How Children with Disabilities Affect Household Investment Decisions

Vicki L. Bogan* and Jose M. Fernandez†

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Abstract

We analyze how children with mental disabilities influence parental portfolio allocation. We find that risky asset holding decreases among households with special needs children. However, conditional on participating in the market, households with special needs children invest a larger portion of their wealth in risky assets. As risky asset holding is a key component of wealth building, these findings have important implications for both policy and household wealth inequality.

Keywords: investments, stockholding, offspring, parental behavior, disabled children

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*The Charles H. Dyson School of Applied Economics and Management, Cornell University, 201K Warren Hall, Ithaca, NY 14853. Phone: 607-254-7219. E-mail: vlb23@cornell.edu.

†Department of Economics, University of Louisville, Louisville, KY. Phone: 502-852-4861. E-mail: jose.fernandez@louisville.edu

Child disability is a growing issue in the United States and more and more children are suffering from mental disabilities. A total of 13% to 20% of children living in the United States experience a mental disorder in a given year, and surveillance during 1994 through 2011 has shown the prevalence of these conditions to be increasing (Perou et al., 2013). While childhood disabilities related to physical health concerns have decreased relative to the early 2000s, disabilities due to neuro-developmental and mental health problems increased dramatically between 2001 and 2010. It is estimated that nearly six million children had a disability in 2010 - an increase of almost 1 million from the 2001 estimates (AMA, 2013).

As a result of these trends, mental disorders among children are becoming an increasingly important public health issue in the United States, with an estimated total annual cost of $247 billion (Perou et al., 2013). At the household level, Stabile and Allin (2012) estimate that the direct costs to families, the indirect costs through reduced family labor supply, the direct costs to disabled children as they age into the labor force, and the costs of safety net programs for children with disabilities total $30,500 a year per family with a disabled child (on average). In general, the severity of the child's condition is the most important predictor of economic costs, particularly in the form of foregone earnings or labor market opportunities, but also direct out-of-pocket expenditures. Powers (2001) finds the estimated impact of offspring disability on employment is similar to the effect of a woman's own failure to complete college or of adding an additional child under age 5 to the family. Cidav, Marcus, and Mandell (2012) find that on average, mothers of children with Autism Spectrum Disorder (ASD) earn 35% less than the mothers of children with another health limitation and 56% less than the mothers of children with no health limitation. Newacheck and McManus (1988) show that charges and out-of-pocket medical expenses were two to three times higher on average for disabled children compared with other children. Sharpe and Baker (2007) show, that for families with an autistic child, the likelihood of financial problems is positively associated with use of medical interventions, having unreimbursed medical or therapy expenses, and having relatively lower income. They also find many survey respondents forfeited future financial security and even experienced bankruptcy to provide therapy for a child with autism.

With regard to caring for children with disabilities, documented efficacy of early intervention heightens the intense pressure to use whatever means possible to secure needed therapy - including placing the family's financial future at risk. While parents can at times substitute their labor for that of a trained service provider, doing so usually precludes securing paid employment; resulting in lower family income that must cover rising expenses (Sharpe & Baker, 2007).

Beyond labor force participation decisions, other household financial decisions may be affected by children with mental disabilities. It may be the case that children with disabilities directly affect household investment decisions in a manner that curtails household wealth accumulation. Yet, little is still known about the other financial effects of children's health problems, specifically child mental disability issues on household portfolio choice decisions.

In this paper, we attempt to add to this area of research by analyzing how children with mental disabilities influence household investment decisions. We find that households with at least one special needs child generally have a decreased probability of holding risky assets and even safe assets. However, those households with at least one special needs child that do hold risky assets have a larger percentage of their financial wealth in risky assets.

1 Data

To empirically evaluate the question of whether children with mental disabilities influence household investment decisions, we use U.S. data from the biennial Panel Survey of Income Dynamics (PSID). This nationally representative panel survey contains questions on income, assets, earnings, occupation, marital status, family structure, child characteristics, and educational attainment.[1]

For child information, we utilize the 1997, 2002, and 2007 waves of the Child Development Supplement (CDS) of the PSID, which contains detailed information on the health status of 3,563 individual children in 2,380 distinct households. For our analysis, we define a child as having

[1]The PSID is produced and distributed by the Institute for Social Research, Survey Research Center, University of Michigan, Ann Arbor, Michigan.

a mental disorder if they are diagnosed with at least one of the following conditions: Autism, Lead Poisoning, Mental Retardation, Pervasive Developmental Delay, or Speech Language Delay/Disorders. We link each child to the head of household. One draw back of these data is that we only observe mental health information for children in the CDS sample. Thus, we do not observe the mental health conditions of all children in the household.[2] For household level financial data, we use seven PSID waves from 1999 through 2011. We aggregate the data to the household level, as stock holding and other financial variables are measured at the household level.

