

Households' Net Worth Accumulation Patterns and Young Adults' Financial Health: Ripple Effects of the Great Recession?

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Abstract We examined households' dynamic patterns of net worth accumulation between 1999 and 2009 and asked whether these patterns related to the financial health of young adults growing up in those households. Two patterns of net worth emerged—the first remained high and stable and the second experienced a precipitous decline between 2007 and 2009. Young adults who grew up in households with high and stable net worth also experienced the greatest benefit in financial health. Given wealth losses in the wake of the Great Recession and the ripple effects those losses may have had—and may continue to have—on households and their children, policies that stimulate wealth accumulation may be feasible and timely strategies for improving financial health.

Keywords Children · Young adults · Savings · Net worth · Recession · Panel study of income dynamics

Introduction

Policy makers have begun to recognize the potentially transformative role of wealth accumulation for the well-

being of lower-income households and their children. Household wealth has been hypothesized to serve as a personal safety net that can supplement income in times of need, such as when a job loss, foreclosure, or other emergency threatens to unhinge their financial stability (Sherraden 1991). Policy innovations proposed or enacted during the last two decades affirm the increasing attention given to lower-income households' wealth accumulation. The American Dream Demonstration (ADD) began in 1998 to test whether lower-income households could save in incentivized savings accounts, known as Individual Development Accounts (IDAs). IDAs accrued interest and earned savings matches on monies saved in these accounts. Among the aims of IDAs was to help lower-income households secure the wealth needed to buy a home, start a business, or invest in education (Schreiner and Sherraden 2007). The 5-year ADD demonstration had promising results and the long-term effectiveness of IDAs is still being tested (Birkenmaier et al. 2012; Grinstein-Weiss et al. 2013; Richards and Thyer 2011). During that same year, the Assets for Independence (AFI) Act established a federal grant program to provide nonprofits and government agencies with funds to offer IDAs to lower-income households. At present, there are over two hundred AFI-supported IDA programs nationwide (US Department of Health and Human Services 2012).

At the same time, a parallel policy movement has focused on creating opportunities for children to begin the process of wealth accumulation (Loke and Sherraden 2009). Among the proposals is the establishment of Child Development Accounts (CDAs) for every child at birth or very soon after. This is to provide children with longer time horizons for them to benefit from the positive effects of wealth accumulation and to experience improved well-being as they move throughout the life course. In the United States, CDAs were field tested in 12 locations

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across the country in the Saving for Education, Entrepreneurship, and Downpayment (SEED) initiative in 2003 (Mason et al. 2010; Sherraden and Stevens 2010). In addition, the America Saving for Personal Investment, Retirement, and Education (ASPIRE) Act, which proposes the establishment of a CDA account for every newborn, have been regularly introduced into congressional sessions since 2004.

Policy innovations encouraging wealth accumulation are not surprising given the mounting evidence from research for its potential benefits on well-being, particularly for children. The effects of household wealth—both statically in terms of wealth holdings and dynamically in terms of wealth accumulation—on children’s well-being has been well-documented, especially in regard to educational outcomes (Elliott et al. 2011, 2013a; Kaushal and Nepomnyaschy 2009; Loke 2013; Williams Shanks et al. 2010). Here, static wealth refers to the stock of wealth possessed by households, whereas dynamic wealth refers to fluctuations in the accumulation and dispersion of wealth (Loke and Sacco 2011). In terms of the static measure of wealth holdings, a recent literature review of 34 studies examining the associations between household wealth and children’s academic achievement, college attendance, and college graduation found significant associations in almost every model (Elliott et al. 2011). For example, 10 of the 11 studies that examined college attendance found a significant positive relationship with static household wealth.

Similarly, research demonstrates that household wealth, as measured from the dynamic perspective of wealth accumulation, has significant positive effects on children’s educational outcomes. For example, Loke and Sacco (2011) found faster rates of net worth accumulation were not associated with changes in math scores; however, faster accumulation was associated with positive changes in reading scores among children. At the same time, initial wealth holdings were associated with math scores, but not reading scores. The authors suggested there may be distinct dimensions of wealth, each with their own potential effect on outcomes (Loke and Sacco 2011). In another study using a sample of 761 from the 1979 National Longitudinal Survey of Youth (NLSY79) and the NLSY79 Child and Young Adult (NLSY79-CYA) supplement, Loke (2013) found that household wealth accumulation trajectories influence children’s college attendance and graduation. Interestingly, when households either consistently maintained high net worth over time or experienced significant net worth accumulation, children from these households had similar college outcomes. This suggests children whose households start off with low net worth can have educational outcomes similar to their high net worth counterparts, so long as their households are in the process of accumulation over time.

In addition to the positive effects on children’s educational outcomes, household wealth similarly has positive associations with children’s future financial outcomes. Friedline and Elliott (2013) examined samples of lower-income young adults age 18–22 from the Panel Study of Income Dynamics (PSID) with propensity score analysis and created a single measure of net worth by averaging values between 1989 and 2001. They transformed net worth using the inverse hyperbolic sine (IHS) combined with splines to retain continuous values and to identify accumulation thresholds—a proxy for dynamic wealth. With these techniques, they were able to examine whether increasing or decreasing net worth at certain thresholds relates to young adults’ savings. They found that accumulating negative net worth (i.e., debt) was negatively related to young adults’ savings, whereas accumulating positive net worth was positively related to young adults’ savings. This study provided preliminary evidence suggesting that households’ dynamic wealth may relate to children’s financial health.

Keeping in mind the policy innovations that aim to stimulate wealth accumulation and using existing research as a foundation, we ask three primary research questions in this paper. First, we ask whether or not there are distinct net worth accumulation trajectories for households in the PSID between 1999 and 2009. Net worth accumulation trajectories are intended to measure households’ dynamic wealth. It is plausible that households experience different net worth accumulation trajectories and research provides support for this (Loke 2013). Notably, this decade encompasses the Great Recession that began in 2007 and was characterized by increasing foreclosures, job losses, and asset devaluations—all things that were potential shocks to households’ net worth (Elliott et al. 2013b; Mishel et al. 2012). Lower-income households may start out with less net worth to lose and with greater probabilities of experiencing these shocks, which may increase financial pressures and stress within their households (Prawitz et al. 2013). If this is the case, policy endeavors that encourage wealth accumulation among lower-income households may be timely strategies for buffering against the ripple effects of the Great Recession. Second, we ask whether or not membership in different net worth accumulation trajectories is associated with young adults’ financial health. We measure young adults’ savings account ownership and savings amount between the ages of 21 and 25 as indicators of financial health using data from the PSID and its supplements. This question is based on the consideration that the paths households take to accumulate net worth have differing effects on the financial health of young adults who grew up in those households. Third, we ask whether or not savings account ownership in childhood—what could be interpreted as a proxy for CDAs and children’s own wealth—is associated with their savings account ownership

and amount saved in young adulthood. This last question explores whether or not young adults' financial health is associated with their static wealth via savings account ownership in childhood while simultaneously controlling for households' dynamic wealth. Previous research has tested this question while controlling for static wealth (Friedline et al. 2013b, 2011). Findings related to this question may lend additional support to policy endeavors that encourage children's savings in addition to household wealth accumulation should their account ownership remain significant. The paper is organized as follows. We review research on household net worth accumulation trajectories, research on the relationship between household net worth and young adults' savings, and research on the relationship between children's and young adults' savings. We then test our research questions and report results, concluding with discussion and implications.

Review of Research

We begin the review by describing research on wealth accumulation trajectories. These studies provide a rationale for our first research question examining dynamic wealth—distinct patterns of households' net worth accumulation. This is followed by describing research from studies that explore the relationship between household net worth and children's and young adults' savings.¹ The findings on children's and young adults' savings inform our second research question examining whether or not net worth accumulation patterns relate to young adults' savings. Lastly, the review describes findings related to our third research question. Previous research has examined whether or not children's savings account ownership—what is perhaps the initiation of children's own wealth—is associated with their savings account ownership and amount saved in young adulthood (Friedline et al. 2013b, 2011).

Wealth Accumulation Patterns: Do Households Follow Different Paths?

In *Assets and the Poor*, Sherraden (1991) suggested that there is more than one path on which households accumulate wealth. For example, non-poor households can

¹ Some of these studies reference children's savings when in fact adolescence is the stage of development during which savings is measured. Childhood and adolescence are distinct developmental stages with differences in cognitive development, socialization, motivation, and attitudes (Shim et al. 2011). Despite the developmental differences between childhood and adolescence and because the emphasis of our study is not on the stage of development, we use children's savings throughout the paper to refer to both children and adolescents in order to be consistent with the terminology used in policy and previous research.

leverage the assets they have to generate even more wealth, placing them on a trajectory of upward social and economic mobility. The tax code and other institutions facilitate this upward mobility by incentivizing the assets that they hold (CFED 2010). However, poor households often lack opportunities to accumulate wealth or are prevented from doing so due to prevailing asset limits for public benefit receipt (Huang et al. 2012; Leonard and Di 2013). As a result, they do not have much that they can leverage to build more wealth, and hence are trapped in a flat trajectory of poverty. This postulation of different trajectories for the accumulation of wealth has been borne out by research in recent years. For example, tracing the same households over 25 years, Shapiro et al. (2013) found that not only does a racial wealth gap exist between white and black families, this gap has increased from \$85,000 in 1984 to \$236,500 in 2009. These findings indicate that there exist different paths for wealth accumulation, with white families experiencing a higher rate of accumulation compared to their black counterparts. Similarly, Loke (2009), analyzing household net worth over a 13-year period from the NLSY-79 dataset, found that households follow four different paths in their wealth accumulation experience. In this study, 78 % of households followed a stable net worth accumulation trajectory whereby they started off and ended with low net worth over the period of observation. Another 12 % of households similarly experienced a stable trend, but these households started off with relatively high net worth and maintained their net worth over time. On the other hand, 4 % of households started with lower net worth levels at the beginning, but experienced significant growth over time. At the same time, 6 % of households began with significant net worth and experienced significant increases in their net worth over time.

