Student loan debt and U.S. married households' stock investment decisions

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ABSTRACT

This study aims to examine the effects of student loan debt on the decisions of U.S. married households to invest in stocks located in non-retirement accounts. Using longitudinal datasets from the 2011 to 2017 U.S. Panel Study of Income Dynamics and a fixed effects logit model, the results show mixed findings. The presence of student debt decreases the probability that married households will own stocks, but the amount of student debt does not show a statistically significant effect. The findings suggest that the incidence of student debt raises the perception of liquidity constraints and debt burden among married households.

KEYWORDS

Student loan debt; stock ownership; married households; stock investments; Panel Study of Income Dynamics

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1. Introduction

Why should households invest in the stock market? According to Campbell (2006), utility maximizing households are expected to invest in the stock market when positive equity premium is prevalent. However, almost 50% of American households do not own stocks (Bricker et al., 2017), although research shows the prevalence of positive equity premium in the stock market (Haliassos, 2003). Several scholars have examined this stock holding puzzle and identified many contributing factors such as illiquid projects, financial sophistication, participation costs, trust and IQ, housing effects, life-cycle effects, awareness, and social interaction (Calvet et al., 2009; Cocco, 2005; Cooper & Zhu, 2016; Faig & Shum, 2002; Georgarakos & Pasini, 2011; Grinblatt et al., 2011; Guiso et al., 2008; Guiso & Jappelli, 2005; Haliassos & Michaelides, 2003; Hong et al., 2004; Vohra & Kaur, 2016). A recent study focusing on U.S. households in general finds the incidence and amount of student debt as contributing factors (Korankye & Guillemette, 2021). Given the magnitude of student debt in the United States (Federal Reserve Bank of New York, 2021), more research is needed to examine the role of student debt in influencing stock market participation among different segments of the populace.

The current study examines the effect of student debt on stock ownership decisions of U.S. married households. The study performs the analysis for married households because the utility of the married household is interdependent. Research also indicates that the decision of married households may be influenced by bargaining effects among the household members (Kim et al., 2017). Married households also could benefit from specializations in financial management functions (Pearson et al., 2021).

2. Theoretical Considerations and Hypothesis

Households have to make decisions regarding the level of tangible and intangible assets to hold over time. The tangible assets could be classified into real and financial assets such as stocks, bonds, mutual funds, exchange traded funds, real estate, collectibles, and business ownerships. A household's intangible assets are generally its human capital. Human capital is non-tradeable unlike stocks and other investments (Campbell, 2006), but it is an indispensable asset that helps households maximize wealth over time. Guiso and Sodini (2012) describe human capital as "the stock of individual attributes – such as skills, personality, education and health – embodied in the ability to earn labor income" (p.11). The human capital theory indicates that households that anticipate receiving positive net benefits from education would want to invest in postsecondary education to maximize utility (Becker, 1993).

The household makes a decision to finance college education in many ways, including family resources or savings, scholarships, and student loans. The life-cycle theory of consumption and savings points out that households make their spending and saving decisions to maximize utility over time. Thus, financing college education through student-loan debt is a useful mechanism for financially constrained households.

While funding college education through education debt is acceptable within the framework of economic theory, research shows that the student-loan debt serves as a constraint to the utility maximization of the household (Korankye & Kalenkoski, 2021a). This constraint could influence the ability of the household to make important economic decisions such as the decision to hold stock investments in their asset portfolio. To maintain their standard of living, Merton (1973) suggests that households that seek to maximize lifetime utility have to consider the risks to their wealth and the returns that their wealth could generate. This is important particularly as the return of human capital is known to diminish over time (Guiso & Sodini, 2012; Boscaljon, 2004). As such, households are expected to make financial decisions that transcend from the short- to medium-term timeframe to across the life cycle. However, studies show that the financial strain associated with student debt could jeopardize the ability of households to make important economic decisions over the life cycle (Kim & Chatterjee, 2019; Korankye &

Kalenkoski, 2021a, b).

Motivated by the theoretical underpinning and prior studies, the current study hypothesizes that:

H1: Married households with student-loan debt have a lower probability of owning stocks compared to their counterparts without student-loan debt.

H2: Student-loan debt amount is related negatively to the probability of owning stocks among married households.

3. Data and Model

The study uses data from the U.S. Panel Study of Income Dynamics (PSID). This is a longitudinal survey dataset that collects individual- and family-level data from American households (Arbor, 2019). The specific datasets for this study belong to the 2011, 2013, 2015, and 2017 waves.

