Investor Democracy

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Abstract

Economic decisions are often delegated to financial intermediaries. Yet beneficiaries rarely have meaningful influence over how their capital is invested. This creates a democratic deficit, especially when investment choices involve trade-offs between financial returns and social impact. We study how informed social preferences can be revealed in the field using deliberative democracy. Partnering with a large Dutch pension fund, we conduct two field experiments that combine a deliberative mini-public with a binding maxi-public vote. In the mini-public, 49 randomly selected members participate in a three-day, in-person process with structured peer deliberation and balanced expert briefings on sustainable investing. After deliberation, participants formulate and vote on recommendations for the pension board. Deliberation increases self-reported investment knowledge. Consistent with this increase, participants' motivations shift from deontological, procedure-based reasoning toward a more consequentialist focus on societal impact. This shift leads participants to recommend expanding impact investing, while no majority supports increasing divestment. Because expanding impact investing may involve lower expected returns and higher risk, the board then tests whether this recommendation aligns with broader member preferences. In a binding vote among 13,619 members, participants are explicitly informed about these trade-offs. A plurality supports expanding impact investing. The board subsequently commits to increasing impact investments by €300 million to €1.2 billion. Together, these results show how investor democracy, implemented through a mini-public paired with a binding maxi-public vote, can elicit informed social preferences in real-world financial intermediation and translate them into consequential investment choices.

Key words: Deliberative Democracy, Sustainable Finance, Experimental Economics, Impact Investing

JEL codes: G11, M14, Q56

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1 Introduction

Financial intermediaries manage vast sums on behalf of millions of savers. Yet, particularly in pension funds, ultimate beneficiaries rarely have meaningful influence over how their capital is invested. Boards routinely make decisions involving trade-offs between financial returns and sustainability. Two factors may explain why these board decisions do not align with members' preferences and create a democratic deficit.

First, pension funds often do not elicit members' preferences. As a result, boards may invest too much or too little in sustainability relative to what beneficiaries want. Instead of eliciting preferences, boards may implement strategies that reflect their own interests or values. Such agency frictions are well documented in financial intermediation (Bergstresser, Desai and Rauh, 2006; Hong and Kostovetsky, 2012; Andonov, Bauer and Cremers, 2017; Andonov, Hochberg and Rauh, 2018). Participants in defined benefit and collective defined contribution plans who are dissatisfied with a pension board's stance cannot switch to a provider or investment plan that aligns with their sustainability views.

Second, even when pension funds attempt to elicit preferences, they typically rely on hypothetical surveys. These instruments are quick and inexpensive but suffer from well-known methodological limitations: no incentive-compatibility (Crowne and Marlowe, 1960; Zizzo, 2010; De Quidt, Haushofer and Roth, 2018; Braghieri, 2024), low financial literacy (Van Rooij, Lusardi and Alessie, 2012; Lusardi and Mitchell, 2014; Anderson and Robinson, 2022), and selective participation (Armstrong and Overton, 1977; Stantcheva, 2023). As a result, even sincere efforts to gather beneficiary input may fail to produce accurate or representative signals of members' normative preferences.

Motivated by these limitations, Cooper (2021) and Hart, Landemore and Zingales (2024) propose deliberative democracy and mini-publics as a tool to address democratic deficits in financial intermediation. Deliberative mini-publics reveal better-informed economic preferences through structured interactions with peers and experts (Dryzek, 2002; Goodin and Dryzek, 2006; Smith, 2009). A representative group learns from experts, deliberates with one another and formulates collective, better-informed recommendations (Flanigan, Gölz, Gupta, Hennig and Procaccia, 2021; Bardhi and Bobkova, 2023). Rooted in sortition selection procedures dating back to ancient Greece, such forums are increasingly used in modern policymaking, including national citizen assemblies in Ireland and climate deliberations at COP26 in Glasgow.

This paper brings deliberative democracy to economics by eliciting sustainable investment preferences with real financial consequences. Some investment choices, such as interest rate swaps or currency forwards, may be too technical for participant input. But trade-offs between financial value and environmental or social values are ethical in nature. Beneficiaries are best positioned to decide whether they are willing to accept lower returns for social impact (Starks, 2023). Absent credible elicitation, boards risk imposing their own values or political views on millions of savers.

We partnered with Pensioenfonds Detailhandel, a large Dutch collective defined contribution pension fund, to test whether deliberation can reveal and shape informed investment preferences. We conducted two complementary field experiments. Figure 1 provides a schematic overview. In the first experiment, we conducted a three-day in-person deliberative mini-public with 49 randomly selected participants and administered pre- and post-surveys. The mini-public was moderated by independent deliberative democracy experts. On the first day, participants were introduced to the Dutch pension system, investing in general, and sustainable investing. Participants could also vote on what information to receive the next day. On the second day, participants received information from the seven most selected experts on topics including oil and gas investing, corporate governance, and impact investing. An independent scientific advisory board helped select the experts to ensure balance. On the third day, participants formulated and voted on recommendations for the pension board. A comprehensive overview of the mini-public is provided in Section 3. For the rationale underlying the deliberative mini-public, details of its design, and a discussion of its legitimacy in a pension fund context, we refer the reader to Cooper and Bauer (2024).[1]

Participants rated their investment knowledge substantially higher after the mini-public than before. Having sufficient knowledge is crucial when studying revealed preferences, because less-informed participants may misreport their normative preferences due to a limited understanding of the question (Beshears, Choi, Laibson and Madrian, 2008). Moreover, participants might update their normative preferences by better understanding the underlying trade-offs (Lichtenstein and Slovic, 2006). This aligns with the notion of informed decision-making in deliberative democracy proposed by Hart, Landemore and Zingales (2024). We therefore interpret participants' revealed preferences as being closer to their normative preferences after the mini-public.

The increase in investment knowledge alters how participants approach sustainable investing. Before the mini-public, many held deontological preferences. They support investing sustainably because the procedure felt morally right. Deontological investing focuses on the process (e.g., holding green stocks rather than brown ones) irrespective of the actual impact of this process. After three days of deliberation, most participants shifted from deontological to consequentialist preferences. Instead of focusing on the process, participants prioritize making measurable social and environmental outcomes. Accordingly, this shift led to support for expanding impact investing, one recommendation of the forum. In contrast, no majority favored increasing divestment, which is more procedural in nature and less likely to generate measurable impact (Berk and Van Binsbergen, 2025).

[1]All expert contributions are publicly available online. Crosby, Kelly and Schaefer (2015) recommends as best practice that mini-publics publish abstracts of all expert talks and mini-public setup. Accordingly, we invite readers to consult `https://pensioenfondsdetailhandel.nl/publication/rapport-voor-dialoogmakers` for all materials exchanged between experts and participants during the mini-public, as well as further organizational information. The remit of the mini-public was formulated as follows: *"You can help shape Pensioenfonds Detailhandel's future investment approach! What should we focus on in responsible investing?"*. Complete survey instruments are provided in Appendices D, E, and F.

