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The effects of health, family, and altruism on retirement savings

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Abstract

Using data from the Panel Study of Income Dynamics, this paper broadens the analysis of retirement savings by examining the effects of health, children, altruism, and family of origin attributes on the decision of whether to save for retirement and on how much retirement savings are accumulated. The presence of children in the household generally reduces the probability of saving for retirement. Poor personal or parental health diminishes retirement savings outcomes. Altruistic behavior generally presents as complementary to retirement savings, and the evidence suggests children of mothers who saved for retirement are more likely to do the same.

JEL classifications: C72; G51; G53

Keywords: Retirement savings; Family of origin; Health; Philanthropy

1. Introduction

Standard economic theory promulgates a (typically) representative agent who emerges into life, introspectively surveys his or her preferences and tolerances, estimates life expectancy and lifetime income patterns, forecasts a real rate of return on savings, sets up a Hamiltonian to solve for the optimal time path of consumption and then saves and spends accordingly. Of course, these assumptions are necessary to reduce enormously complex decisions into mathematically tractable problems so that economic life can be modeled and studied. But no economist believes that a person enters the world prepared to optimally

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make these decisions. Rather, consumption smoothing is a learned behavior, formed and shaped by the people and circumstances surrounding us. Given the observed lack of savings altogether by some agents, one must wonder if some people ever learn this behavior at all.

This paper seeks to examine some of those forces that shape our retirement savings behavior. Specifically, we will examine the effects that health, progeny, altruism, and learning from one's family of origin might have on retirement savings decisions. Data for our consideration will be taken from the Panel Study of Income Dynamics (PSID). While this data set is not as specific to retirement savings as another survey, it allows us to observe in a broader sphere of circumspection the variables surrounding the retirement decision and has been used at times to study the economics of retirement. See, for example, Bernheim et al. (2001).

2. Literature review

A rich body of literature covers a broad range of retirement savings topics, several relevant to our tasks. We start by recalling that the maturation of the Defined Contribution plan has significantly altered the savings landscape. While our standard consumption smoothing models do not differentiate savings accumulated in a retirement plan from savings accumulated elsewhere, there is little empirical doubt that the increasing replacement of the Defined Benefit Pension Plan by the Defined Contribution Plan is affecting the way American laborers save for retirement. Wise (2007) noted that 401(k) plans had not existed for a full working career of those then retiring and the full impact of this change could not yet be anticipated. Indeed, those who were joining the workforce in their early 20s when Congress created Section 401(k) through the Revenue Act of 1978 are just now entering the traditional retirement years. Still, studies have emerged that shed some light on where we are and where we seem to be headed.

Whether the existence of IRAs and 401(k)'s has increased the overall level of savings has been significantly debated with some concluding they have (Poterba et al., 1996) and others finding evidence to the contrary (Engen et al., 1996). The question put on a finer point would be how these Defined Contribution structures anticipated outcomes compare with those expected to obtain in a Defined Benefit Plan. Some evidence suggests that the Defined Contribution outcome is likely to be preferred in all but the lowest decile of earnings. The reason for this outcome lies in the fact that stock market returns, so critical to the Defined Contribution outcome, are largely uncorrelated to any given worker's unique circumstances so a worker is likely to experience highs that counterbalance the lows during the working career. Conversely, Define Benefit plan outcomes are more determined by one's level of income at career end, a metric that is subject to substantial risk. Thus, conversely, to some popular notions, the study suggests that the Defined Contribution outcome is generally preferable to the Defined Benefit outcome (Samwick & Skinner, 2004).

Within the 401(k) realm, we observe the positive correlation of participation and savings with income, age, education, and job tenure (Munnell et al., 2000). These outcomes are intuitive as we would expect the first variable to be positively correlated with the others and

income itself to be positively correlated with participation and savings. A caveat is in order, though. The literature indicates that a significant number of workers at the lowest decile of pay simply do not save at all, running counter to our standard economic predictions. Why would a person even on a very meager wage not opt to smooth consumption by saving at least a small portion of their income? Anecdotal evidence suggests a variety of reasons, including the notion that they feel too poor to save, they plan to work until they die, or they expect support from other sources. The latter idea will be briefly explored later in the essay.

Research has also shown that plan design plays an important role in retirement saving and investing outcomes among plan participants, though the nature of the specific conclusions must be carefully unpacked. According to one study, the presence of a matching contribution seems a crucial factor influencing the contribution decision, but the amount of the matching contribution is statistically insignificant (Munnell et al., 2000). The same study summarizes other research which demonstrates that a very high rate of the match is negatively correlated to the amount a participant saves in the plan, perhaps suggesting that the income effect dominates the substitution effect. In essence, the participants are acting as if they have pre-determined what overall percentage of income they wish to have contributed to the plan and a generous employer match crowds out their own contributions.

The notion that the presence of a matching contribution has a significant effect on plan participation is not without debate. Choi et al. find that, after controlling for the liquidity and investment constraints embedded within the plan designs, the presence of a match only enticed 10% of the eligible employees to contribute to the plan. Workers effectively forfeit 50% of the matching contribution that is available to them by failing to contribute up to the match rate. The study suggests that a matching contribution to incent participation is a relatively weak instrument. Indeed, it sometimes appears as if "at any point in time employees are likely to do whatever requires the least current effort" (Choi et al., 2001), deeply implicating plan design decisions (Choi et al., 2004). Stronger measures such as an Automatic Enrollment (Mitchell et al., 2007) or fresh start nudge (Beshears et al., 2021) seem more critical to obtaining optimal savings outcomes. Such behavioral inertia toward an intuitive path of least resistance might extend to the investment decision as well (Brown et al., 2007).

