Dominated pension investments: the role of search frictions and unawareness

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This study is registered in the AEA RCT Registry and the unique identifying number is: AEARCTR-0003139.

Background

- Differences in returns to savings account for a large fraction of wealth inequality
  (Bach et al., 2017; Fagereng et al., 2020; and Hubmer et al., 2021)

- Different fees for the same investments – dominated funds
  - Fee multiple of 30 among S&P500 index funds
  - 200 million USD expenses to be saved in S&P500 index funds alone (Choi et al., 2010)
  - One third of all assets of U.S. all-equity mutual funds were managed by closet index funds in 2009 (Petajistoo, 2013)

- High price dispersion indicates sizeable frictions affecting the demand side: **consumers' fund choices**

Research questions

- To what extent can information and search frictions explain why savers choose high-fee index funds, i.e., dominated funds?
  - Lack of awareness of price dispersion
  - Search costs
  - Exponential-growth bias
- Can an information intervention improve households' investments?

Method

- A large-scale field experiment in the Swedish public pension system
- Sample: Pension savers in two dominated funds
  - Index funds that follow equivalent indices
  - There exists a cheaper index fund with the same investment strategy
- Randomize different treatment letters, including an incentivized search task, and observe real fund choices

Preview of results

- Information letters that increase awareness of a dominated choice and reduce search costs of finding the dominating alternative improve many savers' real investment choices and can be justified from a cost-benefit analysis
- While the average effects are positive, a majority of previously active investors are unresponsive to information that eliminates search costs
- A lack of awareness and search costs account for at most 45 percent of dominated fund choices

Related Literature

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Institutional setting

The Swedish Premium Pension system

- A defined contribution part of the public pension where households are allowed to choose how their savings are invested
- 2.5 percent of each employee's labor income, subject to a cap
- A large set of mutual funds from which to choose: over 800
- A single platform for all pension savers Platform
- Real long-term investment decisions

Sample

- Individuals, age 25-64, who save some of their Premium Pension in either Fund^m (medium fee) or Fund^h (high fee)
  - Higher fees than Fund^l (low fee)
  - Index funds that follow equivalent indices, i.e., same investment strategy
  - No difference in credit risk, or non-portfolio services
  - The savers have actively chosen the funds and opted out from a default fund

Age and gender distributions

Fund information

Data

Fund choices

- Individual pension savings in Fund^h, Fund^m, and Fund^l
- Portfolio shares in Fund^h, Fund^m, and Fund^l
- Fund data

Individual-level registry data

- Labor income
- Year of birth
- Gender
- Municipality
- Marital status

Data source: The Swedish Pensions Agency

Construct: Expected future reward from switching to the dominating fund

Future rewards Summary statistics

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The Letters

- **A**: Aware
  - A reminder of the individual's current choice of fund
  - It is not the cheapest index fund with that investment strategy
  - The fee difference
  - A short guide of how to implement fund switches and where to verify the information
- **AN**: Aware + Name
  - Letter A
  - The name of the dominating fund
- **AI**$_a$: Aware + Implication
  - Letter A
  - The expected gain at age 65, from immediately switching the savings in the dominated fund to the dominating fund
  - A range of immediate search rewards $a \in \{0, L, M, H\}$
- **ANI**: Aware + Name + Implication
  - Letter AN
  - Letter AI$_0$

Treatment assignment

- The letters were randomized to people who saved in Fund^m or Fund^h
- The control group received no letter
- Sample sizes:

Control	4 791
A	3 980, where 199 were sent a reading task
AN	3 986, where 199 were sent a reading task
AI_0	3 974
$\text{AI}_{L,M,H}$	2 006 (669, 669, 668 for each reward level, respectively)
ANI	3 991

Stratification

Outcomes

Real choices (3 months after treatment)

1. Switches from dominated to dominating fund, Y_i^{switch}
2. Increased portfolio share invested in the dominating fund, Y_i^{l}
3. Decreased portfolio share invested in the dominated funds, Y_i^{mh}
4. Any investment change, Y_i^{any}

We also observe the date of any investment change and the number of logins on the Premium Pension's website

Theoretical framework

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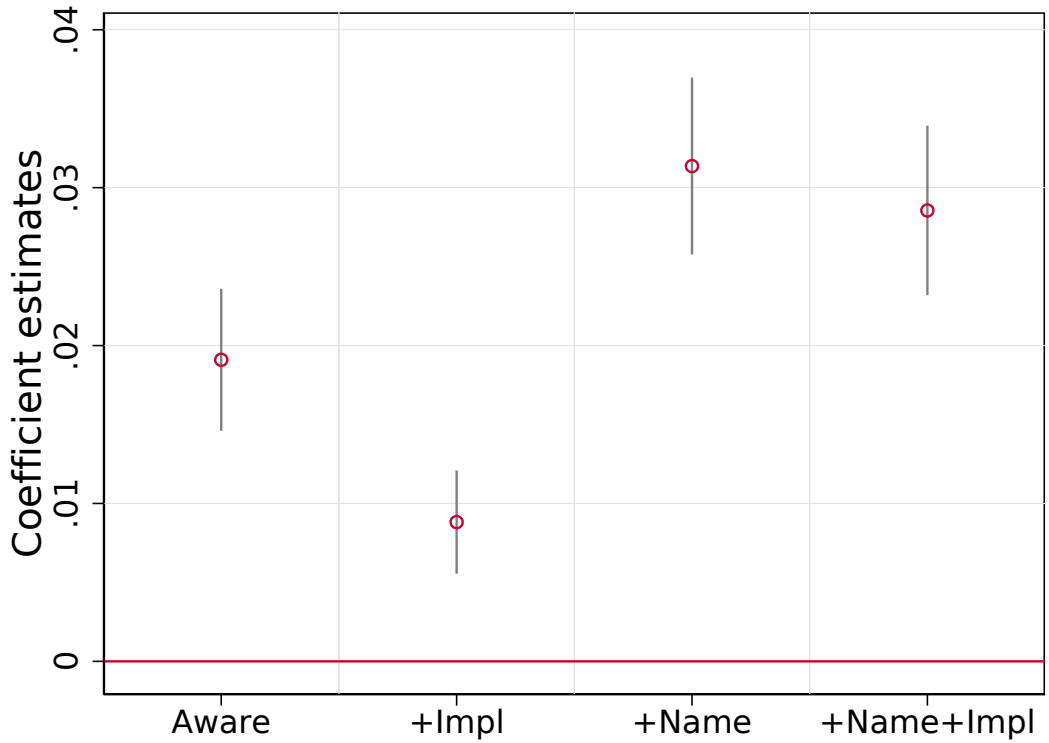
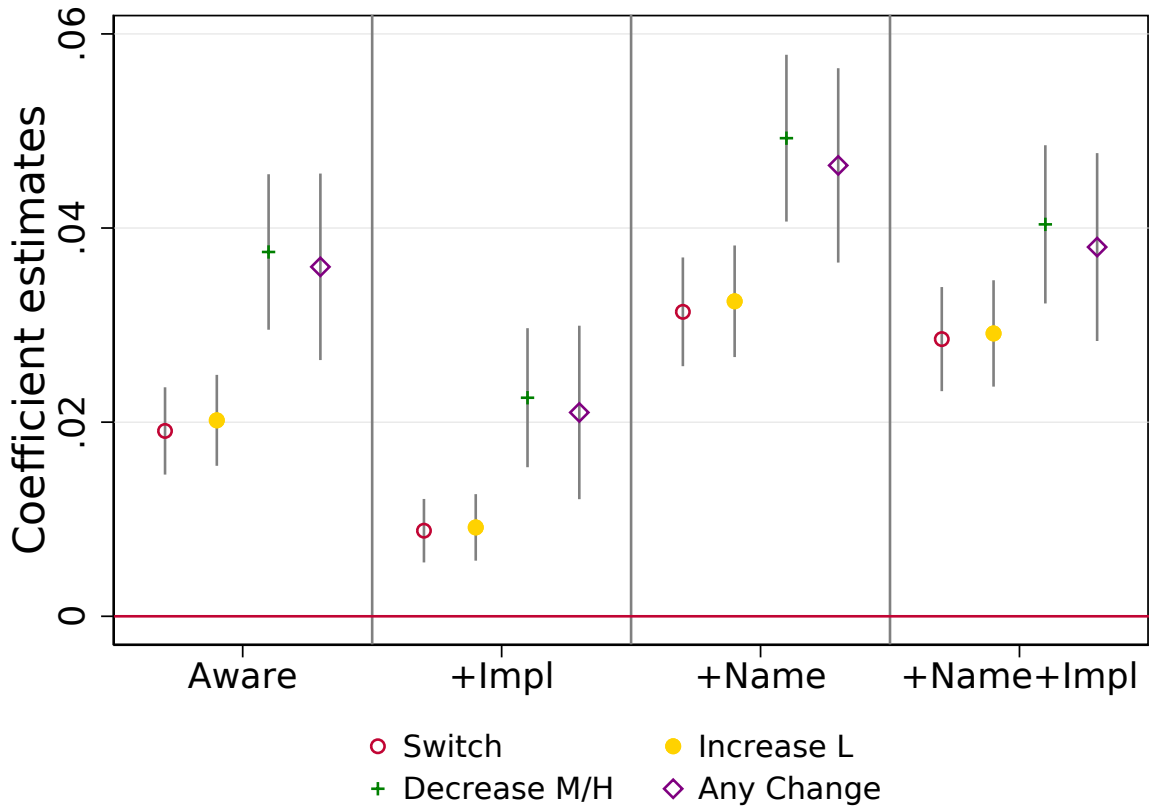
Results - switching funds

$Y_{isk}^{switch} = \gamma_k T_{ik} + \delta_s S_{is} + \varepsilon_{isk}$, where $k \in \{A, AN, AI_0, ANI\}$ and S_{is} are strata dummy variables



