



Debt and Stock Market Participation

Scott Jones

The University of Arizona



Introduction

One of the most common explanations of the stock market participation puzzle is fixed costs of participation. The empirical literature operationalizes these costs as either wealth (assets minus debt) or assets. The former implicitly assumes that assets and debt have the same absolute effect on stock market participation (i.e., β_{Wealth} implies $\beta_{\text{Assets}} = -\beta_{\text{Debt}}$). The latter omits debt from the model and thus implicitly assumes that debt does not affect fixed participation costs or stock market participation (i.e., $\beta_{\text{Debt}} = 0$). I examine these assumptions empirically using a model that more directly and accurately captures the effects of debt on stock market participation. I find that partitioning wealth into assets and debt better explains stock market participation. One puzzle in the literature is the fact that fixed costs of participation cannot explain nonparticipation among the wealthy. By using a model that more accurately and directly identifies debt, I show that debt better explains stock market participation behavior of the wealthy than wealth or assets.

Data and Sample

RAND American Life Panel (ALP)

- Publicly available
- Nationally representative sample of individuals ages 18 and older

Sample:

- 2011 – 2016
- 38 survey waves
- 29,876 individual survey-wave observations from 3,891 unique individuals

Methods

$$\text{Stock Participation}_{it} = \alpha + \beta_{it}\text{Assets} + \beta_{it}\text{Debt} + \beta_{it}X + \beta_{it}\delta + \varepsilon$$

Controls: Race, Gender, Age, Education, Income, Relationship Status

Tests

1 Baseline Regression

	(1)	(2)
Wealth	0.027*** (25.72)	
Assets		0.025*** (24.11)
Debt		-0.045 (-18.60)
$\chi^2: \beta_D + \beta_A = 0$		78.82
(P-Value)		(<.0001)
Controls	Yes	Yes
Year FE	Yes	Yes
N	29,621	29,621

Result: Debt has about double the effect of assets (in absolute value). The difference is significant (from LR test).

2 By Wealth Class

	Average Marginal Effects			
	\$27,000 ≤ Wealth < \$75,000 (3)	\$75,000 ≤ Wealth < Mean (4)	Mean ≤ Wealth < \$320,000 (5)	\$320,001 ≤ Wealth (6)
Total Assets (\$100k)	0.129*** (4.00)	0.112*** (4.33)	0.028** (2.39)	0.003 (1.42)
Total Debt (\$100k)	-0.140*** (-4.22)	-0.148*** (-5.44)	-0.048*** (-3.47)	-0.029*** (-4.39)
$\chi^2: \beta_{\text{Assets}} = -\beta_{\text{Debt}}$	3.72**	23.69***	10.43***	18.18***
P-Value	(0.054)	(<.0001)	(0.00)	(<.0001)
All Controls Included	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
N	4,930	5,035	5,765	3,902

Results:

- Debt is significant across all wealth classes suggesting it captures more than just fixed participation costs.
- Assets is significant for poorer households, but not wealthier households suggesting it only captures fixed costs of participation.
- Debt, when properly modeled, can help explain one of the more puzzling parts of the literature – non-participation among the wealthy

3 Does Debt Capture Behavioral Biases?

Retirement account have several features designed to mitigate behavioral bias (e.g., automatic deduction from paycheck, employer match, early withdrawal penalties, etc.)

⇒ If debt captures behavioral biases, should see weaker effect in retirement accounts.

Results: The economical significance of debt drastically decreases for equity participation in retirement accounts, while assets is unchanged, suggesting debt contains behavioral factors

4 What Biases could debt capture?

Impulsivity & Moral Licensing (the belief that past good choices balance out bad choices today)

⇒ If debt captures impulsivity, credit card debt, transport debt (e.g., auto loans), and other debt (e.g., payday loans) should be significant.

⇒ If debt captures moral licensing, mortgage debt and student loans should be significant

Results: Evidence for both impulsivity and moral licensing, but impulsivity is more important

Conclusions

- Debt can be more directly and accurately modeled:
 - Debt is an important factor in the stock market participation decision – should be included in the model
 - Debt and assets affect stock market participation differently – should be modeled separately
- Debt explains stock market participation among the wealthy better than wealth or assets
- The debt effect could capture a combination of:
 - Fixed costs of participation
 - Behavioral biases (impulsivity and moral licensing)
 - Rational factors around the interest rate of debt (e.g., guaranteed return of 15% from paying off credit card debt vs. $E(r) = 10\%$ in stock market)
- The debt effect is not driven by risk aversion or maturity of debt