$100 Bills on the Sidewalk: Suboptimal Saving in 401(k) Plans

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Motivation

- **Question:** are individuals saving properly for retirement?
- **Answer:** Hmmmm…….
- From a theoretical standpoint, nearly ***any*** choice can be justified by some combination of preferences and information not observed by the econometrician
- This paper examines the extent to which individuals engage in a set of savings behaviors that are ***clearly dominated***

Motivation

- Who?
  - Individuals >59.5
  - 401(k) plan
    - Matches 401(k) contributions
    - Allows withdrawals for any reason (not just hardship)
    - Allows withdrawals while still employed
    - Allows withdrawals without precluding future contributions
    - No tax penalty (>59.5)
- What? Dominating "withdrawal strategy"
  - Increase 401(k) contribution rate to the match threshold
  - Immediately withdraw incremental contribution

Motivation

- Example
  - Employee earns $100,000
  - Employer matches $1/$1 up to 6% of pay
  - Employee does not contribute to 401(k) plan
- Dominating withdrawal strategies
  - Contribute 6% and immediately withdraw own contribution → same consumption + $6000 extra in 401(k)
  - Contribute 6% and immediately withdraw own contribution and employer match → $6000 extra consumption with no decease in savings
- Lower bound loss—optimal savings rate may be above the match threshold

Motivation

- If anyone should get saving for retirement right, it should be workers >59.5
  - Life experience
  - Salience—staring retirement in the face!
  - Long tenure—time to understand company 401(k) plan

Data

- Seven firms
  - Employer match
  - Employees >59.5 can make penalty-free withdrawals for any reason without an ensuing freeze on contributions
- Administrative data
  - Year-end cross-sections from 1998-2002
  - Demographic information: age, tenure, gender, compensation
  - 401(k) information: participation status, contribution rate, withdrawals, asset transfers

Calculating Welfare Losses

- Conceptual approach
  - Total possible match – actual match received
- Example
  - Employee earns $100,000
  - Employer matches $1/$1 up to 6% of pay
  - Employee contributes 3% of pay
- Loss calculation
  - Actual match: $100K x 3% = $3000
  - Possible match: $100K x 6% = $6000
  - Loss: $6000-$3000 = $3000

Calculating Welfare Losses

- **COMPLICATION #1**: IRS contribution limits
  - Elective deferral limit: $10K in 1998, increases over time ($14k today)
  - Allowable compensation limit: $160K in 1998, increases over time ($210K today)
- Example
  - Employee earns $200K
  - Employer matches $1/$1 up to 6% of pay
- Loss calculation
  - Maximum contribution rate: $10K/$160K = 6.25%
  - Possible match: $160K x 6% = $9600

Calculating Welfare Losses

- **COMPLICATION #2:** Vesting
- *Ex ante* loss calcuation approach: use employees' vesting status at the time of the contribution
- Example
  - Employee earns $100,000
  - Employer matches $1/$1 up to 6% of pay
  - Employee contributes 3% of pay
  - Employee 20% vested
- *Ex ante* loss calculation

Actual match:	$100K x 3% x 20%	= $600
Possible match:	$100K x 6% x 20%	= $1200
Loss:	$1200 - $600	= $600

Calculating Welfare Losses

- **COMPLICATION #2:** Vesting
- *Ex post* loss calcuation approach: use employees' ex post vesting status from realized employment history
- Example
  - Employee earns $100,000
  - Employer matches $1/$1 up to 6% of pay
  - Employee contributes 3% of pay
  - Employee 20% vested at time of contribution, but 80% vested when employee leaves the firm
- *Ex post* loss calculation
  - Actual match: $100K x 3% x 80% = $2400
  - Possible match: $100K x 6% x 80% = $4800
  - Loss: $1200 - $600 = $2400