Hypothesis tests

Results - multiple outcomes



The control group is the reference and has a mean of 0.001, 0.002, 0.018, and 0.036, for the respective outcome variables

Results Table

Results

H1. *Awareness*
Information that a cheaper index fund exists
$\Rightarrow$ increases probability of switching by 1.9 percentage points

H2. *Search Costs*
Eliminating the search costs of finding the cheapest fund
$\Rightarrow$ increases probability of switching by 1.2 percentage point

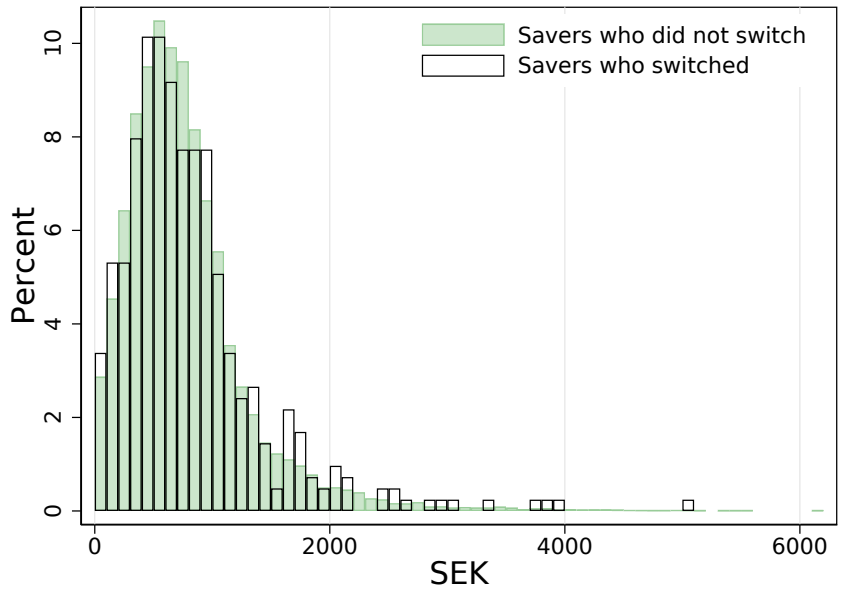
H3. *Monetary Implication*
Information about the monetary implication of switching to the cheapest fund
$\not\Rightarrow$ increase the probability of switching

Intensive margin | Logins | Previous activity

Cost-benefit analysis

- PV of saved expected expenses: 287 000 SEK (10% annual discounting)
- Costs of letters: 180 000 SEK
- Potentially larger general-equilibrium benefits

Discounted expected future rewards

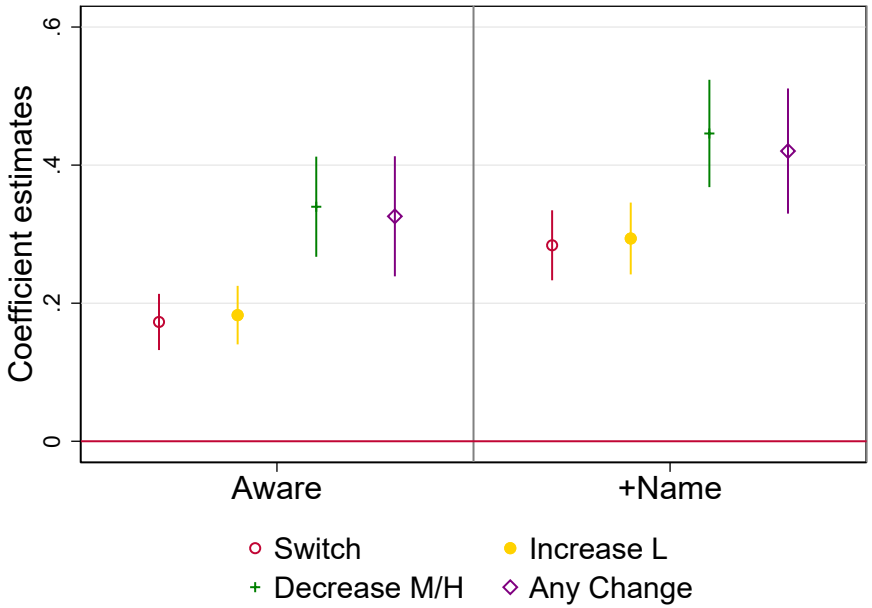


In total, 414 people switched and 22 314 people did not switch funds
11 percent confirmed reading the letters

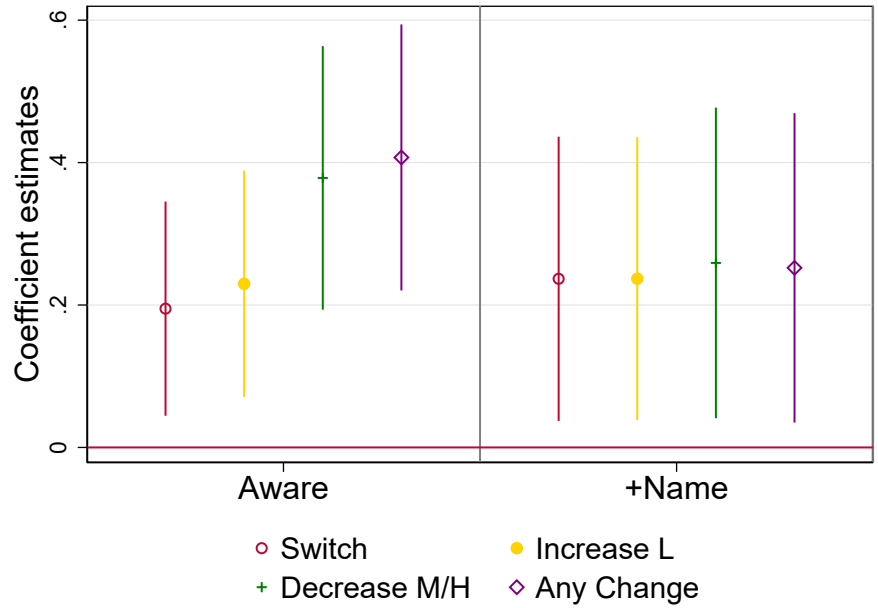
The role of information and search frictions

Treatment effects on the treated

Upper-bound estimates



Those who confirmed reading



Unawareness and search costs account for at most 45 percent of dominated fund choices

Readers

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Exploratory analysis

- Heterogeneous treatment effects Heterogeneity
- Does search uncertainty matter? Uncertainty
- Present bias and mental accounting
  Activity across immediate rewards Activity across discounted future rewards
- How costly is the search for a dominating fund? Search cost distribution
- Procrastination Time of task completeness and fund switches

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Conclusions

- Information letters about the existence of a dominating fund, and removed search costs for identifying this fund, significantly improve many pension savers' real investment choices
- However, a majority of previously active investors do not respond to information that removes search costs
- A lack of awareness and search costs account for at most 45 percent of dominated fund choices
  - Lack of understanding the concept of index funds
  - Low confidence in the own ability to comprehend and evaluate information regarding financial investments

EXTRA SLIDES

Literature review

- Dominated financial choices

  Adams, Hunt, Palmer, and Zaliauskas (2021), Agnew and Szykman (2005), Ayres and Curtis (2015), Bhargava, Loewenstein, and Sydnor (2017), Bhutta, Fuster, and Hizmo (2021), Carlin (2009), Choi, Laibson, and Madrian (2010), Egan (2019), Elton, Gruber, and Busse (2004), Handel and Schwartzstein (2018), Hastings, Hortaçsu, and Syverson (2017), Hortaçsu and Syverson (2004), Johnson, Meier, and Toubia (2015), Petajistoo (2013), Salop and Stiglitz (1977), Sinaiko and Hirth (2011)

- Inactivity and inertia in default funds

  Beshears, Choi, Laibson, Madrian (2009) and (2018), Choi, Laibson, Madrian, and Metrick (2004) and (2006), Kempf and Ruenzi (2006), Kronlund, Pool, Sialm, and Stefanescu (2021), Madrian and Shea (2001), Samuelson and Zeckhauser (1988)

- Exponential-growth bias

  Goda, Levy, Manchester, Sojourner, and Tasoff (2015), Levy and Tasoff (2016), Stango and Zinman (2009), Wagenaar and Sagaria (1975)

