

Beliefs about the Time Cost of Investing: Experimental Evidence from Denmark*

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Abstract

We ask whether misperceptions about the time investment required for stock market participation act as a barrier to entry. In a survey experiment fielded to 70,000 randomly selected Danes, we show that non-investors expect to spend far more time on a hypothetical investment than investors actually report spending: only 30% think 15 minutes a week suffice to manage a broad-market investment, against 71% of investors who report spending less than that. We randomly assign participants to a short video on market efficiency, diversification and passive index funds. Treatment significantly lowers expected preparation time for a hypothetical investment from 9.5 to 8.5 hours, expected monitoring time falls from 60 to 48 minutes per week on average, and preferences shift towards funds over individual stocks. Investment intentions rise significantly by 3.7 percentage points. Treated respondents are also more than twice as likely to voluntarily download further information. Our results suggest that misperceived time requirements are an important barrier to asset market participation.

JEL Codes: C83, D91, D12, D83, G11, G51, G53, D14

Keywords: stock market participation, household finance, beliefs, survey experiment

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1 Introduction

Equity market participation has never been more accessible, yet a majority of households worldwide still do not hold stocks (Haliassos & Bertaut 1995, Calvet et al. 2007). A large literature has proposed a variety of explanations for this puzzle, including entry and participation costs (see Gomes et al. 2021, for a recent survey). This paper investigates whether the perceived time required to participate in equity markets is a meaningful barrier to entry for non-investors. We document that Danish non-investors overestimate the time costs of participation, relative to what investors actually spend, and show that a simple information treatment can reduce the perceived time needed by 10-20%. Furthermore, we find that this correction, in turn, leads to meaningful changes in attitudes towards investing.

Establishing that misperceptions about the time required for investing act as a barrier to participation requires three things: (i) showing that the belief is widespread, (ii) showing that the belief can be moved, and (iii) that this change in belief changes behavior. We do all three with a survey experiment among non-investors in Denmark, showing respondents short educational videos about the stock market. We find that the treated population anticipates significantly smaller preparation and monitoring time for a hypothetical stock market investment, and is more likely to prefer fund investments over individual stocks. The treatment effect on the intention to invest is large and significant. We also document that treated participants are more than twice as likely to download an informational PDF summarizing the information provided to them, providing a behavioral proxy that they are more likely to consider investing.

More specifically, in May 2026, we invited 70,049 randomly selected Danes between 18 and 55 years to participate in our survey experiment. We segmented the sample into non-investors and investors and asked them about common misperceptions regarding investing, such as the time and effort required. Respondents were then randomly assigned to a video treatment conveying that markets are efficient, diversification is important and that passive index investing eliminates the need to pick, monitor, or trade frequently. The control group received a neutral primer on what a stock is. We then ask individuals whether they are planning to invest in the stock market in the following six months, and offered them the opportunity to download a summary of the information in the video they saw.

Our first set of results establishes that misperceptions about stock investing are widespread among non-investors in our sample, in line with Duraj et al. (2025). Almost 38% of non-investors indicate that they agree that investors need to regularly monitor news about the stock market. Among investors the share is just below 25%. Regarding time-investments, only 30% of non-investors believe that less than 15 minutes per week is sufficient time to

manage an investment that tracks the overall stock market, and 36% believe more than one hour per week is necessary. By comparison, 71% of investors in our survey report spending less than 15 minutes per week on their investments. Importantly, in aiming to isolate the effect of misperceptions about the time cost of investing from misperceptions about the market return, we anchor non-investor beliefs about the latter. We first ask participants to estimate the yearly return over the previous 10 years, and then reveal the true return, using an interactive graph. We show that this leads to updating of return beliefs towards the historical average.

We find that our treatment video has a significant effect on our outcome index, which aggregates multiple hypotheses: whether the treatment (i) reduces preparation time for a hypothetical investment of 50,000 DKK (about \$8,000), (ii) reduces monitoring time for said hypothetical investment, (iii) reduces the willingness to pay for outsourcing the managing of the investment, (iv) increases preferences for investment funds and (v) increases intentions to invest own funds. We measure the strongest individual effect on the intention to invest in funds rather than individual stocks. We also find a significant decrease in the expected preparation and monitoring time, with the former decreasing from 9.5 to 8.5 hours, and the latter from 60 to 48 minutes. Intentions to invest rise significantly, by 3.7 percentage points. Finally, the treatment group is more than twice as likely to download a summary of the informational video, pointing towards a significant increase in demand for additional information..

Evaluating our results in a simple participation cost model, setting the value of time at 150 DKK/hour (\$23/hour), we show that our video treatment reduces the wealth threshold at which investing becomes beneficial by about 20%, from 554,000 DKK (\$85,000) to 443,000 DKK (\$68,000). Crucially, the model suggests that almost the entire reduction is driven by the lowering of perceived recurring time costs of monitoring, rather than a reduction in the perception of the time needed to open the account.

Our paper makes three contributions. First, we provide direct evidence on the role of *perceived* time costs in the stock market participation puzzle (Haliassos & Bertaut 1995, Vissing-Jørgensen 2002, Duraj et al. 2025). Empirically, participation costs have remained underexplored, because the perceived costs that govern behavior are invisible in administrative data (Barber & Odean 2013, Menkhoff & Westermann 2025), but the available evidence points away from purely pecuniary explanations: large lottery windfalls and unexpected inheritances raise participation far less than fixed-cost models predict (Andersen & Nielsen 2011, Briggs et al. 2021). We measure non-investors' perceived time requirements directly, show they are much larger than the time investors report actually spending, and shift them experimentally. In doing so we supply the quantitative, pre-registered test

of the mechanism that Duraj et al. (2025) identify qualitatively in Germany, in a different institutional setting and with an experimental design that can speak to causality. Our findings also complement Filali Adib et al. (2025), who show that Danish households with plausibly exogenous increases in available time participate and trade more; we show that the perceived time requirement is itself malleable.

Second, we contribute to the literature linking subjective beliefs to portfolio choice (Choi & Robertson 2020, Giglio et al. 2021). This work has established that beliefs about returns and risk predict portfolios, but most of it is conducted on samples of investors, for whom the extensive-margin decision has already been resolved. We extend the agenda to non-investors, eliciting beliefs directly, benchmarking them against the reported behavior of investors surveyed under an identical instrument, and then manipulating them. A distinctive feature of our design is that we hold beliefs about the *payoff* to investing approximately fixed: all respondents are shown the realized historical return before treatment, which lets us isolate misperceptions about the cost of investing from misperceptions about its reward. This is important, as return expectations are themselves a first-order determinant of participation (Malmendier & Nagel 2011).

Third, we add to the literature using information provision to change financial behavior (Cole et al. 2014, Laudenbach et al. 2024). Our treatment targets a single, demonstrably false, widespread belief. In this it is closest to Haaland & Næss (2023), who present investors with evidence that passively managed funds, after fees, generate higher returns than actively managed ones. Two features of our results speak to the design of such interventions. The treatment shifts the perceived cost of *self*-managing a portfolio, which bears on the demand side of the market for advice and robo-advice (Caratelli et al. 2019). The doubling of voluntary information downloads suggests that the binding constraint is not information avoidance (Golman et al. 2017) but a belief that acquiring the information would not be worth the effort—once that belief is relaxed, demand for further information rises (Fuster et al. 2022).

The rest of the paper is organized as follows: Section 2 sets out the participation model we use to interpret the estimates. Section 3 describes the Danish setting. Section 4 describes the survey experiment. Section 5.1 documents what Danish non-investors believe investing requires and how far those beliefs sit from what investors report doing. Section 5.2 reports the treatment effects, calibrates them through the model, and presents the reasons participants gave for not investing. Section 6 concludes.

2 Conceptual Framework

This section presents a standard participation model to fix notation and to highlight which parameters we anticipate our information experiment to affect and those it cannot.

2.1 Setup

Household i has investable wealth W_i and CRRA preferences with relative risk aversion γ . With lognormal returns, an equity premium μ over the risk-free rate and volatility σ , the optimal risky portfolio share is $\alpha^* = \mu/(\gamma\sigma^2)$ and access to the stock market raises the yearly certainty-equivalent return on invested wealth by

$$\Lambda(\mu, \gamma, \sigma) = \frac{\mu^2}{2\gamma\sigma^2} = \frac{S^2}{2\gamma} \quad (1)$$

per period, where S is the Sharpe ratio (Merton 1969).¹

We assume that participation carries two costs: entry requires τ_0 hours of preparation and a residual non-time component ψ_i , which collects everything about entry that is not time: procedural uncertainty, not knowing which platform or product to choose, etc. Additionally, continued participation requires τ_1 hours per week for as long as the position is held. Thus, participation is worthwhile if, up to a first order approximation,

$$\Lambda W_i A(T) \geq \psi_i + w_i \tau_0 + 52 w_i \tau_1 A(T), \quad (2)$$

where w_i is the value of an hour, T the horizon, ρ the discount rate and $A(T) = \sum_{t=1}^T (1+\rho)^{-t}$. The present discounted value of participation, given a certain level of starting wealth W_i (the left-hand side), must outweigh the fixed costs of participation ($\psi_i + w_i \tau_0$) and the present value of maintenance costs.

Next, we assume that households do not observe τ_0 , τ_1 or μ and instead act on beliefs $\hat{\tau}_{0i}$, $\hat{\tau}_{1i}$, $\hat{\mu}_i$. Rearranging (2) then gives the wealth above which participation becomes profitable under the household's own beliefs,

$$\underline{W}_i = \frac{2\gamma_i\sigma^2}{\hat{\mu}_i^2} \left[\frac{\psi_i + w_i \hat{\tau}_{0i}}{A(T)} + 52 w_i \hat{\tau}_{1i} \right]. \quad (3)$$

First, the entry term is amortized over the investment horizon; the ongoing term is not. A belief about weekly attention scales the participation threshold one for one, while a belief

¹The expression is exact in continuous time under geometric Brownian motion and coincides with the mean-variance benchmark used to back out participation costs by Vissing-Jørgensen (2002).

about set-up time is diluted by a long enough horizon. Hence, both components must be elicited separately rather than as a single effort rating, with the latter carrying potentially much more weight. Because of its importance, it is convenient to express the unamortized effort term as an annual expense ratio. This shadow fee $\phi_i = 52w_i\hat{\tau}_{1i}/W_i$ would impose the same burden as the household's perceived attention requirement and can be directly compared with the cost of products the household could buy.

Second, $\hat{\mu}_i$ enters quadratically in the denominator. Thus, plausible dispersion in return beliefs shifts $\underline{W}_i$ by far more than any plausible movement in perceived time investment. For this reason, and due to our focus on the time-costs of participation, we aim to fix return beliefs before the intervention, as described in Section 4.

2.2 Belief Changes

The parameters of Equation (3) fall into three groups. First, preferences and the return process (γ , σ , ρ and T) are fixed by definition. These parameters affect $\underline{W}$, but they are common to treatment and control and difference out of any intent-to-treat comparison.

Second, each household's state (W and ψ) is beyond the reach of information, but it is not irrelevant, as it determines who is marginal. A shift in the beliefs about time-costs moves the wealth threshold by $\Delta\underline{W}_i = (w_i/\Lambda_i) [\Delta\hat{\tau}_{0i}/A(T) + 52\Delta\hat{\tau}_{1i}]$ and thus generates additional participation according to

$$\Delta P \approx \mathbb{E}[f(\underline{W}_i)\Delta\underline{W}_i], \quad (4)$$

where $f(\underline{W}_i)$ is the density of wealth. Equation (4) also shows that even a large belief change ($\Delta\underline{W}_i$) only generates behavioral changes if the relevant households are not too far from their own threshold. Wealth is thus a first-order conditioning variable for the experiment despite being untouched by it. Relatedly, ψ is untouched by an information treatment about time. Where ψ binds rather than $w\hat{\tau}_1$, (4) predicts no response however far the time belief moves.

Finally, beliefs $\hat{\mu}$, $\hat{\tau}_0$ and $\hat{\tau}_1$ are movable arguments. Equations (3) and (4) imply that (i) a change in $\hat{\tau}_0$ and $\hat{\tau}_1$ translates into kroner of the wealth participation threshold, and the two translate at very different rates, and (ii) a belief correction may not alter the intended or actual participation of a household if its investable wealth is too low. Section 5.2.3 returns to both of these points when discussing our findings.

Below, Section 4 describes how (i) given our focus on the importance of perceived time investment for participation, we aim to minimize variation in return expectations, $\hat{\mu}$, and (ii) how we aim to alter beliefs $\hat{\tau}_0$ and $\hat{\tau}_1$, using our treatment.

3 Institutional Background

Almost every Dane owns equity through their retirement savings. Danish retirement saving rests on a universal public pension, a statutory funded scheme, and quasi-mandatory occupational schemes, the latter two of which are substantially invested in equities. Voluntary participation in equity markets outside of pensions, however, is relatively low. About 25 percent of Danish adults held equity or equity funds outside pension wrappers in 2022, a share that has increased little over the past decade.

Diversified equity is cheap and easy to obtain. Index funds tracking global equity are available to retail investors at annual expense ratios on the order of 0.2 per cent, through banks and online brokers that every respondent can reach from a phone. The perceived time cost we elicit is therefore not a proxy for a real monetary cost.

In 2019, the Danish government introduced an investment savings account (*Aktiesparekonto*), with the goal of making investment easier. The account can be set up with any bank, and is subject to preferential tax treatment. The maximum investable amount through the account has increased since its inception, and stands at roughly 175,000 DKK (\$27,000) in 2026. Danish tax-returns are produced automatically for all Danes, assembled from data submitted to the tax authority by banks and brokerages, and can be approved online within minutes. Thus, we do not expect the burden of tax-reporting to present a meaningful friction.

4 Survey Experiment

We conduct a large-scale survey experiment with a representative sample of the Danish population in which we collect detailed information about their knowledge, beliefs and preferences, and their intentions to start investing in the stock market.

4.1 Survey Data

We conducted our survey experiment in May 2026. We sent survey invitations to a representative sample of 70,049 individuals, registered with a social security number in Denmark, randomly selected by Statistics Denmark and balanced on age, gender, and region by construction. The respondents were 18 to 55 years of age at the time of the survey. We chose this age range to avoid sampling individuals with less than 10 years to retirement age. Respondents could be native Danes or foreigners residing legally in the country (the survey was in Danish). An English translation of the survey is available in Appendix C.

The survey invitation used an official channel of communication called “Digital Post”, which is used to receive and read mail from public authorities. By law, all citizens older than 15 must have and regularly check an electronic mailbox where they receive information from public institutions, their employer or banks. Contacting a random population sample rather than a self-selected market-research panel improves external validity.² To incentivize participating in the survey, we randomized invitations across three groups. Each group was offered a 1% chance to win 250 DKK, 500 DKK or 1000 DKK, respectively. This random variation allows us to test for opting in to the survey based on incentives. Furthermore, invitees were told that they could double their chances if they answered the survey within the first three days of receipt, which the vast majority of respondents did. The survey was programmed with QuestionPro.

4.2 Survey Outline

The survey consists of 11 blocks of questions and is conducted in Danish. First, we ask respondents a number of questions about their household composition, how the household makes financial decisions, and their financial situation generally. We then pose the Big 3 Financial Literacy questions (Lusardi & Mitchell 2011). Respondents are asked to rank their financial confidence, how they gather information about financial decisions, and about some financial products exclusive to the Danish market to understand their financial knowledge. For ethical reasons, we screen out individuals who say that they cannot cover an unexpected expense of 10,000 DKK without borrowing and funnel them into a side survey, not discussed in this paper.³ For the remaining sample, we continue with questions about investing. Mainly we are interested in whether they are current, active investors in the stock market, so we can funnel current investors into another survey arm.