This paper uses stock ownership as the dependent variable to measure a household's decision to invest in stocks. The PSID asks respondents "Do you (or anyone in your family living here) have any shares of stock in publicly-held corporations, stock mutual funds, or investment trusts, not including stocks in employer-based pensions or IRAs?" Stock ownership is measured as a dichotomous variable that equals 1 if a household owns stocks and 0 otherwise.

The main explanatory variables are student debt dummy and the amount of student debt. The student debt dummy variable equals 1 if a student debt is owed, 0 otherwise. The student debt amount variable is measured continuously, and is scaled to US$10,000s.

The study controls for other factors that could influence the stock ownership decisions of the household. These control variables include age, educational attainment, number of children, retirement status, and employment status of the household head. The other control variables include household income, credit card debt, mortgage debt, other debt, non-stock financial assets, and non-financial assets including home, other real estate, vehicles, and farm or business values. In the PSID, the non-stock financial assets of a household include checking or saving accounts, annuity or individual retirement accounts, and other assets such as bond funds, cash value in a life insurance policy, and collectables for investment purposes.

This paper estimates two individual-specific fixed effects logit models as follows:[1]

$$Stock\ ownership_{it}^* = \beta_0 + \beta_1 Student\ loan\ dummy_{it} + \beta_j'^{x_{it}} + \alpha_i + \varepsilon_{it} \tag{1}$$

$$Stock\ ownership_{it}^* = \beta_0 + \beta_1 Student\ loan\ amount_{it} + \beta_j'^{x_{it}} + \alpha_i + \varepsilon_{it} \tag{2}$$

$$Stock\ ownership_{it} = \begin{cases} 1\ if\ Stock\ ownership_{it}^* > 0 \\ 0\ if\ Stock\ ownership_{it}^* \leq 0 \end{cases}$$

$Stock\ ownership_{it}^*$ is the latent variable, while $Stock\ ownership_{it}$ is the observed variable for a married household i owning stocks at time t. The matrix of other explanatory variables is x_{it} with the corresponding β_j coefficients. The α_i and ε_{it} connote the unobserved time-invariant individual effect and error term, respectively. The parameter of interest is β_1, computed as a marginal effect to assess the partial derivative of the change in stock ownership with respect to a change in each student debt variable.

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[1] A Hausman specification test between random and fixed effects indicated the appropriateness of the fixed effects model over the random effects model for this study.

4. Results

Containing the descriptive statistics, Table 1 shows that about 20% of married households have student debt and the average amount of student debt, including married households with zero balances, is $7,450. For married households who own stocks, nearly 14% of them have student loans and the average student debt is $5,753. On the other hand, among married households who do not own stocks, about 23% of them have student debt and the average student debt, including those with zero balances, is $8,066.

Table 1. Descriptive Statistics for Married Households.

Variables	Overall Sample	Dependent Variable		
		Owns Stock	Do Not Own Stock	
Main Explanatory Variables				
Student loan dummy (1=Yes)	20.38%	13.67%	22.82%	***
Student loan amount ($)	7,450	5,753	8,066	***
Other Explanatory Variables				
Age	54	58	53	***
Education (years)	14.17	15.34	13.74	***
Number of children	0.71	0.50	0.79	***
Employed (1=Yes)	68.67%	62.23%	71.00%	***
Retired (1=Yes)	25.80%	34.59%	22.61%	***
Household income ($)	114,503	164,073	96,516	***
Credit-card debt ($)	3,597	2,658	3,938	***
Mortgage debt ($)	94,297	111,137	88,186	***
Other debt ($)	746	303	907	***
Non-stock financial asset ($)	172,054	354,938	105,692	***
Non-financial asset ($)	441,398	751,872	328,737	***
N	13,161	2,775	10,386	

Source: 2011 to 2017 PSID. Survey weights are applied. The T-test compares households with stock ownership to those without stocks. ***significance at 1%, **significance at 5%, *significance at 10%. The study adjusts all variables with dollar amounts for inflation using the 2011 U.S. consumer price index as the base year.

Table 2. Fixed Effects Logit Results for Student Debt and its Effects on Stock Ownership for Married Households.

