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**The Balance Sheets of Younger Americans:
Is the American Dream at Risk?**

*Selected articles from a symposium sponsored by the Center for Household Financial Stability
and the Research Division of the Federal Reserve Bank of St. Louis and the Center for Social
Development at Washington University in St. Louis, May 8-9, 2014*

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Can Parental College Savings Help?**

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Are Savings Accounts a Gateway to Young Adults'
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The Balance Sheets of Younger Americans: Is the American Dream at Risk?

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295

Introduction

Bryan Noeth and Ray Boshara

305

The State of Young Adults' Balance Sheets: Evidence from the Survey of Consumer Finances

Lisa J. Dettling and Joanne W. Hsu

331

Student Loan Debt: Can Parental College Savings Help?

William Elliott, Melinda Lewis, Michal Grinstein-Weiss, and IISung Nam

359

Toward Healthy Balance Sheets: Are Savings Accounts a Gateway to Young Adults' Asset Diversification and Accumulation?

Terri Friedline, Paul Johnson, and Robert Hughes

391

Asset Holdings of Young Households: Trends and Patterns

Ellen A. Merry and Logan Thomas

413

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Introduction

Bryan Noeth and Ray Boshara

The Great Recession exposed many fault lines in the finances of American families. Younger adults, in particular, were susceptible to the perils of the downturn. Many faced elevated unemployment risk and had overleveraged balance sheets and undiversified portfolio allocations that left them vulnerable to the economic shocks of 2007-09 and the subsequent slow recovery.

The combination of these wealth losses and daunting economic challenges (e.g., intensifying global competition for good-paying jobs; continuing rapid rates of technological change; rising costs of higher education and reliance on loans to finance that education; delayed family formation; and demographic shifts) suggests that the American Dream may well be threatened for a growing number of younger Americans.

With these issues in mind, the Center for Household Financial Stability and the Research Division of the Federal Reserve Bank of St. Louis partnered with the Center for Social Development at Washington University to convene experts at the St. Louis Fed on May 8 and 9, 2014, to better understand the balance-sheet issues facing younger Americans. In this second annual balance-sheet symposium at the St. Louis Fed, research focused on families in their 20s and 30s.

Many topics affecting the balance sheets of younger Americans were discussed at the two-day symposium. Among them were economic mobility, student loans, the state of younger adults' balance sheets, homeownership, savings and balance-sheet portfolio allocation, financial decisionmaking, and Child Development Accounts (CDAs).

This issue of the Federal Reserve Bank of St. Louis *Review* includes four papers from the symposium. The remainder of this introduction discusses why the organizers emphasized younger Americans. It also offers a basic synopsis of the research presented and provides themes emerging from the symposium.

Bryan Noeth is a policy analyst for the Center for Household Financial Stability at the Federal Reserve Bank of St. Louis. Ray Boshara directs the Center for Household Financial Stability and is a senior advisor at the Federal Reserve Bank of St. Louis.

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BACKGROUND

Younger families face a unique set of economic challenges and were particularly hard hit by the recent recession. With respect to labor markets, young families encounter elevated economic risks compared with older cohorts. When macroeconomic conditions deteriorate, younger workers are more likely to find themselves unemployed—likely because of lower levels of human capital derived from fewer on-the-job experiences. This effect can be elevated in particular for young people first entering the labor market.

Figure 1 shows the unemployment rate since 1980 partitioned by age group. A general monotonic pattern prevails that unemployment rates tend to decrease with age. In May 2007, the unemployment rates were 7.2 percent, 4.4 percent, 3.3 percent, 3.1 percent, and 3.2 percent for age groups 20 to 24, 25 to 34, 35 to 44, 45 to 54, and 55 years of age and older, respectively. Three years later, in May 2010, those same unemployment rates were 14.7 percent, 10.5 percent, 7.9 percent, 7.6 percent, and 7.1 percent, respectively. All age groups were hit by the recession, but the youngest cohorts had the largest percentage-point increases in unemployment.

Unemployment at young ages can be particularly troublesome: Young people tend to have lower levels of liquid savings than their older counterparts and are, accordingly, much less resilient to lapses in income. Additionally, unemployment spells earlier in life tend to reverberate throughout the rest of the career path (for example, see Kahn, 2010). Even further, research suggests that unemployment has negative impacts on health and well-being.

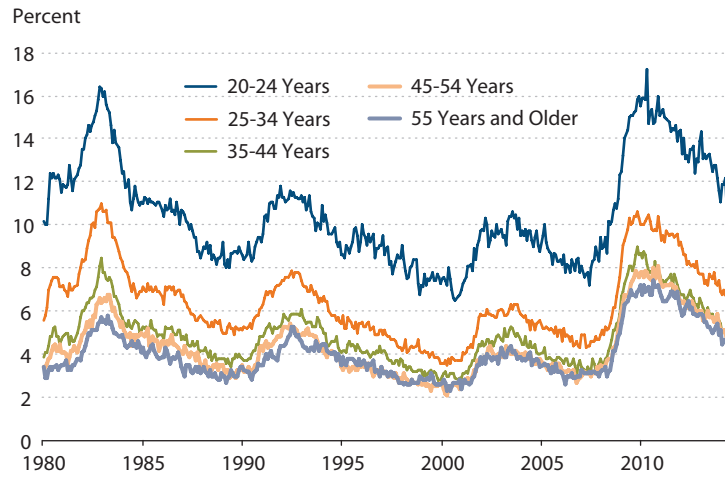
Over the same time period, there was little growth in wages for year-round, full-time wage-earning younger American workers, regardless of the wage measurement method or the earnings distribution. Figure 2 shows Census data from the Current Population Survey Annual Social and Economic Supplement from years 1989 to 2014. The figure shows that the mean income and 75th percentile of wages for those 18 to 39 years of age increased through the 1990s but have remained flat through the 2000s. The median and 25th percentile of wages, arguably, have remained flat over the entire time span.

Younger families generally hold riskier portfolios in several aspects. In general, people borrow earlier in life to smooth consumption over time. They obtain mortgages to purchase homes, incur debt for education, and borrow for a host of other expenses, running up debt in their 20s, 30s, and 40s. In general, this debt is paid down in middle to old age. This leaves younger families with much higher debt burdens than their older counterparts.

Figure 3 shows the average total debt-to-average total income (DTI) ratio using the triennial waves of the Survey of Consumer Finances (SCF). Younger families had much higher DTI ratios throughout the time series. Families across the age distribution ran up debt burdens prior to 2007. Young families, in particular, had DTI ratios of around 102 percent in 2001. The DTI ratios increased to around 167 percent in 2007 before returning to around 131 percent as of 2013. These debt levels were quite elevated from historical norms, which had substantial effects.

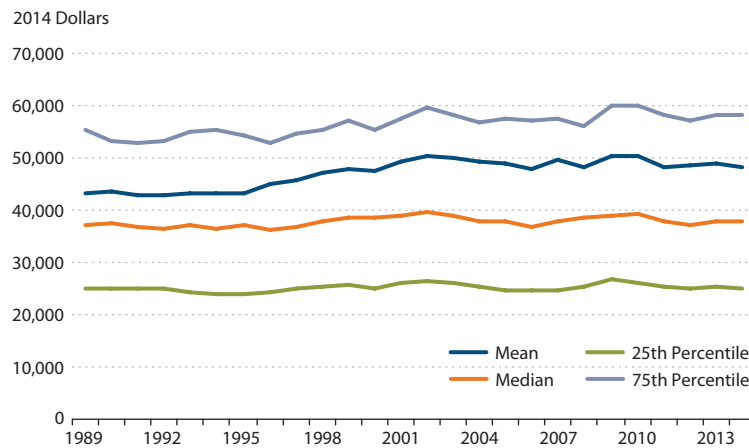
The vast majority of household debt is secured by housing, but young people are increasingly borrowing to attend college. Between 2005 and 2014, aggregate balances of student loan debt grew from \$364 billion to \$1.118 trillion (Figure 4). This occurred as households were

Figure 1
Unemployment Rates by Age



SOURCE: Bureau of Labor Statistics.

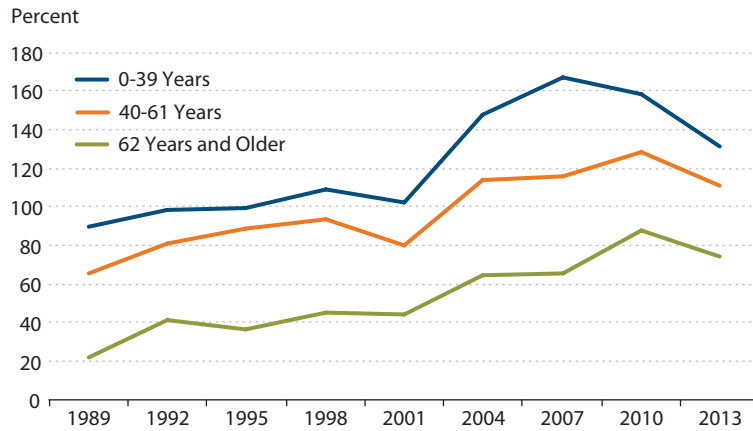
Figure 2
Income: Ages 18-39



NOTE: For year-round, full-time employees only.

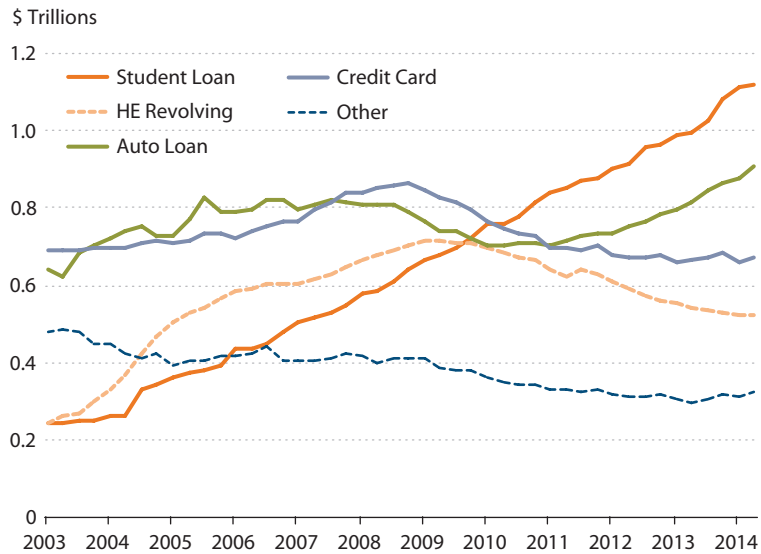
SOURCE: Annual Social and Economic Supplement of the Current Population Survey/U.S. Census Bureau.

Figure 3
Debt-to-Income Ratios by Age



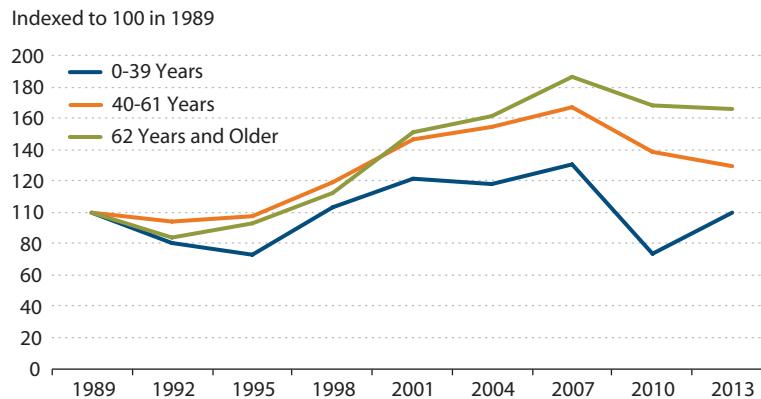
SOURCE: Survey of Consumer Finances.

Figure 4
Aggregate Debt by Category (excluding mortgages)



NOTE: HE, home equity.

SOURCE: Federal Reserve Bank of New York Quarterly Report on Household Debt and Credit/Equifax.

Figure 5**Real Net Worth by Age**

SOURCE: Survey of Consumer Finances.

generally deleveraging with respect to their other debt categories. Much of this increase in student debt can be attributed to the increasing costs of attending college, though other reasons prevail.¹ Regardless of the causes, student debt is increasingly becoming a concern for younger generations.

On the asset side of the balance sheet, young families are not as well diversified as their older counterparts. Those between 18 and 39 years of age were much more heavily invested in housing. In 2007, housing-related assets represented roughly 55 percent of young adults' balance sheets. Conversely, housing-related assets represented 39.0 and 34.1 percent, respectively, of the assets for those 40 to 61 years of age and those 62 and older.

These high levels of debt, increased unemployment risk, and more exposure to housing shocks left young families vulnerable to the effects of the recession in three ways: First, young homeowners were particularly susceptible to the falling asset values. Second, leveraging magnified those losses. And third, the wealth of these families tended to be concentrated in housing, so they missed the bounce back in stock prices that occurred after 2009.

These factors combined to create massive wealth losses for younger families. While older families lost more wealth in absolute terms, this was generally because they had more wealth to lose. In percentage terms, younger families tended to lose the most in the wake of the financial crisis.

Figure 5 shows the SCF data on average wealth by family in 1989. The average young family in 2010 had 43.9 percent less wealth, in real terms, than the average young family in 2007. Those 40 to 60 years of age and those 62 and older had 16.4 percent and 10.3 percent less wealth, respectively

The loss in median wealth for all groups tells a similar story. Median wealth for the youngest group was 37.6 percent lower in 2010 than in 2007 compared with losses of 42.9 percent and

6.7 percent, respectively, for those 40 to 60 years and 62 years and older. The 2013 survey shows that young families have made up some ground but still remain well below their pre-crisis levels.

Looking forward, current and future young families face several uncertainties. How will skill-biased technological change affect the wage profile of young Americans? Will education costs continue to rise, and what implications with this have on the accumulation of human capital? Patterns of household formation seem to be changing: How will this affect macroeconomic growth? The U.S. population is aging. With a much higher percentage of Americans reaching retirement age, how will this affect the economic opportunities of younger cohorts? For these reasons, the symposium organizers decided to focus on younger generations to develop a better understanding of the social and economic forces shaping their financial lives, especially with respect to wealth.

SYNOPSIS

Keynote Address

The symposium began with opening remarks from James Bullard, president and CEO of the St. Louis Fed, and Ray Boshara, director of the Center for Household Financial Stability. Both noted the importance of focusing on the young and their balance sheets.

The opening session featured a keynote address by Neil Howe, a demographer/economist and founding partner and president of LifeCourse Associates. He discussed balance sheets within the context of generational differences. His generational perspective was laid out by analyzing various birth year cohorts (1901-24, the GI Generation; 1925-42, the Silent Generation; 1943-60, the Baby Boomers; 1961-81, Generation X; and 1982-2004, the Millennials). He examined how each generation defined the American Dream and the events that shaped their perspectives.

One theme recurred throughout the symposium: The generation most affected by the Great Recession seems to have been Generation X. Their position in the life cycle, especially their greater likelihood to be homeowners, made them vulnerable to the effects of the crisis. One consequence is that older Generation Xers might have difficulty repairing their balance sheets in time for retirement.

A Micro and Macro Look at Younger Americans' Balance Sheets

The first plenary session examined younger Americans' balance sheets from micro and macro perspectives. The rationale was to explore the current state of younger Americans' balance sheets while also looking at trends over time. The session then turned to the implications of these trends for macroeconomic growth.

Lisa Dettling and Joanne Hsu—both economists at the Board of Governors of the Federal Reserve System—discussed their paper “The State of Young Adults' Balance Sheets: Evidence from the Survey of Consumer Finances” (pp. 305-30). The authors found that young adults experienced a decline in wealth between 2001 and 2010 because of increasing liabilities and decreasing asset values. They corroborated Howe's observation that Millennials are faring

slightly better than Generation Xers in terms of relative changes in net worth and delinquency. Dettling and Hsu also found that most of the changes in finances occurred at the top end of the distribution.

In the same session, William Emmons and Bryan Noeth of the St. Louis Fed discussed links between younger Americans' balance sheets and economic growth. They examined the more aggressive borrowing by young adults, their heightened reaction to price increases, and the greater likelihood of the young to be homeowners in 2007 than in the past. These characteristics and other evidence suggest that young people contributed disproportionately to the housing bubble and crash.

Student Loans

The second plenary session studied a particular topic affecting the balance sheets of younger Americans—student debt. As noted previously, the aggregate balances of student loans have now surpassed \$1 trillion dollars. This session was designed to examine the implications of rising student debt levels for younger generations.

Meta Brown of the Federal Reserve Bank of New York presented research from her paper “Student Loans and Economic Activity of Younger Adults,” with her coauthors Zachary Bleemer, Donghoon Lee, and Wilbert van der Klaauw. The authors used the Federal Reserve Bank of New York Credit Panel data provided by Equifax and found a trend toward more younger adults living with their parents. Particularly, student borrowers showed a stronger trend of retreating from homeownership. The authors also analyzed the effect of local labor markets on the residence of young adults finding. For example, they found that local, well performing local economies actually drive young adults back to their parents, likely a function of increasing housing costs. They also stated that high local college costs were associated with higher rates of young adults moving back in with their parents and lower rates of moving out.

Melinda Lewis of the University of Kansas presented a paper—cowritten with William Elliott, Michal Grinstein-Weiss, and IISung Nam—of the session entitled “Student Loan Debt: Can Parental College Savings Help?” (pp. 331-57). They addressed whether parents' college savings can help reduce student debt. The authors used data from the Educational Longitudinal Survey and found that students whose parents had saved for college had less debt on average than those whose parents did not save. Citing research on the negative effect of student loans on household net worth, the authors concluded that greater policy emphasis on savings-based financing of higher education might help protect students from large debt balances and poor outcomes.

Concurrent Sessions on Younger Americans' Balance Sheets

The second day of the symposium started with concurrent sessions. Two papers were presented in each of two concurrent sessions (four papers total) revolving around balance-sheet issues affecting young people. The topics ran the gamut from portfolio choices of younger Americans to the effects of CDAs on parental educational expectations.

In Concurrent Session A, Terri Friedline of the University of Kansas presented her paper “Toward Healthy Balance Sheets: Are Savings Accounts a Gateway for Young Adults' Asset

Diversification and Accumulation” (pp. 359-89), stemming from work with coauthors Paul Johnson and Robert Hughes. The basic premise is that savings accounts allow individuals to meet low-level financial needs and “ascend the hierarchy of financial products.” The authors used Survey of Income and Program Participation data and showed that savings accounts are associated with more diverse portfolios and contributed to the accumulation of liquid assets.

Wenhua Di of the Federal Reserve Bank of Dallas and Sherrie Rhine of the Federal Deposit Insurance Corporation presented work with coauthors William Greene and Emily Ryder Perlmeter titled “Financial Decisions of Young Households During the Great Recession: An Examination of the SCF 2007-09 Panel.” The authors examined the SCF 2007-09 panel to understand how the financial behaviors of younger households differed from those of older households. They found that younger groups and older groups differed in their response to the recession. They also found differences in the interaction of age with race/ethnicity, number of children, changes in health insurance, liquidity constraints, employment status, and marital status and their effects on financial decisions.

In Concurrent Session B, Michael Sherraden, Youngmi Kim, Jin Haung, and Margaret Clancy presented work titled “Child Development Accounts and Mother’s Educational Expectations: Impacts From a Statewide Social Experiment.” The authors used data from a randomized experimental design from Oklahoma’s SEED OK CDAs; they noted that mothers in the treatment group had higher educational expectations of their children. The authors contend that mothers maintain a positive outlook on their children’s future education when they have savings earmarked for learning. This, in turn, affects both parental and child well-being.

Ellen Merry of the Board of Governors of the Federal Reserve System presented “Asset Holdings of Young Households: Trends and Patterns” (pp. 391-411), cowritten with Logan Thomas. The authors studied the ownership decisions of asset types by young households. They used SCF data and found that demographic characteristics are correlated with choice of asset holdings and these holdings are affected by economic conditions.

The Role of Homeownership

The second session of the second day revolved around homeownership for younger Americans. Homes continue to play a large role in the balance sheets of younger Americans. This panel discussion focused on the implications of owning a home, especially in the wake of the recent housing downturn.

Blair Russell of Washington University discussed his paper—cowritten with Michal Grinstein-Weiss, Lucy Gorham, and Clinton Key—titled “Homeownership and Wealth Among Low-Income Young Adults: Evidence from the Community Advantage Program.” The authors used various waves of a Community Advantage Program Survey (CAPS) and found there was less growth for young households than for older households, but the CAPS homeowners did relatively better than young renters.

Don Schlagenhauf of the St. Louis Fed presented his paper, “Aggregate and Distributional Dynamics of Consumer Credit in the U.S.,” cowritten with Bryan Noeth and Carlos Garriga. The authors studied the dynamics of credit, including mortgages, through the recession. They examined the evolution of the age distribution of various debt categories over the past 15 years

and found significant changes in younger cohorts. They also examined how age interacts with foreclosure and bankruptcy as a vehicle of debt discharge.

Economic Mobility: Income and Asset Accumulation

The final session of the symposium focused on economic mobility, particularly the ability of young adults to move up both the relative and absolute economic ladder with respect to wealth and income.

In her paper, “The Balance Sheets and Economic Mobility of Generation X,” Diana Elliott of the Pew Charitable Trusts discussed the balance sheets and economic mobility of Generation X. She used data from the Panel Study of Income Dynamics and found that while most Generation Xers earned more than their parents, they had less wealth at the same age. Additionally, the relative quintile of net worth and income in which Generation Xers find themselves as adults was highly correlated with the incomes and wealth of their parents.

The final paper, “Coming of Age in the Early 1970s vs. the Early 1990s: Differences in Wealth Accumulation of Young Households in the United States, and Implications for Economic Mobility,” was presented by Daniel Cooper of the Federal Reserve Bank of Boston. The author used Panel Study of Income Dynamics data to determine whether wealth accumulation patterns of young households changed from the 1970s to the 1990s. The main finding was that there seems to be a persistent pattern that young households were, in fact, not accumulating assets as in previous generations.

The symposium concluded with comments by Julie Stackhouse, senior vice president of Banking Supervision and Regulation at the St. Louis Fed; Ray Boshara; and Michael Sherraden, director of the Center for Social Development at Washington University.

Sherraden remarked on a key symposium theme that cohorts matter and, in particular, that Generation X was particularly hurt by the recession. He also noted the seriousness of racial disparities, especially the disturbingly low wealth levels among African-Americans and Hispanics. He noted that despite this difference, homeownership should not be “off the table” as a path to wealth creation for these racial groups going forward. He urged policymakers to consider implementation of more automated methods to stimulate early saving and assist disadvantaged groups in attaining financial security.

Boshara also noted vastly different outcomes among the generations, as well as earlier generations receiving far more in public benefits than they have paid in taxes. He closed his remarks with some reflections on the possibility of an “age-based social contract.” While tax policy and welfare policy have income triggers, could entitlement policies have more age-based triggers? Could successful and prosperous generations be asked, by means of social policy, to provide more for younger or less successful generations at, for example, birth or ages 5, 11, or 18 to help them build education and human capital? Could existing CDA policies serve as a model for an age-based social contract? This would, of course, be a modest variation on current social policies where current generations generally support older generations (as in Social Security, in which workers support retirees), but such a possible change merits serious consideration by policymakers and others.

CONCLUSION

Each generation faces a unique set of challenges with regard to its financial well-being. This symposium touched on several of the issues affecting young people, and the research presented during the symposium has helped shed light on many of these topics. The organizers thank all of the participants for their thoughtful research and comments and all who contributed to the symposium in countless other ways. ■

NOTE

¹ These include previous vintages of loans not being paid off as quickly (e.g., deferment, forbearance, delinquency), more students attending postsecondary institutions, transition toward more expensive schools (e.g., for-profits), job loss and lower income driving people to incur debt to pay for higher education, and lower use of other forms of credit (e.g., home equity lines of credit and credit cards) to pay for expenses.

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The State of Young Adults' Balance Sheets: Evidence from the Survey of Consumer Finances

Lisa J. Dettling and Joanne W. Hsu

The authors investigate recent trends in the financial circumstances of young adults using data from the triennial Survey of Consumer Finances (SCF) from 2001 to 2013. They examine trends in young adults' net worth, break down the composition into specific assets and liabilities, and describe young adults' experiences with credit markets. The analysis focuses on three main comparisons: (i) trends over time (ii) between young adults and older adults and (iii) between young adults in 2013 (members of the "Millennial Generation") and young adults in 1989 (members of "Generation X"). They find that between 2001 and 2013, young adults experienced a decline in net worth, driven largely by declines in asset holdings. The median young adult in 2013 also had lower net worth than the median young adult surveyed in the 1989 SCF. Despite media attention surrounding the Millennial Generation's relatively poor economic outcomes during the Great Recession, young adults in the SCF have fared better on many measures than both current older adults and earlier young adults. Compared with older adults, young adults experienced a relatively modest decline in net worth, particularly during the Great Recession. Young adults in 2013 were also more likely than young adults in 1989 to own homes, stocks, and retirement accounts, and they were less likely to have very high debt payment-to-income ratios than their counterparts in 2001 and 1989 or older adults in 2013. (JEL D14, D91)

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The past decade has ushered in historic swings in housing, labor, and stock markets. It has also prompted growing interest in how young adults, who are only beginning to interact with credit markets and accumulate assets, have fared in the wake of the Great Recession. Recently, it has been claimed that today's young adults are less financially independent than previous generations of young adults, an assertion most notably captured by the unprecedented increase in the fraction of young adults living with a parent (see, for example, Thompson, 2012; Parker, 2012; Fry, 2013; Dettling and Hsu, 2014). The possibility of delayed financial independence among young adults has raised concerns about potential adverse effects on aggregate consumer spending and economic growth. Financial well-being early in life also has important implications for lifetime wealth accumulation; recent evidence

Lisa J. Dettling and Joanne W. Hsu are economists in the Microeconomic Surveys Section at the Board of Governors of the Federal Reserve System. The authors thank Steve Fazzari, John Sabelhaus, Max Schmeiser, and Jeff Thompson for helpful comments and suggestions and Sebastian Devlin-Foltz for excellent research assistance.

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suggests that today's young adults may have accumulated less wealth than their parents had at the same age (Steuerle et al., 2013). However, because they are still in the beginning of the life cycle, today's young adults may be better equipped to weather economic upheaval than older generations, especially in the long run.

In this article, we investigate recent trends in the financial circumstances of young adults. Using individual-level data from household interviews in the triennial Survey of Consumer Finances (SCF) from 2001 to 2013, we examine the net worth of young adults and divide the composition into specific assets and liabilities. In addition, we describe young adults' experiences with credit markets with respect to credit constraints, delinquency, and debt burdens.

Our analysis focuses on three main comparisons. First, we examine trends in young adults' circumstances between 2001 and 2013, a period characterized by large changes in the overall economy. Second, we compare young adults 18 to 31 years of age with older adults 35 to 50 years of age over that period. Finally, we compare young adults in 2013—members of the “Millennial Generation”—with young adults of the same age in the 1989 wave of the SCF—members of “Generation X.”¹

We find that between 2001 and 2013, net worth fell among young adults, primarily because of declines in asset holdings. We also find that net worth was lower for young adults in 2013 than it was for young adults in 1989. However, despite popular accounts of the Millennial Generation's poor economic outcomes during the Great Recession, young adults in the SCF have fared relatively well on many measures. Between 2001 and 2013, debt holdings excluding education loans declined among young adults, as did credit constraints. Compared with older adults, young adults experienced a relatively modest decline in net worth between 2001 and 2013, particularly during the Great Recession. Compared with young adults in 1989, young adults in 2013 were more likely to own homes, stocks, and retirement accounts. Moreover, young adults in 2013 were less likely to have high debt payment burdens than older adults, young adults in 1989, and young adults in 2001.

Our results are not necessarily at odds with popular accounts of how young adults fared in the Great Recession. Our analysis of SCF data focuses on balance sheets and credit market experiences, rather than labor market outcomes. Moreover, because of the SCF sample design, the sample of young adults studied represents only the population of young adults *living independently*, not the entire population of young adults.² We conduct comparisons between SCF young adults and the overall population of young adults from other data sources and find that SCF young adults tend to have higher incomes than the overall population. If income is correlated with wealth, this suggests that the financial circumstances of young adults in the SCF could be better than those experienced by the overall population of young adults.

DATA

We use data from multiple waves of the SCF.³ The SCF is a nationally representative survey of households conducted triennially by the Board of Governors of the Federal Reserve System to gather comprehensive information on household assets, liabilities, income, and credit market experiences. The SCF provides a comprehensive look at household balance sheets that

describes both the ownership and magnitude of particular assets and debt. In addition, the SCF collects demographic information and employment and household income data. Wealth data from the SCF are widely regarded as the most reliable and extensive available in the United States. Our primary analysis focuses on young adults, defined as individuals 18 to 31 years of age, in the 2001, 2004, 2007, 2010, and 2013 waves of the SCF. We also compute some statistics for individuals 35 to 50 years of age during those years (referred to as “middle adults”) as well as for young adults from the 1989 wave for comparison.

The SCF is a household survey, and its sampling frame is designed to be representative at the household level. Young adults can be members of very different types of households in the SCF because their living arrangements and family structure vary so widely. A young adult may be living completely independently, with a spouse or cohabitating partner, with roommates, or with a parent. In each case, the SCF might capture different types of information about the individual, and our analysis must be tailored to address these differences. In the SCF, assets and liabilities are collected at the household level and are pooled for all financially dependent household members, called the “primary economic unit.” Income data are collected only for household heads and spouses/cohabitating partners. Among roommates, the eldest roommate is typically selected for inclusion in the survey. Unless the roommates consider themselves financially dependent on one another, very little information is collected about the other roommates, who are not considered members of the primary economic unit. Individuals living with their parents may contribute to the total household assets and liabilities, but only if the parent considers the child financially dependent and part of the primary economic unit.⁴

We calculate individual-level versions of the household-level measures of assets, liabilities, and income in the SCF to facilitate comparisons between individuals in different types of living arrangements. In most cases, we calculate this measure by weighting the total measures of income, assets, and debt by $1/N$, where N is the number of adults (over 18 years of age) in the primary economic unit. There are several important exceptions to this procedure. First, since wage information is collected only for heads and spouses/cohabitating partners, we can calculate income only for those individuals. Second, when a young adult is in the primary economic unit and the household head is a parent or grandparent (or any other adult older than 50 years of age who is not the spouse or/cohabitating partner), we omit that young adult from the analysis and do not assign him or her a share of the household’s total assets or liabilities because the household’s financial circumstances are likely to be dominated by the head rather than the young adult child/grandchild. In a later section, we further discuss issues about generalizability that arise from the SCF’s sampling frame and the young adults not captured because they are not part of the primary economic unit.

The SCF contains information on whether an individual holds various types of assets and debts, as well as the balances associated with such accounts. We use this information to study net worth, total asset holdings, total liabilities, and total holdings of various types of assets and debt. Total assets are an aggregate measure of all holdings in checking accounts, savings/money market accounts, stocks, bonds, quasi-liquid retirement accounts, and any homes or vehicles owned by the family. Total liabilities are similarly measured as the sum of housing debt (including second mortgages and home equity loans), lines of credit, credit cards, installment debt,

vehicle loans, student loans, and other debt. Net worth is defined as the total of all assets net of all debt.⁵

We also separately analyze several broad categories of assets and debt of particular importance to young adults. On the asset side, we summarize bank deposits (checking and savings accounts), housing, quasi-liquid retirement accounts (such as 401(k)s and individual retirement accounts), and stock holdings. On the debt side, we separately summarize credit card debt, housing debt, vehicle loans, and student loans. Most of our analysis focuses on medians because of skewness in the distributions of financial holdings, although we present information on other aspects of the distributions as well.

The SCF also asks respondents about their interactions with credit markets and their debt burdens in addition to surveying them on aspects of their balance sheet. Collected information includes payment behavior, payment burdens, and bankruptcy filing. We can infer whether the individual is credit constrained based on questions about applications for credit. The survey asks the respondent whether he or she was denied credit in the past two years and whether the individual opted not to apply for credit for fear of being denied. We define individuals who report “yes” to either question as credit-constrained. Finally, we construct several measures of debt burdens, including leverage ratios, debt-to-income ratios, and payment-to-income ratios. We consider payment burdens on loans that are in repayment separately from those in deferment.

TRENDS IN BALANCE SHEETS OF YOUNG ADULTS

Net Worth

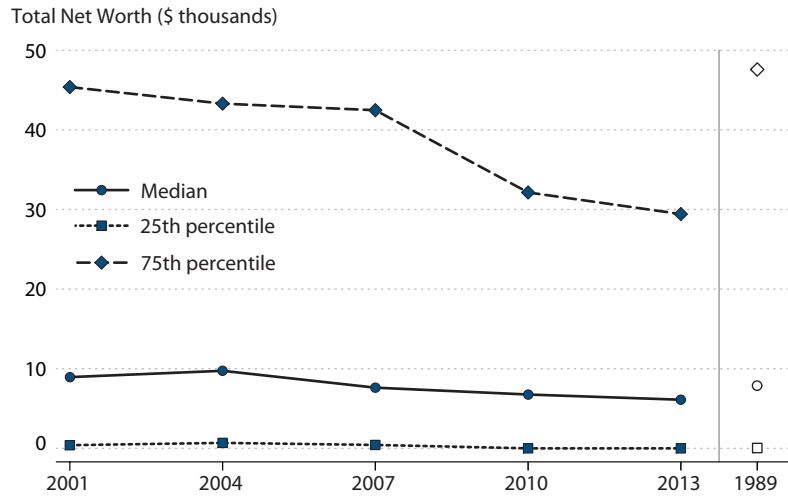
Figure 1A displays various points in the distribution of net worth for young adults in the SCF from 2001 to 2013, expressed in 2013 dollars. In 2001, the median net worth for young adults was \$8,900. The median level grew until 2004 and then declined over the next three waves, falling to \$6,100 in 2013. At the 75th percentile, net worth was \$45,400 in 2001. This number fell throughout the period; the largest drop occurred between the 2007 and 2010 waves. In 2013, net worth at the 75th percentile was \$29,400. At the 25th percentile, net worth remained below \$1,000 throughout the period.

The right side of Figure 1A displays the 25th percentile, median, and 75th percentile of net worth for young adults in 1989. The median young adult in 1989 fared slightly worse than the median young adult in 2001 and 2004 but better than the median young adult from 2007 to 2013. In 2013, the median young adult’s net worth was 30 percent lower than median net worth among young adults in 1989. This gap is even larger for young adults in the 75th percentile, who had 60 percent greater net worth in 1989 than young adults in the 75th percentile did in 2013.

