Stock market misperceptions

Ingar Haaland (NHH Norwegian School of Economics)

PhD Course on **Subjective Beliefs, Attention and Economic Behavior**, March 2023

Behavioral household finance: Great setting to conduct experiments

- Many opportunities to be creative about connecting different data sources.
  - Portfolio choices, housing choices, scanner data, tax data, expert surveys, household surveys.
- You can often relate beliefs to a benchmark to quantify the deviations from the standard model and differentiate between different theories (Giglio et al., 2021).
- Great to combine information provision experiments with stock market choices.
  - Beliefs are essential to all theoretical benchmarks, but very little existing evidence on how exogenous shifts in beliefs affect portfolio choices (Laudenbach et al., 2022).
  - Demand effects are of essentially no concern.
- Households 'should' invest passively in the market portfolio (Merton, 1969), but in practice, they choose suboptimal active trading strategies (French, 2008).
  - Large potential welfare gains from interventions that could reduce investment mistakes.

Misperceived Returns to Active Investing

Ingar Haaland[1] Ole-Andreas Elvik Næss[2]

[1]Department of Economics, NHH Norwegian School of Economics
[2]Centre for Applied Research at NHH (SNF)

March 2023

Motivation

- Standard finance theory suggests that investors should adopt passive investment strategies and place all risky assets in the market portfolio (Merton, 1969; Tobin, 1958).
- In practice, retail investors trade too frequently (Odean, 1998), pay too much in fees due to active trading strategies (French, 2008), and often fail to properly diversify their portfolios (Calvet et al., 2007)
- This preference for active investment strategies is a **costly mistake** (French, 2008).

Why do people adopt active trading strategies?

- Hypothesis explored in this paper: **Misperceptions about the returns to active investing** (French, 2008)
    - Banks often promote active investment strategies (Hackethal et al., 2012; Inderst and Ottaviani, 2012; Mullainathan et al., 2012)
- Alternatively, the preference for active investment strategies could also be driven by behavioral biases or non-standard preferences.
    - Overconfidence (Barber and Odean, 2000; Daniel et al., 1998)
    - Gambling or “bragging” preferences (Kumar, 2009; Statman, 2004)
    - Perceiving active investing as a joyful social activity (Shiller et al., 1984)

Active investing: A costly mistake

- French (2008) estimates that a typical active investor could increase his annual return by 67 basis points by adopting a passive investment.
- There is also abundant evidence that **index funds outperform active funds** (Carhart, 1997; Fama and French, 2010; Gruber, 1996; Jensen, 1968; Malkiel, 1995).
- Whether educational interventions can correct this mistake depends on the underlying reasons for employing active trading strategies.
  - If misperceptions about the returns to active investing are important, there could be large welfare gains from correcting these misperceptions.
  - Might be more difficult to change behavior if investors are overconfident or have an intrinsic preference for active investing.

A field experiment on beliefs about fund returns and portfolio choices

- We recruit a sample of 588 Norwegian retail investors with an account on an online trading platform.
- We collect survey data on beliefs about historical return differences between actively and passively managed funds.
- We include an experimental **information provision** component in which treated respondents are informed that index funds have historically outperformed active funds.
- We collect post-treatment data on beliefs about fund returns and investment intentions.
- Four months after the experiment, we collect data on **actual portfolio choices**.

Contribution to the literature

- **Literature on why retail investors tend to invest in actively managed funds** (Choi and Robertson, 2020; French, 2008; Glode, 2011; Guercio and Reuter, 2014; Savov, 2014).
  - → Evidence on the role of misperceptions about returns of active vs. passive investing.
- **Information provision experiments in household finance** (Beshears et al., 2015; Beutel and Weber, 2021; Bursztyn et al., 2014; Dolls et al., 2018; Hanspal et al., 2020; Laudenbach et al., 2022).
  - → Evidence on how correcting misperceptions affects long-term investing behavior.
- **Literature on beliefs and portfolio choices** (Ameriks et al., 2020; Dominitz and Manski, 2007; Giglio et al., 2021; Meeuwis et al., 2022; Merkle and Weber, 2014).
  - → Evidence on how survey beliefs correlate with actual portfolio choices.
- **Financial literacy interventions** (Fernandes et al., 2014; Kaiser et al., 2022).
  - → Evidence of significant impact on beliefs and investing behavior from a low-cost intervention.