Within our sample, there are some characteristics in which families with and without special needs children significantly differ at the 5% level. Families with special needs children are more likely to have other children, be married, be unemployed, and have less education. Table 1 presents financial and asset holding information for the households in our sample. In the raw data, we find a smaller percentage of households with special needs children hold risky assets (and safe assets) compared to households without special needs children (risky asset holding difference statistically significant at the 10% level). Table 1 also shows that families with special needs children have more household wealth (difference statistically significant at the 1% level).

2 Econometric Analysis and Results

Households that have children with disabilities can have elevated health care costs, unavailable or high-cost of child care, reduced family labor supply, and adult child care costs. These different household expense and income profiles may induce different household investment decisions. Thus, this paper posits that having children with disabilities may affect household portfolio decisions with respect to participation in specific asset markets as well as the intensity of participation in these markets. The empirical analyses below test these hypotheses.

To analyze the effect of offspring mental disabilities on the probability of holding a particular type of asset (the extensive margin), we use univariate models in which the dependent variable is

[2]This could cause our estimates to contain measurement error, if a child with a disability in not interviewed for the survey or children with disabilities are over-represented.

Table 1: **Household Financial Characteristics**

	Total Sample	Hholds w/no special special needs children	Hholds w/special needs children
Financial Assets Holding			
Percent Holding Risky Assets*	0.166	0.169	0.152
Percent with Bonds and Other Safe Assets	0.151	0.154	0.138
Percent with CDs and Transaction Accounts	0.720	0.722	0.711
Percent Home Owners	0.634	0.636	0.620
Pension Holding			
Percent with Defined Benefit Pension	0.164	0.164	0.160
Percent with Defined Contribution Pension	0.218	0.219	0.218
Percent with IRA	0.230	0.230	0.230
Asset Values			
Value of Risky Assets***	35,076	21,646	110,893
Total Value of Financial Assets	146,121	145,583	149,089
Risky Assets as a Percent of Total Financial Assets	0.048	0.047	0.052
Household Annual Income	82,400	82,274	83,109
Household Wealth (including equity)***	183,575	172,717	244,883
Household-Year Observations	12,177	10,331	1,846

*Difference significant at the 10% level. ***Difference significant at the 1% level.

a binary variable for asset (risky asset or safe asset) market participation, and the independent variables include household offspring characteristics and household demographic characteristics that have been previously identified as influencing investment behavior. We define risky assets as mutual fund ownership or stock ownership where stock ownership includes owning shares of stock in publicly held corporations or investment trusts.[3] We define safe assets as bonds, bond funds, cash value in a life insurance policy, a valuable collection for investment purposes, or rights in a trust or estate. Our baseline model specification is:

$$OWNASSET_{it} = \beta_0 + \beta_1 SpecialNeedsCHILD_{it} + \beta_k \bar{X}_{it} + \beta_h Z_{it} + \eta_t + \epsilon_{it} \quad (1)$$

where $OWNASSET_{it}$ is a binary variable holding the value of 1 when household (i) in year (t) has asset (risky or safe) holdings and zero otherwise. The variable of interest, $SpecialNeedsCHILD_{it}$, is a dummy variable with a value of 1 if a child with special needs is present in the household and zero otherwise. $\bar{X}_{it}$, is a matrix containing observed child characteristics.[4] Z_{it}, is a matrix

[3]Stock ownership does not include assets in IRA accounts, Keogh accounts, 401Ks or similar defined contribution pension plans.