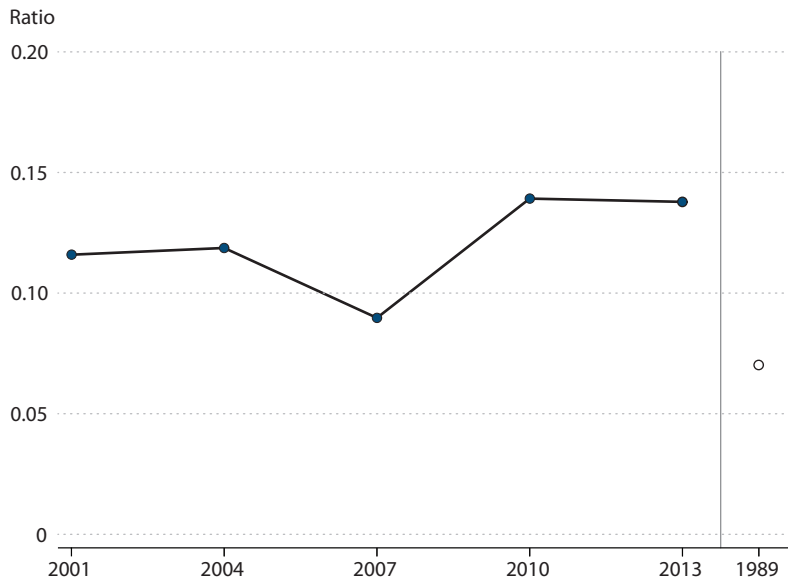
Figure 1B displays the ratio of median young adult net worth to middle adult (35 to 50 years of age) net worth. In 2001, median net worth for middle adults was \$77,200. Between 2001 and 2004, net worth of the median young adult was about 10 percent that of middle adults. This ratio fell slightly between 2004 and 2007 and then rose to 14 percent in 2010, where it

Figure 1
Net Worth Among Young Adults

A. Distribution of Net Worth



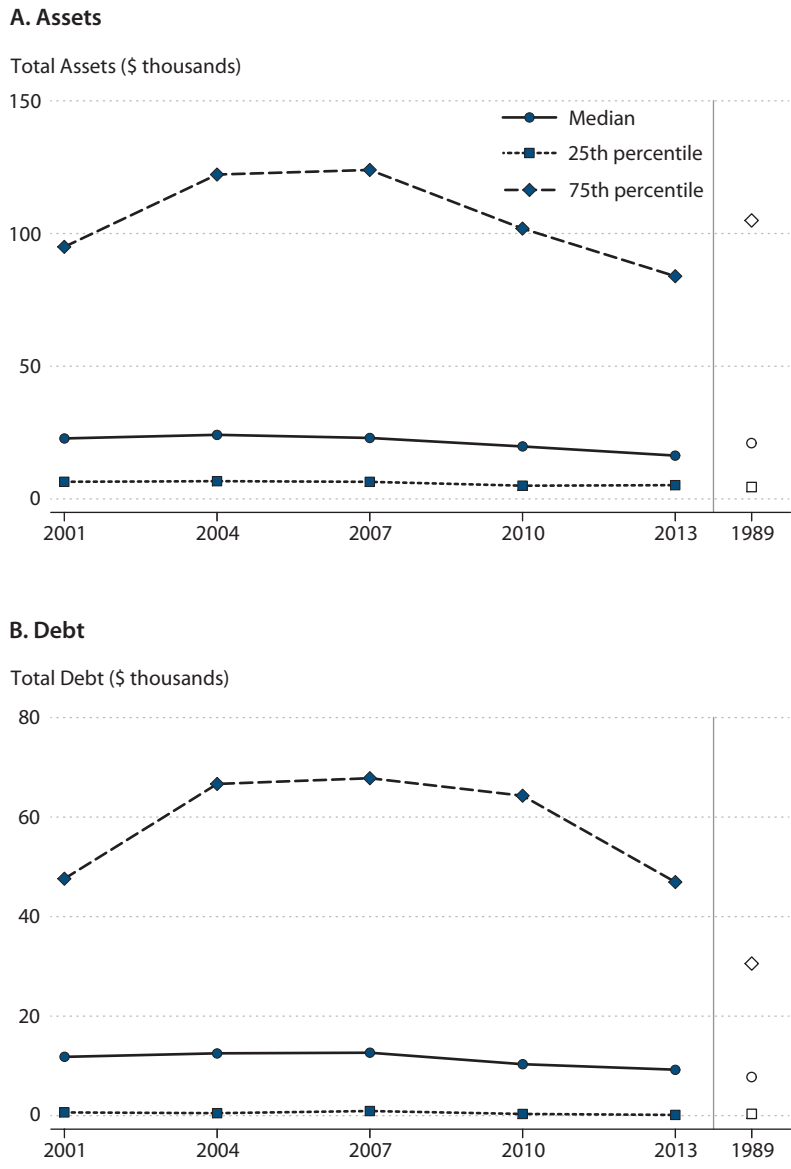
B. Ratio of Young Adult to Middle Adult Median Net Worth



NOTE: Panel A shows various points in the distribution of net worth among young adults 18 to 31 years of age. Panel B shows the ratio of the net worth of middle adults (35 to 50 years of age) to the median net worth of young adults (18 to 31 years of age). All nominal values were adjusted to 2013 dollars using the Consumer Price Index for All Urban Consumers (CPI-U).

SOURCE: SCF.

Figure 2
Distribution of Assets and Debt Among Young Adults



NOTE: The figure shows various points in the distribution of total assets (Panel A) and total debt (Panel B) among young adults 18 to 31 years of age. All nominal values were adjusted to 2013 dollars using the CPI-U.
 SOURCE: SCF.

remained through 2013. These trends are probably attributable to the fact that young adults are less likely to own homes or stocks than other age groups. They therefore did not benefit as much from the housing and stock market boom between 2004 and 2007, nor did they suffer as much from the housing and stock market bust from 2007 to 2010. The right side of Figure 1B shows that young adults in 2013 had higher net worth relative to contemporaneous middle adults than young adults in 1989 had relative to their middle-adult peers.

Figure 2 breaks down the observed trends in net worth into trends in total accumulated assets and debt at various points in the distribution. Figure 2A displays the 25th percentile, median, and 75th percentile for total asset holdings. Median total assets hovered between \$22,000 and \$24,000 through the early 2000s, dropping to \$16,300 by 2013. Similar trends emerge at both the 25th and 75th percentiles. Figure 2B displays trends in debt holding. Median total debt among young adults was close to \$12,300 throughout the period from 2001 to 2007, declining to \$9,200 by 2013. Again, a similar time trend emerges at the 25th and 75th percentiles of debt holding. Relative to young adults in 1989, the median young adult in 2013 held fewer assets and more debt. At the 75th percentile, young adults in 2013 held 54 percent more debt and 20 percent fewer assets than their counterparts in 1989.

The panels in Figure 3 display trends in net worth, total assets, and total debt for young adults by level of education, defined as the highest level of schooling completed. Individuals are grouped into four education categories: high school dropouts, high school graduates, those with some college, and those with a bachelor's degree or more. The patterns are similar to those in Figures 1 and 2. Although net worth remained substantially higher among college-educated individuals than among less-educated individuals throughout the period, it did fall substantially. Figures 3B and 3C show that the decline in net worth for college-educated individuals was driven by a large increase in total debt between 2001 and 2010 and a decline in assets between 2010 and 2013. The right side of Figure 3 shows that college-educated young adults in 2013 had higher debt burdens, lower total asset holdings, and lower net worth than their counterparts had in 1989. For those with a high school diploma or some college, net worth rose slightly between 2001 and 2004 and then fell through 2013. For high school dropouts, median net worth was \$2,500 in 2001 and grew to \$4,700 in 2013, nearly converging with the net worth of high school graduates and those with some college. Compared with 1989, young adults in 2013 with at least some college had much lower net worth. The net worth of those with a high school diploma was similar to that of their counterparts in the 1989 survey, and net worth for high school dropouts was lower for young adults in 1989 than in 2013.

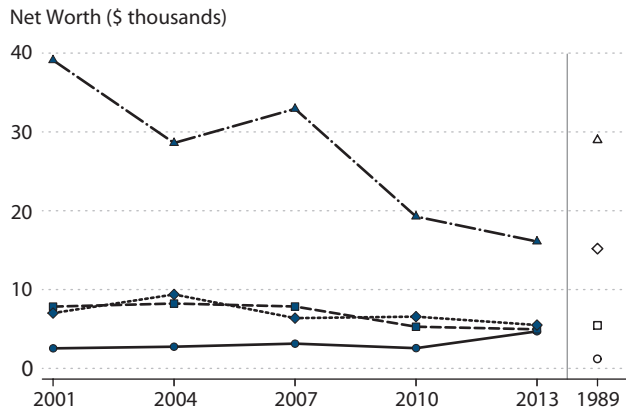
Assets

Figure 4 displays ownership patterns and conditional median values of the four main categories of assets: bank deposits, housing, retirement accounts, and stocks. The blue bars show the fraction of young adults with each asset type, and the black dots and dashed lines mark the conditional median value of each asset type. In 2013, over 97 percent of young adults owned some type of asset; 90 percent had a deposit account, 34 percent owned a home, 37 percent had a retirement account, and 37 percent owned stocks.⁶ In general, asset ownership rates fell between 2001 and 2013.

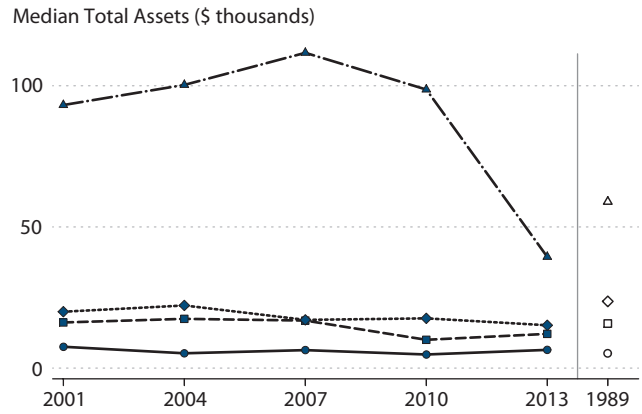
Figure 3

Net Worth, Assets, and Debt Among Young Adults by Education

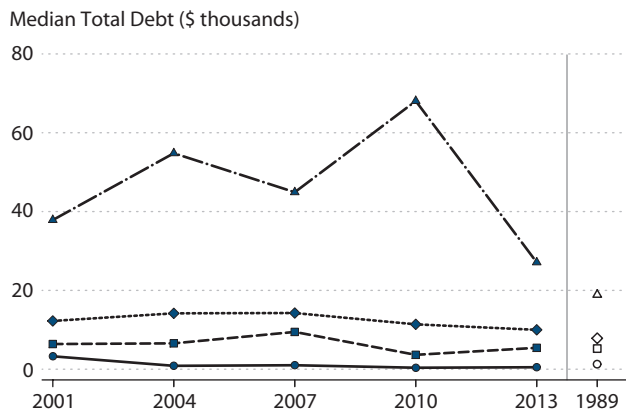
A. Net Worth



B. Total Assets



C. Total Debt



- Less than High School
- High School Graduate
- ◆— Some College
- ▲— Bachelor's or More

NOTE: The figure shows trends in net worth (Panel A), total assets (Panel B), and total debt (Panel C) among young adults 18 to 31 years of age by level of education. All nominal values were adjusted to 2013 dollars using the CPI-U.

SOURCE: SCF.

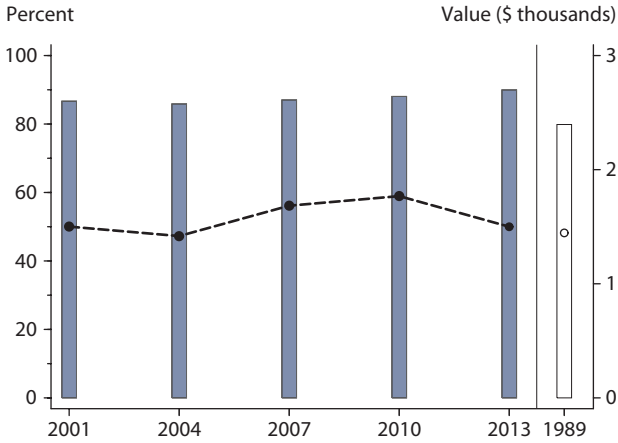
Figure 4A shows that about 87 percent of young adults had bank deposits (checking accounts, savings accounts, or both) in 2001; this proportion rose slightly to 90 percent by 2013. The fractions of young adults with bank deposits were very similar to the fraction of middle adults with bank deposits over that period. The conditional median value of bank deposits also remained fairly stable throughout the period, ranging between \$1,500 and \$1,800. Relative to young adults in 1989, young adults in 2013 were 10 percentage points more likely to have bank deposits, but the conditional median value of those bank deposits was similar to the value observed in 1989. Figure 5A displays trends in conditional values for the 25th and 75th percentiles of the distribution as well as the median. This figure shows that bank deposits rose substantially at the 75th percentile until 2010. Figure 5A also indicates that the conditional value of bank deposits at the 75th percentile for young adults in 2013 was considerably higher than for young adults in 1989.

Figure 4B displays the homeownership rates and conditional median values of housing assets. In both 2001 and 2004, 39 percent of young adults reported owning homes, but by 2013 the homeownership rate for young adults had fallen to 34 percent. Throughout the period, however, the homeownership rate of young adults remained about half that of middle adults, whose rate of ownership was 72 percent in 2001 and 66 percent in 2013. The conditional median value of housing assets closely followed the path of home prices over the same period, rising from 2001 to 2007 and falling from 2007 to 2013. Figure 5B shows that this trend in housing asset values is also observed at the 75th and 25th percentiles. Relative to young adults in 1989, young adults in 2013 were more likely to own a home, but conditional on ownership, the value of the median young adult's home was lower in 2013. In fact, the conditional median value of homes owned by young adults in 1989 was approximately equal to the conditional median value of homes owned by young adults in 2007, the peak of the housing boom (as captured in the triennial SCF). Moreover, Figure 5B shows that relative to 1989, the distribution of home values was more concentrated in 2013: Values for young adults in 1989 were lower at the 25th percentile and higher at the 75th percentile. Moreover, the value of a home owned by the median young adult in 1989 was 75 percent that of the value of a home owned by a median middle adult that same year, while the ratio was 71 percent for young adults in 2013.

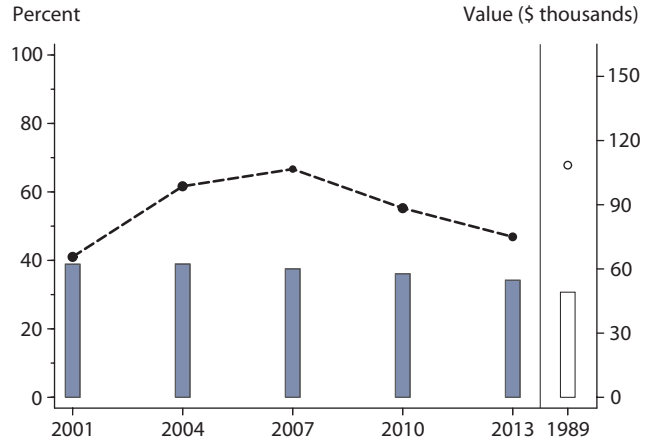
Figure 4C displays trends in ownership of quasi-liquid retirement accounts, which include individual retirement accounts and account-type plans such as 401(k)s. (Note that this does not include the present value of defined benefit retirement plans). Between 2001 and 2013, the share of young adults with retirement accounts remained near 40 percent. Time trends in ownership were similar for middle adults, but their ownership rates were higher, approximately 60 percent, throughout the period shown. In 2013, conditional on owning a retirement account, the median young adult held \$6,500 in such accounts. Figure 5C displays the 75th and 25th percentile values; in 2013; those in the 75th percentile had approximately \$17,000 in retirement accounts, while those in the 25th percentile had approximately \$1,500. Time trends indicate that the value of these accounts fluctuated throughout the period at all points in the distribution, but the conditional values of these accounts are difficult to interpret because they can be attributed to changes in both the stock market and contributory behavior. Relative to young adults in 1989, young adults in 2013 were much more likely to have quasi-liquid retirement

Figure 4
Ownership Rates and Median Asset Values Among Young Adults

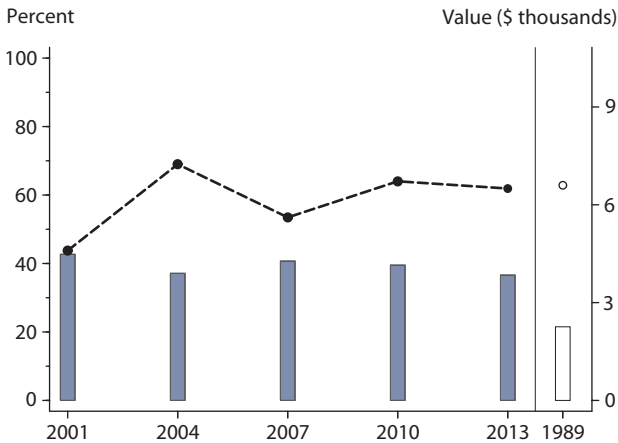
A. Bank Deposits



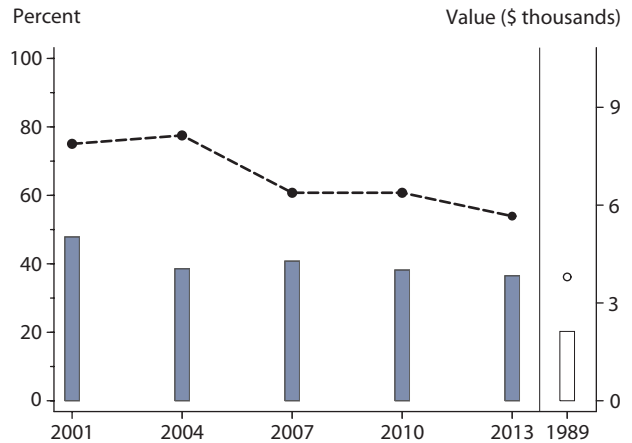
B. Housing



C. Retirement Accounts



D. Stocks



■ Percent Owning -●- Conditional Median Value

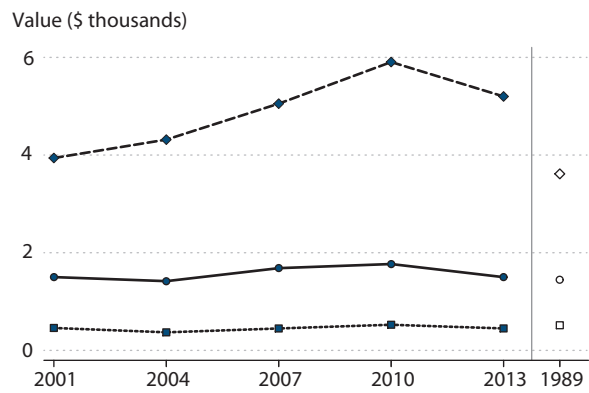
NOTE: The figure shows the asset ownership rates and conditional median values for different asset types among young adults 18 to 31 years of age. All nominal values were adjusted to 2013 dollars using the CPI-U.

SOURCE: SCF.

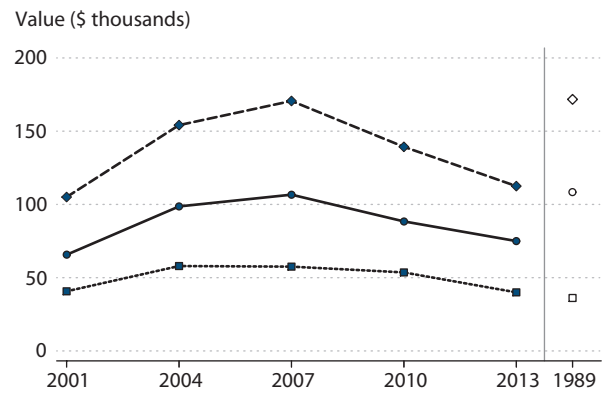
Figure 5

Distribution of Asset Values Among Young Adults

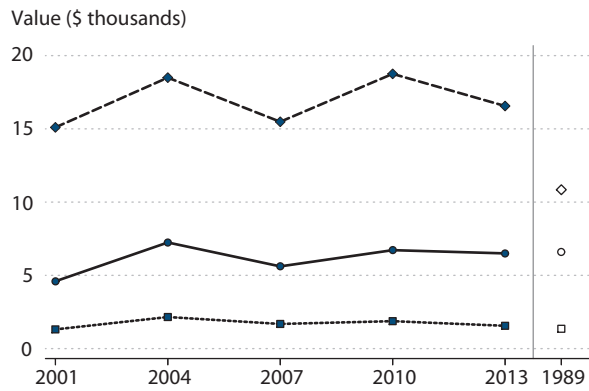
A. Bank Deposits



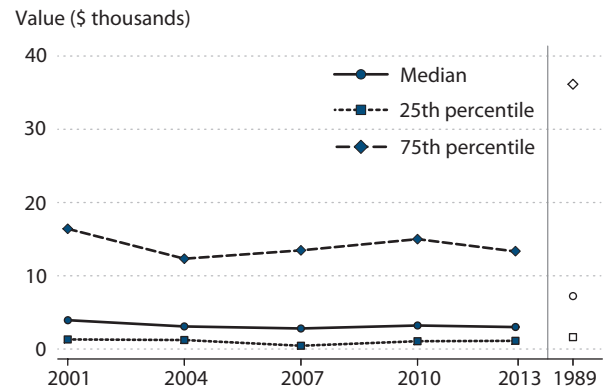
B. Housing



C. Retirement Accounts



D. Stocks



NOTE: The figure shows the distribution of total values for different asset types among young adults 18 to 31 years of age. All nominal values were adjusted to 2013 dollars using the CPI-U.

SOURCE: SCF.

Dettling and Hsu

accounts, although conditional on ownership, the values of these accounts were similar at both the median and 25th percentile. The conditional value at the 75th percentile, however, was much higher in 2013 than in 1989. These trends in ownership and conditional values of retirement accounts are probably at least partially attributable to the declining prevalence of defined benefit pensions since the 1980s and the increasing prevalence of account-type plans as an alternative.⁷

Lastly, Figure 4D displays trends in stock ownership. The definition of stock ownership used here is broad and includes stocks in publicly traded companies held both directly and indirectly (such as those in retirement accounts or pooled investment funds). The share of young adults who owned stocks declined throughout the period: from 48 percent in 2001 to 37 percent in 2013. Rates of stock ownership among middle adults also fell over this period, although by relatively less than among young adults: from 60 percent in 2001 to 56 percent in 2013. The conditional median value of stocks owned by young adults also fell throughout the period, from \$7,900 in 2001 to \$5,600 in 2013. Again, this decline is difficult to interpret as it may reflect changes in the stock market or the composition of stock owners if those who continued to hold stocks invested less money in them or held stocks of relatively lower values. Both stock ownership and conditional median values of stocks have been higher among young adults in 2013 than among their 1989 counterparts. Figure 5D shows that the downward trends in the conditional median value of stocks over this period occurred at the 25th percentile, median, and 75th percentile alike.

The evidence in this section indicates that asset holding was relatively stable among young adults throughout the period studied, although bank deposits grew slightly and ownership of homes, retirement accounts, and stock fell between 2007 and 2013. This pattern partially reflects a general retreat toward safer assets during this period, since ownership rates of stock fell and ownership rates of bank deposits rose for middle adults as well. Indeed, SCF data show that young adults have reported increased unwillingness to bear risk in financial investments since 2001. Compared with young adults in 1989, young adults in 2013 were more likely to own all types of assets studied here, including bank deposits, homes, retirement accounts, and stocks.

Debt

Figure 6 displays ownership patterns and conditional median values for four types of debt: credit card debt, housing debt, automobile loans, and student loans. The blue bars show the fraction of young adults with each type of debt; the black dots and dashed lines represent the conditional median value of the debt. While about 80 percent of young adults in the sample period had some sort of debt, rates varied quite dramatically across the different types of debt. Across the five most recent waves of the survey, about 43 percent of young adults had credit card debt, 39 percent had auto loans, 33 percent had mortgages, and 34 percent had student loans. Generally, rates of holding the various types of debt did not change substantially between 2001 and 2007 but fell between 2007 and 2013. Conditional on holding debt, balances also generally fell between 2007 and 2013. In both trends, student loans are an exception, as discussed below.

Figure 6A displays trends in credit card debt, which is defined as the outstanding balance after the most recent payment and includes bank-issued credit cards and retail cards.⁸ Between 2001 and 2013, the incidence of credit card debt generally fell, as did the conditional median value of the debt. In 2013, 36 percent of young adults had credit card debt compared with 43 percent of middle adults. The median credit card borrower owed slightly more than \$1,000 throughout the sample period, although there was a slight downward trend in the median value. Figure 7A shows this slight downward trend in the value of credit card debt at both the median and 25th percentile, but not the 75th percentile, where the value of credit card debt increased until 2007 before falling. Compared with young adults in 1989, young adults in 2013 were less likely to hold credit card debt and held less debt at each point in the distribution.

Figure 6B displays trends in housing debt, which includes mortgages, home equity loans, and home equity lines of credit on both principal residences and other real estate properties. Between 2001 and 2013, the fraction of young adults with housing debt fell from 35 percent to 27 percent. Housing debt ownership for middle adults also fell over this period, from a peak of 66 percent in 2004 to 58 percent in 2013. The conditional median value of housing debt was \$61,200 for young adults in 2013, below the median of \$80,000 for middle adults. The conditional median debt values for young adults essentially followed the path of home prices over the period, which is consistent with the fact that young adults tend to hold recently opened loans. Figure 7B shows that trends in the value of debt holdings were similar across the distribution. In 2013, housing debt for those at the 75th percentile was \$100,000, compared with \$38,300 for those at the 25th percentile. Young adults held housing debt at similar rates in 2013 and in 1989, but the conditional median value of debt for young adults in 2013 was about 20 percent lower than it was in 1989.

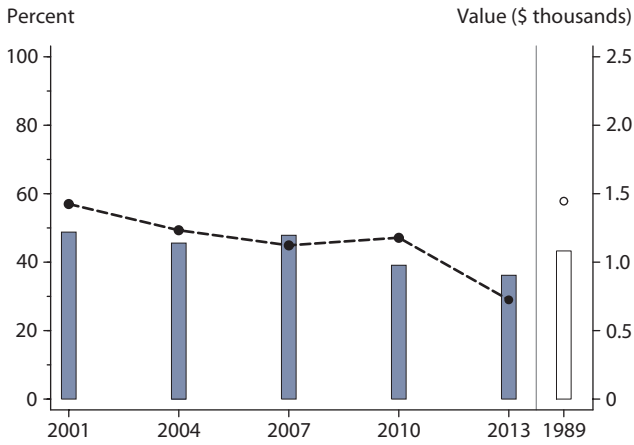
Figure 6C displays trends in automobile debt, which consists of installment loans for both new and used vehicles. The fraction of young adults with automobile debt fell from 45 percent in 2001 to 35 percent in 2013.⁹ As a comparison, 38 percent of middle adults had auto debt in 2013. The median young adult with auto debt in 2013 owed approximately \$6,500, which is similar to the median \$7,000 owed by middle adults. Figure 7C shows similar trends in conditional values for those in the 25th percentile, median, and 75th percentile group: Auto debt levels rose until 2007 and then fell between 2007 and 2010. Both ownership of auto debt and the conditional median value of the debt were higher in 1989 than in 2013.

Figure 6D displays trends in education debt, which differ from trends for other types of debt. Student loan holding rates and the distribution of values rose substantially throughout the period. In 2001, 26 percent of young adults had a student loan; in 2010 and 2013, 40 percent had a student loan. These numbers are substantially higher for young adults than for middle adults, of whom only 25 percent had student loan debt in 2013. Young adult student loan borrowers owed a median of \$6,600 in 2001; this amount increased continuously between each SCF wave to \$10,100 in 2007. Median balances fell slightly between 2007 and 2010 and then increased to a new high of \$11,100 in 2013. Figure 7D indicates that the growth in the value of student loan debt over the period was even stronger at the 75th percentile, where balances grew from \$14,400 in 2001 to \$24,200 in 2013. Balances at the 25th percentile also grew throughout the analysis period, from \$2,600 in 2001 to a peak of \$4,600 in 2013.

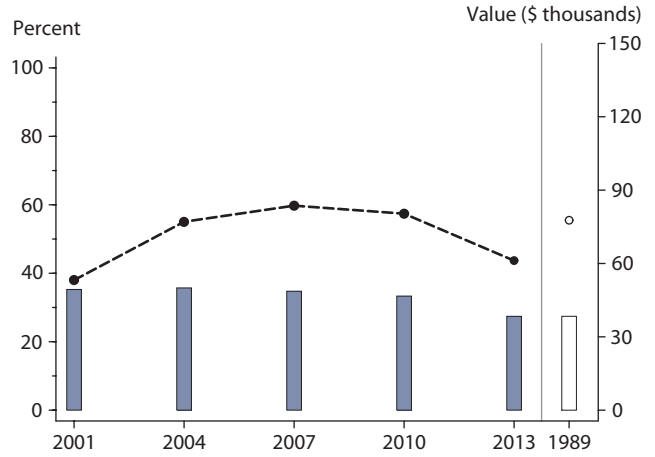
Figure 6

Rates of Debt Holding and Median Values of Debt Among Young Adults

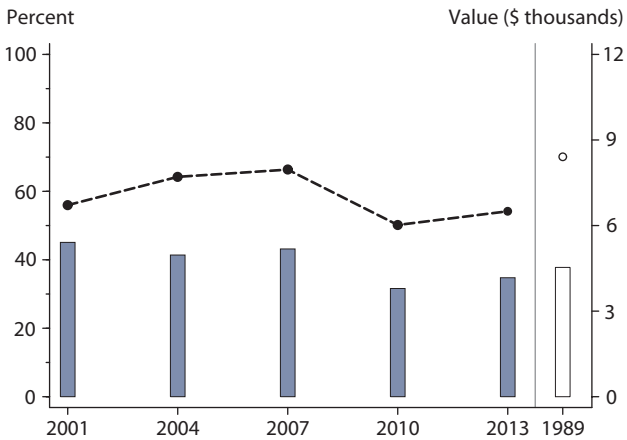
A. Credit Card Debt



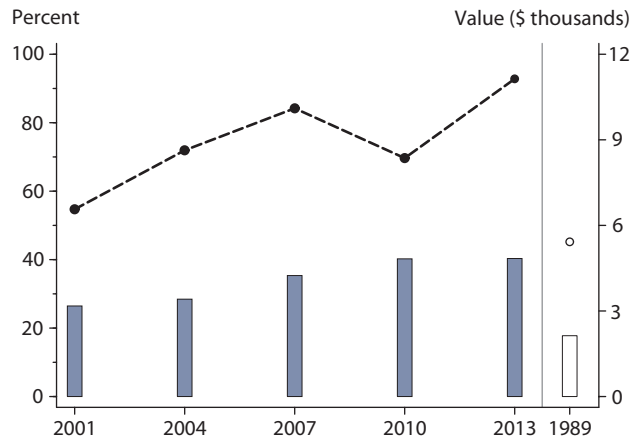
B. Housing



C. Auto Loans



D. Student Loans



■ Percent Owning -●- Conditional Median Value

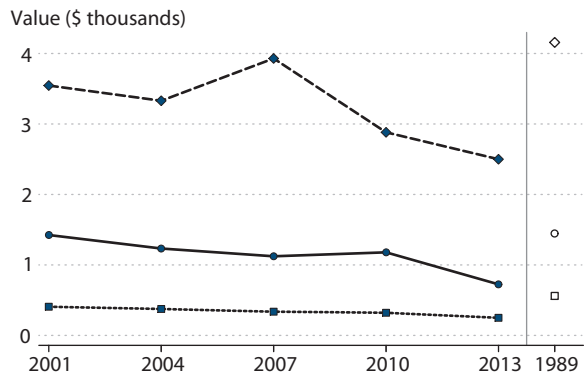
NOTE: The figure shows the rates of debt holding and conditional median values for different types of debt among young adults 18 to 31 years of age. All nominal values were adjusted to 2013 dollars using the CPI-U.

SOURCE: SCF.

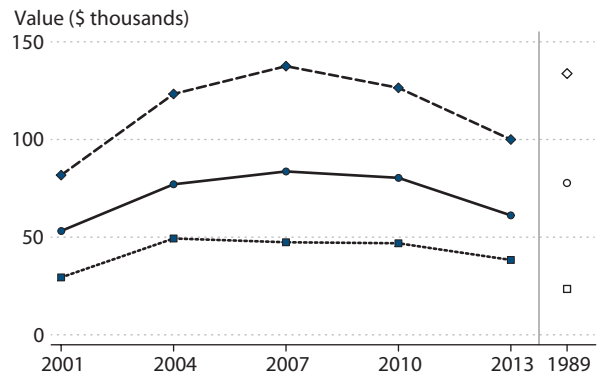
Figure 7

Distribution of Debt Values Among Young Adults

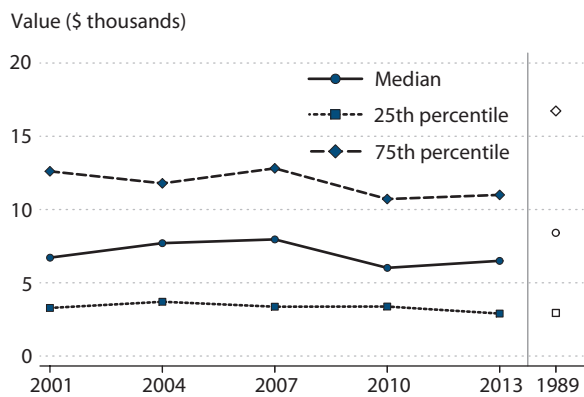
A. Credit Card Debt



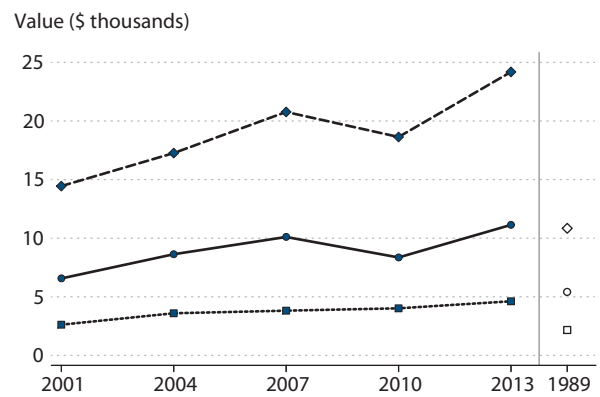
B. Housing



C. Auto Loans



D. Student Loans



NOTE: The figure shows the distribution of debt values for different types of debt among young adults 18 to 31 years of age. All nominal values were adjusted to 2013 dollars using the CPI-U.

SOURCE: SCF.

Compared with young adults in 1989, young adults in 2013 were more than twice as likely to hold student loan debt and owed more money on student loans. Loan balances at the 25th percentile, median, and 75th percentile were all more than twice as high in 2013 as in 1989.

