The Knowledge Gap in Workplace Retirement Investing and the Role of Professional Advisors

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What do we know about the way that investors behave? (some experimental evidence)

- Investors do not look at even very simple disclosures
- Investors do not consider fee information important
- Investors do not understand what risk means (and are extremely risk averse)
- Investors do not understand investment products or concepts
- Investors (especially involuntary investors) find the investment task unpleasant

Project Overview

- Series of studies to learn more about retail investor decision-making
- Results from first study (Penn Law 2014)
  - Retail investors made costly mistakes including insensitivity to fees
  - A fee instruction partially improved decision-making
  - Segmentation was present within the subject group
- Results from this study (Duke 2016)
  - Documented role of financial literacy
  - Professional advisors substantially outperformed retail investors
  - But professional advisors made mistakes too, even in the absence of conflicts of interest
- Additional work in progress
  - Testing the effect of investor education
  - Exploring investor risk aversion

Challenges to Studying Financial Literacy

- How do we evaluate which investor decisions are better or worse?
  - Easy cases like dominated funds (Ayres)
  - But how do we weigh cost, professional management, number of options, related services?
- Role of risk aversion
  - Given the risk/return trade-off, should risk aversion be treated as a preference?
  - What about the relationship of risk aversion to financial literacy?

When are investment advice or increased investment options cost-justified?

- Example 1 – Target date funds

  T Rowe Price Target fund - .75%

  Vanguard Target date fund - .15%

  Vanguard S&P Index fund - .05%

- Example 2 – Rollovers to IRAs

The Regulatory Background

- Participant-directed retirement investing (401(k) plans and IRAs) raises a variety of policy questions
- Are these better for investors than defined benefit plans (see Ayres)?
- To what extent should we defer to investor choice about whether to enroll, how much to contribute, and what to invest in?
- Is paternalism warranted?
- Potential regulatory responses
  - Automatic enrollment, default options, fiduciary rule, fee disclosure

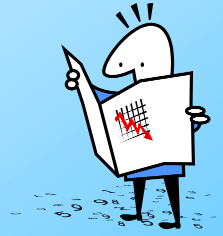
Retail investors make costly mistakes

How much does it matter?

A study cited in the Wall Street Journal found that the average investor in all U.S. stock funds earned 3.7% annually over the past 30 years—a period in which the S&P 500 stock index returned 11.1% annually.

Are the mistakes due to a lack of Financial Literacy?

- Many studies show that retail investors lack financial literacy
- Lack of financial literacy has been linked to poor investment performance, but
  - What is financial literacy?
  - How much does it explain?
  - What, if anything, can we do about it?



Our Study

- On-line study of investment decision-making
- Subjects were instructed to allocate a $10,000 investment across ten options in a 401(k) retirement account with 30 year time horizon
- Fund options and characteristics were modeled on real world investment options with simplified disclosure
- Incentive payment based on portfolio's final value (possible range - $13,478.49 to $132,676.78)
- The subjects
  - Mechanical Turk
  - Professional advisors accessed through FINRA

Study Structure

- All information provided via “clicks”
- Allocation decision followed by a questionnaire collecting information on
  - Financial literacy
  - Demographics
  - Risk tolerance
  - Open-ended questions

Key results

- Professional advisors are dramatically more financially literate than ordinary investors (but some surprising answers)
- Financial literacy is strongly correlated with performance (measured in various ways)
- Professional advisors did not invest optimally
- Risk aversion is critically important

Mechanical Turk

- Do MTurk subjects respond differently from other types of experimental subjects?
- Do MTurk subjects behave like real world retirement investors?

Key demographics

Table 1. MTurk Respondents Demographic Variables

Male	58%
Median Age	33
Four Year College Degree or more	55%
Employed full or part time	66%
Annual Household Income <$50,000	55%

Table 2. FINRA Respondents Demographic Variables

Male	**79%**
Median Age	46
Four Year College Degree or more	96%
Median Time on Survey	23 minutes
Median number funds invested in	4

Please allocate your hypothetical retirement account of $10,000 by designating the percentage that you wish to invest in each of the 10 funds below. Your allocations must total 100%. Press the submit button when you are done. Please click on fund names to obtain more information about each fund.

Fund Type	Fund Name		
Target Date Fund	Fund A	0	%
Fixed Income Fund	Fund B	0	%
Fixed Income Fund	Fund C	0	%
Equity Index Fund	Fund D	0	%
Equity Index Fund	Fund E	0	%
Managed Equity Fund	Fund F	0	%
Managed Equity Fund	Fund G	0	%
Managed Equity Fund	Fund H	0	%
Money Market Fund	Fund I	0	%
Cash Account	Fund J	0	%
Total		0	%

SUBMIT

BACK TO FUND ALLOCATION PAGE

Fund A

Fund A seeks to provide total return consistent with an asset allocation strategy designed for investors expecting to retire around the year 2045. The Portfolio invests in a combination of underlying funds, which are actively managed funds or passively managed funds, that invest in U.S. stocks, U.S. bonds, and other debt instruments. The Fund's current approximate target investment allocation among the underlying funds is approximately: 95% in equity securities; and 5% in debt instruments. The Fund's allocation will gradually shift to an increased percentage of debt instruments.