Given that expanding impact investing involves financial costs, the pension board sought to determine whether this recommendation aligned with the preferences of its broader members. We studied this in a second field experiment (Study 2) by combining a mini-public with a "maxi-public" (a broader population vote). This provides an ideal framework for bringing democracy to pension investing: deliberation offers informed recommendations that gain legitimacy through a binding vote by a wider membership. Specifically, we invited a sample of 220,000 members to vote on the scope of impact investing in their pension fund, receiving 13,619 responses. The board committed to implementing the plurality vote, a choice we preregistered at: `https://www.socialscienceregistry.org/trials/15994`.[2] We communicated these real pension consequences to participants. Participants could choose to stop (0% of AUM), maintain (1% of AUM), or expand (2-5% of AUM) impact investing, as well as a "don't know" option. Among these four options, expanding impact investing received the most support at 41.5% of the votes. In contrast, only 13.2% favored discontinuing impact investing. Participants voted for expansion even after being told that it could lower expected returns (Barber, Morse and Yasuda, 2021, report lower returns for impact investments). Support was highest among women, older and highly educated members, as well as left-leaning voters and those with strong social preferences. The board honored its commitment and will increase impact investments by €300 million to €1.2 billion as a result of the maxi-public.[3]

Do revealed preferences transfer from mini-publics to maxi-public participants? Practical feasibility constraints hinder institutions from conducting mini-publics across the entire population. As a result, preferences expressed by the broader population may be less informed than those formed through structured deliberation in the mini-public. One potential mechanism for bridging this gap is to communicate the revealed preferences of mini-publics to the broader population. We test this mechanism by randomly assigning 60% of participants in the maxi-public to receive information about mini-public preferences. We implement two treatments. In both, participants learn that the majority of respondents support expanding impact investing, hold neutral return expectations, and express positive beliefs about social impact. The treatments differ only in the stated source of the information: one presents it as originating from a deliberative mini-public, while the other attributes it to pension fund peers. This design allows us to distinguish the impact of communicating mini-public revealed preferences from general peer effects.

We find that participants exposed to the mini-public treatment are 7.5 percentage points more likely to vote in favor of expansion, indicating partial preference transfer. Participants who receive peer-attributed information respond similarly. This suggests that individuals view preferences formed through a mini-public as comparable to those of peers. In both treatment

[2]No voting scheme with more than two options is perfect, as follows from Arrow's Impossibility Theorem (Arrow, 1950). Building on the axioms of May (1952), Goodin and List (2006) argue that plurality votes are easy to understand for participants, and always provide a binding outcome. Plurality voting works well when preferences and choices are linear in a single dimension (Black, 1948). The choice between more, the same, or less impact investing likely provides participants with such a comparison. Accordingly, we adopt this voting mechanism.

[3]See `https://pensioenfondsdetailhandel.nl/deelnemers-willen-meer-positieve-impact`.

groups, participants follow mini-public recommendations. This partial adoption of mini-public recommendations provides initial evidence that deliberative mini-publics, paired with maxi-public surveys, serve as a tool for eliciting more representative and better-informed revealed preferences for collective financial decision-making.

This paper makes three contributions. First, we show that deliberative democratic tools can be an effective means of eliciting better-informed economic preferences. Economists have used various methods to elicit social preferences. First, they have used survey questions (Krosnick, 1999; Falk, Becker, Dohmen, Enke, Huffman and Sunde, 2018; Stantcheva, 2023; Falk, Becker, Dohmen, Huffman and Sunde, 2023). Second, economists conduct hypothetical stated preferences (Johnston, Boyle, Adamowicz, Bennett, Brouwer, Cameron, Hanemann, Hanley, Ryan, Scarpa et al., 2017). A third method is incentivized lab experiments, such as dictator games, ultimatum games, and public goods games (Cappelen, Hole, Sørensen and Tungodden, 2007; Falk and Heckman, 2009; Fehr and Charness, 2025). A fourth way they elicit social preferences is through field experiments (Harrison and List, 2004; Levitt and List, 2009; Gneezy and Imas, 2017). We propose a fifth approach to the economist's toolbox: the combination of a mini-public and a maxi-public. This design entails substantial time and financial costs, but it goes well beyond both conventional laboratory experiments and standard survey-based methods. Participants were engaged over three full days, with extensive opportunities for peer deliberation and interaction with experts. The approach integrates the real-world consequences typical of field experiments with a depth of information, reflection, and collective reasoning that is rarely achievable in lab or survey settings. Crucially, it not only elicits participants' revealed preferences but also creates sustained space for them to reflect on and articulate their underlying normative preferences. Lichtenstein and Slovic (2006) and Beshears et al. (2008) show that reducing decision complexity can narrow the gap between what participants choose (revealed preferences) and what they truly value (normative preferences). We show that deliberation with peers and experts increases participants' knowledge and, as a result, shifts their revealed preferences.

Second, the paper contributes to the sustainable finance literature. A central question in this field studies the consequences of investors having social preferences (Riedl and Smeets, 2017; Hartzmark and Sussman, 2019; Pástor, Stambaugh and Taylor, 2021; Pedersen, Fitzgibbons and Pomorski, 2021; Zerbib, 2022; Oehmke and Opp, 2024; Aron-Dine, Beutel, Piazzesi and Schneider, 2025). These findings include a willingness to pay for sustainable investments. Our study differs from other field studies in sustainable investments with real commitments, including (Bauer, Ruof and Smeets, 2021). We elicit better-informed revealed preferences through a mini-public and a maxi-public and explicitly inform participants that choosing more impact investments may result in lower returns and higher risk. We show that many pension members still favor increasing impact investments, even when they are better-informed and faced with clear value–values trade-offs.

A more recent question is whether individuals' choices reflect deontological or consequential-

ist preferences, a distinction that has been studied experimentally in economics (Bénabou, Falk and Henkel, 2026). We examine this issue in the context of sustainable investing and show that the answer depends crucially on how well investors are informed. This provides a direct example of how peer and expert deliberation in our mini-maxi-public approach can meaningfully shape revealed preferences. Among uninformed participants before the mini-public, 34.9% expressed deontological preferences, replicating earlier findings on motives for sustainable investing (Heeb, Kölbel, Paetzold and Zeisberger, 2023; Bonnefon, Landier, Sastry and Thesmar, 2025; Brodback, Günster and Pouget, 2025). However, the pattern changes markedly once participants become better informed through three days of deliberation. The share of deontological preferences falls from 34.9% to 9.3%, while consequentialist preferences rise from 20.9% to 44.2%.

Third, we contribute to the literature on polarization, political divides, and economic decision-making (Callander and Carbajal, 2022; Gethin, Martínez-Toledano and Piketty, 2022; Kish Bar-On, Dimant, Lelkes and Rand, 2024; Dechezleprêtre, Fabre, Kruse, Planterose, Sanchez Chico and Stantcheva, 2025). Polarization shapes a wide range of economic choices, including whether individuals support impact investing. One stream of literature studies information provision as a potential tool to alleviate polarization, with mixed results (Andreoni and Mylovanov, 2012; Bowen, Dmitriev and Galperti, 2023; Voelkel, Chu, Stagnaro, Mernyk, Redekopp, Pink, Druckman, Rand and Willer, 2023). We find that participants across the political divide react to information in both the mini-public and the maxi-public. Participants with diverse political leanings showed broad support during the mini-public, with 85% voting to expand impact investing in an anonymous survey following expert consultation and peer deliberation.[4] This share is substantially higher than the 41.5% support for the maxi-public population that did not partake in the mini-public. Further, some maxi-public participants received information about the preferences and beliefs of mini-public participants regarding impact investing. This information similarly increased support for impact investing among both right-wing and left-wing individuals, with right-wing voting participants showing the largest relative increase in support (25.9% vs 18.3%). Together, these findings provide initial evidence that our mini-maxi-public approach can elicit more reflective revealed preferences, even in polarized economic decisions across the political divide. As the Financial Times observed, mini-publics can serve as "a tool to repair our toxic political culture" (Financial Times, 2024).