[4]One child, two children, three children, and four or more children dummy variables; a dummy variable if household has a child under age 5; and a dummy variable indicating if parents expect at least one child to complete college.

of household control variables previously shown to be significant in explaining the probability of holding stock (risky assets) in the U.S. (Bertaut, 1998).[5]

Using the pooled PSID data, we apply a random effects linear probability model (LPM) to equation (1) to control for unobservable heterogeneity between households.[6] The standard errors in all regressions are adjusted for intra-cluster correlations at the household level. From Table 2, we see that having a child with a special need significantly decreases the probability of holding both risky and safe assets. Households with special needs children are 2-3 percentage points less likely to have risky asset holdings or safe asset holdings. This effect is equivalent to the effect on risky asset holding of a one year reduction in education by the head of household, ceteris paribus. We also find households that have higher educational expectations of children are more likely to hold risky assets.

Next, we consider the intensive margin of asset market participation. For this analysis, the dependent variable is the value of asset (risky asset or safe asset) holdings as a percentage of household wealth. Initially, we consider random effects LPM and Tobit models. As the dependent variable is bounded between zero and unity, the Tobit model is widely used to estimate economic relationships when a large number of zeros are present.

We use the following specification to examine the intensive margin of asset market participation:

$$P_{it} = \beta_0 + \beta_1 SpecialNeedsCHILD_{it} + \beta_k \bar{X}_{it} + \beta_h Z_{it} + \eta_t + \epsilon_{it} \quad (2)$$

[5]These variables include family income, home ownership, a received an inheritance dummy variable, and head of household characteristics (pension holding, age, education, race, employment status, occupation type, marital status, and gender). Additionally, we control for the effects of information and transaction costs with a computer usage dummy (Bogan, 2008); the health effects on asset holding behavior with a health proxy that consists of the number of chronic health conditions of the household head (Bogan & Fertig, 2013; Rosen & Wu, 2004); and health costs with a has health insurance dummy variable. We control for aspects of the respondents' occupation or training that could lead to increased market participation with an employed in a managerial or professional occupation dummy variable, a work in a finance related field dummy variable, and an unemployed dummy variable. (The education, income, and voluntary contribution pension variables also serve to control for aspects of a respondent's occupation or training that could lead to increased asset market participation.) A set of regional dummy variables are used to control for unobserved location differences. (We do observe state of residents, but some states are sparsely sample leading to less precise estimates.) For each household, we also construct risk tolerance measures based on several risk tolerance questions in the 1996 Wave of the PSID to group households (Hryshko et al., 2011). Unobserved changes in national trends are captured by a set of year dummy variables, η_t.

[6]Using a LPM fixed effects model, we do obtain qualitative similar results. However, there is limited within household variation on the special needs variable and thus the fixed effects results are not significant.

where P_{it} is a variable between 0 and 1 that indicates the percent of financial wealth household (i) has invested in assets (risky assets or safe assets) in year (t). The variable of interest, $SpecialNeedsCHILD_{it}$, is a dummy variable with a value of 1 if a child with special needs is present in the household and zero otherwise. The remaining independent variables are identical to the ones used in equation (1).

The results of the LPM and Tobit models are presented in Table 3. These specifications show that educational expectations for children significantly increase the share of financial wealth devoted to risky assets. However, merely having a special needs child in the household does not significantly affect risky or safe assets as a share of financial wealth.

The LPM and Tobit models that we initially use to examine risky asset market participation do have limitations.[7] We therefore also employ a hurdle model. The hurdle model is a two part model, which first considers participation in the market and then conditional on participation, estimates the level effect of household characteristics on the intensive margin of market participation. The hurdle model allows household characteristics to separately affect the participation decision and the amount invested. The results from our hurdle model are presented in Table 4. As the hurdle specification estimates indicate, the Tobit model biases our estimates toward zero. Consistent with our previous extensive margin risky asset results, participation in risky asset markets is lower among households with special needs children (by over 10 percentage points). However, conditional on participating in the market, households with special needs children invest a larger part of their wealth in risky assets.

One limitation of using the CDS is that not all children in the household are captured in the survey. At most, two children from each household are interviewed. Therefore, our estimates may

[7]The Tobit model accounts for the mass of zeros for households who do not participate in the market. However, Tobit assumes stock holding are equal to zero or less when the dependent variable is zero. Further, the Tobit model restricts the participation decision and intensity decision to be determined by a single mechanism. That is, for a continuous variable x_j, the partial effect of x_j on the participation decision $Pr(y > 0|x_j)$, and the intensity decision, $E(y|x_j, y > 0)$, must yield the same sign, as only one set of parameters β_j are estimated for both parts. The single mechanism restriction has been called into question with respect to the validity of using Tobit to measure decisions for financial portfolio choice (Cook et al., 2008).