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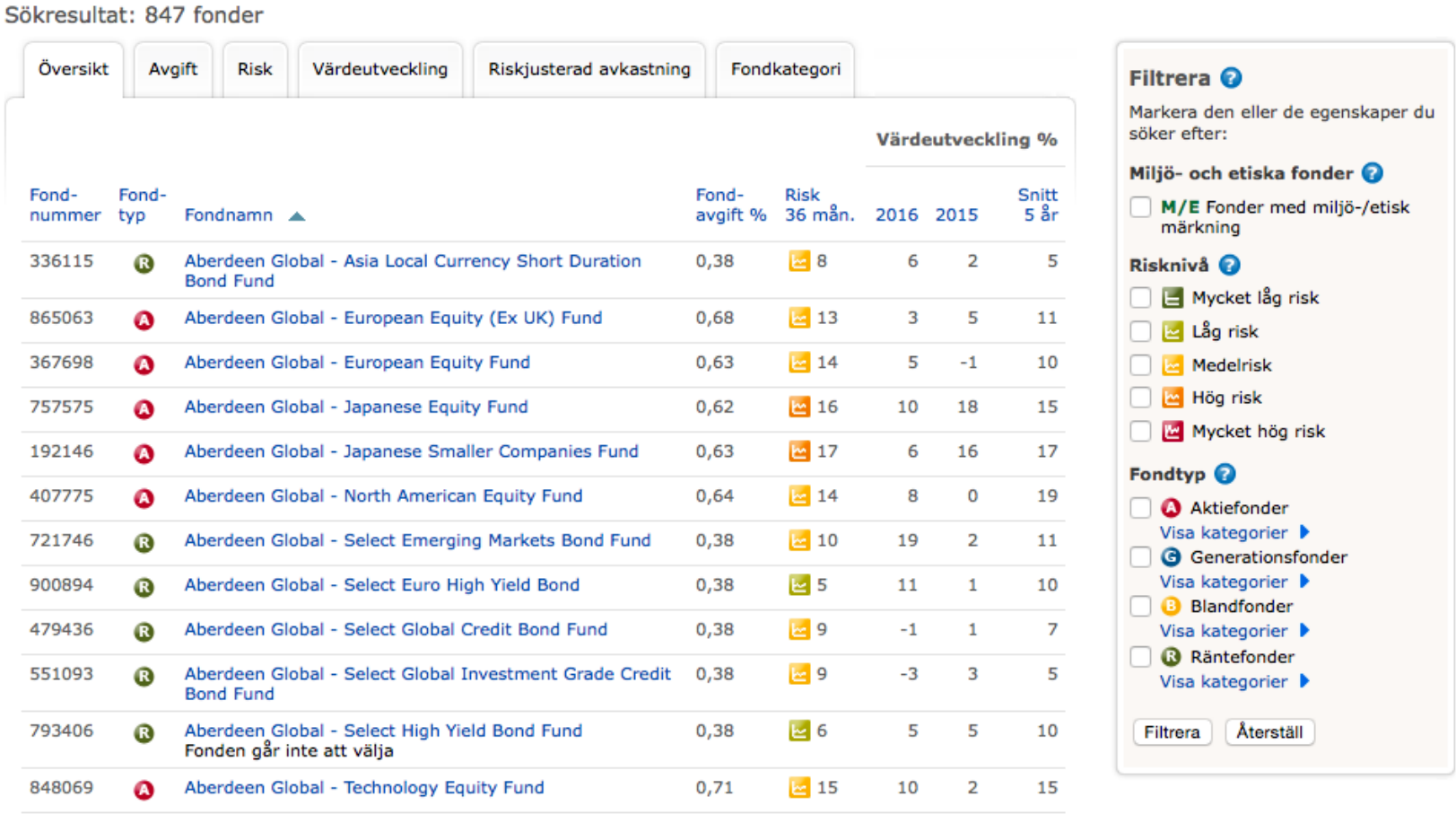
The Pension Fund Choice



Sökresultat: 847 fonder

Översikt | Avgift | Risk | Värdeutveckling | Riskjusterad avkastning | Fondkategori

Fond-nummer	Fond-typ	Fondnamn	Fond-avgift %	Risk 36 mån.	Värdeutveckling % 2016	2015	Snitt 5 år
336115	R	Aberdeen Global - Asia Local Currency Short Duration Bond Fund	0,38	8	6	2	5
865063	A	Aberdeen Global - European Equity (Ex UK) Fund	0,68	13	3	5	11
367698	A	Aberdeen Global - European Equity Fund	0,63	14	5	-1	10
757575	A	Aberdeen Global - Japanese Equity Fund	0,62	16	10	18	15
192146	A	Aberdeen Global - Japanese Smaller Companies Fund	0,63	17	6	16	17
407775	A	Aberdeen Global - North American Equity Fund	0,64	14	8	0	19
721746	R	Aberdeen Global - Select Emerging Markets Bond Fund	0,38	10	19	2	11
900894	R	Aberdeen Global - Select Euro High Yield Bond	0,38	5	11	1	10
479436	R	Aberdeen Global - Select Global Credit Bond Fund	0,38	9	-1	1	7
551093	R	Aberdeen Global - Select Global Investment Grade Credit Bond Fund	0,38	9	-3	3	5
793406	R	Aberdeen Global - Select High Yield Bond Fund Fonden går inte att välja	0,38	6	5	5	10
848069	A	Aberdeen Global - Technology Equity Fund	0,71	15	10	2	15

Filtrera

Markera den eller de egenskaper du söker efter:

Miljö- och etiska fonder

- M/E Fonder med miljö-/etisk märkning

Risknivå

- Mycket låg risk
- Låg risk
- Medelrisk
- Hög risk
- Mycket hög risk

Fondtyp

- Aktiefonder — Visa kategorier
- Generationsfonder — Visa kategorier
- Blandfonder — Visa kategorier
- Räntefonder — Visa kategorier

Filtrera | Återställ

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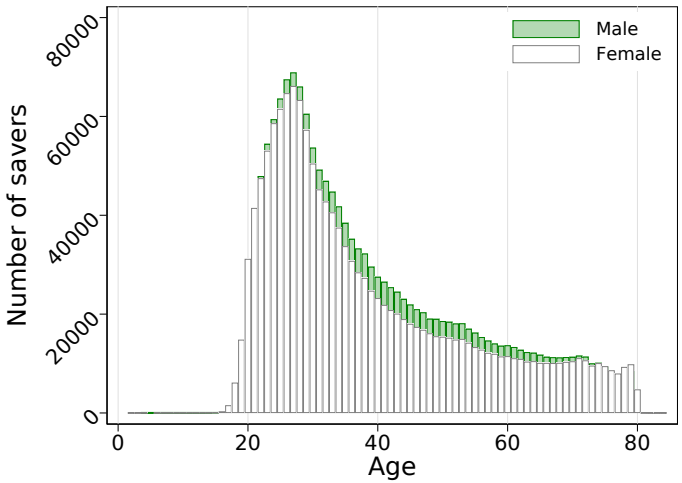
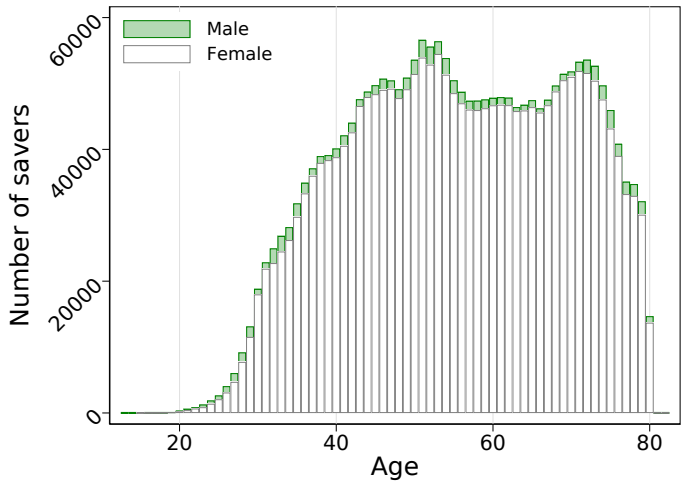
Age and gender distributions

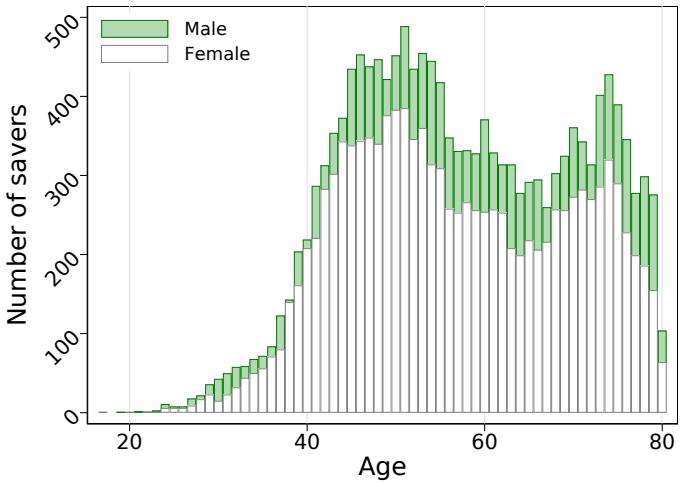
All savings in the default fund



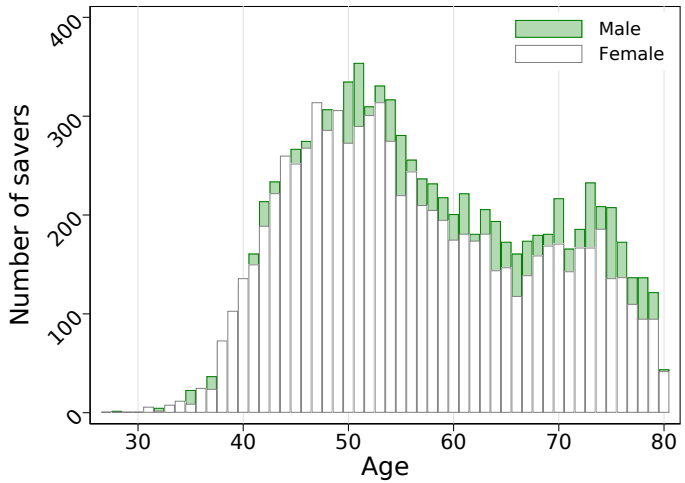
Not all savings in the default



Some savings in Fund^m



Some savings in Fund^h



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Fund information

Fund	Index name	No. savers	Fee (%)	Correlation with Fund^l
Fund^m	OMXS30	31 281	0.20	0.9982
Fund^h	SIX30	19 462	0.25	0.9960
Fund^l	SIX30RX	75 858	0.00	1

The three indices track the performance of the 30 most traded shares listed on the Stockholm Stock Exchange. The number of savers only include Premium Pension savers.