[4]During this process, at least 90% of participants agreed or strongly agreed that they and others had a fair opportunity to express their views, that everyone's stance was heard, that participants treated each other with respect even when disagreeing, and that the final recommendations reflected diverse opinions.

2 Institutional background: Mini-publics, Maxi-publics, and Legitimacy

2.1 Flow of this paper

This paper presents two interconnected studies that combine a mini-public with a maxi-public. Figure 1 illustrates the relationship between Study 1 and Study 2. In Study 1, we conducted a three-day deliberative mini-public and administered pre- and post-surveys. This mini-public produced a set of advisory recommendations for the board of Pensioenfonds Detailhandel. The board committed to providing detailed responses to each recommendation and could: (1) adopt straightforward recommendations, (2) decline infeasible ones, or (3) seek broader participant support. The board chose to seek broader support for one recommendation: expanding impact investments. We tested this in Study 2, conducting a maxi-public survey in which all participants were invited to vote on this recommendation. The pension fund board ex ante committed to adopting the plurality vote and communicated this commitment to participants.

We integrate a mini- and maxi-public while retaining the trustee role of the Pensioenfonds Detailhandel board. Mini-publics bring together a representative group of participants to deliberate, become better-informed, and produce recommendations. Only a small share of the population participates in mini-publics. Therefore, mini-public recommendations may not necessarily command legitimacy among those outside the process (Parkinson, 2006; Bächtiger and Parkinson, 2019; Cooper and Bauer, 2024; Lafont and Urbinati, 2024). Moreover, recommendations from mini-publics are not necessarily feasible investment strategies. To this end, the pension board continues to serve as trustee and reviews the mini-public's recommendations. It evaluates which recommendations can be translated into feasible investment strategies and implemented, and which should be relayed to the broader membership for approval. We present these strategies through a maxi-public survey that delegates authority to pension participants in a binding vote. The maxi-public enhances legitimacy by giving the broader population a direct opportunity to register approval or dissent (Gastil, Richards and Knobloch, 2014). This three-stage design combines the strengths of each governance mechanism to deliver better-informed, feasible, and legitimate decision outcomes.

Our three-stage design shares some similarities with the Citizens' Assembly on abortion in Ireland (Suiter, 2018). The Assembly addressed a highly polarized issue within a constitutional framework that accorded equal value to the mother and the unborn child. In the first stage, the Irish government convened a 10-day mini-public in 2016–2017 with 99 participants. After hearing evidence and deliberating, participants recommended legalizing abortion during the first 12 weeks of pregnancy and in cases involving medical complications. In the second stage, the Joint Committee on the Eighth Amendment, a parliamentary committee that acted as the mini-public's governing institution, reviewed the recommendations and revised them by narrowing the set of medical complications that would qualify for legal abortion. In the third stage, Parliament

put the constitutional change to a referendum on May 25, 2018. Voters approved the measure with 66.4%, thereby amending the Constitution.[5] We are the first to elicit preferences using such a three-stage mini-maxi-public design with trustee oversight in an investment context.

2.2 What is a deliberative mini-public?

Deliberative mini-publics are democratic mechanisms that help a representative group of citizens form informed preferences and produce collective, advisory recommendations on policy questions (Goodin and Dryzek, 2006; Ryan and Smith, 2014). Common formats include citizens' assemblies and juries (Crosby and Nethercut, 2005) as well as Deliberative Polls (Fishkin, 2009). Most mini-publics begin when a governing institution defines the forum's scope and remit. Organizers then invite a large pool of citizens to participate and select a sample as representative as possible of the population's average through sortition. Sortition is a refined form of stratified random sampling that balances representativeness with equal opportunity for participation, a democratic ideal (Flanigan et al., 2021). During the mini-public process, participants learn about the issue by engaging with experts and deliberating with one another (Dahl, 1980; Smith, 2009; Niemeyer, Veri, Dryzek and Bächtiger, 2024). The final stage of mini-publics involves participants crafting and sometimes internally voting on recommendations. Grounded in deliberative democratic ideals, mini-publics provide a feasible way to generate informed preferences and shared recommendations on complex policy matters. Mini-publics offer an alternative way of engaging publics in public governance, widely used to supplement representative electoral government.

An example of a mini-public is the Global Assembly on Climate Change, which preceded COP26 in Glasgow in 2021. The focus of this mini-public was to deliberate on climate policy in a global setting as input for official COP26 negotiations. Accordingly, the mini-public comprised an international sample of 100 participants, selected through a sortition process. They were representative in terms of geography, gender, age, and income. Participants met virtually over several months to learn from experts, discuss with peers, and produce recommendations for climate action. They produced recommendations on climate justice and mitigation strategies, which were presented at COP26 to policymakers.[6]

2.3 Mini-public legitimacy in the maxi-public

There is an ongoing debate on whether the descriptive representativeness of mini-publics affords them sufficient legitimacy to speak on behalf of the broader population, a 'maxi public' (Parkinson, 2006; Smith, 2009; Lafont and Urbinati, 2024). Some argue that mini-public

[5] See `https://citizensassembly.ie/`, `https://olis.oregonlegislature.gov/liz/2019R1/Downloads/CommitteeMeetingDocument/173979`, and Suiter, M Farrell, Harris and Murphy (2022) for more details.

[6] See `https://globalassembly.org/index.html` and `https://www.democracywithoutborders.org/36645/global-citizens-assemblies/`for more details.

recommendations should serve as input to system-level maxi-public deliberative processes by synthesizing issues or clarifying recommendations (Parkinson and Mansbridge, 2012). Others suggest that mini-publics can feed directly into further representative procedures within a wider maxi-public (Deligiaouri and Suiter, 2023), creating a hybrid representative democracy that combines sortition with electoral representation. In both, mini-publics are integrated into wider, dynamic, democratic processes and procedures among the maxi-public, enhancing their overall legitimacy (Cooper and Bauer, 2024; Lafont and Urbinati, 2024).

One example of a procedure linking a mini-public to a wider electorate is the Oregon Citizens' Initiative Review. This institution seeks a more informed electorate on ballot measures in Oregon general elections (Gastil and Knobloch, 2019). Around 24 citizens deliberate on the issues involved in a ballot measure. The key findings and argument of this mini-public are disseminated to voters, effectively functioning as a form of 'deliberative media' (Gastil, Knobloch, Reedy, Henkels and Cramer, 2018; Broghammer and Gastil, 2021). This process has informed the electorate on a wide range of polarized topics involving a normative trade-off, including medicinal marijuana, affordable housing, and GMO labeling.[7]

3 Study 1: Mini-public, Survey Design, and Representativeness

3.1 Mini-public overview

On February 26, March 11, and March 18, 2024, we conducted a deliberative mini-public in collaboration with Pensioenfonds Detailhandel with pre- and post-surveys. Each day, participants traveled in person to Utrecht, a centrally located city in the Netherlands, where they engaged in full-day sessions from 9:00 a.m. to 5:00 p.m. The program included informational briefings and structured deliberations on sustainable investing, interspersed with daily coffee breaks and lunches. Recognizing the significant time commitment, each participant was compensated €360, travel expenses, and child care. The description below highlights the operationalization of the mini-public. Please see Cooper and Bauer (2024) for its rationale, detailed methodological considerations, and an analysis of its outcomes and their legitimacy.[8]

We relied heavily on external parties to minimize our research team's direct involvement in the execution of the mini-public. Additionally, two independent organizations supported recruitment and facilitation efforts. The Sortition Foundation was responsible for participant recruitment, ensuring a randomly sampled and representative group through sortition. The G1000

[7] See `https://sites.psu.edu/citizensinitiativereview/` and Knobloch, Barthel and Gastil (2020) for more details.