Household Net Worth: Does it Relate to the Savings of Children and Young Adults?

We identify nine studies that ask whether household net worth relates to the savings of children and young adults (Friedline 2012; Friedline et al. 2013a, b; Friedline and Elliott 2011, 2013; Friedline et al. 2011, 2012a; Friedline and Song 2013; Kim et al. 2011). A greater number of studies explore household wealth more broadly and its relationship to children's and young adults' savings, such as home ownership or parents' savings (Mason et al. 2010; Webley and Nyhus 2006). In addition, the intergenerational relationship of households' and their children's wealth has been well documented in previous research; however, this relationship is most often analyzed after children reach adulthood and receive bequests from their households (De Nardi 2004; Gale and Scholz 1994; Modigliani 1988). We are interested in the relationship between households' net

worth and children's and young adults' savings early in life—before wealth transfers traditionally occur through bequests and during the age in which children and young adults are becoming more financially independent.

Given that our interests lie in the specific relationship of net worth to children's and young adults' savings, we review only the studies that include net worth. In some cases, net worth is explored alongside other measures of household wealth like parents' savings for their child. Most of studies reviewed here used the IHS transformation to deal with skewness in net worth.² In addition to dealing with skewness, this transformation allows researchers to include negative values such as when a household's debts and liabilities outweigh their assets (Pence 2006). Researchers also combine the IHS transformation with splines. Together, IHS transformed net worth and splines allow researchers to preliminarily test dynamic measures of net worth and their relationship to children's and young adults' savings. It is noteworthy that studies combining IHS transformations and splines average net worth across multiple years, meaning that their measures are only proxies for Loke's (2013) dynamic accumulation. This is because, for instance, net worth values from 1989, 1994, 1999, and 2001 are summed and averaged rather than measured individually and followed across time (see for example, Friedline et al. 2013b). In Loke's (2013) models, each year of net worth is measured individually and followed across time. In other words, the studies reviewed here measure only proxies of dynamic net worth.

The relationship between household net worth and children's and young adults' savings has been well-documented across these nine studies. For example, Friedline and Elliott (2013) analyzed lower-income samples from the PSID and its supplements to explore savings accounts and amounts saved in young adulthood. Controlling for variables like children's race, gender, heads of households' education level, and household income, young adults ages 18–22 were more likely to have savings accounts and more money saved when they grew up in households accumulating high net worth. Young adults were less likely to have savings accounts and have less money saved when they grew up in households accumulating debt. Analyzing longitudinal PSID data with propensity score analysis and controlling for relevant variables like children's employment status, college

enrollment status, heads of households' education level, and household income, researchers found that household net worth accumulation was related to young adults' savings and wealth portfolios at ages 22–25 ($N = 425$; Friedline and Elliott 2013; Friedline and Song 2013). Friedline and Elliott (2013) found that young adults were more likely to own savings accounts, stocks, and more total types of wealth when growing up in households that were accumulating high net worth. Researchers interpret findings to suggest that children's and young adults' savings may be enhanced when their households are engaged in accumulating net worth, perhaps improving financial health in the long run for everyone involved.

Researchers also explored a similar line of questioning with longitudinal data from the Survey of Income and Program Participation (SIPP). Friedline et al. (2013a) analyzed a sample of 1,760 young adults ages 21–24 with propensity score analysis and regression, exploring whether or not young adults were more likely to own savings accounts, stocks, bonds, mutual funds, retirement accounts, and more total types of wealth controlling for relevant covariates. Young adults' ownership of money market accounts, mutual funds, stocks, retirement accounts, and more total types of wealth was associated with growing up in households with higher net worth.

There are a few caveats with regards to the relationship between household net worth and children's and young adults' savings. Friedline et al. (2012a) analyzed savings with propensity score analysis for an aggregate sample of 744 children ages 12 to 15 from the PSID, finding that children were more likely to have savings accounts when their parents had savings on their behalf. Household net worth, however, was not significant. Using separate samples of low-to-moderate-income (LMI; $< \$50,000$; $n = 333$) and high-income households (HI; $\geq \$50,000$; $n = 411$) and their children ages 12 to 15 from the PSID, Friedline (2012) similarly found that household net worth was not significant; however, children in both LMI and HI households were more likely to have savings accounts when their parents had savings on their behalf. For younger children ages 12–15, it may be that certain types of household wealth like parents' savings for their children are important for their children's own savings more so than net worth.

Children's Savings: Does it Relate to Young Adults' Savings?

Of the nine studies that examine the relationship between household net worth and children's and young adults' savings, six controlled for whether or not children own savings accounts (Friedline et al. 2013a; Friedline and Elliott 2011, 2013; Friedline et al. 2013b; Friedline et al. 2011; Friedline and Song 2013). These studies ask whether or not young adults

² There are three exceptions. The first two exceptions are studies by Kim et al. (2011) and Friedline et al. (2011) that use the natural log transformation to adjust for skewness in net worth. This transformation sets all negative values to 1 because it is not mathematically possible to take the log of zero or negative numbers. This means, for example, that a household's debt of \$10,000 is changed to \$1 to deal with skewness. The third exception is a study by Friedline et al. (2012a), who use a categorical measure of household net worth (zero and negative [$\leq \$0$], moderate [$\0 – $\$10,000$], and high [$> \$10,000$]). These exceptions also examine static measures of net worth.

are more likely to own savings accounts and have more money saved when they have savings accounts as children.

Friedline and Elliott (2013) analyzed lower-income samples from the PSID and its supplements to explore savings accounts and amounts saved in young adulthood. Young adults ages 18–22 were more likely to have savings accounts and more money saved when they had savings accounts of their own as children. Moreover, they found significant interactions between children's savings and household net worth for predicting young adults' savings. Researchers interpreted this finding to suggest that the positive relationship between savings account ownership in childhood and their savings in young adulthood was present and strongest when households were accumulating higher net worth (Friedline et al. 2013b). In another study, Friedline and Elliott (2013) analyzed a sample of 425 children from the PSID and its supplements with propensity score weighting and regression. They found that children with savings accounts between ages 15 and 19 were two times more likely to own savings accounts, two times more likely to own credit cards, and four times more likely to own stocks at ages 22–25. A follow-up study by Friedline and Song (2013) found that young adults accumulated more savings and total financial wealth when they had savings accounts as children. Using data from the Survey of Income and Program Participation (SIPP), Friedline et al. (2013a) analyzed a sample of 1,760 young adults ages 21–24 with propensity score analysis and regression, exploring whether or not young adults are more likely to own savings accounts, stocks, bonds, mutual funds, retirement accounts, and more total types of wealth controlling for relevant covariates. Young adults were more likely to own checking accounts, savings accounts, certificate of deposits, stocks, and more total types of wealth when they had savings accounts as children at ages 15–19.

One study had mixed findings regarding the relationship between children's and young adults' savings. Using samples separated by race, researchers found that white young adults were over three times more likely to own savings accounts at ages 17–23 when they had accounts as children (Friedline and Elliott 2011). Savings accounts for black children did not significantly predict their savings account ownership as young adults. Researchers explained these exceptions by suggesting that too few black children had accounts at either time point to find statistical significance or that mainstream banks do not respond well to all groups of people equally to include black children (Friedline and Elliott 2011).

Research Questions

Research finds that households may take different paths to accumulate net worth, net worth may relate to young

adults' savings, and savings account ownership in childhood may relate to young adults' savings. While research uses proxies for dynamic accumulation with IHS-transformed net worth and splines, existing research does not specifically explore the association between dynamic net worth measured over time with young adults' savings. Our study expands on existing research by testing a dynamic measure of wealth—net worth accumulation trajectories—and its relationship to young adults' savings. First, we ask whether or not households experience distinct patterns of net worth accumulation (also referred to as accumulation trajectories) between 1999 and 2009. Second, we ask whether or not these patterns of net worth accumulation relate to savings account ownership and amount saved of young adults (ages 21–25). Third, we ask whether savings account ownership of children (ages 15–19) remains significantly related to savings account ownership and amount saved of young adults (ages 21–25) while controlling for households' patterns of net worth accumulation—a type of net worth for which research has previously not controlled.