Variables	Model 1 Marginal Effects (Standard Error)	Model 2 Marginal Effects (Standard Error)
Main Explanatory Variables		
Student loan dummy	-0.0185** (0.0084)	
Student loan amount (10k)		0.0015 (0.0013)
Other Explanatory Variables		
Age - quadratic	-0.0038*** (0.0014)	-0.0034*** (0.0013)
Education (years)	-0.0501*** (0.0065)	-0.0520*** (0.0072)
Number of children	-0.0006 (0.0039)	0.0011 (0.0038)
Employed	-0.0392*** (0.0132)	-0.0393*** (0.0134)
Retired	-0.0198* (0.0118)	-0.0206* (0.0118)
Household income (in $100,000s)	0.0183*** (0.0055)	0.0178*** (0.0055)
Credit-card debt (in $10,000s)	-0.0152*** (0.0049)	-0.0152*** (0.0050)
Mortgage debt ($1m)	0.1261*** (0.0402)	0.1294*** (0.0415)
Other debt (in $10,000s)	0.0160** (0.0063)	0.0163** (0.0064)
Non-stock financial asset ($1m)	-0.0959*** (0.0270)	-0.0945*** (0.0272)
Non-financial asset ($1m)	-0.0169*** (0.0051)	-0.0166*** (0.0051)
N	2,976	2,976

Source: 2011 to 2017 PSID. Survey weights are applied. ***significance at 1%, **significance at 5%, *significance at 10%.

The marginal effects resulting from the fixed effect logit estimates are contained in Table 2 for Models 1 (student

debt dummy) and 2 (student debt amount). Table 2 shows that it is only the incidence of student debt (as measured by the student loan dummy variable) that has a negative relationship with stock ownership decisions of married couples. Specifically, having student debt decreases the probability that a married household will invest in stocks by 1.85% compared to married households without student debt. The amount of student debt does not have a statistically significant effect on the decision of married households to own non-retirement account stocks. Thus, Table 2 shows only partial support for the hypothesis of the current study.

The findings relating to student loan dummy agree with Korankye and Guillemette (2021) who observe that the presence of student debt makes U.S. households less likely to own stocks in non-retirement accounts. However, the findings relating to the amount of student debt disagrees with Korankye and Guillemette (2021) who find that a $10,000 increase in student loan amount is associated with a 0.38% lower likelihood of owning stocks among American adults. The results based on the amount of student debt suggest that household bargaining, opportunities for specialization, economies of scale, and risk sharing among married households may influence their stock holding behavior differently from American households generally. However, the results on the incidence of student debt suggest that the presence of student debt could demotivate married households from owning stocks in non-retirement accounts.

5. Conclusion

The current study examines the effect of student debt on stock ownership decisions for married households, using the 2011 to 2017 dataset from the U.S. PSID, and estimates fixed effect logit models. The estimated results from fixed effect logit models show that the incidence of student debt has a negative effect, but the amount of student debt has no statistically significant effect on the probability that married households will own stocks. The empirical results support existing studies that student-loan debt may contribute to the stock holding puzzle. The findings suggest that the presence of student debt raises the perception of liquidity constraints and debt burden among married households. Thus, married households are likely to regard the incidence of student debt as an illiquid project just like other personal projects such as investing in private business and buying a primary residence as described in Faig & Shum (2002). The findings underscore the need for financial planners and educators to educate U.S. married households to understand the need to invest in stocks, although the households may have student-loan debt on their balance sheets.

Funding Statement

Data availability statement

This paper uses the publicly available dataset from the U.S. Panel Study of Income Dynamics. It can be found at https://psidonline.isr.umich.edu/.

Conflict of interest

The author claims that the manuscript is completely original. The author declares no conflict of interest.

References

Arbor, A. (2019). *Panel Study of Income Dynamics, public use dataset*. Ann Arbor: Institute for Social Research, University of Michigan.

Becker, G. S. (1993). *Human Capital: A Theoretical and Empirical Analysis, With Special Reference to Education* (3rd edition). Chicago, IL: University of Chicago Press.

Boscaljon, Brian. (2004). Time, Wealth, and Human Capital as Determinants of Asset Allocation. *Financial Services Review, 13*(3), 167-184.

Bricker, J., Dettling, L. J., Henriques, A., Hsu, J. W., Jacobs, L., Moore, K. B., ... & Windle, R. A. (2017). Changes in US Family Finances from 2013 to 2016: Evidence from the Survey of Consumer Finances. *Fed. Res. Bull.*, *103(3)*, 1-41. https://doi.org/10.17016/bulletin.2017.103-3

Campbell, J. (2006). Household Finance. *Journal of Finance, 61*(4), 1553-1604. https://doi.org/10.1111/j.1540-6261.2006.00883.x

Calvet, L. E., Campbell, J. Y., & Sodini, P. (2009). Measuring the Financial Sophistication of Households. *American Economic Review, 99*(2), 393-398. https://doi.org/10.1257/aer.99.2.393