Sample and experimental design

Sample

- We recruit respondents on Shareville, an online trading platform.
  - The largest social trading platform in the Nordics.
  - 269,000 members with 78 billion NOK in investments.
- On June 1, 2021, we invited 16,120 Shareville users to the survey.
  - 588 participated with a valid username.
  - Allows us to track their long-term portfolio choices.

Experimental design

1. Pre-treatment beliefs questions about fund returns.
   - Beliefs about whether active funds have outperformed index funds over the last 20 years.
   - Beliefs about autocorrelation in active fund returns.
2. **Randomization**
   - Control group: No information.
   - Treatment group: Information that index funds have outperformed active funds over the last 20 years.
3. Survey outcomes
   - Beliefs about future fund performance of active vs. index funds.
   - Confidence in own fund and stock picking abilities.
   - Portfolio allocation intentions.
4. **Main outcome**: Portfolio share in index funds (four months after the survey).

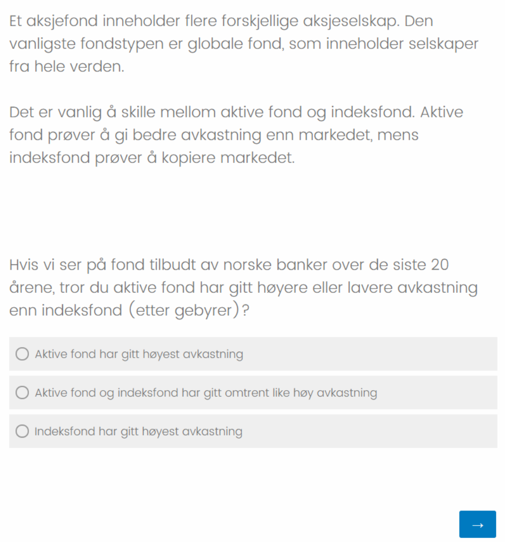
Pre-treatment outcome: Beliefs about active vs. passive investing

An equity fund contains many different stock companies. The most common equity funds are global funds, which contain stock companies from around the world.

It is common to make a distinction between active funds and index funds. Active funds try to give a better return than the stock market, while index funds try to copy the market.

If we consider funds offered by Norwegian banks over the last 20 years, do you think active funds have given higher or lower returns than index funds (after fees)?

- Active funds have given the highest returns.
- Active funds and index funds have given about equal returns.
- Index funds have given the highest returns.


Et aksjefond inneholder flere forskjellige aksjeselskap. Den vanligste fondstypen er globale fond, som inneholder selskaper fra hele verden.

Det er vanlig å skille mellom aktive fond og indeksfond. Aktive fond prøver å gi bedre avkastning enn markedet, mens indeksfond prøver å kopiere markedet.

Hvis vi ser på fond tilbudt av norske banker over de siste 20 årene, tror du aktive fond har gitt høyere eller lavere avkastning enn indeksfond (etter gebyrer)?

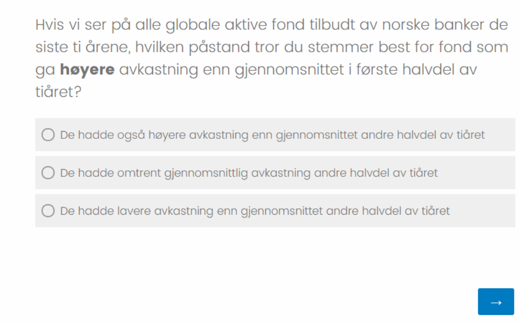
- Aktive fond har gitt høyest avkastning
- Aktive fond og indeksfond har gitt omtrent like høy avkastning
- Indeksfond har gitt høyest avkastning

→

Pre-treatment outcome: Beliefs about autocorrelation in fund returns

If we consider global active funds offered by Norwegian banks over the last 10 years, which claim do you think is most accurate for funds that gave **higher** returns than average in the first half of the decade?

- They also gave higher returns than average in the second half of the decade.
- They gave average returns in the second half of the decade.
- They gave below-average returns in the second half of the decade


Hvis vi ser på alle globale aktive fond tilbudt av norske banker de siste ti årene, hvilken påstand tror du stemmer best for fond som ga **høyere** avkastning enn gjennomsnittet i første halvdel av tiåret?