[8] For additional details, see the report written for Pensioenfonds Detailhandel: `https://pensioenfondsdetailhandel.nl/publication/rapport-voor-dialoogmakers`. A short video with highlights from the mini-public is available at `https://pensioenfondsdetailhandel.nl/deelnemersdialoog`

Netherlands Foundation, and Energized facilitated and moderated the deliberative process. These moderators are leaders in deliberative mini-publics and supported the Global Assembly in preparation for the 2021 COP26 in Glasgow, along with over 30 mini-publics across the Netherlands. Their role was central in maintaining the independence of the mini-public: professional moderators from these institutions led small-group discussions and took notes throughout the deliberative phases.

Five measures ensured that the information provided by the mini-public experts was as balanced as possible. First, we received feedback from an Academic Advisory Board comprising Mathijs van Dijk, Caroline Flammer, Graham Smith, and Laura Starks, ensuring that the mini-public's design was informed by experts in financial economics and democratic innovations. Among others, our academic advisory board helped identify and select the expert speakers for the mini-public. Second, we allowed participants to select which sustainable investing topics they wanted to learn more about beyond the fundamentals of investing, thereby reducing our influence over the information provided. We invited speakers on the chosen topics after the vote. Third, participants were explicitly asked to report their perceptions of the stances of both experts and peers regarding sustainable investing. Participants perceived experts as equally positive to peers on sustainable investing (see Appendix A). Fourth, participants indicated that they updated their views on sustainable investing not only based on expert input but also through discussions with peers (see Appendix A). Finally, neither the experts nor the pension fund promised that sustainable investing is generally profitable; instead, they repeatedly emphasized the trade-off between financial value and personal values. The emphasis on trade-offs is reflected in participants' financial return expectations, which remain unchanged before and after the mini-public, indicating that participants did not become more optimistic about the financial performance of sustainable investments (see Section 4).

On the first day of the mini-public, participants were introduced to the functioning of pension funds and foundational sustainable investing concepts. In the Netherlands, most employees have no choice of pension provider and are assigned to a monopolistic occupational pension fund. Dutch pension funds can best be described as collective defined contribution pension plans with mandatory monthly employee contributions and no possibility to switch pension providers. Pensioenfonds Detailhandel serves the retail sector, where participants' financial literacy tends to be limited. Most participants self-assess their knowledge of investing and sustainable investing as below average. Moreover, anecdotal evidence from focus groups before the mini-public suggests that participants were unaware of their pension contributions being invested. Accordingly, the objective of the mini-public's first day was to inform participants on how pension funds operate and their role in managing retirement savings.

The first day began with an introduction by Pensioenfonds Detailhandel outlining the purpose of the deliberative mini-public, its objectives, the representativeness of participants, and the role it would play in shaping the fund's sustainable investing policy. Following this introduction, participants attended the first of three expert presentations designed to build foundational

knowledge on pensions, investments, and sustainable investing. This initial session explained the structure of the Dutch pension system, distinguishing between the state pension, occupational pensions, and individual arrangements. It also introduced core concepts of sustainable investing and highlighted the trade-offs between financial performance and addressing environmental and social concerns. Participants could ask questions to clarify and deepen their understanding.

The second expert presentation built on this foundation by defining ESG criteria and outlining the financial trade-offs across different sustainable investment strategies, including divestment, shareholder engagement, portfolio tilting, and impact investing. The presentation also elaborated on the environmental, social, and governance dimensions of sustainability, discussing examples such as climate change, biodiversity loss, human rights, labor conditions, tax fairness, and anti-corruption.

After this presentation, participants joined small-group discussions reflecting on their vision of the world in 2034. The exercise encouraged forward thinking and helped surface participants' underlying values. Common themes included peace and conflict, migration, quality of life, technology, care for family, inter-generational equity, justice, equality, poverty, housing, loneliness, and sustainability.

Later in the afternoon, participants attended a third expert presentation focusing on the practical implementation of sustainable investment strategies within a pension fund. The talk emphasized goal setting, measurable outcomes, and the importance of collaboration. It explained that sustainable investing typically begins with engagement and other forms of voice before potentially progressing to divestment or portfolio tilting. The speaker noted two main limitations: first, that investing for positive social or environmental impact can involve financial trade-offs, and second, that one pension fund alone cannot reshape the broader economy.

To conclude the day, participants were presented with a list of potential speakers for the second day and invited to vote for their preferences. This process ensured participant autonomy over the information they received, minimizing our influence as researchers. We invited relevant scientists and private-sector experts for seven out of the fourteen most chosen topics.[9] The complete list of topics is reported in Appendix A.

On the second day, participants attended small round-table sessions on the seven selected topics. Each participant attended four of these 20-minute sessions, allowing them to focus on the areas they found most relevant.[10] After these discussions, participants deliberated in small groups on the values essential for investment decisions. In the afternoon, Pensioenfonds Detailhandel presented its current sustainable investment policy, outlining key trade-offs among strategies. Participants were encouraged to ask questions and critically assess the presentation.

[9]Experts included Mark van Baal (Follow This), Laure Wessemius-Chibrac (Netherlands Advisory Board on Impact Investing), Frank Wagemans (Achmea Investment Management), Ellen Kunst (MN), Will-Jan Jacobs (Pension Federation Netherlands), Kees Gootjes (ABN AMRO), and Rik Teeuwen (UN Principles for Responsible Investment). See `https://pensioenfondsdetailhandel.nl/deelnemersdialoog` for details.

[10]Participants attended four of the seven sessions to manage time effectively. Participants chose which experts to engage with.

The final day focused on developing concrete recommendations for the board of Pensioenfonds Detailhandel. The day began with small-group discussions in which participants reflected on their values and considered whether and to what extent they wanted their pension fund to pursue sustainable investments. Participants then drafted recommendations in smaller groups, refining them through peer feedback before voting on a final set of proposals. One recommendation was to increase the share of impact investments. Participants also assessed the deliberative process itself, reporting that they had sufficient opportunity to express their opinions, that diverse perspectives were represented, and that the process was transparent and fair.[11]

3.2 Participant representativeness

We took several measures to ensure that participants in our deliberative mini-public were as descriptively representative as possible of the pension fund, while providing equal opportunity to participate through a sortition approach. (Flanigan et al., 2021). An external organization (the Sortition Foundation) aided us in this process and sent 20,000 invitations to randomly selected members of Pensioenfonds Detailhandel. Participants were informed they would receive €360, commuting expenses, and childcare coverage. The Sortition Foundation received 154 responses of pension beneficiaries who expressed interest in participating. Among those, the Sortition Foundation selected 53 participants, matched for age, income, ethnicity, location, gender, and World Values Survey–based environmental or economic prioritization.[12] Of the 53 selected participants, 49 attended on the first day, 47 completed the first-day survey, and 43 completed the final-day survey.[13,14] Deliberative mini-publics inherently rely on smaller samples to facilitate meaningful deliberation, with numbers frequently ranging from 25 in the Oregon Citizens Initiative Review to 100 for abortion in Ireland.

