

# **Who Becomes a Stockholder? Expectations, Subjective Uncertainty, and Asset Allocation**

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# Who Becomes a Stockholder? Expectations, Subjective Uncertainty, and Asset Allocation

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**Abstract.** We develop a model of portfolio selection with subjective uncertainty and learning in order to explain why some people hold stocks while others don't. We model heterogeneity in information directly, which is an alternative to the existing explanations that emphasized heterogeneity in transaction costs of investment. Our approach leads to a model of learning with new implications such as zero optimal risky assets, or ex post correlation of uncorrelated income or wealth and optimal portfolio composition. It also points to two factors in probabilistic thinking that should have a major impact on stock ownership. These are the level and the precision of stock market expectations. We use subjective proxy measures of expectations from the Health and Retirement Study (HRS) over stock returns and economic growth. We also use an index of precision over many subjective probabilities from the 1992-2002 waves of HRS, a measure introduced by Lillard and Willis (2001). Our results indicate that stock ownership and the probability of becoming a stockholder are strongly positively correlated with the indices of the level and precision of expectations. They also significantly reduce the partial correlation of stock ownership and education, race and wealth, which indicates that the latter are probably at least as much proxies for expectations and probabilistic thinking as measures of direct transaction costs.

## Tables

**Table 1. Fraction of people living in stockholder households (percent).**

HRS age eligibles (born 1931-41).

Year	All		Those with positive net financial wealth	
	Direct stock ownership	Direct stock ownership and IRA's	Direct stock ownership	Direct stock ownership and IRA's
1992	35	58	44	70
1994	39	60	48	71
1996	38	60	48	70
1998	38	61	47	71
2000	38	61	47	71
2002	37	59	47	70

Notes. Net financial wealth: Stocks, bonds, bank accounts, cd-s, net of all debts except mortgage.

Sample selection: HRS age eligibles, those who were interviewed in each survey from 1992 to 2002. The ownership data refer to the whole family (couple).

HRS 2002: preliminary data.

Observations are weighted by household weights (2000 weights in 2002).

**Table 2. Stock ownership, education, demographics, and wealth**

Pooled sample of HRS age eligibles (born 1931-41) who were interviewed in all waves.

	Direct stock ownership	Direct stock ownership and IRA's
Less than high school	-0.133 (12.4)**	-0.218 (15.9)**
College degree	0.125 (9.6)**	0.117 (10.1)**
Female	0.009 (1.2)	0.006 (0.7)
Lives in couple	0.070 (6.3)**	0.125 (10.4)**
Age	0.000 (0.6)	0.002 (2.5)*
Year of birth	0.000 (0.1)	-0.002 (1.2)
Black	-0.117 (11.2)**	-0.205 (14.5)**
Hispanic	-0.104 (7.7)**	-0.182 (10.2)**
Nonpositive net financial wealth (0-1)	-0.251 (31.2)**	-0.280 (29.7)**
Standardized net worth	0.147 (10.6)**	0.109 (9.3)**
Standardized worth squared	-0.0033 (6.1)**	-0.0025 (5.7)**
Constant	-0.122 (0.0)	4.475 (1.4)
Observations	35,034	34,876
Clusters (household)	4,711	4,711
R-squared	0.18	0.24

Robust t-statistics in parentheses

\* significant at 5% level; \*\* significant at 1% level

**Table 3. Changes in stock ownership outside retirement accounts**

HRS age eligibles, those interviewed in all waves; household weights

		<b>1994</b>		
<b>1992</b>	no	yes	total	
no	54	11	65	
yes	7	28	35	
total	61	39	100	

		<b>1996</b>		
<b>1994</b>	no	yes	total	
no	54	7	61	
yes	7	32	39	
total	61	39	100	

		<b>1998</b>		
<b>1996</b>	no	yes	total	
no	54	8	62	
yes	8	30	38	
total	62	38	100	

		<b>2000</b>		
<b>1998</b>	no	yes	total	
no	54	8	62	
yes	8	30	38	
total	62	38	100	

		<b>2002</b>		
<b>2000</b>	no	yes	total	
no	54	8	62	
yes	9	29	38	
total	63	37	100	

**Table 4. Probability of no economic depression (one minus the probability of an economic depression in the near future). Summary statistics. HRS cohort. Weighted by t0 person weight.**

	mean	std	obs	min	max
1992	0.45	0.26	9086	0	1
1994	0.62	0.28	7878	0	1
1996	0.61	0.28	7427	0	1
average	0.54	0.22	9086	0	1