Methods

Data

This study used longitudinal data from the PSID and its Child Development Supplement (CDS) and Transition into Adulthood (TA) supplement. The PSID was a nationally representative longitudinal survey of US individuals and families that began in 1968. The PSID collected data on characteristics such as employment, income, and assets. The independent variables related to households and parents were taken from the 1999, 2001, 2003, 2005, 2007, and 2009 waves of PSID data. The CDS was administered to 3,563 PSID respondents in 1997 to collect a wide range of data on parents who participated in the PSID and their children (birth to 12 years). Questions covered a range of developmental outcomes across the domains of health, psychological well-being, social relationships, cognitive development, achievement, motivation, and education. Follow-up surveys were administered in 2002 and 2007. The TA supplement was administered in 2005, 2007, and 2009 and measured outcomes for young adults who participated in earlier waves of the CDS and were no longer in high school.

Of the 3,563 respondents from the 1997 CDS, 2,019 families representing data on 2,907 children were interviewed in the 2002 CDS. Of the original sample of children from the 1997 CDS, 860 were eligible to participate in interviews for the 2005 TA and 745 interviews were completed. Respondents were only eligible to participate in the TA if they were no longer in high school because of having graduated, received their general education diploma, or left

for another reason. This meant that a smaller percentage of the 3,563 respondents birth to age 12 who participated in the 1997 CDS were eligible to participate in the 2005 TA, thus explaining the sample size difference between the 1997 CDS and 2005 TA. As the original 1997 CDS respondents aged, they became eligible for later waves of the TA. As such, 1,118 interviews were completed in the 2007 TA and 1,554 interviews were completed in the 2009 TA. We conditioned the sample based on whether or not respondents participated in the 1997 and 2002 CDS and all three waves of the TA, resulting in a sample of 484. In other words, young adults were included in the sample if they were interviewed for the 1997 and 2002 CDS and were interviewed for the 2005 TA. If they were interviewed for the 2005 TA, they were included in the sample when they also completed interviews in 2007 and 2009. Without conditioning the sample in this way, we risked including information from a respondent who participated in the 1997 and 2002 CDS at the respective ages of five and 10, but was not interviewed for the TA until 2009 when he/she was age 17. This meant that we could not have controlled for whether or not that individual respondent was ever enrolled in college or was employed prior to measuring their financial health outcomes. Instead, our final sample intended to follow the same respondents across time.

The PSID, CDS, and TA data sets were linked using map files that contained family and personal identification numbers. For this study, independent variables for children and young adults were taken from the 1997 and 2002 CDS and the 2005 TA. Notably, the 2002 CDS was the first wave to collect information on children's own savings. The 2005 TA allowed us to control for whether or not young adults were working or had ever enrolled in college after graduating from or leaving high school—a wave of data that was not used in the reviewed research on children's savings. We used data from the 2005 TA to have a 4-year time frame between controls measured in 2005 and outcomes measured in 2009. The linked data sets provided an opportunity for analyses in which data collected at earlier points in time could be used to predict outcomes at a later point in time, with background characteristics as covariates.

We used outcome variables from the 2009 TA because this was the wave that had the furthest time distance from children's savings account measured in the 2002 CDS—7 years. Previous research has examined data with 5 years between children's savings account and outcome (between 2002 and 2007; e.g., Friedline et al. 2013b, 2011). In addition, we were interested in examining outcomes during an age when young adults would be emerging as financially independent. Young adults from the 2009 TA for our study were between ages 21 and 25. While this was still early in the transition to young adulthood (Bell et al. 2007), this was the latest age range possible from existing longitudinal data that simultaneously allowed researchers to control for

children's savings account ownership in 2002. Previous research has examined outcomes even earlier in the transition to young adulthood (ages 17–23 or 18–22; e.g., Friedline et al. 2013b; 2011).

Outcome Variables

Two outcome variables were drawn from the 2009 TA: young adults' savings account ownership and savings amount.

Young adults' savings account

Young adults from the 2009 TA were asked whether or not they owned a checking or savings account in their name (yes = 1/no = 0).

Young adults' savings amount

Young adults who reported owning a checking or savings account were asked the amount saved in their accounts, with response values ranging from \$1 to \$9,999,996. Young adults who reported not owning a checking or savings account were recorded as having no money saved. The IHS transformation was used to adjust for skewness and retain zero values (Friedline et al. 2012b; Pence 2006).

Variables of Interest

Household net worth and children's savings account were variables of interest for this study, meaning that they were the primary control variables with which our research questions were concerned.

Household net worth

Household net worth was drawn from the 1999, 2001, 2003, 2005, 2007, and 2009 PSID and analyzed with latent class growth modeling to identify distinct classes of accumulation trajectories. Household net worth summed all assets, including savings, stocks/bonds, business investments, real estate, home equity, and other assets, and subtracted all debts, including credit cards, loans, and other debts. We included home equity because the majority of households in the US acquire assets via home ownership (Mishel et al. 2012). Excluding home equity would have otherwise discounted the most commonly accepted vehicle for net worth accumulation or dispersion. IHS was used to adjust for skewness and retain zero and negative values (e.g., Friedline et al. 2012b).

We concentrated on accumulation patterns for 10 years of household net worth between 1999 and 2009—a decade that included one of the most severe economic recessions in recent

history. Data from major longitudinal sources such as the Survey of Consumer Finances (SCF), Survey of Income and Program Participation (SIPP), and PSID consistently revealed declining patterns of household net worth during the Great Recession (Bricker et al. 2012; Kennickell 2011; Lerman and Zhang 2012; Mishel et al. 2012; Smeeding 2012; Taylor et al. 2011). Data from the PSID suggested that all households experienced declines in net worth between 2007 and 2009, with percentages of median dollar changes disproportionately represented amongst the poorest households (Lerman and Zhang 2012). Households in neighborhoods with less than 10 percent poverty lost \$85,613 in median net worth between 2007 and 2009, a decline of 42 %. Households in neighborhoods with poverty between 20 and less than 30 % and greater than 30 % poverty respectively lost about \$23,000 in median net worth, declines of about 63 %. Households in the highest poverty neighborhoods—those who started out with less wealth to begin with—lost 21 percentage points more in net worth over this 2 year period than households in the lowest poverty neighborhoods (Lerman and Zhang 2012). We examined net worth accumulation trajectories between 1999 and 2009 with the great recession in mind.

Children's Savings Account

Available from the 2002 CDS, children's savings account asked whether they have a savings or bank account in their own name (yes = 1/no = 0).

Control Variables

Child and Young Adult Variables

Of the six control variables representing children's and young adults' characteristics, four were drawn from children in the 1997 and 2002 CDS and two were drawn from young adults in the 2005 TA. These variables were included in the final regression models for examining the outcome variables.

Race Children's race was drawn from the 1997 CDS (white = 1/black = 0).

Gender Children's race was drawn from the 1997 CDS (male = 1/female = 0).

Age Children's age was drawn from the 2002 CDS and was a continuous variable, with each number representing age at the time of interview.

Optimism for the Future The variable used for children's optimism for the future represented a composite score of

seven questions from the 2002 CDS. Questions asked, for example, "What do you think are the chances you will have enough money to support you and your family before age 30, graduate from a 2-year college or other vocational program, and get married?" Children chose among five options ranging from "no chance" to "it will happen." This scale had a Cronbach's alpha of 0.96 that affirmed its reliability. Higher scores meant that children had more optimism for the future. This scale has been used previously as a proxy for children's future optimism (Friedline et al. 2011).

Employment Status Young adults in the 2005 TA were asked whether or not they were currently working for money (employed = 1/not employed = 0).

College enrollment status Young adults in the 2005 TA were asked whether or not they graduated from high school, attended college, or graduated from college. Responses were collapsed to create a binary variable representing whether or not young adults had ever enrolled in college (enrolled in college = 1/never enrolled in college = 0).

Head and household variables

Ten control variables for heads of households and households were drawn from various waves of the PSID and used in the latent class growth model to identify net worth accumulation trajectories. Three variables—head's age, race, and gender—were available from the 1999 PSID and included as time-invariant covariates. The remaining seven control variables—head's marital status, health status, occupational prestige, and education level and households' size, annual income, and home ownership—were available from the 1999, 2001, 2003, 2005, 2007, and 2009 PSID and included as time-variant covariates.

Race Heads of households' race was drawn from the 1999 PSID (white = 1/black = 0).

Gender Heads of households' gender was drawn from the 1999 PSID (male = 1/female = 0).

Age Heads of households' age was drawn from the 1999 PSID and was a continuous variable, with each number representing age at the time of interview.

Marital Status Heads of households' marital status (married = 1/not married = 0) was drawn from the 1999, 2001, 2003, 2005, 2007, and 2009 PSID.

Health Status Heads of households were asked to rate their current and general health on a five-point scale

ranging from excellent to poor, with higher scores representing worse health. Health status was drawn from the 1999, 2001, 2003, 2005, 2007, and 2009 PSID.