Calculating Welfare Losses

- **COMPLICATION #3:** After tax contributions and capital gains
  - Three firms require that employees deplete after-tax accounts first → withdrawals may cause employees to incur capital gains
  - Of employees >59.5 at these firms, 9% have after tax balances
- Conservative approach: do not classify as undersaver anyone with after-tax balances, regardless of capital gains or match
- Example
  - Employee earns $100,000
  - Employer matches $1/$1 up to 6% of pay
  - Employee contributes 3% of pay
  - Employee has $20K in after-tax 401(k) account
- Loss calculation
  - Actual match: $100K x 3% = $3000
  - Possible match: $100K x 6% = $6000
  - Loss: = $0

Welfare Losses: Employees > 59.5

	Loss Calculation Method	
	Ex ante	*Ex post*
Number undersavers	3,179	3,520
Fraction undersavers	49.0%	54.3%
Non-participants	79.1%	79.7%
< match threshold	21.0%	20.3%
Undersaver loss	$256	$259
Loss as % of pay	1.30%	1.32%
% total match lost	18.4%	19.4%

Welfare Losses

- Loss calculation results
  - Roughly half of employees fail to exploit full 401(k) match
    - 80% of undersavers are non-participants
    - 20% of undersavers contribute below the match threshold
  - Losses for those undersaving are non-trivial
    - $260 per year
    - 1.3% of pay
  - 20% of total possible matching contributions foregone
- Ex ante and ex post loss calculations very similar
  - Most (83%) older employees fully vested
  - Many more partially vested

Welfare Losses

- **Caveat #1:** Match in employer stock
  - Four firms match in employer stock and restrict diversification
  - Loss calculation potentially overstated
  - Bias likely to be small
    - These four have the smallest fraction of undersavers
    - All four allow either full or partial diversification on the basis of age (50 or 55) or after a two-year holding period
- **Caveat #2:** Cumulative losses
  - Loss calculations in Table 3 for one-year period only
  - Over half of undersavers have never participated in 401(k)
  - Average tenure of undersavers is 14 years
  - Cumulative losses much larger

Younger Worker Comparison

- No conceptual analog to ex ante or ex post losses for younger workers
  - Hardship withdrawal restrictions
  - Tax penalty
- Alternative calculation: total matching contributions foregone
  - Does not account for tax penalty
  - Does not account for incomplete vesting
  - Does not account for after-tax balances