On net, the evidence in this section indicates that, with the exception of student loans, liabilities have generally declined or remained relatively stable for young adults between 2001 and 2013.¹⁰ Student loan debt, on the other hand, has risen substantially. Middle adults experienced similar trends in debt holding rates, although they are more likely to hold housing, auto, and credit card debt but less likely to hold student loan debt. Total debt was no higher in 2013 than in 2001. Overall, this suggests that the different types of debt may be substitutes for one another for young adults. Compared with young adults in 1989, young adults in 2013 were much more likely to have student loans, equally likely to hold housing debt, and less likely to carry credit card or auto debt.

Credit Market Experiences

Next, we examine how young adults interact with credit markets. Figure 8 displays trends among young and middle adults in their experiences with credit markets, as measured by the incidence of reporting credit constraints, use of revolving credit card debt, and missed payments. In the subsequent analysis, we include all respondents regardless of whether they hold debt to assess the overall incidence of particular credit experiences.

Figure 8A shows the fraction of young adults (dark blue bars) and middle adults (light blue bars) who report being credit constrained. As described earlier, we define an individual as credit constrained if he or she reports either being denied credit or not applying for credit for fear of being denied. Figure 8A shows that young adults were decreasingly likely to be credit constrained over the period studied, while middle adults were increasingly likely to be credit constrained. In 2001, 44 percent of young adults reported being credit constrained compared with 28 percent of middle adults. By 2013, this gap had narrowed substantially; 40 percent of young adults and 34 percent of middle adults reported being credit constrained. These declines in the relative incidence of credit constraints occurred despite the passage of the Credit Card Accountability Responsibility and Disclosure Act of 2009 (Credit CARD Act), which took effect before the interview period for the 2010 wave of the survey and differentially tightened lending standards for young adults. The Act made it very difficult for borrowers younger than 21 years of age to acquire credit cards without a cosigner or evidence of sufficient income (Debbaut, Ghent, and Kudlyak, 2013). Compared with young adults in 1989, young adults in 2013 were slightly less likely to report credit constraints.

Figure 8B shows the proportion of respondents who have revolving credit card debt, which is defined as carrying a balance month to month by not paying balances in full each month. Between 2001 and 2013, a declining share of young adults had revolving credit card debt: 39 percent in 2001 and 25 percent in 2013. In all years, the share of young adults with revolving credit card debt was less than the share of middle adults. Of note, the sample here includes respondents with no credit cards, and a rising proportion of young adults over this period reported having no credit cards.

Figures 8C and 8D show the fraction of young adults who reported late payments in the 12 months before the survey. As Figure 8C shows, the fraction of young adults with late payments rose from 21 percent in 2001 to 29 percent in 2007 and then fell back to 21 percent in 2013 (this includes both borrowers and respondents who do not currently hold debt). Generally, fewer middle adults than young adults had late payments during the sample period. However, for middle adults, late payment behavior trended upward and by 2010 middle adults and young adults were almost equally likely to report being late on payments. Note that the late payments measure takes a value of 1 even if the respondent missed only one payment. Figure 8D shows a stronger measure of payment delinquency—the fraction of respondents who were ever two or more months late on payments. Between 2001 and 2013, about 9 percent of young adults reported ever being two months late on payments. A smaller proportion of middle adults were late on payments by two months or more between 2001 and 2007, but missed payment behavior in this group spiked and exceeded that of young adults in 2010 before dropping to just below that of young adults by 2013. Compared with young adults in 2001 and 1989, young adults in 2013 were slightly more likely to report being two months or more late on payments.

Our next exercise examines levels of debt burdens, as measured by debt-to-income ratios, leverage ratios, and payment-to-income ratios. Figure 9 displays various measures of debt burden for young adults and middle adults from 2001 to 2013, as well as 1989. In Figures 9A, 9B, and 9C, the dark blue bars refer to young adults 18 to 31 years of age in each survey year, and the light blue bars refer to middle adults 35 to 50 years of age in each survey year.

As shown in Figure 9A, median debt-to-income ratios, defined as the ratio of total income to total debt for those holding debt, were lower for young adults than middle adults in all survey years shown. Debt-to-income ratios have generally increased over time, although they declined slightly for both young and middle adults between 2010 and 2013. The right side of Figure 9A shows that the median young adult in 2013 faced a debt-to-income ratio more than twice as high as that experienced by the median young adult in 1989. Figure 9B shows that the median leverage ratio—the ratio of total debt to total assets—exhibited similar patterns.

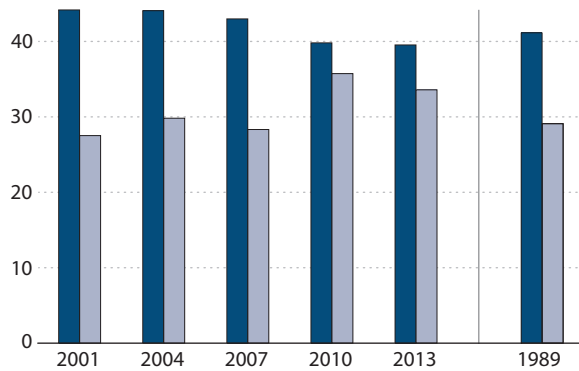
While these measures of debt burden for the median debtor provide information on the experiences of the typical young adult, they may fail to capture specific information about debt burdens that ultimately lead to financial stress since such stress may occur only for a small fraction of young adults and not necessarily the typical young adult. We focus on particularly high payment burdens to analyze the incidence of potentially problematic debt among young adults. Figure 9C displays the fraction of respondents with high payment-to-income ratios, defined as total monthly debt repayment obligations totaling more than 40 percent of total monthly income. In 2001, 8.5 percent of young adults had high payment-to-income ratios compared with 10.1 percent of middle adults. The fraction of young adults with high payment-to-income ratios rose substantially between 2001 and 2007, fell back to 2001 levels by 2010, and continued to decline through 2013. In contrast, the fraction of middle adults with high payment-to-income ratios continued to rise between 2007 and 2010 before decreasing substantially between 2010 and 2013. Compared with young adults in 1989, young adults in 2013 were much less likely to have high payment-to-income ratios. In fact, young adults in 1989 were more likely to have high payment-to-income ratios than middle adults in 1989, while in

Figure 8

Credit Market Experiences Among Young and Middle Adults

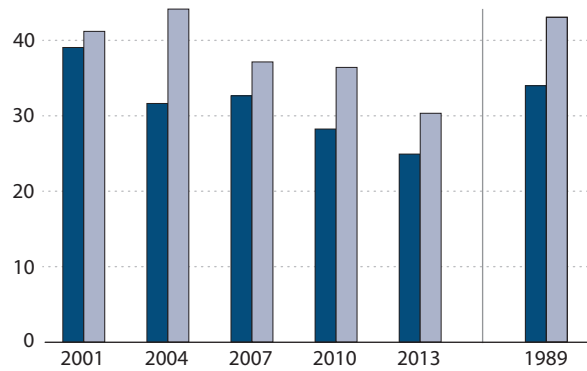
A. Credit Card Constraints

Percent Reporting Credit Constraints



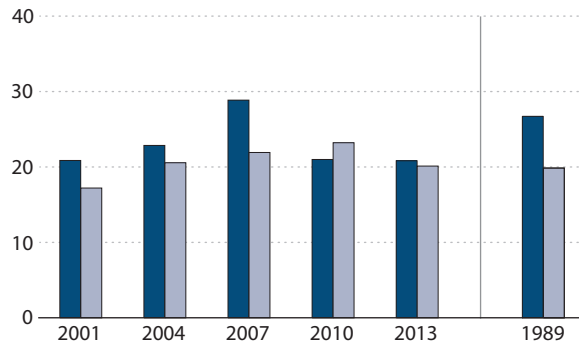
B. Revolving Debt on Credit Card

Percent with Revolving Debt



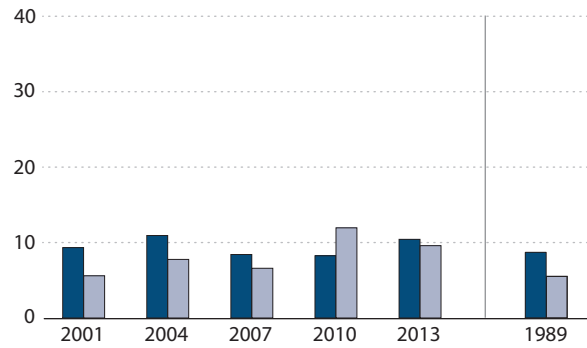
C. Late on Payments

Percent Reporting Late Payments



D. Late on Payments Two Months

Percent Reporting Very Late Payments



■ Young Adults ■ Middle Adults

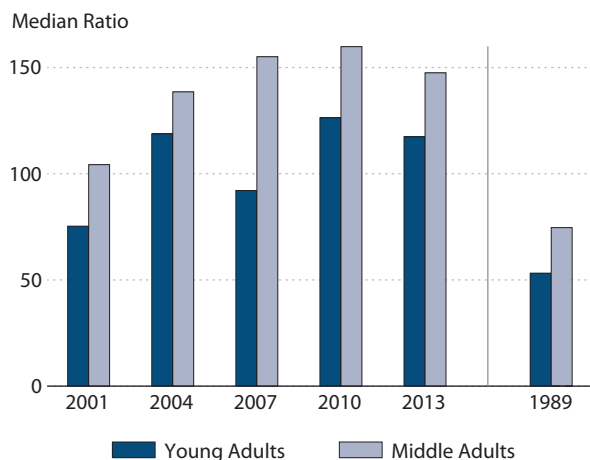
NOTE: Panel A shows the fraction of young (18 to 31 years of age) and middle (35 to 50 years of age) adults with credit constraints. An individual is considered credit constrained if he or she reports either being denied credit in the past two years or not applying for credit for fear of being denied in the past two years. Panel B shows the fraction of young and middle adults who report that they sometimes or hardly ever pay the total balances owed on credit cards each month. Panel C shows the fraction who report being late on payments in the past year, and Panel D shows the fraction who have been late on payments for two or more months.

SOURCE: SCF.

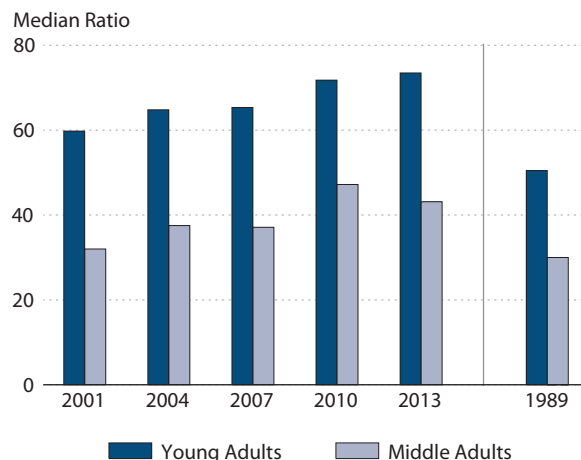
Figure 9

Debt Burdens

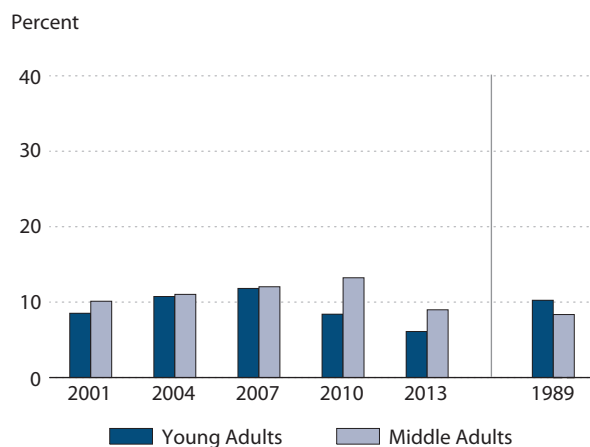
A. Median Debt-to-Income Ratio for Debtors



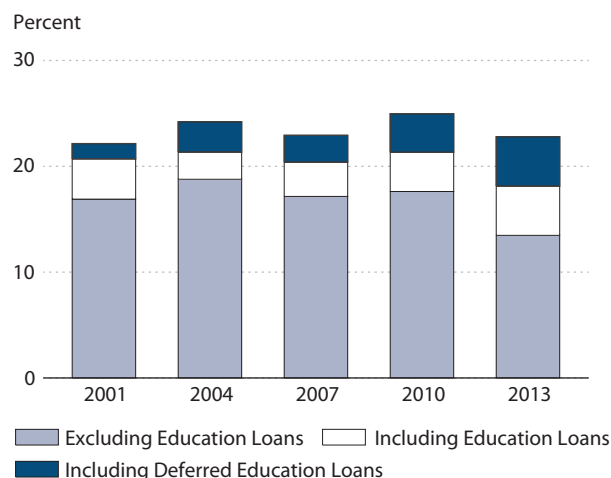
B. Median Leverage Ratio for Debtors



C. Percent with Payment-to-Income Ratio >40 Percent



D. Average Payment-to-Average Income Ratios by Type of Debt



NOTE: Panel A shows the median debt-to-income ratio among young (18 to 31 years of age) and middle (35 to 50 years of age) adults. Panel B shows the median leverage ratio among young and middle adults. Panel C shows the fraction of young and middle adults with payment-to-income ratios greater than 40 percent. Panel D shows the average monthly debt payment-to-average monthly income ratio. Information for student loan debt under deferment status was not collected in 1989, so that year is not displayed in the figure. Debt categories are divided into student loan debt under repayment, student loan debt under deferment, and all other debt.

SOURCE: SCF.

the 2000s young adults were always less likely to have high payment-to-income ratios than middle adults.

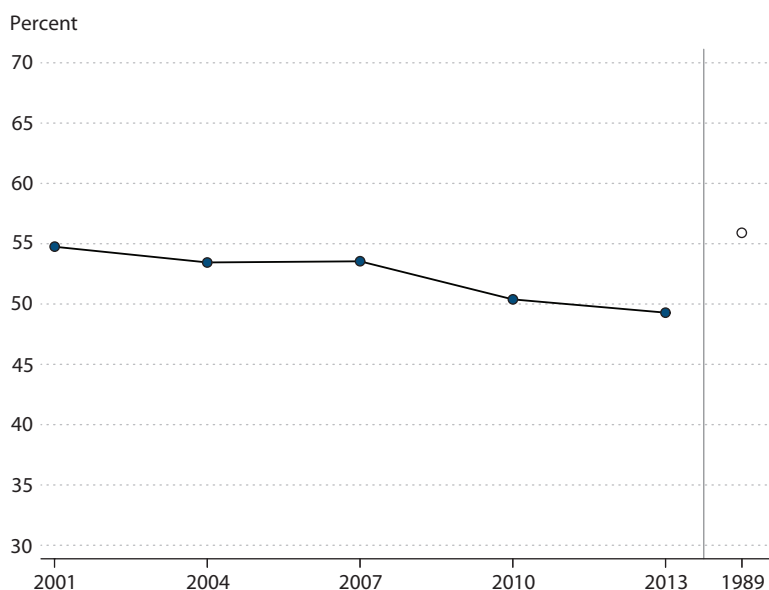
Measures of overall debt burdens reflect total amounts owed, but they may obscure the actual month-to-month payment burden faced by young adults. In particular, since student loans may be under deferment (meaning the lender has agreed that payments do not need to be made for a given period of time), the total debt burden may not provide a complete view of the current payment burdens of young adults. Student loan deferments or forbearance can be granted because the borrower is enrolled in school, has financial hardship, is unemployed, or has other reasons for deferment.¹¹ The SCF collects information about the deferment status of student loans, so we can separate payment burdens for student loans in repayment, hypothetical burdens of student loans under deferment, and all other debt payments. Figure 9D displays payment-to-income ratios from 2001 to 2013. Each portion of the bar represents the contribution of one type of debt to the overall average payment-to-income ratio for young adults. On average, payments on debt other than student loans represented 17 percent of income in 2001 and fell to 13 percent by 2013. In 2001, student loan payments represented about 5 percent of income; nearly three-quarters of this burden consisted of loans under repayment. By 2013, total student loan payment burdens doubled and reached 10 percent of income. However, about half of this burden consisted of hypothetical payments on loans that were under deferment. Actual student loan payment obligations for loans under repayment were only 5 percent of income, 1-percentage-point higher than in 2001. This indicates that although overall debt burdens had risen for young adults, much of the rise is explained by student loan payments that are not currently a burden to young adult borrowers. If these hypothetical burdens were removed, payment-to-income ratios would have actually fallen for young adults between 2001 and 2013.

Overall, the data present a mixed picture of young adults' experiences with credit markets in 2013 relative to the past and to older adults. Young adults in 2013 experienced higher debt-to-income and leverage ratios and were more likely to have late payments than middle adults or young adults in 1989. At the same time, however, young adults in 2013 were less likely to have high payment-to-income ratios than middle adults in 2013, young adults in 2001, or young adults in 1989. Young adults in 2013 were also less likely to report credit constraints than young adults in 2001 or middle adults in 2013.

ARE SCF YOUNG ADULTS REPRESENTATIVE OF ALL YOUNG ADULTS?

In the Data section, we briefly discussed the SCF sampling frame and how it captures certain types of young adults while missing others. Recall that the SCF does not collect balance sheet information for young adults who are financially independent roommates of a household head or are living with a parent. In this section, we investigate whether this feature of the SCF sampling frame causes the SCF sample to be unrepresentative of the overall young adult population and whether its representativeness has changed over time.

To determine whether the SCF is representative of the population of young adults in the United States, we compare the SCF data with those in sources that are representative at the

Figure 10**Percent of Young Adults Living Independently Over Time**

NOTE: The figure shows the trend in the percent of young adults who are living independently (as a household head, spouse, or cohabitating partner). Values are calculated from the March Current Population Survey Annual Social and Economic Supplement in years that correspond to SCF interview years.

SOURCE: CPS.

individual (rather than household) level. Our comparison data source is the March Current Population Survey Annual Social and Economic Supplement (henceforth the CPS). While the CPS does not contain the information on assets or liabilities required for a direct comparison, it does provide information on income, demographics, and living arrangements that can be used to benchmark the SCF data more generally.

We begin by tabulating the fraction of young adults 18 to 31 years of age in the CPS who are living independently (that is, household heads, spouses, or cohabitating partners), which is comparable to the group of young adults observed in the SCF. Figure 10 displays the results of this analysis for SCF survey years 1989 (right side of the figure) and between 2001 and 2013. Over the period studied, young adults were increasingly unlikely to live independently and thus to be a member of the SCF sample. This suggests that the SCF may have become increasingly unrepresentative of all young adult individuals over the past decade.

It is not clear *ex ante* whether the growing fraction of young adults in living arrangements for which their income and balance sheet information is not captured in the SCF biases the results. If the wealth and income of the young adults not captured by the SCF sampling frame are similar to those of young adults captured by the SCF, then an analysis based on SCF data will provide results similar to a hypothetical study of the overall young adult population. To

examine whether this might be the case, we begin by comparing median wage and salary income tabulated in the CPS with median wage and salary income tabulated in the SCF.¹² Figure 11A displays median wage incomes for all young adults in the CPS and for young adults for whom wage income information is available in the SCF (household heads and spouses/cohabitating partners). Several observations emerge. First, both CPS and SCF wage and salary income fell between 2001 and 2013. Second, SCF median income was approximately \$10,000 greater than the CPS median income throughout the period studied. This suggests that young adults who do not live independently tend to have lower wage and salary income than those who do, which raises concerns about the representativeness of the SCF for the overall population of young adults.

Figure 11 shows how SCF and CPS wage income and homeownership rates have evolved. Figure 11B shows the ratio of SCF income to CPS income over time. SCF median wage and salary income between 2001 and 2013 declined less than CPS median wage and salary income. In 2001, median wage income for SCF young adults was approximately 1.6 times larger than median wage income for CPS young adults, rising to approximately twice as large by 2013. Combining these findings with the results shown in Figure 10, which indicate the propensity to live independently declined over this period, further supports the notion that those who live independently tend to have higher incomes than those who do not.

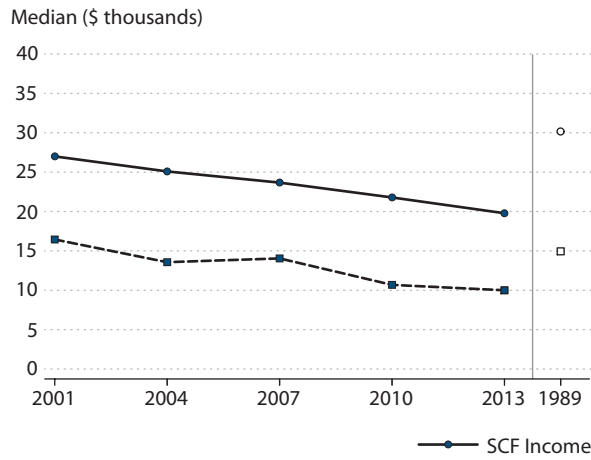
Both data sources also collect information about one asset: homes. Figure 11C displays trends in homeownership rates calculated from the SCF and CPS samples. Not surprisingly, homeownership among the SCF sample was considerably higher throughout the period, since the SCF sample includes only young adults who live independently, while the CPS includes all young adults. Figure 11D displays the ratio of the SCF homeownership rate to the CPS homeownership rate and shows that the ratio has been fairly stable over time. This implies that the decline in the fraction of young adults living independently (and hence the decline in young adults in the SCF sample) has done little to change the homeownership rate in the SCF. We interpret this as evidence suggesting that the marginal young adults not living independently might have been renters, not owners, if they were to live independently.

Overall, our comparison between SCF and CPS data indicates that young adults captured by the SCF tend to have higher incomes and higher homeownership rates than the overall population of young adults in the CPS. Moreover, because fewer young adults lived independently in 2013 than in 2001, SCF median income declined slightly less than CPS median income over the period. If higher incomes are correlated with greater wealth, the SCF will tend to overstate young adults' balance sheets on average. Thus, the results presented in this article should be considered with the caveat that they are representative of only young adults living independently. More broadly, our comparisons with CPS data indicate that SCF users should exercise caution when drawing inferences regarding balance sheet items that are primarily held by young people.

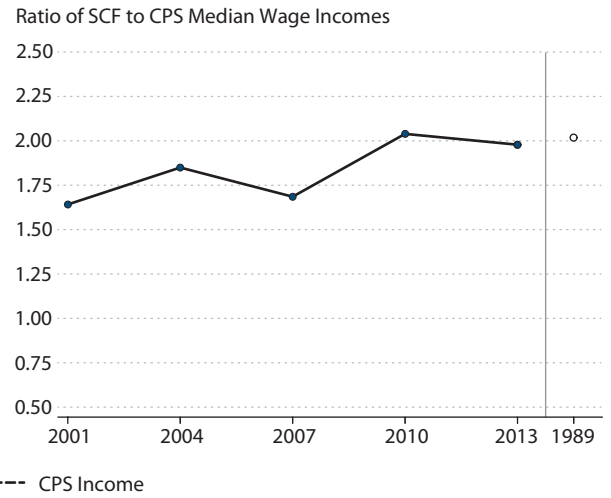
Figure 11

Comparison of SCF and CPS Wage Income and Homeownership Rates

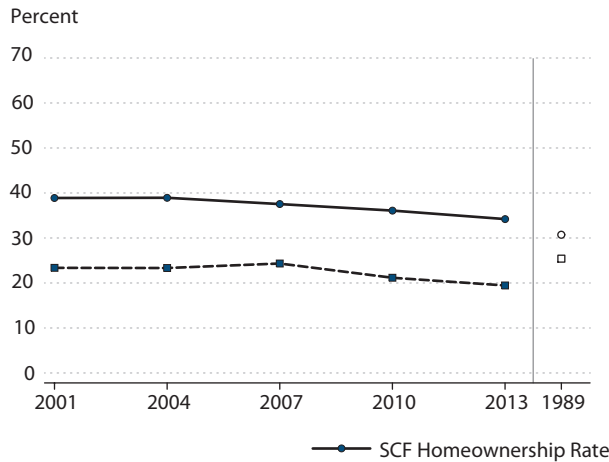
A. Median Wage Income in the SCF and CPS



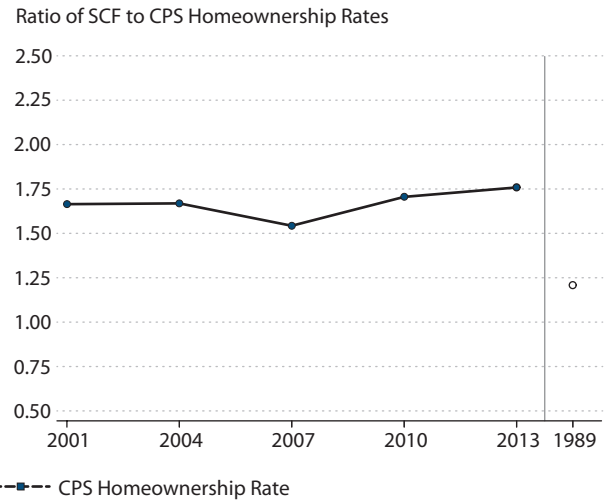
B. Ratio of Median Wage Income



C. Homeownership in the SCF and CPS



D. Ratio of Homeownership Rates



NOTE: The figure shows trends in median wage income (Panel A) and homeownership rates (Panel B) for young adults 18 to 31 years of age in the SCF and CPS. Panels B and D display the ratios. All nominal values were adjusted to 2013 dollars using the CPI-U.

SOURCE: SCF and CPS.

CONCLUSION

This article examines the state of young adults' balance sheets between 2001 and 2013. We draw comparisons between young adults over time, between young adults and middle adults, and between young adults today in 2013 (members of the "Millennial Generation") and young adults in 1989 (members of "Generation X"). We find that net worth for young adults fell between 2001 and 2013, primarily because of a decline in asset holdings. However, compared with middle adults, young adults experienced a relatively modest decline in net worth, particular during the Great Recession and recovery between 2007 and 2013.

We find that asset holdings among young adults were relatively stable throughout the 2000s, although bank deposits grew slightly and stock holdings, retirement account ownership, and homeownership fell. Yet, relative to young adults in 1989, young adults in 2013 were more likely to own all four of these assets. We find that overall, liabilities declined modestly for young adults over the 2001-13 period with one important exception: student loans, which rose substantially over the period. Much of the increase in student loan balances is driven by increases at the top of the distribution. Compared with young adults from in 1989, young adults in 2013 were more likely to carry student loan debt and less likely to carry credit card, auto, and housing debt. Given that median total debt was no higher in 2013 than 2001, this finding suggests that for young adults, these different forms of debt may be substitutes for one another.

We also examine young adults' experiences with credit markets. We find that young adults in 2013 experienced higher debt-to-income and leverage ratios and were more likely to be late on payments than older adults in 2013 or young adults in 1989. At the same time, however, young adults in 2013 were less likely to have very high payment-to-income ratios than older adults in 2013, young adults in 2001, or young adults in 1989. Young adults in 2013 were also less likely to report being credit constrained than young adults in 2001 or middle adults in 2013.

Our analysis of SCF data indicates that although the income and net worth of young adults fell between 2001 and 2013, on many measures young adults in the SCF have weathered the Great Recession relatively well compared with both older adults and an earlier cohort of young adults. However, because the SCF can describe only the balance sheets of young adults living independently, the financial circumstances of young adults in the SCF could be better than those experienced by the overall population of young adults. ■

NOTES

- ¹ Young adults in the 2013 survey were born between 1982 and 1995, and young adults from the 1989 survey were born between 1958 and 1971. The Millennial Generation typically encompasses cohorts born between 1982 and 2004, and Generation X typically encompasses cohorts born between 1961 and 1981 (Strauss and Howe, 1997). Thus, young adults from the 2013 survey are a subset of the Millennial Generation and young adults from the 1989 survey consist mainly of members of Generation X.
- ² In the SCF, living independently is defined as living as a household head, spouse, or cohabitating partner. This issue is discussed extensively in this section and the section entitled “Trends in Young Adults’ Balance Sheets.”
- ³ More information about the SCF, see “Research Resources: Survey of Consumer Finances” (<http://www.federalreserve.gov/econresdata/scf/scfindex.htm>).
- ⁴ The SCF does collect some limited information on income and liabilities for household members who are not financially dependent on the household head. Because of these data limitations, we do not use this information in our analysis.
- ⁵ For more information on the components of net worth and their definitions, see Bricker et al. (2014).
- ⁶ Our measure of stock ownership includes both stocks within and outside retirement accounts, pooled investment funds, and managed accounts.
- ⁷ In 1989, 17 percent of young adults had a defined benefit plan. That number fell to 11 percent by 2013.
- ⁸ This measure is generally zero for those who paid their last balance in full. In contrast, measures from credit reports reflect the current balance.
- ⁹ Note that vehicle ownership among young adults rose from about 78 percent in 2001 to 85 percent in 2007 and then declined to 82 percent in 2013.
- ¹⁰ It is beyond the scope of our analysis to determine whether these trends are driven more by demand-side or supply-side factors.
- ¹¹ For more information on federal student loan deferment, see <https://studentaid.ed.gov/repay-loans/deferment-forbearance>. Deferment policies for private student loans are lender specific.
- ¹² We focus exclusively on wage and salary income in this analysis, but the results for total income are similar.

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Student Loan Debt: Can Parental College Savings Help?

William Elliott, Melinda Lewis, Michal Grinstein-Weiss, and IlSung Nam

Postsecondary education costs in the United States today are rising with an increasing shift from societal responsibility to individual burden, thereby driving greater student borrowing. Evidence suggests that (i) such student debt may have undesirable educational effects and potentially jeopardize household balance sheets and (ii) student loans may better support educational attainment and economic mobility if accompanied by other, non-repayable financial awards. However, given declines in need-based aid and falling state support for postsecondary costs, policymakers and parents alike have failed to produce a compelling complement to debt-dependent financial aid that is capable of improving outcomes and forestalling assumption of ever-increasing student debt for a majority of U.S. households. This article, which relies on longitudinal data from the Educational Longitudinal Study, finds parental college savings may be an important protective factor in reducing debt assumption. However, several other factors increase the likelihood students will borrow: perceiving financial aid as necessary for college attendance, expecting to borrow to finance higher education, having moderate income, and attending a for-profit college. After controlling for student and school variables, the authors find that parental college savings increase a student's chance of accumulating lower debt (less than \$2,000) compared with students lacking such savings. Policy innovations to increase parental college savings—such as children's savings accounts—could be an important piece of the response to the student debt problem in the United States. (JEL I2, I22, I24)

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College costs are high and continue to grow as American students and their families are borrowing at unprecedented rates to keep pace with the increasing costs. The College Board (2012a), which produces an annual report tracking college costs, estimates the total annual cost of college attendance plus room and board at a private four-year college rose by 4.2 percent in 2012-13 to \$29,056 (College Board, 2012a). Even the traditionally more affordable in-state, public four-year college costs were \$8,655 for the 2012-13 school year, an increase of 4.8 percent from the prior school year. While these figures may reflect

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cost *shifts* more than absolute cost increases, the potential sticker shock for prospective college students and their families is the same, and the effects can be seen in educational attainment, particularly for low-income students and students of color, who may be most sensitive to price. Researchers find that increasing college costs have a negative impact on college enrollment decisions (Heller, 1997; Leslie and Brinkman, 1988; McPherson and Schapiro, 1999). McPherson and Schapiro (1999) estimate that a \$150 net cost increase (in 1993-94 dollars) results in a 1.6-percentage-point reduction in enrollment among low-income students. Against the backdrop of rising prices and a persistently elevated unemployment rate, more Americans—from pundits to parents—are questioning the value of a college degree (see Azziz, 2014), even while evidence clearly points to higher education as the primary path to economic mobility and prosperity (see Urahn et al., 2012). Frustrated by the collision of rising prices and declining wages (in inflation-adjusted dollars) (College Board, 2012a), Americans are seeking new ladders of human capital accumulation and related economic advancement. Still, the current public policy debate is limited mainly to tinkering around the edges of a primarily debt-dependent financial aid system. The debate includes discussion of income-based college loan repayment and other modifications to the cost and terms of borrowing, even while evidence suggests a need to rethink the true cost of student loans and to consider alternative approaches to higher education financing.

SHIFTING THE BURDEN OF COLLEGE COSTS FROM SOCIETY TO STUDENTS

Since the late 1970s, the federal government has increasingly attempted to promote equal access to higher education by adopting policies to make college loans accessible to more students (Heller, 2008). Most recently, the Health Care and Education Reconciliation Act (2010) routed all federal loans through the Direct Loan Program, making it easier for students and families to borrow directly from the U.S. Department of Education. At the same time, costs are being pushed upward by disinvestment in direct public support for institutions (U.S. Department of Education, 2013).

State appropriations for colleges sank by 7.6 percent in 2011-12, its largest decline in at least a half century (Center for the Study of Education Policy, 2013). As a result, 29 states allocated less money to higher education in 2011-12 than they did in 2006-7 (Center for the Study of Education Policy, 2013). Historically, public investment in higher education tends to be cyclical, with state and local appropriations for public institutions, in particular, declining during economic downturns (Desrochers, Lenihan, and Wellman, 2010).

Today, many analysts fear both cyclical declines and structural adjustments are at play as higher education is increasingly framed as an individual benefit instead of a public good (Hiltonsmith, 2013). This change in viewpoint has resulted in a “pattern of cost shifting to student tuition revenues” (Desrochers, Lenihan, and Wellman, 2010, p. 5). The College Board reported in 2013 that the net price of in-state tuition increased to \$3,120 after all aid was considered, signaling that even this last refuge of affordability is now a cost burden to many of the poorest American students. All American families may feel the effects of this cost shift; but to

at least some extent, those less able to shoulder their share—low-income households—will pay the highest price (Elliott and Friedline, 2012).

Higher college prices and declining real family incomes are only two parts of the equation adding to the financial squeeze felt by students approaching enrollment. Declines in the purchasing power of need-based financial aid also are significant. Just 10 years ago, the maximum Pell grant amount covered 98 percent of the average tuition and fees at public four-year institutions; in the 2012-13 academic year, this figure dropped to 64 percent (College Board, 2013). Significantly, this difference reflects not only recessionary budget cuts but also longer-term shifts in financial assistance from need-based aid to merit-based aid (Woo and Choy, 2011). *Need-based aid* is determined solely by the assets and income (i.e., financial need) of prospective students and their families. Factors such as test scores have no bearing on the aid decision. *Merit-based aid*—most commonly, scholarships—often is awarded based on test scores. Students with little financial need have the same entitlement to merit-based aid as students with high levels of financial need. Woo and Choy (2011) find that the proportion of undergraduates receiving merit-based aid rose from 6 percent in 1995-96 to 14 percent in 2007-08. Furthermore, research suggests that merit-based aid is awarded disproportionately to students from higher-income families (Woo and Choy, 2011), in large part because of the advantages they enjoy in educational environments and support in attainment. This shift has done little to improve college enrollment rates among low-income and minority students (Marin, 2002).