- De hadde også høyere avkastning enn gjennomsnittet andre halvdel av tiåret
- De hadde omtrent gjennomsnittlig avkastning andre halvdel av tiåret
- De hadde lavere avkastning enn gjennomsnittet andre halvdel av tiåret

→

Information provision about fund returns: Treatment group only

The Norwegian Consumer Council published a survey last year in which they compared the returns on global active funds and index funds offered by Norwegian banks over the last 20 years.

They found that **active funds on average gave a 1.1 percentage point lower yearly return than index funds**. According to the Consumer Council, you can expect to lose NOK 370,000 over 20 years if you choose to invest NOK 500,000 in an active fund instead of an index fund.

The Consumer Council also found that it is not possible to predict the returns of a fund over time: **Active funds with a good performance in the first half of the period did neither better nor worse than other funds in the second half of the period.**

Forbrukerrådet publiserte i fjor en undersøkelse hvor de sammenlignet avkastningen på globale aktive fond og indeksfond tilbudt av norske banker over de siste 20 årene.

De fant at **aktive fond i snitt ga 1,1 prosentpoeng lavere årlig avkastning enn indeksfond**. Ifølge Forbrukerrådet kan du forvente å tape 370 000 kr over 20 år hvis du velger å investere 500 000 kr i et aktivt fond framfor et indeksfond.

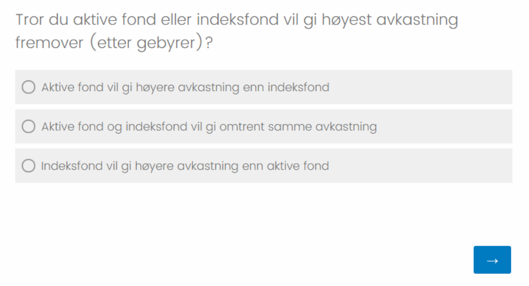
Forbrukerrådet fant også at det ikke er mulig å predikere avkastningen på et fond over tid: **Aktive fond som gjorde det bra i første halvdel av perioden gjorde det i snitt verken bedre eller dårligere enn andre aktive fond i andre halvdel av perioden.**

→

Post-treatment beliefs about active vs. index funds

Do you think active funds or index funds will give the highest returns going forward (after fees)?

- Active funds will give higher returns than index funds.
- Active funds and index funds will give about equal returns.
- Index funds will give higher returns than active funds.



Post-treatment beliefs about own ability to identify superior active funds

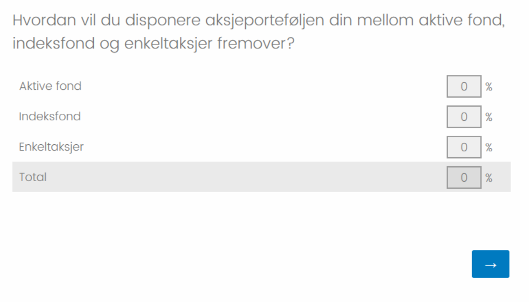
What is the probability that over time you will find active funds that will give better returns than comparable index funds (after fees)?

Post-treatment beliefs about own ability to beat the market

What is the probability that over time you will be able to beat the market by investing in individual stocks?

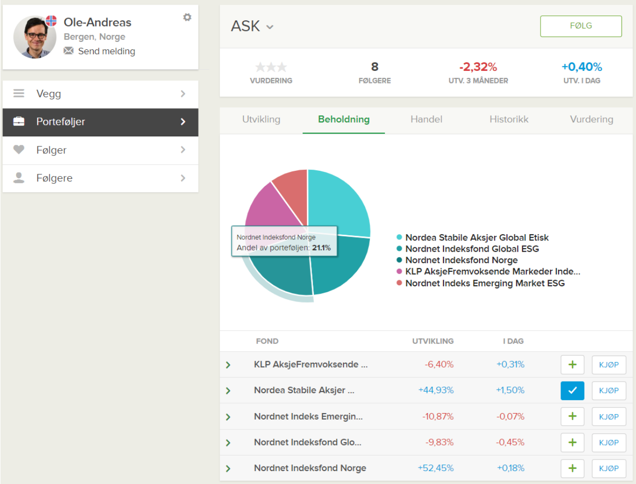
Portfolio allocation intentions

How do you plan to structure your equity portfolio between active funds, index funds, and individual stocks going forward?



