

Education, Cognitive Performance, and Investment Fees

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Q-Group Seminar

April 16, 2019

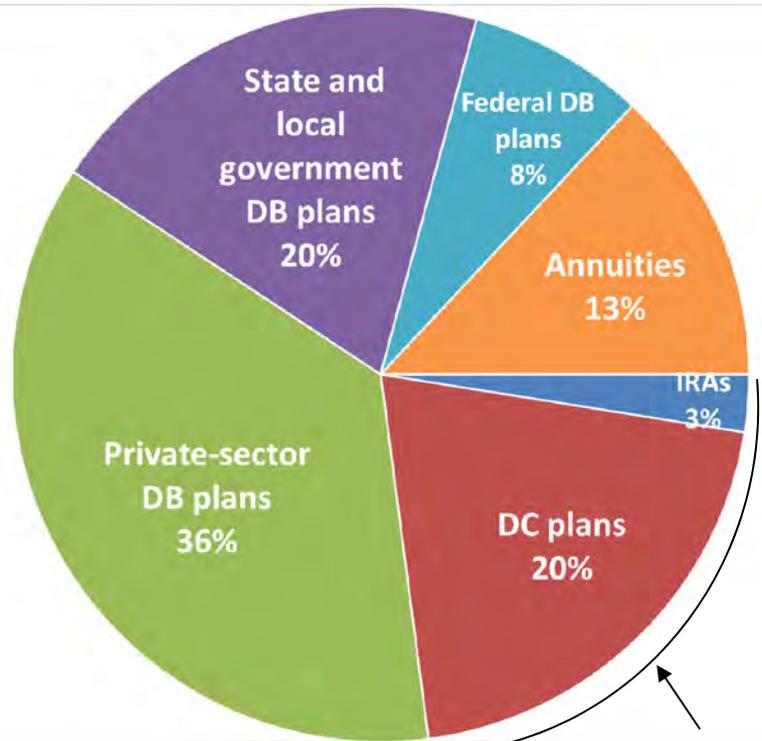
Charleston, SC

Disclosure

- Zeldes is an external advisor to FeeX (www.feex.com) and is grateful to the team there for helpful discussions about IRA fees

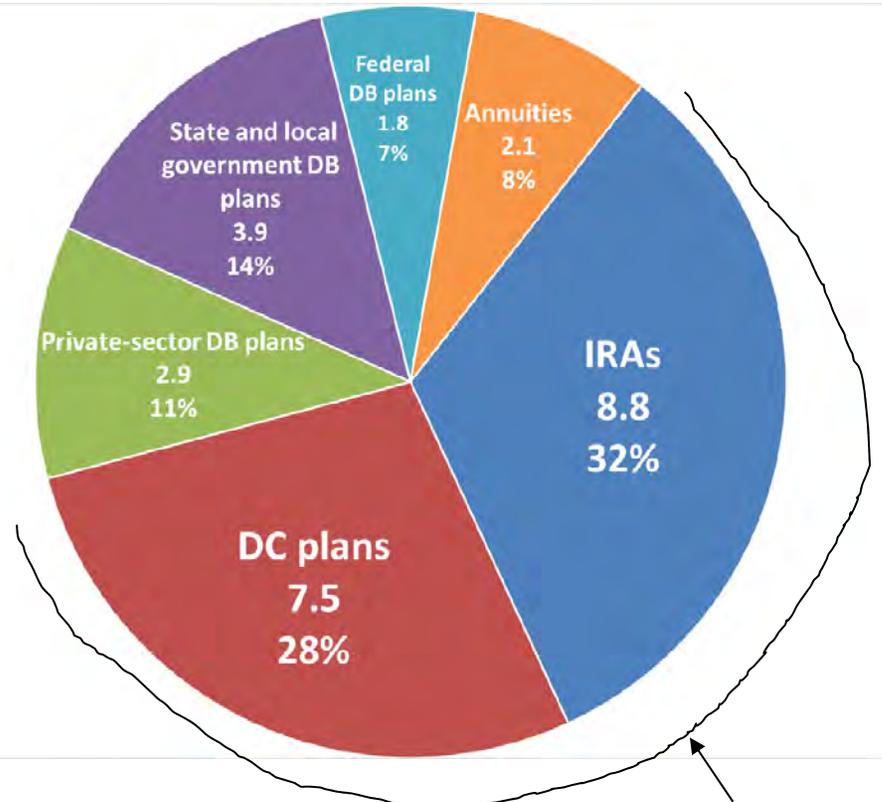
U.S. Retirement Assets

1980: Total Assets \$1.0 trillion



DC+IRA = 23%

2018: Total Assets \$27.1 trillion



DC+IRA = 60%

Data source: Investment Company Institute and author's calculations

<http://www.ici.org/research/stats/retirement>

DC → IRA rollovers

- Rollover flows are large
 - U.S. employer plan → IRA rollovers = \$468 billion (2015) vs
 - \$402 b contributions to private sector DC plans
 - \$39 b contributions to IRAs
 - 84% of new IRA accounts in 2016 were opened exclusively with rollovers
- A substantial fraction of IRA assets come from DC rollovers
- IRAs often held in advised accounts (see chart)
- Rollovers can either raise or lower fees, depending on specific 401(k), IRA FI, and whether advised account
- Rollovers are a key source of AUM (and revenue) for many 401(k) service providers and other asset managers

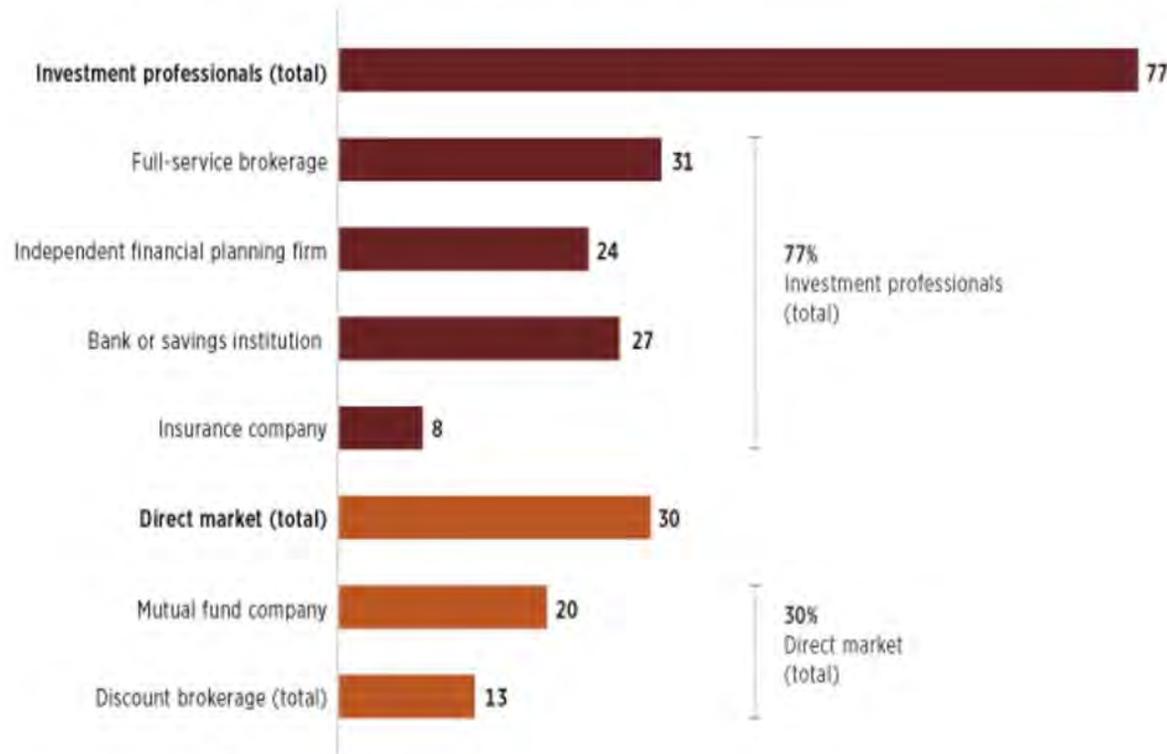
DC plan vs IRA

Defined-contribution plan (DC)	Individual Retirement Account (IRA)
Employer-based	Individual account
Covered by ERISA	Not covered by ERISA
Fiduciary rules apply	Fiduciary rules in flux
Selected menus of mutual funds or collective trusts	No restrictions on assets (mutual funds, ETFs, individual securities, CDs, ...)
Managed accounts offered (but not the norm)	Often held in advised accounts