Cocco, J. F. (2005). Portfolio Choice in the Presence of Housing. *The Review of Financial Studies*, *18*(2), 535-567. https://doi.org/10.1093/rfs/hhi006

Cooper, R., & Zhu, G. (2016). Household Finance Over the Life-Cycle: What Does Education Contribute? *Review of Economic Dynamics*, *20*, 63-89. https://doi.org/10.1016/j.red.2015.12.001

Faig, M., & Shum, P. (2002). Portfolio Choice in the Presence of Personal Illiquid Projects. *The Journal of Finance*, *57*(1), 303-328. https://doi.org/10.1111/1540-6261.00423

Federal Reserve Bank of New York (2021). Household debt and credit report (Q2 2021). Center for microeconomic data. Retrieved from https://www.newyorkfed.org/microeconomics/hhdc

Georgarakos, D., & Pasini, G. (2011). Trust, sociability, and Stock Market Participation. *Review of Finance*, *15*(4), 693-725. https://doi.org/10.1093/rof/rfr028

Grinblatt, M., Keloharju, M., & Linnainmaa, J. (2011). IQ and Stock Market Participation. *The Journal of Finance*, *66*(6), 2121-2164. https://doi.org/10.1111/j.1540-6261.2011.01701.x

Guiso, L., & Jappelli, T. (2005). Awareness and Stock Market Participation. *Review of Finance*, *9*(4), 537-567. https://doi.org/10.1007/s10679-005-5000-8

Guiso, L., & Sodini, P. (2012). Household Finance. An Emerging Field. *IDEAS Working Paper Series from RePEc,* IDEAS Working Paper Series from RePEc, 2012.

Guiso, Sapienza, & Zingales. (2008). Trusting the Stock Market. *Journal of Finance, 63*(6), 2557-2600. https://doi.org/10.1111/j.1540-6261.2008.01408.x

Haliassos, M. (2003). Stockholding: Recent Lessons from Theory and Computations. In *Stockholding in Europe* (pp. 30-49). Palgrave Macmillan, London.

Haliassos, M., & Michaelides, A. (2003). Portfolio Choice and Liquidity Constraints. *International Economic Review*, *44*(1), 143-177. https://doi.org/10.1111/1468-2354.t01-1-00065

Hong, H., Kubik, J. D., & Stein, J. C. (2004). Social interaction and stock-market participation. *The Journal of Finance*, *59*(1), 137-163. https://doi.org/10.1111/j.1540-6261.2004.00629.x

Kim, J., & Chatterjee, S. (2019). Student Loans, Health, and Life Satisfaction of US Households: Evidence from a Panel Study. *Journal of Family and Economic Issues,* 1-15. https://doi.org/10.1007/s10834-018-9594-3

Kim, J., Gutter, M. S., & Spangler, T. (2017). Review of Family Financial Decision Making: Suggestions for Future Research and Implications for Financial Education. *Journal of Financial Counseling and Planning*, *28*(2), 253-267. https://doi.org/10.1891/1052-3073.28.2.253

Korankye, & Kalenkoski, C. M. (2021a). The Effect of Households' Student Debt on Life Satisfaction. *Journal of Family and Economic Issues*, *42*(4), 757–772. https://doi.org/10.1007/s10834-021-09753-

Korankye, T., & Kalenkoski, C. M. (2021b). Student Loan Debt and Financial Well-Being of the Borrower: Does It Matter Whom the Debt Is For?. *Journal of Personal Finance*, *20*(2). https://ssrn.com/abstract=4055654

Korankye, T., & Guillemette, M. (2021). Student Debt and Stock-Ownership Decisions of US Households. *Applied Economics Letters*, *28*(5), 387-390. https://doi.org/10.1080/13504851.2020.1757026

Merton, R. (1973). An Intertemporal Capital Asset Pricing Model. *Econometrica, 41*(5), 867-887.

Pearson, B., Korankye, T., & Salehi, H. (2021). Comparative Advantage in the Household: Should One Person Specialize in a Household's Financial Matters?. *Journal of Family and Economic Issues*, *44 (*1), 114-124. https://doi.org/10.1007/s10834-021-09807-y

Vohra, T., & Kaur, M. (2016). Awareness and Stock Market Participation of Women: A Comparative Study of Stock Investors and Non-Investors. *IUP Journal of Management Research,* *15*(4), 22-38. https://web.s.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=0&sid=8ff3b055-9791-4de1-a303-08c77b31c4d4%40redis