Occupational Prestige Heads of households' occupational prestige was a continuous variable downloaded from the 1999, 2001, 2003, 2005, 2007, and 2009 PSID using 3-digit occupational codes from the 1970 Census issued by the US Department of Congress for industries and occupations. The PSID grouped the 984 occupational categories into 12 categories. These categories were further reduced and combined with heads of households' employment status. The final variable included five categories (not currently working = 0/construction and maintenance = 1/farming, fishing, and forestry = 2/sales and office = 3/service = 4/management and professional = 5).³

Education Level Heads of households' education level was a continuous variable drawn from the 1999, 2001, 2003, 2005, 2007, and 2009 PSID where each number represented a year of completed schooling (e.g., 12 years of education indicated graduating high school).

Household Size Household size represented the total number of persons in the family unit at the time of interview. Household size was drawn from the 1999, 2001, 2003, 2005, 2007, and 2009 PSID.

Household Annual Income Household annual income was a continuous variable drawn from the 1999, 2001, 2003, 2005, 2007, and 2009 PSID and inflated to 2009 prices with the Consumer Price Index. The natural log transformation was used to adjust for skewness.

Home Ownership Heads of households were asked whether they or anyone else in their family owned the home in which they were living, paid rent, or something else. Responses were collapsed into a binary variable (owned home = 1/did not own home = 0). Home ownership was drawn from the 1999, 2001, 2003, 2005, 2007, and 2009 PSID.

Sample

An aggregate sample of young adults was drawn from the 2009 TA. As mentioned, the sample was restricted to young adults who participated in the 1997 and 2002 CDS

and the 2005, 2007, and 2009 TA. The sample was further restricted to black and white young adults given small numbers of other racial/ethnic groups in the TA (Latino, Asian, Pacific Islander, American Indian, Alaskan Native, and other). This restriction reduced the sample by 10 percent and produced a final sample of 435 young adults. The sample was weighted using the recommended sampling weight from the 2009 TA (Institute for Social Research, 2009).

Children in 2002 were an average age of 17 ($M = 17.160$; $SD = 0.942$; range 15–19) and a majority were white (80 %). There were slightly more females (53 %) than males (47 %). A majority was employed (76 %) and had enrolled in college (70 %) by 2005. Their heads of households, most of whom were married (80 %), had almost 2 years of education beyond high school ($M = 13.783$; $SD = 2.394$). Households' median annual income was \$83,029 ($M = \$108,428$), which was log transformed for the analyses ($M = 11.255$; $SD = 0.836$). A majority of children owned their own savings accounts (76 %) in 2002 and a majority of young adults owned accounts in 2009 (91 %). By 2009, young adults saved a median of \$1,000 ($M = \$3,371$) in their accounts. Young adults' savings amount was IHS transformed for the analyses ($M = 6.855$; $SD = 3.044$). Young adults in 2009 were an average age of 23 ($M = 22.787$; $SD = 1.083$; range 21–25). Additional sample characteristics are available in Table 1.

Median household net worth rose by about 45 % between 1999 and 2007, from \$93,857 ($M = \$318,041$) in 1999 to \$136,327 ($M = \$475,685$) in 2007 (Table 2). By 2008, the Great Recession was in full swing (Farmer 2012). While median household net worth had risen steadily prior to 2007, there was drop of 83 % between 2007 and 2009, from \$136,327 to \$23,000 ($M = \$196,749$).

Analysis Plan

The analysis contained three main components, including completing missing data, identifying net worth accumulation trajectories via latent class growth modeling, and conducting regressions.

Missing Data

The first component in the analysis was to account for missing data. Completing missing data was preferred over listwise deletion to limit the threat to validity and to improve generalizability (Rose and Fraser 2008; Rubin 1976, 1987; Saunders et al. 2006). Little and Rubin (2002) have recommended completing missing data when variables have less than 20 percent missing. All variables in our analysis had less than 20 percent missing and the

³ There was a known problem with the PSID employment data for the years 1999 through 2007. The PSID provided a way to fix the problem but it is beyond the scope of this paper to explain here. Please visit the following website for more information on how we addressed this problem: <http://psidonline.isr.umich.edu/Guide/FAQ.aspx?Type=1#285>. Accessed 13 July 2012.

Table 1 Sample characteristics for covariates ($N = 435$)

	Covariates	Full Sample
	Child and young adult variables	
	Age in 1997 ^a	10.670 (1.041)
	Age in 2002	16.958 (1.031)
	Age in 2005 ^a	18.801 (1.066)
	Age in 2009 ^a	22.787 (1.083)
	Race	
	White	82
	Black	19
	Gender	
	Male	47
	Female	53
	Optimism for the future	26.217 (2.896)
	Employment status	
	Employed	76
	Not employed	24
	College enrollment status	
	Ever enrolled in college	70
	Never enrolled in college	30
	Head and household variables ^b	
	Head's age	43.590 (7.342)
	Head's race	
	White	82
	Black	18
	Head's gender	
	Male	83
	Female	17
	Head's marital status	
	Married	80
	Not married	20
	Head's health status	1.217 (0.994)
	Head's occupational prestige	3.211 (1.913)
	Heads' education level	13.783 (2.394)
	Household size	4.298 (1.078)
	Household annual income	11.255 (0.836)
	Mean \$ dollar value	\$108,428
	Median \$ dollar value	\$83,029 (\$163,959)
	Natural log transformation	11.255 (0.836)
	Home ownership	
	Owns home	80
	Does not own home	20

Expectation–Maximization (EM) completed data from the Panel Study of Income Dynamics (PSID); 2002 Child Development Supplement (CDS); and 2005 and 2009 Transition into Adulthood (TA) supplement. Data is weighted using the recommended sampling weight from the 2009 TA

Percentages reported for categorical variables and means and standard deviations reported for continuous variables

^a Variables included for descriptive purposes only. Currency is reported in US dollar values

^b Head and household variables were included as time-variant covariates in the generalized mixture model (GMM) to identify net worth trajectory classes and thus were drawn from the same waves of the PSID as household net worth, including waves 1999, 2001, 2003, 2005, 2007, and 2009. To conserve space, descriptive information is reported from the 1999 PSID

highest percentage missing was from household net worth (13 percent, which was within acceptable limits). Missing data were completed using the Expectation Maximization (EM) algorithm (Dempster et al. 1977). The EM algorithm completed missing values by maximum likelihood estimation using the observed data in an iterative estimation process (Little and Rubin 2002).

Latent Class Growth Modeling

The second component was to examine net worth accumulation trajectories using latent class growth modeling (LCGM), which is a semiparametric group-based approach for modeling trajectories. LCGM allowed us to identify distinct clusters of individual trajectories of household net

Table 2 Ten years of household net worth ($N = 435$)

Values of net worth between 1999–2009	1999	2001	2003	2005	2007	2009
\$ Dollar values						
Median	\$93,857	\$115,869	\$123,121	\$139,885	\$136,327	\$23,000
Mean	\$318,041 (\$1,450,383)	\$426,525 (\$3,056,736)	\$461,782 (\$2,598,244)	\$453,441 (\$2,432,448)	\$475,685 (\$1,757,852)	\$196,749 (\$583,988)
Natural log transformation						
Median	11.450	11.660	11.721	11.849	11.823	10.043
Mean	10.532 (3.522)	10.582 (3.717)	10.869 (3.434)	10.696 (3.763)	10.133 (4.413)	8.018 (5.249)
Inverse hyperbolic sine transformation						
Median	12.143	12.353	12.414	12.542	12.516	9.371
Mean	10.641 (5.532)	10.666 (5.714)	11.211 (4.758)	10.856 (5.540)	9.821 (7.028)	6.242 (9.371)
Changes in net worth between 1999–2009^a						
	1999–2001	1999–2003	1999–2005	1999–2007	1999–2009	2007–2009
Median net worth						
Change in \$ dollar value	+\$22,012	+\$29,264	+\$46,028	+\$42,470	−\$70,858	−\$113,327
Percent change	+23	+31	+49	+45	−75	−83
Mean net worth						
Change in \$ dollar value	+\$108,484	+\$143,741	+\$135,400	+\$157,644	−\$121,292	−\$278,936
Percent change	+34	+45	+43	+50	−38	−88

Expectation–Maximization (EM) completed data from the Panel Study of Income Dynamics (PSID). Data is weighted using the recommended sampling weight from the 2009 TA