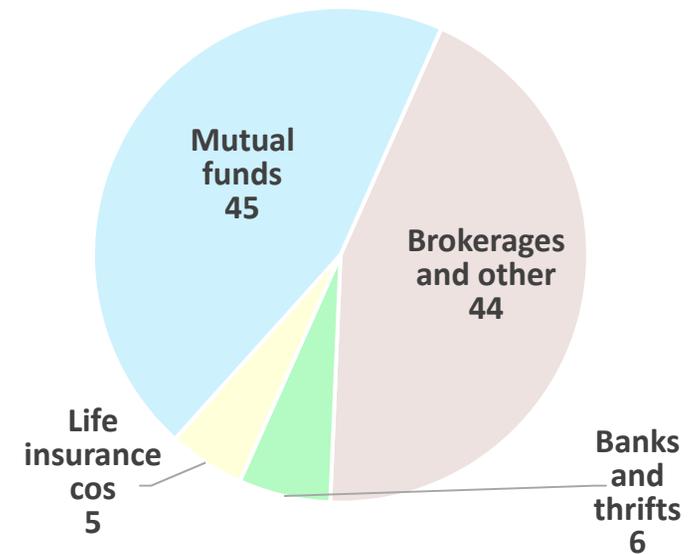
Where are IRAs held?

Traditional IRAs Are Held Through a Variety of Financial Institutions

Percentage of households owning traditional IRAs, 2017



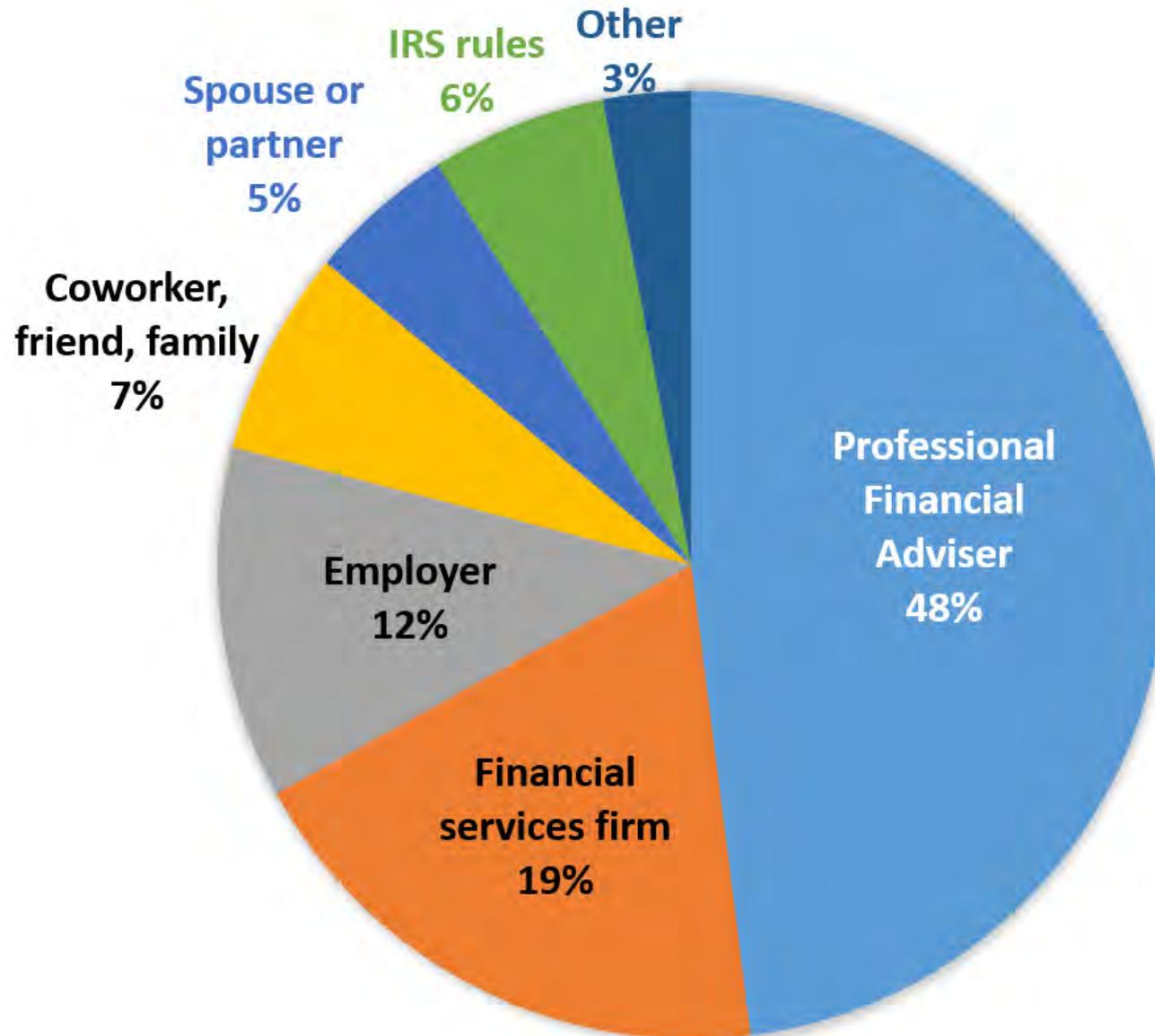
IRA asset shares (dollar-weighted) by type of product



Note: Multiple responses are included.

