

Household Asset Allocation, Offspring Education, and the Sandwich Generation

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Abstract

This paper finds households with children and elderly dependents, the “Sandwich Generation,” significantly reduce both college savings and stockholding. Having any elderly dependents decreases the probability of both stockholding and college savings by twice as much as poor personal health. Hence, these results have critical implications as they demonstrate the importance and magnitude of links between the pension system, college financial aid, and wealth accumulation. Elderly dependents limiting parental funds for offspring education can decrease offspring long-term earnings potential via decreased human capital accumulation. Furthermore, decreased stock holdings can decrease long-term wealth accumulation and thus intergenerational wealth transfers. (JEL: G11)

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1 Introduction

Family size has always been a key factor affecting household investment decision making behavior (Browning, 1992). Yet, recently, household financial decision making issues have become even more acute for millions of Baby Boomers that are part of the “Sandwich Generation”. Households with children approaching college-age are now providing financial support for aging relatives. This combined with the continued rising cost of college tuition has meant that even more families struggle with decisions about financing the college education of their children and other portfolio choice decisions. Parker and Patten (2013) find that in 2005 around 12 percent of middle-aged adults were providing financial support to both an aging parent and a child and by 2012 that number had increased to 15 percent.

There is a substantial empirical literature documenting the household characteristics and traits that influence household investment behavior and college saving behavior. Empirical research shows that household investments increase with wealth and household head education and are sensitive to transaction costs (Haliassos & Bertaut, 1995; Bertaut & Haliassos, 1997; Bogan, 2008). Bertaut and Haliassos (1997) show that labor income risk and bequest motives affect stock market participation. Both physical (Rosen & Wu, 2004) and mental (Bogan & Fertig, 2013) health influence investment behavior. Further, Choudhury (2001) finds that minorities in the United States have lower financial market participation rates than white households.

Similarly, family income is shown to be an important factor in family financial planning for college education and college enrollment (Acemoglu & Pischke, 2001). Family household heads in good health with stable jobs are more likely to consider college for their children (DeVaney & Chien, 2002). Yilmazer (2008) shows that parents’ support for children’s college expenses decreases with the number of children. Lefebvre (2004) shows that characteristics such as financial capacity and education of parents are related to saving for postsecondary education. Characteristics other than income explained about half of the difference in savings between the highest income group and the lowest income group. Home ownership is strongly negatively related (since carrying a mortgage

can interfere with the capacity to save), even when the family income is relatively high. Gender of the parent and child, academic achievement of the child, marital status, education, and educational aspirations have more mixed and weaker effects.

This paper addresses a lacuna in the literature by empirically investigating household investment and college savings behavior with regard to family composition. Specifically, do elderly dependents affect the use of tax-advantaged accounts for college savings and/or other household asset holdings? I find evidence that having an elderly person in a household decreases the probability of risky asset holding by 0.129 (over twice as much as the household head having poor health) and decreases college savings account holding by 0.012 (twice as much as the household head having poor health). The fact that households reduce both risky asset holding and college savings to smooth consumption when providing care for aging relatives has critical implications for wealth accumulation and pension and college aid related policies.

2 Theoretical Framework

Similar to Yilmazer (2008), as the base framework for the analysis, I use a model of household consumption, investment, and savings behavior that incorporates the quality-quantity model of fertility. Individuals (parents) live for two periods. In the first period, a household i earns y_1^i , chooses to have n^i children, consumes c_1^i , saves s_1^i , and chooses how much of savings, s_1^i , to allocate to a risky asset (δ^i). In this model, the household also chooses how much of savings to allocate to a tax-advantaged education investment vehicle (ϕ^i) in the first period.

In the second period, with probability $0 \leq p \leq 1$, the household will incur elderly care-taking expenses \tilde{c} . In the second period, the return on the risk-free asset is r , the excess return on the risky asset is z , and the excess return on the tax-advantaged asset is v . The total second period return on all of the accumulated assets and second period wage income, y_2^i , is divided between consumption, c_2^i , paying for children's college expenses, en^i , where e is the amount of parental support for each

child's college expenses,¹ and any elderly care-taking expenses, \tilde{c} .