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Stratification

16 strata:

- Year of birth: 2 groups
- Fund: 2 groups
- Fund share: 2 quantiles
- Labor income: 2 quantiles

Randomization within each strata

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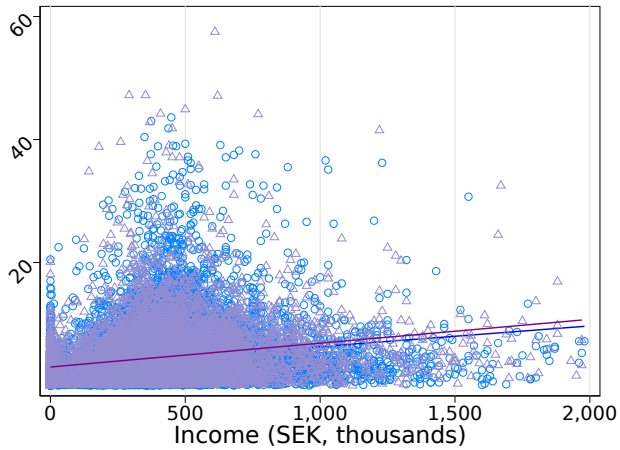
Monetary implication

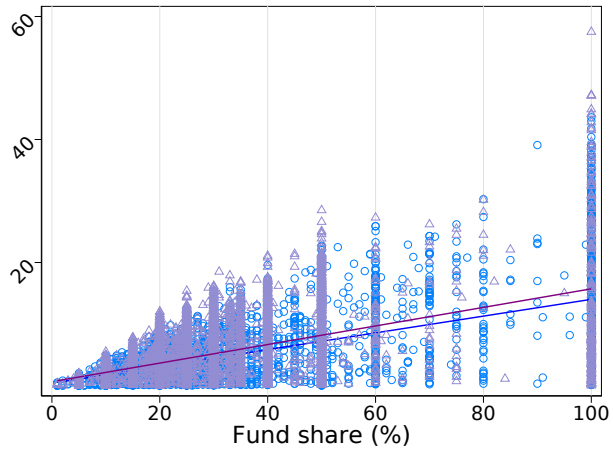
We construct the variable *future reward from switching* R_{it}^{switch}

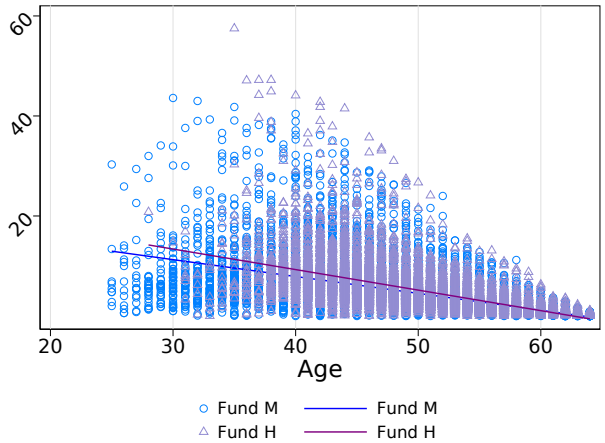
Individual level forecast of expected additional pensions savings, at age 65, from immediately switching from the dominated to the dominating fund (where t is the number of years until age 65)

Standard assumptions for pension forecasts (labor income, fund balance and share, savings rate, administrative fee, fund fee, fund return)

Expected future rewards







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Characteristics of the sample

Variable	Sample				Population
	Mean	Std. Dev.	Min	Max	Mean
Labor income (SEK)	416,718	376,614	0	$2.82e+07$	314,000
Year of birth	1967	7.6	1954	1993	
Female	0.46	0.50	0	1	0.50
Married	0.54	0.50	0	1	0.44
Future Reward	4,442	4,427	0	57,500	

Savers in Fund^m and Fund^h, and a comparison with the Swedish population.

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Framework

The main outcome variable

$$Y_i^{switch} = f(\beta_{it}, E_i[R_{it}^{switch}], R_i^{search}, C_i^{admin}, C_i^{search}, I_i^{aware}) + \varepsilon_i$$

where $Y = 1$ if individual i switches, $Y = 0$ if not.

Whether or not to switch from the dominated to the dominating fund can be modeled with the following decision rule

$$Y_i^{switch} = I_i^{aware} \times 1[Z_{it} > 0],$$

where

$$Z_{it} = u(R_i^{search} - C_i^{admin} - C_i^{search}) + \beta_{it} u(E_i[R_{it}^{switch}])$$

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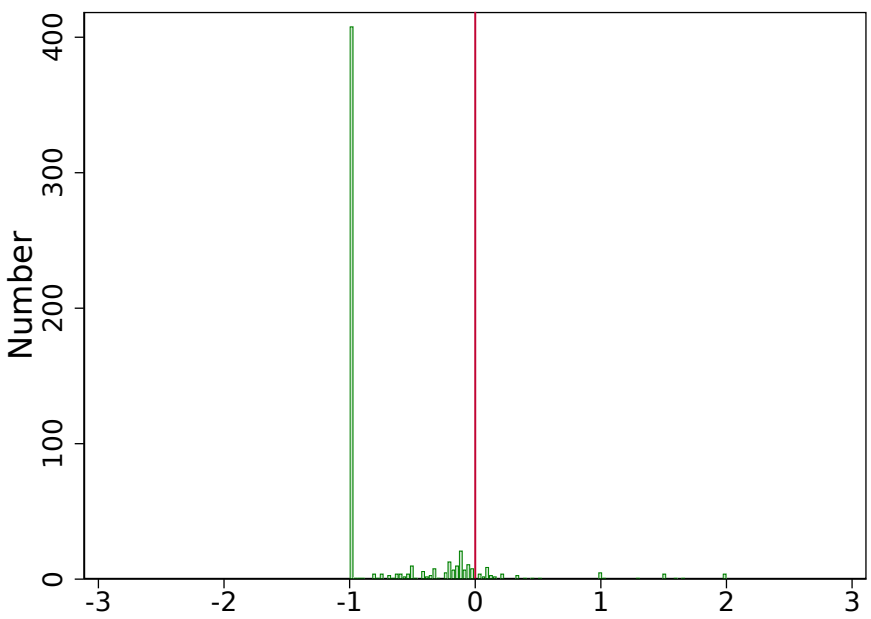
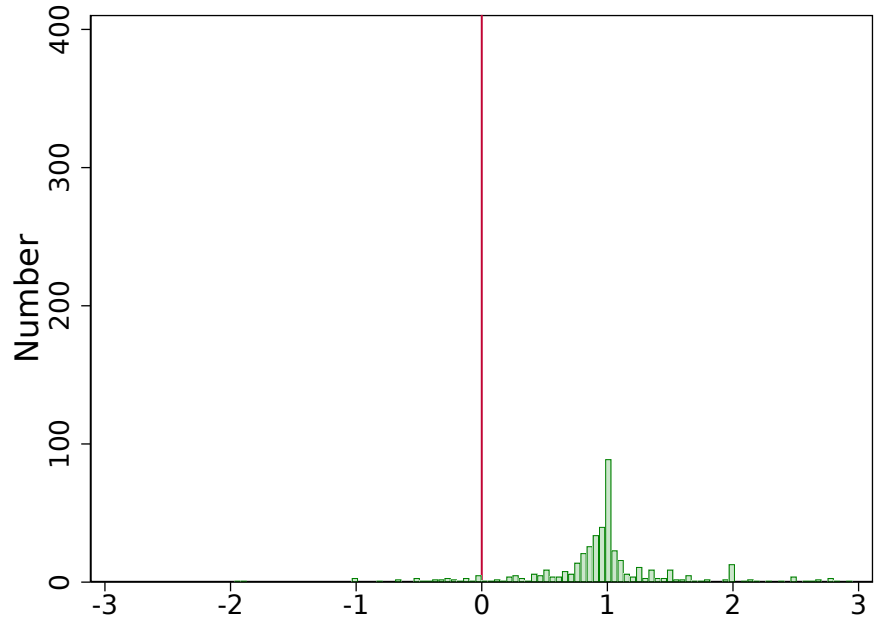
Results - intensive margin

Relative fund share changes: $Fund^{mh}$



Relative fund share changes: $Fund^{l}$



Fund share changes relative to the initial share invested in Fund^m or Fund^h, among those who switched.

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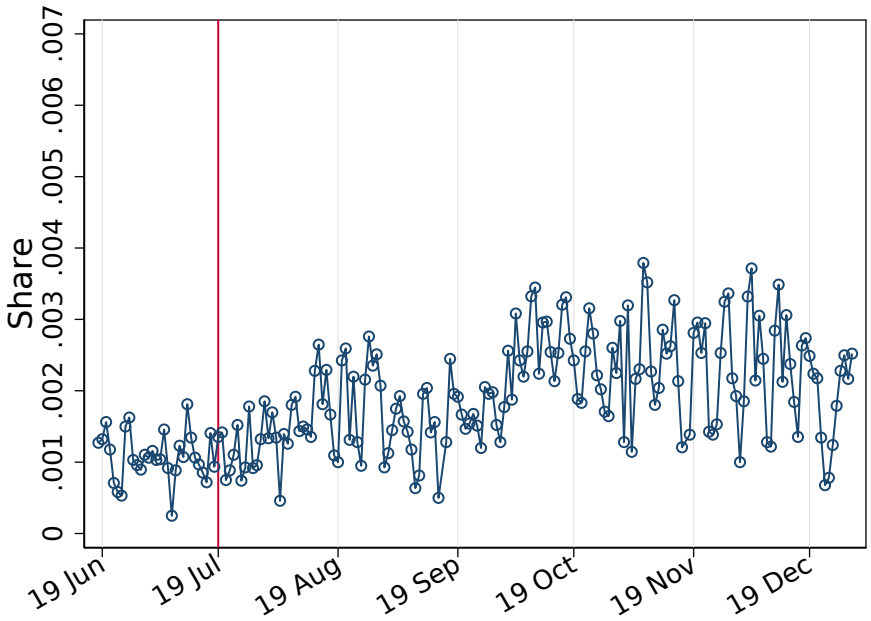
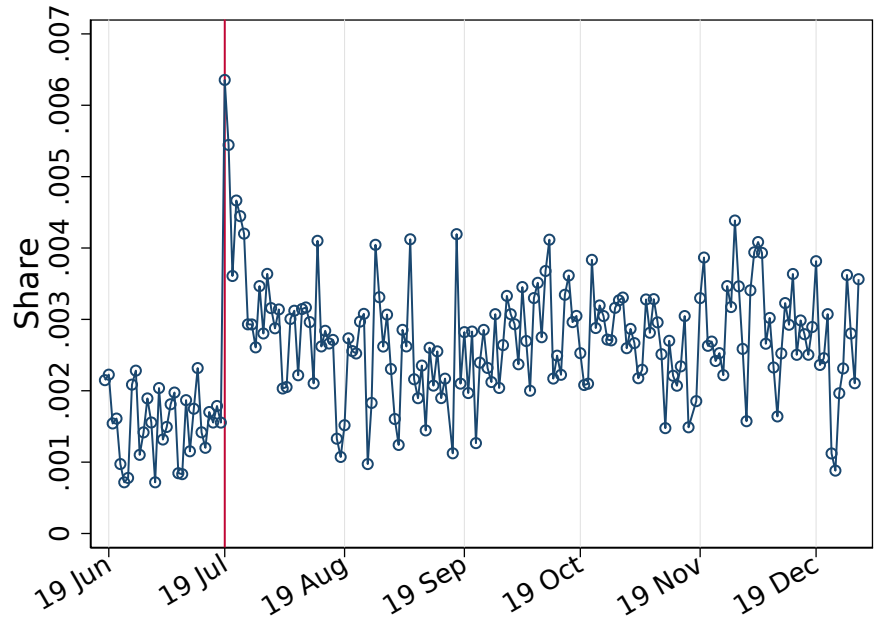
Logins