**Correlation**

	1992	1994	1996	average
1992	1.00			
1994	0.34	1.00		
1996	0.32	0.43	1.00	

**Table 5. Fraction of exact answers. Summary statistics. HRS age eligibles, participants in survey between 1992 and 2002**

Variable	# obs	Mean	Std. D	Min	Max
Fraction exact, 1992	11,879	0.51	0.25	0.00	1.00
Fraction exact, 1994	10,635	0.41	0.22	0.00	1.00
Fraction exact, 1996	10,099	0.39	0.23	0.00	1.00
Fraction exact, 1998	9,548	0.38	0.23	0.00	1.00
Fraction exact, 2000	8,950	0.41	0.22	0.00	1.00
Fraction exact, avg.	7,460	0.42	0.17	0.00	0.94

**Correlations**

(obs=7460)

	1992	1994	1996	1998	2000	avg
Fraction exact, 1992	1.00					
Fraction exact, 1994	0.34	1.00				
Fraction exact, 1996	0.33	0.49	1.00			
Fraction exact, 1998	0.29	0.43	0.46	1.00		
Fraction exact, 2000	0.27	0.41	0.44	0.45	1.00	
Fraction exact, avg.	0.59	0.75	0.78	0.73	0.72	1.00

**Table 6. Distribution of respondents in four risk preference categories (percent)**  
HRS age eligibles, person weights.

<b>Risk preference categories</b>	<b>1992</b>	<b>1994</b>	<b>1998</b>	<b>2000</b>
I. very strong risk aversion ( $\gamma > 4$ )	64.7	63.2	58.2	64.1
II. strong risk aversion ( $4 > \gamma > 2$ )	12.0	12.9	16.2	14.4
III. weak risk aversion ( $2 > \gamma > 1$ )	10.6	13.2	9.6	8.5
IV. very weak risk aversion ( $1 > \gamma > 0$ )	12.7	10.7	16.0	13.0
All	100.0	100.0	100.0	100.0
Number of observations	9,089	591	628	760

**Table 7. Cognition: correlation between different factors**

	Memory	IQ	Counting back by 7	Dementia control
Memory	1.00			
IQ	0.36	1.00		
Counting back by 7	0.58	0.38	1.00	
Dementia control	0.36	0.33	0.47	1.00

**Table 8. Cognition: correlation between the overall factor and the different items  
HRS cohort. p-values in parentheses.**

Question	1992	1994	1996	1998	2000	IQ-type questions	1992
Immediate word recall	0.60 (0.00)	0.64 (0.00)	0.71 (0.00)	0.74 (0.00)	0.72 (0.00)	Orange & banana	0.38 (0.00)
Delayed word recall	0.57 (0.00)	0.61 (0.00)	0.69 (0.00)	0.73 (0.00)	0.73 (0.00)	Table & chair	0.30 (0.00)
Counting back by sevens			0.65 (0.00)	0.67 (0.00)	0.68 (0.00)	Eye & ear	0.44 (0.00)
Date month			0.21 (0.00)	0.20 (0.00)	0.24 (0.00)	Egg & seed	0.33 (0.00)
Date day			0.22 (0.00)	0.24 (0.00)	0.24 (0.00)	Air & water	0.27 (0.00)
Date year			0.23 (0.00)	0.26 (0.00)	0.20 (0.00)	Fly & tree	0.30 (0.00)
Day of week			0.15 (0.00)	0.14 (0.00)	0.15 (0.00)	Praise & punishment	0.25 (0.00)
Scissors			0.11 (0.00)	0.10 (0.00)	0.12 (0.00)		
Cactus			0.43 (0.00)	0.39 (0.00)	0.42 (0.00)		
President			0.30 (0.00)	0.29 (0.00)	0.29 (0.00)		
Vice president			0.40 (0.00)	0.44 (0.00)	0.46 (0.00)		
Counting back from 20			0.25 (0.00)	0.27 (0.00)	0.24 (0.00)		
Counting back from 86			0.37 (0.00)	0.36 (0.00)	0.36 (0.00)		