The household derives utility $U(\cdot)$ from consumption. The household's optimization problem, given y_t^i , is to choose consumption and asset investment to maximize the value of expected, time-separable utility.

$$\begin{aligned} \max_{c_1^i, \delta^i, \phi^i} E [\sum u(c_1^i) + pu(c_2^i - \tilde{c}) + (1-p)u(c_2^i)] \\ \text{s.t. } c_1^i + s_1^i \leq y_1^i \\ c_2^i + en \leq y_2^i + (1+r)s_1^i + \delta^i z^i + \phi^i v^i \end{aligned} \quad (1)$$

If we assume a log utility function, $u(c) = \ln(c)$, we can identify the following relationship from the first order conditions:

$$y_2 + s_1(1+r) + \delta z + \phi v - en = \tilde{c}(1-p) \quad (2)$$

From Equation (2), we can determine that risky asset holding decreases as the probability of elderly care-taking increases ($\frac{\partial \delta}{\partial p} < 0$) and education savings account holding decreases as the probability of elderly care-taking increases ($\frac{\partial \phi}{\partial p} < 0$). (Derivations available upon request.) Section 4 of this paper will focus on empirically examining how elderly care-taking responsibilities and other factors influence δ and ϕ .

3 Data

The primary data used for the empirical analysis come from the 2007-2009 panel data set from the Survey of Consumer Finances (SCF).² The large number of observations, scope of U.S. families surveyed, and the specific financial information collected, make this data set well-suited for this

¹For simplicity, parents' financial support of children's college expenses is assumed to be equal for all n children. The model does not include the effect of financial aid on college savings.

²The Survey of Consumer finances is a conducted by the Federal Reserve and collects detailed information on the finances of U.S. families. Generally the SCF surveys are cross-sectional surveys conducted every three years. However, respondents to the 2007 survey were re-interviewed in 2009.

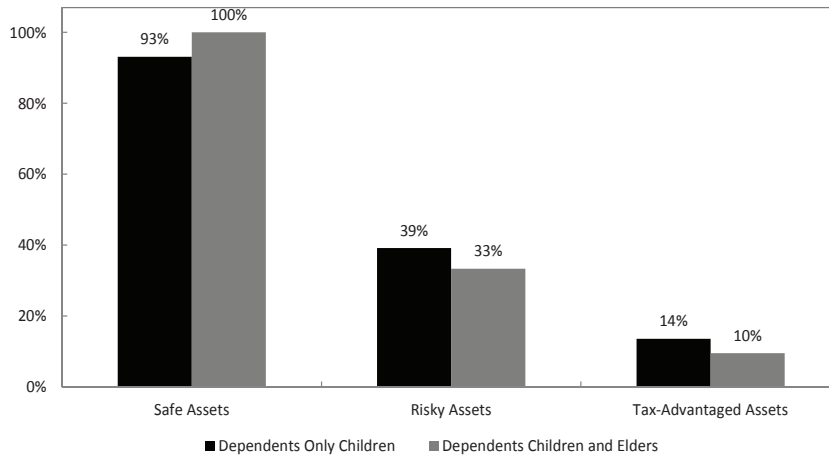
analysis. Moreover, the panel nature of the data set enables one to control for household specific effects that may influence any results.

The average age of respondents in the sample is 50 years old. 54 percent of the sample has a college degree, 80 percent of the respondents are white, and over 66 percent of the respondents are married. Median household income is \$70,000 and over 75 percent of the sample owns a home. In the sample, 94 percent of the households hold safe assets, 44 percent of the households have stock or mutual fund investments (risky assets), and 6 percent of the households have a tax-advantaged college savings account.