Control group



All treatment groups



Shares of savers that each day login to their accounts at the Pensions Agency's website, over time.

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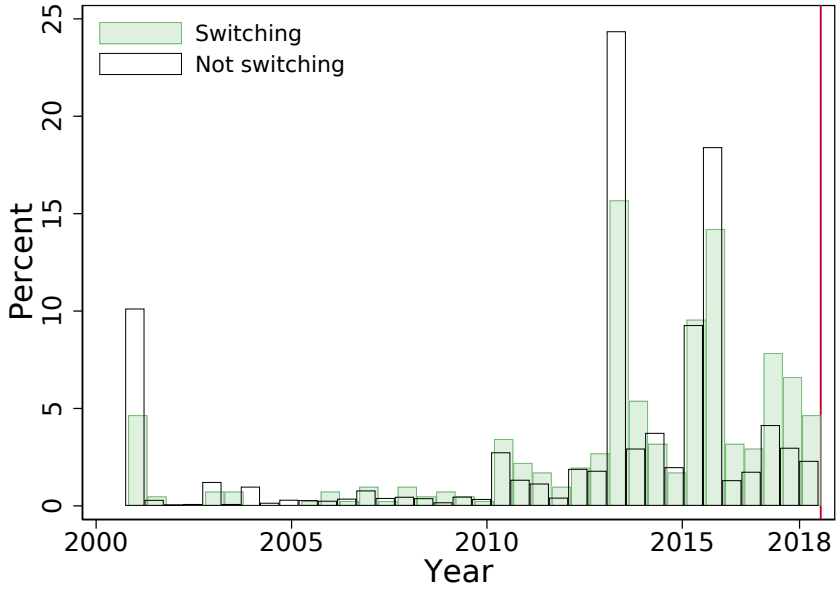
Historical trading intensity

Time of most recent fund choice



Years since most recent investment change

	Control	Treated
No switch	6.27	6.23
Switch	4.84	5.13

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Reader characteristics

Saver characteristics across reading confirmation

	Did not confirm	Did confirm	P-value
Annual income	410,207	429,654	0.47
Future reward	4,509	4,232	0.48
Savings in fund M/H	85,215	79,193	0.30
Year of birth	1967	1967	0.75
Share in fund M/H	0.28	0.27	0.52
Female	0.44	0.45	0.92
Married	0.58	0.63	0.31

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Results - all outcomes

Treatments	Outcomes			
	Switch	Increase L	Decrease M/H	Any change
Aware	0.019***	0.020***	0.038***	0.036***
	(0.002)	(0.002)	(0.004)	(0.005)
+Impl	0.009***	0.009***	0.023***	0.021***
	(0.002)	(0.002)	(0.004)	(0.005)
+Impl+Task Reward	0.018***	0.018***	0.033***	0.030***
	(0.003)	(0.003)	(0.005)	(0.006)
+Name	0.031***	0.032***	0.049***	0.046***
	(0.003)	(0.003)	(0.004)	(0.005)
+Name+Impl	0.029***	0.029***	0.040***	0.038***
	(0.003)	(0.003)	(0.004)	(0.005)
Observations	22,728	22,728	22,728	22,728
R^2	0.011	0.011	0.012	0.010

The control group is the reference and has a mean of 0.001, 0.002, 0.018, and 0.036, for the respective outcome variables.

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Hypothesis tests

Hypothesis	Treatments compared	Coef. diff.	P-value
H1 *Awareness*	A - Control	0.019	0.000
H2 *Search costs*	AN - A	0.012	0.001
	ANI - AI_0	0.020	0.000
H3 *Monetary implication*	AI_0 - A	-0.010	0.000
	ANI - AN	-0.003	0.476

Outcome variable: Y^{switch}

The equality in switches across treatments is assessed with Wald-tests.

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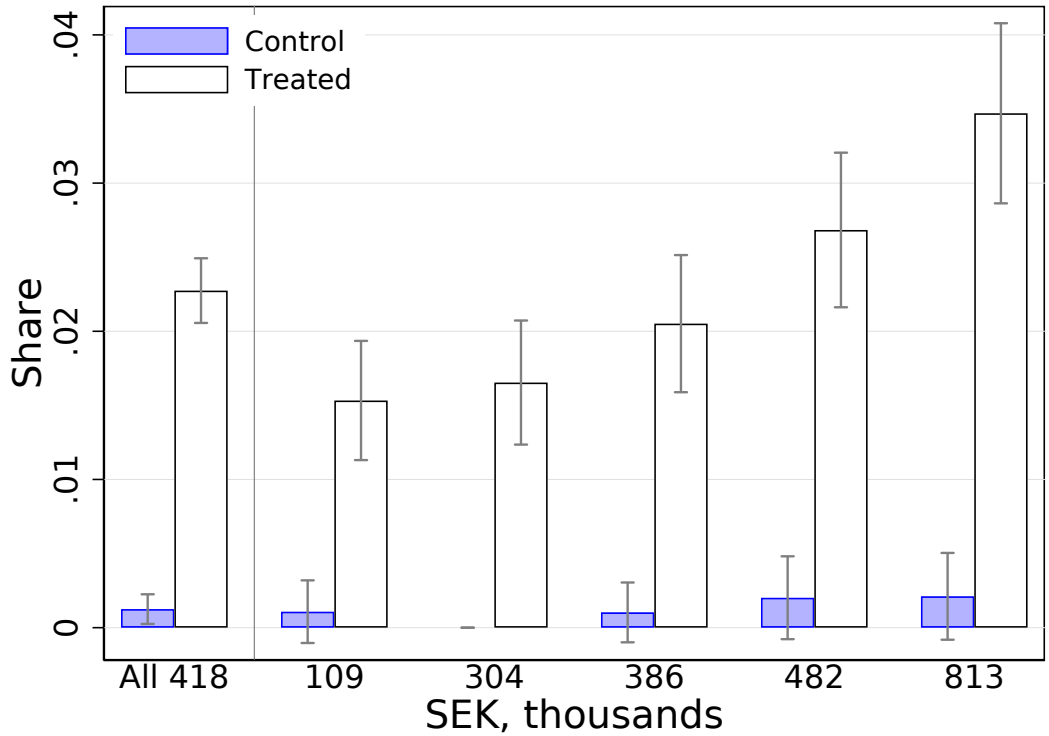
Heterogeneity - labor income quintiles



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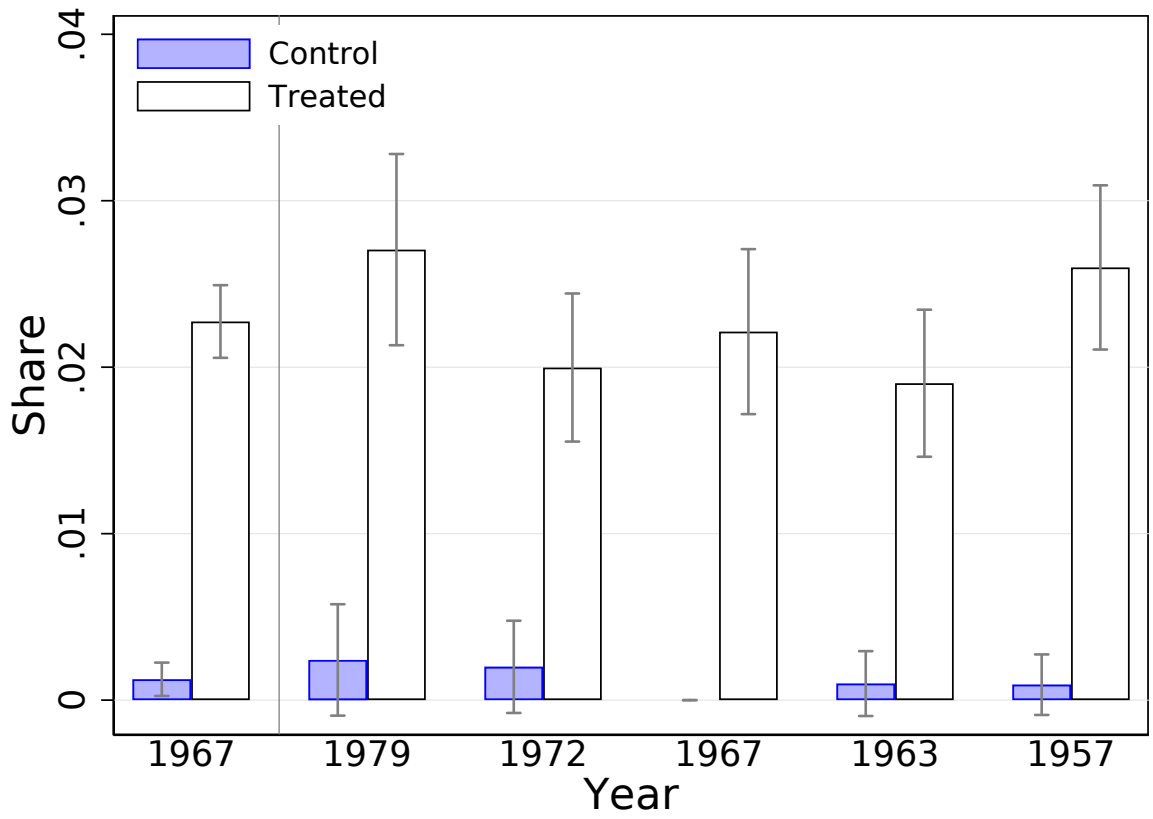
Heterogeneity - year of birth



Shares who switch funds, by year-of-birth quintile.