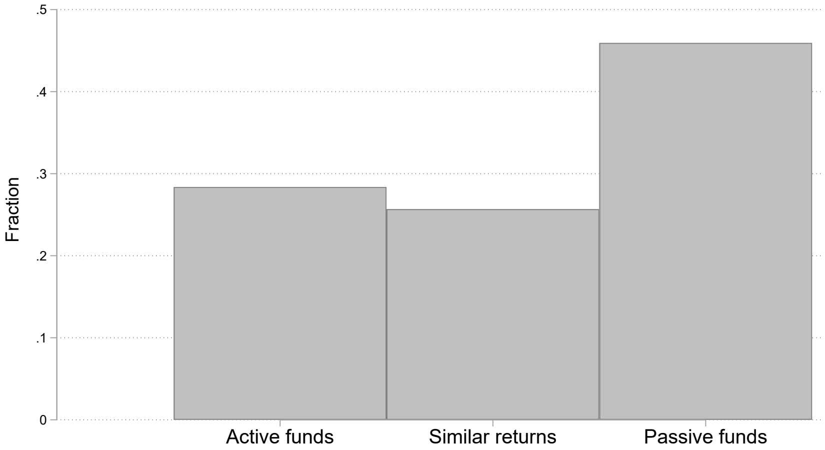
Post-experiment main outcome: Actual portfolio share in index funds

Four months after the experiment, we hand-collect data on actual portfolio shares in active funds, passive funds, and individual stocks.



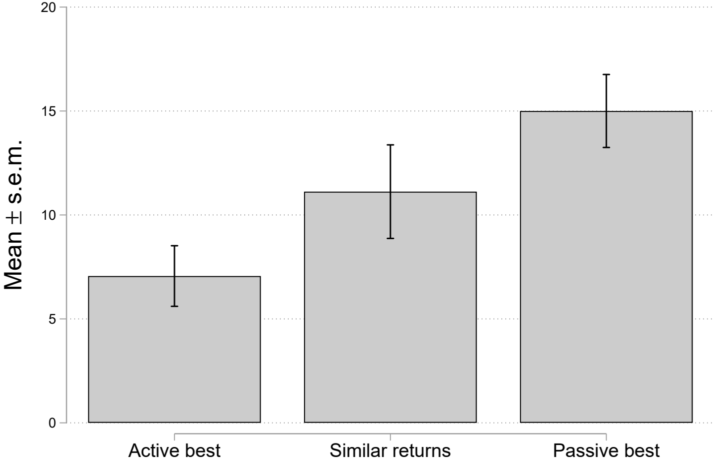
Beliefs and portfolio choices: Descriptive evidence

Beliefs about active vs. passive funds



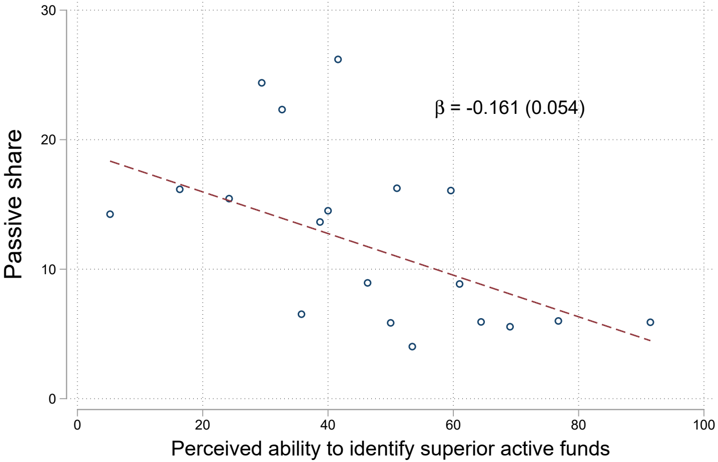
"Do you think active funds or index funds will give the highest returns going forward (after fees)?"