Misperception index For investors and non-investors, we elicit responses to five items that proxy the beliefs Duraj et al. (2025) identify as central to how private investors think about stock market participation. In light of our model, these questions are meant to proxy the variables $\hat{\tau}_{0i}$ and $\hat{\tau}_{1i}$, the respondent’s perceived time and attention required for stock market participation. At this point we do not ask for the actual time perception, so as not to repeat questions within the survey.

Each item is answered on a six-point scale from strongly agree to strongly disagree. For

²Panel and market-research participants usually differ from the general population (Lusk & Brooks 2011, Hopkins & Gorton 2024), which could bias results (Campos-Mercade et al. 2021, Dechezleprêtre et al. 2025, Haaland et al. 2023, Chopra et al. forthcoming).

³We use 10,000 DKK as a cut-off as this is used in the official financial vulnerability statistics by the Danish statistical agency. That group is around 20% of the general population.

each item, we pre-specified the direction of belief that is consistent with market efficiency and passive investing, and code the opposite direction as “incorrect” (see Table 1). Respondents who believe that research effort protects against losses, that experts can pick winners, or that investing requires regular attention to market news hold beliefs that make participation appear more costly than it is; the same is true of respondents who do not recognize the risk reduction from diversification, or who regard diversification as time-consuming to achieve. The misperception index is the count of items answered in the “incorrect” direction and therefore ranges from 0 to 5, with higher values indicating beliefs less consistent with passive investing.

Table 1: Misperception index questions

Question	“Incorrect” response
Investors who spend more time researching companies are less likely to lose money	Agree / Strongly agree
Experts can predict which stocks will do well in the future	Agree / Strongly agree
People who invest need to regularly monitor news about the stock market	Agree / Strongly agree
Investing in one company is riskier than investing in many different companies	Disagree / Strongly disagree
It is time-consuming for private individuals to spread their money across different companies	Agree / Strongly agree

Notes: All items are elicited before the treatment on a six-point scale ranging from strongly agree to strongly disagree. The “incorrect” response is the direction inconsistent with market efficiency and passive investing, pre-specified in the pre-analysis plan. The misperception index is the count of items answered in the incorrect direction and ranges from 0 to 5.

Stock market return For both investors and non-investors we are interested in measuring their beliefs about average stock market returns. Furthermore, as outlined in Section 2, it is important that beliefs about excess returns $\hat{\mu}_i$ are anchored. Thus, all respondents are shown an interactive graph, in which they are asked to indicate how much an investment of 10,000 DKK (roughly \$1,500) invested over the 10 years prior to the survey would be worth in 2026. On a slider, respondents can manipulate the annual return, while the total hypothetical monetary path adjusts simultaneously inside the graph, to avoid confusion about yearly percentages. Figure D.1 shows a screenshot of the survey interface. Once a respondent has made her “guess”, the graph reveals the true path of the MSCI World index, and the index is explained to contain the 1,400 largest companies from 23 developed countries, covering approximately 70% of the global stock market.

Using the difference between a respondent's estimate and the MSCI World return, we can measure their perception of stock market returns over a 10-year period. We then ask them to predict how the market will do over the next 12 months and over the next 10 years, to measure their beliefs about the near and far future, i.e., $\hat{\mu}_i$ in our framework. With this information treatment, all respondents have received the information that the average stock market return per year over the previous 10 years was 9.9%, and we can test whether they update their beliefs towards the correct return. Since everyone received the same information, we cannot test whether this information alone impacted their willingness to invest. After this block, current investors are funneled into a side survey, not discussed in this paper.

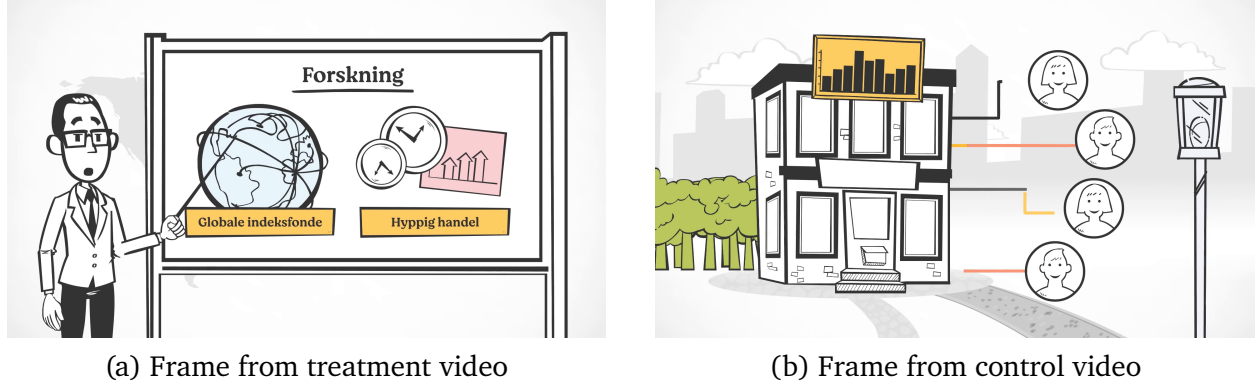
Experiment All non-investors who made it to this part of the survey were randomized into treatment or control with equal probability. Figure 1 shows still frames from both the treatment and the control video.

Control: The control group is shown a 48-second animated video about the stock market. It explains that there are around 44,000 listed companies worldwide and that the global stock market grew over the past 20 years, despite large falls during 2008 and the covid pandemic. It covers what the stock market is and that if a company wants to raise money, it can issue shares. After the video, we ask two comprehension questions to check if the respondent watched the video.

Treatment: The treatment group sees a 1 minute and 48 second video which summarizes the efficient market hypothesis ("it is difficult to find bargains, because experts analyze all stocks constantly"), the benefits of diversification ("follow the entire stock market, and not be exposed to the ups and downs of individual companies"), the existence of index funds ("to own an index fund is like owning a piece of the whole stock market"), and that investing like this does not require constant attention and research. The video does not suggest that individuals *should* invest. As with the control group, we ask two comprehensions questions to check if a respondent watched the video.

Investment Scenario After the attention check questions, we present all respondents with the same hypothetical scenario. We ask them to imagine that a brokerage account has been set up for them and that they have 50,000 DKK to invest. They need to invest in the stock market for the next 10 years, and they cannot withdraw money during that time period. The question text also explains what a brokerage account is. We then ask them about the expected costs of starting to invest, the costs of monitoring and managing their investments, and their perception of how unpleasant it is to manage such an investment. We chose this hypothetical scenario over asking them about their own investment, so we could keep the sum invested and the time horizon fixed. When we ask them about their

Figure 1: Frames from video intervention



Note: This figure shows frames from the two animated videos, to one of which each non-investor was randomly assigned. The *Left Panel* is from the treatment video, which explains that analysts constantly evaluate every stock, that a broad index fund tracks the whole market, and that such investing needs no ongoing attention. The *Right Panel* is from the control video, which explains what the stock market is and how shares are issued. Neither video advises investing.

strategy, we also specify that they should strive to make the same return as the global stock market on average, to avoid them thinking they need to beat the market.

In particular, we are interested in the following five proxies of time-related participation costs, which we use to construct an index in our estimation strategy, following Kling et al. (2007). To avoid multiple hypothesis testing, the index standardizes and then averages the results of the five items below. Since we want to avoid the repetition of questions, we do not again ask about misperceptions generally, but about time perceptions specifically.

- *Time needed to prepare for investment* We ask “Before you make your first investments, how many hours of research and planning do you think you would need if your goal was to achieve roughly the same return as the global stock market over 10 years?”. The six answer categories rang from less than 1 hour to more than 50 hours. This question comes closest to the parameter $\hat{\tau}_0$ in the model of Section 2. We then ask them what they would spend this time on, such as choosing a strategy and deciding which products to buy.
- *Investment Strategy* “What do you think would be best to investment in if your goal was to achieve roughly the same return as the global stock market over the next 10 years?”. The dummy equals one if the respondent chooses a fund—an index fund, several funds, or a mixture of shares and funds—and zero otherwise.
- *Time needed to monitor investment* We ask “Once you have made the first investments, how much time do you think you would need to spend on your investments per week

(buying, selling, monitoring, etc.) for your investment to grow at roughly at the same rate as the global stock market over the next 10 years?” The five answer categories range from “less than 15 minutes” per week to “more than 10 hours per week”. This question proxies the parameter $\hat{\tau}_1$ in Section 2. We then ask how sure they are and what they would spend the time on.

- *WTP for outsourcing* To understand how cumbersome participants think investing is, we then ask them about their willingness to outsource the investment to a service provider. Crucially, we say that the provider does not make better choices than them and does not earn a higher return, but just takes away the time and effort costs of handling a portfolio. We show them a multiple price list with seven rungs, from 0 DKK to 5,000 DKK (10% of the portfolio’s value) every year. We take the switching point as the value of the row above the row in which the respondent indicates “I will manage the investment myself” for the first time. If they never indicate self-management, we assign the highest value (5,000 DKK); if they always do, we assign 0. In addition to this quantitative elicitation, we also ask them how much of a hassle they think it would be to manage the investment themselves, on a scale from 1 to 5.
- *Investment Intentions* We then ask if they are planning to invest in the stock market in the next 6 months and what they are planning to invest in, if they plan to. If they say they are not planning to invest, we ask them why using an open text field.

End of survey Subsequently, we ask respondents a number of personality questions on a 0-10 point scale (risk preferences, time preferences, altruism, generalized trust, complexity aversion, procrastination, self-control). Finally, we provide the video scripts as pdf downloads and allow participants to give feedback in an open text field.

4.3 Descriptive Statistics, Selection and Attrition

By design, we funnel participants into different survey arms. In this paper, we concentrate on the non-investors, of whom 2,102 reached the randomization stage and completed the survey in more than three minutes. Because respondents could advance through the survey without giving an answer to a question (in which case they were reminded to answer, but not forced), some covariates are missing. We deal with this by including missing dummies.

Table D.2 shows how investors, constrained individuals, treatment and control group non-investors compare based on the variables we elicit at the beginning of the survey. Investors, non-investors and constrained participants differ along several important dimensions. Investors are older, more likely to be male, and most likely to be involved in the

household's financial decisions. They are also the most financially literate, by far the most confident in their financial knowledge, and most willing to accept risk. Unsurprisingly, they are also most likely to hold bonds and cryptocurrency. Constrained individuals are most likely to be unemployed or students.

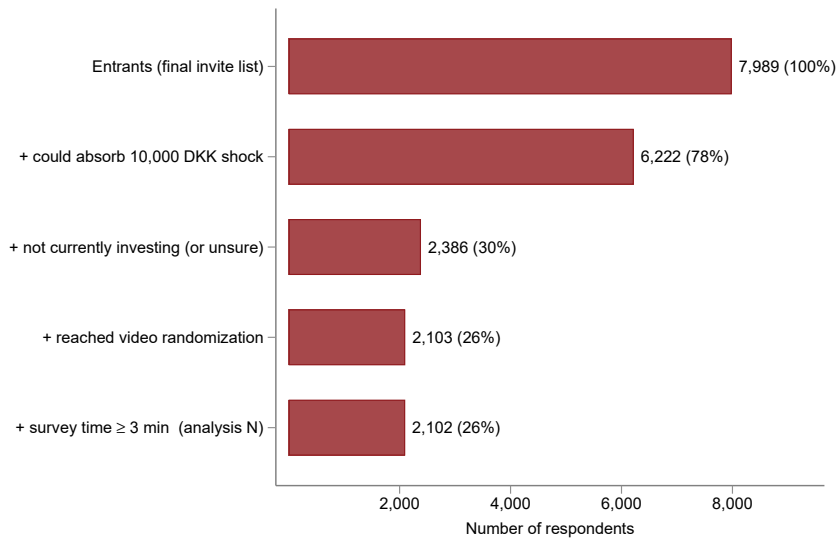
Respondents appear well balanced between the treatment and the control group, as additionally evident from Table D.1. Only two differences emerge between the two groups: household financial decision-makers were more likely to be in the treatment group, and control group members report more self-control. The first is significant at the 5% level and the second only at the 10% level.

Respondents were only randomized into treatment if they made it to the video stage of the survey, hence the eligible sample is restricted to everyone who reached it. Figure 2 summarizes how the original number of invited participants collapses to the final eligible sample size at the video treatment. Respondents are disproportionately likely to be investors, with only 30% of entrants both unconstrained and not currently investing. At randomization, 1,132 individuals were assigned to the control group, and 971 to the treatment group, one of whom was dropped for completing the survey too quickly, leaving an analysis sample of 2,102 respondents. The randomization was done within QuestionPro and was outside the control of the researchers.

In addition, Figure A.1 shows how sample sizes evolve after the intervention for the control and treatment groups, conditional on having reached the video page (Question 24 is the video treatment). The figure shows higher attrition for the treatment group than for the control group: about 97% of control group participants reached the first question after their video, while 94% of the treatment group did so. One possible explanation for this difference is the difference in video lengths, with the treatment video being about twice as long as the control video (see Section 4). The subsequent large drops are questions that require respondents to indicate how they would spend their time (i) preparing for their first investment or (ii) monitoring their investments, respectively. The questions required participants to distribute percentages across categories, potentially leading to a high cognitive load. As we discuss in Appendix A, we find no evidence for a statistically significant difference in attrition between treatment and control groups.

Furthermore, as discussed in Appendix A, we find no evidence that the size of the participation incentive systematically changes our results. We cannot reject equality of the treatment effect on the outcome index across our three incentive arms (a 1% chance to win 250, 500 or 1,000 DKK). The effect on investment intentions does differ across arms, but not monotonically in the prize, so it does not point to selection on the value of time; we return to both tests in Appendix A.

Figure 2: CONSORT funnel



Note: This figure reports how the number of respondents falls as the restrictions defining the non-investor analysis sample are applied. Restrictions are cumulative: each bar adds the criterion named on the vertical axis to those above it. The bars count all entrants from the final invitation list, then those able to cover an unexpected 10,000 DKK expense without borrowing, those not currently investing, those reaching the video and randomization, and those spending at least three minutes on the survey. Labels report the number of respondents and, in parentheses, the percentage of entrants.

4.4 Administrative Data and Follow-Up Survey

As preregistered in our pre-analysis plan (AEARCTR-0018546) on the 4th of May 2026, we plan to connect our survey data with administrative, third-party reported investment and background data for all invited participants ($N = 70,049$), all respondents and a passive control group ($N = 100,000$). We can match this data to the survey data using social security numbers (assigned at birth or when legally registering in the country). The data for the tax year of 2026 becomes available in 2028. The background data, such as income, education level, marital status, and existing stock market participation, from 2025 (prior to the survey) will be available in 2027. In November 2026, we will run a pre-registered follow-up survey, with all survey respondents who said they planned to invest in the stock market ($N = 441$) to measure intermediate outcomes.