Thus, it is no surprise that strong evidence has emerged that Automatic Enrollment, a levering of behavioral inertia, significantly affects savings outcomes in 401(k) plans. Before the advent of this technique, the default election of each participant was deemed to be a deferral of nothing into the plan until the plan-eligible participant signed a deferral agreement electing some positive amount to be saved. Automatic Enrollment implicitly assumes that such an option is not welfare-maximizing and makes the default savings percentage some positive number (say 3%). Thus, the election to defer to the plan becomes essentially a negative election. Only by making an affirmative election to the contrary can the participant move to another rate of deferral, including the formerly ubiquitous 0% election. Early research demonstrated an escalation in participation of 48 percentage points for new hires under automatic enrollment (Madrian & Shea, 2000). Follow-up research reiterated the drastic increase in participation and revealed that between 65% and 87% of new plan participants "elected" the default rate defined under the plan (Choi et al., 2001). Even after controlling for matching contributions, the efficacy of Automatic Enrollment appears robust (Beshears et al., 2007). Enrollment processes that seek to simplify the contribution and investment election

decision-making process have been shown to increase participation (Choi et al., 2006) though not to the same degree as through the mechanism of Automatic Enrollment (Beshears et al., 2007), and the extent to which simplification is effective in improving outcomes is still up for debate (Cardella et al., 2021).

These findings are telling and somewhat discombobulating to standard economic theory. Before this research, economists could simply argue that many non-savers had very large discount rates on their future utilities and affirmatively elected not to save, even in full knowledge of the future implications of such non-savings. A more moderate view would have held that utility discounting is dynamic and that participants would later regret their earlier non-savings decision. However, in either version of the narrative, participants were held as rational thinkers. Research on automatic enrollment introduces the notion that participants might not be thinking at all, begging the question of the importance of financial literacy in retirement savings outcomes.

A large body of literature examines the impact of financial literacy on financial decision making, with a subset of that literature exploring how we learn to save and invest. Not surprisingly, some of that learning emerges from our own experiences (Choi et al., 2009) and education, though not necessarily in financial literacy per se, plays a key role in determining financial outcomes (Cole et al., 2014). Some data suggests that children learn general savings behavior from their parents, particularly when the children have received little financial training elsewhere (Tang & Peter, 2015), though individual behavioral traits of the children seem to ultimately prove more critical than parental training (Barboza et al., 2021). A Probit analysis of intergenerational asset holdings finds a significant correlation between bank account and stock holdings between parents and children and that the correlation is more than that which can be explained by intergenerational transfers (Chiteji & Stafford, 2000). Using the same Panel Study of Income Dynamics (PSID) data, Charles and Hurst find persistence in intergenerational wealth that also transcends mere income and education measures. Parents and children tend to hold similar assets, even after controlling for risk tolerance variables. They suggest that the explanation lies in the idea of children learning about financial market participation from their parents (Charles & Hurst, 2002).

While we tend to perceive the flow of knowledge, behavioral traits, and economic outcomes like income volatility (Shore, 2011) as passing directionally from parents to children, the advent of children in a household indubitably changes that household's economic behavior. For example, Love (2010) finds the number of children living in a household reduces the share of risky assets in the household's portfolio. We will attempt to observe familial effects on retirement savings from both directions—the modeled behavior of the saver's parents and the presence of children in the saver's household. We will also add variables representing charitable giving and health status to test the potential effects of altruism and health on retirement savings decisions.

2.1. PSID data

Our dataset is drawn from the University of Michigan's Panel Study of Income Dynamics. Periodically, this study includes a special module to gather general wealth

information, including retirement savings data. This paper analyzes data from the 1989 and 2019 waves that have some detailed pension-related data points associated. The purpose of using PSID data instead of a dataset more keenly focused on retirement savings is to enable an analysis of factors beyond those typically encompassed in surveys specific to retirement and to analyze intergenerational effects. By using the PSID data, we can observe the retirement savings behavior of parents in 1989 and compare it to that of their adult children in 2019.

Our first set of observations, however, will not yet incorporate intergenerational effects and will simply focus on data from the 2019 wave. The reason for this is straightforward—by doing so we can work with a larger sample size. The analysis throughout will focus on heads of households and will exclude those over the age of 67. Once we begin analyzing intergenerational effects, we will only be able to include 2019 observations for those heads of households who are children of a head of household responding to the 1989 wave, reducing the number of observations with which we can work. On a smaller scale, even working within the 2019 wave itself, our sample size will vary from one exercise to the next depending on whether the participant elected to answer specific questions at hand. For example, participants who responded that they were covered by a pension plan at work but answered that they did not know how much money they had in the plan would be counted in our Probit analysis (as saving for retirement) but not in our Ordinary Least Squares (OLS) regression in which we analyze accumulation.

We will examine retirement plan participation in two ways. In the simplest form, we will simply observe whether the household is actively saving for retirement. We will not differentiate between saving by the head of household or by the spouse—saving by either or both are equally valid. The presence of a positive IRA or other retirement plan balance, or the contribution to a retirement account within the past five years will result in a household being classified as saving for retirement. Otherwise, the household is coded as not saving for retirement. Armed with this binary classification, we can analyze the data with a standard Probit, according to the equation:

$$\text{Prob}\left(\text{Saving for Retirement } 1\right) = \Phi\left(X_x \frac{\beta}{\sigma}\right) \tag{1}$$

In Eq. (1), $X\chi$ is our vector of independent variables explaining the decision of whether to save for retirement, exclusive of the family of origin effects. Later, we will simply modify Eq. (1) such that:

$$\text{Prob}\left(\text{Saving for Retirement } 1\right) = \Phi\left(X_i \frac{\beta}{\sigma}\right) \tag{2}$$

In Eq. (2), Xi is our vector of independent variables explaining the decision to save for retirement, inclusive of the family of origin effects. Descriptive statistics of independent variables are found in Table 1.