Performance Risk Fees Holdings

Table 3. Quiz Performance, by Item, for Each Subject Pool

Question	MTurk Percent Correct	FINRA Percent Correct
MC1: Best returns from stocks	63%	98%
MC2: Stock = own part of company	89%	98%
MC3: Bond = lend money to company	80%	98%
MC4: Safest bond is treasury	87%	100%
MC5: Interest rates go up, bond prices go down	52%	100%
MC6: Mutual funds pool with other investors	73%	100%
MC7: Fund balanced for retirement fund is target-date fund	53%	100%
MC8: Relationship between risk and returns in long run is positive	48%	73%
MC9: Longer time horizon, take on more risk	69%	100%
TF10: Index fund tracks market index	90%	98%
TF11: Possible to lose money in bond	61%	100%
TF12: Professional managed funds do better	31%	70%
TF13: Index funds vary based on manager experience	35%	68%
TF14: Possible to lose money in mutual fund	89%	100%
TF15: Expenses do not vary among mutual funds	78%	98%
TF16: Diversification reduces variability	44%	67%
TF17: Difference between bank and money market is FDIC insurance	74%	82%
TF18: Mutual funds less diversified than individual stocks	78%	97%
TF19: Target dates cheaper than individual funds	30%	46%

N1: Return in 2 years	61%	78%
N2: Return in 30 years	38%	75%
N3: Fees paid in 30 years	42%	50%
N4: Fees paid in 30 years	35%	42%
LM1: Compounding	90%	98%
LM2: Inflation and Savings	84%	98%
LM3: Safety of Stocks vs. Mutual Funds	80%	96%
Mean 19-point score	12.3	16.9
Mean Numeracy Score	1.8	2.4
Mean LM score	2.5	2.9

Note: MC – multiple choice, TF – true false, N – numeracy, LM – Lusardi & Mitchell questions.

Financial Literacy

If interest rates go up, bond prices:	**a. Go up** **b. Go down (1)** **c. Do not change** **d. There is no relationship**

52% of MTurk subjects answered correctly

100% of professional advisors answered correctly

Some surprising results from the advisors

Index fund performance can vary substantially depending on the expertise of the fund managers.

32% of advisors answered incorrectly

Diversification reduces the variability of my portfolio.

33% of advisors answered incorrectly

On average what is the relationship between risk and returns over the long run?

1. Riskier investments deliver higher returns
2. Riskier investments deliver lower returns
3. There is no relationship
4. Riskier investments deliver short term losses but can be profitable in the long run

48% of Mturk subjects and 73% of professional advisors answered correctly

The Importance of Financial Literacy

	Low Literacy	High Literacy	Prof advisors
Returns	70,389.78	91,575.08	97,166.02
Cheap Index Fund Investment	8.1	19.3	27.5
Fees Paid	.77	.69	.63
Total Clicks	17.9	29.0	25.6

[1] To calculate fees paid, we omitted the cash account.

Table 8. Regression: DV=Return

	FL Score (1)	FL Score and Demographics (2)	All Scores and Demographics (3)
Intercept	80766.3*** (1770.4)	81050.8*** (2825.2)	81003.4*** (2679.8)
FL Score 19	11065*** (1776.4)	10797.7*** (1949.3)	7034.8** (2094.3)
Numeracy Score			2519.3 (1815.1)
Risk Score			8208.6*** (1836.3)
Experience			948.4 (1908)
Age		-578.1 (1868.6)	-1237.8 (1815.3)
Male		-52.6 (3824.3)	-706.6 (3619.4)
Education		2860.6 (1978.6)	2115.1 (1918.7)
Income		530.4 (1921)	947.2 (1907.9)
Adjusted R^2	0.206	0.21	0.305
F-Test	$F(1,145)=38.8$	$F(5,138)=8.62$	$F(8,132)=8.67$
p-value	<.001	<.001	<.001