Over 1 percent of the households have dependent elderly individuals living in the home. For the analysis, co-residence will be used as a criteria to classify the sandwich generation. Using a co-residence criteria is an extremely conservative assumption that works against finding significant results by substantially decreasing the sandwich generation sample size. Most households that provide financial support to aging parents do so without co-residence. For example, Pierret (2006) finds in a sample of women from the National Longitudinal Survey that while one percent had both parents and children living with them, 9 percent of the sample provided support (greater than \$1,000 or 500 hours) for both an aging parent and a child. If the support definition is expanded to greater than \$200 or 100 hours, then over 33 percent of the sample can be classified as part of the sandwich generation.

There could be a selection concern in that the sample of sandwich generation households could be distinctly different from households with only children dependents. However, the subsample of households with both children and elderly dependents does not have significantly different household head ages, college graduates, percent with pensions, home owners, or heads in poor health. Although the difference is not statistically significant, the median annual household income for the sandwich generation subsample (\$84,000) is larger than the median annual household income for the subsample of households with no elderly dependents (\$78,000). There are some notable statistically significant differences. Households with elderly dependents are more likely to contain a married

Figure 1: Asset Classes Holdings by Household Type (2009)



coupled and are more likely to have an employed household head. Significantly more households with dependent elderly have anticipated college expenses (67 percent) compared to households with only children dependents (54 percent). Yet, Figure 1 shows that fewer of these households hold risky assets and fewer hold tax-advantaged college savings accounts.

4 Econometric Analysis and Results

The empirical analysis focuses on investigating how household characteristics influence risky asset holding and the use of tax-advantaged accounts for college savings compared to other types of investments. Specifically, I look at the effects of number of children, anticipated college expenses, and elderly care-taking on the probability of holding safe assets, risky assets, and tax-advantaged college savings accounts (the extensive margin).

I use univariate probit models in which the dependent variable is a binary variable for one of three investment types: safe assets (transaction accounts, certificates of deposit (CDs), and bonds), risky assets (stocks and mutual funds), or tax-advantage assets (529 plans and Coverdell Educational Savings Accounts).³ The key independent variables of interest are number of children,

³A 529 plan is a tax-advantaged investment plan designed to encourage saving for the future higher education expenses of a designated beneficiary. Contributions are not deductible on federal tax returns but investments grow tax-deferred and all withdrawals from 529 plans for qualified education expense are exempt from federal income tax.

an anticipated college expenses dummy variable,⁴ and a have dependent elderly persons living in the household dummy variable.

The other control variables are ones that previously have been shown to influence household investment and college savings behavior: log of household income (Bertaut, 1998), total household size (Keister, 2003), a respondent married dummy variable (DeVaney & Chien, 2002), a respondent age variable (Yilmazer, 2008), a respondent college graduate dummy variable (Lee & Hanna, 1995; Lefebvre, 2004), a respondent employed dummy variable, a respondent managerial or professional occupation dummy variable (Bogan, 2008), a has a pension dummy variable (Babiarz & Yilmazer, 2001; Reyes, 2008), a home owner dummy variable (Babiarz & Yilmazer, 2001; Lefebvre, 2004), a poor health dummy variable (Rosen & Wu, 2004; DeVaney & Chien, 2002), a has health insurance dummy variable (Bogan & Fertig, 2013), a year 2009 dummy variable, and race dummy variables (Bogan, 2013). The model specification is:

$$OWNASSET_{it} = \beta_0 + \sum_{k=1}^K \beta_{kt} X_{ikt} + \epsilon_{it}, \quad (3)$$

where X_{ikt} is the set of household characteristic variables.⁵ The standard errors in all regressions are adjusted for intra-cluster correlations.

Consistent with the literature (in results not shown), I find that parental age, parental education, home ownership, and parental health influence parental saving for offspring education. Both having household health insurance and having a managerial or professional occupation increase the probability of a household investing in safe assets, risky assets, and college savings accounts.