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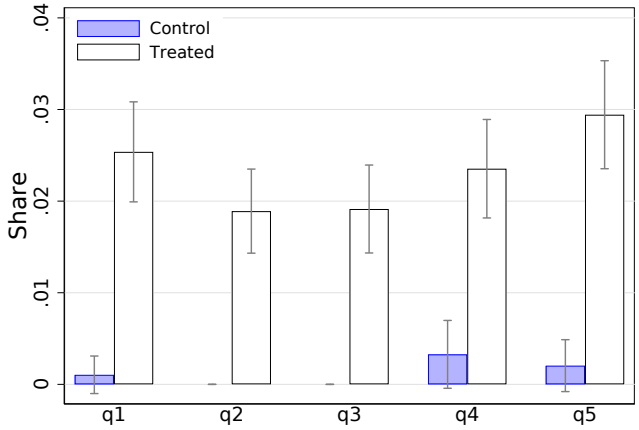
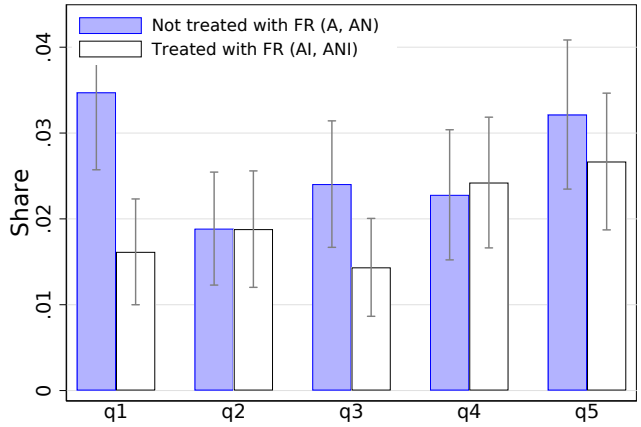
Heterogeneity - future rewards

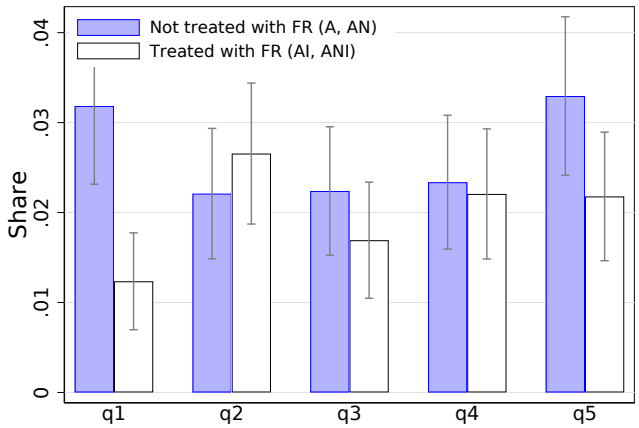
Quantiles of future reward



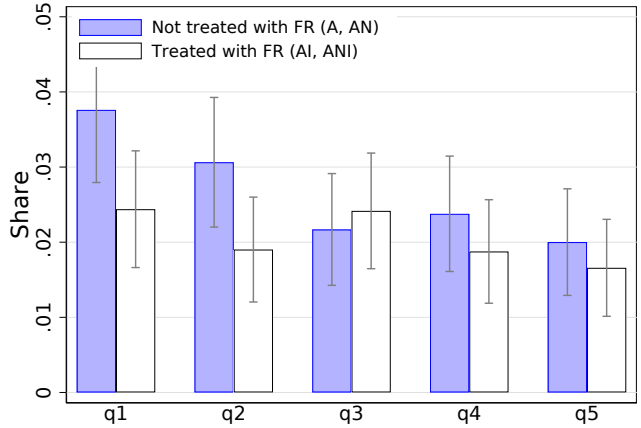
Quantiles of future reward



Quantiles of discounted future reward



Quantiles of discounted future reward over labor income



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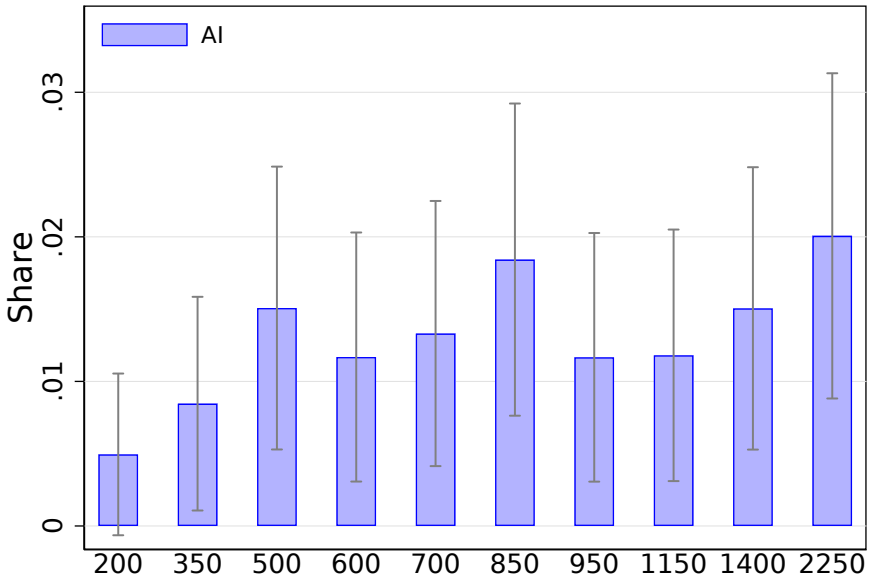
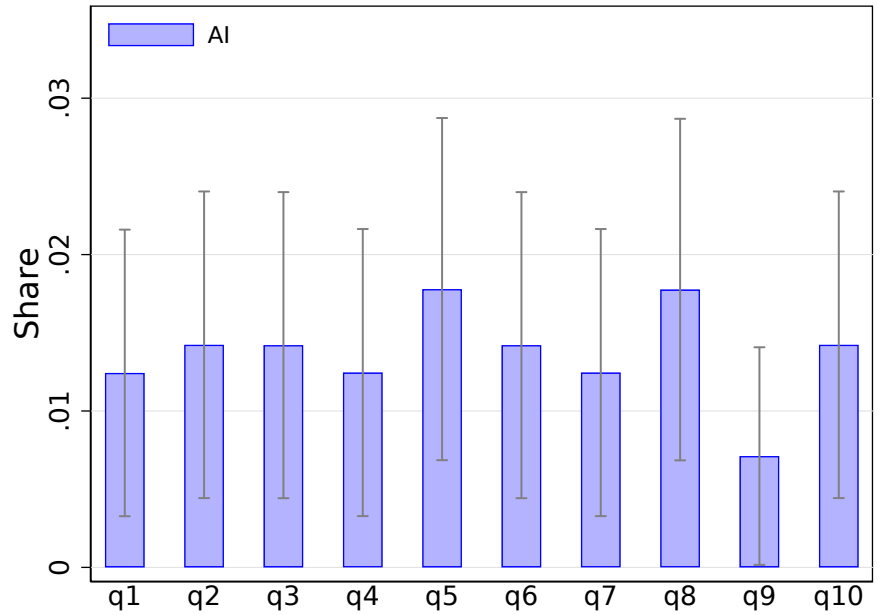
Heterogeneity - total rewards

Deciles of total discounted rewards



Deciles of total discounted rewards over labor income



Shares of savers switching funds, across total rewards.