**Table 9. Probability of stock ownership (1 if stockholder, 0 otherwise), becoming a stockholder (1 if became a stockholder, 0 otherwise), and becoming a non-holder (-1 if sold out, 0 otherwise). Linear probability models. HRS age eligibles, participants of each survey between 1992 and 2002. (t values in parentheses)**

	Stockholder, 1992-1996		Stockholder, 2002		Becoming a stockholder, 1992-1998		Becoming a non-holder, 1992-1998	
	narrow	broad	narrow	broad	narrow	broad	narrow	broad
Less than high-school	-0.072 (5.21)**	-0.158 (9.68)**	-0.100 (4.97)**	-0.182 (8.05)**	-0.044 (5.36)**	-0.062 (5.58)**	-0.037 (1.39)	-0.040 (2.69)**
College	0.078 (5.11)**	0.082 (6.08)**	0.071 (3.50)**	0.044 (2.62)**	0.043 (3.17)**	0.064 (3.15)**	0.028 (2.08)*	0.008 (1.06)
Female	-0.006 (0.67)	-0.001 (0.15)	0.015 (1.08)	0.003 (0.22)	-0.015 (2.22)*	-0.032 (3.36)**	-0.012 (1.20)	-0.007 (1.16)
Couple	0.055 (4.13)**	0.105 (7.66)**	0.046 (2.56)*	0.094 (5.40)**	0.031 (3.37)**	0.044 (3.82)**	-0.006 (0.37)	0.021 (2.23)*
Age	0.004 (1.92)	0.003 (1.49)	-0.002 (0.64)	0.001 (0.44)	-0.011 (4.17)**	-0.008 (2.54)*	-0.005 (1.35)	-0.000 (0.16)
Year of birth	0.003 (0.92)	-0.003 (1.30)	-0.003 (0.95)	-0.003 (0.96)	-0.009 (3.18)**	-0.003 (0.83)	-0.007 (1.75)	-0.003 (1.54)
Black	-0.078 (5.93)**	-0.153 (9.04)**	-0.131 (6.17)**	-0.248 (10.13)**	-0.032 (3.69)**	-0.039 (3.58)**	-0.167 (4.18)**	-0.142 (5.44)**
Hispanic	-0.082 (4.89)**	-0.149 (6.94)**	-0.166 (6.45)**	-0.250 (7.85)**	-0.046 (4.93)**	-0.035 (2.70)**	-0.075 (1.26)	-0.095 (2.81)**
Negative fin. wealth	-0.256 (24.71)**	-0.286 (21.89)**	-0.158 (8.60)**	-0.126 (6.71)**	-0.045 (5.15)**	-0.073 (6.52)**	-0.192 (4.65)**	-0.111 (6.50)**
Net wealth (std)	0.232 (10.18)**	0.182 (8.45)**	0.246 (10.48)**	0.217 (11.38)**	0.144 (4.60)**	0.097 (2.46)*	0.050 (3.50)**	0.034 (4.32)**
Net wealth squared	-0.019 (4.02)**	-0.016 (3.54)**	-0.020 (5.93)**	-0.019 (5.75)**	-0.013 (1.40)	-0.015 (1.29)	-0.004 (2.23)*	-0.003 (2.77)**
Cognition	0.049 (7.05)**	0.041 (5.43)**	0.023 (1.99)*	0.028 (2.56)*	0.020 (4.32)**	0.010 (1.70)	0.029 (2.80)**	0.026 (4.74)**
Econ.growth	0.060 (3.78)**	0.083 (5.33)**			0.033 (2.64)**	0.034 (2.27)*	-0.000 (0.01)	-0.003 (0.26)
Precision	0.090 (4.41)**	0.114 (5.82)**	0.030 (0.91)	0.083 (2.73)**	0.026 (1.55)	0.042 (2.00)*	0.050 (1.95)	0.020 (1.46)
Stock mkt. up			0.079 (2.95)**	0.128 (5.25)**				
Constant	-4.890 (0.89)	7.025 (1.34)	6.720 (1.00)	6.338 (1.02)	18.643 (3.23)**	6.508 (0.90)	14.540 (1.72)	6.461 (1.48)
Observations	16243	16208	4391	4371	10417	6958	5657	9018
R-squared	0.23	0.29	0.21	0.26	0.07	0.07	0.03	0.05

Robust t-statistics in parentheses

\* significant at 5% level; \*\* significant at 1% level

**Table 10. Probability of *direct stock ownership*. Linear probability models (1 if stockholder, 0 otherwise). HRS age eligibles, participants of each survey between 1992 and 2002. (t values in parentheses)**