Table 1 Descriptive statistics of PSID data (author's calculations)

	Mean	*N*	Min	Max	*SD*
Dependent variables (2019)					
Saving for retirement	0.46	8,404	0	1	0.50
Retirement savings	$61,130	7,881	0	$4,700,000	$226,971
Independent variables (2019)					
Age	42.37	8,404	31	66	10.29
Income	$80,048	8,404	−$267,900	$2,125,100	$91,002
Education	13.43	8,310	0	17	2.55
Male	0.68	8,404	0	1	0.47
Married	0.51	8,404	0	1	0.50
Health status	2.55	8,382	1	5	1.03
Children	0.89	8,404	0	10	1.23
Minority	0.48	8,328	0	1	0.50
Lived with parents	0.65	8,262	0	1	0.48
Union member	0.09	8,404	0	1	0.29
Health insurance	0.91	8,348	0	1	0.29
Religious $	$602	8,344	0	$62,000	$2,521
Combo $	$78	8,373	0	$20,000	$526
Needy $	$96	8,344	0	$30,000	$636
Health $	$32	8,383	0	$15,000	$287
Education $	$37	8,391	0	$15,000	$356
Youth $	$17	8,388	0	$6,000	$176
Cultural $	$15	8,398	0	$30,000	$354
Community $	$6	8,395	0	$5,000	$85
Environment $	$11	8,395	0	$5,000	$106
Peace $	$10	8,390	0	$10,000	$150
Other $	$31	8,395	0	$32,675	$519
Independent variables (1989 family of origin)					
Head interactive	$19,773	3,713	0	$1,412,200	$48,616
Spouse interactive	$10,053	3,713	0	$465,080	$24,953
Health of head	2.49	3,713	1	5	1.12
Parent income	$35,028	3,713	1	$1,412,200	$48,654
Head education	4.70	3,713	1	9	1.83
Spouse work	0.76	3,713	0	1	0.43

Note. PSID = Panel Study of Income Dynamics.

The second way that we will observe retirement plan savings is cardinal in nature. Each household is asked what amount it has invested in an IRA or other annuity and how much it has in its retirement account. We will add these two together as the measure of a household's designated retirement savings and use OLS regression to analyze it according to the standard form:

$$y = X_x\beta + \upsilon \tag{3}$$

Here, y is the dollar amount of the household's retirement savings and X_x is the vector of explanatory variables, exclusive of family of origin effects. As with the Probit analysis, we will then estimate:

$$y = X_i\beta + \upsilon \tag{4}$$

In Eq. (4), we are simply adding additional variables to the OLS regression so that X_i includes all independent variables included in X_x plus the family of origin variables at the bottom of Table 1.

Clearly, the data we analyzed in the Probit analysis, actively saving for requirement, is a necessary condition for the actual accumulation of retirement savings and our evaluation thereof. The accumulated amount, however, is a function of many more variables, some of which we can analyze directly or indirectly with PSID data (like income and age) and others (like risk tolerance) that lie beyond the scope of our analysis. Still, our variables of interest will also prove salient in this second type of analysis and will be discussed below.

3. Why doesn't everyone save for retirement?

3.1. The effects of health

While much research and the popular press demonstrate a good deal of worry over the fact that many Americans simply do not save for retirement, it is useful to rehearse some rational reasons why a worker might choose the path of non-savings. Such theoretical reasons will inform our investigation. Perhaps the most intuitive reason for non-savings would be a state of health that is deemed insufficient for any significant post-retirement life expectancy. Why forego current consumption to fund a part of the life-cycle one does not expect to attain in meaningful measure? Of course, the PSID survey team is not so gauche as to ask whether the participant expects to live to see retirement. We must rely on a slightly weaker instrument—namely the revealed perception of participant health. The survey question allows the respondent to choose excellent, very good, good, fair, or poor health, with the ordinal Level 1 assigned to those describing themselves as having excellent health and Level 5 designated to those in poor health.

One might also wonder if the observation of parental health during childhood years might impact the retirement savings decision. A rational response to the observation of the poor health of one's parent would be to conclude that one's own life expectancy might be below average, thus, reducing the stock of financial capital needed to finance the retirement years. Fortuitously, we have in the 1989 PSID data the self-reported parental health assessment, on the same scale of 1–5, allowing us to test whether the observation of parental health might have a bearing on retirement savings decisions.

3.2. The effects of progeny

The presence of children in the household might also have a bearing on retirement planning decisions. Modern seminal work regarding intergenerational transfers was performed by Becker (1974) who assumed that altruism motivated these transfers. Later literature also explored the alternative motive that any intergenerational transfer proffered was done so with the expectation of getting the favor returned in the future (Cox et al., 1998) rather than more altruistic motives (Cigno, 1993). In many cultures throughout history, family expectations

included caring for those who could not care for themselves (see I Timothy 5:8 for an ancient dictum to provide for one's immediate family). Societal laws and mores are still such that those who will not provide for their own children are viewed dimly. Care for one's elderly parents, however, might generate a broader array of responses. While children have no means by which to care for themselves, aged parents have presumably had a working lifetime to accumulate retirement savings and, in many cases, a retirement benefit stream from a government-funded plan.

Most savings models simply focus on the rational choice of a purely introspective agent, but some studies invoke the tools of game theory to help systematize behavior that is otherwise difficult to rationally explain (Cigno, 1993). Appendix briefly presents a set of simple games between parents, their children, and the government. The games are presented in extensive form for visual clarity. In each case the parent can be alternatively viewed in one of two ways. In the more pejorative view, the parent is selfish and cares nothing for the welfare of his or her children. In the more forgiving view, the parent's expectation is that he or she will provide for both children and geriatric parents and that the children, in turn, might return the favor. For simplicity, we assume a sequential game of full information. A more realistic game might be one of the simultaneous moves with incomplete information on the payoffs of other players, but the game is styled simply to make some basic points.

In the initial game, parents move first, deciding whether to save for retirement. Children observe their parents' actions and then decide, if the parent has elected not to save, whether to effectively "bail" out the parent. The subgame perfect equilibrium, of course, depends on the child's altruism toward parents and the perception of the parents on that altruism.