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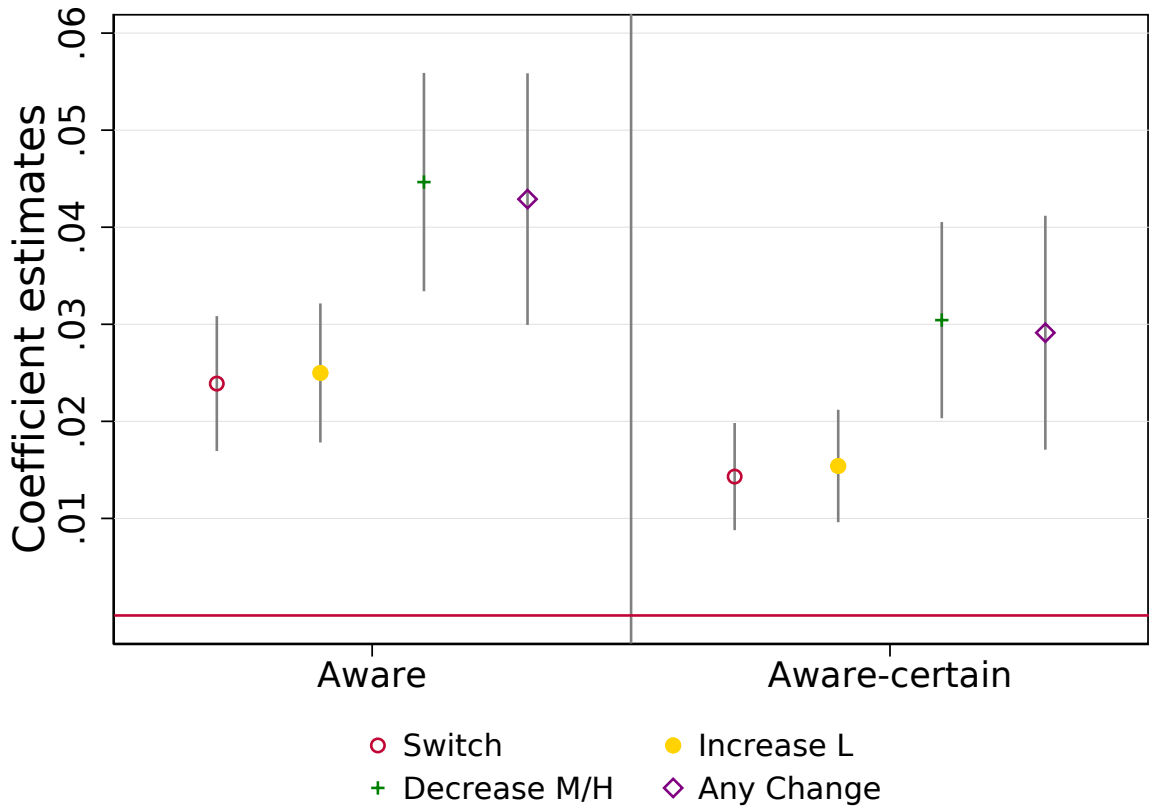
Does search uncertainty matter?

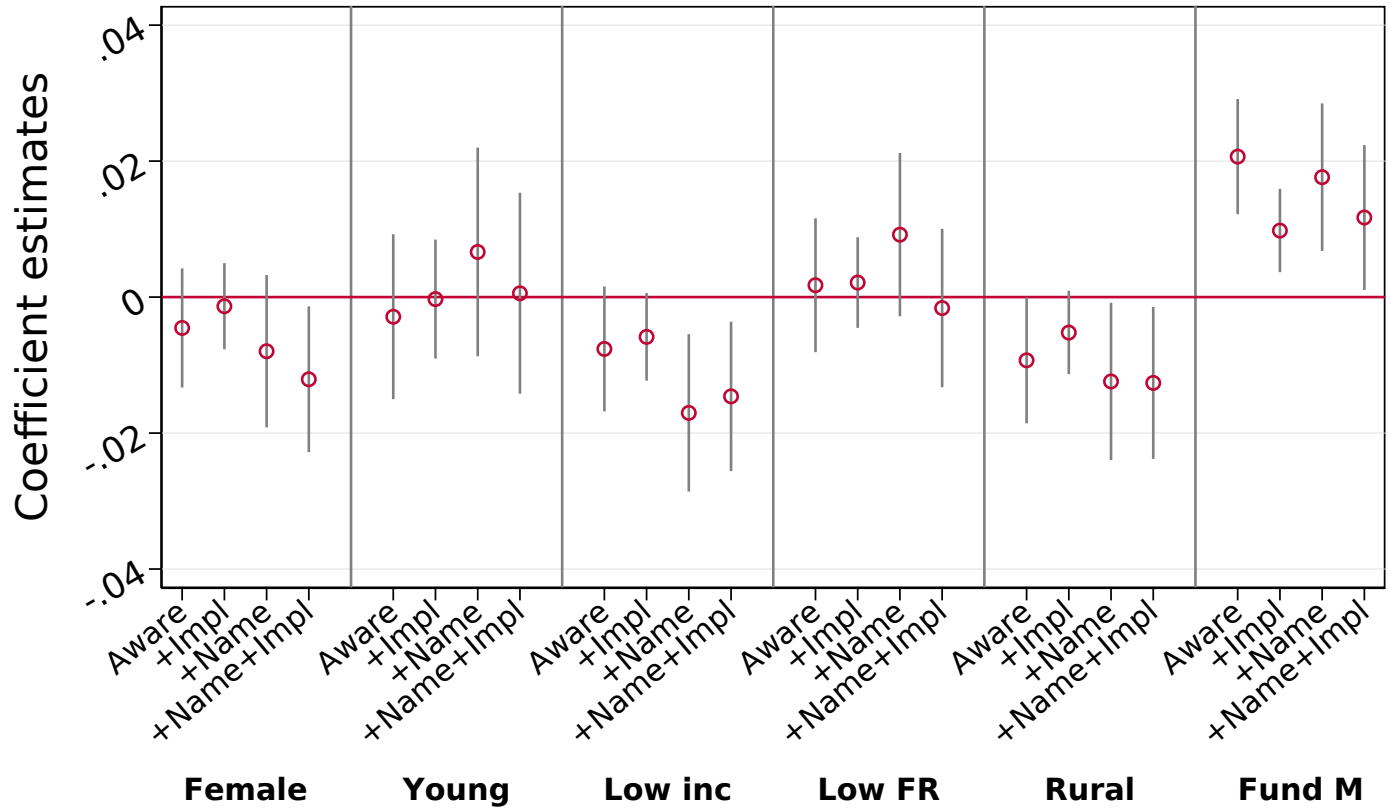
Does the option to verify if a fund is the dominating fund increase the probability of switching funds? (Subset of treatment Aware (A))



- Potential support for overload hypothesis. Back to main

Heterogeneity

$$Y_{isk}^{switch} = \gamma_k T_{ik} + \eta_{kj} T_{ik} \mathbf{X}_{ij} + \rho_j \mathbf{X}_{ij} + \delta_s S_{is} + \varepsilon_{isk}, \text{ for covariates } \mathbf{X}_j$$



Heterogeneity income | Heterogeneity age | Heterogeneity future rewards | Heterogeneity total rewards

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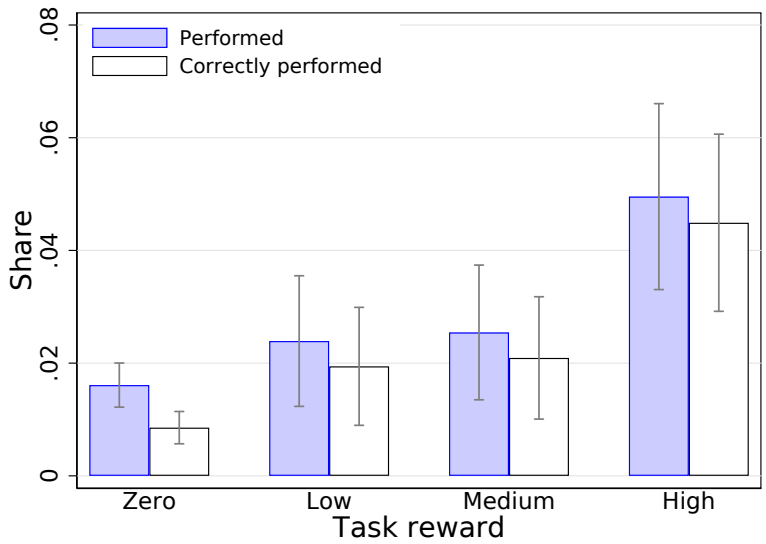
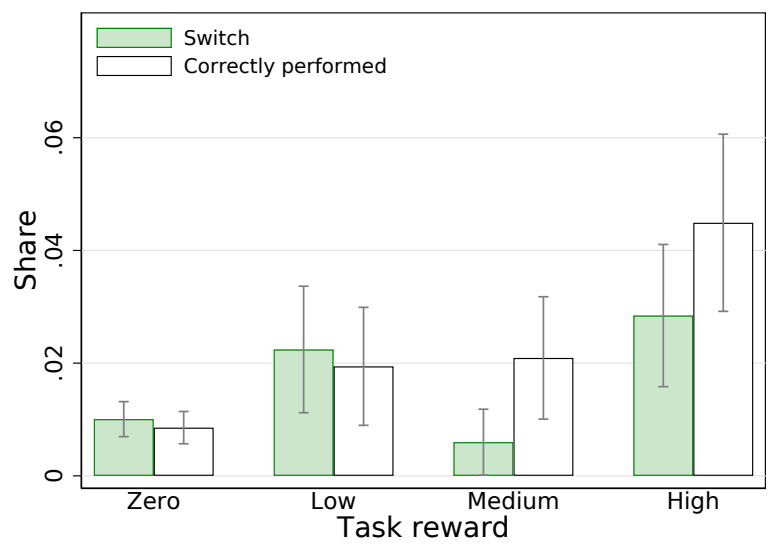
Heterogeneity across immediate rewards

Search task



Search task and and switches



Treatment AI (Aware+Impl)