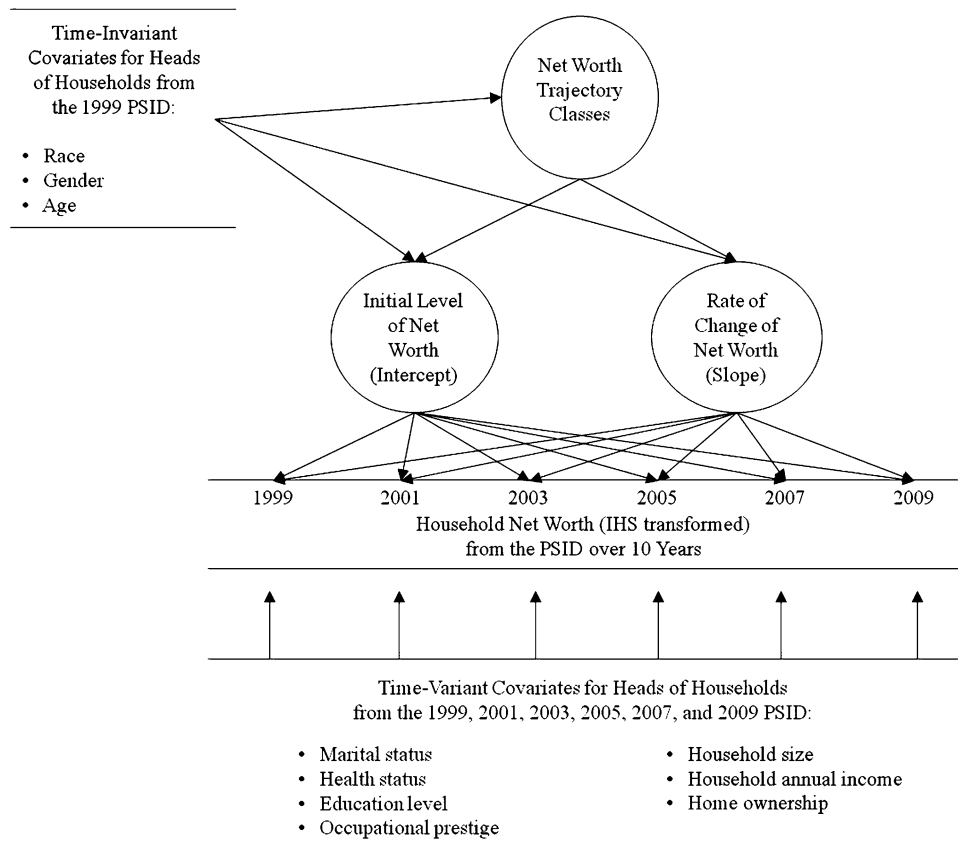
Currency is reported in US dollar values. Net worth values are inflated to 2009 dollar values using the Consumer Price Index (CPI). Values were rounded to the nearest dollar value. Standard deviations are reported in parentheses

^a Changes in net worth represent comparisons between 1999 values and values from each individual wave of the PSID. Household net worth percent changes were calculated by subtracting 1999 values from the 2009 values, dividing by 1999 values, and multiplying by 100: $[(2009 \$ \text{ value} - 1999 \$ \text{ value}) / 1999 \$ \text{ value}] \times 100 = \text{percent change}$. This procedure was carried out for median net worth for every year as it compared to 1999. For example: $[(\$23,000 - \$93,857) / \$93,857] \times 100 = -75$. We also compared 2007 and 2009 given that the largest decline in median net worth occurred between these years

worth within the sample and to profile the characteristics of individuals within the clusters. The association of group membership with group characteristics was examined in the model with a multinomial logistic function (Maddala 1983). The optimal number of groups to form clusters was determined by using Bayesian Information Criteria (BIC) and Akaike Information Criteria (AIC), with smaller values indicating better fit (Jones et al. 2001). We used this modeling strategy in order to identify distinct clusters of relatively homogeneous individual trajectories over time based on IHS transformed household net worth values using the STATA TRAJ plug-in (Jones and Nagin 2012). The distribution of net worth trajectories was denoted by $P(Y_i | \text{Year}_i)$, where the random vector Y_i represented individual i 's longitudinal sequence of net worth values and the vector Year_i represented the year when each of those measurements was recorded. We applied censored normal distribution to the modeling which may be censored by a scale minimum, scale maximum, or both.

Within LCGM, there were three steps for identifying net worth accumulation trajectories. The first step estimated net worth trajectories within the data and excluded time-varying and time-invariant covariates in the estimation. This allowed us to determine the optimal number of groups and examine net worth trajectories prior to taking covariates into consideration. The second step incorporated covariates into the estimation of the optimal number of groups. Univariate analyses selected those factors that were significantly associated with group membership. After removing redundant time-varying and time invariant predictors and controlling for potential confounders, we obtained a multivariate LCGM that provided a parsimonious list of predictors of group membership. The third step conducted a final LCGM that identified net worth trajectories using time-varying and time-invariant covariates for estimation of the models. A display of the model used to estimate net worth trajectories is provided in Fig. 1.

Fig. 1 Latent class growth model estimating net worth trajectory classes over 10 years



Regression

The third component of the analysis was to conduct logistic and multiple regression models to predict young adults' savings in 2009, controlling for net worth accumulation trajectories and selected covariates. Logistic regression was used for young adults' savings account ownership and multiple regression was used for young adults' savings amount (IHS transformed). For logistic regression, we reported the McFadden's pseudo R^2 (not equivalent to the variance explained in multiple regression model, but closer to 1 was also positive) and reported odds ratios (OR) for easier interpretation. The odds ratio was a measure of effect size that described the strength of association. For multiple regression, we reported measures of predictive accuracy through the R^2 , which offered an indication of variance explained by the model.

Results

Descriptive Results

All households experienced declines in median net worth between 1999 and 2009 (Table 3a). However, descriptively

speaking, the households hardest hit by declines during this decade were headed by racial and ethnic minorities, females, and singles. For example, the median net worth of white headed households fell by about \$69,218, a 60 % reduction in their median net worth compared to 1999.⁴ In comparison, the median net worth of black headed households fell by \$14,294, a drop of 91 % from their net worth in 1999. While the median net worth of white headed households fell by a larger amount, the percentage loss was disproportionately greater for black headed households. Households headed by singles started with \$10,032 in median net worth in 1999 and ended with \$0 in median net worth 10 years later.

Mean declines in net worth between 1999 and 2009 were provided as a comparison (Table 3b). From this perspective, mean declines suggested that the households hardest hit may have had the most net worth to lose. For example, male-headed households had mean net worth of \$388,652 in 1999 and experienced a decline of 39 % by 2009. In comparison, female-headed households had mean net worth of \$45,905 and experienced a decline of 16 % by 2009. While the loss of female-headed households' mean

⁴ All values were inflated to 2009 price levels using the Consumer Price Index.

Table 3a Median values of households’ net worth decline between 1999–2009 based on heads’ and households’ characteristics ($N = 435$)

	Median net worth in 1999	Median net worth in 2009	Change in \$ value of median net worth between 1999–2009	Percent change in median net worth between 1999–2009
Full sample	\$93,857	\$23,000	−\$70,858	−75
At or older than age 43	\$184,272	\$54,500	−\$129,772	−70
Younger than age 43	\$52,932	\$12,300	−\$40,632	−77
White	\$115,218	\$46,000	−\$69,218	−60
Black	\$15,794	\$1,500	−\$14,294	−91
Male-headed household	\$115,218	\$34,000	−\$81,218	−70
Female-headed household	\$10,824	\$0	−\$10,824	−100
Married	\$125,136	\$46,000	−\$79,136	−63
Not married	\$10,032	\$0	−\$10,032	−100
Above-average health	\$135,960	\$48,600	−\$87,360	−64
Below-average health	\$53,562	\$5,360	−\$48,202	−90
Unemployed	\$3,300	\$900	−\$2,400	−73
Employed in construction, maintenance, farming, fishing, sales, office, or service positions	\$73,920	\$23,900	−\$50,020	−68
Employed in managerial or professional positions	\$182,160	\$25,200	−\$156,960	−86
High school degree or less	\$43,296	\$10,000	−\$33,296	−77
Some college	\$105,600	\$49,400	−\$56,200	−53
College degree or more	\$223,080	\$32,000	−\$191,080	−86
Four or more members per household	\$100,320	\$30,000	−\$70,320	−70
Less than four members per household	\$57,156	\$1,700	−\$55,456	−97
High annual income (\geq \$83,029)	\$203,280	\$98,000	−\$105,280	−75
Low-to-moderate annual income ($<$ \$83,029)	\$43,297	\$4,500	−\$38,797	−90
Owens home	\$142,560	\$46,000	−\$96,560	−68
Does not own home	\$3,300	\$2,000	−\$1,300	−40

Expectation–Maximization (EM) completed data from the Panel Study of Income Dynamics (PSID). Weighted using the recommended sampling weight from the 2009 TA

Currency is reported in US dollar values. Heads’ and households’ characteristics are reported using data from the 1999 PSID. Continuous variables including age, health status, occupational prestige, education level, household size, and household annual income were categorized to report values and percentages within this table. Median value changes are similar to those reported in previous research (Elliott et al. 2013a)

net worth was less compared to their male-headed counterparts, they only owned 12 % of male-headed households’ net worth to begin with in 1999. Similarly, households headed by college degree holders lost mean net worth of 42 % compared with a mean loss of 7 % for households whose heads had high school degrees or less. In 1999, households whose heads had a high school degree or less owned 18 % of the net worth of households whose heads had a college degree or more. Interestingly, home owners lost mean net worth of 40 % between 1999 and 2009, compared to non-home owners who gained net worth of 348 %, which perhaps represents the adverse effects of the economic recession on the housing industry that included declines in home equity (Chakrabarti et al. 2011).