Passive share and beliefs about future fund returns



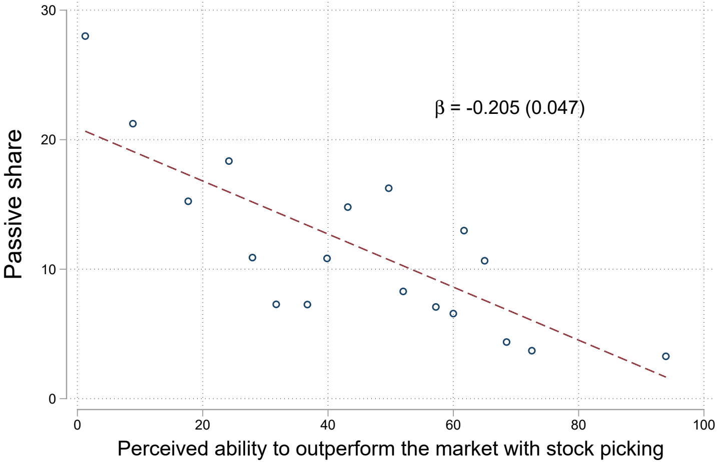
Share of portfolio invested in **passive funds**

Passive share and beliefs about own ability to identify superior funds



"What is the probability that over time you will find active funds that will give better returns than comparable index funds (after fees)?"

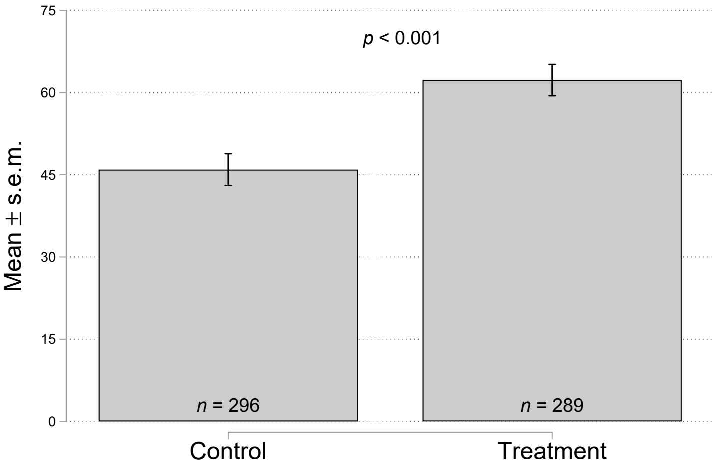
Passive share and beliefs about own stock-picking ability



"What is the probability that over time you will be able to beat the market by investing in individual stocks?"

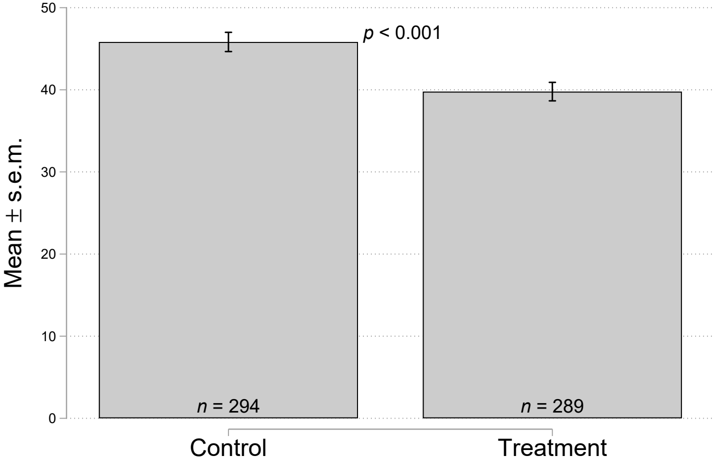
Beliefs and portfolio choices: Causal evidence

Post-treatment beliefs: Passive funds will give the highest returns



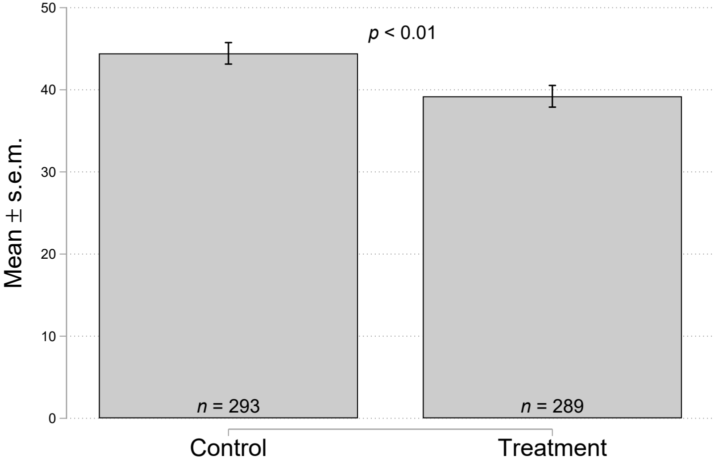
"Do you think active funds or index funds will give the highest returns going forward (after fees)?"