Sortition matched participants as closely as possible to the fund's demographics in gender, age, nationality, location, and environmental versus economic prioritization. Achieving descriptive representativeness in sortition requires a sufficiently large candidate pool relative to the number of matching variables. Our pool of 154 volunteers was relatively small compared to the 53 invited participants and the 16 matching variables, yet the Sortition Foundation largely

[11] Appendix A provides survey evidence showing that a large majority of participants agreed or strongly agreed that they had fair opportunities to contribute, that differing opinions were respected, and that the process and influence of the mini-public were transparent. See `https://pensioenfondsdetailhandel.nl/deelnemersdialoog` for the full list of recommendations and their level of support.

[12] The World Values Survey environmental or economic prioritization question represents the Dutch population, not Pensioenfonds Detailhandel. We used this selection criterion as the pension fund did not ask its participants this trade-off, and including it is important to ensure representativeness. It would have been preferable to ensure that environmental or economic prioritization for the pension fund is representative of the pension fund's beneficiaries rather than the Dutch population.

[13] We find no statistical differences in participants' age, income, or gender between the first-day and last-day survey. These correspond to response rates of 95.9% and 87.8%, respectively. The pension fund informed us that attrition was due to a flu epidemic. These response rates are comparable to other assemblies.

[14] The Irish Citizens Assembly on Biodiversity Loss had an average response rate of 84%, see `https://citizensassembly.ie/report-of-the-citizens-assembly-on-biodiversity-loss-report-launches/`.

succeeded in minimizing deviations from the overall population. Table 2, Column (4), presents the formal test of representativeness.

Participants in our sample closely match the Pensioenfonds Detailhandel membership. We detect no statistically significant differences in gender, age, ethnicity, or preferences over economic growth versus environmental prioritization.[15] To assess geographic representativeness, we grouped participants into eight ZIP-code regions and found no statistically significant differences in seven of the eight. Income differed modestly: mini-public participants earned on average €379 less per month. Taken together, these tests show that our sample is highly representative of the fund's membership.

3.3 Survey designs

We asked participants in our deliberative mini-public to complete two surveys: one before the mini-public began on the first day and another after the third day concluded. The first survey consisted of three parts; see Appendix D for the full transcript. In the first part, we gathered their prior self-assessed knowledge and preferences regarding sustainable investing. Self-assessed investment knowledge is strongly correlated with actual investment knowledge (Van Rooij, Lusardi and Alessie, 2011; Lusardi and Mitchell, 2017). We asked participants to self-assess their knowledge of investing and sustainable investing rather than objectively test it to preserve the integrity of the mini-public. In particular, a key feature of deliberative mini-publics is that democratic deliberation can transform participants' knowledge and better define their preferences. Since we invited a representative sample of participants, not all were expected to be knowledgeable about sustainable investing. Quizzing them before information provision risked discouraging less knowledgeable participants from engaging in the deliberative process due to fear of not knowing the "correct" answers before the mini-public. Participants could answer the question on a 7-point Likert scale.

Regarding sustainable investment preferences, we ask participants to identify with one of the five descriptions listed below. These respectively represent profit-oriented, consequentialist, deontological, no sustainable investing, and no opinion. The order of answer options is randomized in the survey.

From a moral philosophy perspective, people with deontological preferences prioritize duties, rules, or moral principles over outcomes or consequences (Kant, 1785; Alexander and Moore, 2007). They judged actions based on whether they conformed to a moral code rather than on what produced the best overall result. In contrast, people with consequentialist preferences solely evaluate actions by their consequences (Anscombe, 1958). They judge actions as morally

[15] World Values Survey Question Wave 8 Q122: "Here are two statements people sometimes make when discussing the environment and economic growth. Which of them comes closer to your own point of view? (Read out and code one answer): 1. Protecting the environment should be given priority, even if it causes slower economic growth and some loss of jobs. 2. Economic growth and creating jobs should be the top priority, even if the environment suffers to some extent."

right if they lead to the best overall consequences compared to available alternatives, potentially within moral constraints. Utilitarianism is one expression of consequentialist preferences, in which people choose actions to maximize the well-being of all persons, regardless of personal, emotional, spatial, or temporal distance (Bentham, 1996; Mill, 1863; Kahane, Everett, Earp, Caviola, Faber, Crockett and Savulescu, 2018). Bénabou et al. (2026) evaluates whether and under what circumstances participants react deontologically or consequentially in economic lab experiments.

In our sustainable finance context, we define participants who pursue sustainable investing from a consequentialist perspective as those who aim to invest sustainably because this approach yields a positive environmental and social impact. Those with deontological preferences express a desire to invest sustainably because the procedure feels morally right, regardless of whether it benefits society. Studying whether investors prioritize sustainability based on deontological or consequentialist preferences builds on recent experimental work by Heeb et al. (2023), Brodback et al. (2025), and Bonnefon et al. (2025). We further introduce a profit-oriented and a non-sustainable investing preference to account for the fact that not all participants have other-regarding preferences or value sustainability.

Specifically, we asked "*Which of the following statements best reflects your preference regarding sustainable investing? I would like Pensioenfonds Detailhandel to invest sustainably...*" with answer options "*If this increases my expected pension payments at retirement age*" (profit-maximizing), "*If sustainable investing has a direct positive impact on the environment or society. I don't mind if this potentially leads to a reduction in my pension payments at retirement*" (consequentialist), "*Based on social norms or moral reasons. I am determined not to invest in companies that negatively impact the environment or society. I don't mind whether this actually affects the impact of my investments or potentially lowers my pension payments at retirement*" (deontological), "*I do not want Pensioenfonds Detailhandel to invest sustainably*" (no sustainable investing), "*I have no opinion*".

In the second part of the first survey, we informed participants of the definition of sustainable investing. Following this, we asked participants whether they wanted their pension fund to expand its sustainable investing, maintain the current level, or reduce it. To gain a deeper understanding of the mechanisms driving participants' choices, we investigated: 1) return expectations on a 5-point Likert scale: their anticipated financial outcomes from sustainable investing on pension payments, 2) impact beliefs on a 5-point Likert scale: their perceived environmental and social impacts compared to conventional investing, and 3) their sustainable investment preferences (see above). Peer deliberation during mini-publics can help participants uncover their sustainable investment preferences. Moreover, the provided expert information can help shape return expectations and impact beliefs by highlighting the trade-offs in sustainable investing.

In the final section of the first survey, we collected participants' demographic information, including income and political leanings. We asked this at the end to prevent anchoring sustainable

investment decisions to political leaning. Additionally, participants may be more inclined to disclose their political views or income after completing the survey, given the sensitive nature of the information.

After the mini-public on day three, we conducted a post-mini-public survey to reassess participants' knowledge, preferences, beliefs, and expectations regarding sustainable investing. Furthermore, we again asked participants whether they would like to invest their pension funds sustainably. Alongside a general willingness to adopt sustainable investing, we inquired about implementing impact investing, engagement, portfolio tilting, and divestment. To ensure participants understood the terms, we provided a brief explanation of these sustainable investment approaches. We finished the survey with validity questions on the mini-public procedure, focusing on participants' ability to express their views and the equitable discussion of recommendations. Moreover, we ask participants which stakeholder group (experts, peers, or other stakeholders) most affected their views on sustainable investing.