	1992	1994	1996	2002	2002
Less than high-school	-0.070 (4.43)**	-0.073 (4.18)**	-0.070 (4.06)**		-0.100 (4.97)**
College	0.098 (5.35)**	0.055 (2.94)**	0.074 (3.98)**		0.071 (3.50)**
Female	-0.006 (0.54)	-0.001 (0.12)	-0.011 (1.03)		0.015 (1.08)
Couple	0.033 (2.11)*	0.052 (3.14)**	0.070 (4.32)**		0.046 (2.56)*
Age	-0.007 (0.51)	-0.034 (2.58)**	0.003 (0.22)		-0.002 (0.64)
Year of birth	-0.007 (0.51)	-0.036 (2.69)**	0.000 (0.01)		-0.003 (0.95)
Black	-0.052 (3.12)**	-0.085 (4.74)**	-0.087 (4.99)**		-0.131 (6.17)**
Hispanic	-0.054 (2.81)**	-0.115 (5.57)**	-0.067 (2.99)**		-0.166 (6.45)**
Negative fin. wealth	-0.223 (15.45)**	-0.269 (17.48)**	-0.266 (17.54)**		-0.158 (8.60)**
Net wealth (std)	0.343 (12.95)**	0.225 (8.75)**	0.225 (8.87)**		0.246 (10.48)**
Net wealth squared	-0.049 (7.85)**	-0.015 (3.79)**	-0.018 (4.80)**		-0.020 (5.93)**
Cognition	0.042 (5.26)**	0.047 (5.27)**	0.056 (6.24)**		0.023 (1.99)*
Econ.growth	0.096 (4.01)**	0.062 (2.60)**	0.010 (0.47)		
Precision	0.068 (2.58)**	0.112 (3.49)**	0.104 (3.30)**		0.030 (0.91)
Stock mkt. up				0.281 (10.20)**	0.079 (2.95)**
Constant	13.637 (0.52)	71.276 (2.70)**	-0.122 (0.00)	0.284 (18.79)**	6.720 (1.00)
Observations	5603	5342	5298	4422	4391
R-squared	0.24	0.23	0.24	0.03	0.21

**Table 11. Probability of *direct and indirect stock ownership* (incl. IRA). Linear probability models (1 if stockholder, 0 otherwise). HRS age eligibles, participants of each survey between 1992 and 2002. (t values in parentheses)**

	1992	1994	1996	2002	2002
Less than high-school	-0.155 (8.33)**	-0.159 (7.92)**	-0.158 (8.08)**		-0.182 (8.05)**
College	0.099 (6.23)**	0.079 (4.85)**	0.063 (3.87)**		0.044 (2.62)**
Female	-0.003 (0.31)	-0.008 (0.70)	0.007 (0.64)		0.003 (0.22)
Couple	0.079 (4.85)**	0.113 (6.85)**	0.115 (7.02)**		0.094 (5.40)**
Age	-0.001 (0.06)	-0.010 (0.77)	-0.002 (0.12)		0.001 (0.44)
Year of birth	-0.007 (0.52)	-0.017 (1.35)	-0.007 (0.57)		-0.003 (0.96)
Black	-0.130 (6.66)**	-0.158 (7.37)**	-0.164 (7.75)**		-0.248 (10.13)**
Hispanic	-0.132 (5.31)**	-0.167 (6.31)**	-0.143 (5.21)**		-0.250 (7.85)**
Negative fin. wealth	-0.288 (15.47)**	-0.279 (14.42)**	-0.278 (14.73)**		-0.126 (6.71)**
Net wealth (std)	0.284 (11.87)**	0.167 (7.74)**	0.186 (8.32)**		0.217 (11.38)**
Net wealth squared	-0.045 (7.67)**	-0.013 (3.18)**	-0.016 (4.47)**		-0.019 (5.75)**
Cognition	0.037 (4.45)**	0.041 (4.49)**	0.040 (4.34)**		0.028 (2.56)*
Econ.growth	0.090 (3.80)**	0.091 (3.86)**	0.060 (2.75)**		
Precision	0.072 (2.79)**	0.114 (3.79)**	0.167 (5.63)**		0.083 (2.73)**
Stock mkt. up				0.344 (13.48)**	0.128 (5.25)**
Constant	13.669 (0.53)	33.651 (1.35)	14.625 (0.58)	0.486 (31.36)**	6.338 (1.02)
Observations	5603	5338	5267	4402	4371
R-squared	0.30	0.28	0.29	0.04	0.26