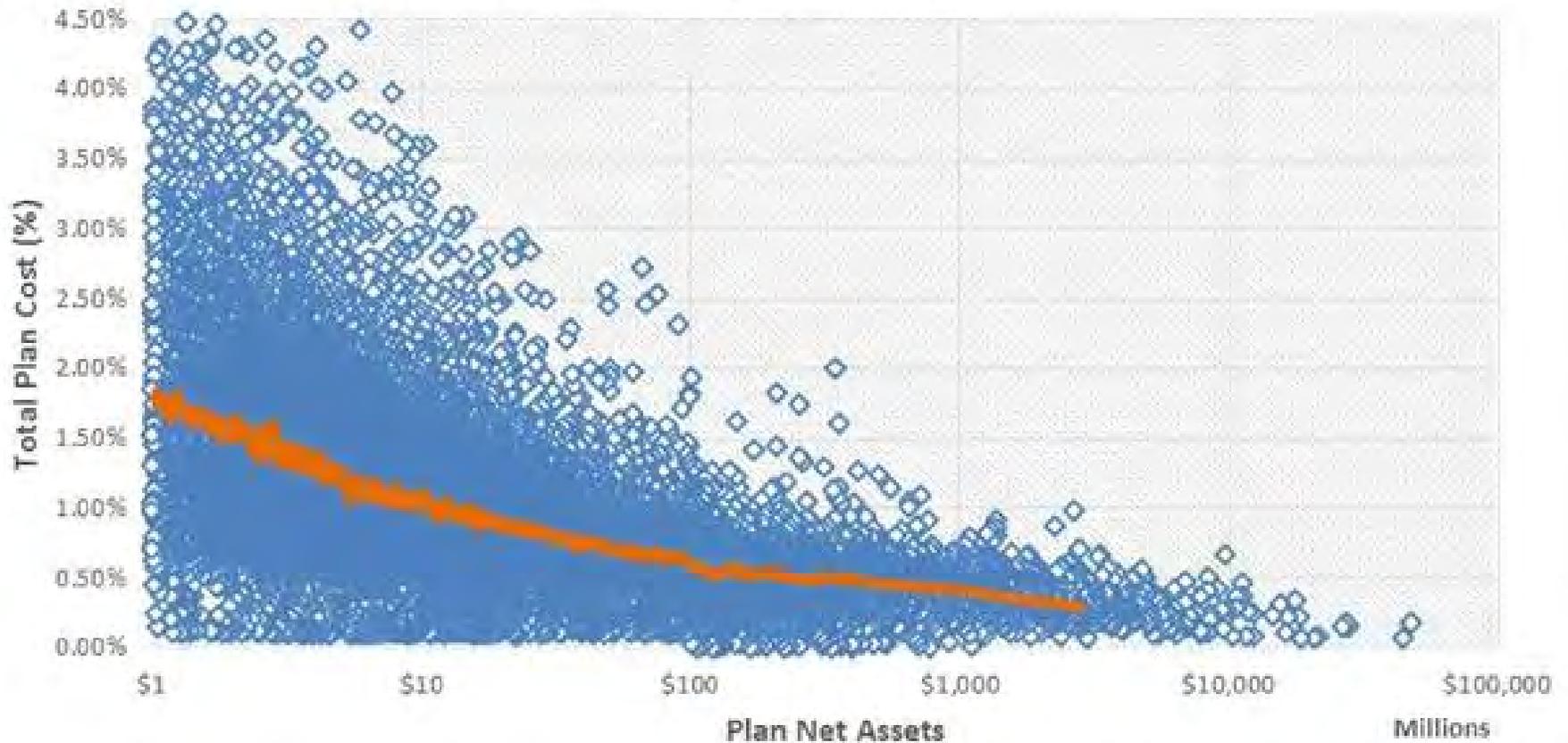
Source: Investment Company Institute IRA Owners Survey

Primary source of information consulted for rollover decision 2018 ICI survey on IRA rollovers



DC Plan Fees

Total Plan Cost in 401(k) Plans



Brightscope.com

www.brightscope.com/financial-planning/advice/article/15556/The-One-Chart-That-Explains-401K-Fees

What drives rollovers to IRAs?

Possibilities include

- Lower fees in IRAs (in some cases)
- Greater flexibility in IRAs
 - Asset selection
 - Withdrawal options
- Valuable services provided in IRAs
- Account consolidation
- Marketing by financial firms
- Advice from financial advisors (potentially conflicted)
- Mistakes

Rollovers: Research questions

- Do rollovers represent “good” (rational) decisions?
- How appropriate is the advice given by financial advisors?
- Are “mistakes” related to education and cognitive ability?

Thrift Savings Plan (TSP)

- Covers Federal government employees and uniformed service members
- Largest DC plan in the world
 - ~500 billion in assets
 - ~5 million current participants
- 5 funds + life-cycle funds
- All funds are passive (indexed)
- Very low fees (< 4 bps)

TSP investment options

Fund Name	Description of Investments	Objective of Fund	Expense Ratios		
			2016	2017	2018
G Fund	Government securities (specially issued to the TSP)	Interest income without risk of loss of principal	0.038%	0.033%	0.040%
F Fund	Government, corporate, and mortgage-backed bonds	To match the performance of the Bloomberg Barclays U.S. Aggregate Bond Index	0.038%	0.032%	0.041%
C Fund	Stocks of large and medium-sized U.S. companies	To match the performance of the S&P 500 Index	0.038%	0.032%	0.041%
S Fund	Stocks of small to medium-sizes U.S. companies	To match the performance of the Dow Jones U.S. Completion TSM Index	0.038%	0.032%	0.040%
I Fund	International stocks of more than 20 developed countries	To match the performance of MSCI EAFE Index	0.039%	0.032%	0.041%
L Funds	Invested in the G, F, C, S, and I Funds	To provide professional diversified portfolios based on various time horizons, using the G,F,C,S, and I Funds	0.038%	0.033%	0.040%

Rollovers from TSP to IRA

- Fees at IRA rollover institutions much higher than at TSP
- Our dollar-weighted average estimates
 - Expense ratios: 56 bps
 - Advisory fees: 120 bps
- Suggests that rolling over might be a mistake

Marketing rollovers to TSP participants



GOLD IRA GUIDE

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Investing In Gold Through A Thrift Savings Plan (TSP)

Gold IRA Guide / Types of Retirement Plans / Investing in Gold through a Thrift Savings Plan (TSP)



Are you a federal employee or military member who participates in the **Thrift Savings Plan**? Have you ever wondered if you can invest in recession-proof physical gold or silver bullion (and other investment-grade metals) with your TSP? Here, we'll go in details over TSP accounts, their investment limitations in regards to precious metals, and how you can safeguard your retirement assets against economic calamity.

<https://goldiraguide.org/types-of-accounts/investing-in-gold-through-a-thrift-savings-plan-tsp/>

Our hypotheses: Higher human capital, better financial decisions?

- Are rollovers a mistake?
- Does severity of mistake vary across people?
- Our proxy for severity of mistake: fee differential

- Are mistakes less prevalent or less severe among those with higher education and/or test scores?

Our hypotheses:

- Greater education and cognitive ability associated with
 - Lower likelihood of rolling into IRA
 - Choosing IRAs with lower fees (conditional on rollover)

Data

- Observations on all current or former Army personnel who had positive TSP balance any time in 2016 Q1 – 2018 Q1
 - Federal civilian employees
 - Uniformed service members
- Quarterly TSP account data, 2016 Q1-2018 Q1
 - Balances
 - Asset allocations
 - Withdrawals, rollovers, annuitizations,
 - Rollovers: amount, name of financial institution \$ sent to
- Army personnel data
 - Years of education
 - AFQT score
 - Salary
 - Tenure
- Fee data at rollover institution
 - Expense ratios
 - Advisory fees

Human capital measures

- AFQT – Armed Forces Qualification Test
 - Subset of Armed Services Vocational Aptitude Battery (ASVAB)
 - Components
 - Word Knowledge (WK)
 - Paragraph Comprehension (PC)
 - Arithmetic Reasoning (AR)
 - Mathematics Knowledge (MK)
 - Administered to military
 - Reported as percentile, based on national sample of 18-23 yr olds
 - Cutoff for enrollment in military service generally 31-36
- Education
 - Years of education prior to employment

Samples used

Sample Name	Analysis	Definition
Middle-Age Separators	Fund Projections	Employees aged 50-69 at separation and had balances at some point during our sample period. ¹¹ Only includes observations corresponding to the post-separation period. Excludes employees after all TSP funds have been withdrawn. Excludes fund flows during Q1 2016.
In-Sample Separators	Extensive Margin	Individuals employed as of Q1 2016 and who separated between Q2 2016-Q1 2018
In-Sample Rollovers	Intensive Margin	All separated employees with rollover transfers during Q1 2016-Q1 2018 to institutions for which we have fee data. ¹²