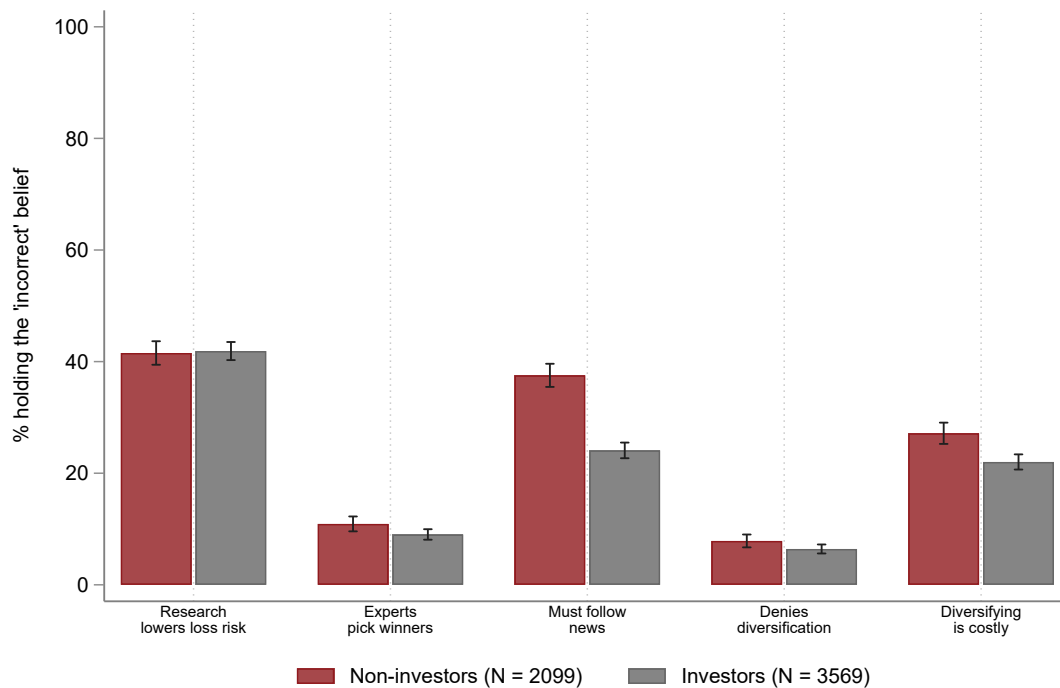
5 Survey Results

5.1 Beliefs and Misperceptions about Investing

5.1.1 Misperceptions about Optimal Investing

Prior to the intervention, we elicit investors' and non-investors' broader perceptions of what successful investing requires (see Section 4.2). Figure 3 reports, for each statement, the share of respondents whose answers run counter to the academic evidence, i.e., those who (strongly) agree with a statement we classify as false, or (strongly) disagree with one we classify as true. Investors and non-investors hold strikingly similar views on several dimen-

Figure 3: Misperceptions among investors and non-investors



Note: This figure reports the percentage of respondents answering in the direction classified as incorrect on each of five statements, by self-reported investor status. The statements are that researching companies makes losses less likely, that experts can predict which stocks will do well, that investors must follow market news regularly, that one company is riskier than many, and that diversifying is time-consuming for private individuals. Answers run from strongly disagree to strongly agree; the incorrect direction is agreement for every statement except the fourth, where it is disagreement. Items are elicited before the video, on unconstrained respondents. The sample is restricted to those who reached the randomization (video) stage. Whiskers are 95% confidence intervals from robust standard errors.

sions. In both groups, 42% agree that researching the companies one invests in reduces the risk of losses. This mirrors Duraj et al. (2025) and is consistent with a belief that greater

effort is rewarded in financial markets. At the same time, only about 10% in both groups agree that experts can predict which shares will do well. Encouragingly, fewer than 10% of each group disagree with the statement that diversification lowers risk.

The largest differences between investors' and non-investors' perceptions of investing lie in the two remaining questions. While 27% of non-investors believe that it is time consuming to spread investments across many companies, only 22% of investors hold this view. The gap suggests that some investors, potentially through experience, know that diversification is easy to achieve. The biggest difference in perceptions, however, lies in the question about attention: almost 38% of non-investors agree that investors need to monitor news about the stock market. Among investors, the share is just 24%.

These belief differences regarding the costs of diversification and the time costs associated with attention to news map directly onto the beliefs our intervention is designed to correct.

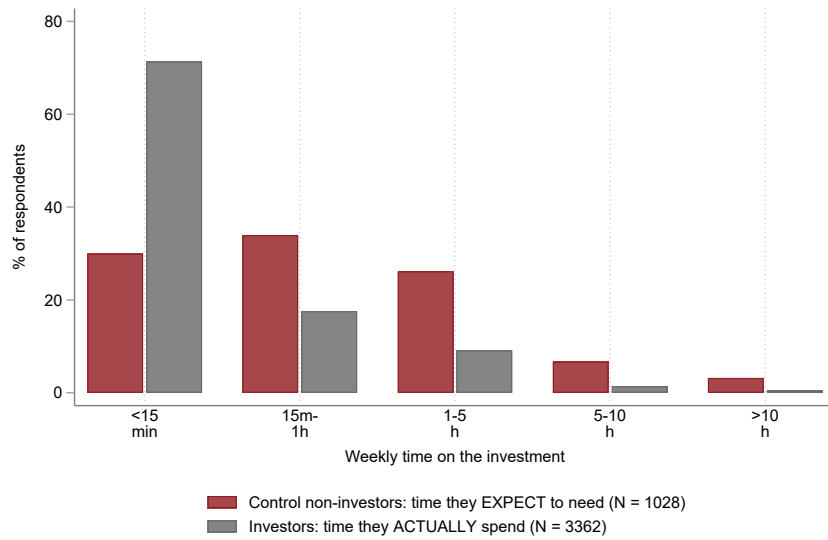
5.1.2 Beliefs about Monitoring Time

Relatedly, we asked non-investors how much time they would spend monitoring a hypothetical investment on a weekly basis. This question is one of our main outcome variables, and we discuss the effect of the treatment in Section 5.2. Still, it is useful to quantify the size of the misperception here. Figure 4 compares the answers of investors, who report their actual weekly time use, with those of control group participants.

In line with the qualitative beliefs discussed above, we find a substantial difference between time used and time expected. While 71% of current investors report spending less than 15 minutes per week on their investments, only 30% of non-investors believe that less than 15 minutes would be sufficient. Average perceptions differ accordingly: using the lower bounds of the intervals to compute averages, investors spend just under 16 minutes per week on their investments, whereas the average non-investor expects to spend almost four times as much. The perceived time burden of investing is thus a large misconception.

These numbers allow us to compute the shadow fee ϕ_i introduced in Section 2: the expense ratio that would impose the same annual cost as the time spent monitoring, given a value of time w_i and an invested amount W_i . Setting $w_i = 150$ DKK/hour and $W_i = 50,000$ DKK (the hypothetical investment used in the survey), investors' reported time use implies $\phi_{investor} = 4.1\%$. That figure is high relative to the expense ratios of widely available global index funds, but it stays far below the value for non-investors in the control group, where $\phi_{non-investor} = 15.6\%$. Beliefs about monitoring time can therefore potentially rationalize non-participation, and moving non-investors' perceptions toward investors' lived experiences may substantially change the trade-off they face.

Figure 4: Expected versus actual weekly monitoring time



Note: This figure compares the weekly time non-investors expect to spend on a stock market investment with the time investors report spending on their own. Bars give the percentage of each group choosing each of five categories, from under 15 minutes to over 10 hours per week, and sum to 100% within a group. Non-investors answer for a hypothetical 50,000 DKK portfolio locked in for ten years; investors report their current time use. The non-investor bars use control-arm respondents only.

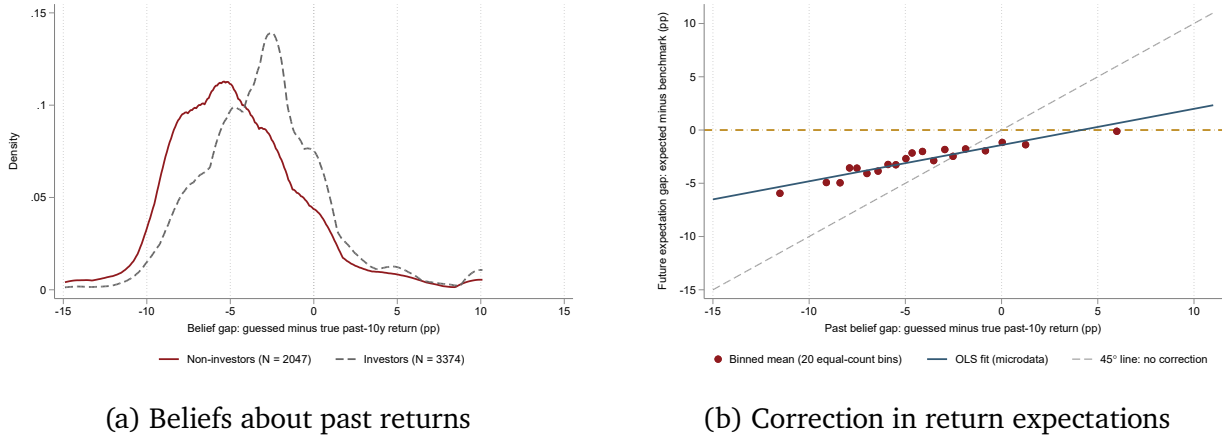
5.1.3 Beliefs about Market Returns

As outlined in Section 4.2, we ask investors and non-investors about their beliefs about *past* market returns (January 2016 to May 2026) to anchor beliefs about future market expectations. This exercise gives us a clear picture about return perceptions for each of the two groups.

Previous studies have documented that non-investors often underestimate long-run market returns (Dominitz & Manski 2007, Hurd et al. 2011) and we confirm this pattern for Denmark. Figure 5 shows the distribution of the belief gap, i.e., the difference between the true historical return over the previous 10 years (9.9% per year) and the respondent's guess. The median belief gap for investors lies around -2.5 , indicating a return guess of 7%. For non-investors, the median gap is closer to -5 , indicating a return guess of about 5%, and the distribution is skewed to the right, with a long left tail of very low guesses. Nevertheless, while underestimating it, the median non-investor realizes that an equity premium exists, in line with findings from Germany (Duraj et al. 2025).

Importantly, as explained in Section 4.2, all respondents are informed of the true past return after having registered their answer. Figure 5b shows the relationship between respondents' beliefs about past returns, and their expectations of future returns, after being

Figure 5: Perceptions about stock market returns



Note: This figure describes beliefs about the return on the global stock market, in annualized percentage points, before the video. The *Left Panel* plots kernel densities of the past-return belief gap, the respondent’s guess for January 2016 to the survey date minus the realized MSCI World return of 9.9% when converted to Danish Kroner, revealed only after the guess was recorded. Densities are drawn by self-reported investor status for all unconstrained respondents, those able to cover an unexpected 10,000 DKK expense without borrowing. The *Right Panel* plots the future expectation gap, the return expected over the next ten years minus the same benchmark, against that past-return gap, on the non-investor analysis sample. Markers are means within twenty equal-count bins; the line is the ordinary least squares fit. The dashed 45-degree line marks carrying the past error forward one for one.

informed about the true return over the past 10 years. The slope shows a clear indication of belief updating: expectations about future returns are more closely aligned with the historical realization than the initial guesses were. Hence, we conclude that by informing participants about past returns, we were at least partly successful in anchoring return expectations.

5.2 The Effect of the Treatment on Perceived Participation Costs

We compare respondents who were assigned the treatment video to those who were assigned the control video using a linear model as preregistered.⁴ Our primary outcome of interest is a summary index of five proxies for perceived participation costs, as outlined in Section 4. Each component is signed so that higher values correspond to lower perceived costs or greater investment orientation. The Z-scores are computed using the control group mean and standard deviation of each component.

⁴Table D.3 reports the results without covariates as a robustness check in the Appendix; the covariate-adjusted specification is the pre-registered primary.

We regress our outcome variable y_i on a treatment dummy and control variables:

$$y_i = \alpha + \beta_1(Treat)_i + \beta_2 X_i + \varepsilon_i \quad (5)$$

where $(Treat)_i$ is an indicator that takes the value of 1 if respondent i reached the stage of the treatment video and 0 if they reached the control video, X_i is a vector of control variables (consisting of age bin indicators, gender, employment status, an indicator for home ownership, household financial-decision role, the Lusardi three-item financial-literacy score, self-assessed confidence in own financial knowledge, the absolute pre-treatment past-return gap, pre-treatment return expectations at one and ten years, and the misperception index described in Section 4.2), and ε_i is an individual specific error term robust to heteroskedasticity. Covariates are included to reduce residual variance. For respondents who skip a question, we include missing dummies for said question, such that the final sample consists of all respondents who reached the video stage of the survey. Unless stated otherwise, all regressions in the paper are extensions of (5). We use a one-sided test of $H_0: \beta_1 \leq 0$ against $H_1: \beta_1 > 0$, predicting that the treatment lowers perceived participation costs.

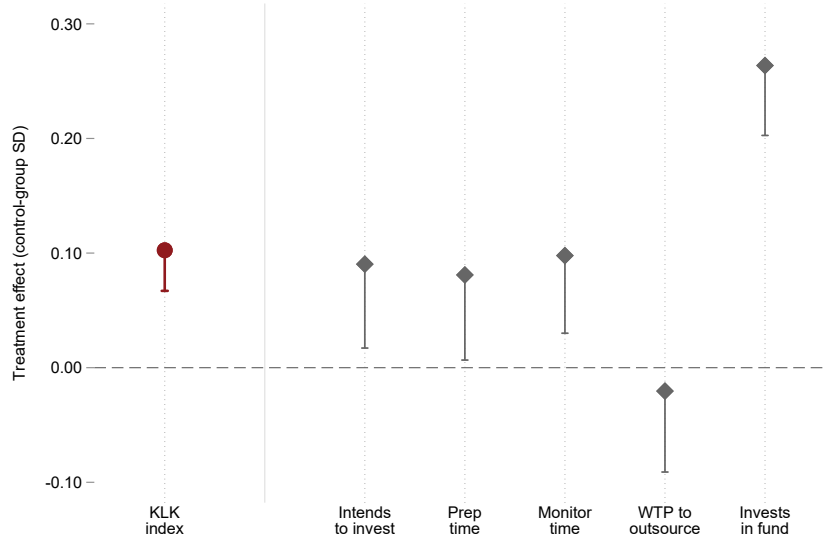
5.2.1 Results

The treatment has a significant impact on the Kling et al. (2007) outcome index, implying that the treatment successfully moved perceptions towards more accurate beliefs about the stock market, and intentions towards passive investing. Figure 6 shows that viewing the two-minute treatment video, as opposed to the control video, moves the index by about a tenth of a standard deviation. In the following, we discuss the treatment effect on the various index components, which are also shown in Figure 6, expressed as standard deviations. Table D.4 displays the non-standardized treatment effects.⁵

The video treatment had a sizeable and significant effect on the intentions to invest. In the control group, 22% of participants plan to invest in the following six months, against 25.7% in the treatment group (Figure 7). A 3.7 percentage point increase in the intention to invest in the stock market, significant at the 5% level in a one-sided test, is sizeable. As outlined in Section 4.4, going forward, we aim to (i) elicit whether respondents actually invested six months after the survey and (ii) check realized investment status in the administrative data and hence, whether intentions translate into actions.

⁵For the results in Figure 6, for all respondents who answered at least one index-related question, we impute missing answers with the assignment-specific index group mean, following Kling et al. (2007). In this way, the treatment effect of the index is the average of the component treatment effects. In Table D.4, we do not impute missing answers, hence, sample sizes differ across components.