**Table 12. Probability of buying stocks if not a stockholder (*direct stock ownership*). Linear probability models (1 if bought stocks, 0 otherwise). HRS age eligibles, participants of each survey between 1992 and 2002. (t values in parentheses)**

	1992-4	1994-6	1996-8	2000-2	2000-2
Less than high-school	-0.047 (3.15)**	-0.037 (2.88)**	-0.049 (3.96)**		-0.048 (2.66)**
College	0.016 (0.71)	0.042 (1.92)	0.072 (3.21)**		0.051 (1.97)*
Female	-0.006 (0.58)	-0.013 (1.34)	-0.024 (2.10)*		0.014 (0.94)
Couple	0.034 (2.14)*	0.041 (3.02)**	0.014 (0.91)		0.046 (2.65)**
Age	0.001 (0.06)	0.001 (0.06)	-0.006 (0.51)		-0.017 (0.97)
Year of birth	0.000 (0.03)	0.002 (0.12)	-0.002 (0.12)		-0.012 (0.65)
Black	-0.047 (3.14)**	-0.014 (0.95)	-0.032 (2.28)*		-0.069 (4.09)**
Hispanic	-0.083 (5.54)**	-0.018 (1.19)	-0.037 (2.41)*		-0.088 (5.02)**
Negative fin. wealth	-0.043 (2.63)**	-0.052 (3.90)**	-0.036 (2.55)*		-0.058 (3.25)**
Net wealth (std)	0.197 (4.47)**	0.135 (3.17)**	0.129 (3.02)**		0.102 (3.34)**
Net wealth squared	-0.044 (4.43)**	-0.006 (0.34)	-0.004 (0.48)		-0.003 (2.71)**
Cognition	0.022 (2.95)**	0.023 (3.02)**	0.013 (1.73)		-0.000 (0.04)
Econ.growth	0.072 (2.92)**	0.027 (1.29)	0.028 (1.44)		
Precision	0.023 (0.86)	0.002 (0.07)	0.028 (0.98)		-0.004 (0.11)
Stock mkt. up				0.146 (5.05)**	0.092 (3.19)**
Constant	-0.546 (0.02)	-2.889 (0.12)	3.429 (0.14)	0.094 (7.21)**	23.555 (0.67)
Observations	3770	3340	3307	2632	2557
R-squared	0.06	0.07	0.08	0.01	0.07

**Table 13. Probability of buying stocks if not a stockholder (*direct and indirect stock ownership through IRAs*). Linear probability models (*1 if bought stocks, 0 otherwise*). HRS age eligibles, participants of each survey between 1992 and 2002. (t values in parentheses)**

	1992-4	1994-6	1996-8	2000-2	2000-2
Less than high-school	-0.066 (3.42)**	-0.068 (3.70)**	-0.053 (2.98)**		-0.029 (1.23)
College	0.082 (2.52)*	0.043 (1.40)	0.065 (1.90)		0.086 (2.25)*
Female	-0.029 (1.93)	-0.003 (0.22)	-0.059 (3.65)**		-0.034 (1.76)
Couple	0.061 (3.19)**	0.038 (2.14)*	0.024 (1.26)		0.047 (2.14)*
Age	0.013 (0.74)	-0.006 (0.39)	-0.019 (1.13)		0.003 (0.13)
Year of birth	0.013 (0.73)	0.003 (0.16)	-0.012 (0.71)		0.016 (0.67)
Black	-0.042 (2.28)*	-0.028 (1.48)	-0.041 (2.47)*		-0.056 (2.63)**
Hispanic	-0.028 (1.19)	-0.035 (1.71)	-0.041 (1.94)		-0.083 (3.16)**
Negative fin. wealth	-0.066 (3.27)**	-0.086 (5.01)**	-0.060 (3.32)**		-0.076 (3.39)**
Net wealth (std)	0.166 (2.57)*	0.057 (1.64)	0.166 (2.23)*		0.203 (3.23)**
Net wealth squared	-0.046 (3.21)**	-0.007 (0.76)	-0.027 (1.14)		-0.013 (2.14)*
Cognition	0.012 (1.34)	-0.001 (0.14)	0.016 (1.63)		0.010 (0.71)
Econ.growth	0.056 (1.97)*	0.042 (1.62)	0.027 (1.09)		
Precision	0.034 (1.07)	0.030 (0.76)	0.046 (1.13)		0.069 (1.41)
Stock mkt. up				0.120 (3.09)**	0.048 (1.27)
Constant	-25.319 (0.73)	-4.641 (0.14)	24.481 (0.73)	0.118 (6.95)**	-30.969 (0.65)
Observations	2561	2225	2172	1618	1568
R-squared	0.07	0.06	0.08	0.01	0.11