A more interesting version of the game is sketched in Game 2, where the government also enters the picture. Given recent governmental intervention in the economy, it seems reasonable to postulate that the government might go into deeper deficit spending mode to enhance social security payouts to prevent rampant geriatric poverty among the aged who have failed to save for retirement. The government moves second and whether it decides to bail out the non-saving parent is a function of its own empathy versus the deadweight loss associated with a bailout. It is also a function of its belief about what the child as last mover will do. We reverse the order of child and government in Game 3 to demonstrate the advantage of priority when all payoffs are known. The altruistic second mover has the luxury of foregoing a costly bailout of the non-saving parent if it knows that the final mover will fund the mutually desired wealth transfer. And, of course, in all games the rational parent who expects to live to retirement will elect to save if it believes that there are no other players who will bail them out. A reasonable assumption on the coefficient δ (<1) ensures that the parent would rather save some now than to suffer or prematurely expire due to insufficient post-retirement resources.

Suppose parents believe that their children will help care for them in retirement and that these parents fit the mold described for our simple games. In that case, the parent will maximize lifetime utility by minimizing (or even eliminating) retirement savings during the working years. We have a theoretically interesting reason to include in our parameters the variable of how many children live with the head of household. From South Korea, we have empirical evidence showing crowding out by expanding pensions of intergenerational transfers to retired parents from their working-age children (Jung et al., 2016). In Thailand,

expectation of support from children reduces the probability of retirement savings (Witvorapong & Yoon, 2021). Indeed, cross-country analysis suggests, at least in countries without robust financial markets, children represent a *de facto* retirement savings (Galasso et al., 2009). We will examine whether a correlated phenomenon might be happening in the United States.

4. The effects of altruism

The familiar Edgeworth Box diagram demonstrating an agent's interior bliss point when said agent values the welfare of the other player is instructive when we consider the potential effect of altruism on the retirement savings decision. If there are agents within the economy who value the immediate welfare of others more than their own future welfare, we might expect altruistic behavior to crowd out savings toward future consumption. For example, consider an agent who wishes to maximize the present value of his lifetime welfare stream W which is based on some function U of that agent's own consumption C and an altruistic valuing of the consumption of others O all discounted at a homogenous time preference rate ρ. More formally, the agent wishes to maximize, subject to standard economic constraints:

$$W = \int \{U(C_t,\ O_t)\} e^{-\rho t} dt \tag{5}$$

$$with\ \frac{\partial W}{\partial C} > 0\ and\ \frac{\partial W}{\partial O} > 0$$

Depending on value of ρ and on the agent's relative preferences driving the U function to a specific form, some combination of one's own current surplus and another's current shortage will reduce (or possibly eliminate) the savings one would otherwise undertake.

The PSID dataset generously breaks down charitable giving into multiple categories that allow us to break down the effects of giving by type. In our list of variables in the tables at the end of the paper, we denote philanthropic giving with a dollar sign at the end of the variable. Thus, philanthropic variables being tested for significance range from Religious $ to Other $.

4.1. The effects of family of origin

We implicitly acknowledge that saving for retirement is a learned behavior and examine the possible effects of one's family of origin on the retirement savings decision and commensurate outcomes in the level of such savings obtained. Even with our largest sample of data, that which is exclusively from the 2019 survey, we have one variable giving insight into these potential effects—a binary variable indicating whether the respondent grew up in a household with both parents. At the cost of reducing sample size, we will more robustly

specify our model to include attributes of the 2019 respondent's parents from the PSID survey responses of those parents in 1989.

4.2. Other variables

Our analysis also includes the standard lineup of demographic variables along with a binary variable indicating whether the respondent lived with both parents during childhood. We add variables for income and education, and dummy variables indicating whether the respondent is a union member and whether the respondent's family is covered by health insurance. Summary statistics of our variables are listed in Table 1. We first see descriptive data on the two dependent variables—the binary variable in our Probit analysis which indicates whether the respondent is actively saving for retirement and the cardinal variable indicating the level of accumulated retirement savings. We next see descriptive data on the independent variables observed for the respondents in 2019. We finally see descriptive data for the responses of their parents to the PSID survey in 1989. The 1989 family of origin data elements include the ordinal measure of the health of the parental head of household, measures of that head's education (recorded on a slightly different ordinal scale in 1989 than in 2019), parental income, and whether the spouse (worded as "spouse" in the 1989 survey) was working. We also consider an interactive variable for each parent which is family income multiplied by a dummy variable indicating whether that parent is participating in a retirement plan. An affirmative response to survey questions concerning whether the head (and, in turn, spouse) is covered by a retirement plan or contributing to an IRA or annuity gives the binary variable a value of one. Otherwise, the binary multiplier of the interactive variable is zero. Given the wording of the 1989 survey, the Spouse would be the spouse of the respondent. We can gain some insight on whether the example of one parent might be more potentially influential than the other.

4.3. Analysis of results from 2019 data

Table 2 (probit) and Table 3 (OLS) show the results of the analysis of our 2019 data, with a more robust sample size. Table 2 can be interpreted as an analysis of the first step of the retirement decision—whether to actively save for retirement at all, while Table 3 analyzes the quantifiable result of the decision of, among other parameters, how much to save. In both cases, we have only one variable indicating the potential effect of one's family of origin, the binary variable telling whether one grew up in a household with both parents. Let us first consider the probit results of Table 2.