Figure 6: Treatment effect on index components



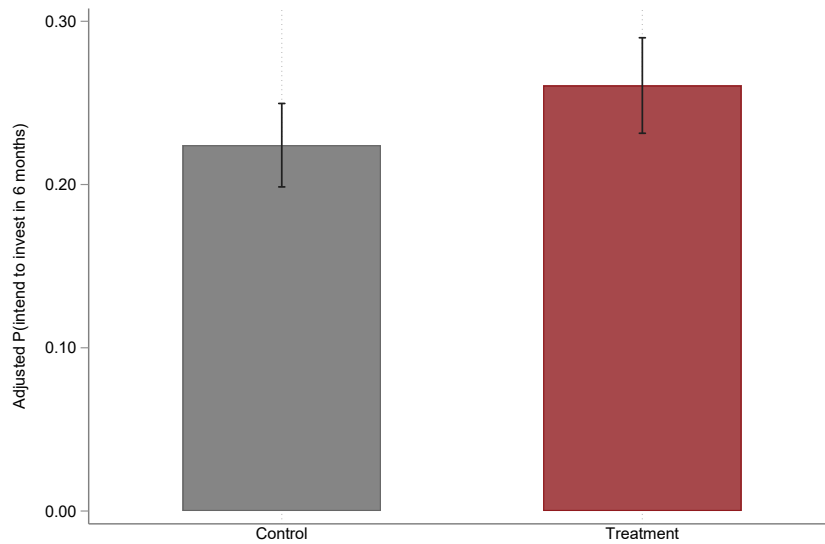
Note: This figure reports intent-to-treat estimates of the video’s effect on the summary index of perceived participation costs and its five components. Each estimate is the treatment coefficient from a separate ordinary least squares regression including the pre-registered covariates (age bin, gender, employment, home ownership, household financial-decision role, financial literacy, financial confidence, the absolute past-return belief gap, return expectations at one and ten years, and the misperception index), with robust standard errors. The index, left of the vertical rule, follows Kling et al. (2007) and averages the components’ z -scores. Components are z -scored on control-group moments and signed so higher values mean lower perceived costs. Whiskers show the one-sided 95% lower bound, $b - 1.645 \times SE$. The sample is the non-investor analysis sample.

The treatment significantly reduces the perceived time investment associated with investing. Respondents in the control group indicate that they would need about 9.5 hours to prepare for their first investment. The treatment reduces this estimate by slightly more than one hour (1/10th of a standard deviation), significant at the 5% one-sided level. Figure D.2 shows the treatment’s effect on the distribution of expected preparation time: the main effect comes from mass moving from answers of (i) “5 hours to 10 hours” and (ii) “10 hours to 25 hours” to answers indicating less than five hours. Individuals who indicated preparation times of above 25 hours seem unmoved by the treatment.

Similarly, the treatment reduces expected monitoring time of a hypothetical portfolio: while the control group expects that one hour per week is needed, the treatment group expects 12 minutes less (1/10 of a standard deviation) – this estimate is significant at the 5% level as well. Again, the treatment moves mass from answers like “15 minutes to 1 hour” and “1 to 5 hours” into the “less than 15 minutes” category, as shown in Figure D.4.

While a reduction in preparation and monitoring time should make investment more attractive to respondents in the control group, *ceteris paribus*, the total “utility cost” of in-

Figure 7: Treatment effect on intentions to invest

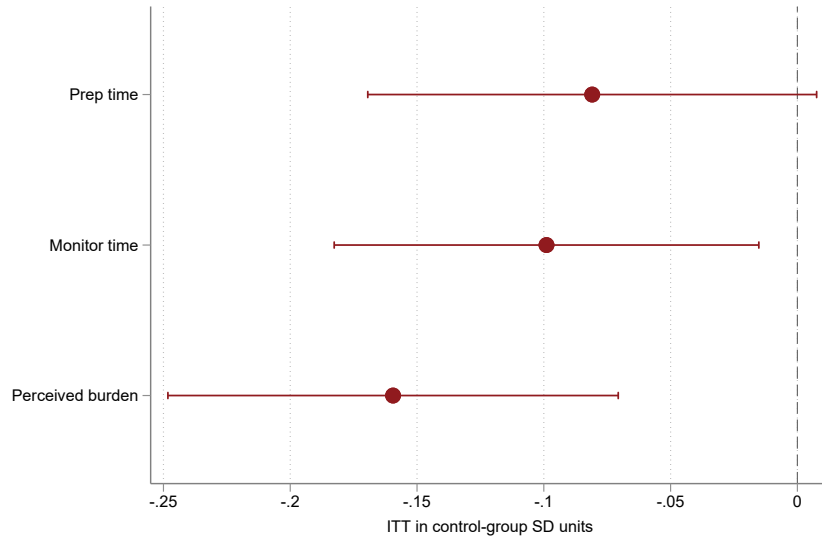


Note: This figure reports the covariate-adjusted probability of intending to invest within six months, by arm. Bars are predicted probabilities from an ordinary least squares regression of intention on treatment and the covariates in the note to Figure 6. Whiskers are 95% confidence intervals from robust standard errors. The sample is the non-investor analysis sample.

vesting also depends on the disutility of spending the time. Although we do not include it in our Kling et al. (2007) index, we ask respondents about how difficult they anticipate managing their hypothetical investment to be. As reported in Figure 8, the 2-minute treatment significantly reduces this perception, by almost 0.2 standard deviations, indicating that not only the time required, but also the disutility of spending the time matters. Since a part of the treatment video explains that low preparation and monitoring costs can be achieved through index fund investment, we also ask non-investing respondents what they would buy when investing their hypothetical 50,000 DKK. In the control group 81% choose a fund, and the treatment raises that share to 91%. That effect is the strongest (0.3 standard deviations) and most significant effect of the intervention, possibly suggesting that non-investors are in many cases not familiar with the financial instruments available to them.

Finally, we ask respondents about their willingness to pay for management which would manage exactly as they would themselves. Our aim is to identify purely the value of time, without including the value of expertise provided by an investment advisor. We find no effect of the treatment on this dimension. The treatment effect is 25.9 DKK per year against a standard error of 78. One explanation may be the coarseness of the elicitation: the price list has seven rungs spanning 0 to 5,000 DKK, so a respondent whose valuation falls by a few

Figure 8: Treatment effect on perceived costs



Note: This figure reports intent-to-treat estimates of the video’s effect on three perceived-cost measures. Prep time is the hours expected before a first investment and monitor time the hours per week afterwards, both asked for a hypothetical 50,000 DKK portfolio locked in for ten years and scored at the lower bound of the chosen category. Perceived burden is how burdensome self-management would be, from 1 to 5; exploratory, not part of the index. Each estimate is the treatment coefficient from a separate regression including the covariates in the note to Figure 6, divided by the control-group standard deviation. Whiskers are two-sided 95% confidence intervals from robust standard errors.

hundred kroner stays on the same rung. Figure D.3 shows the percentage of all individuals willing to pay for management at each ladder rung. The treatment shifts mass towards zero, especially from the 100 DKK rung, but the right tail also gains mass, implying a zero-effect.

5.2.2 Information demand

At the end of the survey, participants were offered the opportunity to download a PDF summary of the information conveyed in the video they were shown. The summaries included the main messages of the video, including still frames to remind readers of the visuals. For the treatment video, the summary included references for the claims made regarding managed fund underperformance, time investment of investors, etc. Using a digital tracker, we recorded whether a respondent clicked on the link to download the PDF, which opened a separate window in their browser without closing the survey. The link did not stand out on the final page of the survey as a separate button. Instead, it was integrated in the final sentences, which read, “Thank you for your time. The survey finishes when you click the ‘Finish’-button. You can download a PDF which summarizes the information in the video

here: [download PDF](#).”

Additional information demand is costly. The link was offered at the very end of the survey, where participation is already complete and the fastest route out is to close the window. Hence, this is a clearer signal of true interest than stated intentions, which are known to overstate subsequent behavior (Gravert 2024). Clicking the link is also less likely to be subject to experimenter demand effects.

Table 2 shows the effects of watching the treatment video on information demand. This analysis is exploratory and not pre-specified in the preanalysis plan. The first column reports the treatment effect for all individuals who reached the randomization stage, i.e., including all who dropped out before seeing the link, without covariates. While only 3.2% of the control group clicked the download link, the share is more than twice as large for the treatment group, and highly significant at all conventional levels. Adding pre-treatment covariates and applying the pre-specified sample restrictions, in column 2, slightly increases the treatment effect to about 4.4 percentage points. Finally, column 3 restricts the sample further to only those respondents who reached the survey page that offered the download link. Among this sample, the treatment effect is 5.10 percentage points, with a control group mean of 3.7%.

Table 2: Treatment effect on summary PDF download

	Dependent variable: downloaded the summary PDF		
	(1) Unadjusted	(2) Adjusted	(3) Saw the link
Treated	0.0435*** (0.0100)	0.0441*** (0.0101)	0.0510*** (0.0117)
Covariates	No	Yes	Yes
Control mean	0.0318	0.0318	0.0368
Observations	2102	2102	1797
R-squared	0.010	0.029	0.030

Notes: The dependent variable equals one if the respondent downloaded the summary PDF offered on the closing screen. Each arm is offered the PDF for the video it saw, and the download is recorded by the link itself, so a treated-control gap mixes demand for the information with any difference in the appeal of the two documents. Columns (1) and (2) share the pre-registered non-investor analysis sample, which applies the pre-analysis plan’s exclusion of respondents finishing in under three minutes; the variable is defined for every respondent in that sample, with those who abandoned the survey before the closing screen coded zero. They differ only in that column (2) adds the pre-registered covariates. Column (3) restricts to respondents who reached the closing screen and so conditions on a post-treatment event. Covariates, where included, are the pre-registered set. Estimation is by OLS with heteroskedasticity-robust standard errors in parentheses; stars are from two-sided tests. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

The results show that the treatment information was relevant and interesting enough

for a share of our treated individuals to want to keep access to it by downloading the pdf. As in other survey-based studies (Haaland et al. 2023), we interpret this as a behavioral proxy that at least for a sub-set of participants the intention to invest is honest.

5.2.3 From Beliefs to Participation

We find that our treatment moves every belief it targets, one of them by three tenths of a standard deviation. Here, we analyze these findings in light of the model presented in Section 2.

Table 3 combines the estimates presented in Section 5.2 with plausible parameter values for the other variables in the model. We assume a conservative equity premium of $\mu = 5\%$, a return standard deviation of $\sigma = 17\%$, and risk aversion $\gamma = 3$, which together imply a certainty-equivalent gain from market access of $\Lambda = 1.44\%$ of invested wealth per year. We discount at $\rho = 0.02$, so a ten-year horizon gives $A(10) = 8.98$. We set the cost of time at $w = 150$ DKK/hour, and we set $\psi_i = 0$, so the wealth thresholds below are lower bounds.

At these values the perceived time burden costs the control group 7,825 DKK a year and the treatment group 6,249 DKK. For our hypothetical position of 50,000 DKK, the treatment thus cuts the expense ratio that would match the perceived burden from 15.6% to 12.5%, closing about 27% of the gap between the shadow fee of the control group and that of actual investors.

With the calibration at hand, the beliefs in the control group imply that investing becomes beneficial above 554,000 DKK of investable wealth. Beliefs in the treatment group put the figure at 443,000 DKK. Investors' own reported time puts it at 141,000 DKK. These estimates suggest that a substantial amount of wealth is required for non-investors, despite a large downward revision of participation costs. Our point estimate on intentions is consistent with a thin density there: 3.7 percentage points requires that 3.7% of non-investors sit inside the band. With 1,831 respondents and a control mean of 22%, our survey has an 80% chance of rejecting zero only for effects above five percentage points.

Additionally, the model suggests that of the 110,000 DKK by which the treatment reduces the investment threshold, 109,000 comes from the twelve-minute correction to weekly monitoring and 1,000 from the one-hour correction to preparation. The entry costs are amortized over the ten-year horizon and monitoring costs are not, implying that one hour saved once is worth about 17 DKK a year while the twelve minutes saved every week are worth 1,600 DKK per year. Although the two beliefs look alike in a survey, they differ by two orders of magnitude in the model, which is why we elicit them separately. It also means the intervention succeeded on the margin that matters: had the video moved only preparation time, the threshold would have likely been almost unaffected.

Table 3: Perceived participation costs and the implied wealth threshold

	Control beliefs	Treatment beliefs	Investors (revealed)
Preparation time (hours, one-time)	9.5	8.3	—
Monitoring time (minutes per week)	60.2	47.1	15.6
Annualised time cost at $w = 150$ DKK/hour (DKK)	7,825	6,118	2,029
Shadow fee ϕ on a 50,000 DKK position	15.6%	12.2%	4.1%
Implied threshold $\underline{W}$ (DKK)	553,758	433,983	140,763
CE benefit at $W = 50,000$ DKK	721 DKK/year (1.44% of W)		
$\hat{\tau}_1$ for $W = 50,000$ DKK	4.3 minutes/week		
Required correction delivered	23.5%		
Threshold gap closed	29.0%		

Notes: The table evaluates the participation threshold at $\mu = 0.05$, $\sigma = 0.17$ and $\gamma = 3$, which give $\Lambda = 1.44\%$ of invested wealth per year, and at $\rho = 0.02$ over a ten-year horizon, which gives $A(10) = 8.98$. The value of time is 150 DKK per hour and the position is the 50,000 DKK of the hypothetical scenario. The control column uses control-group mean beliefs; the treatment column adds the covariate-adjusted ITT from Table D.4; the investor column uses investors' reported monitoring time. Every time-use figure scores an answer at the lower bound of the chosen bin, so the investor mean counts the modal answer as zero. Investors are not asked how long they prepared, having already paid that cost, so their column carries no preparation term. The shadow fee $\phi_i = 52 w_i \hat{\tau}_{1i} / W_i$ is the annual expense ratio that would impose the same burden as the perceived attention requirement. All three columns set $\psi_i = 0$, so the thresholds are lower bounds. $\hat{\tau}_1$ for $W = 50,000$ DKK is the weekly monitoring time that would bring the threshold down to the position, holding preparation at the control belief of 9.5 hours; is the share of the gap between that figure and the control belief that the treatment supplies. is the share of the control-to-investor threshold gap it closes.

5.3 Heterogeneity by Pre-Treatment Misperception

Our treatment video deliberately targets the five misperceptions which we elicit before the intervention, namely, (i) researching companies lowers the risk of losses, (ii) experts can pick winners, (iii) investors need to monitor stock market news, (iv) diversification does not lower risk (v) diversification is costly to achieve. In this section we test whether respondents who initially hold “more incorrect” beliefs about, e.g., the value of expertise, experience larger effects of the treatment.

We run the following five regressions:

$$y_i = \alpha + \beta_1 Treat_i + \beta_2 Wrong_i^Q + \beta_3 \cdot (Treat_i \times Wrong_i^Q) + X_i\gamma + \varepsilon_i \quad (6)$$

where the treatment dummy is interacted, in turn, with five dummies $Wrong_i^Q$, which indicate whether a respondent answered the respective question $Q \in \{1, \dots, 5\}$ incorrectly, as defined by Table 1. The vector X_i represents the pre-specified covariates as before, including the overall misperception index.

Figure 9 plots the interaction coefficient β_3 for each of the five regressions. We find no evidence of significant heterogeneity of the treatment effect across the different misperceptions. All interaction coefficients are close to zero and imprecisely estimated. In absolute terms, the treatment effect is smallest for respondents denying diversification, but with wide confidence bands.