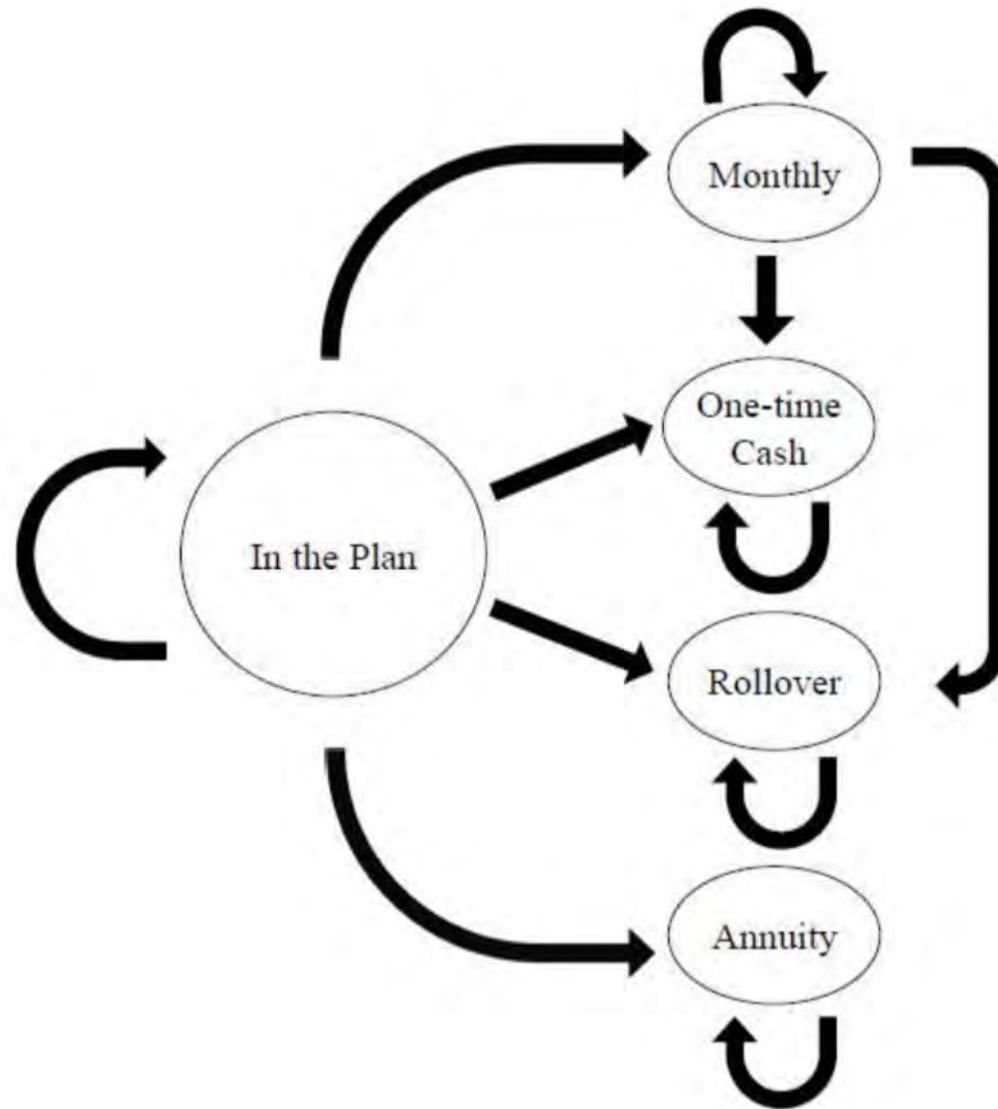
Summary statistics

Sample Name	Middle-Age Separators		In-Sample Separators		In-Sample Rollovers	
Analysis	Fund Projections		Extensive Margin		Intensive Margin	
Subgroup	(Full)	(AFQT)	(Full)	(AFQT)	(Full)	(AFQT)
Years of Education	14.4 (2.7)	13.4 (2.4)	13.3 (2.6)	12.2 (1.9)	14.6 (2.7)	12.9 (2.2)
% with Rollover	8.2%	5.1%	5.9%	2.5%	100%	100%
TSP Balances at Q1 2016	\$155K (\$180K)	\$70K (\$97K)	\$52K (\$112K)	\$14K (\$34K)	\$124K (\$163K)	\$34K (\$64K)
Age at Q1 2016	58.7 (4.9)	56.0 (4.9)	40.8 (13.7)	34.6 (10.2)	50.8 (13.6)	38.4 (11.3)
% Male	64.4%	84.2%	74.5%	83.0%	67.9%	80.1%
% Military	10.3%	36.7%	62.2%	86.9%	32.9%	79.3%
% White	57.4%	31.8%	46.8%	50.2%	57.7%	57.7%
% Black	9.3%	21.2%	17.3%	23.0%	8.5%	16.7%
% Hispanic	4.1%	5.9%	8.0%	10.8%	4.5%	7.5%
% Other	29.2%	41.2%	28.0%	16.0%	29.3%	18.1%
# of Employees	74,518	7,767	78,687	45,454	10,270	2,347

TSP Withdrawal Options

- When still employed by federal gov't
 - One-time in-service withdrawal if age > 59½ (cash or rollover)
 - Financial hardship withdrawal
- After separation
 - One-time partial withdrawal (if haven't taken in-service withdrawal
 - Cash withdrawal
 - Rollover to an IRA or other employer plan
 - Full withdrawal (must be taken once turn 70 ½)
 - Lump-sum cash
 - Rollover to IRA or DC plan of new employer
 - Stream of monthly payments
 - Life annuity
- TSP Modernization Act will yield much more flexibility starting September 2019

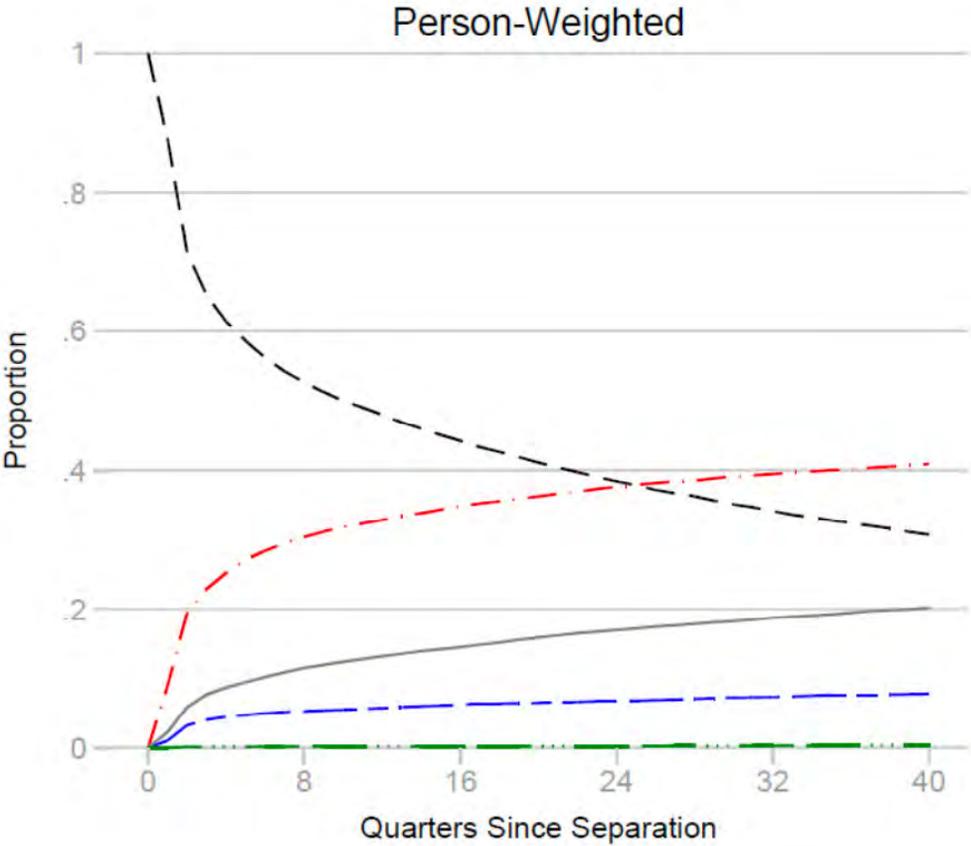
Possible transitions of TSP balances after separation