The resulting perfect storm of rising college prices, eroding real incomes, and declining purchasing power of financial aid creates “unmet need,” the hole that must be filled with student loans even beyond the point of reasonable affordability. Unmet need can be a barrier to academic success and upward mobility, forcing students to work longer hours, scale back enrollment, or adjust degree completion plans (Castleman and Long, 2013). Sometimes unmet need may derail higher education entirely; a 2009 study found that 69 percent of students who left school without a degree or certificate did not receive scholarships or financial aid (Johnson and Rochkind, 2013). Of course, these adverse educational effects are not evenly distributed; instead, they fall most heavily on low-income and otherwise disadvantaged students most in need of the mobility and promise a college education can provide.

As a result of these changes, Elliott and Friedline (2012) find that students might carry a larger proportion of the college cost burden. Students may use a patchwork approach to financing college costs. They may have to use parental or their own savings and job earnings to lower costs. They may also need to consider student loans or federal work-study programs. They also find that the college cost burden might vary by race, income level (the focus of this article), and length of college program. Elliott and Friedline (2012) find that the college cost burden for four-year college enrollment is lowest among the lowest-income group but highest among the middle-income group. However, they find evidence to suggest that parental college savings may help lower the debt burden on students.

Growing Amounts of Student Debt

Americans consider student loans to be investments that support long-term achievement (Cunningham and Santiago, 2008). Indeed, to the extent that higher education correlates to

higher lifetime earnings (Carnevale, Rose, and Cheah, 2011), this accounting of student loans as a ratio of monthly payments to increased earning potential is reinforced. However, college borrowing has real costs for students, who increasingly leave college with debt. During the 2011-12 school year, federal loans provided 37 percent of all undergraduate financial aid received (\$70.8 billion) (College Board, 2012b). The next-highest sources were federal Pell grants (19 percent) and institutional grants (18 percent). The percentage of undergraduate students who obtained federal loans increased from 23 percent in 2001-02 to 35 percent in 2011-12. In 2010-11, nearly 57 percent of students at public four-year colleges graduated with some debt (College Board, 2012b). On average, students who attended public four-year colleges borrowed \$23,800. Total borrowing for college hit \$113.4 billion for the 2011-12 school year, up 24 percent from 2007 (College Board, 2012b). Of course, this indebtedness persists after college completion; Fry (2012) found that 40 percent of all households headed by individuals younger than 35 years of age have outstanding student debt.

Too Much Debt May Have Undesired Educational Effects

As a policy mechanism, student loans are designed to ensure that more students have access to college by providing additional funds at the time of enrollment. However, research suggests that after a certain level, student loans may not produce the desired effect of increased enrollment and graduation rates (Dwyer, McCloud, and Hodson, 2012, and Heller, 2008). If this premise is true, simply continuing to increase the amount of loans available to students may not produce the desired effects. Instead, to preserve the role of higher education as an arbiter of equity and a tool for economic mobility (Elliott and Lewis, 2013), other complementary financial aid policies may be necessary.

Heller (2008) concludes after an extensive literature review that very little evidence suggests that loans improve outcomes. Similarly, Cofer and Somers (2001) suggest that larger loan amounts are counterproductive and fail to meet the goal of greater college accessibility, whereas smaller loan amounts might have positive effects. Dwyer, McCloud, and Hodson (2012) find that debt below \$10,000 has a positive relationship with college completion, while debt above \$10,000 has a negative relationship with college completion for the bottom 75 percent of the income distribution in their study. Other researchers find evidence that loan debt may have a more negative impact on college persistence during the first year than in subsequent years (Dowd and Coury, 2006, and Kim, 2007).

Further, prior research suggests that student loans may be a more effective strategy for middle- and high-income students because low-income students are averse to borrowing (Campagne and Hossler, 1998, and Paulsen and St. John, 2002). Similar findings exist with regard to race: Perna (2000) finds that student loans have a negative effect for black students on enrollment in a four-year college, which she attributes in part to an aversion to borrowing. This aversion suggests cause for concern with the indiscriminate preference of borrowing over other forms of college financing within the financial aid system, even for students for whom loans may be problematic.

Interestingly, evidence suggests that loans plus grants might be a more effective strategy than loans alone. For example, Hu and St. John (2001) examine different types of financial

aid among different racial groups: They find that, when combined with grants, loans have a more positive effect on persistence than loans only. This led Heller (2008) to conclude that “If grant aid were proportionally higher, then loans might provide more of a positive impact on college participation” (p. 49). However, with the shift toward merit-based aid for determining eligibility for grants and scholarships, some researchers suggest that grants increasingly benefit middle- and upper-income students (Woo and Choy, 2011) instead of low-income students for whom large debt assumption may be particularly forbidding.

Student Debt, Equity, and the Macroeconomy

While the understanding of the effects of debt on educational outcomes is still evolving, correlational evidence suggests the full accounting of the cost of student loans must include not only the more direct effects on educational attainment but also how dependence on student borrowing may jeopardize the balance sheets of American households (Elliott and Lewis, 2013). This, of course, is a circular relationship: Compromised family balance sheets, eroded by the pressures of the Great Recession, massive loss of housing value, and reductions in net worth wrought by elevated unemployment and constrained wages, also drive dependence on student loans (Chopra, 2013). While wealthy households demonstrate considerable ability to use debt to their advantage in pursuit of greater asset accumulation, low-income students are often forced to rely on borrowing as the sole mechanism of college finance. Even while they are building human capital, these students may then find themselves increasingly unable to accumulate financial assets in the face of overwhelming liabilities. These twin blows to household balance sheets have significant effects on individual well-being by reducing access to human capital development, particularly college education (Zhan and Sherraden, 2011). These combined factors lead to (i) constraining economic mobility (Cramer et al., 2009), as assets are usually needed to accumulate additional wealth and gain access to ladders of economic opportunity (Elliott and Lewis, 2014) and (ii) engendering financial insecurity, as households lack reserves with which to withstand future downturns (Boshara and Emmons, 2013). In the aggregate, these effects point to some of the ways in which student debt may influence macroeconomic health, even at levels short of the foretold “crisis.” If reductions in household wealth may be at least partly to blame for the rather anemic recovery following the recession, there is certainly reason to believe that the U.S. economy cannot easily withstand significant erosion of household balance sheet health.

SAVING AND THE POTENTIAL TO EXPAND THE CAPACITY OF STUDENT LOANS

The growing belief among policymakers is that the individual—who benefits most from attending college—should bear more personal responsibility for college costs. Thus, there might be very little political will to continue increasing the number of scholarships and grants available to students. Given this belief, there may be a need for a financial aid innovation that not only aligns with the notion of individual responsibility but also supplements student loans.

Asset accumulation strategies, such as children’s savings accounts (CSAs), might be just such an innovation within the financial aid system.

CSAs might serve as a policy vehicle for allocating intellectual and material resources to low- and moderate-income children. Unlike basic savings accounts, CSAs leverage investments by individuals, families, and sometimes third parties (e.g., initial deposits, incentives, matches). CSAs align with the ideals of personal responsibility because they require students and their families to help pay for college by saving. A growing body of literature (Elliott, Song, and Nam, 2013) supports the potential for positive educational outcomes from asset accumulation, which has led to CSA program innovation and momentum around the country. However, the political window created by the perception of a student loan crisis and the growing discontent with the U.S. college financing system may be the path by which CSAs garner sufficient traction to grow to scale.

Researchers who study CSAs suggest the accounts have the potential for both direct effects (e.g., reducing the price of college by providing students with money to pay for college) and indirect effects (e.g., improving engagement in school prior to college by making college appear within reach, thereby reducing the educational attainment gap) (Elliott et al., 2011). Researchers also find that saving is associated with college enrollment (Elliott and Beverly, 2011a), college persistence (Elliott and Beverly, 2011b), and college graduation (Elliott, 2013).

While some evidence suggests that assets—such as net worth and savings accounts—do have positive relationships with college enrollment and graduation (see Elliott, Destin, and Friedline, 2011), there is little information about whether CSAs can help reduce student debt. In this study, we focus on the role of parents’ savings for their children’s college education and their potential to reduce the amount of debt students are forced to assume to attend college. We focus on savings accounts because they most closely resemble CSAs, which can be thought of as savings accounts for children. Because CSAs allow and encourage not only children but also parents and others to save in the accounts, Loke and Sherraden (2009) suggest they might have a “multiplier effect by engaging the larger family in the asset-accumulation process” (p. 119).

RESEARCH QUESTIONS

In this study we address the following questions:

- Are students whose parents had savings to help pay for their four-year college degree less likely to have any student loan debt than students whose parents did not have savings to help pay for their four-year college degree?
- Do students whose parents had savings to help pay for their four-year college degree have less college debt than students whose parents did not have savings to help pay for their college?
- Are parental savings to help pay for a four-year college degree associated with a lower threshold of student loan debt?

METHODS

Dataset

This study uses longitudinal data from the Educational Longitudinal Survey (ELS) available to the public through the National Center for Education Statistics (NCES). The survey began in 2002 when students were in 10th grade; follow-up waves took place in 2004, 2006, and 2012. The survey, designed to follow students as they progressed through high school and transitioned to postsecondary education or the labor market, is an ideal dataset to test whether early experiences or resources predicted later outcomes.

The ELS aimed to present a holistic picture of student achievement by gathering information from multiple sources. Students, their parents, teachers, school librarians, and principals provided information regarding students' average grades, math achievement, educational expectations, school resources and curriculum, teacher experience, student and parent work/employment, and students' enrollment in college.

Study Sample

The final sample of this study is restricted to students who were in the 2002 10th-grade cohort and the 2012 ELS samples (i.e., those who answered the follow-up questionnaires). We also restricted the sample to graduates of four-year colleges who did not then attend graduate school. The amounts of college debt differ if students graduated from a four-year college or if they then attended graduate school (Miller, 2014). After these restrictions were applied, the full sample included 2,992 students.

Student Variables

Dependent variables in this study are from the 2012 wave, and independent variables are from the 2002, 2004, 2006, and 2012 waves depending on availability.

Student Race/Ethnicity. The variable representing race included seven categories in the ELS. Students whose race was listed as Native American, Alaska Native, or more than one race were not included in this analysis due to small sample sizes, and the Hispanic and Latino categories were combined. Four categories were included in the final analysis: 0 = white, 1 = black, 2 = Latino/Hispanic, and 3 = Asian (downloaded from 2002 data).

Gender. A student's gender is coded as: 0 = female, 1 = male (downloaded from 2002 data).

Students' High School GPA. A student's grade point average (GPA) is a categorical variable that averages grades for all coursework in 9th through 12th grades. The ELS has seven GPA categories: 0 = 0.00-1.00, 1 = 1.01-1.50, 2 = 1.51-2.00, 3 = 2.01-2.50, 4 = 2.51-3.00, 5 = 3.01-3.50, and 6 = 3.51-4.00. We collapsed categories 0 through 2 into one category due to small frequencies (36, 156, and 782, respectively). To convert the categories into letter grades, a commonly used grade scale is GPA category 0 = F, 1 = D, 2-3 = C, 4-5 = B, and 6 = A (downloaded from 2002 data).

Students' Perception of College Costs. Students were asked how important they considered low costs (e.g., of tuition, books, room and board) in choosing a school. Responses were coded as follows: 0 = not very important, 1 = very important (downloaded from 2002 data).

Students' Perception of Financial Aid. Students were asked how important they considered the availability of financial aid in choosing a school. Responses were dichotomized as follows: 1 = very important, 0 = not very important (downloaded from 2002 data).

Students' Perception of College Choice Basis. Students were asked if they thought they would have to choose a college based on cost. Responses were as follows: 0 = no, 1 = yes (downloaded from 2002 data).

Amount Student Expected To Borrow. Students were asked the amount they expected in undergraduate student loans in the future. The amount expected to borrow is a categorical variable in the ELS: 1 = \$0-1,999; 2 = \$2,000-3,999; 3 = \$4,000-5,999; 4 = \$6,000-7,999; 5 = \$8,000-9,999; 6 = \$10,000-14,999; 7 = \$15,000-19,999; 8 = \$20,000 or more. In this study, the expected student loan amount was collapsed into a three-level variable as follows: 0 = \$0-\$9,999; 1 = \$10,000-\$19,999; 2 = \$20,000 or more (downloaded from 2002 data).

Parental/Household Variables

Household Income. The ELS included 13 distinct household income levels. For this study, the levels of household income were combined into four levels: 0 = low income (\$0-\$35,000); 1 = moderate income (\$35,001-\$75,000); 2 = middle income (\$75,001-\$100,000); and 3 = high income (\$100,001 or higher). These levels were chosen, in part, to have relatively equal cases in each category while maintaining important distinctions between income groups (downloaded from 2002 data).

Parental Education Level. Parental education level is equivalent to the highest educational level achieved by the head of household and includes eight distinct levels in the ELS. The eight levels were collapsed into three for the final analysis: 0 = high school diploma or less, 1 = some college, 2 = four-year college degree or higher (downloaded from 2002 data).

Number of Siblings. The number of a student's siblings was a continuous variable that ranged from 0 to 7. We collapsed families with 4 to 7 siblings into the same category because of small frequencies with a new range of 0 to 4 as follows: 0 = 0 siblings, 1 = 1 sibling, 2 = 2 siblings, 3 = 3 siblings, 4 = 4 or more siblings (downloaded from 2002 data).

Secondary School Variables

College Counseling. This is a dichotomous variable that indicates whether the student had visited the high school's counselor for college entrance information: 0 = no, 1 = yes (downloaded from 2004 data).

Percentage of Students Who Attended a Four-Year College. The percentage of 2003 high school graduates who attended a four-year college (i.e., this is the percentage from a student's high school when in the 10th grade) was categorized as follows: 1 = none, 2 = 1-10 percent, 3 = 11-24 percent, 4 = 25-49 percent, 5 = 50-74 percent, 6 = 75-100 percent. Categories 1 through 4 were collapsed into one category to better balance the sample and because we felt 50 percent or more would represent a high level of students attending four-year colleges (downloaded from 2004 data).

University Variables

Application for Financial Aid. Students were asked if they applied for financial aid, which resulted in a dichotomous variable: 0 = no, 1 = yes (downloaded from 2006 data).

Out-of-State Residency. This is a dichotomous variable indicating whether the student attended college in the state where he or she lived: 0 = no, 1 = yes (downloaded from 2006 data).

Dependent Status. This is a dichotomous variable indicating whether students lived with their parents in 2006: 0 = no, 1 = yes (downloaded from 2006 data).

College Selectivity. The following categories comprise the college selectivity variable: 1 = public, four-year; 2 = private, not-for-profit, four-year; 3 = private, for-profit, four-year; 4 = public, two-year; 5 = private, not-for-profit, two-year; 6 = private, for-profit, two-year; 7 = public, less than two-year; 8 = private, not-for-profit, less than two-year; 9 = private, for-profit, less than two-year college. Due to sample restrictions—including only students who graduated from a four-year college—these nine categories were recoded as a three-level variable with the following categories: 0 = public, four-year; 1 = private, four-year; 2 = private, for-profit, four-year (downloaded from 2006 data).

Variable of Interest

Parental Savings for College. The variable of interest came from a survey question asking parents whether they were financially preparing to pay for their children to attend college by starting a savings account: 0 = no, 1 = yes (downloaded from 2002 data).

Outcome Variables

Student Debt. The student debt outcome variable is a dichotomous variable (i.e., has student loan debt/does not have student loan debt) (downloaded from 2012 data).

Amount of Student Loan Debt. The outcome variable, amount of student loan debt, was drawn from the 2012 wave and was a continuous variable (downloaded from 2012 data).

Student Debt Threshold. We also created a three-level debt variable: 0 = \$0-\$1,999; 1 = \$2,000-\$19,999; and 2 = \$20,000 or more. These categories were chosen based on the distribution of the data (downloaded from 2012 data).

ANALYSIS PLAN

We used two steps—with no problems of multicollinearity—to produce and analyze results for predictors of student college loan debt. In the first step, we conducted propensity score analyses for parents with a savings account for their child's college education (i.e., treated cases) and parents without a savings account for their child's college education (i.e., non-treated cases). We used two propensity score analyses (i.e., one-to-one matching and propensity score weighting) to cross-validate the results from the two models that adjust selection bias given the observed covariates. In the second step, we conducted multilevel modeling given that the children in this study are nested within schools.

Propensity Score Analyses

A propensity score matching was performed on whether or not parents had college savings predicted by all covariates using one-to-one nearest-neighborhood matching. Propensity score analysis balances the treatment group (i.e., those with savings accounts) on covariates to obtain more accurate estimates of the treatment effects. This method involves matching and weighting cases to create new samples and performing covariate balance checks (D'Agostino, 1998). Following the estimation of the propensity scores, we used two methods of propensity score analysis, including nearest-neighbor matching with caliper matching and propensity score weighting. Matching typically reduces the sample size because of the inability to match all treated and non-treated observations (Guo and Fraser, 2010; Rosenbaum, 2002; Rosenbaum and Rubin, 1985), which could result in a loss of a statistical power of the treatment effect on outcome estimation. Propensity score weighting was used as a non-sample-reducing correction to selection bias.

Propensity Score Estimation. Logistic regressions were performed to estimate propensity scores (i.e., the predicted probability of parents having a savings account for their child's college education in 2002). Prior to estimating the propensity scores, we conducted a series of logistic regressions to determine the covariates affecting selection bias. The results of these tests revealed significant differences among most covariates.

Covariate Balance Checks. We conducted balance checks to determine the ability of the propensity score analyses to balance relevant covariates. Given the potential selection bias evident among the covariates, balance checks were necessary to determine whether propensity score analyses adjusted for observed bias (Barth, Guo, and McCrae, 2008; D'Agostino, 1998; Guo, Barth, and Gibbons, 2006; Guo and Fraser, 2010). We performed all balance checks using weighted simple logistic regression (Guo and Fraser, 2010). Complete balance was achieved.

One-to-One Nearest-Neighbor Matching with Caliper Matching. After estimating propensity scores, we performed one-to-one nearest-neighbor matching (or, for brevity, one-to-one matching) with caliper matching (Cochran and Rubin, 1973). Parents with savings accounts (i.e., treated) and without savings accounts (i.e., non-treated) were ordered randomly. Then a treated parent was selected and matched with a non-treated parent using the closest propensity score within the region of the caliper (Guo and Fraser, 2010). The caliper size was equal to 0.1 times the standard deviation of the obtained propensity score. The matched pair was not used in matching other pairs (i.e., matching without replacement).

Average Treatment Effect. The estimated propensity scores were also used to compute the average treatment effect (ATE) for the population. The ATE weight estimated the ATE for the population using $(1/(1-ps))$, where ps indicates propensity score) when cases are among the non-treatment group and $(1/ps)$ when the cases are among the treatment group. Propensity scores ranged from 0.08 to 0.89.

Multilevel Modeling

Multilevel (hierarchical linear) modeling was performed on three student loan debt outcomes predicted by the variables shown in the boxed insert (Raudenbush and Bryk, 2002).

Variables Used for Multilevel (Hierarchical Linear) Modeling

Demographic variables

- Race
- Gender
- GPA

Student variables

- Students' perceptions of the following:
 - College costs as very important
 - Financial aid as very important
 - College choice based on cost
 - Amount expected to borrow
 - Parental income and education
 - Number of siblings

High school variables

- Percent of students from high school who attend a four-year college
- Visiting high school counselors before college

University variables

- Applying for financial aid
- Out-of-state residency
- Dependent status
- School selectivity

Random intercept and slope were determined. Students were nested within schools. The intra-class correlation coefficient was 0.142.

Findings at significance levels of $p < 0.05$ are noted in the tables. We also reported odds ratios (ORs) for easier interpretation. The OR is a measure of effect size describing the strength of association. All data analysis steps were conducted using Stata (version 13).¹

Sensitivity Analyses for Unobserved Heterogeneity

Although propensity score analysis was used to account for selection bias among observed covariates, bias could still be present because of unobserved covariates (Rosenbaum, 2002). This type of selection bias, also referred to as hidden bias or unobserved heterogeneity, may have been present because potentially important covariates could have been unknowingly omitted from the model. Mantel-Haenszel (MH) tests were conducted using the mhbounds procedure in Stata (version 13) to account for unobserved heterogeneity that may have affected selection into treated and non-treated groups (see Becker and Caliendo, 2007).² MH tests were used to calculate the bounds to check sensitivity of the ATE weight results (Aakvik, 2001). Q represents the MH test statistic. The level of gamma (Γ), a range of possible values attributable to unobserved heterogeneity, was set from 1 to 2 with an increment of 0.05. A Γ value close to 1 and significant indicates sensitivity to unobserved heterogeneity (Rosenbaum, 2005). Sensitivity analyses were conducted for the student debt (yes/no) outcome variable.

RESULTS

Descriptive Results

We discuss highlights of descriptive findings here; for additional information see Table 1. Among 2002 high school sophomores who graduated from a four-year college by 2012, 29 percent perceived that college costs were very important in choosing a college, 52 percent perceived

Table 1
Weighted Descriptive Statistics

Categorical variables	Full (N = 2,992)	
	Frequency	Percent
Student variables		
White	2,233	75
Male	1,637	55
GPA (reference 2.00 or lower)	203	7
GPA (2.01-2.50)	197	7
GPA (2.51-3.00)	513	17
GPA (3.01-3.50)	991	33
GPA (3.51-4.00)	1,088	36
Student perceives low college costs as very important	856	29
Student perceives financial aid as very important	1,562	52
Student perceives college choice is based on college cost	1,575	53
Amount expected to borrow in the future (reference \$0-\$1,999)	1,333	47
Amount expected to borrow in the future (\$2,000-\$19,999)	934	33
Amount expected to borrow in the future (\$20,000 or more)	545	19
Parental/household variables		
Low income (reference \$35,000 or below)	885	30
Moderate income (\$35,001-\$75,000)	1,040	35
Middle income (\$75,001-\$100,000)	467	16
High income (\$100,001 or higher)	601	20
Parental education (reference high school or less)	428	14
Some college	548	18
Two-year college degree	284	10
Four-year college degree or higher	1,731	58
Number of siblings (reference 0 or 1)	690	23
Number of siblings (2)	1,141	38
Number of siblings (3)	746	25
Number of siblings (4 or more siblings)	416	14
Secondary school variables		
50 percent or more of students from high school attend four-year college	1,700	57
College or university variables		
Student applied for financial aid	2,370	79
Out-of-state residency	720	24
Student lives with parents	792	27
School selectivity (reference public university)	2,006	67
Private, not-for-profit	870	29
Private, for-profit	110	4
Outcome variables		
Has student loans	2,049	69
Student loan thresholds (reference \$0-\$1,999)	962	32
\$2,000-\$19,999	622	21
\$20,000 or more	1,408	47
Variable of interest		
Parental savings account to pay for student's college tuition	1,297	49
Continuous outcome variable		
Amount of student loans	Mean \$23,698	Median \$17,000

SOURCE: Data from the Educational Longitudinal Study.

that financial aid was very important in choosing a college, and 53 percent perceived they would have to choose a college based on cost. Forty-nine percent of parents of these students had savings to pay for their college. Of these students, 67 percent received their four-year degree from a public college; 29 percent from a private, not-for-profit college; and 7 percent from a private, for-profit college. Among these four-year college graduates, 69 percent have student loan debt; the average debt amount is \$23,698.

Multivariate Analysis

Here we write out only the results from ATE matching to conserve space. Results are consistent across the unadjusted, one-to-one matching, and ATE matching models with respect to direction and significance. Unadjusted and one-to-one matching results are available upon request. Results were similar to ATE results, so they are not included here.

Student Loan Debt Results

Table 2 presents results from a multilevel mixed-effects logistic regression predicting whether or not 2002 high school sophomores who graduated from a four-year college by 2012 have student loan debt. The ATE matching results indicate that among the variables controlled for in this study, parental savings for college is the only factor that reduces the probability of student loan debt (i.e., savings is a potential protective factor). Graduates whose parents had college savings for them as high school sophomores are about 39 percent less likely to have student loan debt than graduates whose parents did not have college savings for them as high school sophomores (see Table 2).

Positive significant predictors (i.e., potential risk factors) of student loan debt include the following:

- perceiving student financial aid as very important,
- expecting to have student loan debt of \$2,000-\$19,999,
- expecting to have student loan debt of \$20,000 or more versus expecting to have student loan debt of \$0-\$1,999,
- living in a moderate-income family (\$35,001-\$75,000) as a sophomore compared with living in a low-income family (\$35,000 or below),
- applying for financial aid, and
- attending a private, for-profit college.

Positive predictors *increase* the probability that a student will report having student loan debt (i.e., risk factor). Four-year college graduates who as high school sophomores perceived financial aid as very important in choosing a college are 64 percent more likely to report having student loan debt than if they did not consider financial aid very important. They are about 12 percent more likely to have student loan debt if as sophomores they expected to borrow \$2,000-\$19,999 and about 15 percent more likely if they expected to borrow \$20,000 or more. Students from low-income (\$35,000 or less) families are about 49 percent less likely to have student debt. If students applied for financial aid, they are two times more likely to have student debt than if they did not. Four-year college graduates who attend a private, not-for-profit col-

Table 2

Multilevel Mixed-Effects Logistic Regression Predicting Whether Four-Year College Graduates Have Outstanding Student Loans (N = 2,992)

	Unadjusted (n = 2,247)		One-to-one matching (n = 1,742)			ATE matching (n = 2,247)			
	β	SE	OR	β	SE	OR	β	SE	OR
Student variables									
White	-0.149	0.132		-0.407**	0.151	0.67	-0.149	0.132	
Male	0.069	0.117		0.058	0.132		0.069	0.117	
GPA (reference 2.00 or lower)									
GPA (2.01-2.50)	0.594	0.330		0.640	0.383		0.594	0.330	
GPA (2.51-3.00)	0.325	0.271		0.411	0.321		0.325	0.271	
GPA (3.01-3.50)	0.058	0.249		-0.019	0.296		0.058	0.249	
GPA (3.51-4.00)	-0.256	0.249		-0.270	0.298		-0.256	0.249	
Student perceives low college costs as very important	-0.164	0.148		-0.154	0.169		-0.164	0.148	
Student perceives financial aid as very important	0.493***	0.136	1.64	0.491***	0.154	1.63	0.493***	0.136	1.64
Student perceives college choice is based on college	0.017	0.124		0.131	0.139		0.017	0.124	
Amt. expected to borrow in the future (reference \$0-\$1,999)									
Amt. expected to borrow in the future (\$2,000-\$19,999)	2.500***	0.160	12.18	2.546***	0.179	12.76	2.500***	0.160	12.18
Amt. expected to borrow in the future (\$20,000 or more)	2.715***	0.218	15.10	2.714***	0.243	15.08	2.715***	0.218	15.10
Parental/household variables									
Low income (reference \$35,000 or below)									
Moderate income (\$35,001-\$75,000)	0.396*	0.161	1.49	0.406*	0.183	1.50	0.396*	0.161	1.49
Middle income (\$75,001-\$100,000)	0.211	0.189		0.260	0.212		0.211	0.189	
High income (\$100,001 or higher)	-0.164	0.182		-0.043	0.203		-0.164	0.182	
Parental education (reference high school or less)									
Some college	0.174	0.232		-0.142	0.283		0.174	0.232	
Two-year college degree	0.123	0.278		-0.029	0.331		0.123	0.278	
Four-year college degree or higher	-0.210	0.199		-0.406	0.249		-0.210	0.199	
Number of siblings (reference 0 or 1)									
Number of siblings (2)	0.188	0.169		0.157	0.191		0.188	0.169	
Number of siblings (3)	-0.169	0.179		-0.167	0.202		-0.169	0.179	
Number of siblings (4 or more siblings)	0.285	0.206		0.344	0.237		0.285	0.206	
Secondary school variables									
% of students from high school who attend four-year college	-0.171	0.127		-0.216	0.142		-0.171	0.127	
College counseling	0.121	0.115		0.126	0.130		0.121	0.115	
College or university variables									
Student applied for financial aid	0.738***	0.141	2.09	0.828***	0.159	2.29	0.738***	0.141	2.09
Out-of-state residency	-0.053	0.140		-0.072	0.165		-0.083	0.148	
Student lives with parents	-0.083	0.148		-0.178	0.159		-0.053	0.140	
School selectivity (reference public university)									
Private, not-for-profit	0.327*	0.134	1.39	0.278	0.150		0.327*	0.134	1.39
Private, for-profit	1.110**	0.324	3.03	1.330**	0.400	3.78	1.110**	0.324	3.03
Variable of interest									
Parental savings account to pay for student's college tuition	-0.487***	0.119	0.61	-0.511***	0.130	0.60	-0.487***	0.119	0.61
Random effects									
School ID		0.032			3.15			0.032	

NOTE: β , regression coefficients; SE, standard error; OR, odds ratio; ATE, the average treatment effect on the population. *, **, and *** indicate significance at the 5 percent, 1 percent, and 0.1 percent levels, respectively.

SOURCE: Data from the Educational Longitudinal Study.

lege are 39 percent more likely to have student loan debt. If they attend a private, for-profit college, they are about three times more likely to have student loan debt than if they attend a public four-year college.

Student Loan Debt Amounts

Table 3 presents results from a multilevel mixed-effects linear regression on the amount of student loan debt. The ATE matching results indicate that among the variables controlled for in this study, male gender and parental college savings reduce the amount of student loan debt a four-year graduate from the sophomore class of 2002 has in 2012. Male graduates have \$2,162.58 less student loan debt than female graduates. Graduates whose parents had savings for them as high school sophomores have \$3,208.88 less student loan debt than graduates whose parents did not (see Table 3).

Conversely, four-year college graduates with high school sophomore GPAs of 2.01-2.50 have \$7,849.32 more student loan debt in 2012 than those with GPAs of 2.00 or lower. Students who perceived student financial aid as very important in choosing a college have \$4,111.61 more in student loan debt than those who did not. If students expected to have student loan debt of \$2,000-\$19,999 when they were high school sophomores, they have \$14,076.03 more in student loan debt than if they expected to have student loan debt of \$0-\$1,999. If they expected to have student loan debt of \$20,000 or more, they have \$30,989.78 more in student loan debt compared with graduates who expected to have debt of \$2,000 or less. College graduates from four-year colleges who as high school sophomores had four or more siblings have \$4,740.54 more student loan debt than similarly situated four-year graduates who as high school sophomores lived in a family with one or no siblings. Those who applied for financial aid have \$4,604.17 more in student loan debt than those who did not apply for financial aid in 2012. Graduates who attended a private, for-profit college have the highest amount of student debt in 2012. Graduates who attended a private, not-for-profit college have \$6,934.69 more student loan debt, and graduates who attended a private, for-profit college have \$16,435.97 more debt compared with college graduates who attended a public four-year college.

Student Loan Debt Thresholds

Table 4 presents results from a multilevel mixed-effects multinomial regression on the student loan debt threshold.

Borrowing Less than \$2,000 Versus \$2,000-\$19,999. The ATE matching results in column (1) of Table 4 indicate that among the variables controlled for in this study, parental college savings is the only factor that reduces the log odds of having less than \$2,000 of student loan debt than of having \$2,000-\$19,999 of debt. A 2002 high school sophomore *with* parental college savings for them and who graduated from a four-year college by 2012 is 31 percent less likely to have \$2,000-\$19,999 of student loan debt than to have less than \$2,000 of student loan debt compared with a 2002 high school sophomore whose parents had *no* college savings for them and who graduated from a four-year college by 2012.

Positive significant predictors of student loan debt threshold include the following:

Table 3

Multilevel Mixed-Effects Linear Regression Predicting Amount of Student Loans Borrowed (N = 2,992)

	Unadjusted (n = 2,247)		One-to-one matching (n = 1,742)		ATE matching (n = 2,247)	
	β	SE	β	SE	β	SE
Student variables						
White	-1,459.14	1,606.76	-3,476.63**	1,287.98	-2,130.39	1,147.72
Male	-1,588.51	1,230.98	-2,350.54*	1,134.30	-2,162.58*	1,016.47
GPA (reference 2.00 or lower)						
GPA (2.01-2.50)	7,618.93*	3,069.18	9,582.71**	3,272.81	7,849.32**	2,897.42
GPA (2.51-3.00)	3,150.33	2,350.42	3,187.10	2,764.72	3,164.49	2,425.87
GPA (3.01-3.50)	4,142.29	2,222.07	4,328.19	2,585.29	4,590.58	2,258.28
GPA (3.51-4.00)	572.89	2,198.57	2,067.61	2,596.77	2,104.29	2,256.91
Student perceives low college costs as very important	-1,582.54	1,405.31	-1,695.11	1,404.93	-1,279.63	1,248.01
Student perceives financial aid as very important	4,839.18***	1,339.50	5,028.69***	1,300.45	4,111.61*	1,175.41
Student perceives college choice is based on college	-1,542.66	1,272.60	-699.55	1,181.58	-1,320.24	1,061.60
Amt. expected to borrow in the future (reference \$0-\$1,999)						
Amt. expected to borrow in the future (\$2,000-\$19,999)	1,2581.28***	1,374.42	14,105.90***	1,360.20	14,076.03***	1,219.42
Amt. expected to borrow in the future (\$20,000 or more)	28,997.25***	2,134.93	30,145.28***	1,640.18	30,989.78***	1,467.55
Parental/household variables						
Low income (reference \$35,000 or below)						
Moderate income (\$35,001-\$75,000)	1,121.42	1,532.13	2,256.12	1,542.90	1,362.12	1,357.97
Middle income (\$75,001-\$100,000)	56.43	1,808.74	469.00	1,820.28	241.37	1,637.61
High income (\$100,001 or higher)	-1,919.63	1,854.35	-332.09	1,821.59	-1,495.59	1,642.63
Parental education (reference high school or less)						
Some college	1,665.06	2,240.34	1,864.01	2,340.55	2,883.08	1,919.25
Two-year college degree	-3,076.17	2,489.65	-843.99	2,682.56	324.34	2,273.93
Four-year college degree or higher	-2,415.63	2,041.90	111.46	2,092.49	673.36	1,707.73
Number of siblings (reference 0 or 1)						
Number of siblings (2)	-1,434.00	1,826.70	1,661.31	1,655.32	1,384.54	1,484.92
Number of siblings (3)	-984.49	1,933.46	2,364.43	1,747.80	1,507.93	1,565.58
Number of siblings (4 or more siblings)	1,035.73	2,176.51	5,594.93**	2,001.13	4,740.54**	1,755.15
Secondary school variables						
% of students from high school who attend four-year college	532.17	1,223.42	-475.44	1,247.29	-376.02	1,130.94
College counseling	-963.18	1,166.52	-392.27	1,118.27	22.76	996.17
College or university variables						
Student applied for financial aid	5,091.44***	1,481.30	4,636.18**	1,521.68	4,604.17**	1,354.26
Out-of-state residency	1562.27	1,534.71	-551.67	1,377.64	-421.99	1,245.09
Student lives with parents	-3,057.63*	1,323.32	-3,190.21*	1,414.03	-2,756.22*	1,248.61
School selectivity (reference public college)						
Private, not-for-profit	7,313.67***	1,584.72	6,604.12***	1,270.88	6,934.69***	1,142.22
Private, for-profit	14,335.00***	3,754.91	14,469.98***	3,093.34	16,435.97***	2,716.62
Variable of interest						
Parental savings account to pay for student's college tuition	-3,153.93*	1,150.94	-3,608.07**	1,103.74	-3,208.88**	1,147.72
Random effects						
School ID	4.61		5.13		5.21***	

NOTE: Values except random effects indicate U.S. dollars. β , regression coefficients; SE, standard error. *, **, and *** indicate significance at the 5 percent, 1 percent, and 0.1 percent levels, respectively.