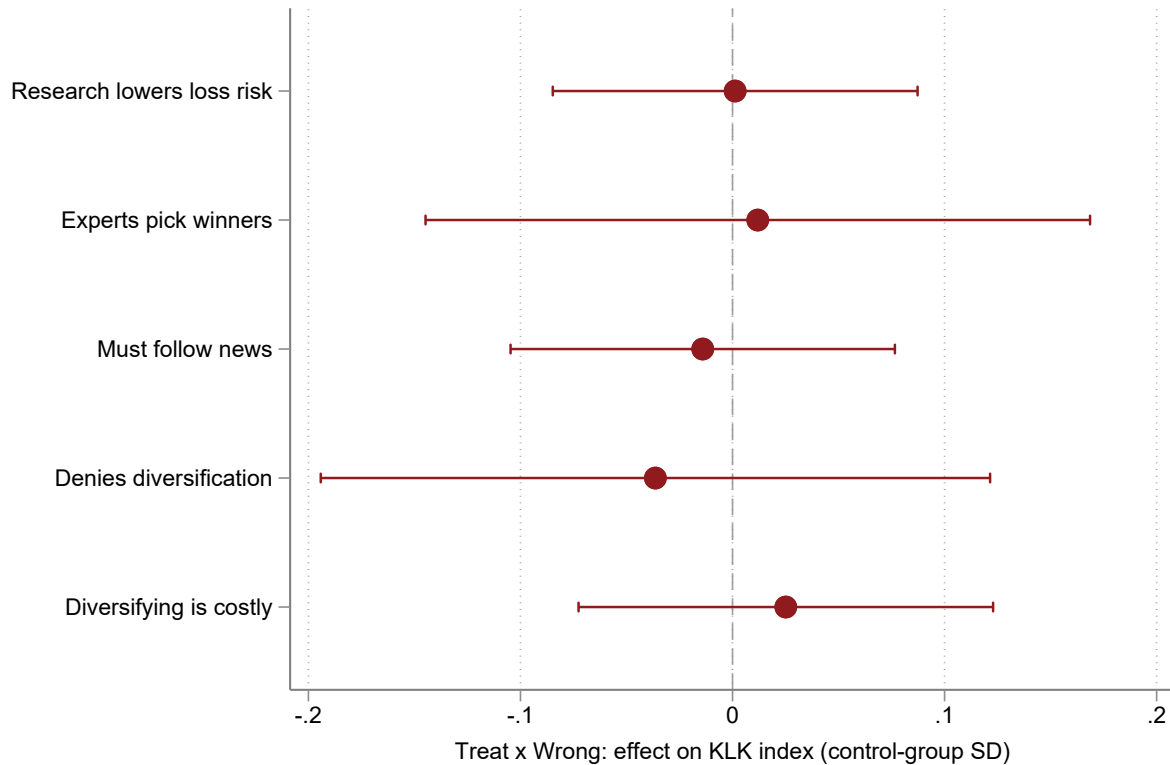
The absence of heterogeneity is informative. If the video worked only by correcting a specific false belief, its effect would concentrate among those who held that belief beforehand. Instead, the treatment moves the cost index by a similar amount regardless of respondents’ priors, suggesting that a short, general reframing of what investing requires, as opposed to the changing of any single misconception, drives the result.

5.3.1 Reasons for Not Investing

We asked all respondents whether they were planning to invest within the next six months or not. If they said no, we then asked them in an open text field to explain why not. Using the categories for not investing identified by Chopra & Haaland (2023), we generate keywords in Danish that correspond to these categories. For example, “usikker arbejdssituation”, which translates to “unstable employment”, would be classified as “labor income is too uncertain”. We allowed for a maximum of three reasons per person, but not every participant gave a reason.

Figure 10 shows each reason’s share of all substantive mentions, by arm. This figure

Figure 9: Treatment effect heterogeneity by pre-treatment misperception

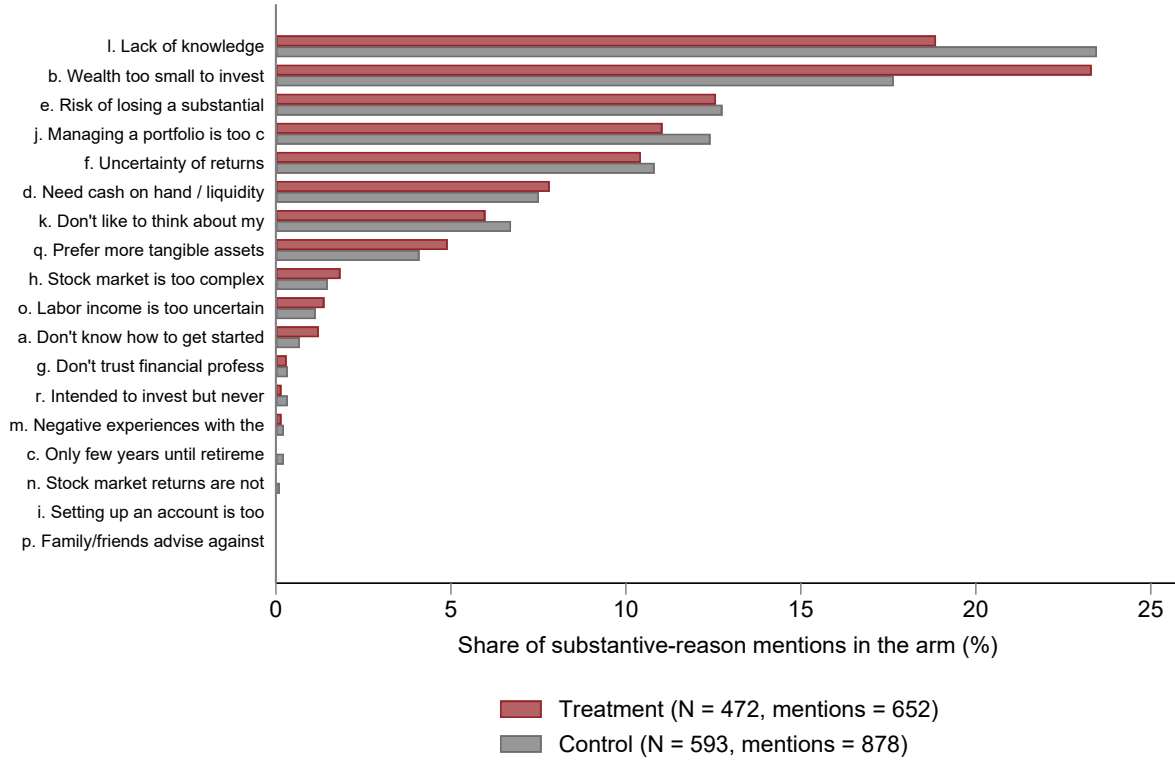


Note: This figure reports how the video’s effect on the Kling et al. (2007) cost index varies with respondents’ pre-treatment misperceptions. Each point is the treatment $\times$ misperception interaction from a separate ordinary least squares regression, with robust standard errors. The five rows use binary indicators for holding each belief beforehand. The outcome index is in control-group standard deviations, signed so a higher value means lower perceived costs. Whiskers are 95% confidence intervals.

should not be understood as a causal effect of treatment, as it combines two effects: 1) the reasons of those who are not swayed by the treatment and 2) the treatment potentially changing what respondents mention as the main reason. While before the treatment someone might have thought portfolio management is too time intensive and they prefer more tangible assets, they now only mention tangible assets.

Nevertheless, the evidence is suggestive that non-investors in the treatment group are less likely to mention “lack of knowledge” or “managing a portfolio is too costly” as reasons for their not wanting to invest. “Lack of knowledge” accounts for 19% of all mentions in the treatment group, against 24% in the control group. Interestingly, while lack of knowledge is stated less frequently, the treatment group is much more likely to indicate that their wealth is too small to invest. One possible explanation is an ex-post rationalization of the non-investment choice, but accounting for the information received during the survey.

Figure 10: Reasons for not investing



Note: This figure reports the composition of stated reasons for not planning to invest, by arm. The sample is respondents in the non-investor analysis sample who said they do not plan to invest and gave at least one classifiable reason. Answers were assigned to the eighteen substantive categories of Chopra & Haaland (2023) by Danish keyword matching, with up to three reasons per respondent. Bars give each category's share of all mentions in the arm and sum to 100% within an arm; the residual "none of the above" is excluded. Categories are ordered by their pooled share.

Reasons such as risk of losing money, the uncertainty of returns, or the need for cash on hand are mentioned to the same extent in both groups, which is encouraging given that our treatment did not directly address these concerns or that, in case of needing cash on hand or preferring tangible assets, should be equal by design, as this motivation should be evenly distributed across treatment and control respondents.

These open-ended questions speak directly to the model's residual entry cost ψ . Needing cash on hand, fear of losses, and a preference for tangible assets sit in ψ , and are mentioned frequently. For such respondents, time costs are likely swamped by other concerns.

6 Conclusion

This paper asks whether misperceptions about the time required to participate in equity markets constitute a barrier to entry. Establishing this requires showing that the belief is widespread, that it can be moved, and that moving it changes behavior. We provide evidence on all three.

Danish non-investors substantially overestimate what participation demands. Only 30% believe that fifteen minutes a week suffices to manage a broad-market investment, while 71% of investors surveyed under the same instrument report spending less than that. Non-investors are also more likely to believe that regular monitoring of financial news is necessary and that diversification is costly to achieve.

We then show that these beliefs are malleable. A short video explaining market efficiency, diversification and passive index investing significantly lowers our pre-registered outcome index. Expected preparation time for a hypothetical investment of 50,000 DKK falls from 9.5 to 8.5 hours, expected monitoring time from 60 to 48 minutes, and respondents shift towards funds rather than individual stocks. The estimated effect on intentions to invest, at 3.7 percentage points, is sizeable relative to a control-group base of 22% and statistically significant. The clearest behavioural signal comes from an outcome respondents chose for themselves: treated participants are more than twice as likely to download a summary of the information they were shown.

Three limitations bound what we can claim. First, so far, our behavioral outcomes are intentions and a low-cost information download rather than realized portfolio choices; whether the treatment moves participation itself is a question we aim to answer when the relevant data become available. Second, the treatment bundles several messages—efficiency, diversification, and the availability of passive vehicles—and we cannot separate their contributions. Third, our sample consists of survey respondents, who may differ from the broader population of non-investors in ways that are correlated with the outcomes we study. We intentionally screened out individuals who could not cover a 10,000 DKK emergency expense without borrowing, to avoid encouraging investing for individuals without an emergency buffer. They are 22% of the survey entrants.⁶

If misperceived time costs are a genuine friction, the policy implication is narrower and cheaper than much of what financial education currently attempts. The relevant intervention is not to teach households to evaluate assets, but to correct a specific and demonstrably false belief about how much evaluation is required. Our results suggest that a two-minute

⁶We will add administrative wealth data, when it becomes available to address this point of possible self-selection.

video can move that belief. Whether it can move portfolios is the question we take up next. Further, our results demonstrate that the more important misperception seems to lie with the continuous monitoring costs, not the initial entry costs. So while information on “how to get started” with investing can be useful for many non-investors, this does not address the main barrier of participation costs. Nevertheless, we do include some basic steps on how to get started both in the way we set up the hypothetical scenario and at the beginning of the pdf.

Taken together, the results describe an intervention that is small in duration and consistent in direction. Two minutes of video reduce the expected preparation time before a first investment by roughly an hour and expected weekly monitoring time by twelve minutes, reduce the anticipated burden of self-management by almost 0.2 standard deviations, raise the share of respondents who would choose a fund from 81% to 91%, and more than double the rate at which respondents seek out further information. Intentions to invest move by 3.7 percentage points. The one dimension that does not move is willingness to pay for management, which the coarseness of the price list plausibly explains. What we cannot yet observe is whether any of this leads to increased entry, but our study is set up to test this as soon as the data becomes available.

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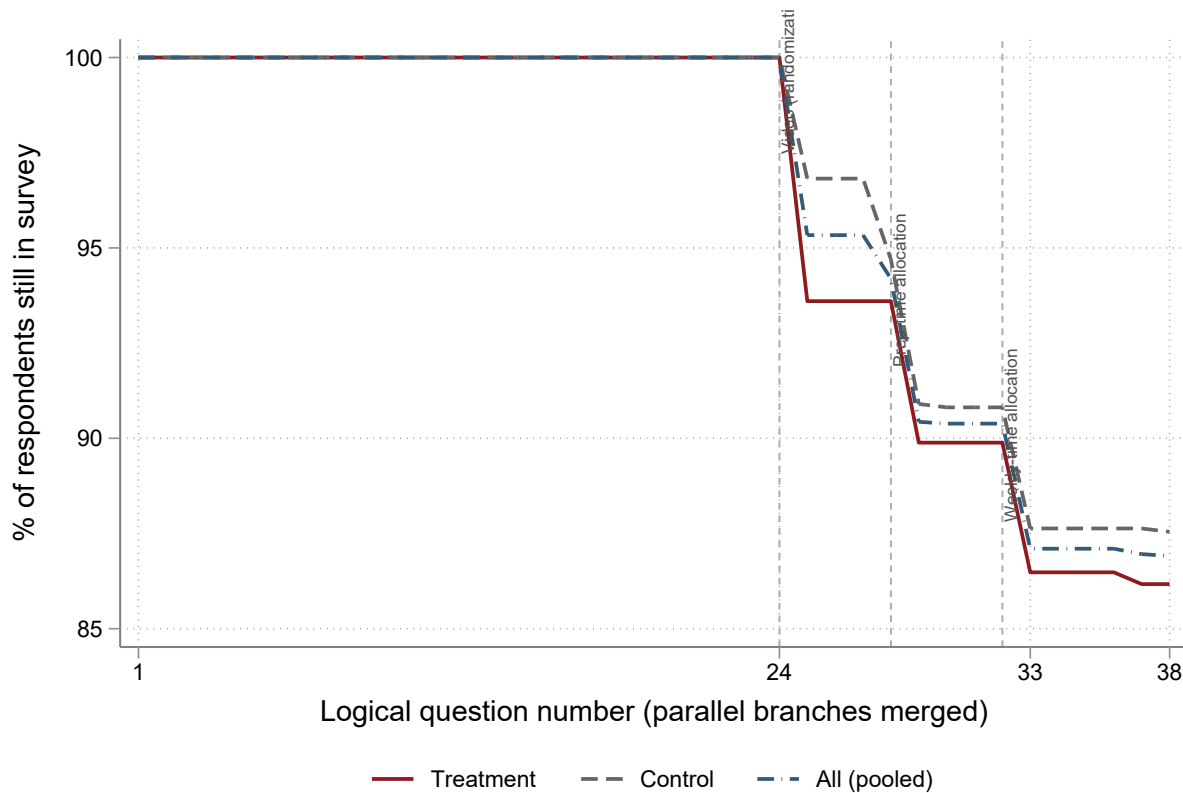
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Appendix

A Selection and Attrition

As outlined in Section 4.3, Figure A.1 shows that completion rates differ for the treatment and control groups. In this section, we show that we find no evidence for the differences in completion rates being caused by the treatment, and that completers are balanced between the control and treatment groups. Table A.1 reports OLS regressions of completion on

Figure A.1: Dropout for non-investors by treatment



Note: This figure shows the share of respondents still answering at each question, by arm and pooled. The horizontal axis is a logical question index merging the questionnaire's parallel branches: position 24 is the video and randomization, position 33 the perceived-burden item. The vertical axis, truncated below 100%, is the percentage of the group reaching at least that position. Dashed rules mark questions losing more than 2% of the sample. The sample is the non-investor analysis sample.

a treatment dummy. The first column omits all covariates and mirrors Figure A.1: respondents who watched the treatment video were 2.2 percentage points less likely to complete the survey. The difference is not statistically significant. Column two adds the prespecified covariates used in the main regressions, but does not change the results.