Post-treatment beliefs: Can identify superior active fund



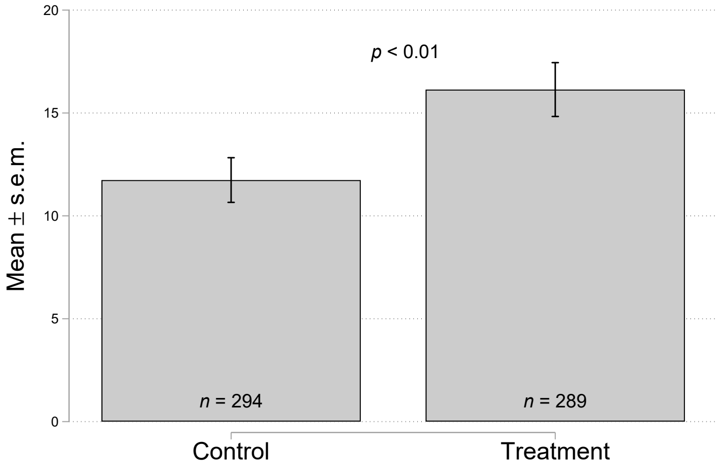
"What is the probability that over time you will find active funds that will give better returns than comparable index funds (after fees)?"

Post-treatment beliefs: Can beat the market with stock picking



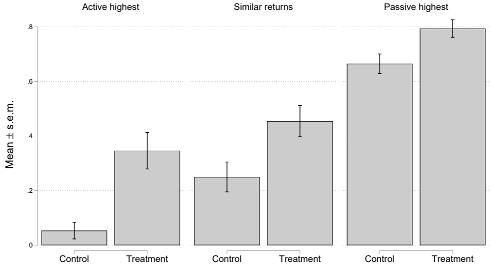
"What is the probability that over time you will be able to beat the market by investing in individual stocks?"

Post-experiment portfolio choice: Passive share



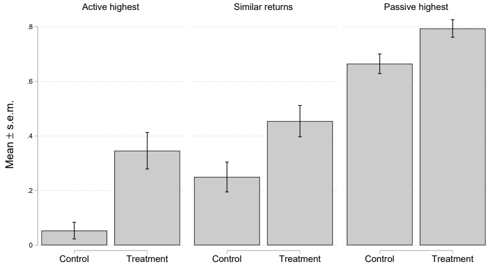
Actual passive share four months after the experiment (not self-reported)

Heterogeneous treatment effects by prior beliefs

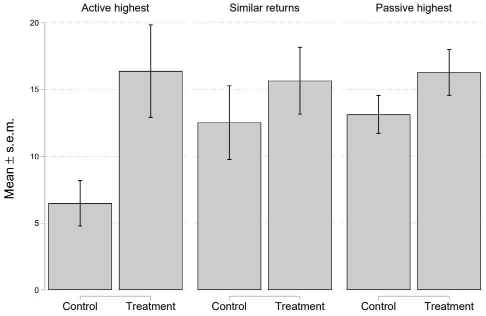


Heterogeneity in belief updating

Heterogeneous treatment effects by prior beliefs



Heterogeneity in belief updating



Heterogeneity in passive share choices

Robustness: Regressions with controls

	Post-treatment beliefs				Index share	
	(1) Active superior	(2) Index superior	(3) Superior fund	(4) Beat market	(5) Survey intentions	(6) Actual portfolio
Treatment	-15.32***	17.82***	-6.36***	-5.52***	7.80***	4.41***
	(3.00)	(3.63)	(1.51)	(1.83)	(1.98)	(1.70)
N	585	585	583	582	578	583
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Control mean	28.4	45.9	45.8	44.4	32.4	11.7

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses.