Table 2: **Key Marginal Effects - Household Asset Holding**

	Risky Asset Holding		Safe Asset Holding	
Special Needs Child in Household	-0.0323***	-0.0293**	-0.0180*	-0.0200*
	(0.0111)	(0.0131)	(0.0106)	(0.0122)
Expected Education for HH Children	0.0232***	0.0160*	0.0103	0.0039
	(0.0073)	(0.0085)	(0.0080)	(0.0098)
Year FE	Yes	Yes	Yes	Yes
Region Dummies	Yes	Yes	Yes	Yes
Risk Controls	Yes	Yes	Yes	Yes
Computer User Control	No	Yes	No	Yes
Household-Year Observations	11,635	7,342	11,635	7,342

Marginal effects reported. Robust standard errors in parentheses. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 3: **Key Marginal Effects - Household Asset Holding as a Percent of Financial Assets**

	Risky Asset Holding		Safe Asset Holding	
	LPM	Tobit	LPM	Tobit
Special Needs Child in Household	0.0011	-0.0304	-0.0032	-0.0186
	(0.0048)	(0.0267)	(0.0022)	(0.0194)
Expected Education for HH Children	0.0041*	0.0766***	0.0026	0.0129
	(0.0025)	(0.0246)	(0.0019)	(0.0248)
Year FE	Yes	Yes	Yes	Yes
Region Dummies	Yes	Yes	Yes	Yes
Risk Controls	No	No	No	No
Computer User Control	No	No	No	No
Household-Year Observations	11,170	11,170	11,055	11,055

Marginal effects reported. Robust standard errors in parentheses. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 4: **Asset Market Participation - Hurdle Model Coefficients**

	Risky Assets		Safe Assets	
	Probit	OLS	Probit	OLS
Special Needs Child in Household	-0.1090**	0.0760***	-0.0215	-0.0213*
	(0.0525)	(0.0205)	(0.0469)	(0.0116)
Expected Education for HH Children	0.1806***	-0.0234	0.0392	0.0159
	(0.0493)	(0.0219)	(0.0412)	(0.0113)
Year FE	Yes	Yes	Yes	Yes
Region Dummies	Yes	Yes	Yes	Yes
Risk Controls	Yes	Yes	No	No
Computer User Control	No	No	No	No
Household-Year Observations	11,170	11,170	11,055	11,055

Robust standard errors in parentheses. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

contain measurement error, if a child with a disability is not interviewed for the survey or if children with disabilities are over-represented. As a robustness check, we perform additional analyses with a subsample of our data which contains only households with one child (n=3,332).[8] The marginal effects (not shown) from the hurdle model using the one-child household subsample indicate that having a special needs child decreases the probability of holding risky assets by 2.6 percentage points (p-value of 0.108). Also similar to our other results, those special needs one-child households that do hold risky assets, hold over 16 percent more risky assets as a percent of total financial wealth (p-value of 0.000).

3 Concluding Remarks

The cost of caring for a child with special needs can be significant. For chronic conditions, these costs of care can extend into adulthood. Special needs households face a tradeoff between investing in education/therapy today to increase future income potential for the child or investing in financial assets today to finance the future of the child as an adult. In this paper, we examine this issue using CDS data from the PSID. We find households that have children with special needs experience a reduction of up to 11 percentage points in the likelihood of holding risky assets. However, households with special needs children tend to invest more intensely (by over 7% of wealth) when they do participate in the stock market.

As risky asset holding is a key component of wealth building, these findings have important implications for both policy and household wealth inequality. Our results suggest that while risky asset market participation is an important vehicle to generate the much needed funds to support a special needs child, many households with special needs children are not able to participate in these markets, despite similar average annual income levels. Hence, these results are important as the federal government and many states adopt policies which benefit special needs children. For example, some states have developed Medicaid waivers allowing household to participate in

[8] When we analyze only single child families, we keep a household in the subsample only if they have a single child. If a new child is born, then the household is dropped from the subsample.

Medicaid regardless of income level, if the child has a disability. These policies can affect both the household decision to invest in education/therapy as well as to invest in specific types of assets.

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