Table A.1: Attrition by treatment

	(1) Unadjusted	(2) Adjusted
Treated	-0.0215 (0.0155)	-0.0198 (0.0152)
Control completion rate	0.8648	0.8648
Covariates	No	Yes
Observations	2102	2102
R-squared	0.001	0.061

Notes: The dependent variable is completion, equal to one if the respondent answered the final survey item. The sample is the pre-registered non-investor analysis sample (respondents who reached the video randomisation and cleared the three-minute exclusion). Column 2 uses the pre-registered covariate set.

Naturally, it is still possible that while treatment has little effect on completion, it affects the *composition* of the sample. To understand whether this is the case, Table A.2 computes the difference between all pre-intervention covariates at randomization and for completers in columns 1 and 2, respectively (note that Column 1 is identical to the values reported in Table D.1). The table reveals no significant differences between the two samples. While the indicator for the household financial decision-maker is significantly different between treatment and control groups, it is nearly identical across columns; an indication for possible imbalance at randomization, but not selective attrition. Furthermore, the joint F-test for completers indicates that the covariates jointly do not predict treatment among completers. Thus, we find no evidence for systematic selection.

As a robustness check, we conduct our analysis using Lee (2009) bounds, which require two assumptions: first, randomized treatment and second, monotonicity. The latter requires that treatment affects selection only in one direction; in our case, we assume that the treated group consists only of always-takers, while the control group consists of always-takers and control-only respondents. The bounds assume extreme selection and adjust for it by dropping the tails of the outcome distribution for the control group, equalizing its size with the treatment group. By first dropping from the top, and then from the bottom, and then recomputing the treatment effects, this method provides bounds for the true effect without selection into treatment. Table A.3 summarizes the results. For both the Kling et al. (2007) index and the investment intention alone the bounds exclude zero, suggesting that attrition has no meaningful effect on our conclusions. Note that the estimator does not account for covariates.

To preempt concerns about selection on the value of time, as explained in Section 4, we randomly assign survey invitations into three different incentive schemes. One third of respondents were told that upon completion, they would enter a lottery to win 250 DKK, 500 DKK and 1000 DKK, respectively, with one percent chance. If treatment effects differed between these groups, e.g., such that we only found an effect among individuals being offered 250 DKK, a plausible explanation is that only those with a low value of time (i.e., those willing to do a 15 minute survey for an expected gain of 2.5 DKK) could be persuaded to start investing through a two minute video.

The top panel of Table A.4 plots the results for our main specification, i.e., the treatment's effect on the Kling et al. (2007) index constructed using questions about investment intentions, across incentive arms, with and without covariates. First, encouragingly, the incentives have the expected effect of drawing in more participants monotonically: while about 570 individuals completed the survey at a 250 DKK incentive, over 770 did so at the 1,000 DKK incentive.

The effects for the low and high incentive arms are very similar in size and highly significant. The treatment raises the index by between 0.10 and 0.16 standard deviations in both cases. The intermediate incentive scheme gives a slightly different picture: the treatment effect is only about half as big as in the other two cases, and only marginally significant without covariates. Significance disappears when covariates are added. We cannot reject the null hypothesis of equality in treatment effects across incentive arms.

Regarding the most important outcome within the index, the self-reported intent to invest, the picture is similar, as reported in the bottom panel of Table A.4. For the low- and high-incentive arms, the probability of investing within the subsequent six months rises by 7 to 10 percentage points, with and without covariates. For both arms, zero lies outside of a one-sided 95% confidence interval. For the intermediate incentive group, however, the effect is insignificant, and the point estimate is negative. In this case, we reject the null hypothesis of equality across incentive arms.

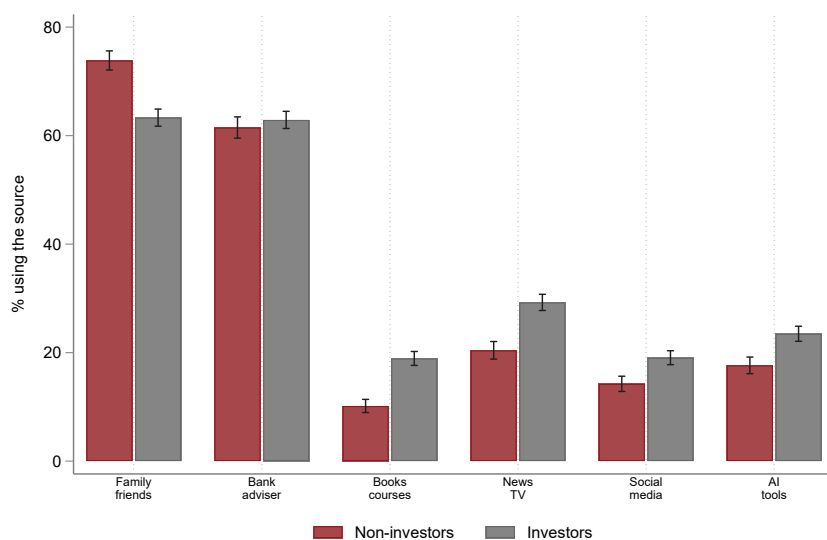
While we find it surprising that the medium incentive arm stands out in the way summarized above, the finding does not point towards monotonically changing treatment effects in the value of time. In such a case, we would expect the highest or lowest incentive arm to yield the outlying estimates. Thus, the results across incentive arms do not indicate that individuals with higher values of time were affected systematically differently by the treatment compared to those with lower values of time.

B Information Acquisition

One possible explanation for the large differences between non-investor’s perceptions and investor’s actual time requirements is a difference in information acquisition. If non-investors use different sources of information, this might explain some of the discrepancies outlined above.

In our survey, we ask all participants to indicate which sources of information they use to get advice on financial matters. Each respondent can name up to three sources. Figure B.2 compiles the results, comparing non-investors and investors. Non-investors appear to rely more heavily on family and friends for their financial advice, while investors use a wider variety of sources. Investors seem to particularly rely on educational materials such as books and courses to aid their decisions. Just over 20% of respondents use AI tools for financial advice. Given the prominence of AI tools in the current discourse, we also asked

Figure B.2: Differences in information sources

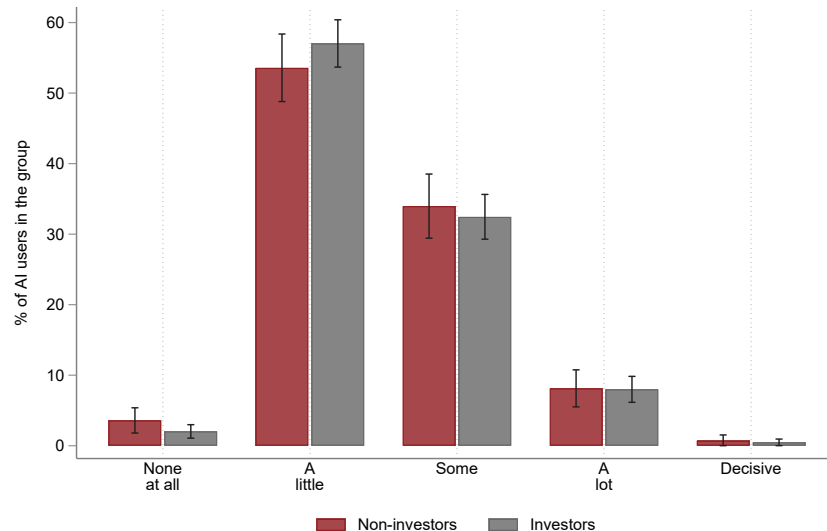


Note: This figure reports the percentage of respondents naming each source of financial advice, by self-reported investor status. Respondents are asked where they generally get advice on financial matters and may name up to three sources, so bars do not sum to 100%. Consumer organisations and an open “other” field are not displayed. Whiskers are 95% confidence intervals from robust standard errors. The item is pre-treatment; the sample is unconstrained respondents.

all respondents who indicated that they use AI tools for financial advice how much weight they assign to this advice in their decisions. The results are summarized in Figure B.3. Both investors and non-investors, on average, indicate that they give relatively little weight to AI advice. However, about 8% in each group assigns “a lot” of weight to it. We hope that

future research can elucidate the potential benefits of personalized financial advice in light of the relatively reserved attitude in our sample towards the technology.

Figure B.3: Weight given to AI financial advice



Note: This figure reports how much weight respondents who use AI tools for financial advice place on it, by self-reported investor status. The question is asked only of respondents who named AI tools as an advice source and offers five ordered answers, from “none at all” to “decisive”. Bars give the percentage of each group’s AI users choosing each answer. Whiskers are 95% confidence intervals from robust standard errors.

C English Translation of the Survey Instrument

The survey was administered in Danish through QuestionPro. What follows is a translation of the non-investor instrument, which every respondent enters and which generates the results in the main text. Question wording and every response option are translated in full; nothing is omitted or abridged. Text piped from an earlier answer was displayed to the respondent as the value they had given. The two routing points and the randomization point are marked in the order the respondent encountered them. Respondents routed out at either branch completed a separate instrument, not reproduced here.

Block A. Welcome and consent

A1. Welcome! The Department of Economics at the University of Copenhagen is conducting a 15–20 minute survey about how people manage their finances day to day and over the longer term. You need no special knowledge about money or investing, but you may learn

something new that could help you with future decisions. Your answers will be used for research only. We greatly value your time and your considered answers. Because research like this can inform future changes to economic policy in Denmark, we hope that as many different people as possible will take part — whatever their background, finances or education. The more varied the participation, the better the survey can reflect the perspectives of the whole population.

Would you like to take part?

[required]

1. Yes, I would like to take part
2. No, I do not want to take part

A2. *(If A1 = No)* You have indicated that you do not wish to take part. May we ask why?
[required]

1. I am not interested in this topic
2. I do not like thinking about money
3. I do not feel confident about my knowledge of money
4. I do not have time right now
5. I find surveys stressful and tiring
6. I am concerned about my privacy
7. I do not trust surveys
8. Prefer not to say
9. Other (please describe)

Block B. Demographics

First we would like to know a little about you and about how you make financial decisions.

B1. How old are you?

1. 18–25 2. 26–35 3. 36–45 4. 46–55 5. 56+ 6. Prefer not to say

B2. What is your gender?

1. Man 2. Woman 3. Other 4. Prefer not to say

B3. Which best describes your current employment?

1. Employed full-time

2. Employed part-time
3. Self-employed or business owner
4. Student
5. Unemployed and looking for work
6. Outside the labour force (retired, homemaker, etc.)
7. Other

B4. Do you expect changes in your household income within the next six months (for example a change of job, parental leave, starting a course of study)?

1. Yes, a longer-lasting decrease (more than one year)
2. Yes, a short-term decrease (less than one year)
3. Yes, a longer-lasting increase (more than one year)
4. Yes, a short-term increase (less than one year)
5. No, no change
6. Other
7. Prefer not to say

B5. Which best describes your housing situation? I live in...

1. An owner-occupied home
2. A co-operative housing unit (*andelsbolig*)
3. Private rented accommodation
4. Social housing (*almen bolig*)
5. Halls of residence or youth housing
6. Other

B6. What share of your household's total monthly income after tax goes to fixed housing costs (for example rent or mortgage, utilities)? You do not need to calculate precisely — choose the category that fits best.

1. Less than 20 per cent
2. 20–30
3. 30–40
4. More than 40
5. Don't know / prefer not to say

B7. Which statement best describes how your household makes major financial decisions (for example large purchases, choice of mortgage, investment, pension arrangements)? A household can also be one person. If you live alone, please choose the first option.

1. I make most of the decisions in the household
2. We make the decisions together
3. My partner or family makes most of the decisions
4. Other (please specify)

Block C. Liquidity screen

C1. If you suddenly faced an unexpected expense of 10,000 DKK, would you be able to pay it without having to borrow?

1. Yes
2. No ← sets the financially constrained flag

The flag is set here, but routing occurs later, after Block E.

Block D. Financial literacy and sources of advice

The next questions are about financial concepts. Many people find some of them difficult. Do not worry if you are unsure — just give your best guess.

D1. Imagine you had 1,000 DKK in a savings account and the interest rate was 2 per cent a year. How much do you think would be in the account after five years, if you left the money untouched?

1. More than 1,020 DKK (correct)
2. Exactly 1,020 DKK
3. Less than 1,020 DKK

D2. Imagine the interest rate on a savings account is 1 per cent a year and inflation is 2 per cent a year. After one year, would you be able to buy:

1. More than today
2. Exactly the same as today
3. Less than today (correct)

D3. Is the following statement true or false? “Buying shares in a single company normally gives a safer return than investing in an equity fund.”

1. True
2. False (correct)

D4. How would you rate your overall knowledge of economics and money compared with other adults in Denmark?

1. Far below average
2. A little below average
3. Average
4. A little above average
5. Far above average

D5. Where do you generally get advice or information about financial decisions? (Choose up to three)

1. Family and friends
2. Bank or financial adviser
3. Books or courses
4. Consumer organizations (for example Tænk)
5. Newspapers or television
6. AI tools (ChatGPT, Claude, Gemini, etc.)
7. Social media (YouTube, TikTok, Reddit, etc.)
8. Other (please specify)

D6. (If D5 includes AI tools) You have indicated that you use AI tools for advice or information about financial decisions. How much weight do you place on what an AI tool says when you discuss finances with it?

1. None at all
2. A little
3. Some
4. A lot
5. Decisive

Block E. Savings and pension instruments

E1. There are a number of ways to save for the future in Denmark. Which description best fits your familiarity with, and use of, each scheme? Rows: *ratepension*; *livrente*; *alder-sopsparing*; *aktiesparekonto*; investment account; child savings account.

Columns, identical for every row:

1. I have never heard of it

2. I have heard of it
3. My household does not have one, but I or we plan to open one or more
4. My household has one or more

Routing point 1. After Block E, respondents flagged as financially constrained at C1 are routed to a separate instrument and see nothing below. All others continue.

Block F. Investment status and beliefs

Now we are interested in your thoughts about investing. Your answers are valuable even if you have little or no experience of the stock market and investing.

F1. Do you currently have money invested in the stock market? (Examples: shares or funds through an investment account at your bank or an online trading platform.) Disregard pension savings managed by your pension fund.

1. Yes — in my own account (bank, broker, online platform)
2. Yes — in my name, but someone else manages or decides (partner, adviser, parent)
3. No — but I have invested previously
4. No — I have never invested
5. Don't know / prefer not to say

F2. Do you currently have money saved or invested in the following — besides investments in shares? (Choose all that apply)

1. Money in a current account (*NemKonto*)
2. Savings account (flexible or fixed-term)
3. Private business or ownership stakes (not listed)
4. Property (including holiday homes, parental purchases, investment)
5. Bonds
6. Cryptocurrency
7. Prefer not to say
8. Other (please specify)

F3. How much do you agree or disagree with the following statements? Give your best guess if you are unsure. Six-point scale, 1 = strongly disagree to 6 = strongly agree.

1. Investors who spend more time researching companies are less likely to lose money
2. Experts can predict which shares will do well in the future
3. People who invest have to follow news about the stock market regularly
4. Investing in one company is riskier than investing in many different companies
5. It is time-consuming for private individuals to spread their money across different companies

Item 4 is reverse-coded: the response inconsistent with diversification is *disagreement*.

Block G. Return beliefs and the common information screen

G1. Imagine someone invested 10,000 DKK in the global stock market (many different companies around the world) in January 2016. How much do you think that money would be worth today? *Move the slider at the bottom of the page to show your guess. The black line follows the slider and shows the amount you think the investment would be worth today, and the annual return in per cent. The blue line shows how much the same 10,000 DKK would be worth today if it had instead been in a savings account.* Slider labelled “annual return in per cent”.