Experiment 2: Representative sample

Sample and experimental design

- 1,005 respondents recruited in July 2022 with YouGov
- Survey restricted to respondents holding stocks or equity funds
- Broadly representative sample of the Norwegian population (gender, age, and geography)
- Follows the same format as the main experiment
  - Prior beliefs about historical returns
  - Information provision treatment about index funds outperforming active funds
  - Post-treatment beliefs and portfolio choice intentions
- Some additional questions to examine potential mechanisms
  - Financial literacy, overconfidence, and sources of information

Main findings

- 25.2% of control group respondents believe that index funds will outperform active funds (compared to 45.9% in the main experiment).
- Respondents who rely on bank advice are **17.8 percentage points** more likely to believe that active funds have historically outperformed index funds.
- Strong treatment effects on belief updating and portfolio choice intentions
  - Treated respondents are **20.1 percentage points more likely** to think that index funds will outperform active funds.
  - Treated respondents plan a **7.0 percentage points higher passive share** in their portfolio (similar to the 7.8 percentage points effect in the main experiment).

Main findings: Heterogeneity

- Strong heterogeneous effects by pre-treatment beliefs about historical fund returns.
- High literacy respondents generally respond stronger to the treatment.
- No significant heterogeneity by confidence in own abilities, though some suggestive evidence that high confidence respondents react less to the information in terms of intended behavior.
- No heterogeneous treatment effects by gender.

Conclusion

Concluding remarks

Information about historical return differences between active funds and index funds has **economically significant impacts** on beliefs about the benefits of passive investing and on actual portfolio choices.

- Significant treatment effects on all our main outcomes, with treated respondents ...
  - being 38.8 percent more likely to think that index funds will outperform active funds in the future.
  - having 4.4 percentage points higher portfolio share in passive funds.
- Important implications for finance theory and optimal policy.
  - Misperceptions about the returns to active investing seem to be an important reason for why index funds are not more widespread among retail investors.
  - Information campaigns have the scope to correct misperceptions and reduce investment mistakes.

References I

Ameriks, John, Gábor Kézdi, Minjoon Lee, and Matthew D Shapiro, "Heterogeneity in expectations, risk tolerance, and household stock shares: The attenuation puzzle," *Journal of Business & Economic Statistics*, 2020, *38* (3), 633–646.

Barber, Brad M. and Terrance Odean, "Trading Is Hazardous to Your Wealth: The Common Stock Investment Performance of Individual Investors," *Journal of Finance*, 2000, *55* (2), 773–806.

Beshears, John, James J Choi, David Laibson, Brigitte C Madrian, and Katherine L Milkman, "The effect of providing peer information on retirement savings decisions," *Journal of Finance*, 2015, *70* (3), 1161–1201.

Beutel, Johannes and Michael Weber, "Beliefs and Portfolios: Causal Evidence," *Working Paper*, 2021.

Bursztyn, Leonardo, Florian Ederer, Bruno Ferman, and Noam Yuchtman, "Understanding Mechanisms Underlying Peer Effects: Evidence From a Field Experiment on Financial Decisions," *Econometrica*, 2014, *82* (4), 1273–1301.

References II

Calvet, Laurent E, John Y Campbell, and Paolo Sodini, "Down or out: Assessing the welfare costs of household investment mistakes," *Journal of Political Economy*, 2007, *115* (5), 707–747.

Carhart, Mark M, "On persistence in mutual fund performance," *Journal of Finance*, 1997, *52* (1), 57–82.

Choi, James J and Adriana Z Robertson, "What matters to individual investors? Evidence from the horse's mouth," *Journal of Finance*, 2020, *75* (4), 1965–2020.

Daniel, Kent, David Hirshleifer, and Avanidhar Subrahmanyam, "Investor psychology and security market under-and overreactions," *Journal of Finance*, 1998, *53* (6), 1839–1885.

Dolls, Mathias, Philipp Doerrenberg, Andreas Peichl, and Holger Stichnoth, "Do retirement savings increase in response to information about retirement and expected pensions?," *Journal of Public Economics*, 2018, *158*, 168–179.

Dominitz, Jeff and Charles F. Manski, "Expected Equity Returns and Portfolio Choice: Evidence from the Health and Retirement Study," *Journal of the European Economic Association*, 05 2007, *5* (2-3), 369–379.