4 Study 1: Mini-public Survey Results

4.1 More or less sustainable investing?

The objective of Study 1 is to assess participants' willingness to invest sustainably and to investigate how this evolves over a multi-day deliberative mini-public. Understanding the consequences of sustainable investing can be complex for the average participant. Therefore, participants' willingness to invest sustainably may change after the mini-public, as deliberating with peers and experts can shape their investing and sustainable investing knowledge.

Participants reported more knowledge of investing and sustainable investing after the mini-public. Figure 3 displays the self-assessed knowledge of participants on investing and sustainable investing on a 7-point Likert scale in Panels A and B. The share of participants expressing no knowledge of investing declined from 39.5% before the mini-public to 9.5% afterwards. Furthermore, only 16.6% of participants reported average or above-average investment knowledge before the mini-public, compared with 58.1% after the mini-public. We find similar effects for *sustainable* investment knowledge. Accordingly, the mini-public led participants to report greater knowledge of investing and sustainable investing.

The increase in knowledge is reflected in their willingness to invest sustainably. We ask participants, both before and after the deliberative mini-public, whether they prefer Pensioenfonds Detailhandel to increase, maintain, or reduce its sustainable investments (see Figure 2 Panel A). In the pre-mini-public survey, 66.7% of participants responded with "I do not know/ no opinion" when being asked about how much their pension fund should invest sustainably. By the mini-public's end, participants expressed clearer views, with only 16.3% reporting no opinion. Among participants who expressed an opinion after the mini-public, most shifted toward favoring expanded sustainable investing. Specifically, the share of participants wishing

to increase sustainable investing increased from 23.8% to 62.8%.[16] Notably, no participants indicated they wanted to reduce their pension funds' sustainable investing after the mini-public. This suggests that deliberative mini-publics help many individuals shape their opinions on sustainable investing.

We attribute part of the effect to knowledge. We conduct an additional analysis. In this analysis, we exclude participants who answered "I do not know" in at least one of the two surveys. This refers to the responses shown in Figure 2, Panel B.

Among participants who already had an opinion, willingness to invest sustainably changes little. Before the mini-public, 71.4 percent supported increasing sustainable investments. After the mini-public, this share increases to 80.0 percent. This difference is not statistically significant (Wilcoxon signed-rank test, z = 0.621).

These results suggest that the mini-public mainly affects participants who were initially uncertain. The deliberation process increases knowledge. It helps participants form better-informed preferences. It does not substantially change the views of participants who already held considered positions.

We attribute a part of this effect to knowledge. We perform a separate analysis in which we remove participants who in either survey answered "I do not know" in Figure Panel B. Here, we find a near-identical willingness to invest sustainably. Before the mini-public, 71.4% of participants with an opinion favored increasing sustainable investments. This fraction increased to 80.0% post-mini-public but is statistically indistinguishable from the pre-mini-public scenario *(Wilcoxon signed-rank test, z=0.621)*. These results suggest that knowledge provision through informed deliberation is a crucial channel through which mini-publics influence sustainable investing choices. In other words, it enables those unfamiliar with the situation to make more informed decisions, rather than altering already deliberate sustainable investing choices.

4.2 Mechanism: Preferences and Beliefs

How are sustainable investment decisions shaped by investment knowledge? We will first elaborate on the theoretical underpinnings, describing how knowledge can affect both beliefs and preferences. Subsequently, we will present a utility function to formalize the relationship between sustainable investment decisions, return expectations, impact beliefs, and sustainable investment preferences. Finally, we will use this utility function as a framework for discussing shifts in participants' survey responses before and after the mini-public. We will not estimate or calibrate participants' utility using this function. Its sole purpose is to structure the debate surrounding participants' survey responses.

Participants can update their beliefs by acquiring additional knowledge through expert presentations, thereby revising their assessments of the consequences of sustainable investing.

[16]This difference is statistically significant (z=4.521) when using a Wilcoxon signed-rank test, assuming "No opinion" and "I do not know" answers can be interpreted as "Unaltered".

The experimental economics literature shows that beliefs can change when participants are treated with information (Haaland, Roth and Wohlfart, 2023). For instance, Andre, Boneva, Chopra and Falk (2024) show that a lack of information on the perceived willingness of others to address climate change leads to lower support for climate policy; Dechezleprêtre et al. (2025) show that targeted information on climate policy mechanisms increases support for climate policies; and Bauer, Gödker, Smeets and Zimmermann (2024) show that financial experts update their beliefs about the pricing of climate change when informed about the beliefs of their peers.

Deliberation with peers can also shape participants' sustainable investment preferences. Lichtenstein and Slovic (2006) show that normative preferences can change over time when participants access relevant personal values, interpret those values in the specific context (constructing a preference), learn to understand trade-offs, and apply preferences to the question at hand. Moreover, Beshears et al. (2008) highlight that revealed preferences may differ from normative preferences, especially when decisions are complex. In our setting, participants are unfamiliar with sustainable investment decisions, and 39.5% indicated no knowledge of sustainable investing before the mini-public. As participants report higher knowledge following peer deliberation in the mini-public, the complexity of the decision should decrease, thereby improving their understanding and revealing of normative preferences.

Let us be more precise about how sustainable investment preferences can drive decision-making, given participants' financial expectations and impact beliefs. We present a utility function below that builds on the work of Zerbib (2022), Hart, Thesmar and Zingales (2024), Bonnefon et al. (2025), and Bénabou et al. (2026). We propose a simplified constant-elasticity-of-substitution (CES) utility function in which participants maximize expected utility by choosing between conventional and sustainable investments in the risky part of their portfolio. In this utility function, participants trade off a "value" and a "values" component associated with sustainable investment. Participants' sustainable investment preferences can differ in two dimensions: 1) their value-values trade-off, and 2) the extent to which they value impact. Regarding beliefs, participants may hold different return expectations or impact beliefs associated with sustainable investing. We employ a CES function to ensure that the "value" and "values" components complement one another, as captured by exponents involving ρ. More formally, we adopt:

$$U_i(s) = E\Big(\Big[(1-\alpha)^{\frac{1}{\rho}} \Big(s\Delta R + R_c \Big)^{\frac{\rho-1}{\rho}} + \alpha^{\frac{1}{\rho}} \big(s\big((1-\eta) + \eta\,(\Delta I + I_c)\big)\big)^{\frac{\rho-1}{\rho}} \Big]^{\frac{\rho}{\rho-1}} \Big) \qquad (1)$$

To keep the debate surrounding survey questions transparent and easy to interpret, we adopt a parsimonious single-period framework that focuses on the risky part of an investor's portfolio rather than a richer multi-period model with consumption, investment, and terminal wealth or a complete portfolio-choice model with a risk-free asset. While such extensions are applicable for other settings, they would add complexity without materially affecting the central trade-off

between sustainable and conventional investing that we study. Moreover, our framework does not explicitly address the role of risk or a partial internalization of externalities. One could revise the interpretation of our financial return parameters to account for these factors without affecting the narrative and explanation of results below.[17]

In the utility function, we express the share of sustainable investments as $s \in [0,1]$. Participants' utility depends on their assessment of the difference in financial returns between sustainable and conventional investing, $\Delta R \equiv R_s - R_c$. Here, R_c reflects the return of conventional investing, and R_s the return of sustainable investing. Some participants also value the difference in environmental and social impacts across these investment approaches, denoted by $\Delta I \equiv I_s - I_c$ with I_s the impact of sustainable investing and I_c the impact of conventional investing. Both return expectations and, in some cases, impact beliefs scale with the share of sustainable investments. In our experimental design, we measure participants' preferred share of sustainable investments (s) relative to the status quo, asking whether they prefer to reduce, maintain, or increase their share of sustainable investments in their pension fund.