In terms of children’s and young adults’ savings account ownership, 76 % of children had savings accounts in 2002. By 2009, 91 % had savings accounts and a median savings of \$1,000 ($M = \$1,371$; Table 4). Descriptive statistics

indicate that among white children, 83 % had savings accounts in 2002 compared with 45 % of black children. This gap in account ownership between whites and blacks remained evident in young adulthood: 95 % of white young adults owned savings accounts and 72 % of black young adults owned savings accounts. Whites had median savings that was four times greater than blacks by 2009 ($Md = \$1,200$ compared with \$300; $M = \$3,888$ compared with \$1,123). Ninety-six percent of those who had ever enrolled in college by 2005 had savings accounts in 2009, compared to 79 % of those who had never enrolled in college. Those who had ever enrolled in college saved a median of \$2,000 ($M = \$4,367$), which was a median amount saved of almost seven times greater than those who had never enrolled in college ($Md = \$300$; $M = \$1,139$). Similar discrepancies existed based on heads of households’ race, marital status, employment status, and education level, and households’ annual income.

Table 3b Mean values of households' net worth decline between 1999–2009 based on heads' and households' characteristics ($N = 435$)

	Mean net worth in 1999	Mean net worth in 2009	Change in \$ value of mean net worth between 1999–2009	Percent change in mean net worth between 1999–2009
Full sample	\$318,041	\$196,749	–\$121,292	–38
At or older than age 43	\$503,672	\$276,517	–\$227,155	–45
Younger than age 43	\$128,048	\$119,745	–\$8,303	–6
White	\$379,205	\$234,409	–\$144,796	–38
Black	\$99,153	\$57,144	–\$42,009	–42
Male-headed household	\$388,652	\$237,477	–\$151,175	–39
Female-headed household	\$45,905	\$38,640	–\$7,265	–16
Married	\$397,490	\$243,494	–\$153,996	–39
Not married	\$53,833	\$39,345	–\$14,488	–27
Above-average health	\$93,334	\$116,919	+\$23,585	+25
Below-average health	\$455,773	\$250,594	–\$205,179	–45
Unemployed	\$32,545	\$36,647	+\$4,102	+13
Employed in construction, maintenance, farming, fishing, sales, office, or service positions	\$187,557	\$172,868	–\$14,689	–8
Employed in managerial or professional positions	\$521,814	\$263,488	–\$258,326	–50
High school degree or less	\$114,037	\$105,777	–\$8,260	–7
Some college	\$255,535	\$136,033	–\$119,502	–47
College degree or more	\$636,974	\$368,986	–\$267,988	–42
Four or more members per household	\$371,626	\$235,662	–\$135,964	–37
Less than four members per household	\$176,142	\$80,837	–\$95,305	–54
High annual income (\geq \$83,029)	\$509,826	\$280,191	–\$229,635	–45
Low-to-moderate annual income ($<$ \$83,029)	\$123,177	\$113,483	–\$9,694	–8
Owens home	\$414,550	\$247,424	–\$164,126	–40
Does not own home	–\$6,583	\$29,515	+\$22,932	+348

Expectation–Maximization (EM) completed data from the Panel Study of Income Dynamics (PSID). Weighted using the recommended sampling weight from the 2009 TA

Currency is reported in US dollar values. Heads' and households' characteristics are reported using data from the 1999 PSID. Continuous variables including age, health status, occupational prestige, education level, household size, and household annual income were categorized to report values and percentages within this table. Mean value changes are similar to those reported in previous research (Moore et al. 2013)

Percentages of children's savings account ownership in 2002 and household net worth are reported given that they were variables of interest in the analyses (Table 5). Percentiles of household net worth values for 1999 were used to tabulate percentages of children's savings account ownership in 2002 and percentiles of household net worth for 1999, 2007, and 2009 were used to tabulate percentages of young adults' savings account ownership and amounts saved in 2009. In 2002, percentages of children's savings account ownership increased slightly with each net worth percentile. Fifty-three percent of children who grew up in households with less than \$26,400 in net worth in 1999 owned savings accounts and they saved a median of \$350 ($M = \$1,143$) by 2009. In comparison, 91 % of children who grew up households with greater than \$262,680 in net worth in 1999 and they saved a median of \$3,000 ($M = \$6,864$) by 2009. Their percentages of account

ownership increased to 81 and 97, respectively, by young adulthood in 2009.

Net Worth Accumulation Trajectories Results

Two relatively homogeneous groups displaying distinctive trajectories of net worth were identified (Fig. 2). Head and household time-varying and time-invariant covariates were used to estimate the two-group membership from the multinomial logit model. The optimal two-group model was determined based on Bayesian Information Criteria values ($-8,307.41$) and Akaike Information Criteria ($8,291.11$). Two-, three-, and four-group models were tested; however, the two-group model presented the optimal trajectory model based on the lowest BIC and AIC values. We named the two net worth accumulation trajectories "high and stable" and "declining." The first trajectory remained relatively high and stable over the

Table 4 Sample characteristics for children's and young adults' savings (N = 435)

	Percentage of children's savings account ownership in 2002	Percentage of young adults' savings account ownership in 2009	Young adults' median amount saved in 2009	Young adults' mean amount saved in 2009
Full sample	76	91	\$1,000	\$3,371
Child and young adult variables				
At or older than age 17	78	87	\$1,000	\$3,743
Younger than age 17	74	93	\$1,000	\$2,905
White	83	95	\$1,200	\$3,888
Black	45	72	\$300	\$1,123
Male	76	91	\$1,000	\$3,498
Female	76	91	\$1,000	\$3,289
Above-average optimism for the future	79	93	\$1,200	\$4,286
Below-average optimism for the future	75	90	\$800	\$2,535
Employed	73	93	\$1,000	\$2,960
Not employed	78	88	\$1,000	\$3,794
Ever enrolled in college	84	96	\$2,000	\$4,367
Never enrolled in college	57	79	\$300	\$1,139
Head and household variables				
At or older than age 43	84	93	\$1,500	\$4,192
Younger than age 43	68	89	\$700	\$2,677
White	83	95	\$1,200	\$3,979
Black	44	72	\$300	\$1,083
Male-headed household	79	94	\$1,400	\$3,918
Female-headed household	61	78	\$300	\$1,436
Married	80	94	\$1,500	\$3,998
Not married	62	80	\$300	\$1,440
Above-average health	69	85	\$1,700	\$1,580
Below-average health	80	95	\$500	\$4,509
Unemployed	45	81	\$300	\$470
Employed in construction, maintenance, farming, fishing, sales, office, or service positions	71	86	\$600	\$2,347
Employed in managerial or professional positions	88	98	\$2,000	\$5,099
High school degree or less	67	86	\$500	\$2,442
Some college	79	91	\$950	\$2,965
College degree or more	88	98	\$2,500	\$5,051
Four or more members per household	74	91	\$1,000	\$3,787
Less than four members per household	83	91	\$700	\$2,368
High annual income (\geq \$83,029)	88	98	\$2,000	\$5,020
Low-to-moderate annual income ($<$ \$83,029)	64	83	\$400	\$1,764
Owens home	82	93	\$1,500	\$4,010
Does not own home	58	86	\$500	\$1,508

Expectation–Maximization (EM) completed data from the Panel Study of Income Dynamics (PSID); 2002 Child Development Supplement (CDS); and 2005 and 2009 Transition into Adulthood (TA) supplement. Data is weighted using the recommended sampling weight from the 2009 TA

Percentages are reported within groups. For instance, 83 percent of whites have savings accounts in 2002. Currency is reported in US dollar values. Mean and median savings amounts were rounded to the nearest dollar value. Heads' and households' characteristics are reported using data from the 1999 PSID. Children's and young adults' variables are reported from the 2002 CDS and 2005 TA

10 year period, with indication of slight accumulation following 2001. Sixty-nine percent of the sample followed this high and stable net worth accumulation trajectory. The second

trajectory experienced slight accumulation through 2003 that was followed by a steep decline through 2009. This trajectory was referred to as declining net worth.