Much of the result comports with intuition. Income, age, education, marital status, union membership and the complementary benefits package of health insurance are all highly significant and take a positive algebraic sign on their coefficients. Disconcerting, and beyond the scope of this paper, is the negative coefficient on the Minority variable. Comporting with intuition is the statistically significant negative coefficient associated with health status—poorer health is associated with a lower probability of saving for retirement. More intriguingly, we observe the highly significant and negative coefficient associated with the number

Table 2 Probit analysis of 2019 PSID data (n = 7,994) Exclusive of the family of origin variables

Philanthropic contributions followed by "$"				
Dependent variable: Saving for retirement				
	Coefficient	SE	z	p-value
Constant	−4.60345	0.245827	−18.73	< .0001***
Income	5.83488e-06	3.34007e-07	17.47	< .0001***
Age	0.0653389	0.0101352	6.447	< .0001***
Age^2	−0.000736212	0.000114324	−6.440	< .0001***
Education	0.137487	0.00775512	17.73	< .0001***
Male	−0.0129764	0.0482848	−0.2687	.7881
Married	0.329825	0.0488800	6.748	< .0001***
Health status	−0.0771171	0.0170285	−4.529	< .0001***
Children	−0.0937214	0.0153356	−6.111	< .0001***
Minority	−0.282718	0.0345042	−8.194	< .0001***
Lived with parents	0.0994510	0.0356185	2.792	.0052***
Union member	0.622159	0.0569302	10.93	< .0001***
Health insurance	1.04121	0.0783915	13.28	< .0001***
Religious $	4.62806e-05	9.92698e-06	4.662	< .0001***
Combo $	4.58896e-05	4.86573e-05	0.9431	.3456
Needy $	9.18933e-07	3.36444e-05	0.02731	.9782
Health $	0.000280908	0.000143534	1.957	.0503*
Education $	−3.47601e-05	9.87521e-05	−0.3520	.7248
Youth $	−0.000292925	0.000116167	−2.522	.0117**
Cultural $	0.000323009	0.000195115	1.655	.0978*
Community $	−3.39467e-05	0.000353272	−0.09609	.9234
Environment $	0.00152810	0.000494932	3.087	.0020***
Peace $	0.000214843	0.000191108	1.124	.2609
Other $	7.58910e-06	3.94299e-05	0.1925	.8474

Mean dependent variable	0.462222	*SD* dependent variable	.498602
McFadden R^2	0.289363	Adjusted R^2	.285014
Log-likelihood	−3921.419	Akaike criterion	7890.839

Note. PSID = Panel Study of Income Dynamics. The number of cases "correctly predicted" = 6,176 (77.3%). Philanthropic donations followed by "$".
*p < .10, **p < .05, ***p < .01.

of children the respondent has. It seems the presence of children in a household makes it less likely that household will save for retirement, a position bolstered by the fact that of the statistically significant philanthropic variables, only donations toward youth causes take a negative coefficient. This could lend credence to the game-theoretic reasoning we have discussed. Parents might be looking to their children to help care for them during their retirement years. Conversely, it could be that parents believe they have only enough discretionary income to care for their children and that saving for retirement is something they will undertake once their children have matured.

Besides charitable contributions to organizations that support youth, all other philanthropic variables of statistical significance take a positive coefficient. This suggests altruistic behavior does not crowd out retirement savings. Rather, those who donate philanthropically, at least to organizations serving religious or environmental needs, are more likely to save for retirement. We also see in Table 2 the first glimpse of the effect of family of origin. While

Table 3 OLS Analysis of 2019 PSID data (n = 7,512) Exclusive of the family of origin variables

Philanthropic contributions followed by "$"				
Dependent variable: Retirement savings accumulated				
	Coefficient	*SE*	*t*-ratio	*p*-value
Constant	−122706	18039.4	−6.802	< .0001***
Income	0.827321	0.0335647	24.65	< .0001***
Age^2	35.3199	2.21022	15.98	< .0001***
Education	6521.88	1006.48	6.480	< .0001***
Male	6477.73	6719.82	0.9640	.3351
Married	−2189.18	6880.26	−0.3182	.7504
Health status	−10734.1	2353.69	−4.561	< .0001***
Children	−2830.25	2086.15	−1.357	.1749
Minority	−30057.6	4959.56	−6.061	< .0001***
Lived with parents	2996.90	5036.12	0.5951	.5518
Union member	−20101.7	8227.37	−2.443	.0146**
Health insurance	−3422.28	8146.88	−0.4201	.6744
Religious $	2.10752	0.958022	2.200	.0278**
Combo $	10.7533	4.88625	2.201	.0278**
Needy $	9.79702	4.16270	2.354	.0186**
Health $	21.3235	8.58277	2.484	.0130**
Education $	−7.89183	7.32756	−1.077	.2815
Youth $	−27.0763	13.7150	−1.974	.0484**
Cultural $	17.2087	6.19687	2.777	.0055***
Community $	49.3573	28.9072	1.707	.0878*
Environment $	174.036	21.6076	8.054	< .0001***
Peace $	32.6903	15.6816	2.085	.0371**
Other $	11.9140	4.24040	2.810	.0050***

Mean dependent variable	62001.83	*SD* dependent variable	228074.5
Sum squared residuals	2.93e + 14	*SE* of regression	197896.9
R^2	0.249327	Adjusted R^2	.247122
F(22, 7489)	113.0630	p-value(F)	.000000
Log-likelihood	−102260.2	Akaike criterion	204566.3

Note. OLS = Ordinary Least Squares, PSID = Panel Study of Income Dynamics.
Philanthropic donations followed by "$".
*p < .10, **p < .05, ***p < .01.

in this iteration of the analysis we know nothing of parental behavior, we see that those who grew up with both parents in the household are more likely to save for retirement.

Next, consider in Table 3 our cardinal analysis of retirement savings accumulation as a function of the same variables analyzed from the binary analysis. Through OLS regression, we observe, when known, the total amount of retirement savings accumulation. One immediately notes several points of continuity between what we observed in the first stage of the retirement savings decision (whether to do so) and the amount which has been accumulated. As expected, income, age (or, in this case, its square) and education take positive coefficients in the OLS regression. Minority status continues to be both economically and statistically significant with a negative coefficient and poor health is associated with lower retirement account balances. Similarly, all statistically significant philanthropic behavior (note more of the various types of philanthropy are statistically significant here than in our Probit analysis)

except for charitable contributions for youth are positively correlated with retirement savings accumulation.