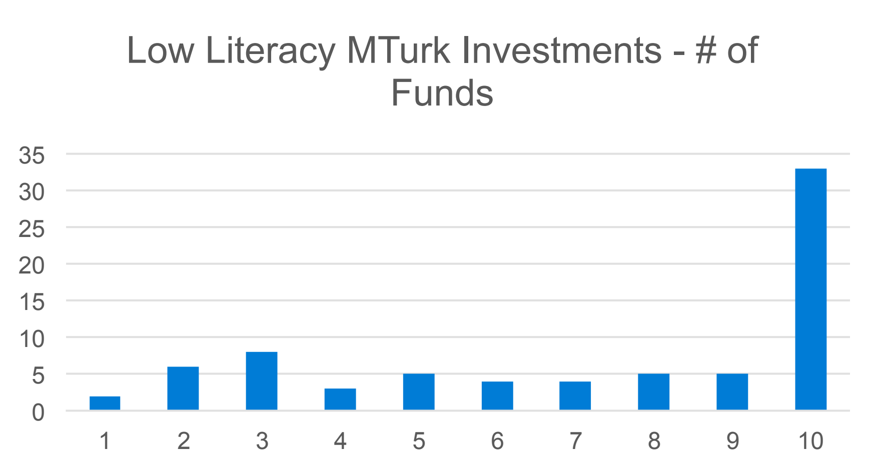
n=144. *p<.05, **p<.01, ***p<.001 All noncategorical independent variables have been scaled by subtracting the mean and dividing by the standard deviation.

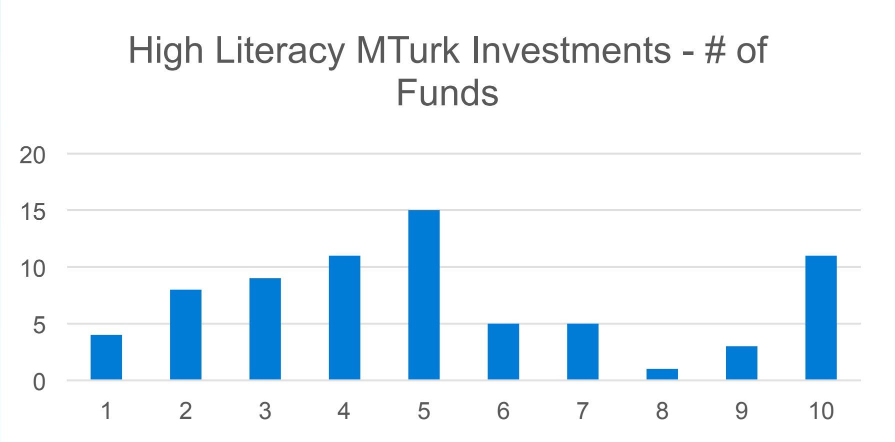
What is driving financial literacy?

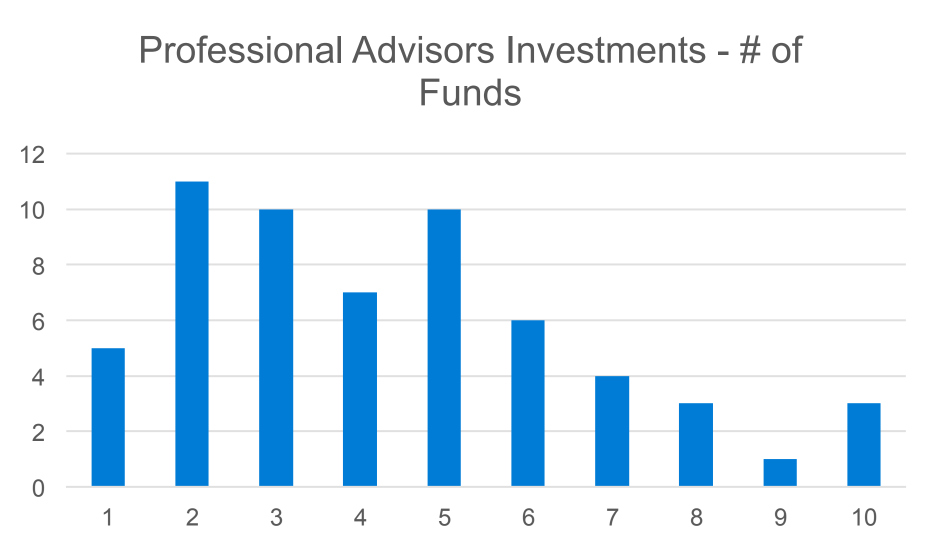
	Estimate	SE	p-value
Intercept	**11.48**		
Experience	0.64	0.22	0.005
Age	0.41	0.21	0.055
Male	1.30	0.42	0.003
Education	0.56	0.22	0.013
Income	0.10	0.23	0.654

Multiple R-squared: 0.1875 Adjusted R-squared: 0.1581
F-statistic: 6.369 on 5 and 138 DF, p-value < .001