How money leaves the TSP: projection method

- How to project many years out, with only 9 qtrs of data?
 - We observe individuals who separated long ago but still in TSP
 - We assume transition prob matrices vary with qtrs since separation, but stable across time and other variables
- Methodology
 - Take all employees who separated n quarters ago
 - Estimate probability that their TSP balance transitions from state i to state j
 - Multiply set of estimated transition matrices to project longer run transitions for each person who separated during our sample

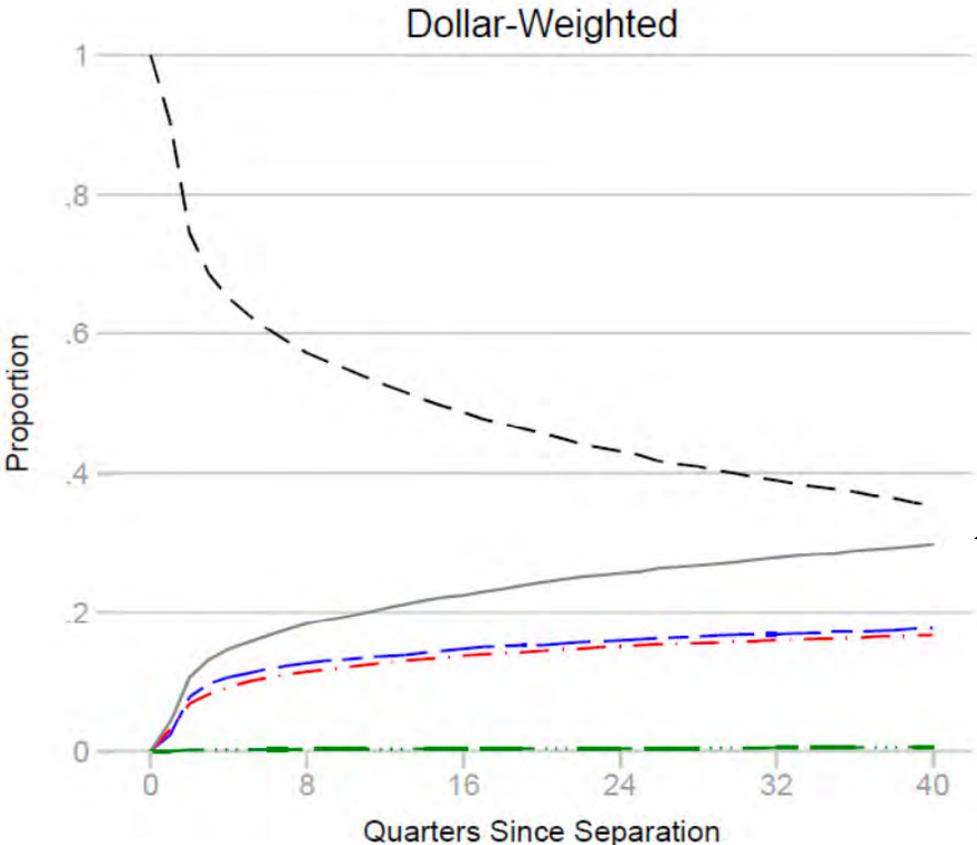
TSP balance status among age 50-59 separators



20% of people roll over by 10 years after separation

- In-Plan
- Rollover
- - - Monthly
- · - One-time Cash
- · · Annuity

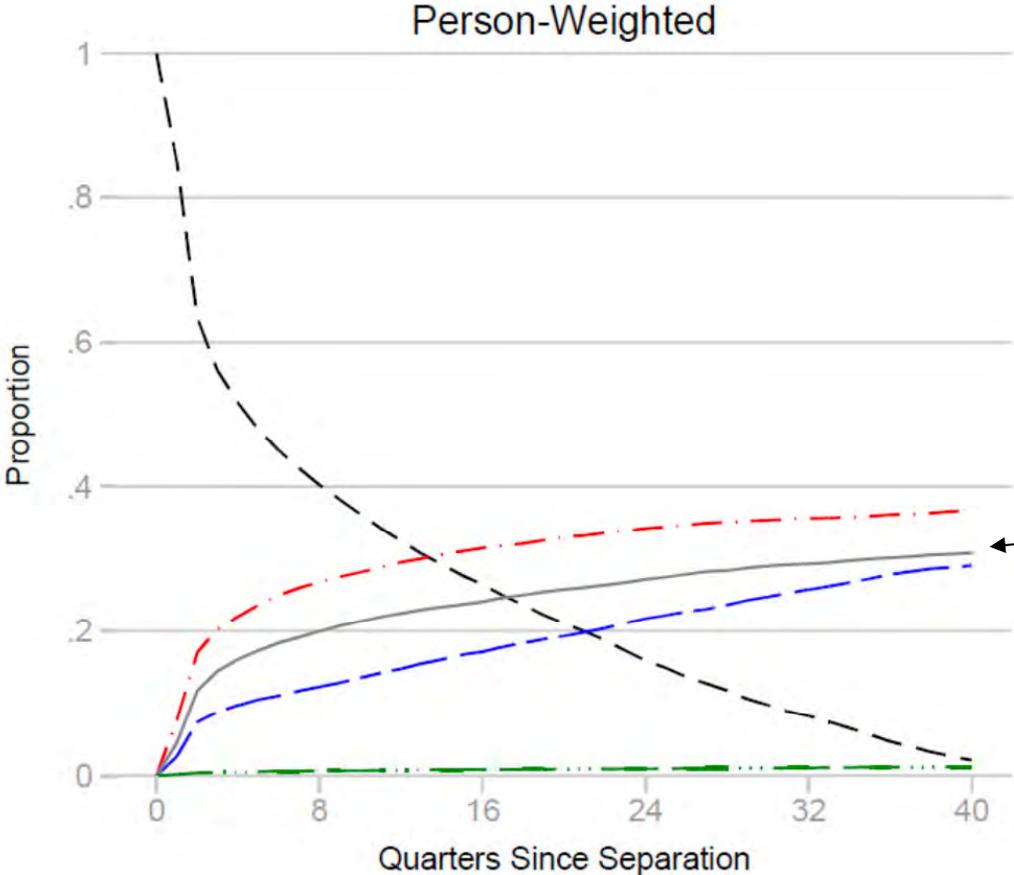
TSP balance status among age 50-59 separators