We also observe some points of departure from the Table 2 results. While union membership seems to make it more likely that the member will save for retirement, the amount of accumulated savings is negatively correlated with union membership. We might conjecture that union members are more likely to also enjoy some type of defined benefit pension plan coverage under which an actuarial equivalent of the current account balance is unreported by the survey respondent. Consequently, the results in Table 3 might tell us little about the likely retirement well-being of union versus non-union members.

Another interesting point of discontinuity is the sole variable giving insight into the effects of one's family of origin. While living with both parents while growing up leads to a greater likelihood of saving for retirement, it seems to have no bearing on the actual amount of retirement savings accumulation. Just so, while the number of children in the household can have an adverse effect on the decision of whether to save for retirement, the number of children is not a statistically significant indicator of how much those parents who decide to save for retirement actually accumulate.

4.4. Intergenerational analysis

As noted earlier, the inclusion of parental variables from the 1989 wave reduces our sample size since not all 2019 responding heads of households had a parental head of household who responded to the 1989 survey. Herein lies the weakness of this new step, but taking it allows us to specify the model more fully and analyze whether children seem to learn anything affecting their retirement savings behavior from their parents.

Following our earlier order of operations, we first observe the Probit analysis reported in Table 4. This analysis follows that described in Table 2, but with the family of origin variables added. Much remains unchanged among the variables earlier analyzed, but contributions to youth organizations are no longer of statistical significance in predicting whether a respondent saves for retirement. Family of origin variables here typically present as statistically insignificant, with the notable and algebraically positive exception of the interactive variable constructed as the product of family income and the mother's participation in a retirement plan. To control for the possibility that the effect might be a result simply of the mother's participation in the workforce, a typically necessary condition to also save for retirement, we include a binary variable indicating whether the mother worked outside the home but find that variable to be statistically insignificant. If family-of-origin behavior affects the decision of whether to save for retirement, that behavior seems more likely to be transmitted through the mother.

What happens when we analyze the amount of retirement balance accumulation with an OLS regression that includes a family of origin variable? Table 5 gives the answers. We should not be surprised to learn that income, age, education, union membership, and minority status, continue to display the same properties earlier discussed. However, we note that contributions to youth organizations now display statistical significance and a positive algebraic sign, joining the other statistically significant philanthropic variables as complements to retirement savings accumulation. And while a mother's retirement savings behavior might influence the initial retirement savings decision, it seems to have no significant bearing on

Table 4 Probit analysis of 2019 PSID data (n = 3,598) Inclusive of family of origin variables

Philanthropic contributions followed by "$"				
Family of origin variables in italics				
Dependent variable: Saving for retirement				
	Coefficient	*SE*	*z*	*p*-value
Constant	−4.73750	0.435574	−10.88	< .0001***
Income	6.69183e-06	5.57630e-07	12.00	< .0001***
Age	0.0725972	0.0169832	4.275	< .0001***
Age^2	−0.000837659	0.000187176	−4.475	< .0001***
Education	0.138385	0.0137482	10.07	< .0001***
Male	−0.0206323	0.0641102	−0.3218	.7476
Married	0.287069	0.0713396	4.024	< .0001***
Health status	−0.0882530	0.0262294	−3.365	.0008***
Children	−0.0675705	0.0252273	−2.678	.0074***
Minority	−0.297096	0.0564493	−5.263	< .0001***
Lived with parents	0.147792	0.0580016	2.548	.0108**
Union member	0.672718	0.0880006	7.644	< .0001***
Health insurance	0.900498	0.107364	8.387	< .0001***
Religious $	3.38554e-05	1.44712e-05	2.340	.0193**
Combo $	2.46305e-05	7.09484e-05	0.3472	.7285
Needy $	−5.62748e-06	5.15755e-05	−0.1091	.9131
Health $	0.000536065	0.000289928	1.849	.0645*
Education $	−0.000109256	0.000156249	−0.6992	.4844
Youth $	−0.000182149	0.000187711	−0.9704	.3319
Cultural $	0.000385624	0.000285471	1.351	.1767
Community $	0.00154095	0.000992411	1.553	.1205
Environment $	0.00184249	0.000837875	2.199	.0279**
Peace $	0.000478458	0.000522544	0.9156	.3599
Other $	8.44776e-05	9.69104e-05	0.8717	.3834
Head interactive	−6.77236e-07	1.21394e-06	−0.5579	.5769
Spouse interactive	2.43506e-06	1.21300e-06	2.007	.0447**
Health head	0.00680264	0.0251455	0.2705	.7868
Parent income	1.20853e-06	1.33266e-06	0.9069	.3645
Parent education	0.0151172	0.0164922	0.9166	.3593
Spouse work	−0.0300312	0.0608267	−0.4937	.6215

Mean dependent variable	0.469983	*SD* dependent variable	.499168
McFadden R^2	0.310560	Adjusted R^2	.298500
Log-likelihood	−1714.952	Akaike criterion	3489.903

Note. OLS = Ordinary Least Squares, PSID = Panel Study of Income Dynamics. Number of cases "correctly predicted" = 2,810 (78.1%).

Philanthropic donations followed by "$".

*p < .10, **p < .05, ***p < .01.

the ultimate balances obtained within retirement accounts. The most interesting difference we see is the effect of parental health. Not only is the health status of the parental head negatively correlated with retirement savings accumulation, but it also presents as highly significant while the health of the saver himself or herself is now displaced from statistical significance. This data suggests that retirement savers might be looking at parental health over their own health as a better predictor of the savers' longevity and the commensurate magnitude of retirement savings need.