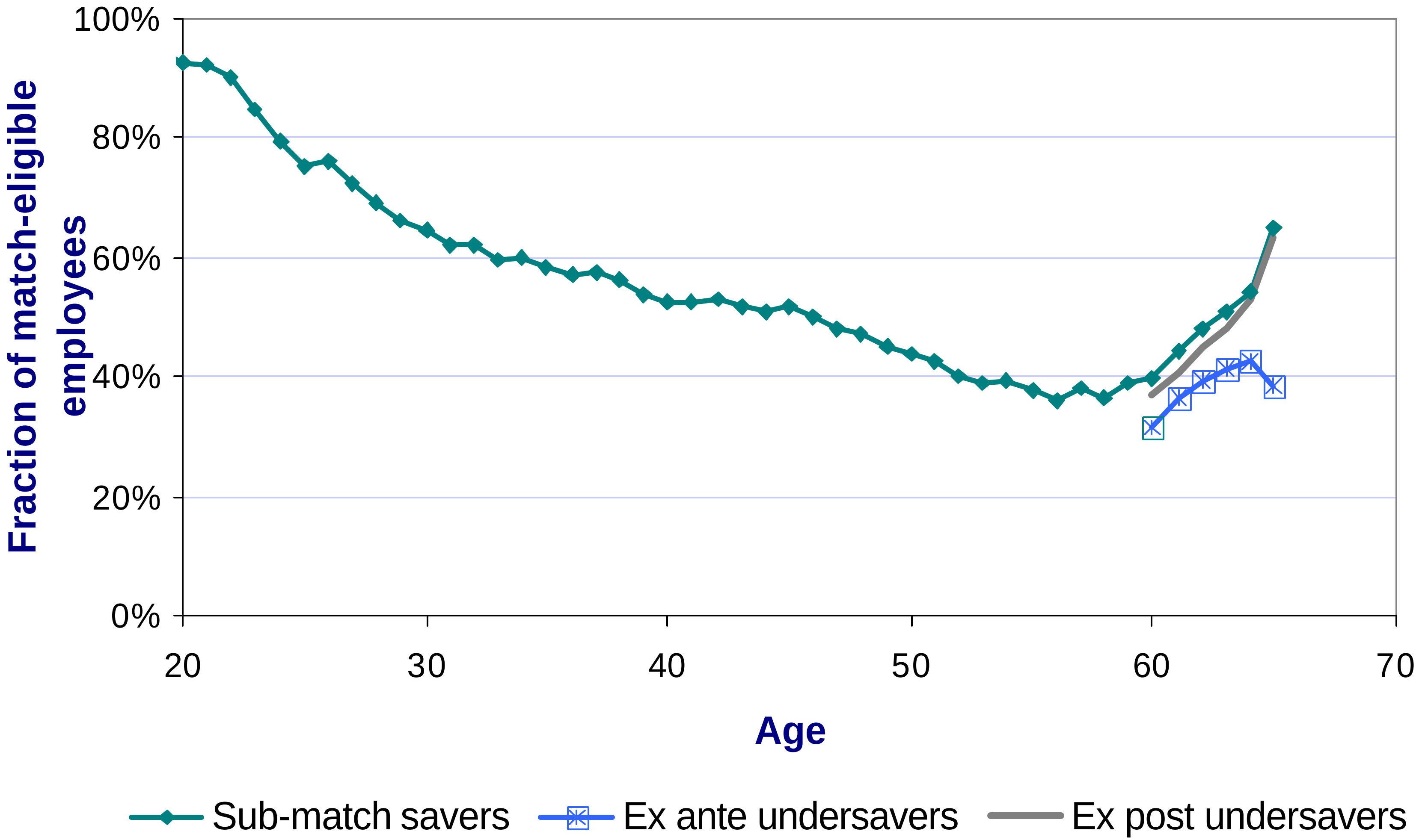
Foregone Matching Contributions

	Loss Calculation Group	
	>59.5	<59.5
Number sub-match savers	3,673	
Fraction sub-match savers	56.7%	53.9%
Non-participants	79.1%	47.2%
< match threshold	20.9%	52.8%
Sub-match saver loss	$263	$450
Loss as % of pay	1.35%	1.30%
% total match lost	20.2%	26.6%

Matching Contributions Foregone

- Exploiting the full employer match: employees >59.5 vs. <59.5
  - Those >59.5 ***less*** likely to fully exploit 401(k) match
  - Older sub-match savers more likely to be non-participants
  - Magnitude of foregone match
    - Nominal amount higher for <59.5 ($450 vs. $260)
    - But <59.5 higher paid—1.3% of pay for both groups
  - 20% of total possible matching contributions foregone

Failure to Exploit the Full 401(k) Match



Predictors of Foregoing Matching Contributions (Marginal Effects)

	Ex ante undersaver >59.5	*Ex post* undersaver >59.5	Sub-match saver >59.5	Sub-match saver <59.5
Male	0.0630**	0.0755**	0.0805**	0.0456**
Married	-0.0412**	-0.0517**	-0.0654**	-0.0461**
Age	0.0257**	0.0158**	0.0100**	-0.0034*
Ln(tenure)	0.0264**	-0.0621**	-0.1147**	-0.0801**
Ln(salary)	-0.1909**	-0.2483**	-0.2765**	-0.2919**
Sample size	N=6,481	N=6,481	N=6,481	N=165,651

All regressions include firm fixed effects; ** denotes significance at the 1% level

