulation and Racial and Ethnic Minorities

Millennials are more racially and ethnically diverse than prior generations: for example, 44 percent of millennials identify as a minority (a race or ethnicity other than non-Hispanic white), compared to 25 percent of people aged 21–36 in 1985.[44] As a result of this increased diversity, the United States will be a "majority-minority" country by 2050, where minority is defined as any race other than non-Hispanic white.[45] The projected growth of the minority population will present new challenges and opportunities for wealth accumulation. A substantial literature suggests that minorities are at a disadvantage with regard to wealth accumulation compared to their nonminority counterparts.[46]

39. Elmendorf and Sheiner (2016).
40. Summers (2016).
41. Bernanke (2007, 2015).
42. Fichtner and Seligman (2017), and Mitchell, Clark, and Maurer (2018).
43. Kong, Ravikumar, and Vandenbroucke (2018).
44. Fry, Igielnik, and Patten (2018).
45. US Census Bureau (2018).
46. See Hasler, Lusardi, and Oggero (2018), and Rhee (2013).

We provide further evidence on these issues below. We estimate regressions of the form

(5.3) $w_3 = \alpha_3 + \beta_3 X_i + g_3 R_i + \varepsilon_{3i},$

where w_3 is a measure of wealth, X is a vector of characteristics for each household i—including education, marital status, sex (for singles), income and age categories—and R is a series of racial/ethnic indicators (Black, Hispanic, and nonwhite other, with white as the omitted category).[47] Using the same methodology elaborated upon above, we employ cross-section data from each of the 10 survey years of the SCF (triennially from 1989 to 2016) and estimate least squares (LS) and median (LAD) regressions, each with robust estimation techniques. Thompson and Suarez (2015) examine similar issues and provide wealth decompositions using the 1989–2013 SCFs.[48]

In the text, we present regressions using the level of wealth as the dependent variable. We emphasize that the coefficient on race shows differences in wealth accumulation after controlling for various factors but should not be interpreted as an estimate of the impact of racial discrimination.

The LS regressions in table 5.3 show that Black households tend to have lower net worth than white households, controlling for other factors.[49] In the 2016 SCF, controlling for other factors, Black households had on average $124,000 less net worth than white households. This difference may have increased over time. The Black-white differences in wealth in the 1989, 1992, and 1995 cross-sections are smaller than the 2016 difference, with p-values ranging from 0.035 to 0.105.

This finding should be qualified carefully. Certainly, reductions in Black-white differences over time in educational attainment and in wages should serve to *reduce* Black-white wealth differences. Our results address a different point. We show that—*controlling for* any changes in education, wages, and other household characteristics—the difference in wealth between Black and white people may well have increased over time. Additional results presented below support this conclusion.

Households where the head is of Hispanic origin do not generally have statistically significantly different net worth from whites, controlling for other factors. Other nonwhite individuals, on average, had significantly lower net worth than whites in three of the SCF years (2004, 2010, and 2016). This difference appears to have increased over time, with the coefficients on the

47. Regressions using a variable called "normal income" instead of income yielded similar results.
48. Other studies of racial wealth gaps include Altonji and Doraszelski (2005), Barsky et al. (2002), Masterson, Zacharias, and Wolff (2009), Pew Research Center (2011), Scholz and Levine (2003), and Shapiro, Meschede, and Osoro (2013).
49. This finding is consistent with Emmons and Ricketts (2017), who show that differences in observable variables cannot fully explain minorities' wealth accumulation relative to whites.

Table 5.3   Net worth regressions (least squares)

	1989 (1)	1992 (2)	1995 (3)	1998 (4)	2001 (5)	2004 (6)	2007 (7)	2010 (8)	2013 (9)	2016 (10)
Black	−42,109*	−40,433***	−56,846***	−66,146***	−96,659***	−97,979***	−78,393***	−141,470***	−83,542***	−124,142***
	(23,206)	(13,804)	(18,309)	(19,132)	(31,543)	(27,485)	(29,495)	(26,428)	(23,857)	(37,193)
p-value	0.061	0.035	0.105	0.166	0.573	0.572	0.335	0.704	0.358	n/a
Hispanic	−6,333	23,809	−34,760	29,801	−5,895	−25,377	70,958*	−58,587**	1,298	42,575
	(26,919)	(24,879)	(28,864)	(26,233)	(38,400)	(40,387)	(42,880)	(29,682)	(28,004)	(37,425)
p-value	0.289	0.676	0.102	0.780	0.366	0.217	0.618	0.034	0.377	n/a
Nonwhite other	48,796	21,532	−20,803	−66,383	−160,583	−229,736***	−147,826	−279,171***	−69,021	−255,881**
	(89,674)	(49,493)	(50,361)	(91,136)	(134,387)	(86,197)	(115,956)	(87,955)	(88,076)	(105,779)
p-value	0.028	0.018	0.045	0.175	0.577	0.848	0.491	0.866	0.175	n/a
N	3,143	3,906	4,299	4,305	4,442	4,519	4,417	6,482	6,015	6,248
R-squared	0.114	0.084	0.088	0.094	0.131	0.102	0.104	0.099	0.093	0.071