- The search rewards increase the probability that a saver searches and switches from the dominated to the dominating fund, but for the higher search rewards, there appears to be a greater discrepancy
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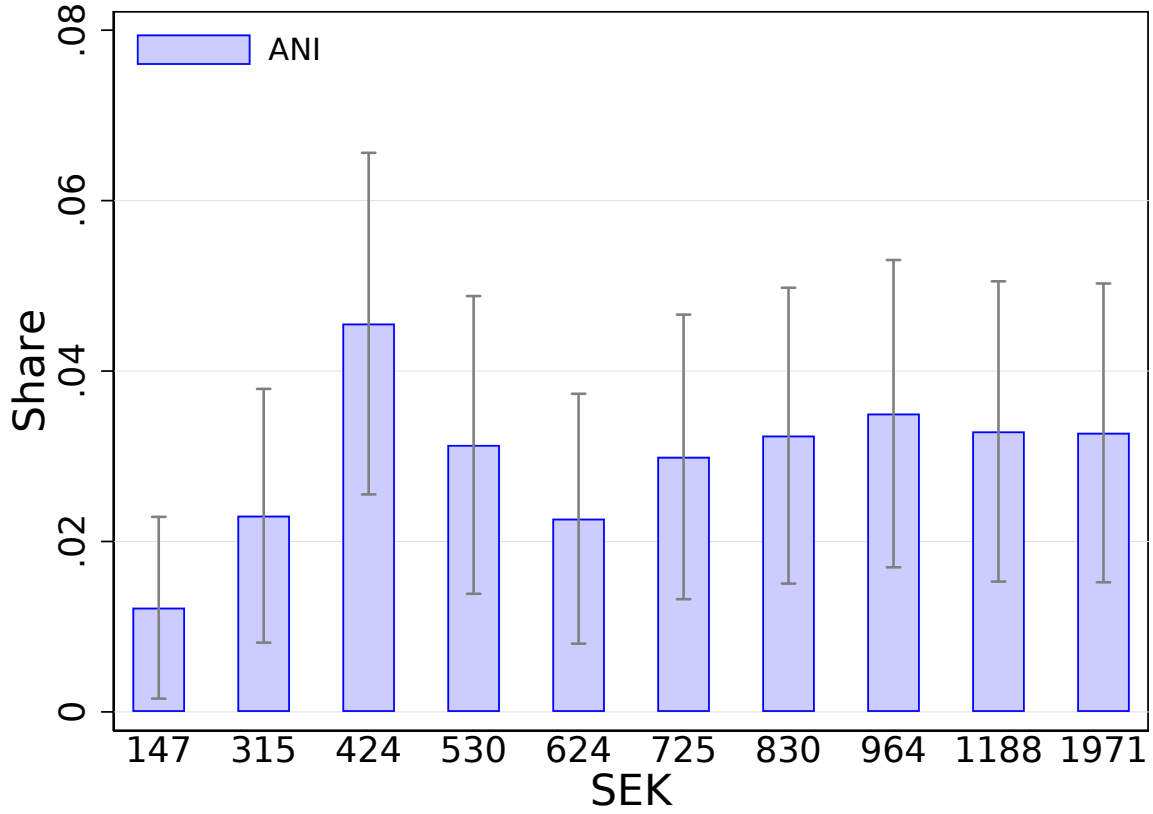
Heterogeneity across future rewards



- Shares that switch funds, across deciles of discounted future rewards. Treatment ANI.
- Small variation in outcomes across discounted future rewards, when search costs are eliminated.

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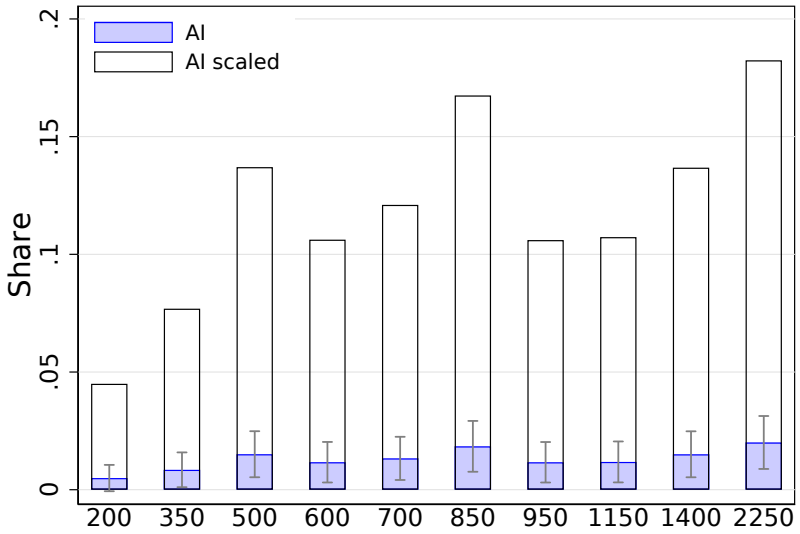
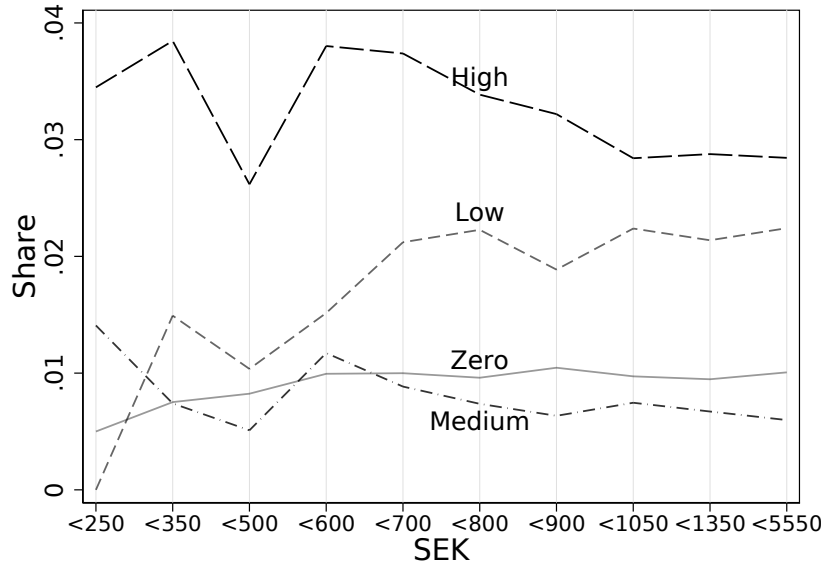
How costly is the search for a dominating fund?

Total discounted rewards (SEK)



Discounted future rewards (SEK)



- Treatment AI (Aware+Impl)
- More than 80 percent of the savers find searching more costly than approximately 2 250 SEK (about 250 USD)
  ⇒ Search costs on their own unlikely to explain unresponsiveness
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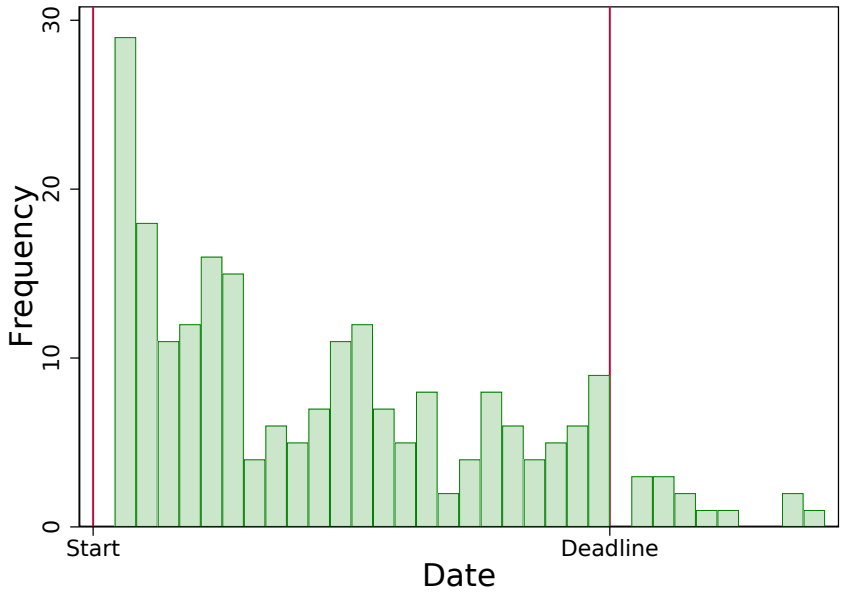
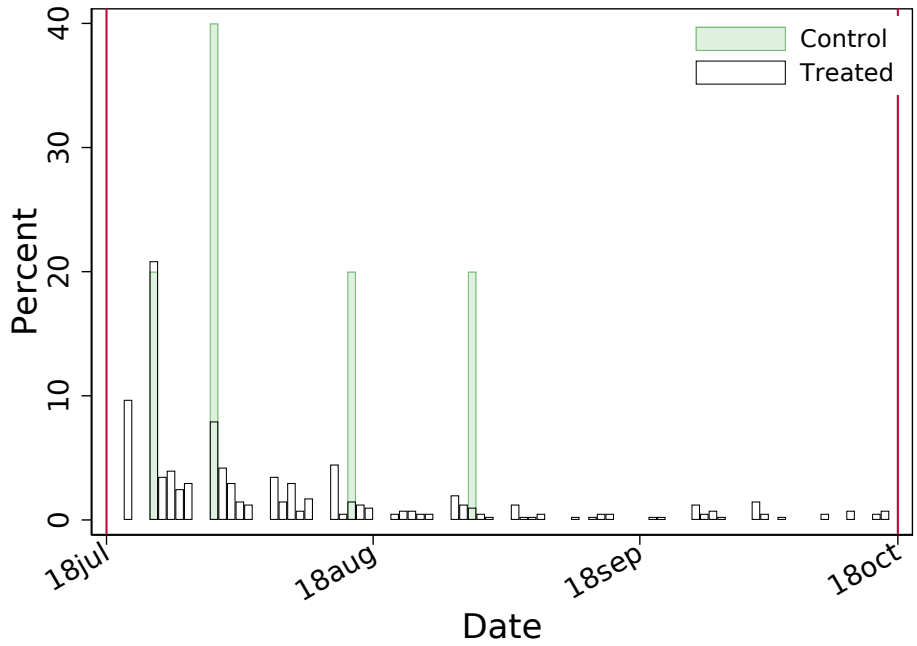
Time of task completeness and fund switches

Task completeness



Fund switches



- The time from the start to the deadline was 22 days.
  Fund changes made during weekends are registered on the following weekday.
- No direct signs of procrastination. Back to main