SOURCE: Data from the Educational Longitudinal Study.

Table 4

Multilevel Mixed-Effects Multinomial Predicting Amount of Student Loan Debt: ATE Matching (N = 2,992; n = 2,247)

	Loan amount:			(2) 0 vs. 2			(3) 1 vs. 2		
	β	SE	OR	β	SE	OR	β	SE	OR
Student variables									
White	-0.024	0.145		-0.089	0.146		-0.066	0.135	
Male	0.168	0.130		-0.022	0.131		-0.191	0.121	
GPA (reference 2.00 or lower)									
GPA (2.01-2.50)	-0.165	0.373		0.383	0.366		0.558	0.353	
GPA (2.51-3.00)	0.275	0.297		0.129	0.310		-0.143	0.285	
GPA (3.01-3.50)	-0.146	0.277		0.133	0.286		0.284	0.268	
GPA (3.51-4.00)	-0.278	0.276		-0.268	0.286		0.016	0.268	
Student perceives low college costs as very important	-0.162	0.159		-0.194	0.160		-0.033	0.143	
Student perceives financial aid as very important	0.304*	0.147	1.36	0.497**	0.149	1.64	0.193	0.135	
Student perceives college choice is based on college	0.113	0.135		-0.053	0.136		-0.165	0.125	
Amt. expected to borrow in the future (reference \$0-\$1,999)									
Amt. expected to borrow in the future (\$2,000-\$19,999)	2.383***	0.160	10.84	2.515***	0.165	12.37	0.126	0.149	
Amt. expected to borrow in the future (\$20,000 or more)	2.138***	0.227	8.48	3.351***	0.214	28.53	1.211***	0.177	3.36
Parental/household variables									
Low income (reference \$35,000 or below)									
Moderate income (\$35,001-\$75,000)	0.516**	0.174	1.68	0.381*	0.173	1.46	-0.135	0.156	
Middle income (\$75,001-\$100,000)	0.383	0.207		0.183	0.209		-0.203	0.193	
High income (\$100,001 or higher)	-0.005	0.211		-0.188	0.211		-0.186	0.211	
Parental education (reference high school or less)									
Some college	0.153	0.245		0.303	0.243		0.153	0.215	
Two-year college degree	0.186	0.289		0.158	0.291		-0.028	0.253	
Four-year college degree or higher	0.025	0.214		-0.077	0.215		-0.103	0.195	
Number of siblings (reference 0 or 1)									
Number of siblings (2)	0.154	0.184		0.340	0.195		0.187	0.180	
Number of siblings (3)	-0.171	0.197		0.215	0.204		0.386*	0.191	1.47
Number of siblings (4 or more siblings)	0.069	0.225		0.696**	0.227	2.01	0.630**	0.207	1.88
Secondary school variables									
% of students from high school who attend four-year college	-0.181	0.139		-0.186	0.141		-0.003	0.127	
College counseling	0.101	0.126		0.077	0.128		-0.023	0.118	
College or university variables									
Student applied for financial aid	0.660***	0.173	1.93	0.575**	0.179	1.78	-0.084	0.197	
Out-of-state residency	-0.110	0.164		0.014	0.161		0.123	0.148	
Student lives with parents	0.124	0.153		-0.143	0.160		-0.271	0.149	
School selectivity (reference public college)									
Private, not-for-profit	0.273	0.147		0.533***	0.146	1.70	0.263*	0.133	1.30
Private, for-profit	0.675	0.370		1.594***	0.334	4.92	0.919**	0.324	2.51
Variable of interest									
Parental savings account to pay for student's college tuition	-0.364**	0.131	0.69	-0.515***	0.133	0.60	-0.150	0.123	
Random effects									
School ID	0.099			0.099			0.033		

NOTE: β , regression coefficients; SE, standard error; OR, odds ratio. Loan amount is a three-level categorical variable as follows: 0 = below \$2,000; 1 = \$2,000 and \$19,999; 2 = \$20,000 or more. *, **, and *** indicate significance at the 5 percent, 1 percent, and 0.1 percent levels, respectively.

SOURCE: Data from the Educational Longitudinal Study.

- perceiving student financial aid as very important,
- expecting to have student loan debt of \$2,000-\$19,999,
- expecting to have student loan debt of \$20,000 or more,
- living in a moderate-income family (\$35,001-\$75,000) as a sophomore compared with living in a low-income family (\$35,000 or below), and
- applying for financial aid.

Four-year graduates who perceived financial aid as very important in choosing a college are about 36 percent more likely to have \$2,000-\$19,999 of student loan debt than to have less than \$2,000 of debt. They are about 11 times more likely to have \$2,000-\$19,999 in student loan debt than to have less than \$2,000 if as sophomores they expected to borrow \$2,000-\$19,999 and about 8 times more likely if they expected to borrow \$20,000 or more compared with expecting to borrow less than \$2,000. Four-year graduates in moderate-income families as sophomores are 68 percent more likely to have \$2,000-\$19,999 in student loan debt than to have less than \$2,000 compared with four-year college graduates in low-income families as high school sophomores. Four-year college graduates who applied for financial aid are about two times more likely to have \$2,000-\$19,999 in student debt than less than \$2,000 compared with four-year college graduates who did not apply for financial aid.

Borrowing Less than \$2,000 Versus \$20,000 or More. The results in column (2) of Table 4 indicate that a 2002 high school sophomore *with* parental college savings for them and who graduated from a four-year college by 2012 is 40 percent less likely to have \$20,000 or more of student loan debt than to have less than \$2,000 of student loan debt compared with a 2002 high school sophomore who had parents with *no* college savings for them and who graduated from a four-year college by 2012.

Positive significant predictors of student loan debt threshold include the following:

- perceiving student financial aid as very important,
- expecting to have student loan debt of \$2,000-\$19,999,
- expecting to have student loan debt of \$20,000 or more,
- living in a moderate-income family (\$35,001-\$75,000) as a sophomore compared with living in a low-income family (\$35,000 or below),
- living in a family as a sophomore with four or more siblings,
- applying for financial aid, and
- attending a private college (not-for-profit or for-profit).

Four-year graduates who perceived financial aid as very important are about 64 percent more likely to have \$20,000 or more in student loan debt than to have less than \$2,000. They are about 12 times more likely to have \$20,000 or more of debt than less than \$2,000 if as sophomores they expected to borrow \$2,000-\$19,999. They are also about 29 times more likely to have \$20,000 or more of debt if they expected to borrow \$20,000 or more than if they expected to borrow less than \$2,000. Four-year college graduates in moderate-income families as sophomores are 46 percent more likely to have \$20,000 or more of debt than to have less than \$2,000 compared with graduates in low-income families as sophomores. Graduates who lived in fami-

lies with four or more siblings as sophomores are about two times more likely to have student debt of \$20,000 or more than to have less than \$2,000. Four-year college graduates who applied for financial aid are about 78 percent more likely to have \$20,000 or more in student debt than to have less than \$2,000 compared with four-year college graduates who did not apply for financial aid. Graduates who attended a private, not-for-profit college instead of a public college are about 70 percent more likely to have student debt of \$20,000 or more than to have less than \$2,000. Graduates who attended a private, for-profit college instead of a public college are close to five times more likely to have student debt of \$20,000 or more than to have less than \$2,000.

Borrowing \$2,000-\$19,999 Versus \$20,000 or More. The evidence in column (3) of Table 4 suggests that *no* factors reduce the odds of having the highest debt amount versus the middle debt amount. Positive significant predictors of the student loan debt threshold include the following:

- expecting to have student loan debt of \$20,000 or more compared with expecting to have less than \$2,000,
- living in a family as a sophomore with three or more siblings compared with living in a family with one or no siblings, and
- applying for financial aid, and
- attending a private college (not-for-profit or for-profit).

Four-year college graduates are more than three times more likely to have \$20,000 or more in student loan debt than to have \$2,000-\$19,999 of debt if as sophomores they expected to borrow \$20,000 or more compared with expecting to borrow less than \$2,000. If students lived in families with three siblings compared with living in families with one or no siblings, they are about 47 percent more likely to have \$20,000 or more of debt than \$2,000-\$19,999 and 88 percent more likely if they lived in families with four siblings or more. Students who attended a private, not-for-profit college instead of a public college are 30 percent more likely to have student debt of \$20,000 or more instead of debt of \$2,000-\$19,999. Students who attended a private, for-profit college instead of a public college are almost two and a half times more likely to have student debt of \$20,000 than to have debt of \$2,000-\$19,999.

Sensitivity of the Results to Unobserved Heterogeneity

The results for student loan debt seem moderately robust against potential hidden bias. For student loan debt, the bounds under the assumption that we overestimated the treatment effect (i.e., $Q + MH$) revealed that at relatively high Γ values, the results become insignificant (Table 5). Specifically, the results would no longer be significant with a value of $\Gamma = 1.50$ ($p = 0.000$).

DISCUSSION

Given the growing amount of student loan debt in the United States today (Fry, 2012) and the growing evidence that student debt can potentially have negative effects on the financial

Table 5
Sensitivity Analyses for Unobserved Heterogeneity

Γ	Student Loan Debt in 2012 Q – MH+
1.000	4.313
1.050	4.795
1.100	5.255
1.150	5.695
1.200	6.117
1.250	6.523
1.300	6.914
1.350	7.290
1.400	7.654
1.450	8.006
1.500	8.347***
1.550	8.678***
1.600	8.998***
1.650	9.310***
1.700	9.613***
1.750	9.908***
1.800	10.195***
1.850	10.475***
1.900	10.748***
1.950	11.015***
2.000	11.276***

NOTE: Q – MH+ represents the Mantel-Haenszel statistic for over-estimation of treatment effect. *** indicates significance at the 0.1 percent level.

SOURCE: Data from the Educational Longitudinal Study.

well-being of students after college graduation (Elliott and Nam, 2013, and Hiltonsmith, 2013), finding ways to reduce college debt has become increasingly important for maintaining education as the great equalizer in society. Consistent with other national estimates of student indebtedness, the typical four-year graduate in this study has about \$24,000 in student loan debt. Evidence suggests that the debt load of these graduates will have significant effects on their asset accumulation (Elliott and Lewis, 2013), their personal financial ability, and their preparation for their own children's education—as well as effects on the larger economy.

In the first part of this study, we asked whether parental college savings for their high school sophomore's higher education acts as a potential protective factor against student loan debt after graduation from a four-year college. We find that, in this study, parental college savings does reduce the odds of a four-year college graduate having student loan debt. While we found nothing else that reduced the odds of graduates having student debt, several factors

were obvious potential risk factors. For example, it is interesting to note that four-year graduates from moderate-income (\$35,001-\$75,000) families had higher odds of having student debt than four-year college graduates from low-income (below \$35,000) families. This finding is consistent with other research suggesting that moderate-income students have been hardest hit by the combination of student loan debt, the shift toward merit-based aid, and the escalation of college prices (Choy, Berker, and Carroll, 2003, and Elliott and Friedline, 2012). For example, according to data from full-time dependent students from the 1999-2000 National Postsecondary Student Aid Study, 51 to 59 percent of students from low- and moderate-income households pay with loans compared with 27 to 49 percent of students from middle- and high-income households (Choy, Berker, and Carroll, 2003). Further, a number of studies have discussed how some students are loan averse and thereby have less-certain job prospects, less familiarity with financial institutions, and a higher likelihood of not graduating from college (Kim, 2007). If it is true that some students are loan averse, the opposite also appears to be true. Evidence in this study on the amount students expect to borrow may be interpreted as suggesting that students have much higher odds of borrowing for college if they are inclined to borrow. This suggests a potential future increase in student borrowing, even as the “culture” of college financing becomes even more completely debt-dependent, a collective narrative that could shape prospective students’ orientation toward high-dollar debt. Future researchers may want to examine the predictors of why some students have higher odds of borrowing than other students. Also consistent with previous research, our findings suggest that students who attend private, for-profit colleges have higher odds of student loan debt than graduates from public or private, not-for-profit colleges (Deming, Goldin, and Katz, 2011). These findings should be considered as part of the ongoing policy and research conversations about the interaction between institutional practices and characteristics and student outcomes.

In the second part of the study, we examined whether parental college savings for their child reduces the amount of student loan debt the student will have upon graduation. Student gender and parental savings appear to act as protective factors for the total amount of college debt. Consistent with findings by Dwyer, McCloud, and Hodson (2012), we find evidence that male students have about \$2,163 less student loan debt than female students. Graduates whose parents had savings for them when they were sophomores in high school have about \$3,209 less debt. Of note, among the risk factors for more student loan debt is college choice: Graduates who attend private, for-profit colleges have about \$16,436 more student debt than graduates who attend public colleges.

In the third part of our study, we examined whether the effects of parental college savings for their child may vary at different student debt thresholds. Results suggest that for four-year college graduates whose parents saved for their college education, the odds of borrowing what might be considered high-dollar student loans (defined here as \$20,000 or more) are lower than for students whose parents had no college savings. High-dollar loans are of particular interest because they may be the most damaging to persistence and graduation from college (Dwyer, McCloud, and Hodson, 2011; Dwyer, McCloud, and Hodson, 2012; Paulsen and St. John, 2002). In addition, the negative effects of student indebtedness on asset accumulation and other milestones of household economic security are often extended for those with high-dollar debts,

which of course require more time to repay. High-dollar student loan debt is also associated with a greater risk of delinquency for student debt and other types of borrowing (Lee, 2013).

We find that a number of factors increase the likelihood of a student obtaining a high-dollar loan. The amount of money children expect to borrow in the future is a very strong predictor of whether students actually obtain student loans. Students who expected to borrow \$10,000 or more were far more likely to borrow high-dollar amounts. Some research suggests that students may gain a boost in self-esteem and a sense of mastery from obtaining student loans, which may encourage them to acquire additional loans. However, this sense of mastery begins to fade over time (Dwyer, McCloud, and Hodson, 2011). Additional research suggests that students are more likely to drop out of college once loan totals become too high (\$10,000 or more), which might occur because students with high-dollar loans early in their college careers do not have realistic expectations of what they can afford to repay (Dwyer, McCloud, and Hodson, 2011, 2012). As more reasonable expectations are formed, students become more averse to obtaining additional loans necessary to finish and graduate. However, more research is necessary to understand this potential relationship.

Further, consistent results from the nearest-neighbor matching and ATE weighting suggest that the effect of parental college savings on reducing student loan debt is robust (i.e., the results are insensitive to selection bias given the covariates in the models).

Limitations

One limitation of this study is the use of propensity score weighting, which may increase random error in estimates due to endogeneity and specification of the propensity score estimation equation (Freedman and Berk, 2008). In some cases, propensity score weighting has been found to exaggerate endogeneity (Freedman and Berk, 2008). More specifically, parental college savings may be endogenous if assignment into treatment groups correlates with unobserved covariates that affect college enrollment and graduation. Endogeneity may be introduced by unknowingly omitting relevant or important covariates. In this study, concerns regarding endogeneity can be mitigated somewhat because we used two propensity score analyses (i.e., pair matching and propensity score weighting) to cross-validate the results from the two models that adjust for selection bias given the observed covariates.

Implications

Public policymakers, educators, economists, and higher education consumers are searching together for approaches capable of reducing the effects of student borrowing on the educational trajectories and later financial futures of a generation of young people in the United States. If parental savings is one of the few reliable and significant ways to reduce students' assumption of high-dollar debt, even though parental savings is currently inadequate to protect most students from an indebted future (Sallie Mae, 2013), policies to facilitate, encourage, and even subsidize parental savings may be worthwhile public investments. Certainly, tax incentives may be part of this policy mix, including reforms to increase the refundability and improve the timing of current supports (Huelsman, 2010). Additionally, providing parents with better access to workable savings vehicles by changing the operations of 529 college sav-

ings plans (Newville, 2010) and, perhaps, linking college savings opportunities to employers may better equip parents to perform this important protective function in their children's lives.

Given the long-term trends in college financing and the increasing shift of college costs from society to individual students and families, it is clear that parents will need new tools to meet the challenge of saving as an alternative to student borrowing. The evidence today suggests that households with the greatest need for education savings—low- and moderate-income households, those most negatively affected by the almost-certain burden of student loan debt and most likely to have their educational options curtailed by inadequate options for college financing—are the least equipped to rise to the challenge of educational asset accumulation (Sallie Mae, 2013).

CONCLUSION

One long-standing policy argument for adopting children's savings accounts (CSAs) has been that they can help reduce the amount of college debt when students leave school, but no research has confirmed this claim. In this study, we find evidence to suggest that parental college savings can be part of a strategy to help reduce college debt. These findings may be not only theoretically significant, but also immediately and politically relevant, as asset practitioners and advocates search for the means to make a compelling case for CSAs as a solution to student debt and its educational and financial effects at the household and aggregate levels. However, even if small-dollar savings accounts for college improve enrollment and graduation rates (Assets and Education Initiative, 2013), CSAs must be adequately funded to effectively reduce debt. To best wield CSAs as a tool to support students' educational attainment, their effects must be understood on multiple levels. The likelihood of students, first, making it to college enrollment and then persisting through graduation may increase significantly with even small levels of asset ownership (Elliott, 2013). However, forestalling high levels of student debt and the potentially negative financial and educational effects associated with such borrowing will require larger savings balances, particularly since the savings of low-income participants in CSAs have tended to be fairly limited (see Mason et al., 2009). For example, descriptive data tell us that low-income children (38 percent) are far less likely to have a savings account than are higher-income children (69 percent) (Friedline, 2012). Realizing the full potential of asset-based college financing approaches may require that policies rely significantly on redistributive measures (e.g., initial deposits, matching, and incentives) capable of combating the challenges within today's higher education landscape. Understanding these investments as potentially significant protections against the student debt problem may increase their political viability and clarify their importance in U.S. educational and economic policy. ■

NOTES

- ¹ Stata syntax is as follows: `xi:xtmelogit` used for the dichotomous outcome variable (i.e., student debt); `xi:xtmixed` used for the continuous outcome variable (i.e., amount borrowed); and `xi:gllamm` used for the three-level outcome variable (i.e., student debt threshold).
- ² The `mhbounds` procedure is a user-written program in Stata used to test the sensitivity of the analysis to the influence of unobserved factors (i.e., factors not controlled for in the model) when there is a categorical dependent variable.

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Toward Healthy Balance Sheets: Are Savings Accounts a Gateway to Young Adults' Asset Diversification and Accumulation?

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Understanding the balance sheets of today's young adults—particularly the factors that set them on a path to financial security through asset diversification and accumulation—lends some insight into the balance sheets they will have when they are older. This study uses panel data from the Census Bureau's 1996 Survey of Income and Program Participation to investigate the acquisition of a savings account as a gateway to asset diversification and accumulation for young adults. Two avenues were considered: The first emphasized ownership of a diverse portfolio of financial products, and the second emphasized the accumulated value of liquid assets. Almost half of the surveyed young adults owned a savings account (43 percent) and approximately 3 percent acquired a savings account over the course of the panel. (Older, nonwhite, or unemployed participants were significantly less likely to acquire an account.) Those who owned or acquired a savings account also had more diverse asset portfolios. Evidence suggests that young adults who acquire a savings account and diversify their asset portfolios may also accumulate more liquid assets over time, which can be leveraged in the future to strengthen their balance sheets. (JEL D1, D3, D140)

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Young adulthood is a period often characterized by financial fragility. Young adults earn the lowest incomes of their careers while making decisions about obtaining postsecondary education, living independently, finding and changing employment, and repaying educational debt (Bell et al., 2007, and Mishel et al., 2012). They may also have limited assets on which to draw during times of financial need, given that half of young adults through age 40 lack sufficient accumulated assets to sustain themselves above the poverty line for three months without regular income (Rank and Hirschl, 2010). One study finds that the average savings account balance of young adults is generally low, from \$639 to \$1,881 between 16 and 35 years of age (Friedline and Nam, 2014). This low average suggests

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young adults may have limited savings for even daily, lower-level financial needs such as groceries, bills, rent, or auto repairs, let alone needs arising from educational debt or independent living that persist for several months or years.

It is generally agreed that balance sheets consist of assets, debt, and net worth (Boshara, 2012; Key, 2014; Mishkin, 1978), with an underlying assumption that saving, diversifying, and accumulating assets lead to healthier balance sheets (Carasso and McKernan, 2007). Young adults with lower accumulated liquid assets may have fragile balance sheets when healthy balance sheets are most needed. If young adults enter this period of life by accumulating reserves and liquid assets through financial products such as savings, stock, and retirement accounts, they may have the financial resources to better weather unexpected changes in employment or living situations or to further invest in their futures. Their savings and liquid assets help to create a healthy balance sheet that likely sets them on a path to financial security from which they can benefit throughout life. Understanding the savings and liquid assets of today's young adults as part of their balance sheets lends some insight into their balance sheets when they are older, particularly with regard to factors that set them on a path to financial security and, eventually, mobility.

In this article, we attempt to provide an understanding of assets as one component of the balance sheets of today's young adults—that is, understanding the starting point for young adults to acquire lifetime financial security. Given that savings accounts are one of the most basic products available from mainstream financial institutions and are hypothesized as a starting place or gateway to asset diversification and accumulation (Friedline and Elliott, 2013; Hogarth and O'Donnell, 2000; Sherraden, 1991; Xiao and Noring, 1994), this article seeks to provide a better understanding of the role of savings accounts in young adults' balance sheets, particularly with regard to a diverse portfolio and the accumulation of liquid assets.

A SAVINGS ACCOUNT AND THE FINANCIAL HIERARCHY OF A DIVERSE PORTFOLIO

Xiao and Anderson (1997) draw on Maslow's (1948, 1954) human needs theory to show how the financial products acquired by young adults may ascend a hierarchy based on the needs the products are designed to meet. Human needs are assumed to be hierarchical, with the achievement of higher-level needs conditional on the achievement of lower-level needs (Maslow, 1948, 1954). These assumptions have been applied to the acquisition and use of financial products as they relate to lower- and higher-level needs (Xiao and Anderson, 1997; Xiao and Noring, 1994; Xiao and Olson, 1993). Notably, lower-level needs are referred to as "survival" and higher-level needs are referred to as "growth" (Xiao and Anderson, 1997),¹ labels that also provide some indication of the achievement of financial security. From this perspective, a savings account is one of the first and most common financial products acquired because it is lower risk, easily liquidated, and designed for the achievement of daily, lower-level needs. Financial products such as stock and retirement accounts entail higher risk, have liquidity constraints, and are designed for long-term investments and higher-level needs.

Young adults may ascend a financial hierarchy by acquiring a savings account that facilitates their achievement of daily, lower-level needs such as buying groceries or paying utility bills. Once acquired, young adults' maintenance of their savings account to continue to meet lower-level needs may be guided in part by the inertia of behaviors regarding financial products (Benartzi and Thaler, 2007, and Madrian and Shea, 2001). As young adults transition to achieving long-term, higher-level needs, such as affording college tuition, the down payment on a new home, or inheritances they can provide to future generations, they may acquire stock and retirement accounts. A diverse portfolio, then, potentially indicates that young adults have ascended the financial hierarchy (De Brouwer, 2009; Canova, Rattazzi, and Webley, 2005; Xiao and Anderson, 1997). This trend toward diversification is consistent with an optimal portfolio arrangement that spreads potential risk across multiple assets (Fabozzi, Gupta, and Markowitz, 2002, and Markowitz, 1952), although the extent of diversification of most asset portfolios is generally limited (King and Leape, 1998).

A GATEWAY TO HEALTHY BALANCE SHEETS

The financial products acquired by young adults as they ascend the financial hierarchy may serve as a gateway to diversifying and accumulating assets, nudging them toward healthy balance sheets. Young adults can leverage the assets accumulated in a diverse asset portfolio to their advantage for generating additional wealth throughout life (Friedline, Despard, and Chowa, forthcoming; Friedline and Song, 2013; King and Leape, 1998). As such, a diverse portfolio may be an indicator of the ascension of the financial hierarchy to achieve higher-level needs, and the contribution of accumulated assets across the portfolio may be an indicator of financial security (Beutler and Dickson, 2008; Canova, Rattazzi, and Webley, 2005; Xiao and Anderson, 1997). Holding a majority of liquid assets in a savings account might indicate the need for easily liquidated assets, which might allude to inadequate funds to afford daily, lower-level needs. A majority of assets in stock or retirement accounts would be more complicated to liquidate and might indicate the existence of adequate funds to meet daily expenses and therefore represent investment in higher-level needs.

Research confirms a decrease in accumulated amounts in savings accounts as assets increase (Xiao and Anderson, 1997); this suggests the contributions of the portfolio to asset accumulation change with ascending the financial hierarchy. From this perspective, a savings account may serve as a gateway for ascending the financial hierarchy as demonstrated by the distribution of accumulated assets across the portfolio. For example, the amount held in a savings account contributes the most to accumulated liquid assets for households at the bottom 10 percent of the asset distribution compared with the amounts held in stock and retirement accounts for households at the top 10 percent of the distribution (Xiao and Anderson, 1997). Likewise, the most common trajectory from asset diversification to accumulation is to begin by accumulating assets in savings and checking accounts in early young adulthood and progress by accumulating assets through homeownership and stocks (Keister, 2003). It is much less common for young adults to begin by accumulating assets in homes and stocks.

The ascension of the financial hierarchy and distribution of accumulated assets could be interpreted to mean that asset diversification must always precede accumulation. However,

the relationship between diversification and accumulation is likely more nuanced. In writing about the optimal portfolio arrangement, Sherraden (1990, p. 589) states “With greater assets, a household can more effectively diversify its holdings,” suggesting instead that asset accumulation precedes diversification. The question of “Which came first, a diverse portfolio or accumulated assets?” is somewhat less perceptive than the question of “How does a diverse portfolio contribute to the value of accumulated assets?” Whereas the first question focuses on determining the causal direction of the relationship, the latter explores the correlation or pattern and composition of assets accumulated within the context of a diverse portfolio. In other words, compared with young adults with either no account or only a savings account, young adults who own both savings and retirement accounts may be more financially secure and have a healthier balance sheet based on their accumulated liquid assets. This is because a savings account may represent lower-level needs, whereas savings and retirement accounts represent lower- and higher-level needs. If young adults acquire financial products contingent on a financial hierarchy that eventually develops into a diverse portfolio that can be leveraged to generate additional assets, then it is worth knowing how a diverse portfolio contributes to the balance sheet.

RESEARCH QUESTIONS

This article addresses the following questions to better understand how young adults acquire a savings account and the role account acquisition plays in diversifying and accumulating assets:

- (i) What relates to the acquisition, or take-up, of a savings account by young adults after controlling for relevant factors?
- (ii) Once a saving account is acquired, what fraction of young adults acquire other financial products such as CDs, stock, and retirement accounts? In other words, is the acquisition of a savings account a gateway to a diverse asset portfolio for young adults?
- (iii) How much do the acquisition of a savings account and a diverse asset portfolio by young adults contribute to the value of their accumulated liquid assets after controlling for relevant factors?

METHODS

Data

A large sample providing information at multiple and frequent time points was needed to analyze the acquisition of a savings account, asset diversification, and asset accumulation among a young adult population over time. The Panel Study of Income Dynamics (PSID) and Survey of Consumer Finances (SCF) are often used to explore questions about wealth (including savings and assets; Curtin, Juster, and Morgan, 1989; Czajka, Jacobson, and Cody, 2003; Wolff, 1999). However, these surveys have smaller sample sizes and an analysis can

measure savings and assets only every other year at most, potentially missing sensitive changes that occur monthly or quarterly. This study used data from the 1996 panel of the Survey of Income and Program Participation (SIPP) that were collected and made publicly available by the Census Bureau. The 1996 SIPP data were collected during the 1990s, a decade of U.S. economic growth (Jorgenson, Ho, and Stiroh, 2008). Thus, the questions and data explored in this article reflected balance sheets during generally favorable economic conditions (when the balance sheets of young adults might appear the most optimistic).²

Between December 1995 and February 2000, the 1996 SIPP drew a random sample of households grouped within geographic regions based on population counts from the most recent Census (U.S. Census Bureau, 2011), oversampling those with lower incomes ($N = 380,609$ individual respondents from 40,188 eligible households; $n = 1,634,357$ number of rows). Each household member 15 years of age and older participated in data collection, which occurred either quarterly or three times per year. During each interview, respondents recalled their experiences over the previous four months, thus resulting in 12 observations per year for a 48-month time span on many variables. This allowed construction of monthly and quarterly histories of savings and asset diversification accounts of young adults for up to 48 months, which was ideal for addressing the research questions. Quarterly information was drawn from the fourth month in the reference period when respondents were interviewed in person, allowing examination of changes in responses from one quarter to the next. The 1996 SIPP also collected annual information in topical modules on special topics, including health, education, child care, and accumulated assets. Annual information on liquid assets was collected in topical modules during waves 3, 6, 9, and 12 over the 48-month panel.

Sample selection criteria included young adults between 18 and 40 years of age who provided reference month and topical module information and participated in at least two years' worth of data collection. Separate samples were produced from these two sources of information. Thus, a young adult who entered the sample at age 16 was included when he or she provided at least two years' worth of information, making him or her age 18 at some time during the sampling frame. Likewise, two years' worth of information was retained for a young adult who entered the sample at age 40, making him or her age 42 at some time during the sampling frame. In other words, young adult respondents were included when age 18 would not be their last year of eligibility and when age 40 would not be their first year of eligibility. This restriction minimized the inclusion of young adults who cycled in or out of the 1996 SIPP within a shorter time, ensured more equal sample sizes across age groups, and reduced the number of available rows in the data to 1,245,689 (a reduction of 24 percent). Based on these selection criteria, a total of 311,446 person-month observations for young adults were included in the reference month sample ($n = 30,601$ individuals). There were 36,415 individuals included in the topical module sample and 100,998 rows of data. This reduction in rows of data for the topical module sample was expected given that the sample was followed on an annual basis as opposed to monthly or quarterly.

The average age of young adults was 30; 48 percent of respondents were female and 82 percent were white. Smaller percentages of Asians (4 percent) and other nonwhite groups (14 percent; blacks, Native Americans/First Peoples) were represented. Forty-three percent of

Table 1**Sample Characteristics**

Covariates	Reference month sample (<i>n</i> = 30,601) Mean (SD)/percent	Topical module sample (<i>n</i> = 36,415) Mean (SD)/percent
Sex		
Male	52	54
Female	48	46
Race		
White	82	82
Nonwhite	14	14
Asian	4	4
Marital status	50	50
Married	50	50
Not married		
College enrollment		
Full-time enrollment	13	13
Part-time enrollment	5	5
Not enrolled	82	82
Education level		
Primary school	3	3
Some high school	11	10
High school diploma	33	33
Some college	32	33
College degree or more	21	21
Employment		
Employed	72	65
Partially employed	6	21
Not employed	22	14
Household relationship		
Reference person	43	47
Child	22	20
Relative	31	29
Nonrelative	4	4
New reference person		
Yes	3	3
No	97	97
Homeownership		
Homeowner	59	56
Not a homeowner	31	44
Geographic region		
Northeast	18	18
West	22	22
North Central	25	25
South	35	35
Monthly earned income	\$1,695 (\$2,278)	\$2,194 (\$2,644)
Age (yr)	31.889 (5.600)	29.760 (6.626)

NOTE: The sample characteristics in this table are drawn from reference month data (*n* = 311,446 person-month observations; *n* = 30,601 individuals) and topical module data (*n* = 36,415 individuals). Means and standard deviations (SDs; shown in parentheses) are reported for continuous variables and percentages are reported for categorical variables.

SOURCE: Unweighted data from the 1996 SIPP.

Table 2**Savings Account, Asset Diversification, and Accumulation Characteristics**

Covariates	Reference month sample (<i>n</i> = 30,601) Mean (SD)/percent	Topical module sample (<i>n</i> = 36,415) Mean (SD)/percent
Percentage of savings account and financial products that comprise a diverse portfolio*		
Savings account	43	46
Checking account	24	24
CD account	5	5
Money market account	5	5
Savings bond account	11	11
Stock account	15	15
Retirement account	24	25
Value of accumulated liquid assets [†]	—	\$6,328 (\$79,498)

NOTE: The characteristics reported in this table are drawn from the reference month data (*n* = 311,446 person-month observations; *n* = 30,601 individuals) and topical module data (*n* = 36,415 individuals). Percentages are reported for categorical variables and medians and SDs (shown in parentheses) are reported for continuous variables. *Percentages for savings account and asset diversification strategies are presented for young adults who ever reported owning these account types during the course of the panel using monthly level information. [†]Accumulated liquid assets are presented for young adults based on annual-level information. The accumulated mean value of liquid assets is reported only for young adults who held liquid assets greater than \$0 and after the value was winsorized.

SOURCE: Unweighted data from the 1996 SIPP.

young adults had a savings account. Among those who accumulated liquid assets, the mean value totaled \$6,328 (standard deviation [SD] = \$79,498).³ Samples from reference month and topical module data were similar on all characteristics; however, young adults from the topical module earned an average of \$500 more per month. See Tables 1 and 2 for additional sample characteristics.

Measures

The main analyses examined savings account acquisition, a diverse asset portfolio, and accumulation of liquid assets as outcome variables.

Savings account acquisition. Account ownership by young adults was tracked to determine whether or not, and when, they acquired a savings account (SIPP category EAST2B). This measure was used to model the acquisition of a savings account over the course of the panel. This tracking used quarterly histories and occurred retrospectively over one previous calendar year. For instance, a young adult who originally said he or she did not own a savings account during one quarter and then said yes during the next quarter was considered to have acquired a savings account. Thus, this dependent variable measured young adults' "no-to-yes" change in account ownership compared with those who consistently reported owning a savings

account, closing their account, or not acquiring a savings account (savings account closure “yes-to-no”; savings account acquisition “no-to-yes”; savings account ownership “yes-yes”; no savings account ownership “no-no”). Approximately 43 percent of young adults consistently had a savings account and 52 percent consistently did not have a savings account. About 3 percent of young adults acquired an account between quarters and 2 percent closed their account. Acquisition and closure were the most commonly reported savings account transitions. We were also interested in other variations of account acquisition and closure; however, fewer than 1 percent of young adults made multiple transitions throughout the panel. Only one young adult reported vacillating between acquisition and closure at every time point.