30% of dollars roll over by 10 years after separation

- In-Plan
- Monthly
- One-time Cash
- Rollover
- Annuity

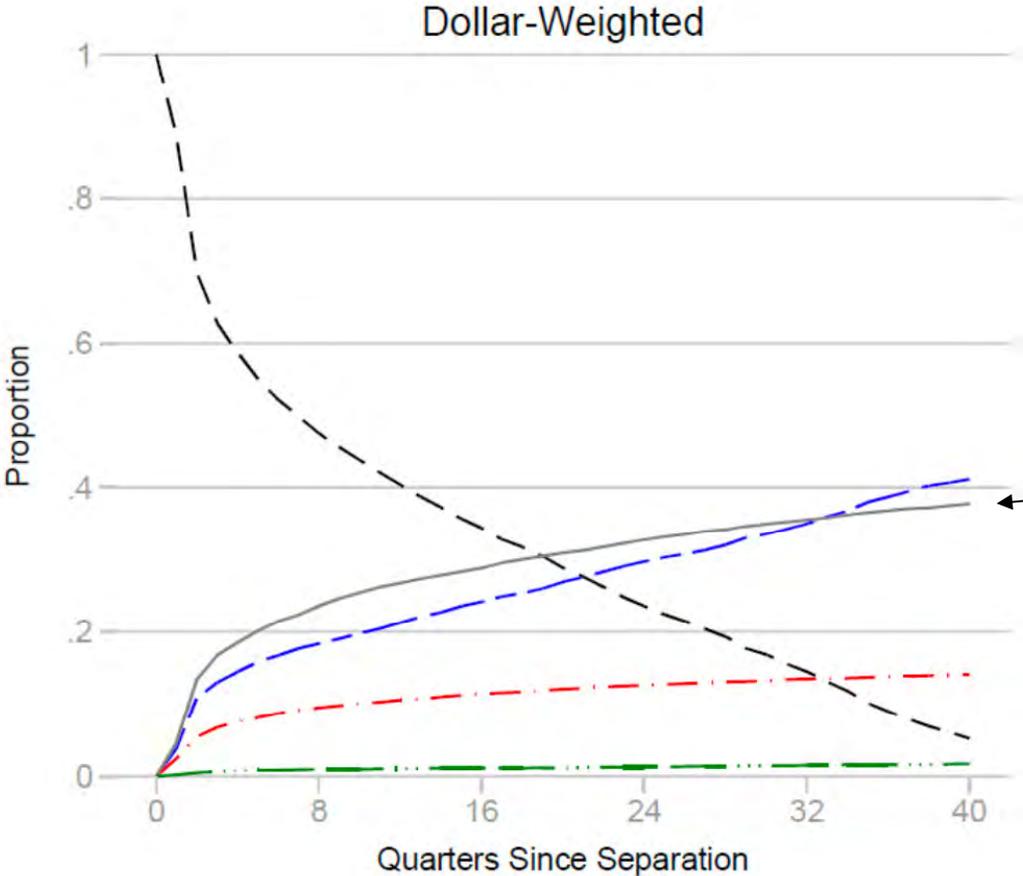
TSP balance status among age 60-69 separators



31% of people roll over by 10 years after separation

- In-Plan
- Monthly
- · - One-time Cash
- Rollover
- · · Annuity

TSP balance status among age 60-69 separators



38% of dollars roll over by 10 years after separation

- In-Plan
- Monthly
- · - One-time Cash
- Rollover
- · · Annuity

Annuitization

- Note: almost no people or dollars get annuitized
- Not the focus of this paper, but consistent with evidence on annuity puzzle
- See, e.g., Beshears, Choi, Laibson, Madrian, and Zeldes “What Makes Annuitization More Appealing?” (*Journal of Public Economics*, 2014)

Rollover destinations

- We observe the name of the institution receiving each rollover and the dollar amount of each rollover
- We can't track what happens to the dollars at the new institution
- Rollover destinations attract people with different human capital
 - Mean educational attainment differs across destinations
 - Mean AFQT score differs across destinations
- Fees vary across rollover destinations

IRA fee information

- Expense ratio data (44 institutions)
 - CRSP Mutual Fund Database, 2016-2017
 - Asset-weighted average of all mutual funds offered by IRA provider excluding institutional funds and hybrid funds
- Advisory fee data (33 institutions)
 - Form ADV Part 2a filed with SEC
 - Assume all IRA accounts pay advisory fee
- 58 institutions with at least one of these
- Imputing missing data within these 58
 - If no mutual funds (14) → Use average of firm-level expense ratios for providers that do offer mutual funds, weighted by rollover dollars from TSP
 - If no advisory services (25) → Use weighted average of firm-level advisory fees for providers that do offer advisory services
- Resulting sample covers 77% of rollover individuals and 82% of rollover dollars

Average IRA fees

- Average dollar of TSP rollovers pays
 - 56 basis points of expense ratio
 - 120 basis points of advisory fees
 - 176 basis points total
- 100 basis points of extra fees → 22% lower balances after 25 years $[1-(1-f)^T]$

IRA fee information - caveats

- We don't have individual-level data at IRA institution (hope to get this)
- We can't follow people *after* the rollover
 - Can't track what individuals invest in at the new institution
- If fees vary by education/AFQT *within* an institution, we'd have no way of picking it up

Regression analyses

Dependent variables (sample)

- 1) Whether roll over (in sample separators)
- 2) Fees - conditional on rollover (in sample rollovers)
- 3) Fees – (in sample separators, stayers and rollovers)

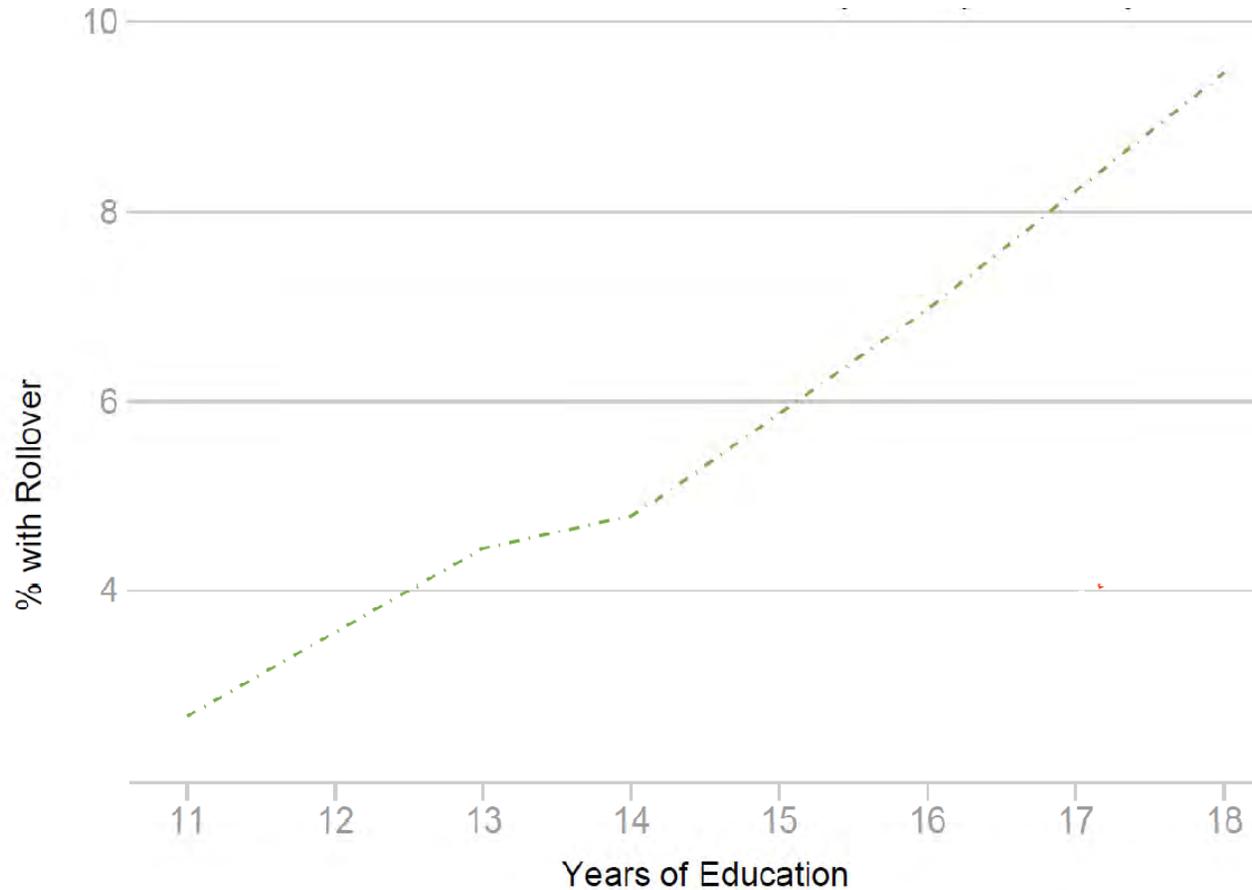
Main explanatory variables (separately, and together)