Survey/Field Experiment

- Survey mailed to employees >59.5 at Company A
  - All employees below the match threshold
  - Randomly selected employees above the match threshold
- Control survey
  - All employees above the match threshold
  - Half of employees below the match threshold
  - Questions on satisfaction with and knowledge of 401(k) plan, financial literacy, savings preferences
- Treatment survey
  - Half of employees below the match threshold
  - Additional questions to explain withdrawal strategy and help employees calculate potential 401(k) match

Experiment Sample

	Employees >59.5		
	Control Group	Treatment Group	TOTAL
Below match threshold	344	345	689
Above match threshold	200	0	200
TOTAL	544	345	889

Rationales for Undersaving: Direct Transactions Costs

- Perceived time cost of 401(k) transactions
  - Non-participants
    - Enroll — 1.7 hours
    - Change contribution rate — 1.3 hours
    - Change asset allocation — 1.5 hours
  - Participants
    - Enroll — 1.4 hours
    - Change contribution rate — 0.6 hours
    - Change asset allocation — 0.6 hours
- Questions 23 and 25: none of those planning never to enroll in the 401(k) plan cite the time it takes to enroll as a reason for not participating
- Indirect transactions costs

Rationales for Undersaving: Current Saving Adequate

- Question 16—not currently saving enough for retirement
  - Above match threshold: 70%
  - Below match threshold: 86%
- Question 15—actual vs. ideal savings rate
  - Above match threshold: 15.3% vs. 20.0%
  - Below match threshold: 7.4% vs. 17.1%
- Question 16—able to save more ($10/week)
  - Above match threshold: 78%
  - Below match threshold: 67%

Rationales for Undersaving: Financial Literacy

- Question 8—very or relatively knowledgeable investor (self-assessed)
  - Above match threshold: 20%
  - Below match threshold: 8%
- Question 20—employer stock less risky than a large U.S. stock mutual fund
  - Above match threshold: 26%
  - Below match threshold: 53%
- Question 4—correctly understand 401(k) match rate
  - Above match threshold: 41%
  - Below match threshold: 21%
- Question 4—correctly understand 401(k) match threshold (6%)
  - Above match threshold: 59%
  - Below match threshold: 27%

Rationales for Undersaving: Procrastination

- Survey response rate
  - Above match threshold: 52%
  - Below match threshold: 19%
- Response time
  - Above match threshold: 15.1 days
  - Below match threshold: 17.2 days
- Question 10—tendency to often or always leave things to the last minute
  - Above match threshold: 11%
  - Below match threshold: 16%
  - Bias from differential survey response—inveterate procrastinators didn't respond!

Experiment Component

- Treatment survey
  - Questions 26-28: 401(k) plan facts
    - Plan match for first 6% of pay contributed
    - Transactions can be made through the internet or on the telephone
    - Withdrawals for those over 59.5 penalty-free
  - Question 29: Calculate potential employer match
  - Question 30: Interest in increasing 401(k) savings rate
- Sample: below match threshold employees only
- Median potential 401(k) match of $1200

Field Experiment Results

	Control Group	Treatment Group	*t*-statistic of difference
Pre-survey contribution rate (August 1, 2004)	1.73%	1.48%	1.38
Post-survey contribution rate (November 1, 2004)	1.81%	1.64%	0.86
Change (post-pre)	0.08%	0.16%	0.86
Sample size	N=341	N=337	--

Conclusions

- Roughly half of employees fail to exploit full 401(k) match
  - 20% of total possible matching contributions foregone
  - 1.3% of pay for those leaving money on the table
- Cannot be explained by:
  - Liquidity constraints
  - Early withdrawal penalties
  - Incomplete vesting
  - Direct transactions costs
  - Adequate current savings
- Potential explanations
  - Financial literacy → substantial indirect transactions costs (e.g. decision-making)
  - Procrastination

Implications

- Financial incentives not sufficient for reluctant savers
- Financial education interventions not sufficient for reluctant savers
  - Small effects in this paper
  - Consistent with prior literature (Madrian and Shea, 2001; Choi et al. 2002 and 2004; Duflo and Saez 2003)
- Persistence of arbitrage opportunities in economic equilibria