Inefficient Diversification







Dominated Funds
The Two Index Funds

(VFINX) Vanguard 500 Index Fund		(SPIAX) Invesco S&P 500 Index Fund
Fund D		Fund E
Equity Index		Equity Index
0.17%	fees	0.67%
7.28%	1 year return	6.85%
17.17%	5 year return	16.70%
7.69%	10 year return	7.28%

Security	% of Portfolio
Apple Inc	3.95
Microsoft Corp	1.95
Exxon Mobil Corporation	1.90
Johnson & Johnson	1.48
General Electric Co	1.46
Wells Fargo & Co	1.44
JPMorgan Chase & Co	1.37
Berkshire Hathaway Inc Class B	1.26
Procter & Gamble Co	1.16
Pfizer Inc	1.13

35 of 60 professional advisors allocated some money to the dominated index fund

Questions Raised

- Why are the advisors getting it wrong?
  - They are much more financially literate
  - They are unlikely to be influenced by conflicts of interest
  - They do not appear to be using all the information available to them
  - This has implications for regulation of disclosure
- How should we understand the role of risk aversion?
  - Risk aversion played a substantial role in reducing portfolio value
  - Should risk aversion be treated as preference or a mistake?
  - Are we assessing risk aversion correctly?

How can the investment process be improved?

- Improved disclosure will only work if people look at it
- Heightened fiduciary duties – how do we reconcile fiduciary duties with fee structures?
- Investor education – but does it work?
- Paternalism
  - Defaults and structured choices
  - Automated vesting, robo-advisors
  - Critical regulatory question of identifying better investment choices

Further Research

- Investor Education
- Information Timing
- Risk Aversion

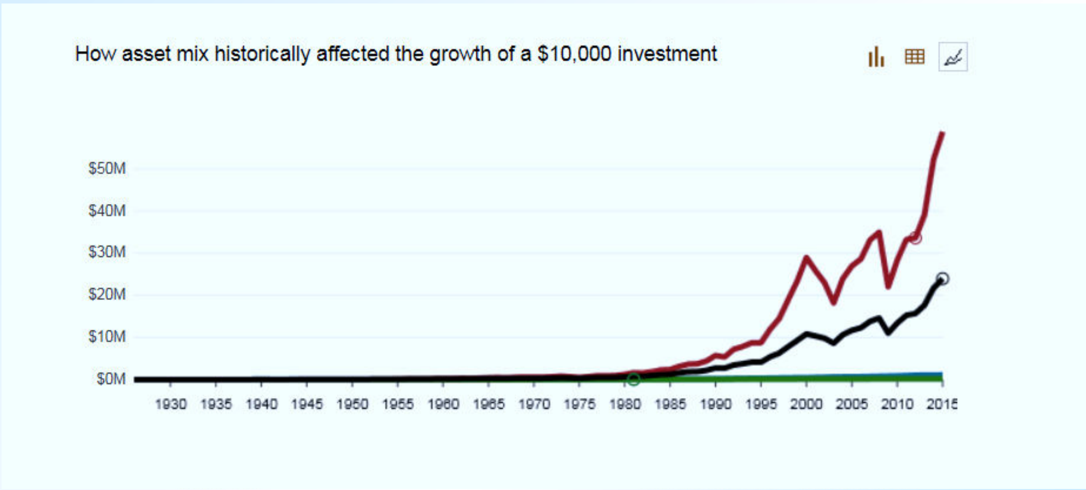
Investor Education

This study asks you to choose among 10 investment alternatives in a hypothetical employer's 401(k) retirement plan. The following information may be helpful to you in making your allocation decision.

I. Start by understanding the basics of risk and return.

Deciding how much money you want to have and when you need it is probably pretty easy. Knowing how comfortable you are with risk might be a lot tougher if you've never thought about it or experienced it yourself. But don't just wing it. Your risk tolerance is one of the critical ingredients in deciding what you're going to invest in. Picking investments that are riskier than you can handle can lead to some pretty ugly outcomes. But choosing investments that aren't risky enough—that don't have the right potential for growth—can also be a roadblock in reaching your goal.

All investing involves some risk. It's also true that investing is one of the best ways to increase the amount of money you have available to meet your goals (although an expectation of immediate riches is highly unrealistic). In fact, there's typically a direct relationship between the amount of risk involved in an investment and the potential amount of money it could make



100% stock
70% stock, 25% bonds, 5% cash
100% cash

Preliminary Results

RETURNS	Control	Education
Overall	83743	91806 (p=.008)
Low Experience	77707	85300 (p=.065)
High Experience	90019	97164 (p=.085)

FINSCORE 19	Control	Education
Overall	12.6	12.5
Low Experience	11.6	11.4
High Experience	13.2	13.5

CLICKS	Control	Education
Overall	17.3	24.9 (p=.019)
Low Experience	18.2	22.4
High Experience	16.4	26.9 (p=.018)