- Years of education
- AFQT score

Additional control variables

- Age, age squared
- Gender
- Race
- Military status (uniformed vs. civilian)
- Log(TSP balances)

Rollover probability by education - raw data



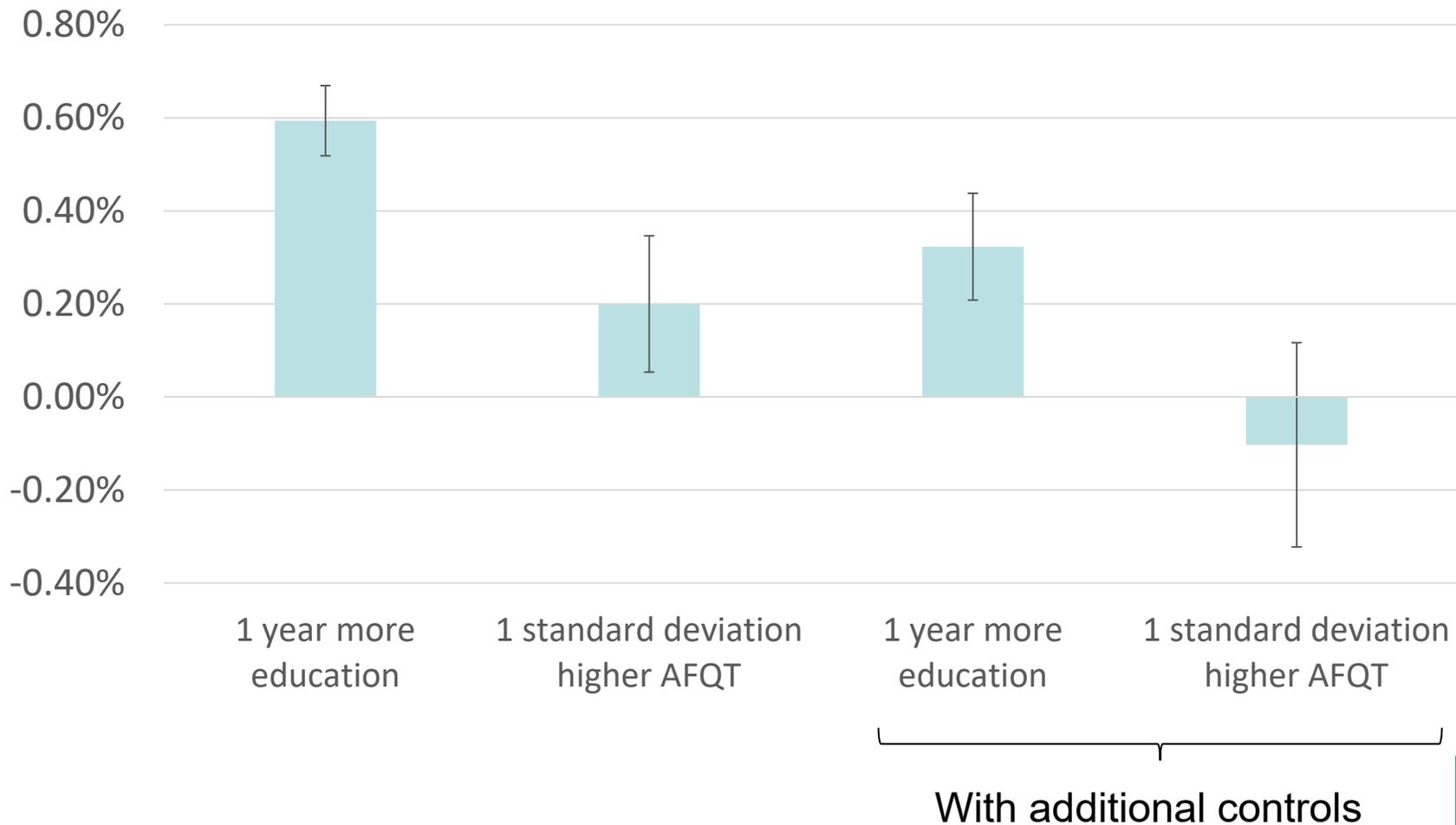
- Higher education → *more* likely to roll over

Rollover probability (logit)

Higher human capital = *more* likely to roll over

Specifications include both education and AFQT

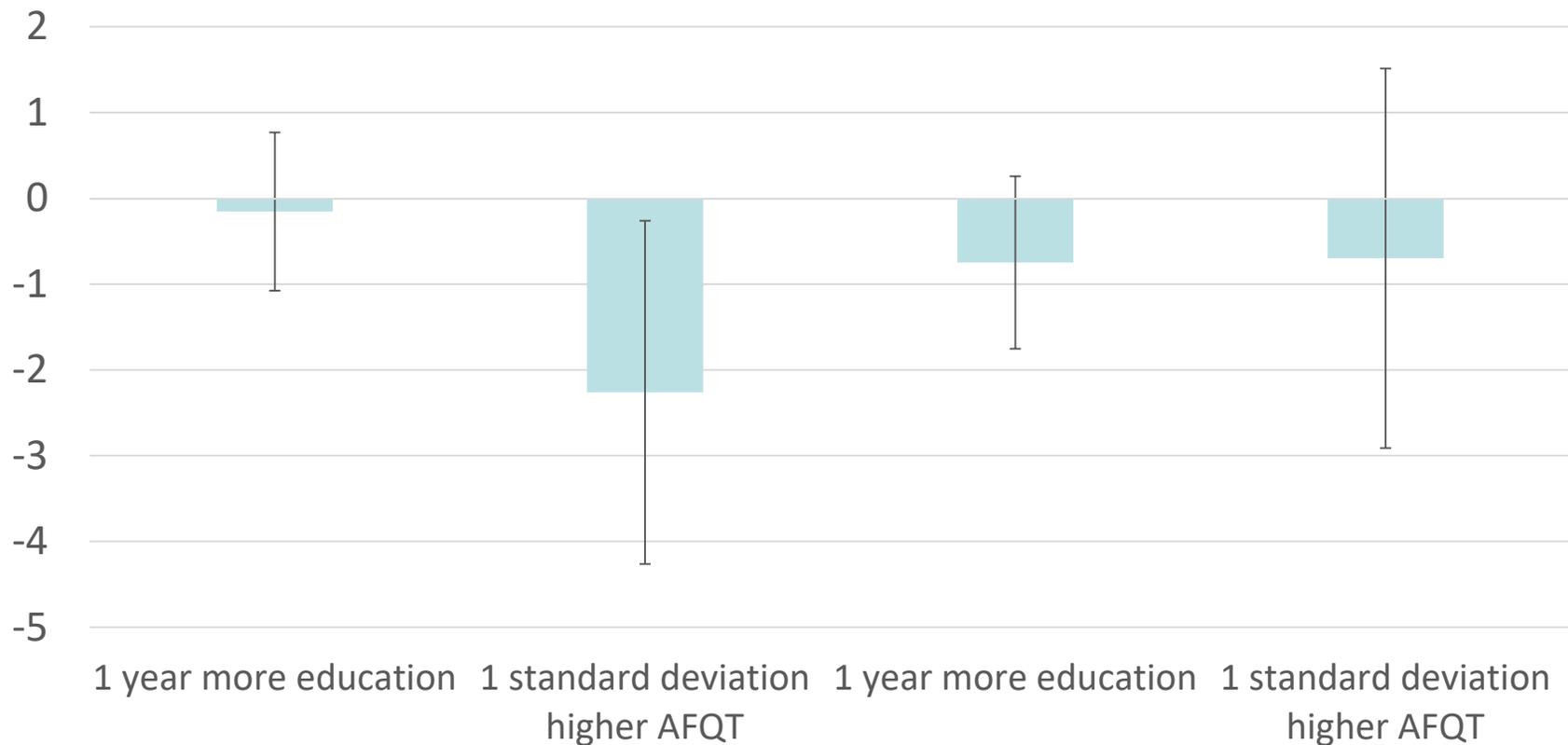
Magnitudes with controls relatively small