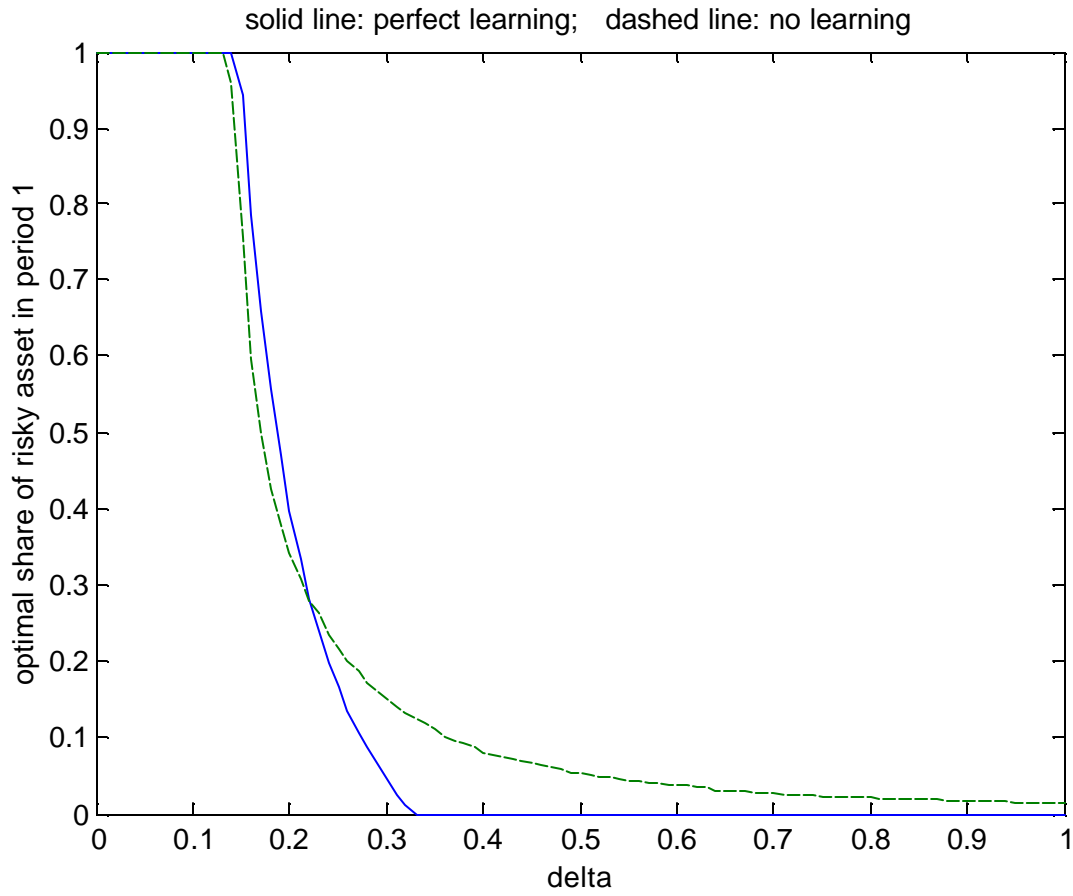
**Table 14. Probability of not selling off all stocks if a stockholder (*direct stock ownership*). Linear probability models (-1 if sold out all stocks, 0 otherwise). HRS age eligibles, participants of each survey between 1992 and 2002. (t values in parentheses)**