Diverse asset portfolio. Aside from a savings account, young adults reported whether they owned other types of financial products that represented additional strategies for asset diversification (yes; no). These included checking (EAST2A), CDs (EAST2D), savings bond (EAST1A, EAST3C), money market (EAST2C), stock (EAST3B, EAST3A), and retirement accounts (EAST1B, EAST1C). Ownership of these financial products was reported quarterly and occurred retrospectively over one previous calendar year. Twenty-four percent of young adults owned checking accounts, 5 percent owned CDs, 11 percent owned savings bonds, 5 percent owned money market accounts, 15 percent owned stock accounts, and 24 percent owned retirement accounts. The asset diversity of portfolios of young adults was explored descriptively rather than as outcomes in prediction models given that (i) the acquisition of a savings account was found to precede or coincide with other financial products that comprised the portfolio and (ii) the acquisition of a savings account was a dominant predictor in preliminary models.

Liquid assets. Young adults were asked to sum the value of liquid assets held in interest-earning accounts, including savings and checking accounts, CDs, and money market accounts (TIAITA). Young adults also reported amounts held in bond (TALSbv), stock (ESMIV), and retirement (TALRB, TALTB, TALKB) accounts. These amounts were available from topical modules in waves 3, 6, 9, and 12 of the 1996 SIPP and were summed to create a measure of combined liquid assets.

Liquid assets—an outcome variable whose value had the potential to cross or include \$0—was winsorized at the 99th percentile to censor extreme values (Cox, 2006) and transformed using the inverse hyperbolic sine (IHS; Friedline, Masa, and Chowa, 2015; Pence, 2006). The IHS transformation has been found to more accurately adjust for skewness in distribution of wealth variables compared with other transformations (Pence, 2006). After the analyses, the IHS-transformed outcome variables were back transformed into real dollars using predicted values that accounted for control variables in the models.

The following 11 variables were included as controls in the analyses:

- age,
- gender (female; male),
- race (nonwhite; Asian; white),
- marital status (married; not married),
- college enrollment (not enrolled; enrolled part-time; enrolled full-time),

- education level (primary school; partial high school; high school diploma; some college; college degree or more),
- employment (not employed; partially employed; employed),
- quarterly earned income,
- household relationship ([reference person; child; relative; nonrelative] and [new reference person; not a new reference person]),
- homeownership ([owned; rented or occupied] and [owned; purchased; sold; not a homeowner]), and
- geographic region (South; North Central; West; Northeast).

Savings account ownership and owning financial products within a diverse asset portfolio (yes; no) were also used as controls in models predicting liquid assets. Descriptions of these control variables are provided in Appendix A.

Control variables were constructed using information from the preceding months leading up to the fourth reference month in the quarter and averaging across the months. Thus, control variables were coded at the quarterly level for analyses. The quarterly measurements could be used to predict savings account acquisition or measure a diverse asset portfolio given that all were on the same quarterly scale. However, the liquid assets variable was measured at the annual level and the control variables (measured quarterly) needed to be compressed to the same annual time scale as the asset accumulation outcomes. To do so, the control variables were recoded to examine changes between quarters across the year preceding liquid asset accumulation. This meant that a young adult could report not owning a home in the first two quarters and purchasing a home in the third quarter, changing from not owning a home to having purchased a home over the course of the year.

Analysis Plan

The analysis plan leveraged the quarterly and longitudinal variation in savings account acquisition by young adults to measure associations with a diverse asset portfolio, including ownership of diverse financial products and the accumulation of liquid assets. Three analytic techniques were used. Multinomial logit regression was used to predict account acquisition, and multilevel and censored tobit regressions with individual random effects were used to predict the accumulated liquid assets of young adults. The multinomial logit regression was accomplished using Stata (StataCorp., 2011) and the multilevel and tobit regressions with random effects were accomplished using R (R Core Team, 2014).

Multinomial logit regression was used to compare quarterly changes in savings account ownership, acquisition, and closure with no savings account ownership after controlling for relevant factors. This technique was ideal because it allowed comparison of multiple account types. Robust standard errors (SEs) and individual clustering were used in the multinomial models to predict savings account acquisition (Hosmer and Lemeshow, 2000). Control variables measured at the quarterly level were included in the model and lagged by one quarter. This meant the previous quarter was used to predict acquisition in the quarter in which the savings account was measured.

Multilevel (hierarchical linear) modeling was used as the primary analytic technique to predict liquid assets given the technique's ability to (i) model random effects accounting for unobserved individual heterogeneity and (ii) control for categorical and continuous variables (Raudenbush and Bryk, 2002). In other words, multilevel modeling was used to account for differences among individuals that existed within the data. The nonlinear mixed effects (*nlme*) add-on package in R was used for multilevel modeling (Pinheiro et al., 2009) and robust SEs were produced using a Huber-White correction (Huber, 1967; Maas and Hox, 2004; Raudenbush and Bryk, 2002; White, 1982).

As a comparison with the multilevel modeling, tobit regression analysis with individual random effects was used to predict liquid assets (Honoré, Kyriazidou, and Powell, 2000, and Tobin, 1958).⁴ Tobit regression was used given that the liquid assets variable was left-censored, meaning that many values were recorded as \$0. This analytic technique depicted these censored outcomes as information from a continuously distributed latent variable and avoided introducing bias in the estimates by omitting this information (Angrist, 2001). In other words, censored tobit regression attempted to minimize the \$0 liquid asset amounts from young adults who did not have savings or other accounts or any liquid assets.⁵ The *censReg* (censored regression) add-on package in R was used to conduct the censored tobit regressions with random effects (Henningsen, 2010, 2013) and was dependent on the *maxLik* package in R for producing maximum likelihood (ML) estimates (Henningsen and Toomet, 2011) (Table 3). The results reported in the text focus on the multilevel model with individual random effects, as results from the censored tobit regression were provided as a type of sensitivity analysis.

RESULTS

Acquiring a Savings Account

Small percentages of young adults acquired or closed accounts between quarters. About 3 percent of young adults acquired an account and 2 percent closed an account. The predominant behaviors with regard to a savings account were consistently having owned or never having owned a savings account, with respective percentages of 43 and 52. Figure 1 graphs young adults' savings account ownership, acquisition, and closure by age. However, Figure 1 also shows the likelihood of owning a savings account increased with age, which suggests that while young adults were not sensitive to acquisition between quarters, they increasingly acquired accounts through their mid- to late 20s before the percentage leveled off in their 30s.⁶

Multinomial logit models predicted young adults' acquisition of a savings account between quarters, comparing savings account ownership ("yes-yes"), acquisition ("no-to-yes"), and closure ("yes-to-no") with no savings account ownership ("no-no"; see Table 2). The models of primary interest compared acquisition and closure with no savings account ownership (Models 2 and 3).

Savings Account Ownership (Model 1). Females were more likely than males to own a savings account. By race, young adults who were nonwhite or Asian were both less likely to own accounts compared with whites. Young adults were also more likely to own accounts

Table 3

Multinomial Logit Regression Models of Quarterly Change in Savings Ownership, Acquisition, and Closure Compared with No Savings Account Ownership[†]

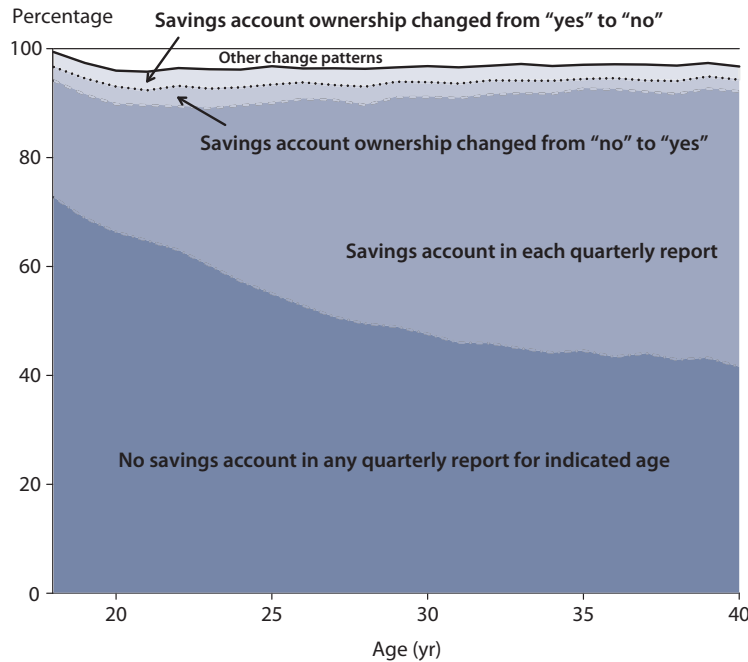
Covariates	Model 1		Model 2		Model 3	
	No account ownership vs. account ownership		No account ownership vs. account acquisition		No account ownership vs. account closure	
	β	SE	β	SE	β	SE
Sex: Male						
Female	0.101***	(0.008)	0.005	(0.022)	0.022	(0.022)
Race: White						
Nonwhite	-0.925***	(0.013)	-0.349***	(0.033)	-0.404***	(0.033)
Asian	-0.133***	(0.021)	0.132**	(0.054)	0.079	(0.055)
Marital status: Not married						
Married	0.010	(0.009)	0.009	(0.024)	0.064***	(0.024)
School enrollment: Full-time						
Enrolled part-time	0.006	(0.021)	-0.015	(0.059)	0.020	(0.060)
Not enrolled	-0.005	(0.014)	-0.022	(0.037)	0.015	(0.038)
Education level: Primary school						
Some high school	-0.019	(0.025)	-0.048	(0.068)	-0.000	(0.070)
High school diploma	-0.015	(0.023)	-0.020	(0.062)	0.013	(0.064)
Some college	-0.022	(0.023)	-0.081	(0.063)	0.013	(0.065)
College degree or more	-0.017	(0.024)	-0.071	(0.066)	-0.025	(0.067)
Employment status: Employed						
Partially employed	0.025	(0.018)	0.011	(0.048)	0.064	(0.050)
Not employed	0.026	(0.027)	-0.155**	(0.071)	0.187**	(0.077)
New reference person: No						
Yes	0.011	(0.009)	-0.005	(0.023)	0.005	(0.023)
Homeownership: Not a homeowner						
Homeowner	0.138***	(0.025)	-0.663***	(0.046)	-0.571***	(0.049)
Geographic region: Northeast						
West	-0.277***	(0.013)	-0.047	(0.034)	-0.008	(0.035)
North Central	0.019	(0.012)	-0.044	(0.034)	0.045	(0.035)
South	-0.419***	(0.012)	-0.287***	(0.032)	-0.204***	(0.033)
Quarterly mean income spline 1	-12.464	(6.451)	10.960	(19.520)	90.076	(73.601)
Quarterly mean income spline 2	-11.984	(6.428)	11.093	(19.463)	90.891	(73.507)
Quarterly mean income spline 3	-12.048	(6.434)	10.892	(19.479)	90.958	(73.537)
Quarterly mean income spline 4	-11.962	(6.386)	11.233	(19.350)	90.491	(73.264)
Quarterly mean income spline 5	-13.322	(7.128)	10.924	(21.381)	98.168	(78.896)
Age spline 1	1.130***	(0.375)	-4.700***	(1.040)	-2.648**	(1.036)
Age spline 2	-1.948***	(0.205)	-1.507**	(0.595)	-0.261	(0.599)
Age spline 3	-0.523**	(0.231)	-1.304**	(0.665)	-0.232	(0.672)
Age spline 4	-0.228	(0.199)	-1.314	(0.580)	-0.041	(0.586)
Age spline 5	-0.079	(0.259)	-1.671**	(0.751)	-0.195	(0.756)
Constant	12.638***		-12.089		-93.451	
	-0.277***		-0.047		-0.008	
Log pseudo-likelihood	-248,450.850					
Wald chi-square	18,224.530					
Degrees of freedom	81					
N = Person-month observations	280,845					
N = Individual clusters	29,585					

NOTE: Listwise deletion of missing data was used and reduced the original sample of 311,446 person-month observations to 280,845 and 30,601 individuals to 29,585, respective reductions of 10 percent and 3 percent. Robust SEs, clustered by individual, are reported in parentheses. [†]No savings account ownership “no-no”; savings account ownership “yes-yes”; savings account acquisition “no-to-yes”; savings account closure “yes-to-no.” β , regression coefficient; SE, robust SE. ** and *** indicate significance at the 5 percent and 1 percent levels, respectively.

SOURCE: Unweighted data from the 1996 SIPP.

Figure 1

Percentage of Savings Account Ownership, Acquisition, and Closure by Age of Young Adults



NOTE: This figure was produced with person-month and individual observations ($n = 311,446$ person-month observations; $n = 30,601$ individuals).

SOURCE: Unweighted data from the 1996 SIPP.

compared with not owning a savings account when they owned their own homes. Living in the West and South was negatively related to account ownership compared with living in the Northeast. Splines for age indicated that young adults' savings account ownership declined as they grew older, with the exception that adults in the youngest age spline were more likely to own an account.

Savings Account Acquisition (Model 2). Asian young adults were more likely to acquire a savings account than their white counterparts, and nonwhite young adults were less likely to acquire an account. Being unemployed and living in the South were negatively related to the acquisition of a savings account. Young adults were less likely to acquire an account if they were homeowners. Given that young adults were more likely to own an account initially if they were a homeowner (see Model 1), this negative relationship was not surprising.

Savings Account Closure (Model 3). Nonwhite young adults were less likely to close a savings account compared with whites, although they were also less likely to own accounts initially (Model 1). Those who were unemployed were more likely to close an account. Young adults who owned a home were also less likely to close a savings account compared with non-homeowners. Young adults who were married were more likely to close an account than to not own one.

In sum, young adults' race, employment status, homeownership, geographic region, and age were consistently related to account ownership, acquisition, and closure across the models. The findings from the multinomial logit models can be interpreted as follows. Given that non-white young adults were less likely to own an account initially compared with whites, they were also less likely to exhibit quarterly changes in account acquisition and closure. However, even though Asians were less likely to own an account compared with whites, they were more likely to acquire one between quarters. There were no differences in ownership and acquisition based on marital status; however, those who were married were more likely to close an account—an observation that was perhaps an artifact of joint account-holding behavior between marital partners. There was no difference in account ownership between young adults who were employed versus unemployed, but those who were unemployed were less likely to acquire an account between quarters and more likely to close an account. This suggests employment status may have played a role in facilitating the use of a savings account. Homeowners were more likely to own an account initially, which perhaps explains why they were also less likely to acquire or close accounts between quarters. Notably, education level and quarterly earned income were not significant in any of the models.

Diversifying Asset Portfolios

Compared with the percentage of young adults who owned and acquired a savings account, far fewer owned a diverse portfolio. As mentioned earlier, 24 percent of young adults owned checking accounts, 5 percent owned CDs, 5 percent owned money market accounts, 11 percent owned savings bond accounts, 15 percent owned stock accounts, and 24 percent owned retirement accounts. However, if the acquisition of a savings account serves as a gateway through which young adults can diversify their asset portfolios, savings accounts should consistently precede or occur simultaneously with the ownership or acquisition of these financial products. Figures 2 through 4 display young adults' portfolios as they relate to a savings account.

In most cases, young adults owned a savings account at or before the acquisition of checking, CD, money market, savings bond, stock, and retirement accounts (see Figures 2 and 3). Figure 2 presents the percentage of young adults with a savings account who also owned other financial products. Figure 3 presents the percentage of acquired financial products that were preceded by or coincided with owning a savings account, which required determining the point in the 1996 SIPP at which young adults first acquired these products and identifying if they owned a savings account at that time or in any preceding month. For instance, 44 percent of young adults with a savings account also owned a checking account (see Figure 2), and for most young adults the acquisition of a checking account was preceded by or coincided with owning a savings account (23 percent; see Figure 3). Forty-two percent of young adults with a savings account also owned a retirement account (see Figure 2), and for most young adults the acquisition of a retirement account was preceded by or coincided with a savings account (21 percent; see Figure 3). Far fewer financial products were owned or acquired in the absence of a savings account.

Young adults also acquired savings accounts in combination with other financial products as they grew older (see Figure 4). The most common combinations were savings accounts

Figure 2

Percentage of Young Adults with a Savings Account Who Also Owned Other Financial Products

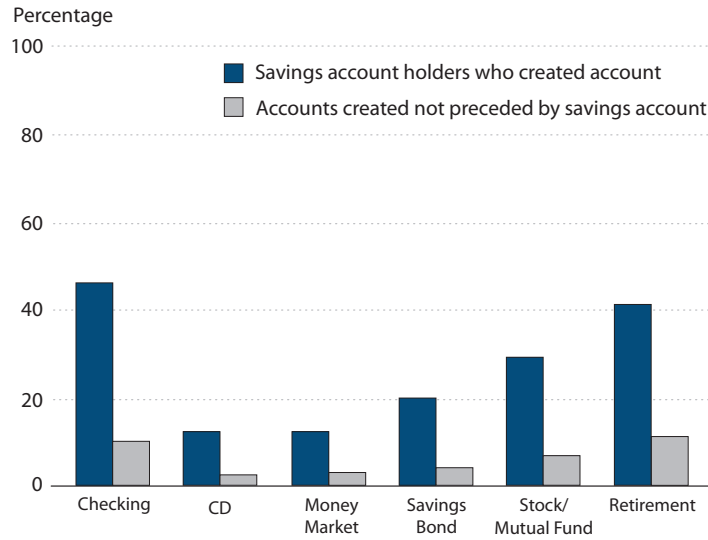
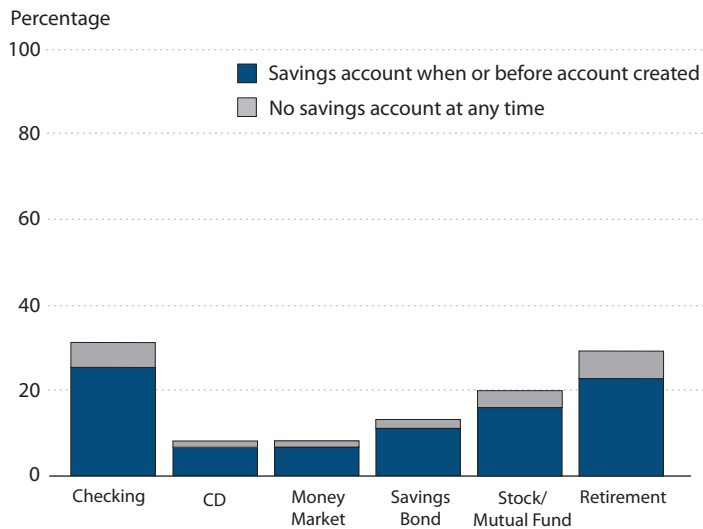


Figure 3

Percentage of Young Adults Who Acquired Financial Products Coincident With or Preceded by a Savings Account

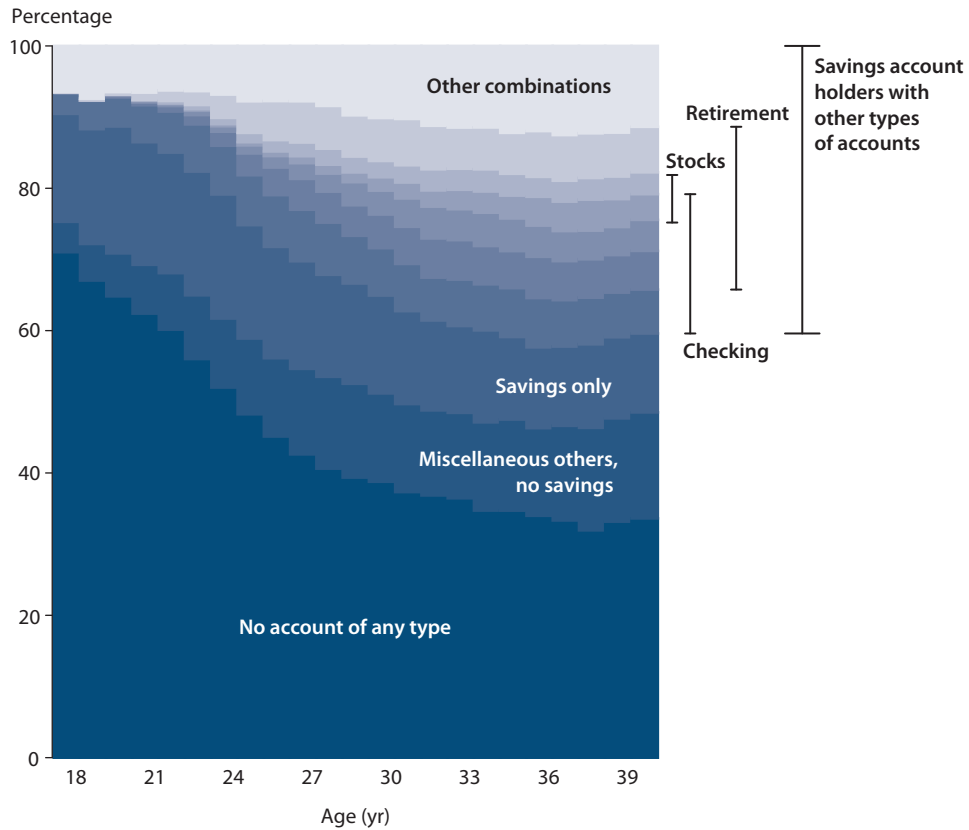


NOTE: Figures 2 and 3 were produced with person-month and individual observations ($n = 311,446$ person-month observations; $n = 30,601$ individuals).

SOURCE: Unweighted data from the 1996 SIPP.

Figure 4

Percentage of Savings Account Ownership by Young Adults Combined with Ownership of Other Financial Products by Age



NOTE: This figure was produced with person-month and individual observations ($n = 311,446$ person-month observations; $n = 30,601$ individuals).

SOURCE: Unweighted data from the 1996 SIPP.

plus checking, stock, and/or retirement accounts. Similar to the scenario in Figure 1, young adults may have increasingly acquired accounts and diversified their asset portfolios through their mid- to late 20s before the trend leveled off in their 30s.

In sum, young adults who owned a savings account appeared to own other financial products more often. Furthermore, savings account ownership consistently preceded or coincided with the acquisition of other financial products.

Accumulating Liquid Assets

Information on the accumulated liquid assets of young adults was provided from annual topical modules and analyzed using multilevel and censored tobit regression modeling with individual random effects (see Table 4, Models 4 through 6). Random effects accounted for unobserved individual heterogeneity. The intraclass correlation (Raudenbush and Bryk, 2002)—defined as the between-individual variance divided by the total variance of liquid assets—ranged from 0.305 (Model 5) to 0.540 (Model 6), indicating that significant differences in the individual characteristics of young adults explained between 30 percent and 54 percent of the variability in liquid assets. The results reported below focus on the multilevel analyses from Models 4 and 5. The relationships between financial products and liquid assets are reported first before a discussion of the relationships between control variables and liquid assets.

As a first step, the financial products representing a diverse portfolio were used to predict liquid assets in Model 4, absent control variables. It was previously determined that a savings account was a gateway to a diverse asset portfolio and almost always coincided with or preceded the acquisition of other types of financial products. As such, the relationships between liquid assets and checking, stock, and retirement accounts can be interpreted as the added contribution of a diverse portfolio over and above a savings account. As expected, young adults with no account of any kind accumulated significantly fewer liquid assets, whereas those with other account types accumulated significantly more. In particular, the relationships were strongest between stock and retirement accounts and liquid assets, although the combination of these accounts was negatively related to liquid assets.

While some variation in the size or strength of the estimates exists between Models 4 and 5, the direction of the relationships remained fairly consistent once control variables were added. With controls, savings and stock accounts had the strongest relationships with liquid assets based on regression coefficients. However, using predicted values (Table 5), a savings account contributed \$49.68 and stocks contributed \$329.50 to accumulated liquid assets. In terms of dollar values, the combination of stock and retirement accounts contributed the most, \$5,283.05, to liquid asset accumulation by young adults. Results also indicated that retirement accounts and the combination of stock and retirement accounts contributed negatively to young adults' liquid assets.

Given that the acquisition of financial products could be determined in part by age and income, interaction effects were incorporated. There were significant, positive interactions between the age of young adults and their retirement and combined stock and retirement accounts for predicting liquid assets. Predicted values based on these interactions indicated that as young adults ascended age quintiles, their contributions to liquid assets by combined stock and retirement accounts ranged from \$4,900.80 to \$12,385.20 (Table 6). Also consistent with the interaction terms between age and financial products from Model 5, the amounts contributed to liquid assets by savings, checking, and stocks declined across the 25th, 50th, and 75th age quintiles.

There was a significant, positive interaction between ownership of stock and retirement accounts and quarterly mean income; however, the interaction between the combined accounts and liquid assets was negative. Predicted values indicated that the contributions to liquid

Table 4

Models Predicting Liquid Assets (IHS-Transformed; N = 36,415)

Covariates	Model 4		Model 5		Model 6	
	Multilevel model with individual random effects		Multilevel model with individual random effects		Multilevel model with individual random effects	
	β	SE	β	SE	β	SE
Financial products from a diverse asset portfolio						
No account of any kind	-3.479***	(0.035)	-3.382***	(0.035)	-8.852***	(0.074)
Savings account	0.272***	(0.030)	2.956***	(0.098)	2.274***	(0.185)
Checking account	0.093***	(0.026)	0.517***	(0.122)	0.499**	(0.193)
Stock/mutual fund account	2.102***	(0.043)	3.178***	(0.188)	2.259***	(0.293)
Retirement account	4.576***	(0.031)	-0.808***	(0.161)	-1.225***	(0.248)
Stock and retirement accounts	-1.094***	(0.057)	-1.859***	(0.313)	-1.043**	(0.460)
Age			0.023***	(0.002)	-0.013**	(0.006)
Sex: Male						
Female			-0.082***	(0.022)	-0.230***	(0.045)
Race: White						
Nonwhite			-0.266***	(0.031)	-0.409***	(0.073)
Asian			-0.037	(0.055)	-0.011	(0.112)
Marital status: Not married						
Married			-1.437***	(0.022)	-3.008***	(0.045)
College enrollment: Not enrolled						
Part-time enrollment			0.140***	(0.036)	0.248***	(0.061)
Full-time enrollment			0.319***	(0.030)	0.660***	(0.059)
Education level: Primary school						
Some high school			-0.113	(0.064)	0.568***	(0.209)
High school diploma			-0.067	(0.060)	0.987***	(0.197)
Some college			0.067	(0.061)	1.289***	(0.197)
College degree or more			0.476***	(0.064)	1.890***	(0.199)
Employment status: Not employed						
Partially employed			0.107***	(0.030)	0.289***	(0.067)
Employed			0.206***	(0.032)	0.493***	(0.070)
Quarterly mean income/1,000			0.039***	(0.013)	0.238***	(0.028)
New reference person: False						
True			0.113**	(0.044)	0.170**	(0.079)
Change in homeownership: Not a homeowner						
Owned			0.150***	(0.021)	0.407***	(0.043)
Purchased			0.022	(0.039)	0.167**	(0.068)
Sold			0.032	(0.046)	0.084	(0.085)
Geographic region: Northeast						
West			-0.214***	(0.032)	-0.430***	(0.066)
North Central			-0.141***	(0.032)	-0.262***	(0.063)
South			-0.218***	(0.030)	-0.465***	(0.061)
Interactions of financial products with age						
Savings account			-0.091***	(0.003)	-0.056***	(0.006)
Checking account			-0.015***	(0.004)	-0.010	(0.006)
Stock account			-0.033***	(0.006)	-0.021**	(0.010)
Retirement account			0.147***	(0.005)	0.197***	(0.008)
Stock and retirement accounts			0.032***	(0.010)	-0.021***	(0.014)
Interactions of financial products with quarterly mean income/1,000						
Savings account			0.076***	(0.014)	-0.044	(0.023)
Checking account			0.057***	(0.014)	0.024	(0.022)
Stock account			0.048**	(0.024)	-0.082**	(0.037)
Retirement account			0.315***	(0.019)	0.163***	(0.029)
Stock and retirement accounts			-0.231***	(0.031)	-0.077	(0.046)
Constant	3.686***	(0.033)	1.915***	(0.103)	0.580**	(0.285)
Random effects (σ)						
Residual	2.15		2.13		2.13	
Individual effect	1.69		1.41		1.41	
Intraclass correlation	0.381		0.305		0.540	

NOTE: β , regression coefficient; SE, robust SE. ** and *** indicate significance at the 5 percent and 1 percent levels, respectively.

SOURCE: Unweighted data from the 1996 SIPP.

Table 5**Predicted Values of Contributions of a Diverse Asset Portfolio to Accumulated Liquid Assets (IHS-Transformed; N = 36,415)**

Covariates	Model 4	Model 5
	Multilevel model with individual random effects (financial-products-only model)	Multilevel model with individual random effects (full model)
Financial products from a diverse asset portfolio		
No account of any kind (\$)	0.21	0.95
Savings account (\$)	26.15	49.68
Checking account (\$)	21.86	40.34
Stock account (\$)	163.04	329.50
Retirement account (\$)	1,937.09	1,992.07
Stock and retirement account (\$)	5,302.87	5,283.05

NOTES: Values expressed in U.S. dollars. Predicted values were calculated by back transforming the IHS transformation of accumulated liquid assets into real dollars.

SOURCE: Unweighted data from the 1996 SIPP.

assets made by stock and retirement accounts were sensitive to income (see Table 6). At the 25th quintile of income, the predicted value of a retirement account was \$1,699.58; however, at the 75th quintile, the predicted value was \$3,945.08. Likewise, the combined stock and retirement accounts at the 25th income quintile were \$5,650.18 compared with \$9,151.51 at the 75th income quintile.

The relationships between control variables and liquid assets were also examined (see Table 4 and Model 5). As expected, young adults who were older, enrolled in college, had a college degree or more, earned a higher quarterly income, recently became a new head of household, and owned their own homes accumulated significantly more liquid assets than their counterparts. Young adults who were female, nonwhite, married, and lived in geographic regions other than the Northeast accumulated significantly fewer liquid assets.

In sum, the financial products from a diverse portfolio were significantly related to the accumulated liquid assets of young adults. Significant, negative interactions between age and savings, checking, and stock accounts suggested that the effects of these financial products on liquid asset accumulation diminished as young adults grew older. Conversely, as young adults earned more income, the effects of these financial products on liquid asset accumulation increased. Likewise, as young adults grew older and earned more income, the effects increased.

DISCUSSION

Our research attempted to understand young adults' balance sheets through two avenues with 1996 SIPP data, with particular attention to the acquisition and role of a savings account. The first avenue emphasized the ownership of a diverse asset portfolio with financial products,

Table 6**Predicted Values of Contributions of a Diverse Asset Portfolio to Accumulated Liquid Assets by Quintiles of Age and Quarterly Mean Income (IHS-Transformed; N = 36,415)**

Covariates	Age quintiles			Income quintiles		
	25th	50th	75th	25th	50th	75th
Financial products from a diverse asset portfolio						
No account of any kind (\$)	0.77	0.96	1.16	0.89	0.93	0.99
Savings account (\$)	73.41	48.88	32.54	43.11	47.75	54.03
Checking account (\$)	94.09	57.27	34.85	47.28	55.07	66.20
Stock account (\$)	854.12	465.66	253.87	390.45	451.16	537.13
Retirement account (\$)	1,830.75	2,938.81	4,717.53	1,699.58	2,489.15	3,945.08
Stock and retirement accounts (\$)	4,900.80	7,790.85	12,385.20	5,650.18	7,030.04	9,151.51

NOTE: Values expressed in U.S. dollars. Predicted values were calculated by back transforming the IHS transformation of accumulated liquid assets into real dollars.

SOURCE: Unweighted data from the 1996 SIPP.

such as CDs, mutual funds, or other brokerage accounts, while the second considered the accumulated value of liquid assets.

Our first research question focused on factors related to the acquisition, or take-up, of a savings account by young adults. A majority of young adults either owned or did not own a savings account, with far fewer acquiring or closing a savings account over the course of the panel. At least descriptively speaking, these percentages suggested that account ownership may have been “sticky” and guided by inertia—the currently observed behavior was guided in part by the previously observed behavior (Thaler and Sunstein, 2009; for further discussion, see Appendix B). If ownership and maintenance of a savings account by young adults is as constant as these results suggest and previous research confirms (Benartzi and Thaler, 2007; Friedline and Elliott, 2013; Friedline, Elliott, and Chowa, 2013; Madrian and Shea, 2001), then the initial acquisition of a savings account may be important for continued account ownership.

Given the apparent importance of inertia in savings account ownership, we explored factors that predicted the acquisition of a savings account by young adults during the course of the panel. Race, employment status, homeownership, geographic region, and age were among the significant predictors in the multinomial logit model comparing account acquisition with no account ownership. The relationships between these control variables and account acquisition were in the expected directions. For instance, nonwhite young adults were less likely to acquire accounts than white young adults (Friedline and Elliott, 2011), whereas Asians were significantly more likely to do so. While nonwhites were less likely to have a savings account initially, the fact that they were also less likely to acquire a savings account suggests they may experience continued exclusion from financial mainstream institutions, a finding consistent with previous research (Federal Deposit Insurance Corporation [FDIC], 2012, and Shapiro, Meschede, and Osoro, 2013).

Unemployed young adults were less likely than those who were employed to acquire an account, suggesting employment may be one path to account acquisition (Rhine and Greene, 2013). One explanation for the link between young adult employment and the acquisition of a savings account may be that employers offer—if not mandate—direct deposit for paychecks. Employment thus may have helped to ensure that young adults acquired accounts, whereas unemployment may have made this acquisition less likely.

Our second research question asked whether ownership or acquisition of a savings account was a gateway to a diverse asset portfolio. Consistently, young adults who owned a savings account appeared to also own other financial products more often, and their savings account ownership preceded or coincided with the acquisition of other financial products. While few young adults had a diverse portfolio—meaning that few young adults owned a savings account in combination with other financial products (see Figure 4; Cooper, 2013, and King and Leape, 1998)—checking, stock, and retirement accounts were among the most commonly acquired products as part of a diverse portfolio. Taken together, it appears that a savings account may be one of the first financial products acquired as young adults ascend the financial hierarchy and may almost be considered a prerequisite for—not simply a gateway to—a diverse asset portfolio (Xiao and Anderson, 1997), which is one measure of a healthy balance sheet (Fabozzi, Gupta, and Markowitz, 2002).