Total annual IRA fees, basis points (among those who roll over)

Higher human capital = *lower* fees, but very small effects

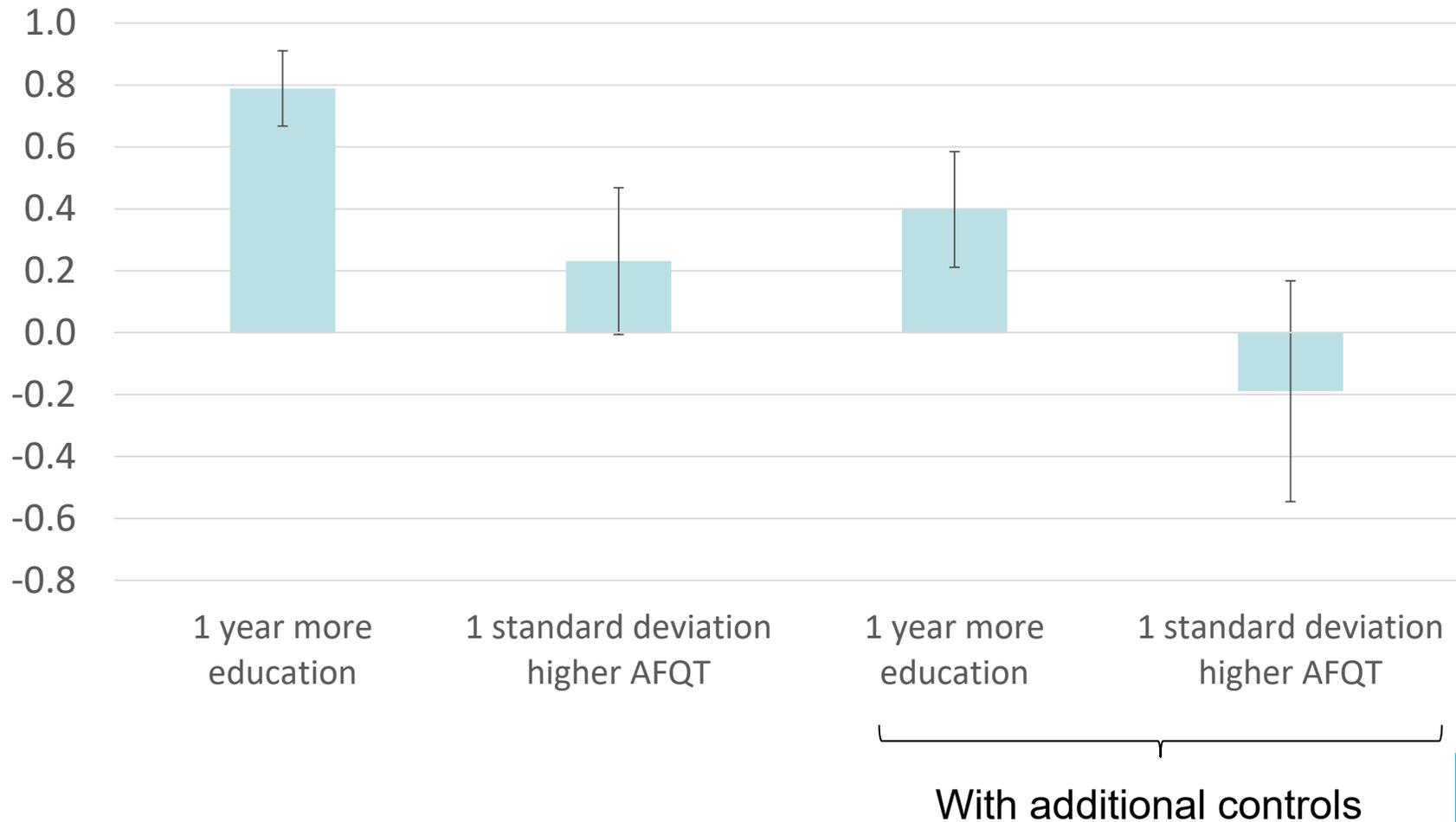
When variables included separately, education significantly negative, but small



With additional controls

Total annual fees, basis points (for all separators, whether or not rollover)

Higher human capital = *higher* fees, small magnitudes



Comparison to Grinblatt et al

Grinblatt, Ikäheimo, Keloharju, and Knüpfer (*Management Science*, 2016) “IQ and Mutual Fund Choice”

- Examine fees paid on mutual funds and scores on Finnish military IQ test
- Find statistically significant negative relationship, but ...
- Very small in magnitude (our interpretation) – similar in size to our results

Summary

- A significant fraction of TSP balances are eventually rolled over into an IRA
- Relationship between fees and education/cognitive ability
 - Likelihood of rolling over: positive
 - Fees conditional on rolling over: slightly negative
 - Fees (including stayers and rollovers) – slightly positive (statistically and economically insignificant)

Questions and implications...

- Why are high education individuals more likely to roll over?
 - Partially due to higher balances, but result holds even controlling for balances
 - More confidence? More prone to be “active” types?
 - More likely to have advisors?
 - More likely to be targeted by marketing efforts?
- Why are fees conditional on rollover only slightly decreasing in human capital? At least two possibilities:
 - Rollovers do not represent a “mistake” (particularly for high human capital individuals) OR
 - Rollovers are a mistake, but education / test scores not “protective” against this kind of mistake

Next steps?

- Alternative IRA fee measures by institution
 - Can we get evidence on actual fees paid by individual after rollover?
- Model rollover decision (passivity/activity) separately from institution/fees decision
 - Additional evidence on why individuals roll money out of TSP?
- Identify and examine other mistakes and see if correlated with rollovers?
- Examine outright withdrawals after separation (a larger mistake?)
- Are financial advisors encouraging rollovers? Can we find direct evidence of this? Is this helping or hurting their clients?