References III

Fama, Eugene F and Kenneth R French, "Luck versus Skill in the Cross-Section of Mutual Fund Returns," *Journal of Finance*, 2010, *65* (5), 1915–1947.

Fernandes, Daniel, John G Lynch Jr, and Richard G Netemeyer, "Financial literacy, financial education, and downstream financial behaviors," *Management Science*, 2014, *60* (8), 1861–1883.

French, Kenneth R, "Presidential address: The cost of active investing," *Journal of Finance*, 2008, *63* (4), 1537–1573.

Giglio, Stefano, Matteo Maggiori, Johannes Stroebel, and Stephen Utkus, "Five Facts about Beliefs and Portfolios," *American Economic Review*, 2021, *111* (5), 1481–1522.

Glode, Vincent, "Why mutual funds "underperform'," *Journal of Financial Economics*, 2011, *99* (3), 546–559.

Gruber, Martin J., "Another Puzzle: The Growth in Actively Managed Mutual Funds," *Journal of Finance*, 1996, *51* (3), 783–810.

Guercio, Diane Del and Jonathan Reuter, "Mutual Fund Performance and the Incentive to Generate Alpha," *Journal of Finance*, 2014, *69* (4), 1673–1704.

References IV

Hackethal, Andreas, Michael Haliassos, and Tullio Jappelli, "Financial advisors: A case of babysitters?," *Journal of Banking & Finance*, 2012, *36* (2), 509–524.

Hanspal, Tobin, Annika Weber, and Johannes Wohlfart, "Exposure to the COVID-19 Stock Market Crash and Its Effect on Household Expectations," *Review of Economics and Statistics*, 2020, pp. 1–45.

Inderst, Roman and Marco Ottaviani, "How (not) to pay for advice: A framework for consumer financial protection," *Journal of Financial Economics*, 2012, *105* (2), 393–411.

Jensen, Michael C, "The performance of mutual funds in the period 1945-1964," *Journal of Finance*, 1968, *23* (2), 389–416.

Kaiser, Tim, Annamaria Lusardi, Lukas Menkhoff, and Carly Urban, "Financial education affects financial knowledge and downstream behaviors," *Journal of Financial Economics*, 2022, *145* (2), 255–272.

Kumar, Alok, "Who gambles in the stock market?," *Journal of Finance*, 2009, *64* (4), 1889–1933.

References V

Laudenbach, Christine, Annika Weber, Rüdiger Weber, and Johannes Wohlfart, "Beliefs about the Stock Market and Investment Choices: Evidence from a Field Experiment," CESifo Working Paper 9427 October 2022.

Malkiel, Burton G, "Returns from investing in equity mutual funds 1971 to 1991," *Journal of Finance*, 1995, *50* (2), 549–572.

Meeuwis, Maarten, Jonathan A Parker, Antoinette Schoar, and Duncan Simester, "Belief disagreement and portfolio choice," *Journal of Finance*, 2022, *77* (6), 3191–3247.

Merkle, Christoph and Martin Weber, "Do investors put their money where their mouth is? Stock market expectations and investing behavior," *Journal of Banking & Finance*, 2014, *46*, 372–386.

Merton, Robert C, "Lifetime portfolio selection under uncertainty: The continuous-time case," *Review of Economics and Statistics*, 1969, pp. 247–257.

Mullainathan, Sendhil, Markus Noeth, and Antoinette Schoar, "The Market for Financial Advice: An Audit Study," Working Paper 17929, National Bureau of Economic Research March 2012.

References VI

Odean, Terrance, "Volume, volatility, price, and profit when all traders are above average," *Journal of Finance*, 1998, *53* (6), 1887–1934.

Savov, Alexi, "The price of skill: Performance evaluation by households," *Journal of Financial Economics*, 2014, *112* (2), 213–231.

Shiller, Robert J, Stanley Fischer, and Benjamin M Friedman, "Stock prices and social dynamics," *Brookings Papers on Economic Activity*, 1984, *1984* (2), 457–510.

Statman, Meir, "What do investors want?," *The Journal of Portfolio Management*, 2004, *30* (5), 153–161.

Tobin, J., "Liquidity Preference as Behavior Towards Risk," *Review of Economic Studies*, 1958, *25* (2), 65–86.