Notes: Control variables: education level category (less than high school diploma, high school diploma, some college, bachelor's degree, graduate degree); marital status; sex of single heads of household; income category ($0–19,999, $20,000–49,999, $50,000–99,999, $100,000–199,999, $200,000+); age category (0–24, 25–34, 35–44, 45–54, 65–74, 75+). Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Board of Governors of the Federal Reserve (2017). Coefficients reported in 2016 values.

Table 5.4   **Pooled net worth regressions (least squares)**

	1989–2016 (1)	1989–2007 (2)	2010–2016 (3)
Black	−90,972***	−71,877***	−117,903***
	(8,626)	(9,386)	(17,292)
p-value	n/a	0.012	n/a
Hispanic	−7,845	3,575	−7,399
	(11,002)	(13,499)	(18,635)
p-value	n/a	0.303	n/a
Non-white other	−112,807***	−70,197**	−199,954***
	(29,078)	(33,546)	(54,600)
p-value	n/a	0.045	n/a
N	47,776	29,031	18,745
R-squared	0.091	0.102	0.082

Notes: Control variables: same as in tables 5.3 and 5.5, plus year effects. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Board of Governors of the Federal Reserve (2017). Coefficients reported in 2016 values.

1989, 1992, and 1995 regressions significantly smaller (in absolute value) than the coefficient in the 2016 regression.

In all of these regressions, however, the relevant sample sizes are fairly small, so precise estimation is difficult. To help address the concern with sample size, we also pool the data across survey years, adding a control for the survey year, with results shown in table 5.4.

As in the cross-section results, Black households have lower net worth, controlling for other factors. The coefficients are larger in absolute value in the 2010–16 specification than in the 1989–2007 specification, confirming the finding above about widening Black-white wealth differences, controlling for other factors.

Households where the head is of Hispanic origin do not have a significantly different net worth in any of the specifications. Those who do not identify as white, Black, or Hispanic have significantly lower net worth than whites in each specification and the difference has grown over time.

In cross-section LAD results reported in table 5.5, the typical Black household had $43,262 less in wealth than the typical white household, controlling for other factors. The difference in wealth has increased over time, again conditional on observable factors.

The LAD regressions also show that the typical household with a head of Hispanic origin has less net worth than white households in several of the survey years, particularly in 2013 and 2016. The results suggest that wealth differences between whites and Hispanics may be increasing over time. Results are mixed for other nonwhite individuals, but the sample size for this group is relatively small, so precise estimation is difficult.

Table 5.5 Net worth regressions (least absolute deviations)

	1989 (1)	1992 (2)	1995 (3)	1998 (4)	2001 (5)	2004 (6)	2007 (7)	2010 (8)	2013 (9)	2016 (10)
Black	−29,966***	−20,971***	−21,259***	−19,532***	−22,585***	−31,104***	−23,935***	−21,602***	−36,176***	−43,262***
	(4,534)	(3,181)	(3,719)	(3,123)	(3,890)	(6,478)	(5,844)	(4,480)	(2,927)	(3,019)
p-value	0.019	<0.001	<0.001	<0.001	<0.001	0.113	0.010	<0.001	0.088	n/a
Hispanic	−25,656***	−8,703	−14,384***	−9,866	−9,010*	−5,346	−3,439	−6,724	−13,124***	−23,161***
	(9,338)	(5,808)	(5,113)	(6,065)	(5,043)	(5,973)	(6,960)	(4,466)	(3,823)	(4,457)
p-value	0.665	0.028	0.237	0.053	0.024	0.017	0.025	0.004	0.069	n/a
Nonwhite other	−12,710	−11,955***	−23,216***	−23,200	−523.9	−25,554	−34,624***	−32,870***	−23,177	−8,501
	(9,025)	(3,212)	(6,717)	(17,139)	(30,931)	(19,163)	(11,401)	(9,290)	(15,789)	(6,512)
p-value	0.786	0.611	0.052	0.438	0.741	0.287	0.192	0.049	0.382	N.A.
N	3,143	3,906	4,299	4,305	4,442	4,519	4,417	6,482	6,015	6,248
Pseudo R-squared	0.180	0.184	0.143	0.167	0.166	0.163	0.158	0.163	0.168	0.160

Notes: Control variables: education level category (less than high school diploma, high school diploma, some college, bachelor's degree, graduate degree); marital status; sex of single heads of household; income category ($0–19,999, $20,000–49,999, $50,000–99,999, $100,000–199,999, $200,000+); age category (0–24, 25–34, 35–44, 45–54, 65–74, 75+). Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Board of Governors of the Federal Reserve (2017). Coefficients reported in 2016 values.