Participants can differ in sustainable investment preferences in two dimensions: 1) their value-values trade-off (Starks, 2023), and 2) the extent to which participants prioritize pursuing a process or making an impact when deciding to invest sustainably, reflecting a balance between deontological and consequentialist views. Participants' $\alpha \in [0,1]$ determines the weight they assign to achieving positive environmental and social impacts when investing, relative to financial performance. The higher the α, the more participants value the "values" component of the utility function, the second half. The lower the α, the more they weight their "value" component, the first half. In extreme cases, participants with an α of 1 value only the non-pecuniary dimensions of their investments, whereas participants with an α of 0 are exclusively profit-maximizing.[18]

Participants' $\eta \in [0,1]$ displays their sensitivity to making an impact. The "values" component of the utility function comprises two parts: a deontological component that scales with the share of sustainable investments, and a consequentialist component that also depends on participants' expected impact of sustainable investing. The more participants value making an impact in a consequentialist fashion, the higher their η. As corner solutions, participants with an η of 0 consider only the process of sustainable investing (deontology), whereas participants with an η of 1 value only the impact of sustainable investing and derive no utility from its process (consequentialist). To illustrate, deontological participants could sell stocks that do not align with their ethical values while knowing this is unlikely to have an impact (Berk and

[17] For instance, expected returns could be interpreted as Sharpe ratios to account for differences in risk across sustainable and conventional investing. Additionally, our reduced-form approach can accommodate partial internalization externalities associated with conventional investing by treating them as reflected in expected returns.

[18] Two boundary conditions safeguard sensible results for the "value" to "values" trade-off. First, we assume that at least some participants expect that returns from sustainable investing will be lower than those from conventional investing. Otherwise, participants face no trade-offs and would invest all sustainably ($s = 1$). Second, participants' utility function should be concave without being perfect complements ($\rho \in (\infty, 0)$). Put differently, participants dislike having a lot of income in a very unsustainable world, or live in a very sustainable world without financial means. They value a mix of "value" and "values" when investing.

Van Binsbergen, 2025). In contrast, participants with consequentialist views would pursue more impact investing for its environmental and social benefits (Geczy, Jeffers, Musto and Tucker, 2021; Cole, Jeng, Lerner, Rigol and Roth, 2023). The following paragraphs describe how shifts in participants' beliefs and preferences before and after the mini-public can affect sustainable investment decisions, using the utility function as a roadmap.

4.2.1 Financial return expectations

Developments in return expectations could explain participants' shift to increasing sustainable investing, ΔR in Equation 1. Financial expectations tie into how participants perceive the value-values trade-off (Starks, 2023). Participants are more likely to expand sustainable investing when they expect it to be more profitable or are more certain about its financial consequences. We asked participants about their return expectations before and after the mini-public, and display responses in Figure 4.

Aside from enhanced clarity, the mini-public did not shape participants' expectations regarding the financial performance of sustainable investing. Before the mini-public in Panel A, most participants (61.0%) didn't know the financial consequences of sustainable investing. Of those who declared an opinion, most expected similar returns (24.4%), while only 9.8% and 4.9% expressed negative or positive financial consequences, respectively. After the mini-public, participants were more certain about the financial implications of sustainable investing, with the share of "I do not know" answers declining to 34.9%. This enhanced clarity did not alter the distribution of return expectations. It retained a similar two-to-one ratio of negative to positive returns, at 20.93% to 9.30%. The finding that pension members expect more negative than positive returns is consistent with the negative equilibrium returns associated with sustainable investing (Pástor, Stambaugh and Taylor, 2022). Moreover, the subset of participants who initially expressed an opinion on the financial implications of sustainable investing similarly maintained their views on return expectations (see Panel B). Despite reduced uncertainty, participants did not update their return expectations after being better informed about sustainable investing. Therefore, updated financial expectations are unlikely to significantly influence participants' increased willingness to invest sustainably following the mini-public.

4.2.2 Impact beliefs

Developments in impact beliefs could also explain participants' shift to increasing sustainable investing when they expect it to yield a greater environmental and social impact, ΔI in Equation 1. These impact beliefs are tied to their perceived cost-benefit ratio for sustainability, where a similar financial sacrifice yields a greater impact. We perform a similar analysis for impact beliefs as for financial return expectations in Figure 4 Panels C and D.

Participating in the deliberative mini-public led participants to express more positive environmental and social improvements associated with sustainable investing. In Panel C, 56.1%

of participants expected the environmental and social impact of sustainable investing to be higher or much higher than that of conventional investing before the mini-public. This share increased to 90.7% post mini-public, a statistically significant increase *(McNemar test, p<0.001)*. Furthermore, not a single participant anticipated that sustainable investing would harm social or environmental issues. A significant portion of this shift can be attributed to the decline in participants who stated they had no knowledge or opinion, from 24.4% to 0%. For those participants who declared an opinion, the shift is economically minor but remains statistically significant *(McNemar test, p=0.039)*. Therefore, participants displayed a better understanding of how sustainable investing can make an impact and are more positive about the extent of environmental and social impact it can achieve.

4.2.3 Sustainable investment preferences

We discuss how participants' sustainable investment preferences affect their sustainable investment decisions. To ensure that participants understood the sustainable investment preference question, we asked them to select the option that best aligned with their view. Therefore, we measure preferences in a discrete rather than continuous setting as in Equation 1. Participants may have social preferences that lead them to pursue sustainable investing for reasons beyond profit. This can be viewed from either a deontological or a consequentialist perspective, differing in the extent to which participants prioritize positive environmental and social impacts. Participants may have improved their ability to express sustainable investment preferences after gaining more knowledge during the mini-public. Figure 5 decomposes participants' self-assessed sustainable investment preferences before and after the mini-public. We asked participants to report the preference that most closely aligns with their views. To illustrate, this does not mean that consequentialist participants lack profit motives, but implies that they pursue sustainability primarily for impact reasons.

We find that 55.8% of participants express a willingness to sacrifice returns by investing their funds sustainably before the mini-public. These non-financial motives for sustainable investing are consistent with Riedl and Smeets (2017) and Giglio, Maggiori, Stroebel, Tan, Utkus and Xu (2025). However, not all participants are willing to sacrifice financial returns for environmental or social improvements. Among these, 25.6 percentage points expressed profit-oriented sustainable investment preferences, only pursuing sustainable investing when it is profitable and enhances their pension payments (low α); 4.7 percentage points did not want their pension to be invested sustainably ($\alpha = 0$); and 14.0 percentage points expressed no opinion on sustainable investment preferences.