	1992-4	1994-6	1996-8	2000-2	2000-2
Less than high-school	-0.055 (1.21)	0.013 (0.33)	-0.074 (1.69)		0.001 (0.01)
College	0.008 (0.36)	0.047 (2.30)*	0.024 (0.98)		0.045 (1.80)
Female	-0.008 (0.47)	-0.032 (2.12)*	0.005 (0.31)		-0.020 (1.09)
Couple	-0.005 (0.19)	-0.005 (0.19)	-0.012 (0.41)		-0.025 (0.87)
Age	-0.026 (1.27)	0.033 (1.84)	-0.038 (2.00)*		-0.021 (0.89)
Year of birth	-0.029 (1.41)	0.028 (1.51)	-0.036 (1.88)		-0.023 (0.93)
Black	-0.238 (3.44)**	-0.192 (3.07)**	-0.062 (0.91)		-0.216 (3.00)**
Hispanic	-0.047 (0.49)	-0.055 (0.59)	-0.102 (1.05)		-0.166 (1.56)
Negative fin. wealth	-0.226 (3.13)**	-0.123 (1.94)	-0.218 (3.27)**		-0.137 (1.56)
Net wealth (std)	0.050 (1.60)	0.048 (3.12)**	0.069 (3.32)**		0.042 (4.95)**
Net wealth squared	-0.009 (1.67)	-0.003 (2.35)*	-0.006 (2.63)**		-0.001 (4.13)**
Cognition	0.018 (1.08)	0.064 (4.13)**	0.003 (0.16)		0.012 (0.63)
Econ.growth	-0.011 (0.26)	-0.033 (0.93)	0.019 (0.53)		
Precision	0.082 (1.89)	-0.019 (0.45)	0.104 (2.25)*		-0.066 (1.33)
Stock mkt. up				-0.025 (0.61)	-0.063 (1.52)
Constant	57.872 (1.40)	-55.872 (1.52)	71.973 (1.88)	-0.218 (8.92)**	45.069 (0.93)
Observations	1789	1949	1919	1734	1694
R-squared	0.04	0.05	0.04	0.00	0.04

**Table 15. Probability of not selling off all stocks if a stockholder (*direct and indirect stock ownership through IRAs*). Linear probability models (-1 if sold out all stocks, 0 otherwise). HRS age eligibles, participants of each survey between 1992 and 2002. (t values in parentheses)**

	1992-4	1994-6	1996-8	2000-2	<b>2000-2</b>
Less than high-school	-0.050 (2.01)*	-0.006 (0.25)	-0.059 (2.38)*		-0.049 (1.65)
College	0.001 (0.08)	0.017 (1.38)	0.004 (0.31)		0.015 (1.08)
Female	-0.006 (0.71)	-0.003 (0.28)	-0.010 (1.09)		0.005 (0.46)
Couple	0.020 (1.25)	0.008 (0.51)	0.033 (2.06)*		0.015 (0.89)
Age	0.007 (0.65)	0.009 (0.86)	-0.015 (1.40)		0.013 (0.99)
Year of birth	0.003 (0.26)	0.004 (0.37)	-0.015 (1.39)		0.010 (0.80)
Black	-0.151 (4.12)**	-0.136 (3.39)**	-0.131 (3.27)**		-0.227 (4.65)**
Hispanic	-0.157 (2.69)**	-0.060 (1.33)	-0.082 (1.44)		-0.205 (3.08)**
Negative fin. wealth	-0.066 (2.59)**	-0.168 (5.16)**	-0.099 (3.65)**		-0.090 (2.58)**
Net wealth (std)	0.029 (1.60)	0.043 (5.36)**	0.044 (4.43)**		0.028 (5.57)**
Net wealth squared	-0.006 (2.11)*	-0.003 (3.28)**	-0.004 (3.49)**		-0.001 (4.51)**
Cognition	0.020 (2.23)*	0.035 (3.65)**	0.023 (2.31)*		0.005 (0.46)
Econ.growth	0.014 (0.57)	-0.023 (1.06)	0.009 (0.43)		
Precision	0.011 (0.49)	0.034 (1.38)	0.018 (0.77)		0.030 (1.04)
Stock mkt. up				0.086 (3.91)**	0.063 (2.73)**
Constant	-5.706 (0.27)	-8.680 (0.39)	29.106 (1.39)	-0.150 (10.40)**	-21.183 (0.81)
Observations	2993	3028	2997	2713	2649
R-squared	0.04	0.07	0.05	0.01	0.06

## Figures



**Figure 1.**  
**Optimal share of risky asset in period 1 in the simple 2-period learning model with two possible returns. No learning and perfect learning by period 2**