After the answer is registered, the true realised value and annual return of the global index are revealed, with the disclaimer: *Past returns are no guarantee of future returns. That an investment has risen before does not mean it will rise again.*

G2. Now let us look to the future. Imagine someone invested 10,000 DKK today and the investment performed as well as the global stock market. What annual return do you expect over the coming year? Move the slider until the figure matches your expectation.

G3. Now let us look further into the future. What annual return do you expect over the coming ten years?

Routing point 2. After Block G, respondents who reported currently holding stock-market investments at F1 are routed to a separate instrument and see nothing below. All others continue.

Randomization. Remaining respondents are assigned with equal probability to the treatment or the control video.

Block H. Video and comprehension checks

H1. *We would now like to ask you to watch a two-minute video. The video has sound, so please turn it up or use headphones. If you cannot hear the sound, you can follow the subtitles instead.*

Important: the video is for educational and informational purposes only. It does not constitute investment advice, a personal recommendation, or an offer to buy or sell financial instruments. It does not take account of your individual circumstances, financial situation or investment objectives. Investing always involves risk — you may lose some or all of the money you invest. Past returns are no guarantee of future returns.

- **Treatment** (Video1.mp4). Market efficiency, the benefits of diversification, index funds, and that investing this way does not require constant attention or research. The video does not suggest that the respondent should invest.
- **Control** (Video2.mp4). What a share is, how a company raises capital by issuing shares, the number of listed companies, and the growth of the global market over the past twenty years despite large falls.

H2. Two comprehension questions follow each video.

Treatment arm:

1. What does a global index fund do?
 - (a) Invests in one selected company
 - (b) Spreads money across many companies (correct)
 - (c) Buys and sells shares daily on your behalf

Control arm:

1. What do people buy when they want to own part of a company?
 - (a) Bonds
 - (b) Shares (correct)
 - (c) Loans

Both arms:

1. Which two events were mentioned in the video as examples of economic crises?
 - (a) The dotcom bubble in 2000 and the financial crisis in 2008
 - (b) The coronavirus pandemic and the energy crisis in 2022
 - (c) The oil crisis in 1973 and the financial crisis in 2008
 - (d) The financial crisis in 2008 and the coronavirus pandemic (correct)

The correct option is the same in both arms: both scripts refer to the 2008 crisis and the covid pandemic, and to no other episode.

Block I. Hypothetical investment scenario

The following questions present you with a purely hypothetical investment scenario. We are interested in how you would make choices in that situation. There are no right or wrong answers.

Imagine that an investment account has been set up for you with 50,000 DKK. An investment account is an account at your bank or online trading platform. It is really just an account, but instead of money it holds your investments. In our scenario the money can only be invested in the stock market and cannot be withdrawn for the next ten years. You choose yourself what to invest in.

I1. Before you make your first investments — how many hours of research and planning do you think you would need, if your goal were to achieve roughly the same return as the global stock market over the next ten years? I would need...

1. Less than 1 hour
2. More than 1 hour but less than 5 hours
3. More than 5 hours but less than 10 hours
4. More than 10 hours but less than 25 hours
5. More than 25 hours but less than 50 hours
6. More than 50 hours

I2. You have indicated that it would take you [*the time you gave*] to prepare your stock-market investments. What share of that time do you think you would spend on the following activities? Give percentages. The rows must sum to 100 per cent.

1. Learning the basics of investing (for example, what are shares and investment funds?)
2. Choosing your overall investment strategy
3. Deciding which specific products to invest in
4. Buying the share or fund unit (as in an online shop: search, choose a quantity or amount, confirm)
5. Other

I3. What do you think would be best to invest in, if your goal were to achieve roughly the same return as the global stock market over the next ten years?

1. Shares in one company
2. Shares in a few companies

3. An index fund or another broad fund with many companies
4. Several different funds
5. A mixture of shares and funds
6. Other (please specify)

I4. Once you have made the first investments — how much time do you think you would have to spend on your investments per week (buying, selling, monitoring and so on) for your investment to grow at roughly the same rate as the global stock market over the next ten years? I would have to spend...

1. Less than 15 minutes
2. More than 15 minutes but less than 1 hour
3. More than 1 hour but less than 5 hours
4. More than 5 hours but less than 10 hours
5. More than 10 hours

I5. How confident are you that you would need to spend [*the time you gave*] a week on your investments? Five-point scale, 1 = not at all confident to 5 = very confident. **I6.** You have indicated that it would take you [*the time you gave*] a week for your stock-market investments to perform roughly as well as the market as a whole over the next ten years. How much of that time do you expect to spend on each of the following activities? Give percentages. The rows must sum to 100 per cent.

1. Researching individual shares and companies
2. Reading financial news and market updates
3. Monitoring the portfolio
4. Buying and selling shares
5. Discussing with advisers or in communities
6. Other

I7. How much of a hassle do you think it would be to manage a stock-market investment yourself, using the strategy you have just described? Five-point scale, 1 = not at all a hassle to 5 = extremely troublesome.

I8. You indicated earlier that you would need [*the time you gave*] a week to manage your hypothetical investment of 50,000 DKK in order to do as well as the global stock market.

Now imagine a hypothetical service that does exactly what you would do when investing. The service does not choose better investments than you — it gives you neither a higher return nor lower risk. The only difference is that you avoid spending the time and effort on the task yourself. This hypothetical service charges an annual fee, deducted from the value of your account.

For each of the fees below, please indicate whether you would manage the investments yourself or hire the service. Columns: *I would pay for the service / I would manage the investment myself*. Rows: 0 DKK; 50 DKK (0.1 per cent of 50,000 DKK); 100 DKK (0.2 per cent); 500 DKK (1 per cent); 1,000 DKK (2 per cent); 2,500 DKK (5 per cent); 5,000 DKK (10 per cent).

I9. Are you planning to invest any of your own money in the stock market within the next six months?

1. Yes
2. No

I10a. (*If yes*) You have indicated that you plan to invest in the stock market within the next six months. What do you plan to buy?

1. One or two shares
2. Several shares
3. One investment fund or index fund
4. Several investment funds or index funds
5. I don't know yet
6. Other (please specify)

I10b. (*If no*) You have indicated that you do not plan to invest in the stock market within the next six months. What is the main reason? (For example, lack of money, fear of losing money, not enough knowledge, uncertainty about the market, lack of time, or other reasons.) Please describe briefly in your own words.

Block J. Preference modules

We are almost done. We have just a few questions about how you would describe yourself.

J1. How much do you agree or disagree with the following statements? Eleven-point scale, 0 = strongly disagree to 10 = strongly agree, plus a “don't know” option.

1. I am good at exercising self-control in my actions and decisions
2. I often put off starting things that I do not like doing
3. I assume that people have the best intentions
4. I avoid situations that are too complex for me to understand

J2. How willing or unwilling are you to do the following? Eleven-point scale, 0 = not at all willing to 10 = very willing, plus a “don’t know” option.

1. How willing are you to give up something that benefits you today in order to benefit more from it in the future?
2. How willing or unwilling are you to take risks?
3. How willing are you to give to good causes without expecting anything in return?

Block K. Close

We would greatly appreciate feedback and comments on the questionnaire. If you have any comments, you can add them below. Many thanks for your time. The survey ends when you click “finish”. You can download a PDF summarizing the information from the video here: [download PDF](#). If you are one of the winners, we will contact you via e-Boks after 24 May 2026.

Each arm was offered a PDF summarizing the content of the video it was shown, through an identically worded and identically placed link.

D Additional Graphs and Tables

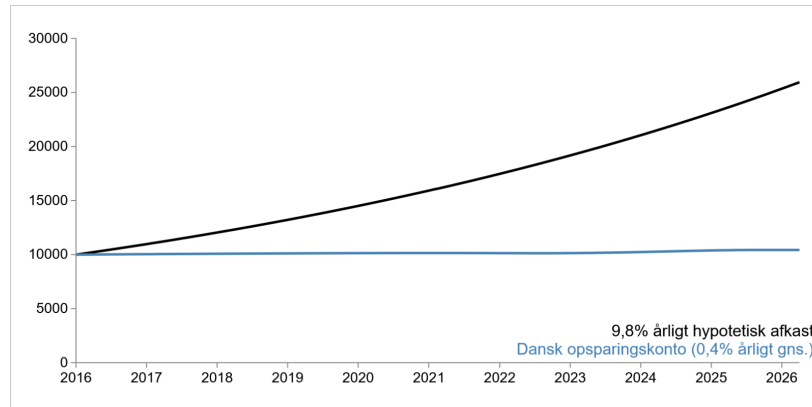
Figure D.1: Interface for return guess

Forestil dig, at nogen investerede 10.000 kr. i det globale aktiemarked (mange forskellige virksomheder rundt om i verden) i januar 2016.

Hvor meget tror du, at de penge ville være værd i dag?

Flyt slideren i bunden af siden for at vise dit gæt. Den sorte linje følger slideren og viser det beløb, du tror, investeringen ville være værd i dag og årligt afkast i procent.

Den blå linje viser, hvor meget de samme 10.000 kr. ville være værd i dag, hvis de i stedet havde stået på en opsparingskonto.



Efter ti år vil et årligt afkast på 9,8% resultere i 25.951 kr. fra en investering på 10.000 kr.



Note: This figure shows the survey screen on which respondents estimate the return on the global stock market over the previous decade. They are asked what 10,000 DKK invested in January 2016 would be worth today. The slider sets the annual return and redraws the implied value inside the graph, so answers are given in kroner rather than percentages. Once recorded, the graph reveals the realized MSCI World path. The screen precedes any video assignment.

Table A.2: Balance at randomization and completion

	At randomization (1) Treated – control	Among completers (2) Treated – control
Age bin	-0.0358 (0.0479)	-0.0251 (0.0514)
Female	-0.0031 (0.0214)	0.0064 (0.0233)
Employment status	0.0634 (0.0770)	0.0505 (0.0819)
Owns home	0.0308 (0.0218)	0.0298 (0.0236)
Household financial decision-maker	0.0717** (0.0304)	0.0643** (0.0326)
Financial literacy (Lusardi, 0-3)	0.0192 (0.0273)	0.0403 (0.0280)
Self-assessed financial knowledge	-0.0101 (0.0411)	0.0060 (0.0442)
Abs. belief gap, past 10y return (pp)	-0.0685 (0.1340)	-0.1223 (0.1436)
Expected return 1 year	-0.0385 (0.1957)	0.1163 (0.2070)
Expected return 10 years	-0.1632 (0.1778)	-0.0688 (0.1884)
Misperception index (0-5)	-0.0760 (0.0483)	-0.0785 (0.0521)
Joint F-test (completers)	F = 0.93 (p = 0.484)	
Observations	2102	1797

Notes: Column 1 compares treated and control respondents in the pre-registered analysis sample; column 2 restricts to those who completed the survey. A gap that is present in column 2 but absent in column 1 is evidence of differential attrition on that covariate. Differences come from OLS with heteroskedasticity-robust standard errors, and stars are from two-sided tests. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.3: Treatment effect with Lee (2009) bounds

	Lower bound	Upper bound	Imbens–Manski 95% CI	Trimming proportion	Outcome observed
Intends to invest	0.0409 (0.0206)	0.0541 (0.0243)	[0.0047, 0.0967]	0.0130	1831
KLK index	0.0908 (0.0282)	0.1219 (0.0246)	[0.0437, 0.1630]	0.0115	1980
Analysis sample	2102				

Notes: The table reports Lee (2009) trimming bounds on the ITT, which are robust to selective attrition under monotonicity. Standard errors for each bound are in parentheses. The bounds carry no covariates: they are a nonparametric trimmed-mean comparison, so the comparable ITT is the unadjusted specification. The Imbens–Manski interval covers the treatment effect itself rather than the identified set. The trimming proportion is the share of the higher-response arm that is trimmed; it rises with differential attrition, so narrow bounds here reflect the small completion gap between arms. *Outcome observed* counts respondents supplying a value, while the bounds use the full pre-registered analysis sample.

Table A.4: Treatment effects across incentive arms

	No covariates			With covariates		
	250 DKK	500 DKK	1000 DKK	250 DKK	500 DKK	1000 DKK
<i>Panel A. KLK summary index (control-group SD units)</i>						
Treated	0.1516*** (0.0442)	0.0715* (0.0398)	0.1192*** (0.0353)	0.1578*** (0.0434)	0.0622 (0.0389)	0.1008*** (0.0333)
Control mean	-0.025	0.009	0.010	-0.025	0.009	0.010
Observations	567	640	772	567	640	772
Equal across arms (<i>p</i>)		0.390			0.279	
<i>Panel B. Intends to invest within 6 months (0/1)</i>						
Treated	0.0709* (0.0390)	-0.0430 (0.0349)	0.0975*** (0.0317)	0.0750* (0.0391)	-0.0484 (0.0355)	0.0850*** (0.0313)
Control mean	0.227	0.260	0.183	0.227	0.260	0.183
Observations	515	599	716	515	599	716
Equal across arms (<i>p</i>)		0.009			0.008	
Covariates	No	No	No	Yes	Yes	Yes

Notes: The table reports the treatment effect of the video within each lottery-incentive arm, estimated separately by arm, on the non-investor analysis sample. Heteroskedasticity-robust standard errors are in parentheses. Covariate coefficients are suppressed; the covariate set is the pre-registered one used throughout the paper. *Equal across arms* is the *p*-value on the joint test that the treatment $\times$ arm interactions are zero, estimated on the pooled sample, so a high *p* means the prize size did not moderate the treatment effect. Columns 1–3 report the estimates that the accompanying figure plots. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table D.1: Balance at randomization

	Control	Treatment	Diff	SE
Age bin	2.809	2.773	-0.0358	0.0479
Female	0.611	0.608	-0.0031	0.0214
Employment status	2.102	2.165	0.0634	0.0770
Owns home	0.518	0.548	0.0308	0.0218
Household financial decision-maker	1.818	1.890	0.0717**	0.0304
Financial literacy: compound interest correct	0.814	0.835	0.0213	0.0166
Financial literacy: inflation correct	0.880	0.865	-0.0149	0.0146
Financial literacy: diversification correct	0.917	0.926	0.0090	0.0118
Financial literacy (Lusardi, 0-3)	2.605	2.624	0.0192	0.0273
Self-assessed financial knowledge	2.940	2.930	-0.0101	0.0411
Expected income change	4.334	4.266	-0.0678	0.0556
Past 10y return	5.327	5.452	0.1254	0.1785
Abs. belief gap, past 10y return (pp)	5.269	5.200	-0.0685	0.1340
Underestimated past 10y return	0.876	0.867	-0.0094	0.0148
Expected return 1 year	6.791	6.752	-0.0385	0.1957
Expected return 10 years	7.034	6.871	-0.1632	0.1778
Has considered investing (1-3)	1.873	1.839	-0.0334	0.0622
Misperception index (0-5)	1.285	1.209	-0.0760	0.0483
<i>Personality (end-of-survey; completers only)</i>				
Risk willingness (0-10)	4.669	4.790	0.1210	0.1056
Patience: forgoes today for the future (0-10)	6.428	6.398	-0.0302	0.0982
Altruism (0-10)	6.460	6.323	-0.1369	0.1140
Generalized trust (0-10)	6.291	6.175	-0.1160	0.1147
Complexity aversion (0-10)	4.861	4.795	-0.0663	0.1296
Self-control (0-10)	7.758	7.582	-0.1763*	0.0939
Procrastinates (0-10)	5.726	5.780	0.0537	0.1287
Observations (pre-randomisation covariates)	1132	970		
Observations (personality traits)	988	834		