Our third research question explored the extent to which a savings account and a diverse asset portfolio contributed to the value of young adults' accumulated liquid assets. In addition to a savings account, we focused on the financial products most commonly owned by young adults—checking, stock, and retirement accounts. Given that a savings account was almost a prerequisite for the financial products that comprised a diverse portfolio, their relationships to liquid assets were seen as additive. That is, these financial products represented the added effects on liquid assets when combined with a savings account. Indeed, as young adults ascended the financial hierarchy and acquired stock and retirement accounts that represented long-term, higher-level needs, they also accumulated significantly more liquid assets. A savings or checking account alone contributed small amounts—respectively, \$49.68 and \$40.34. Initially, it appeared that a retirement account was negatively related to accumulated liquid assets; however, considered in light of increasing quarterly mean income, a retirement account contributed substantially to accumulated liquid assets. A retirement account contributed \$1,699.58 at the 25th income quintile and \$3,945.08 at the 75th income quintile. When combined with stocks, young adults accumulated \$5,650.18 at the 25th income quintile compared with \$9,151.51 at the 75th income quintile. This suggests that the financial hierarchy that young adults ascend, in addition to helping diversify their portfolios (Xiao and Anderson, 1997; Xiao and Noring, 1994), may contribute to accumulated liquid assets.

Limitations

Findings from this research should be considered in light of several limitations. The measures included in this research were limited to those available from the 1996 SIPP, and many contextual factors with potential relevance to young adults' balance sheets were not

incorporated into the analyses. These factors include family history of financial socialization, availability of banks within a community, U.S. economic growth during the 1990s, and the banking mergers and closures during the late 1980s and early 1990s preceding the 1996 SIPP data collection (FDIC, 1997, and Serido et al., 2010). While this research cannot rule out the relationships between these contextual factors and the balance sheets of young adults, measuring the changes in employment, education level, income, or household relationship provided some context. The 1996 SIPP data itself had some complexities, including oversampling of lower-income young adults, resulting in less frequent ownership of a savings account or other diverse financial products and fewer accumulated assets compared with other surveys (Czajka, Jacobson, and Cody, 2003).

In addition, imprecise reporting of retrospective monthly or quarterly information may have resulted in excessive transitions between reference periods (also known as “seam bias”; see Moore et al., 2009). While this research focused on the balance sheets of all young adults, those from lower-income backgrounds are arguably at greater risk for financial fragility and, thus, an important subgroup of interest, mitigating concerns about the 1996 SIPP’s oversampling. The concern about excessive transitions between reference periods—an artifact of the 1996 SIPP survey design—has been mitigated by using information from the fourth and last reference month of the quarter, a recommendation by previous researchers (Ham, Li, and Shore-Sheppard, 2009, and Moore et al., 2009). This meant using information from 12 quarters across the 4-year panel (the last reference month in the quarter), as opposed to all 48 months. In other words, young adults appeared to more precisely report life events such as the month they were married, but their recollection at the monthly level was “fuzzier” about seemingly minor life events such as opening a savings account until they were asked in person by the SIPP interviewers in the fourth reference month.

Another limitation is that the large sample sizes in the 1996 panel were useful to model the occurrence of rare events such as account acquisition and closure, but such large sample sizes also unexpectedly ruled out many estimation methods. For example, we considered using median regression as an analytic technique to model IHS-transformed liquid assets among the topical module sample (Pence, 2006); however, after one week of processing, R still had not returned output on our preliminary model. To test whether median regression was possible with a smaller sample size, we reran the preliminary model with a reduced sample and, indeed, results were produced. Given the lengthy time to produce output with such large samples, median regression was ruled out as a possible analytic technique and we instead used linear models with multilevel modeling and censored tobit regressions.

CONCLUSION AND POLICY CONSIDERATIONS

Automatic enrollment into a savings account is one consideration in terms of policy concerns regarding acquisition of savings accounts by young adults. Absent some external force such as homeownership or employment that requires an account, some young adults may never own a savings account (Benartzi and Thaler, 2007). Previous research has identified automatic enrollment as an important default: Nearly all participants open a savings account

in research studies in which the default leverages inertia and requires participants to opt out of account acquisition (Huang et al., 2013, and Nam et al., 2013).

Given that a savings account appears to be a gateway—and perhaps even a prerequisite—to asset diversification and accumulation, a related and second consideration is encouraging account acquisition by young adults to facilitate their development of a healthy balance sheet. Efforts to “bank the unbanked,” so to speak, have focused on the importance of savings account acquisition in facilitating entry into the financial mainstream (FDIC, 2012). These efforts promote the use of safe and affordable financial products available from mainstream banks and credit unions as opposed to products from predatory payday lenders that may jeopardize balance sheets by charging excessive fees (FDIC, 2012, and Rhine and Greene, 2013). However, entry into the financial mainstream should not be the end in and of itself, particularly for young adults who are financially disadvantaged. Policies that promote transparency in savings account fees and lower barriers to acquisition, such as reduced or eliminated minimum balance requirements or maintenance fees, may indeed help young adults gain entry into the financial mainstream. Importantly, policies such as these may also serve to set young adults on a path to asset diversification and accumulation and to strengthen their balance sheets.

A third consideration relates to policies that encourage asset accumulation. All of the following contribute to the health of the balance sheet: a postsecondary education system built on debt (Assets and Education Initiative [AEDI], 2013); predatory mortgage lending practices (Agarwal et al., 2013); an economic recession that reduced net worth and raised unemployment rates (Kochhar, Fry, and Taylor, 2011, and Mishel et al., 2012); an expanding retail and service economy paying only minimum wage with few benefits (Aaronson, Agarwal, and French, 2012, and Carré and Tilly, 2012); and regressive tax policies that penalize individuals for accumulating assets (Cramer and Schreur, 2013). The tax code represents one of the most extensive and publicly accepted policies for asset diversification and accumulation, with a majority of the president’s \$536 billion 2015 budget for saving and asset accumulation allocated through the tax code (Black, 2014). However, the tax code disproportionately benefits those from upper-income groups through subsidies on homeownership and retirement savings while neglecting certain groups who often lack such assets, such as young adults (Cramer, Black, and King, 2012). In part, this may be why a retirement account contributes such large predicted values to liquid asset accumulation as income quartiles increase. This “upside-down” asset policy in the tax code incentivizes and helps to maintain positions of financial advantage without necessarily helping young adults build assets (Woo, Rademacher, and Meier, 2010).

Real and substantial policy change is needed to stimulate asset diversification and promote accumulation among young adults, particularly since their current balance sheets may be an indicator of their lifetime financial security. While policy programs such as Individual Development Accounts and Child Development Accounts have been found to play important roles in the acquisition of a savings account and accumulation of assets (Boshara, 2012, and Sherraden, 1991), policies are also needed that are broader in scope and simultaneously address other vulnerabilities to young adults’ balance sheets, such as student loans, predatory lending, income, and unemployment.

A final consideration relates to the implications of these results for young adults’ balance sheets that also include debt and net worth. An underlying assumption of this research is that

asset diversification and accumulation are desirable—and perhaps even reliable—indicators of a healthy balance sheet. While it is desirable for young adults to have opportunities to diversify their assets, diversification is not the only indicator of a healthy balance sheet, nor is it necessarily the outcome for which all young adults should strive. The composition of asset diversification and accumulated assets, debt, and net worth helps to determine the health of the balance sheet. Balance sheets by their very nature are complex: They incorporate debt that includes credit cards, vehicle loans, and mortgages of varying interest rates and policy terms plus assets that include money market, stock, and retirement accounts of varying restrictions and returns. As such, it is not enough to simply say that diversification and accumulation in and of themselves are indicators of a healthy balance sheet; where and how these diverse assets accumulate compared with debt also matter. ■

APPENDIXES

Appendix A: Descriptions of Control Variables

Age. Young adults' age was a continuous variable ranging from 18 to 40 (TAGE).

Gender. Young adults' gender was measured based on their reports of being male or female (ESEX; female; male).

Race. Young adults' race included those who were white, black, Asian (including Pacific Islander), and Native American/First Peoples (ERACE). Given the low percentage in the sample who were Native American/First Peoples and their very similar estimates in the models compared with blacks, Native American/First Peoples were combined with blacks and identified as nonwhite (nonwhite; Asian; white).

Marital status. Marital status (EMS) was measured by asking young adults to report monthly whether they were married, widowed, divorced, separated, or never married. Responses were collapsed into married or not married categories (married; not married).

College enrollment. Young adults' college enrollment status (RENROLL) was measured by asking whether they were enrolled in school in the previous quarter. Young adults who were enrolled full- or part-time during the quarter were considered to have been enrolled in college, whereas those who were not enrolled in the quarter were considered to have not been enrolled (enrolled full-time; enrolled part-time; not enrolled).

Education level. Young adults were asked to report the highest grade completed or degree received each month, ranging from less than first grade to doctorate degree (EEDUCATE). Responses were collapsed to indicate having a primary school education through grade eight, some high school education through grade 12, a high school diploma, some college, or a four-year college degree or more (primary school; some high school; high school diploma; some college; college degree or more).

Employment status. Young adults were asked whether they were employed during the month (RMESR). Those who responded that they had a job for the entire month were coded as employed. Young adults who reported having a job for part of the month were coded as partially employed. Those without a job, including being absent without pay, laid off, or looking for work, were coded as unemployed (not employed; partially employed; employed). The change in young adults' employment status was tracked by using monthly information retrospectively over one previous calendar year. Young adults who were employed or unemployed without change between months were considered to be consistently employed or unemployed, respectively. Changes in status were observed when young adults moved from employed to unemployed or unemployed to employed.

Quarterly mean income. Young adults' total earned income was available for a given month (TPEARN), which was averaged across the months leading up to the fourth reference month in the quarter, winsorized (Cox, 2006), and transformed using the natural log to account for skewness. In the analyses predicting liquid assets, quarterly mean income was divided by 1,000.

Household relationship. Each quarter young adults were asked their relationship to the household reference person (ERRP)—the person for the household whose name appeared on the lease or mortgage and who was identified by the 1996 SIPP as the household head or person of reference. The 1996 SIPP recorded a range of relationship statuses, from a spouse or relative of the reference person to a housemate or other nonrelative. The range of relationships was categorized into young adults listed as the reference person, child of the reference person, relative, or nonrelative (reference person; child; relative; nonrelative). Forty-three percent of young adults were listed as the reference person, potentially indicating they were responsible for households of their own. Twenty-two percent of young adults reported they were the child of the reference person, potentially indicating they continued to reside with their families of origin. The remaining 35 percent reported they were relatives or nonrelatives of the household reference person. The change in household relationship status tracked young adults quarterly and retrospectively over one previous calendar year, identifying whether the status of young adults changed from being listed as a child, relative, or nonrelative to a household reference. Approximately 3 percent of the sample reported becoming a new reference person at some point during the panel. This change in household relationship status served as a proxy for young adults who became heads of households during the course of the panel (new reference person “yes”; not a new reference person “no”).

Homeownership. Young adults were asked whether they lived in a home being purchased or currently owned or whether they rented or otherwise occupied the residence in which they lived (ETENURE; owned = 1; rented or occupied = 0). Their responses were measured monthly. However, we also expected the purchase or selling of a home could affect the amount of liquid assets available to young adults apart from simply being a homeowner. If they recently purchased a home, young adults may have spent down their liquid assets to make a down payment or repairs. As such, we modeled whether the quarterly change in young adults’ homeownership over the previous preceding year related to their accumulated liquid assets (owned; purchased; sold; not a homeowner).

Geographic region. The 1996 SIPP asked young adults in which state their household resided (TFIPSST). States were recoded into geographic regions (South; North Central; West; Northeast; Elliott, 2013). Southern states included Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia and Washington, DC. North Central states included Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, North Dakota, South Dakota, Wisconsin, and Wyoming. Western states included Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, and Washington. Northeastern states included Connecticut, Maine, Vermont, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, and Rhode Island.

Appendix B**Generalized Additive Models Predicting Savings Account Ownership**

Covariates	Model A		Model B	
	β	SE	β	SE
Sex: Male				
Female	0.265***	(0.009)	0.161***	(0.065)
Race: White				
Nonwhite	-0.480***	(0.013)	-0.223***	(0.025)
Asian	-0.158***	(0.021)	-0.045***	(0.042)
Marital status: Not married				
Married	0.610***	(0.011)	0.387***	(0.021)
College enrollment: Full-time enrollment				
Part-time enrollment	-0.061***	(0.022)	0.054	(0.044)
Not enrolled	-0.436***	(0.015)	-0.208***	(0.031)
Education level: Primary school				
Some high school	0.209***	(0.031)	-0.029	(0.058)
High school diploma	0.965***	(0.028)	0.408***	(0.052)
Some college	1.362***	(0.028)	0.630***	(0.052)
College degree or more	1.743***	(0.029)	0.815***	(0.054)
Employment status: Employed				
Partially employed	-0.237***	(0.018)	-0.230***	(0.036)
Not employed	-0.522***	(0.021)	-0.382***	(0.038)
Household relationship to reference person				
Child	-0.681***	(0.015)	-0.285***	(0.030)
Relative	-0.044***	(0.010)	0.060***	(0.020)
Nonrelative	-0.412***	(0.022)	-0.053	(0.048)
New reference person: False				
True	-0.119***	(0.024)	0.052	(0.045)
Change in homeownership: Not a homeowner				
Homeowner	-0.593***	(0.009)	-0.286***	(0.018)
Geographic region: Northeast				
West	-0.161***	(0.013)	-0.112***	(0.025)
North Central	-0.088***	(0.012)	-0.094***	(0.024)
South	-0.457***	(0.012)	-0.295***	(0.023)
Quarterly mean income spline 1	8.157***	(8.957)	5.124***	(6.206)
Age spline 1	8.612***	(8.788)	8.079***	(8.772)
Savings account (lagged)			5.081***	(0.016)
Constant	-0.026***	(0.034)	-2.464	(0.065)
R^2	0.203		0.764	

NOTE: The results in this table are from the reference month sample ($n = 311,446$ person-month observations; $n = 30,601$ individuals). Generalized additive models (GAMs) were performed on savings account ownership (regardless of whether young adults had an account during the fourth reference month) with and without a lagged account variable (Wood, 2004, 2006, 2011). The lagged account variable measured whether young adults owned a savings account in a preceding quarter. These models were used to determine how young adults first acquired an account, as opposed to the more sensitive “no-to-yes” transition measured by the multinomial logit models in Table 3. The question of predictors of account ownership logically preceded the question of account acquisition; however, account ownership was not a primary focus of our article. Thus, the GAM results are provided here. As shown, for the differences in estimates between Models A and B, the lagged savings account was a dominant predictor that depressed all other estimates and contributed an additional 56 percent to the variance in Model B. This finding provided some evidence to support the “stickiness” of savings account ownership across time. Young adults who had a savings account in one quarter were significantly more likely to maintain that account in the following quarter. *** indicates significance at the 1 percent level.

SOURCE: Unweighted data from the 1996 SIPP.

NOTES

- ¹ Xiao and Anderson (1997) also identify a third category of needs—“security”—or middle-level needs such as saving for a home or investing in human capital. Certificates of deposit, bonds, and money market accounts are financial products theorized to be consistent with meeting these middle-level needs.
- ² While the United States as a whole experienced macroeconomic growth evidenced in part by expanded productivity (Jorgenson, Ho, and Stiroh, 2008), this growth did not necessarily translate into healthy balance sheets for all Americans. For instance, in the late 1990s, younger households headed by individuals 42 years of age or younger had about 29 percent of the median net worth held by older households; female heads of households had about 9 percent of the median net worth of male heads of households; black households had about 14 percent of the median net worth held by white households; and heads of households with high school educations had about 19 percent of the median net worth held by heads of households with college degrees (Friedline, Nam, and Loke, 2014).
- ³ The median value presented here for liquid assets was provided after the value was winsorized (Cox, 2006).
- ⁴ Censored median regression was considered to analyze liquid assets, debt, and net worth at the annual level (Koenker, 2008); however, running the model in a reasonable amount of time given the large number of observations was difficult with the R software. Censored median regression was abandoned as an analytic strategy after a single model was not produced within five days.
- ⁵ The effect of the censored tobit regression on the prediction of liquid assets can be seen by comparing estimates of “no account of any kind” from Model 6 with estimates from Models 4 and 5. The estimate for “no account of any kind” takes into consideration young adults who have no accounts and, thus, few to no accumulated liquid assets. In the censored tobit regression (Model 6), the estimate was steeper with a lower intercept or constant value ($\beta = 0.580$; $SE = 0.285$), indicating the technique’s attempt to minimize the effects of these values.
- ⁶ Notably, when we examined the relationship between age and savings account ownership using a predicted probability scale from the generalized additive models (GAMs) that controlled for relevant factors, the age trend disappeared. In other words, using this method, young adults at age 40 or 30 were no more likely to own a savings account than young adults at age 20. These figures are available from the authors upon request.

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Friedline, Johnson, Hughes

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Asset Holdings of Young Households: Trends and Patterns

Ellen A. Merry and Logan Thomas

The authors use multiple waves of the triennial Survey of Consumer Finances (SCF) from 1989 to 2013 to examine the composition of the asset portfolios of young households whose head of household is between 18 and 41 years of age. The focus is on households' decisions to hold different types of assets, including both financial assets (e.g., bank accounts, stocks, and retirement accounts) and non-financial assets (e.g., residential real estate, businesses, and automobiles). The authors describe the patterns of acquisition of broad asset categories in the early part of the life cycle with attention to patterns that appear to have changed over time and explore how the propensity to hold different types of assets varies across households. (JEL D14, D31, G11)

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Recent research focused on how young households fared throughout the Great Recession has highlighted the losses this group incurred, in part because a large share of their assets was in housing. Emmons and Noeth (2013) find evidence that homeownership rates in 2007 were elevated for younger households relative to earlier years after controlling for other factors. The significant losses in wealth as a result of the Great Recession have prompted many questions about how households, particularly younger households and minorities, can rebuild and invest for the future.

This article builds on the existing work on portfolio choices of young households and focuses on households' decisions to hold a range of asset types, including both financial assets (e.g., bank accounts, stocks, and retirement accounts) and nonfinancial assets (e.g., residential real estate, businesses, and automobiles). While several recent articles on the 2007-09 recession and recovery have focused on the losses and gains experienced by different groups, including the young, the possible changes in household decisions to hold different types of nonhousing assets in recent years have received less attention. The composition of asset ownership is important for both long-term economic mobility and the ability of households to weather temporary

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financial shocks. For example, stocks have historically provided a greater return over time but also involve a greater risk of loss over shorter time horizons. In contrast, bank accounts grow more slowly over time but offer a ready reserve for emergencies. Recent decades provide examples of both positive and negative impacts of asset price changes on household balance sheets depending on the degree of exposure to different asset classes.

We use the triennial Survey of Consumer Finances (SCF) to examine the composition of the asset portfolios of young households whose head of household is between 18 and 41 years of age over the years 1989 to 2013. While the SCF does not follow the same households over this entire period, it does allow us to study different cohorts or groups of young adults who entered adulthood at different points in time. The next two sections describe the asset categories used in the analysis and the young adults included in the measures of asset ownership constructed with the SCF data. We then describe the patterns of acquisition of broad asset categories in the early part of the life cycle with attention to patterns that appear to have changed over time and explore how the propensity to hold different types of assets varies across households.

DATA AND DESCRIPTIONS OF ASSET CATEGORIES

This article uses data from the Federal Reserve Board's SCF collected from 1989 through 2013 to examine the composition of household assets. The SCF is a triennial cross-sectional survey of households that includes detailed information on assets, liabilities, and income as well as attitudes toward saving, credit, and risk. The SCF uses a two-part sampling frame and oversamples wealthy households in an effort to measure the wealth holdings concentrated among households at the top of the wealth distribution. As Kennickell (2009) notes, since 1989 the SCF has been conducted using comparable methodologies that facilitate comparisons over time.¹

The SCF measures both assets and liabilities. Although not provided here, a complete treatment of asset ownership would involve examining the relationship between the use of debt—particularly secured debt—and asset holdings. Much recent work on household balance sheets has focused on the role of home leverage and its implications for households' ability to enter, sustain, and benefit financially from homeownership.² Other assets, such as businesses and vehicles, are also often financed by loans.

As a complement to this literature on the distribution of and changes in net worth, our focus here is on the composition of household assets to better understand which households are exposed to the potential financial risks and rewards that accompany the decision to allocate wealth to a particular asset type. For assets that may have associated secured debt, we focus on the ownership of the asset, not the value, for two reasons. First, assets may yield service flows or income (in the case of a business) even if their net equity value is zero or negative.³ Second, we are interested in exposure to the potential risks and rewards of asset ownership over the longer term, not necessarily the value of the asset if it were liquidated at the time of the survey. Negative net equity positions in assets can be a serious concern for household financial security and can be associated with bankruptcy, foreclosure, and other types of

Table 1**Asset Categories**

Broad asset category	Assets included
Transaction accounts and CDs	Checking, savings, and money market deposit accounts; money market mutual fund and call accounts; CDs
Vehicles	Autos, motor homes, recreational vehicles, airplanes, or boats
Residential real estate	Owner-occupied or other residential real estate
Retirement accounts	Quasi-liquid retirement accounts, including IRAs and Keogh, thrift, 401(k), 403(b), and supplemental retirement accounts
Bonds, stocks, and mutual funds	Bonds (including savings bonds), stocks, and non-money market mutual funds
Business equity and nonresidential real estate	Business equity or nonresidential real estate
Other assets	Cash value of life insurance, other managed assets (e.g., trusts, annuities), and other financial or nonfinancial assets

financial distress. However, the focus on ownership here is intended to be a complement to, not a substitute for, other work focused on values and net worth.

While the SCF includes very detailed information on many types of assets, for the purpose of this study, assets are grouped into several broad categories. This aggregation approach is similar to that used by Goukova, Juster, and Stafford (2006) in their analysis of household portfolios using the Panel Study of Income Dynamics. The seven categories and the component asset types that comprise each one are listed in Table 1 and discussed below.

Transaction Accounts and CDs

Following Bricker et al. (2012), the category for transaction accounts is composed of checking, savings, and money market deposit accounts plus money market mutual funds and cash or call accounts at brokerage firms. In addition to transaction accounts, certificates of deposit (CDs) are also included in this category. Transaction accounts are characterized by the immediate availability of their funds and generally stable asset values. Although CDs may be subject to early withdrawal penalties, they are not subject to the fluctuations in value that occur with some other financial assets such as bonds, stocks, and non-money market mutual funds. These characteristics of liquidity, immediate (or rapid) availability of funds, and stability of asset values make these financial products readily accessible. However, the lack of exposure to market fluctuations implies that these assets yield a lower rate of return than some riskier assets. The lower return raises the likelihood that the real rate of return for households with transactions accounts and CDs may be negative over some periods if the nominal after-tax rate of return is lower than the inflation rate.

Vehicles

For most SCF respondents, the vehicles asset category reflects ownership of an automobile. However, this asset category also includes motor homes, recreational vehicles, airplanes, and

boats. Unlike many of the other asset categories, vehicles typically offer little opportunity for appreciation in the value of the asset over time unless they are vintage or collectible models. Although automobiles may be a poor store of value based on their likely depreciation and need for upkeep, they can have important impacts on financial security and economic opportunity beyond the market value reflected on the household balance sheet. For example, Pendell et al. (2014) find that automobile access has effects on the economic opportunities available to housing voucher recipients.

Wolff (2006) excludes automobiles, appliances, and other consumer durables from household wealth, noting that such assets may be more valuable for their service flow than as a source of potential funds were they to be sold. However, Kennickell (2009) notes that vehicles are a particularly important component of wealth for low-income and low-wealth groups and that other assets—particularly owner-occupied housing—also yield a flow of services. Many young adults have low wealth or low income as they enter adulthood; therefore, including vehicles would seem important for a study of asset holdings of this population.

Residential Real Estate

The residential real estate category includes both owner-occupied homes and other residential real estate. These other residential properties could include second or vacation homes and any properties that may be used as rental properties for additional income. For all SCF waves used in this study, almost all households who own residential real estate own their homes. While some respondents do own other residential real estate in addition to their home, only 1 to 2 percent of young households own other residential real estate without also owning their home.

Retirement Accounts

The retirement accounts category includes tax-deferred retirement accounts such as individual retirement accounts (IRAs), Keogh, thrift, 401(k), 403(b), and supplemental retirement accounts.⁴ The underlying assets in these accounts vary and include stocks, bonds, and mutual funds. However, because institutional factors can play such a significant role in the acquisition of assets in retirement accounts, they are treated as a distinct category. Employer-sponsored plans such as 401(k)s may have features that may include automatic payroll deductions, matching, and automatic enrollment that encourage employees to enroll and contribute a portion of their salary to saving in the plan. IRA owners may have more latitude than participants in 401(k)s or other employer-sponsored plans to choose the fund company and asset allocation. However, Holden and Bass (2014) find that few investors in traditional IRAs contribute to these plans, and most new traditional IRA accounts are created with rollovers from employer-sponsored plans. Thus, access to and participation in employer-sponsored retirement plans can have a significant impact on whether households have assets in various types of retirement accounts.

Bonds, Stocks, and Mutual Funds

While many households who hold bonds and stocks do so in tax-deferred retirement accounts, some households hold these assets directly. Holdings of these assets outside retire-

ment accounts are captured in the bonds, stocks, and mutual funds category. This asset category includes U.S. savings bonds, municipal and corporate bonds, directly held stocks, and non-money market mutual funds held outside a retirement account.

Business Equity and Nonresidential Real Estate

Following Bricker et al. (2012), business equity in the SCF reflects the ownership of a range of business types, including sole proprietorships, partnerships, and privately held corporations. Nonresidential real estate includes commercial properties, residential structures with more than five units, and undeveloped land. Farm and ranch land, as well as assets associated with agricultural businesses, are also included in this category. Bricker et al. (2012) also note that because nonresidential real estate investments may have multiple owners and may be high-value investments associated with large mortgages that are paid out of the income from the property, these assets may more closely resemble a business than residential investment properties. For this reason, ownership of privately held businesses and nonresidential real estate is grouped together into a single asset category for our analysis.

The summary data extracts of SCF data used here compute the value of business equity and nonresidential real estate net of any associated debt. Although most households who hold these assets have positive net equity in them, for some asset holders these categories have negative or zero net asset values. As noted previously, we use a measure of *ownership* of the asset, not its value, so households with no net equity in the business are still included as owning assets in this category.

Other Assets

The remaining category of “other assets” includes all other financial assets, such as the cash value of life insurance policies, deferred compensation, and trusts, plus all other nonfinancial assets, such as jewelry, artwork, and various collections (e.g., baseball cards, records, and wine).

While the SCF provides detailed information on the broad range of asset types listed above, some sources of wealth are not included. Kennickell (2009) notes that the SCF does not measure, or provides only limited information on, particular forms of wealth.⁵ For example, the survey includes questions about whether members of the household are covered by a pension plan, but the value of defined benefit pensions is not measured. Similarly, educational attainment is included, but the value of human capital is not measured. Even though the asset categories included here may be incomplete, they nonetheless reflect many of the major stores of wealth for households across the wealth distribution.

YOUNG HOUSEHOLDS IN THE SCF

In the following descriptions of asset holding, a portion of the young adult population is reflected in the asset measures provided by the SCF and a portion may be missing because of the survey design. Dettling and Hsu (2014) note that the SCF’s design captures the asset holdings of young adults who have formed independent households but is not well suited for

studying the balance sheets of young adults living with parents or roommates. When young adults are still included in their parents' household, their asset information may be collected but cannot be separately identified. Asset data for those living with roommates are collected only for the head of the household, who is defined as the oldest member of the household. Thus, the asset measures for young households presented in this article reflect only the holdings of independent households in which the head is between 18 years of age and their early 40s. This includes married, cohabitating, and single-person households, as well as some heads of household who may live with younger roommates not captured in the survey.

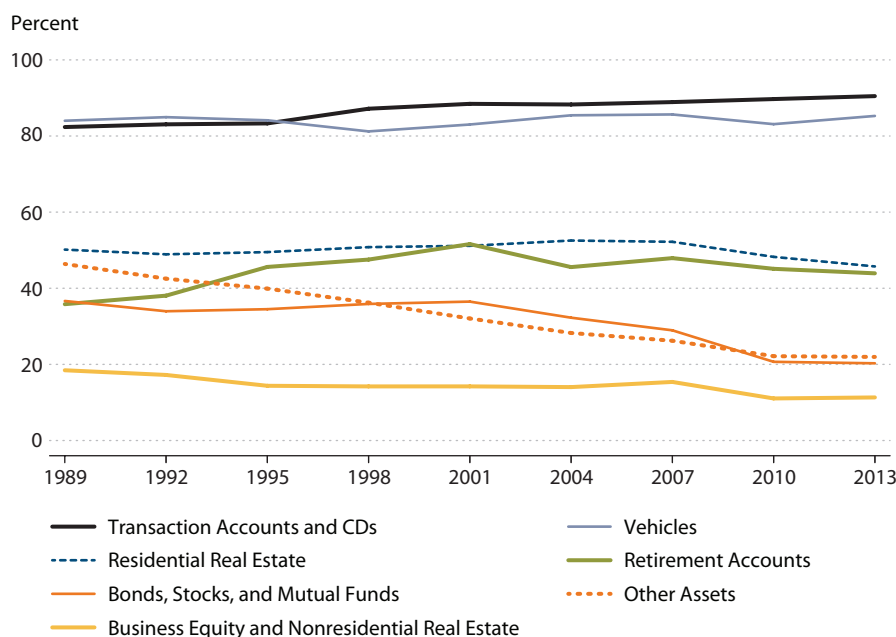
The lack of information on asset ownership for young adults not living in independent households may affect profiles of asset acquisition for several reasons. First, the characteristics and asset ownership patterns of young adults who form independent households may differ from those living with parents or roommates. Dettling and Hsu (2014) compare median wage income measures for young adults (18 to 31 years of age) in the Census Bureau's Current Population Survey (CPS) with estimates of wage income for individual young adults in the SCF and find that this income measure in the SCF is higher by around \$10,000 over the 2001-10 period. This finding may suggest that the young adult households included in the SCF may be doing better on average than young adults living with parents or roommates who are not included in the SCF.

Second, if household formation patterns change, then the households reporting asset holdings will change, potentially altering the composition of the sampled population. Dettling and Hsu (2014) note that household formation patterns have changed since 2001: Young adults 18 to 31 years of age are more likely to be living with parents in more recent years. However, they also examine the wage data previously mentioned and find that the \$10,000 difference in wage income between young adults in the CPS and SCF has been relatively stable over time. This could imply that even with the recent changes in household formation, the composition of the underlying population of independent households has not necessarily changed markedly.

Finally, the characteristics of young adults may differ based on the age at which they form independent households. If so, profiles of asset acquisition reflect both changes in the likelihood of owning assets as people age and changes in the composition of the households we observe. For example, young adults who attend college may be less likely to be sampled when they are 18 to 23 years of age as they may still be dependent on their parents. Once they graduate and are employed, they may form households. College graduates may be more likely to have access to and participate in retirement savings plans at work than the population that did not attend college. This could imply that our observed increase in ownership of retirement accounts between the 18- to 23-year age group and the 24- to 29-year age group is affected by the entry into the sample of households who are more likely to own retirement accounts, and not just an increase in ownership of retirement assets with age.

Because we are not able to track individual households over time in the SCF, we cannot distinguish the "newly formed" households from those who formed households at earlier ages. Thus, the profile of asset ownership should be interpreted as a series of snapshots of young households that can be observed over time, recognizing that the snapshots reflect an increasing share of the young adult population as it ages and that the composition of the observed groups may be changing across time.

Figure 1
Ownership of All Asset Categories: All Ages 18-41 Years



SOURCE: SCF.

OVERVIEW OF TRENDS AND PATTERNS IN ASSET HOLDINGS

We first examine ownership of each asset category, where we see wide differences in the incidence of ownership between asset types and some indications of changes over time. Figure 1 shows ownership of the various asset categories from 1989 through 2013 for households whose head is between 18 and 41 years of age.^{6,7}

Two categories—transaction accounts and CDs and vehicles—have the highest ownership rates over all waves of the SCF. Figure 1 clearly shows that these two assets are the most commonly held asset categories among those 18 to 41 years of age. Ownership of transaction accounts and CDs exceeded 80 percent for this entire period, trending up from 82 percent in 1989 to around 90 percent in 2013. Vehicle ownership also was above 80 percent over this time, registering between 83 and 86 percent with a dip to 81 percent in 1998. Ownership of vehicles also declined a bit between 2007 and 2010 before increasing again in the 2013 survey.

Residential real estate is the third most commonly held asset type; ownership rates for young households hovered around 50 percent over most of this period. Ownership rates in 2004 and 2007 were around 52 percent but declined to 48 percent in 2010 and 46 percent in 2013.

Ownership of retirement accounts increased from 36 percent in 1989 to around 52 percent in 2001. Ownership has dropped a bit in more recent years. In 2013, 44 percent of young households had assets in this fourth most common asset category.

Table 2**Six-Year Age Cohorts**

Birth years	Year cohort was 18-23 years of age	SCF waves when cohort was 18-41 years of age (44)
1948-53	1971	1989 (1992)
1954-59	1977	1989-95 (1998)
1960-65	1983	1989-2001 (2004)
1966-71	1989	1989-2007 (2010)
1972-77	1995	1995-2013
1978-83	2001	2001-13
1984-89	2007	2007-13
1990-95	2013	2013

NOTE: Ownership rates for the four older cohorts are also included for years when the head was between 39 and 44 years of age, as noted in parentheses.

Ownership of the three less widely held asset categories declined over this period. Ownership rates for the bonds, stocks, and mutual funds category ranged from 34 to 37 percent from 1989 to 2001 but declined in more recent years to around 20 percent in 2013. Ownership of other assets declined as well, falling steadily from 46 percent in 1989 to 22 percent in 2013. Business equity and nonresidential real estate, now the least commonly held asset category, also registered a decline in ownership rates: from 18 percent of young households in 1989 to 15 percent in 2007 and 11 percent in 2013.

Ownership Over the Life Cycle

We construct cohorts based on the years that respondents enter adulthood to examine life cycle patterns of ownership. While we cannot follow the same households over time, we are able to follow the cohorts over time as samples in each successive SCF are weighted to be representative of the underlying population of young households. Using 6-year age groupings, we compute asset ownership rates for eight cohorts in the 18- to 41-year age range during one or more waves of the SCF between 1989 and 2013 (Table 2). In the accompanying figures, cohorts are identified by the year in which the members of that cohort were 18 to 23 years of age. The oldest cohort observed during ages 18 to 41 is the group of young adults who were between 36 and 41 years of age in 1989; the youngest cohort appears initially in the 2013 survey. Two cohorts—those 18 to 23 years of age in 1989 and those 18 to 23 years of age in 1995—can be followed throughout their early adult years in the triennial SCF surveys.

Because the cohorts are defined by 6-year groupings of birth years, we defined 6-year age groups of young adults (18-23, 24-29, 30-35, and 36-41 years) to follow them through their early adult years. The labeled tick marks on the figures reflect the ages of the cohorts in the 1989, 1995, 2001, 2007, and 2013 waves of the SCF. Since the SCF is collected every three years, cohorts “age into” the next age group every other wave of the SCF. The unlabeled tick marks

reflect measures for that cohort from the other waves of the SCF (1992, 1998, 2004, and 2010) when the cohort was between two age groups. For example, those in the 18- to 23-year group in 1989 were between 21 and 26 years of age in 1992 and between 24 and 29 years of age in 1995. The individual lines follow the same cohort over time through the various waves of the SCF as the cohort ages. While our focus is on households in the 18- to 41-year age range, we include observations for cohorts who are 39 to 44 years of age in 1992, 1998, 2004, and 2010. While this extends the age range slightly, it also allows us to observe the changes in ownership from 2007 to 2010 for all cohorts observed in 2007. This period is noteworthy as it captures changes to household balance sheets that may have occurred around the Great Recession.