Table 5 OLS analysis of 2019 PSID data (n = 3,411) Inclusive of family of origin variables

Philanthropic contributions followed by "$"				
Family of origin variables in italics				
Dependent variable: Retirement savings accumulated				
	Coefficient	*SE*	*t*-ratio	*p*-value
Constant	−136051	33972.7	−4.005	< .0001***
Income	1.06365	0.0566082	18.79	< .0001***
Age^2	42.9840	3.80438	11.30	< .0001***
Education	5708.48	1983.25	2.878	.0040***
Male	6982.38	9541.63	0.7318	.4644
Married	892.960	10620.2	0.08408	.9330
Health status	−5610.92	3834.08	−1.463	.1434
Children	−1362.58	3640.49	−0.3743	.7082
Minority	−20873.7	8502.90	−2.455	.0141**
Lived with parents	−1444.96	8468.30	−0.1706	.8645
Union member	−28366.0	13315.1	−2.130	.0332**
Health insurance	−12515.5	12629.5	−0.9910	.3218
Religious $	0.696535	1.58741	0.4388	.6608
Combo $	−5.24681	8.08576	−0.6489	.5165
Needy $	29.1985	6.99521	4.174	< .0001***
Health $	77.2639	21.7333	3.555	.0004***
Education $	17.5444	11.1140	1.579	.1145
Youth $	90.1074	25.4434	3.541	.0004***
Cultural $	5.63254	6.82375	0.8254	.4092
Community $	173.802	47.0682	3.693	.0002***
Environment $	214.067	27.4320	7.804	< .0001***
Peace $	−18.7385	36.7719	−0.5096	.6104
Other $	38.6322	10.6156	3.639	.0003***
Head interactive	−0.0702475	0.161830	−0.4341	.6643
Spouse interactive	−0.131690	0.156531	−0.8413	.4002
Health of head	−12924.1	3713.55	−3.480	.0005***
Parent income	0.0520071	0.172694	0.3012	.7633
Head education	2996.05	2416.05	1.240	.2150

Mean dependent variable	70064.03	*SD* dependent variable	256521.9
Sum squared residuals	1.51e + 14	*SE* of regression	211289.5
R^2	0.326939	Adjusted R^2	.321567
F(27, 3383)	60.86260	p-value(F)	1.7e-266
Log-likelihood	−46648.16	Akaike criterion	93352.32

Note. OLS = Ordinary Least Squares, PSID = Panel Study of Income Dynamics.
Philanthropic donations followed by "$".
*p < .10, **p < .05, ***p < .01.

5. Practical implications for financial planners

As the role of financial advisors evolves and expands (Sommer et al., 2022), client conversations should be handled with concomitantly evolving prudence and tact. Health, whether parental or personal, apparently matters to many savers and the perception of bad health can present as a barrier to saving for retirement. The skilled advisor, rather than relying simply on averages or mortality tables, might ask gentle questions about whether those

national averages seem right for the client and, if not, why not. The answer to such questions might minimize the need to save for retirement. Conversely, the planner might appropriately nudge into salubrious financial action a non-saver who otherwise (perhaps falsely) assumes a premature death will fully obviate the need for retirement savings. Without a helpful nudge, such a client might experience the ironic joy of serendipitous life accompanied by the regret of having underfinanced it.

Family can matter as well. The skilled planner might consider asking what their clients learned about saving from their parents, leveraging all helpful knowledge previously gained, and filling in the apparent gaps. More importantly, financial advisors can be keenly alert to the possibility that the presence of children in the household might be delaying the client's saving for retirement. Again, such action could be rational if the family has a sound history of intergenerational care that is inculcated into each successive generation. Perhaps more likely, the conversation will provide an opportunity to educate the client about the time value of money and the crucial importance of saving early.

On a more relieving note, if an advisor worries that altruistic behavior might crowd out a client's ability to save, that advisor can take some comfort in evidence that suggests altruistic giving and saving for retirement are typically complementary behaviors. An examination of the client's portfolio should quickly confirm whether the client fits this pattern or proves to be an exception, with further conversation needed.

6. Conclusion

While PSID data are not as specific to retirement savings as other surveys, its possession of intergenerational data and other elements that retirement-specific surveys might ignore make it worthy of exploration. Here is what the data suggests:

1. Health status plays a predictable role in the retirement savings decision. Those who enjoy good health are more likely to save for retirement. When analyzing the amount of retirement savings accumulated, the good health of the saver drives higher savings until we consider intergenerational variables. Once those variables are included, parental health is more significant than one's health in predicting the retirement savings level.
2. The number of children in the household is inversely correlated with the household's likelihood of saving for retirement, possibly suggesting some parents plan to draw some retirement support from their children. However, the number of children in the household is statistically insignificant as a predictor of the actual amount of retirement savings accumulation.
3. To the extent that it is statistically significant, most altruistic giving is complementary to retirement plan savings. Crowding-out effects are only observed with those contributions made to serve youth, and that effect disappears when adding intergenerational variables.
4. There is evidence that the decision to save for retirement is positively impacted by having lived with both parents growing up, and the mother's retirement savings behavior might positively influence the retirement savings decision of her children.

Appendix

Games parents, children, and governments might play

For the following games between players Parents, Children, and Government, let the following variables define the payoffs.

P = Present value of the Parent's lifetime utility resulting from the consumption that obtains from their own productivity.

Γ = Present value of utility enjoyed by the Government that obtains from knowing its elderly citizens are provided for correctly.

X = Present value of utility enjoyed by Children from knowing their Parents are provided for correctly.

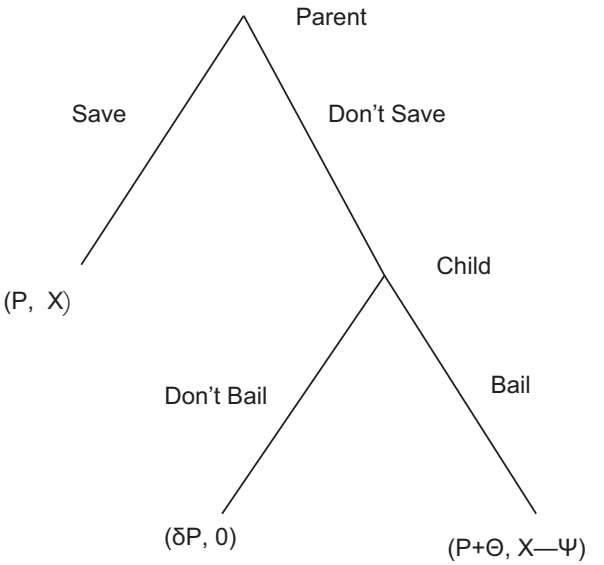
Θ = Present value of the utility Parent receives from a transfer from Child.