Table 5 Sample characteristics for children's and young adults' savings ($N = 435$)

	Percentage of children's savings account ownership in 2002	Percentage of young adults' savings account ownership in 2009	Young adults' median amount saved in 2009	Young adults' mean amount saved in 2009
Full sample	76	91	\$1,000	\$3,371
Variables of interest				
Child owns savings account in 2002	–	97	\$1,500	\$3,969
Child does not own savings account in 2002	–	73	\$200	\$1,593
Household net worth in 1999 ^a				
Less than 25th percentile (<\$26,400)	53	81	\$350	\$1,143
25th to 50th percentile (\geq \$26,400 to <\$93,720)	68	90	\$700	\$2,191
50th to 75th percentile (\geq \$93,720 to <\$262,680)	92	96	\$1,500	\$3,332
Greater than 75th percentile (\geq \$262,680)	91	97	\$3,000	\$6,864
Household net worth in 2007 ^{a,b}				
Less than 25th percentile (<\$8,343)	–	77	\$300	\$1,160
25th to 50th percentile (\geq \$8,343 to <\$134,930)	–	95	\$900	\$3,025
50th to 75th percentile (\geq \$134,930 to <\$429,510)	–	96	\$1,500	\$3,358
Greater than 75th percentile (\geq \$429,510)	–	96	\$3,000	\$6,061
Household net worth in 2009 ^{a,b}				
Less than 25th percentile (< \$0)	–	82	\$1,000	\$1,497
25th to 50th percentile (\geq \$0 to <\$23,000)	–	90	\$500	\$2,294
50th to 75th percentile (\geq \$23,000 to <\$183,000)	–	95	\$2,000	\$5,874
Greater than 75th percentile (\geq \$183,000)	–	98	\$1,500	\$4,204

Expectation–Maximization (EM) completed data from the Panel Study of Income Dynamics (PSID); 2002 Child Development Supplement (CDS); and 2005 and 2009 Transition into Adulthood (TA) supplement. Data is weighted using the recommended sampling weight from the 2009 TA

Percentages are reported within groups. For instance, among children who had savings accounts in 2002, 97 percent had savings accounts in 2009. Currency is reported in US dollar values. Mean and median savings amounts were rounded to the nearest dollar value. Children's and young adults' variables are reported from the 2002 CDS and 2009 TA

^a Continuous net worth amounts are collapsed into categories using percentiles for descriptive purposes

^b Household net worth for 2007 and 2009 are not used to examine percentages for children's savings account in 2002 given the time order of these variables (children's savings account in 2002 precedes household net worth for 2007 and 2009)

Young Adults' Savings Results

The net worth accumulation trajectories identified through latent class growth modeling were included in regression models and accompanied by children's and young adults' control variables to examine their relationships to young adults' savings account ownership and amount saved (Table 6).

Young Adults' Savings Account Ownership

Results indicated there was not a significant relationship between household net worth accumulation trajectories and young adults' savings account ownership in 2009 ($\beta = 0.556$, $SE = 0.517$, $p = 0.282$). There was a significant relationship between children's and young adults' savings account ($\beta = 1.835$, $SE = 0.439$, $OR = 6.265$, $p < 0.001$). Children

with savings accounts in 2002 had over six times the odds of having savings accounts as young adults in 2009, compared to those without accounts in 2002. In addition, race ($\beta = 1.365$, $SE = 0.494$, $OR = 3.916$, $p = 0.006$) and college enrollment ($\beta = 1.486$, $SE = 0.501$, $OR = 4.419$, $p = 0.003$) were significant in the model. White young adults had almost four times the odds of owning savings accounts compared with black young adults. Young adults who had ever enrolled in college by 2005 had about four-and-a-half times the odds of owning savings accounts in 2009, compared to those who had never enrolled in college. Young adults' employment in 2005 was also associated with their savings account ownership in 2009 at trend level ($\beta = 0.914$, $SE = 0.483$, $OR = 2.494$, $p = 0.098$). Young adults who were employed in 2005 were almost two-and-a-half times more likely to own savings accounts in 2009, compared to those who were not employed.

Fig. 2 Net worth trajectories from latent class growth modeling. Notes. Expectation–Maximization (EM) completed data from the Panel Study of Income Dynamics (PSID). Net worth was transformed using the inverse hyperbolic sine (IHS) transformation to adjust for skewness, then converted back into real US 2009 dollar values for easier interpretation. Net worth of 69 percent of the sample remained relatively high and stable over the 10 year time period, with indication of accumulation after 2001. Net worth for the remaining 31 percent demonstrated accumulation through 2003 that was followed by a steep decline through 2009. Net worth trajectories were also estimated between 1999 and 2007. Growth mixture modeling revealed two distinct trajectories even when excluding 2009 net worth

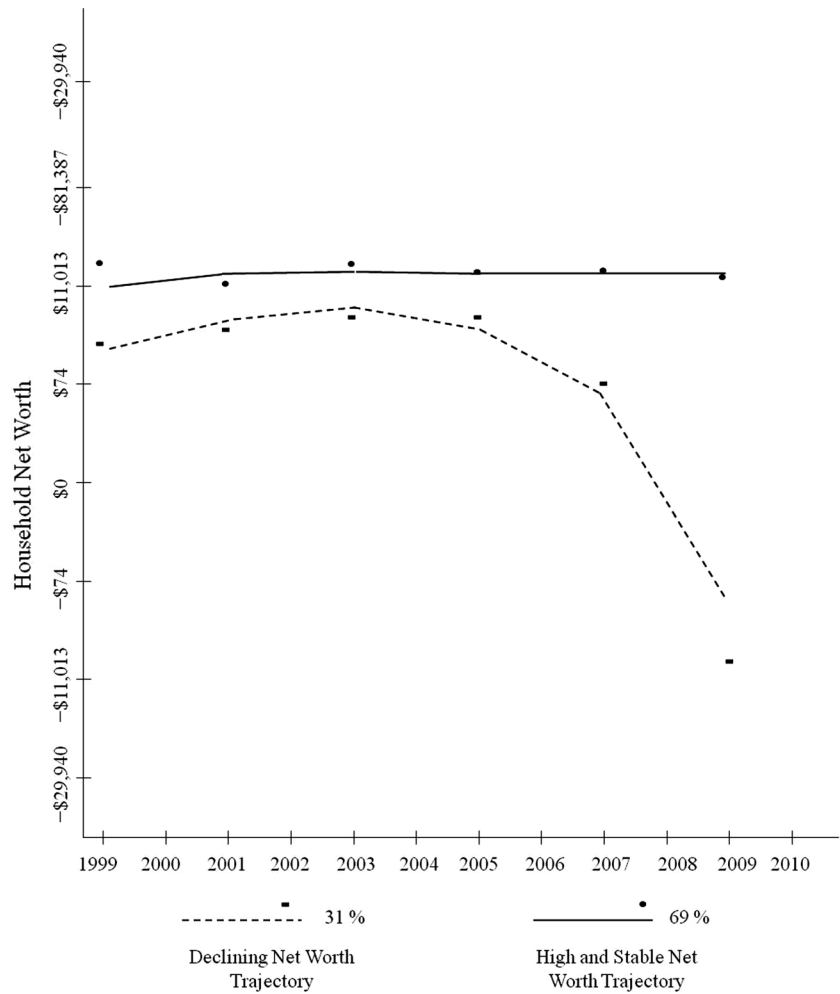


Table 6 Logistic and multiple regressions predicting young adults’ savings in 2009 ($N = 435$)

	Young adults’ savings account ownership			Young adults’ amount saved (IHS transformed)	
	β	SE	OR	β	SE
Child and young adult variables					
White	1.365**	0.494	3.916	1.374**	0.470
Male	-0.010	0.518	-	0.197	0.311
Optimism for the future	0.043	0.076	-	0.049	0.050
Employed in 2005	0.914†	0.483	2.494	0.449	0.315
Ever enrolled in college in 2005	1.486**	0.501	4.419	2.094***	0.389
Variables of interest					
Child owns savings account in 2002	1.835***	0.439	6.265	1.875***	0.442
High and stable net worth accumulation trajectory	0.556	0.517	-	0.925**	0.349
Constant	-2.828		$p = 0.282$	0.631	$p = 0.668$
McFadden’s R^2 and R^2			0.315		0.330

Expectation–Maximization (EM) completed data from the Panel Study of Income Dynamics (PSID); 2002 Child Development Supplement (CDS); and 2005 and 2009 Transition into Adulthood (TA) supplement. Data is weighted using the recommended sampling weight from the 2009 TA

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; † $p < 0.10$

Young Adults' Savings Amount

Results indicated there were significant associations of household net worth accumulation trajectories ($\beta = 0.925$, $SE = 0.349$, $p = 0.008$) and children's savings account ($\beta = 1.875$, $SE = 0.442$, $p < 0.001$) with young adults' savings amount in 2009. Growing up in households with high and stable net worth accumulation was associated with more accumulated savings in young adulthood, compared to those who grew up in households that experienced declining net worth during the period of the Great Recession. Children's savings accounts in 2002 was also associated with more in savings as young adults, compared to those without accounts in 2002. In addition, race ($\beta = 1.374$, $SE = 0.470$, $p = 0.004$) and college enrollment ($\beta = 2.094$, $SE = 0.389$, $p < 0.001$) were significantly associated with young adults' savings in the model. White young adults had more savings compared with black young adults. Young adults who had ever enrolled in college by 2005 had more savings in 2009, compared to their counterparts who had never enrolled in college.

Discussion

The attention given to net worth may be justified given the large percentages lost amongst some households in the wake of the Great Recession. While household net worth appears to have risen steadily in the aggregate prior to 2007, households experienced a precipitous median decline of 83 % between 2007 and 2009 ($Md =$ from \$136,327 to \$23,000; $M =$ from \$475,685 to \$196,749). Descriptively, households experiencing the greatest median percentage losses in net worth were headed by blacks, females, and singles. These households had less net worth to begin with (Shapiro et al. 2013), making their losses disproportionately greater compared to their more advantaged counterparts. Findings suggest that households experiencing the greatest percentage losses in net worth may benefit from policies like IDAs that facilitate their wealth accumulation. Wealth accumulation—even in small amounts—allows lower-income or otherwise financially disadvantaged households to have a personal safety net that can supplement their income in times of need and can help buffer them against the detrimental effects of economic recessions.