Figure 2 shows asset ownership profiles for all cohorts across the seven asset categories. Ownership rates for transaction accounts and CDs are relatively high even for the youngest households in the SCF and increase over the early part of the adult life cycle (Figure 2A). For all cohorts observed in their 20s, ownership rates for this asset category are above 65 percent for households 18 to 23 years of age and climb above 80 percent by the time they reach their late 20s. Increases in ownership as households age into their 30s and early 40s are smaller, with ownership rates around 85 to just above 90 percent by the late 30s or early 40s.

As with ownership of transaction accounts, vehicle ownership is relatively high for very young adults (Figure 2B). Around 65 to 75 percent of those in the 18- to 23-year age group own vehicles; this proportion increases to around 85 or 90 percent by the early to mid-30s.

Ownership patterns for residential real estate follow a distinct pattern of acquisition over the early adult life cycle (Figure 2C). Rates of ownership increase substantially from the earliest age group to the oldest: from between 10 and 20 percent for the 18- to 23-year age group to 60 to 75 percent by the early 40s.

As with real estate, ownership of retirement accounts rises steadily over the early adult life cycle (Figure 2D). Rates of ownership are low early—around 20 percent or below for those 18 to 23 years of age—but increase to about 50 to 60 percent by the mid-30s and early 40s.

While a sizable share of young adult households have acquired transaction accounts, vehicles, homes, and retirement accounts by the time they reach their 40s, ownership of the remaining three asset types is less prevalent across this population. Ownership rates of bonds, stocks, and mutual funds also trend upward as households move through the early adult portion of the life cycle, although ownership rates have dropped off noticeably in recent years (Figure 2E).

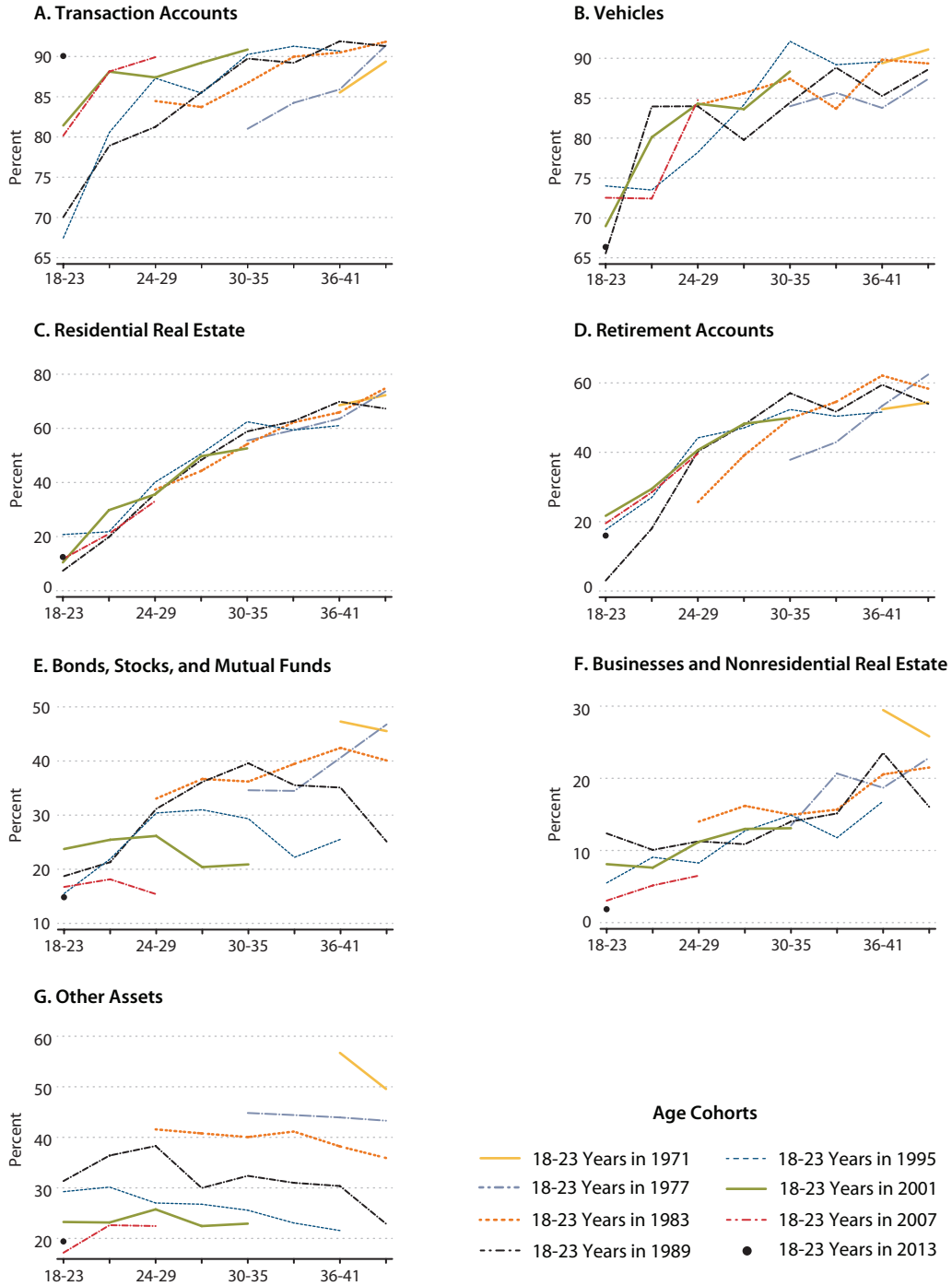
Ownership of business equity and nonresidential real estate increases with age, although even by the late 30s or early 40s, ownership rates are lower than the other six asset categories (Figure 2F).

Ownership rates for the other assets category decline between the older cohorts and the younger ones (Figure 2G). This declining trend in ownership over time is the dominant pattern in the holdings of other assets for young households, and thus Figure 2G does not indicate any particular life cycle profile of acquisition.

Changes in Ownership Patterns Over Time

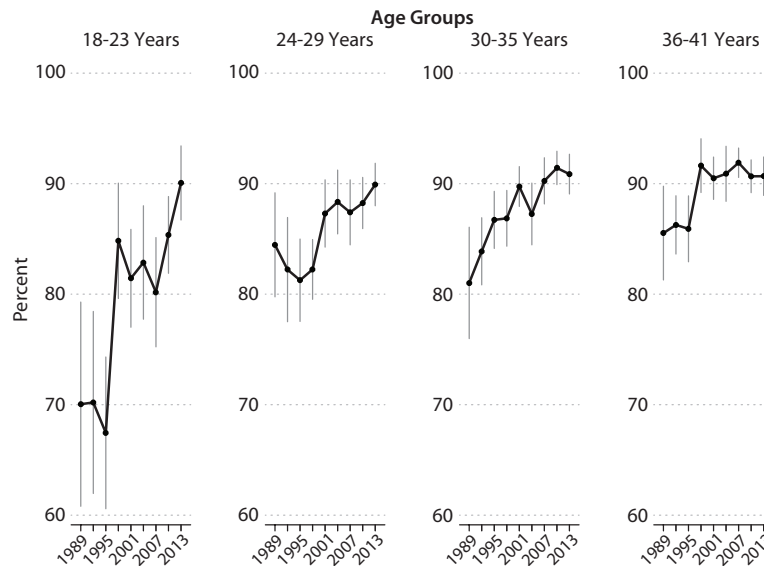
While Figure 2 follows particular cohorts as they age, the remaining figures focus on the patterns for particular age groups across all nine waves of the SCF from 1989 to 2013. Owner-

Figure 2
Asset Ownership Over the Young Adult Life Cycle



SOURCE: SCF.

Figure 3
Ownership of Transaction Accounts and CDs



NOTE: Vertical bars represent 95 percent confidence intervals for the means of the groups.

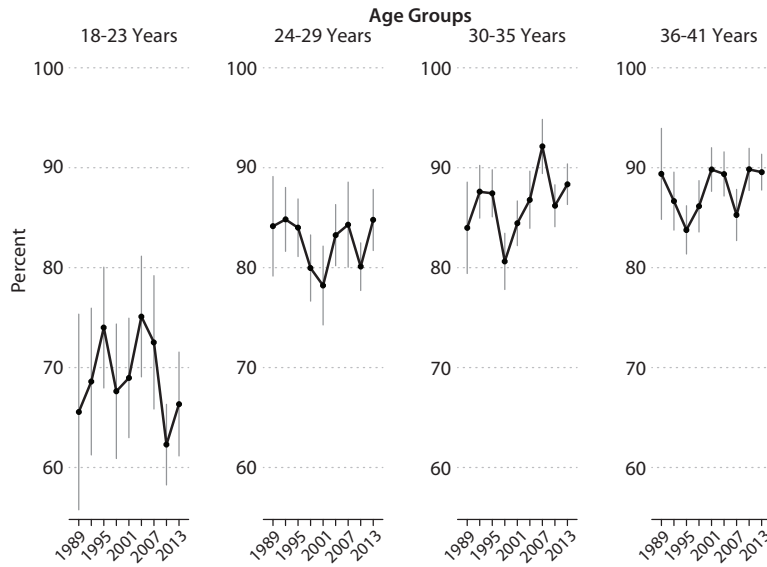
SOURCE: SCF.

ship of transaction accounts and CDs increased across all four age groups, but the increase was most pronounced for those in the 18- to 23-year age group (Figure 3).^{8,9} This rise in ownership and earlier acquisition of transaction accounts and CDs may be related to the increased use of direct deposit over time, whereby employees are required to have some type of transaction account. Hogarth, Anguelov, and Lee (2005) note that changes in government policy, such as the move to electronic benefits transfers, may have increased ownership of transaction accounts, and they document the increase in account ownership over time in the broader population as well.

Vehicle ownership rates show some differences over time (Figure 4). Mannering, Winston, and Starkey (2002) document the rise in consumer auto leasing over the 1990s. The SCF data on vehicle leasing (not shown) show a sharp rise in the share of households with leased vehicles between 1992 and 1998. This share remained elevated into the early 2000s, so leasing may have contributed to the estimates showing a lower propensity to own vehicles for some age groups during this period. While strong trends are not evident in the pattern of vehicle acquisition between the earlier and later years, vehicle ownership rates are lower for the 18- to 23-year age group in recent waves of the SCF.

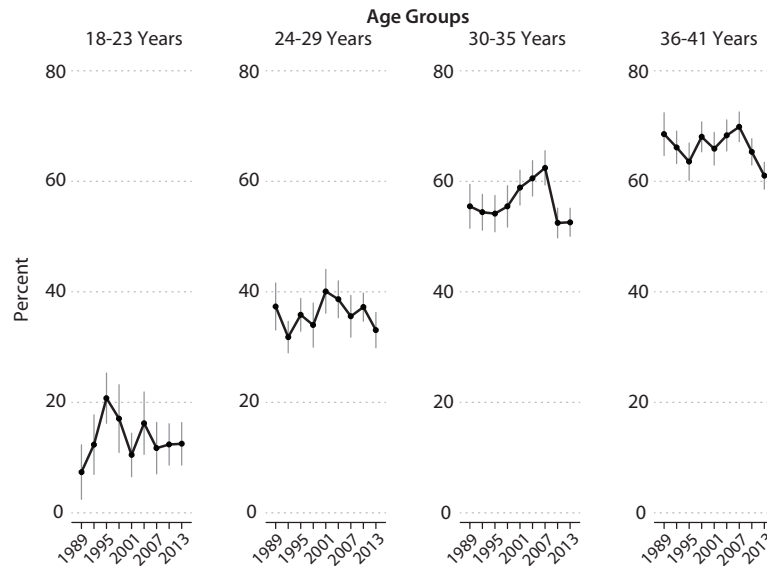
Ownership rates for residential real estate have remained generally consistent over time for the younger age groups in their 20s (Figure 5). Ownership rates climb markedly for young households in their 30s and early 40s. Therefore, it is not surprising that the impact of the

Figure 4
Ownership of Vehicles



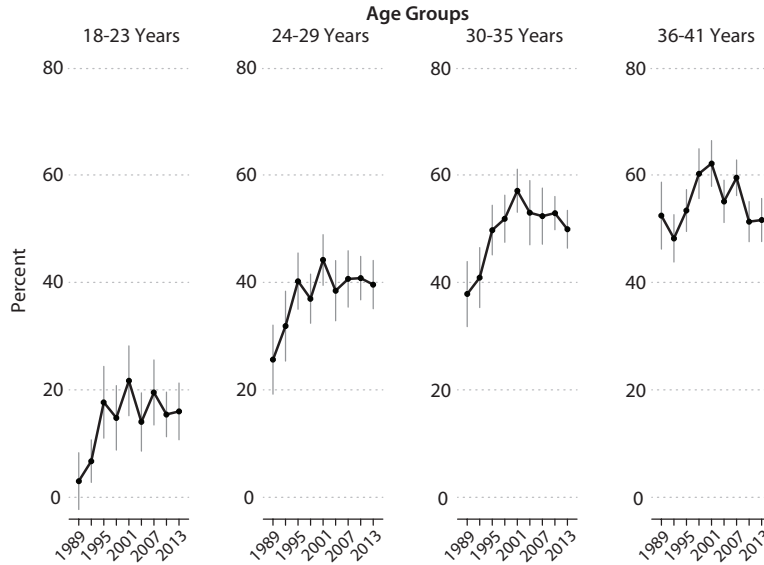
NOTE: Vertical bars represent 95 percent confidence intervals for the means of the groups.
 SOURCE: SCF.

Figure 5
Ownership of Residential Real Estate



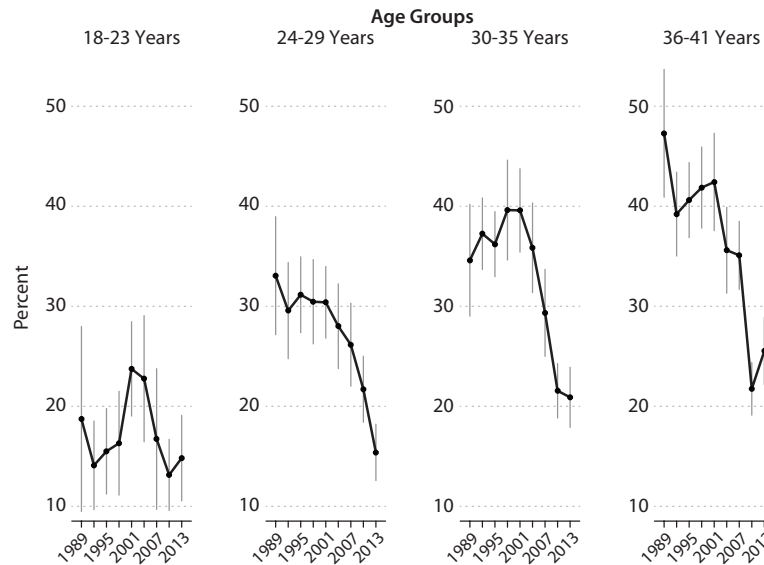
NOTE: Vertical bars represent 95 percent confidence intervals for the means of the groups.
 SOURCE: SCF.

Figure 6
Ownership of Retirement Accounts



NOTE: Vertical bars represent 95 percent confidence intervals for the means of the groups.
 SOURCE: SCF.

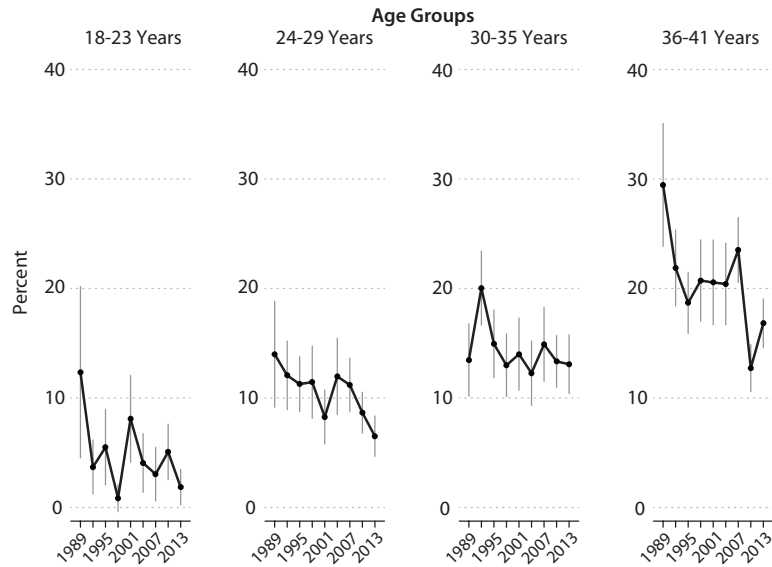
Figure 7
Ownership of Bonds, Stocks, and Mutual Funds



NOTE: Vertical bars represent 95 percent confidence intervals for the means of the groups.
 SOURCE: SCF.

Figure 8

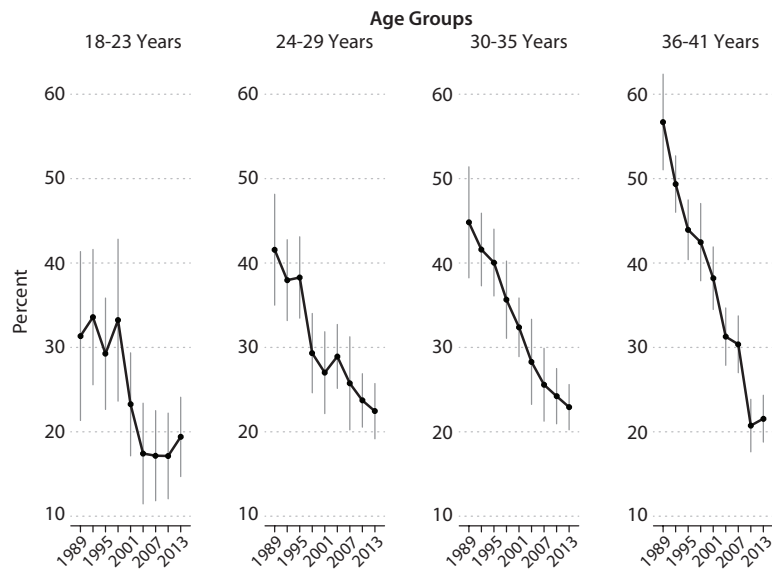
Ownership of Business Equity and Nonresidential Real Estate



NOTE: Vertical bars represent 95 percent confidence intervals for the means of the groups.
SOURCE: SCF.

Figure 9

Ownership of Other Assets



NOTE: Vertical bars represent 95 percent confidence intervals for the means of the groups.
SOURCE: SCF.

Great Recession appears to have been felt by these groups, as evidenced by the drop in their ownership rates after 2007.

As with transaction accounts, ownership of retirement accounts has trended up over time for the younger age groups (Figure 6). Ownership rates for all age groups peaked in 2001, just after the rise in stock prices of the late 1990s. Ownership rates for the two older age groups have trended down somewhat since then.

The remaining three asset types are less widely held among young households, and their ownership rates have also fallen over time. Ownership rates for bonds, stocks, and mutual funds have dropped substantially, particularly for the older age groups (Figure 7). As with retirement accounts, much of this decline has occurred since 2001. Although the patterns over time are not as pronounced as with some other asset categories, ownership rates of business and nonresidential real estate have also trended lower over time (Figure 8). Ownership of other assets has dropped steadily over time (Figure 9), driven primarily by the decline in ownership of life insurance (not shown). Ownership rates for the broad other financial and other non-financial components of this category have declined over time as well.

Differences in Asset Holdings Across Households

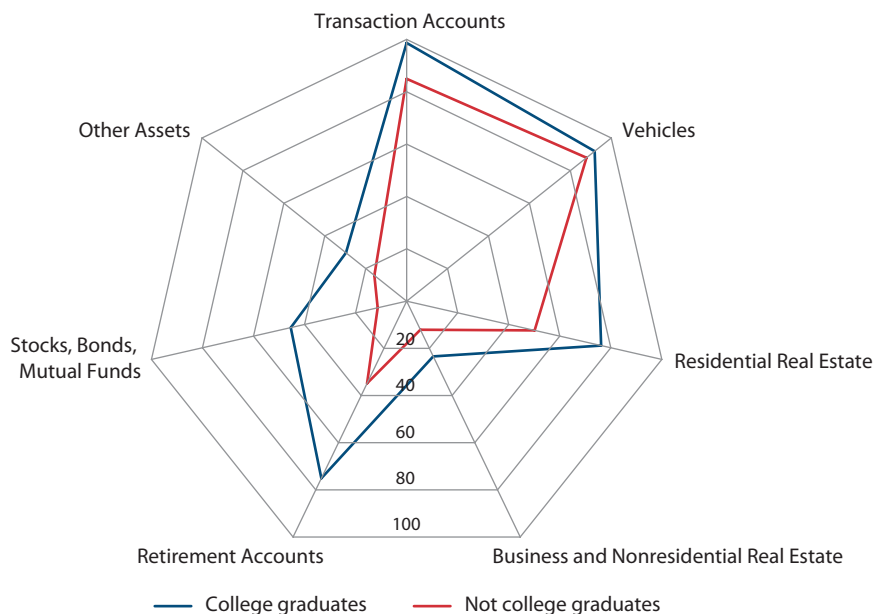
Portfolio composition can vary substantially across different demographic groups. Education and race are two household characteristics often considered in discussions of wealth holding. To briefly explore how asset holdings may differ across households in the SCF based on these characteristics, we focus on the young households whose head of household is between 36 and 41 years of age. We focus on this group to possibly avoid some of the complications of differences in the timing of household formation across different segments of the population since many adults have formed independent households by this age. This age group also provides a snapshot of overall asset ownership patterns just as many of these households are entering their middle years of work and raising families.

Figure 10 provides an overall look at the mean rate of ownership of the seven different asset types for households in the 36- to 41-year age group whose head of household has a college degree (the blue outer line) and for those households whose head does not have a college degree (the red inner line). Households whose head has a college degree have higher rates of ownership of all asset types relative to those households whose head does not have a degree.¹⁰ The differences in ownership rates are smaller for the vehicles and transaction accounts and CDs categories (4 percentage points and 14 percentage points, respectively) but larger for residential real estate (26 percentage points), the third most commonly held asset for households in this age group.

Large differences in ownership rates are particularly evident for the financial assets in the retirement accounts category (40 percentage points) and the bonds, stocks, and mutual funds category (34 percentage points). As noted earlier, both of these asset categories can contain some of the same types of underlying securities, but retirement accounts have a number of distinguishing institutional features that can set them apart. Some of these features—particularly automatic enrollment and payroll deductions—may be important for spurring asset ownership. That said, some employers do not offer retirement plans, and Copeland (2013) finds

Figure 10

Asset Ownership for Young Households Ages 36-41 in 2013 by Education of the Head of Household

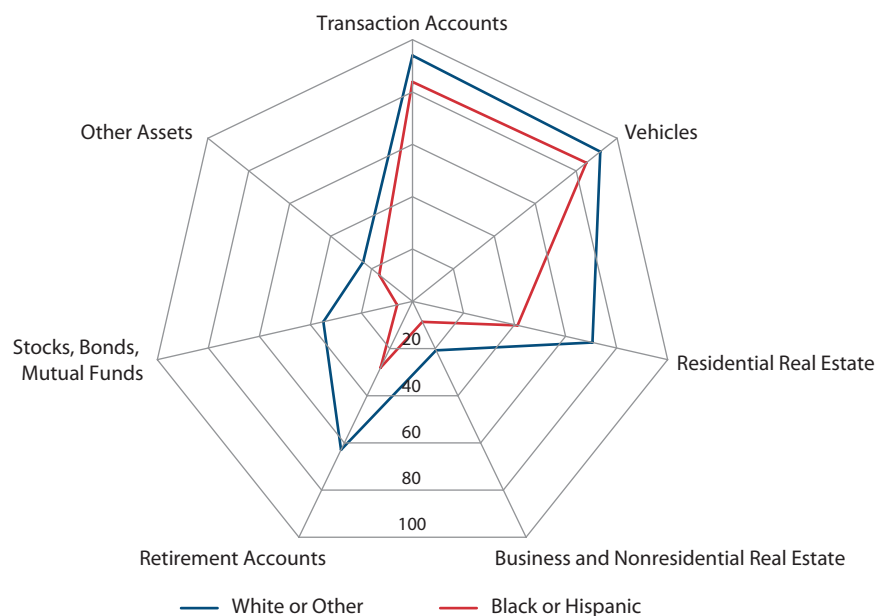


NOTE: The center is at 0. Values reflect percentage points.
SOURCE: SCF.

that minority workers and those with lower levels of education are less likely to work for employers or unions that sponsor a plan for any of their employees. Thus, part of the observed difference in the ownership of retirement accounts may be attributable to differences in access to employer-sponsored plans.

Figure 11 shows a similar comparison for households in the 36- to 41-year age group but focuses on differences by race/ethnicity. The public version of the SCF data provides sufficient detail to identify black, Hispanic, and white non-Hispanic households separately, but respondents who self-identify as Asian, American Indian, Pacific Islander, and other races are grouped together in a single category.¹¹ Because of the relatively small number of observations for minorities in this age group, we group households into two groups for this comparison. One group includes black and Hispanic households, as these groups have relatively similar ownership rates for several asset types. The other group includes white non-Hispanic households and the other minority households pooled in the public data, as the asset ownership patterns of this other group appear more similar to the ownership patterns for white non-Hispanic households than to those for black and Hispanic households.

The differences in ownership patterns based on race/ethnicity show a pattern very similar to the differences across educational status. Households whose head is white non-Hispanic or

Figure 11**Asset Ownership for Young Households Ages 36-41 in 2013 by Race/Ethnicity of the Head of Household**

NOTE: The center is at 0. Values reflect percentage points.

SOURCE: SCF.

one of the other minority groups (the blue outer line) have higher ownership rates of all asset types relative to black and Hispanic households (the red inner line).¹² As with education, the largest differences in ownership rates are in the categories for retirement accounts (35 percentage points), residential real estate (29 percentage points), and bonds, stocks, and mutual funds (29 percentage points). Differences in ownership rates for transaction accounts and CDs and vehicles are smaller (10 percentage points and 7 percentage points, respectively).

Racial differences in wealth and asset ownership are well documented in the existing literature; this previous work suggests some possible reasons for the sizable differences in the probability of ownership of assets. For example, Menchik and Jianakoplos (1997) note that white households are more likely to have either received or expect to receive some type of inheritance, which may increase their chances of owning any given asset type. Houses are a noteworthy example, as inheritances and other types of wealth transfers are commonly used for down payments on real estate purchases. Also, Caskey (1997) finds that some black and Hispanic households do not save because of social network pressure to share any such savings.

Basic comparisons of differences in asset ownership rates such as those included here for education and race/ethnicity exclude many other important factors that may be helpful in explaining the variation in household portfolios. These factors include differences in income;

geographic location, which can affect the cost and availability of transportation and housing; and participation in government programs, which can include asset limits as a condition of eligibility. However, these basic comparisons suggest the need for additional attention to the portfolio choice challenges and opportunities faced by households across the income and wealth distributions. The asset classes with the greatest differences in ownership rates in these comparisons (i.e., retirement accounts, residential real estate, and bonds, stocks, and mutual funds) are also the categories with the potential for significant long-run appreciation, which can contribute to household economic security over time.¹³

CONCLUSION

The multiple waves of the SCF over time provide the opportunity to explore trends and patterns in the asset holdings of younger households in the years leading up to the Great Recession and the period immediately after the downturn. This historical experience can enrich our understanding of how young households use the range of available asset choices as they seek to build wealth and maintain financial stability in the early stages of adulthood.

Ownership of transaction accounts and CDs and vehicles is relatively high for young households across the 1989-2013 period, and ownership of transaction accounts appears to have risen somewhat over this period.

Ownership rates for residential real estate have a distinct life cycle pattern in the young adult years; rates start low when households first reach adulthood and rise substantially by the time they reach their late 30s and early 40s. Ownership patterns for residential real estate have been generally consistent from 1989 to 2013, although there are some indications of the effects of the housing boom and Great Recession on ownership rates for this asset category, particularly for households in their 30s and early 40s.

Ownership of retirement accounts also increases substantially over the early adult years. While ownership of these accounts has increased for young households between 1989 and 2013, ownership rates have trended down somewhat since 2001.

Ownership of bonds, stocks, and mutual funds outside retirement accounts also increases with age, although the share of households that own this category of assets is lower than for residential real estate and retirement accounts and has fallen markedly in recent years. Business equity and nonresidential real estate holdings increase with age as well, although it is the least widely held asset category for young households and ownership has also declined somewhat over the 1989-2013 period. Ownership of other assets, which include both financial and non-financial assets not included in the other categories, has also fallen steadily over this period.

Consistent with the existing literature on the impact of demographic factors on asset holdings, we find that race/ethnicity and education matter for holdings of all asset types. Black and Hispanic households and those without a college degree are less likely to own all of the asset types. For young households in the 36- to 41-year age group who have generally formed independent households and are entering the middle years of work and raising families, the largest differences in ownership rates by education and race are for retirement accounts, residential real estate, and bonds, stocks, and mutual funds.

Young households typically have long time horizons to accumulate wealth. Their ability to (i) invest in assets likely to appreciate and (ii) weather short-term shocks can yield significant benefits both now and in the future as they age. Many young households faced financial shocks during the Great Recession that may have necessitated the liquidation of assets or impaired their ability to save and invest for the future. Additional research on the patterns of asset holding over time may improve our understanding of factors affecting asset acquisition before and after the recession. The recession was also a reminder of the importance of examining which asset ownership strategies are also sustainable, particularly for young households and others who may be just starting to build wealth. ■

NOTES

- ¹ Our analysis is built on the asset categories defined in the SCF Summary Extract Public Data files. These data include variables used in *Federal Reserve Bulletin* articles on the SCF. While the SCF is typically conducted as a cross-sectional survey, panel data were collected between 1983 and 1989 and between 2007 and 2009, although the panels are not used in this study. More information on the SCF, including codebooks and other documentation, is available at <http://www.federalreserve.gov/econresdata/scf/scfindex.htm>.
- ² For example, see Emmons and Noeth (2013) and Herbert, McCue, and Sanchez-Moyano (2013).
- ³ The owner of an asset often has positive net equity in that asset, but not always. It has been common recently for many homeowners to have an outstanding mortgage balance greater than the market value of the house.
- ⁴ Although the SCF includes data on defined benefit pensions, such plans are not included in this measure.
- ⁵ In Table 1 of his article, Kennickell includes an inventory of all the income, debt, and asset categories measured in the SCF, as well as some categories that are only partially measured or not measured at all.
- ⁶ All estimates of asset ownership rates presented in this section are computed using the SCF weights.
- ⁷ The SCF is a household survey, and the focus is on the “primary economic unit” consisting of a single individual or a couple together with other members of the household who are financially interdependent with that individual or couple. When a single individual is economically dominant in the household, that person is defined as the head of the household. For the purpose of organizing the data for couples, the SCF defines the household head as the male in a mixed-sex couple or the older individual in a same-sex couple.
- ⁸ The vertical bars in the graphs represent the 95 percent confidence interval for the mean ownership rate for each group. The authors appreciate Karen Pence’s sharing of code to compute standard errors accounting for both sampling and imputation variance in the SCF.
- ⁹ Sample sizes for the younger age groups are smaller than for older age groups across all waves of the SCF. Caution is warranted in interpreting the asset holding rates for those 18 to 23 years of age and those 24 to 29 years of age because the smaller samples imply more sampling variability in the estimates of the ownership rates for these younger age groups.
- ¹⁰ The difference in vehicle ownership is statistically significant at the 5 percent level. All other differences between asset ownership rates for these two groups based on the education of the head of household in 2013 are statistically significant at the 1 percent level.
- ¹¹ In recent waves of the SCF, respondents have been able to self-identify as more than one race or ethnicity but are asked to respond first with the category that best describes their race. For simplicity, we classify the household’s race based on the first response.
- ¹² All differences between asset ownership rates for these groups based on the race or ethnicity of the household head in 2013 are statistically significant at the 1 percent level.
- ¹³ See Wolff (2012) for estimates of rates of return for several broad asset types similar to those used in this article.

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REVIEW

Annual Index • Volume 96 • 2014

FIRST QUARTER

James Bullard

"The Rise and Fall of Labor Force Participation in the United States"

Cletus C. Coughlin

"The Great Trade Collapse and Rebound: A State-by-State View"

Kevin L. Kliesen

"A Guide to Tracking the U.S. Economy"

Daniel L. Thornton

"QE: Is There a Portfolio Balance Effect?"

Brett W. Fawley and Christopher J. Neely

"The Evolution of Federal Reserve Policy and the Impact of Monetary Policy Surprises on Asset Prices"

SECOND QUARTER

Stephen D. Williamson

"Monetary Policy in the United States: A Brave New World?"

Bill Dupor

"The 2009 Recovery Act: Directly Created and Saved Jobs Were Primarily in Government"

Alejandro Badel

"Representative Neighborhoods of the United States"

Sean Grover and Michael W. McCracken

"Factor-Based Prediction of Industry-Wide Bank Stress"

Katrina Stierholz

"FRED[®], the St. Louis Fed's Force of Data"

THIRD QUARTER

Robert E. Lucas, Jr.

"Liquidity: Meaning, Measurement, Management"

Daniel L. Thornton and David C. Wheelock

"Making Sense of Dissents: A History of FOMC Dissents"

Subhayu Bandyopadhyay and Todd Sandler

"The Effects of Terrorism on Trade: A Factor Supply Approach"

Yi Wen

"When and How To Exit Quantitative Easing?"

Silvio Contessi, Pierangelo De Pace, and Li Li

"An International Perspective on the Recent Behavior of Inflation"

FOURTH QUARTER

The Balance Sheets of Younger Americans: Is the American Dream at Risk?

Bryan Noeth and Ray Boshara

"Introduction"

Lisa J. Dettling and Joanne W. Hsu

"The State of Young Adults' Balance Sheets: Evidence from the Survey of Consumer Finances"

William Elliott, Melinda Lewis, Michal Grinstein-Weiss, and IISung Nam

"Student Loan Debt: Can Parental College Savings Help?"

Terri Friedline, Paul Johnson, and Robert Hughes

"Toward Healthy Balance Sheets: Are Savings Accounts a Gateway to Young Adults' Asset Diversification and Accumulation?"

Ellen A. Merry and Logan Thomas

"Asset Holdings of Young Households: Trends and Patterns"