Table 5.6   **Pooled net worth regressions (least absolute deviations)**

	1989–2016 (1)	1989–2007 (2)	2010–16 (3)
Black	−26,419***	−23,339***	−33,809***
	(1,171)	(1,394)	(1,714)
p-value	n/a	<0.001	n/a
Hispanic	−12,422***	−10,292***	−14,670***
	(1,553)	(1,706)	(2,521)
p-value	n/a	0.129	n/a
Nonwhite other	−17,827***	−18,695***	−17,158***
	(3,185)	(2,621)	(5,705)
p-value	n/a	0.643	n/a
N	47,776	29,031	18,745
Pseudo R-squared	0.160	0.161	0.163

Notes: Control variables: same as in tables 5.3 and 5.5, plus year effects. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Board of Governors of the Federal Reserve (2017). Coefficients reported in 2016 values.

Table 5.6 reports LAD regressions using data pooled across survey years. The results are qualitatively similar to earlier findings. Black households have less wealth than white households and the difference has grown over time, although it is smaller in the LAD regressions than in LS regressions.

5.5.1   Discussion

Our finding that differences in wealth between whites and minorities appears to have increased over time is consistent with a substantial body of literature.[50] The increase in the gap, at least over the past decade, appears to be due to the decline in housing wealth during the Great Recession, which impacted low-wealth households more than high-wealth households.[51]

The implications of the results for the Millennial generation are concerning. Chetty et al. (2018) find that Black households have lower income, on average, than white households. Moreover, given parental income, they find that Black children have lower rates of upward mobility and higher rates of downward mobility than white children. Rates of upward mobility for Hispanics are lower than for whites but higher than for Black households. Their results suggest that closing the *income* gap over time between whites and minorities will be difficult. Building off those results, our findings imply

50. See, for example, Kochhar and Fry (2014), McKernan et al. (2014), Shapiro, Meschede, and Osoro (2014), Taylor et al. (2011), Thompson and Suarez (2015), and Wolff (2018). Munnell, Hou, and Sanzenbacher (2018) show that differences in the proportion of households saving adequately for retirement (a different measure than the "wealth gap" measures used in the studies cited above) fell for Black households relative to white household from 2007 to 2016, but rose for Hispanics relative to whites. Hispanics were particularly hard hit by declines in housing prices in the Great Recession.

51. McKernan et al. (2014); Shapiro, Meschede, and Osoro (2014); Wolff (2018).

that minorities that have less wealth than whites, *even after controlling for income* (and education, age, and marital status). Therefore, our results suggest that, even if the income gap between groups were eventually reduced or eliminated, that would not in itself be sufficient to ensure the adequacy of saving for minority households—there would still be a retirement saving gap between whites and minorities.

It is unclear, however, to what extent the wealth accumulation patterns of minorities in the past provides a reliable guide to their wealth accumulation patterns in the future. As the economy evolves, one can expect the economic experience of minorities to change. For example, relative to minorities in the past, minorities in the future may well live in neighborhoods with different characteristics, go to different types of schools, and have different experiences with mentors, discrimination, marriage, childbearing, and so on. This could, in principle, help minorities accumulate more wealth relative to whites than in the past. However, the results above show that over the past 30 years, the gap has widened, after controlling for observable characteristics.

5.6   Conclusion

We document and explain changing wealth levels across the life cycle, with special attention to the millennial generation. We show that all generations lost wealth during the Great Recession of 2007–9, and that the longer-term trends show that older age groups have generated wealth levels over time, but younger age groups have generated lower wealth levels over time. We show that a significant share of these changes can be attributed to the evolution of household demographic and economic characteristics. Millennials, in particular, have less wealth than any similarly aged generation since 2007. Although they possess a few major advantages over previous generations, millennials also face a number of "headwinds" that will reduce wealth accumulation.

More generally, our results suggest that wealth accumulation paths may be becoming more delayed over the life cycle.[52] Younger generations are attaining more education, which takes time, are entering the labor force with more student debt, and are marrying and buying homes at later ages. But not all trends suggest that wealth accumulation should be occurring later in life. For example, Americans are increasingly choosing to have children later in life.