Using LCGM, we found that almost a third of our sample experienced declining net worth beginning around 2003, with a plunging drop between 2007 and 2009. Net worth for the remainder of the sample (69 %) remained relatively high and stable over the duration of the decade. In fact, these households may have slowly accumulated net worth over time. Previous research confirms different net

worth patterns during similar time frames (Lerman and Zhang 2012; Loke 2013).

Consistent with prior research, household patterns of net worth accumulation were significantly related to young adults' savings amount (Friedline et al. 2013a; Friedline and Elliott 2011; Friedline et al. 2013b). Not surprisingly, children who grew up in households that experienced declining net worth tended not to fair as well financially as young adults. This finding is of interest because it suggests that dynamic household net worth—whether or not that stock of wealth is stabilizing, accumulating, or declining over time—may relate to young adults' savings. One way to improve young adults' financial health may be to help their households stabilize and accumulate net worth.

Notably, we found household patterns of net worth were related to young adults' amount saved, but not account ownership. This mixed finding was confirmed in previous research (Friedline and Elliott 2011; Friedline et al. 2011). For instance, Friedline et al. (2011) used propensity score weighted, longitudinal data from the PSID and its supplements to analyze savings account and amount saved for young adults ages 17–23 in 2007 ($N = 1,003$). They found that household net worth (log transformed) was related to young adults' amount saved, but not their account ownership and concluded that children's savings accounts may help them maintain their account ownership into young adulthood while household net worth may help them accumulate savings.

Findings on the relationship between patterns of net worth accumulation and young adults' savings outcomes have implications for researchers. Just as previous research found that different dimensions of wealth may have distinct effects on children's educational outcomes (Loke 2013), there may be dimensions of household wealth with distinct effects on young adults' financial health, as well. In our study, net worth accumulation trajectories were related to young adults' savings amount and not their savings account ownership. This makes intuitive sense—a household's net worth accumulation relates to the savings accumulation of young adults who grew up in those households. Such a finding could be explained by intergenerational wealth transfers in young adulthood (Wightman et al. 2012), though these transfers are often studied later in the life cycle through bequests and retirement motives (Cao 2006; Kao et al. 1997). While households' net worth accumulation may not emerge as significantly related to savings account ownership for young adults, the wealth and resources of households likely help them establish their savings accounts as children (Friedline 2012). Researchers should continue to test different types of wealth such as net worth and their dimensions—dynamic and static—for effects on young adults' savings and other financial outcomes.

Also consistent with previous research is the significant relationship between savings account ownership in childhood and savings in young adulthood (Friedline and Elliott 2013; Friedline et al. 2013b; 2011). Young adults have savings accounts more often and more money saved when they own accounts as children. Opening a savings account in childhood may be one way to build young adults' savings and financial health around the time they become financially independent from their households. In addition to the implications of this finding for young adults' financial health, there are implications for financial institutions, programs, and practitioners that serve and work directly with children and young adults. For example, financial institutions like banks and credit unions may stand to profit from encouraging children's savings despite the initial small-dollar nature of these accounts. While banks and credit unions may not experience short-term profitability from children's savings accounts, they may stand to benefit over time as young adults' savings accumulates and they diversify their wealth holdings (Deshpande and Zimmerman 2010; Friedline and Elliott 2013; Friedline and Song 2013). As such, financial institutions may consider inviting children into their customer base. In another example, social workers facilitate saving account opening and encourage wealth accumulation among children in foster care or similar settings as a way to prepare them for good financial health in young adulthood (Peters et al. 2012).

We also found that children's race and college enrollment status were significantly related to young adults' savings account and amount saved in 2009. Young adults who were white were more likely to have savings accounts and have more money saved compared to those who were black. Race is one of the strongest and most consistent predictors in all the studies on children's and young adults' savings (Friedline and Elliott 2011, 2013; Friedline et al. 2013b; 2011). Young adults' college enrollment was found to significantly relate to their savings account ownership and total amount saved, even after controlling for variables like their employment status and households' income and net worth (Friedline and Elliott 2013; Friedline and Song 2013). It appears that human capital development in the form of college enrollment is positively linked to young adults' savings.

Limitations

The results should be interpreted with a few limitations in mind. One of the most notable limitations is the use of observational data in which our variables of interest may have selection on observables. Observational data is limited by the lack of random assignment and the presence of selection (Rosenbaum and Rubin 1983a, b). In other words, it is not possible to randomly assign households to different

net worth accumulation trajectories. Therefore, we cannot assume that children have equal chances of growing up in households of either net worth accumulation trajectory and cannot make causal interpretations from the data. However, we included a number of relevant covariates related to net worth accumulation in an attempt to minimize selection.

Another limitation is with regards to children's savings account from the 2002 CDS. In this study, savings accounts are first measured in childhood at ages 15–19 from the 2002 CDS. Previous research suggests households' net worth is associated with children's initial savings account ownership (Friedline 2012; Friedline et al. 2012a). Our simultaneous measurement of net worth accumulation trajectories and children's savings account in 2002 is a limitation and we cannot rule out endogeneity. In other words, we cannot test whether or not net worth accumulation trajectories between 1999 and 2009 relate to children's savings accounts in 2002 given the time order of our key variables. To address this limitation, we ran additional regression analyses to determine whether or not the significance of net worth trajectories remained, disappeared, or emerged when excluding children's savings. Net worth trajectories were significant at trend level for young adults' savings account ($\beta = 0.834$, $SE = 0.504$, $p = 0.098$) and remained significant for amount saved ($\beta = 1.115$, $SE = 0.389$, $p = 0.004$).

Another noteworthy limitation is that we were unable to test more precise mechanisms through which household net worth accumulation may relate to young adults' savings. For instance, we were unable to test or control for household behaviors related to wealth accumulation and the connection those behaviors might have to young adults' financial behaviors (Gudmunson and Danes 2011; Payne et al. 2013), such as how household members communicate about finances or the economy. We also could not test whether household members were involved with young adults' finances or whether young adults emulated the financial behaviors exhibited by members of their households. Moreover, we could not test whether variables such as geographic distance to financial institutions, financial institution closures, access to alternative versus mainstream financial institutions, financial literacy scores, or credit history relate to either household net worth accumulation or young adults' financial health.

Despite these limitations, this study has a number of strengths. To the authors' best knowledge, this is one of the first studies to examine the relationship between patterns of households' net worth accumulation—a dynamic measure of household wealth—and young adults' savings using longitudinal, nationally representative data. We analyzed households' net worth (IHS transformed) accumulation trajectories during a 10-year period that included the Great Recession, accounting for a number of relevant

time-invariant and time-variant covariates. Moreover, we did so using multiple imputation, LCGM, and regression analysis, which are relatively advanced techniques for testing these relationships.

Conclusion

One story that may be told from these findings is that children who grow up in households hardest hit by the Great Recession experienced the ripple effects in their own financial health, as indicated by their savings in young adulthood. Nearly one-third of US households experienced a precipitous decline in their net worth during the Great Recession. Young adults in households with declining net worth have less money saved than their counterparts from households with stable net worth, suggesting they may also struggle to cope financially following the recession (Stein et al. 2013). The effects of the Great Recession on households' net worth and young adults' savings may compound over time. That is, these young adults appeared to be disadvantaged in their own savings and wealth accumulation—a disadvantage that has the potential to follow them throughout their life course. In comparison, their counterparts whose households' net worth was spared from precipitous declines during the Great Recession may start off in life with an advantage that they can build upon across their life course. Policies and programs like IDAs and CDAs that encourage wealth accumulation—particularly for lower-income households and their children—may be one step toward staving off the effects of a recession on households' net worth and any ripple effects experienced by children and young adults.

Policies and related proposals that aim to build lower-income households' and children's wealth have historically taken separate and parallel approaches. That is, IDAs aim to help families and households save and CDAs aim to help children save. While the goals and even the policy designs of IDAs and CDAs are similar, the parallel approaches separate children's savings from their households' savings and family context when research finds that in fact their savings may be intertwined. Our findings indicate that young adults' savings is related to their households' dynamic net worth. Programs and policies like IDAs that are geared toward households may consider expanding to include children's and young adults' savings. Pairing CDAs with IDAs, for instance, may be an integrated policy approach that leverages households' savings to improve children's and young adults' own savings. This is not to say that net worth accumulation for households takes precedence over children's and young adults' savings.⁵ Rather,

⁵ Keep in mind that based on theory and research, the more direct route for improving children's and young adults' financial health may

this is to recognize that lower-income households typically have less net worth and may benefit from accumulation themselves. Children and young adults may benefit from sharing a common goal with their households. Children's and young adults' savings may be enhanced when their households simultaneously engage in net worth accumulation, perhaps improving financial health in the long run for everyone involved.

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Footnote 5 continued

be through extending savings accounts to them directly without households as intermediaries. Linking households' savings and children's and young adults' savings may be an alternate route to improving their financial health.

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