Table 1 shows the results for the key independent variables of interest. Households having an-

(529 plan contributions may be deductible on state tax returns under certain circumstances.) A Coverdell Education Savings Account (ESA) is an account created as an incentive to help parents and students save for education expenses. Contributions to an ESA are not deductible, but amounts deposited in the account grow tax free until distributed. The beneficiary will not owe tax on the distributions if they are less than a beneficiary's qualified education expenses at an eligible institution. This benefit applies to qualified higher education expenses as well as to qualified elementary and secondary education expenses.

⁴This variable is given a value of 1 if the respondent indicates that saving for their children's college education is a large anticipated expense in the next 5 to 10 years. The variable is set to 0 otherwise.

⁵A fixed effects model cannot be used due to sample size issues. Since the identification strategy is based upon changes in elderly care-taking responsibilities over time, the fixed effects model substantially decreases the already small sample size.

Table 1: **Household Characteristics and Investments (Key Marginal Effects)**

	Safe Assets	Risky Assets	Tax-Advantaged Assets
Number of Children	0.006 (0.006)	-0.141*** (0.057)	0.001 (0.005)
Anticipated College Expenses Dummy Variable	-0.001 (0.001)	0.036*** (0.009)	0.044*** (0.004)
Have Elderly in Household Dummy Variable	0.008* (0.003)	-0.129** (0.052)	-0.012** (0.004)
Observations	28,230	31,530	31,530

*** Indicates that differences are statistically significant at the 1% level.

** Indicates that differences are statistically significant at the 5% level.

*Indicates that differences are statistically significant at the 10% level.

Standard errors are adjusted for intra-cluster correlations.

anticipated college expenses increases the probability of investing in risky assets (significant at the 1 percent level) and increases the probability of having a tax-advantaged college savings account (significant at the 1 percent level). Having an elderly person in the household increases the probability of a household holding safe assets (significant at the 10 percent level). In contrast, having an elderly person in the household decreases the probability of investing in risky assets by 0.129 (significant at the 5 percent level). This number is significant but also large relative to the mean value of risky asset holding, 0.441. Having an elderly person in the household decreases the probability of having an educational saving account by 0.012 (significant at the 5 percent level). This coefficient is twice as large in magnitude as being in poor personal health and is large relative to the mean value of educational savings account holding, 0.061. These results provide evidence that risky asset holding and college savings behavior are connected to household elderly care-taking responsibilities above the effects of a bigger household size.

These results are especially compelling given that the sandwich generation households in the sample are more likely to have anticipated college expenses, an employed household head, and be a married couple - all traits associated with a higher probability of risky asset holding and college savings. The significance levels of the results are also striking given the extremely conservative assumption for sandwich generation households.

5 Concluding Remarks

Specific aspects of family composition beyond household size have significant effects on household asset allocation and portfolio choice. While it has been shown that children influence household financial behaviors, elderly dependents also have a large and significant effect on household investment decision making. Elderly care-taking responsibilities significantly decrease risky asset holding as well as household savings for offspring education. In terms of the magnitude of the effect on college savings, having an elderly person in the household affects the probability of investing funds for offspring education twice as much as having poor personal health. Similarly having elderly dependents reduces risky asset holding more than twice as much as having poor health. This suggests that households reduce offspring educational investment and risky asset investments in order to smooth consumption.

These results indicate potential negative effects on economic mobility across generations through two channels. Limited parental funds for education can decrease human capital accumulation of offspring and correspondingly their long-term earnings potential. Furthermore, as risky asset holding is critical to long-term wealth accumulation, the decrease in risky asset holdings can have significant effects on wealth transfers across generations. These results have critical policy implications as they demonstrate important intergenerational links between the pension system, the college financial aid system, and wealth accumulation. The magnitude of the result implies that failures of Social Security and the current pension systems could negatively affect the educational attainment and wealth accumulation of subsequent generations in the United States. Furthermore, among those with at least one parent age 65 or older, Hispanics and blacks are much more likely than whites to financially assist a parent. Compared to 24 percent of whites, 65 percent of Hispanics and 40 percent of African Americans say they have provided financial support to a parent in the past 12 months (Parker & Patten, 2013). Thus, this is another factor that can contribute to racial economic disparities.

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