Two factors that could have important effects on millennials' outcomes—but are subject to substantial uncertainty and are not addressed above—are intergenerational transfers and immigration. The baby boomer generation is entering retirement with record amounts of wealth, much of which will be bequeathed.[53] But the value of intergenerational transfers is highly

52. See Gale and Harris (2020).
53. Gale et al. (2019).

concentrated among high-income and very high-income households and is therefore unlikely to substantially impact millennial wealth at the median or even among the bottom 80 percent of households.[54]

Immigration presents further opportunities and challenges. Immigration is a complex issue. While most immigrants have significantly lower wealth, controlling for household and life cycle characteristics, than the native-born population, they also exhibit higher rates of innovation and entrepreneurship—which can boost wealth accumulation over time.[55] The future path of immigration, however, is unclear.

Putting together all of these factors is beyond the scope of this chapter. However, Johnson et al. (2017) project future retirement income for older millennials and generation Xers and finds that median income at age 70 for members of these groups will be higher than that of prior generations, though a smaller share of individuals will have enough to maintain their preretirement standard of living. These results, as the authors describe, are uncertain, given that today's young adults still have decades of work until their retirement.

Future research could address changing wealth patterns by race, sex, and educational attainment, immigration, and other characteristics. Another issue is the impact of delayed wealth accumulation on aggregate wealth inequality. If wealth accumulation is indeed occurring later in life, this trend (all else being equal) could increase cross-sectional wealth inequality, without necessarily increasing inequality across the life cycle. A related area of research concerns how a wide range of policy interventions—everything from student loans to estate tax reform—affect wealth accumulation.

Appendix

Table 5A.1   Pooled (least absolute deviations), inverse hyperbolic sine

	25–34 (1)	35–44 (2)	45–54 (3)	55–64 (4)
Constant	4.840***	32.036***	52.581***	59.813***
	0.172	0.113	0.203	0.120
Year 2016	−0.116	−0.466***	−0.361***	0.049
	0.224	0.153	0.141	0.146
Observations	1,250	1,712	1,848	2,015

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

54. Gale and Scholz (1994), and Feiveson and Sabelhaus (2018).
55. See Akresh (2011), and Cobb-Clark and Hildebrand (2006) on the nativity wealth gap. See Hunt and Gauthier-Loiselle (2010) on immigrants' propensity to innovate.

Table 5A.2   **Pooled (least squares), inverse hyperbolic sine**

	25–34 (1)	35–44 (2)	45–54 (3)	55–64 (4)
Constant	5.325***	19.080***	37.974***	40.484***
	(0.102)	(0.098)	(0.105)	(0.110)
Year 2016	−0.316***	−0.378***	−0.358***	0.127
	(0.132)	(0.125)	(0.129)	(0.131)
Observations	1,250	1,712	1,848	2,015
R-squared	0.009	0.013	0.011	0.001

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
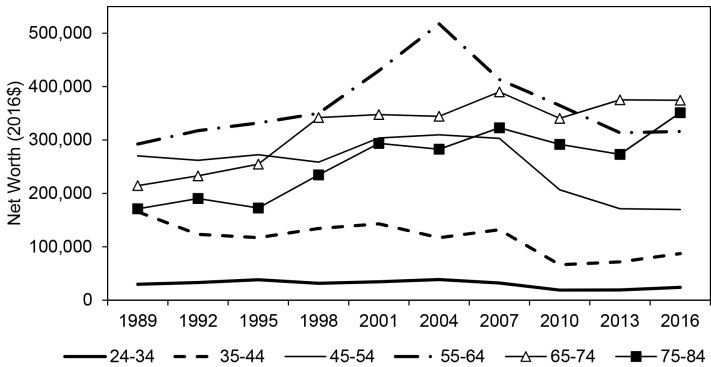

Fig. 5A.1   Median age-wealth profiles by constant-age group
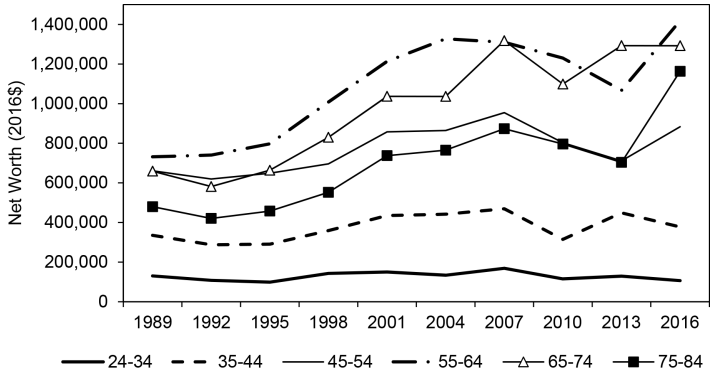*Source:* Federal Reserve Board of Governors Survey of Consumer Finances (1989–2016).

Fig. 5A.2   Average age-wealth profiles by constant-age group
Source: Federal Reserve Board of Governors Survey of Consumer Finances (1989–2016).

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