Ψ = Present value of the child's cost of providing Θ to the Parent.

G = Present value of utility Parent enjoys from a Government transfer.

DWL = Deadweight loss Government sustains to fund G.

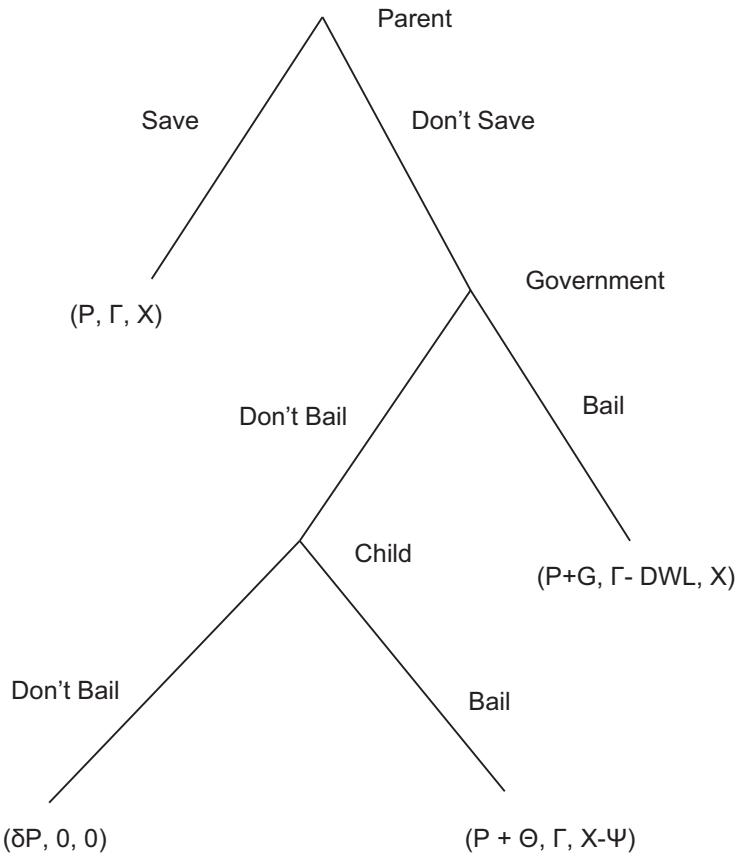
δ = Parental discount factor associated with running out of resources prematurely.



If $X > \Psi$, Subgame Perfect Equilibrium, or "SPE" = (Don't Save, Bail)

If $X < \Psi$, SPE = (Save, Don't Bail)

Parent, Child Game 1

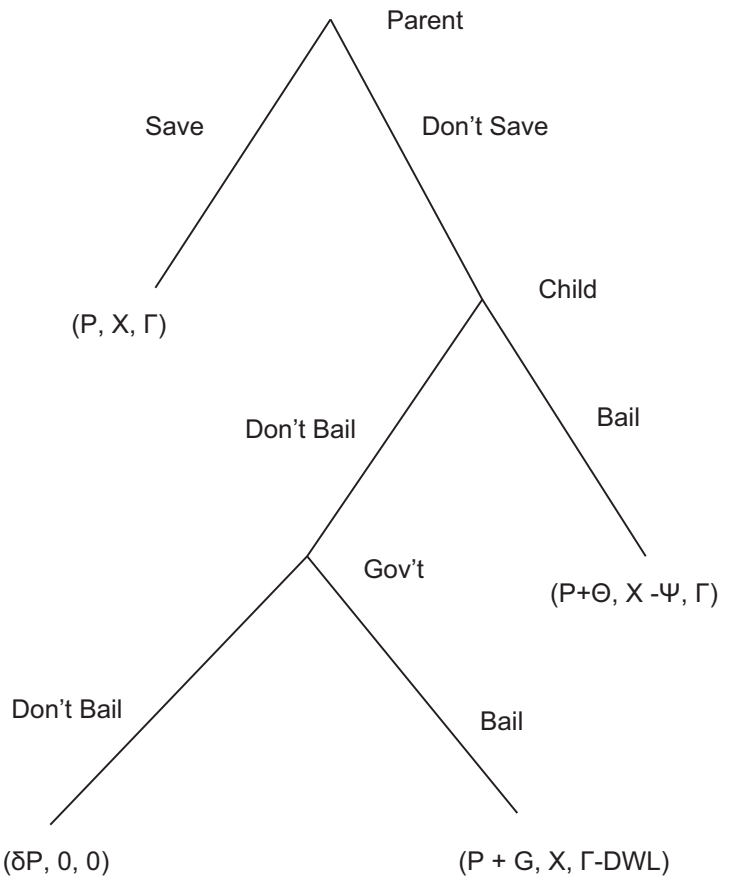


If $X > \Psi$, SPE = (Don't Save, Don't Bail, Bail)

If $X < \Psi$ and $\Gamma < DWL$, SPE = (Save, Don't Bail, Don't Bail)

If $X < \Psi$ and $\Gamma > DWL$, SPE = (Don't Save, Bail, Don't Bail)

Parent, Child, and Government Game 2



If $X > \Psi$, SPE = (Don't Save, Don't Bail, Bail)

If $X < \Psi$ and $\Gamma <$ DWL, SPE = (Save, Don't Bail, Don't Bail)

If $X < \Psi$ and $\Gamma >$ DWL, SPE = (Don't Save, Bail, Don't Bail)

Parent, Child, and Government Game 3

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