Notes: The sample is the pre-registered non-investor analysis sample: non-investors who reached the video randomisation stage and cleared the pre-registered exclusion of surveys completed in under three minutes. Diff = treatment – control from OLS with heteroskedasticity-robust standard errors; stars are from two-sided tests. The personality traits are elicited at the end of the survey, so they are observed only for completers and carry a smaller N; those rows check differential attrition on stable traits rather than randomisation balance. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table D.2: Descriptive statistics

			Non-investors	
	Investors	Constrained	Control	Treated
<i>Demographics</i>				
Age 18-35	0.361	0.489	0.392	0.415
Age 36-56	0.639	0.511	0.608	0.585
Female	0.497	0.632	0.611	0.608
Employed (full-time, part-time or self-employed)	0.816	0.485	0.767	0.758
Student	0.105	0.193	0.129	0.116
Unemployed or out of the labour force	0.060	0.242	0.075	0.082
Owns home	0.634	0.221	0.518	0.548
Decides household finances alone or jointly	0.900	0.861	0.894	0.868
<i>Financial literacy and sources of advice</i>				
Financial literacy (Lusardi, 0-3)	2.765	2.278	2.605	2.624
Self-assessed financial knowledge	3.461	2.541	2.940	2.930
Advice: family and friends	0.633	0.708	0.730	0.740
Advice: bank or financial adviser	0.629	0.367	0.619	0.622
Advice: news, books or consumer organisations	0.506	0.359	0.386	0.411
Advice: social media or AI tools	0.355	0.387	0.257	0.300
<i>Savings vehicles and other assets (Blocks F-G; not asked of constrained respondents)</i>				
Aware of Aktiesparekonto (1-4)	3.278	1.986	2.044	2.134
Awareness of the five other instruments (mean, 1-4)	2.899	1.978	2.295	2.309
Savings account	0.761	—	0.712	0.684
Property	0.494	—	0.366	0.379
Business equity, bonds or cryptocurrency	0.353	—	0.079	0.072
Has considered investing (1-3)	—	—	1.873	1.839
<i>Beliefs about investing (not asked of constrained respondents)</i>				
Misperception index (0-5)	1.032	—	1.285	1.209
Past 10y return	6.994	—	5.327	5.452
Underestimated past 10y return	0.801	—	0.876	0.867
Expected return 10 years	7.912	—	7.034	6.871
<i>Preference modules (non-investors post-treatment; investors from ASK)</i>				
Risk willingness (0-10)	5.975	—	4.669	4.790
Complexity aversion (0-10)	4.208	—	4.861	4.795
Patience: forgoes today for the future (0-10)	7.125	—	6.428	6.398
Respondents	3596	1320	1132	970

Notes: Cell entries are group means and binary rows are shares. A dash means the group was never asked the question, never that the answer was zero: the constrained arm leaves the instrument before the holdings, belief and return-expectation blocks. Age, employment, the household-decision item and the advice sources are reported in grouped categories rather than one row per response option.

Table D.3: Treatment effect on Kling et al. (2007) outcome index

	(1) CLK index	(2) CLK index
Treated	0.1121*** (0.0227)	0.1025*** (0.0215)
Control mean	0.0000	0.0000
Covariates	No	Yes
Observations	1980	1980
R-squared	0.012	0.118

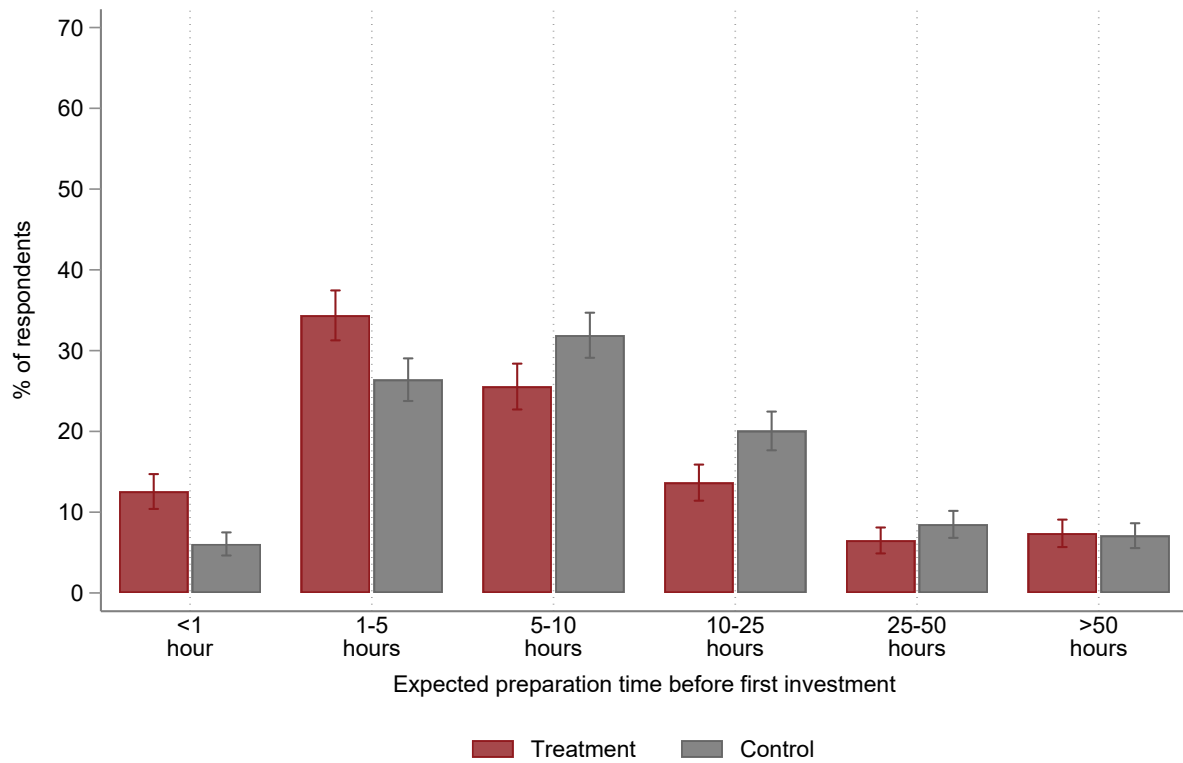
Notes: Both columns report the ITT (the treatment coefficient) on the Kling–Liebman–Katz (2007) summary index of participation costs, from OLS with heteroskedasticity-robust standard errors. Column (1) is the raw difference in means; column (2) adds the pre-registered covariate set (coefficients suppressed; inclusion flagged in the row). Registry covariates are omitted until the registry data arrive. The control mean is the mean of the index among control respondents in each column’s own estimation sample; the index is z-scored on control-group moments, so the control mean is approximately zero. The adjusted sample is smaller because respondents missing a covariate drop out. Following Kling, Liebman, and Katz (2007), the index is defined for every respondent answering at least one component, with missing components imputed at the random-assignment-group mean.

Table D.4: ITT effects on survey outcomes

	(1) Int-ninv	(2) Tprep	(3) Tmon	(4) Inv(fund)	(5) WTP	(6) CLK index
Treated	0.0366* (0.0199)	-1.0485* (0.5851)	-0.2020** (0.0872)	0.1062*** (0.0153)	25.9505 (78.4434)	0.1025*** (0.0215)
Control mean	0.2208	9.5317	1.0032	0.8054	1.0e+03	0.0000
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1831	1980	1900	1900	1765	1980
R-squared	0.060	0.044	0.044	0.093	0.052	0.118

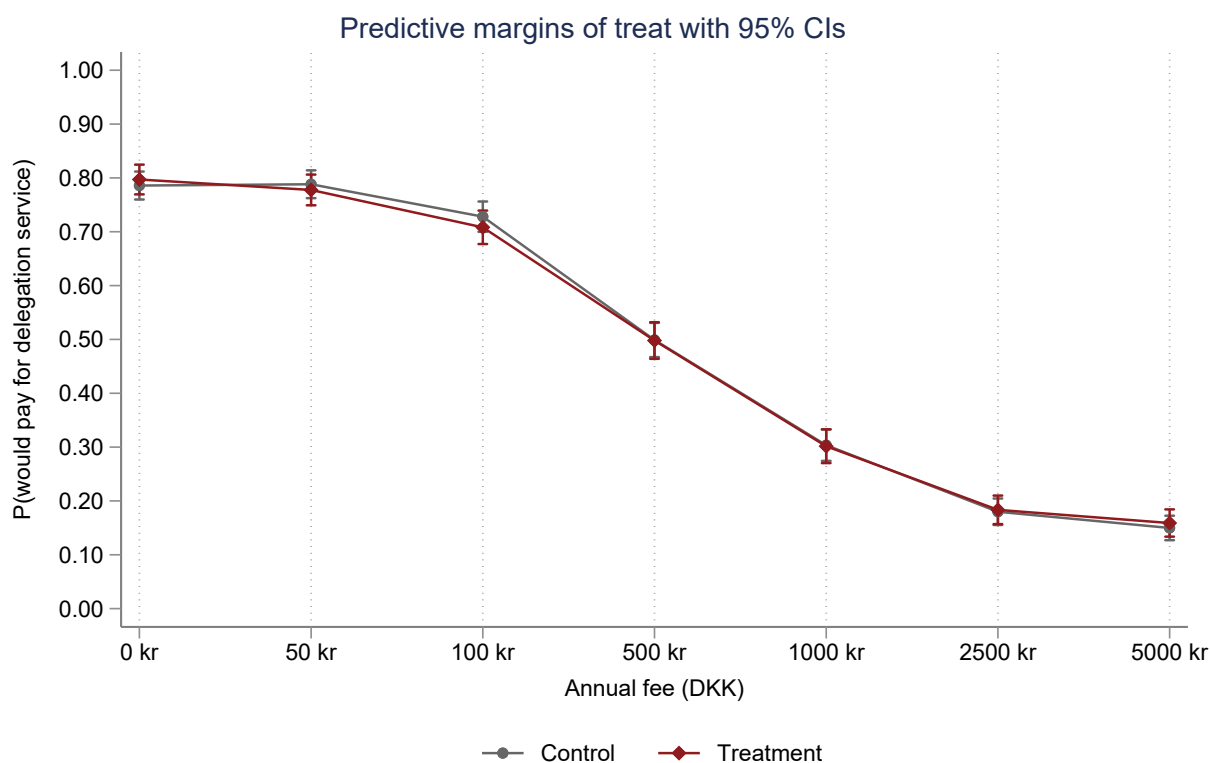
Notes: Each column reports the ITT (the treatment coefficient) on one survey outcome, from OLS with heteroskedasticity-robust standard errors and the pre-registered covariate set; the covariate coefficients are suppressed and their inclusion is flagged in the row. Registry covariates are omitted until the registry data arrive. The control mean is the mean of the dependent variable among control respondents in the same estimation sample. The CLK index is z-scored on control-group moments, so its control mean is approximately zero. Following Kling, Liebman, and Katz (2007), the index is defined for every respondent answering at least one component, with missing components imputed at the random-assignment-group mean; its sample is therefore the union of the component samples and larger than any single component column.

Figure D.2: Treatment effect on distribution of expected preparation time



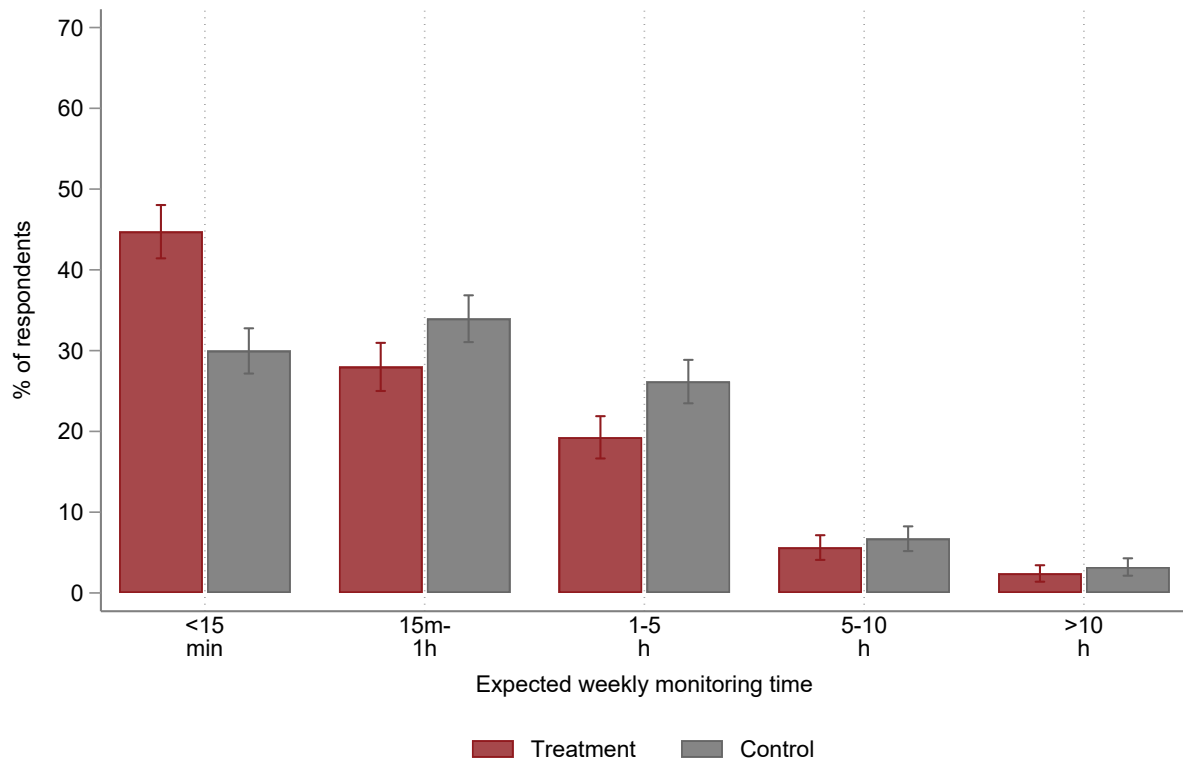
Note: This figure shows the distribution of expected preparation time by arm. Respondents are asked, for a hypothetical 50,000 DKK portfolio locked in for ten years, how many hours they would need to prepare before their first investment. Bars give the percentage of the arm choosing each of the six categories. Capped lines are ± 1.96 standard errors. The sample is the non-investor analysis sample.

Figure D.3: Willingness to pay for delegated portfolio management



Note: This figure reports the covariate-adjusted probability of paying for a delegation service at each fee on the price list, by arm. At each of seven annual fees, from 0 to 5,000 DKK on the hypothetical 50,000 DKK portfolio, respondents choose between paying and managing the portfolio themselves; they are told the service earns no higher return and takes no lower risk. Predictions come from a linear probability model interacting treatment with fee-level indicators, plus the covariates in the note to Figure 6, estimated on respondent-by-fee observations with standard errors clustered on the respondent. Vertical lines are 95% confidence intervals.

Figure D.4: Treatment effect on distribution of expected monitoring time



Note: This figure shows the distribution of expected weekly monitoring time by arm. Respondents are asked, for a hypothetical 50,000 DKK portfolio locked in for ten years, how much time per week they would need to spend buying, selling and monitoring it. Bars give the percentage of the arm choosing each of the five categories. Capped lines are ± 1.96 standard errors. The sample is the non-investor analysis sample.