For those participants who express a willingness to sacrifice returns, we are interested in whether they are driven by deontological or consequentialist preferences. Deontological is the most common expression of preferences for this group, accounting for 34.9 percentage points of participants. These participants indicate that they are willing to invest sustainably and

sacrifice returns from a normative standpoint, while placing less emphasis on the environmental and social consequences (high α, low η). Alongside deontological investors, 20.9 percentage points express consequentialist-oriented preferences. They instead value the impact of their investments on environmental and social dimensions (high α, high η). These findings replicate estimates from the literature that highlight that most investors pursue sustainable investing from a deontological rather than a consequentialist perspective (Heeb et al., 2023; Bonnefon et al., 2025).

Participants shift from deontological to consequentialist sustainable investment preferences after being better informed during the mini-public. Lichtenstein and Slovic (2006) show that being familiar with a choice and deliberating on its implications is instrumental for being able to express one's preferences. Further, Heeb et al. (2023) predict that a lack of knowledge might be the cause of deontological preferences and the limited need for impact. In line with the newly acquired sustainable investing knowledge of participants during the mini-public, they display more consequentialist and less deontological preferences (see Figure 5). We find that the share of deontological preferences fell to 9.3 percentage points, marking a 73.3% decline. This ratio of participants with deontological preferences is statistically significantly different *(McNemar test, p=0.005)*. Most of these participants shifted to expressing consequentialist sustainable investment preferences after the mini-public, increasing the share from 20.9% to 44.2%. This change in consequentialist participants is statistically significantly different *(McNemar test, p=0.004)*. These findings suggest that only few participants were concerned about the impact of their pension investments prior to being informed during the mini-public.

We further establish the role of knowledge in the decline of deontological preferences. A one-point increase in sustainable investing knowledge (on a 7-point Likert scale) decreases the likelihood that participants express deontological preferences by 10.4 percentage points *(t-test, p = 0.032)* and increases the probability of consequentialist sustainable investment preferences by 11.7 percentage points *(t-test, p = 0.049)*. This shift toward consequentialist reasoning occurs even as participants' value trade-offs between self-interest and other-regarding preferences remain stable before and after the mini-public. Accordingly, the share of participants who are only willing to pursue sustainable investing for financial reasons remains virtually unchanged at 46.5%, statistically indistinguishable from the prior 44.2% *(McNemar test, p = 0.739)*.[19]

Our findings relate to Bénabou et al. (2026), who study the stability of deontological and consequentialist motivations across different laboratory economic games. Their evidence highlights that other-regarding preferences are relatively stable whereas deontological motivations vary across contexts. We complement this work by showing in the field that such variation is

[19]Formal tests of the relative importance of the change in preferences to a change in financial expectation or impact beliefs would be underpowered with an N of 43. As a validation analysis, we asked mini-public participants whether they wanted to invest in diverse sustainable investment approaches to validate that they understood the implications of financial returns and impact beliefs. Since sustainable investment approaches differ in financial costs and environmental/social benefits, we test within-subject differences in Appendix C. We find that those approaches with more impact or better financial performance implications are more strongly preferred by participants.

systematically linked to becoming better informed about the consequences of different actions. When participants lack knowledge about the consequences of sustainable investing, they are more likely to rely on deontological reasoning, whereas learning about these consequences shifts their motivations toward consequentialist preferences.

Given the above, we suggest that the deontological rather than consequentialist orientation observed in individuals' sustainable investment preferences can be attributed to a lack of knowledge. Therefore, developments in sustainable investment preferences and impact beliefs increase participants' willingness to invest sustainably, whereas financial expectations remain unchanged.

4.3 Impact investing: A mini-public recommendation

How does the shift toward consequentialist sustainable investment preferences influence participants' views on sustainable investment approaches? Impact investing is a sustainable investment approach in which investors provide capital in private markets to sustainable firms that might otherwise face challenges accessing financing. Geczy et al. (2021) and Cole et al. (2023) suggest that impact investing can have positive environmental and social effects. Consistent with the more consequentialist orientation observed after the mini-public, one of 49 mini-public recommendations was to expand impact investing to 10% of assets under management (AUM). A majority (52.4%) supported this recommendation.

Alongside the formal mini-public recommendation, we conducted two surveys that also indicated majority support for impact investing. First, we performed a survey at the end of the third day of the mini-public, asking participants whether they wanted to expand, keep unchanged, or decrease impact investing.[20] In this survey, a majority of participants (85%) supported expanding impact investing. Second, we conducted an additional survey one year after the mini-public with the same participants and questions to test for the persistence of support; see Appendix A3. As before, a majority (70.5%) supported expanding impact investing.

Participants recommended expanding impact investing, aware that it could affect pension payments at retirement by lowering portfolio returns or increasing risk. They also expected it to deliver greater environmental and social benefits than other sustainable investment approaches, such as divestment, portfolio tilting, engagement, or shareholder proposals.

We provide further evidence that the shift in participants' sustainable investment preferences affects their views on sustainable investment approaches. Divestment aligns most with a deontological perspective as it is primarily procedural and least likely to have an impact (Berk and Van Binsbergen, 2025). Participants did not express majority support for expanding divesting, following the 73.3% reduction in deontological sustainable investment preferences. Moreover,

[20]We constructed this survey before participants drafted mini-public recommendations. Consequently, the survey asks for a less explicit expansion of impact investing than the formal recommendation, potentially leading to higher support.

divestment is the only sustainable investment approach where expansion did not receive majority support.

As illustrated in Figure 1, the board could determine which recommendations to implement directly, which to test for broader support, and which to discard. Prior to this recommendation, the board had already been considering the appropriate level of impact investing, which at the time stood at 1% of AUM. Given the potential costs, risks, and governance complexity associated with impact investing (Barber et al., 2021), the board decided to assess whether broader support existed among the overall population of Pensioenfonds Detailhandel participants. To balance its fiduciary duty and give beneficiaries a voice in the fund's investment strategy, the board asked participants whether they preferred to discontinue impact investing (0% of AUM), maintain the current level (1%), or expand it to 2%-5% of AUM. It specified a range rather than a fixed percentage because impact investments are lumpy, making precise allocation difficult. For fiduciary reasons, the board also capped the maximum expansion at 5%, below the initially proposed 10%.

This board's intervention into the scope of the recommendation, combined with allowing the broader population a vote on the recommendation, offers a unique approach to achieving democracy in financial institutions. It facilitates beneficiaries' involvement in normative trade-offs while maintaining the board's role in safeguarding fiduciary duties. We collaborated with the board on this initiative and conducted a follow-up field experiment, discussed below.

5 Study 2: Maxi-public survey design

In democratic terms, Study 2 enhances the legitimacy of the mini-public's recommendations on impact investing among the population of beneficiaries. Study 2 answers two questions. First, we investigate whether the Pensioenfonds Detailhandel population is willing to expand impact investing when we communicate the potential costs and increased risks associated with this. Second, we examine how members of the broader pension fund membership population respond to information generated by the deliberative mini-public of Study 1.

5.1 Dissemination and Outline

Between May 14 and June 4, 2025, we invited all beneficiaries of Pensioenfonds Detailhandel to participate in our second study, which included a binding vote on impact investing. Invitations were sent via email to approximately 220,000 individuals. This is everyone for whom the pension fund had a valid email address. Additionally, an invitation to the survey was included in the pension fund's quarterly printed newsletter. Pensioenfonds Detailhandel also informed affiliated employers in the retail sector to encourage employees to complete the survey.

Figure 6 presents an overview of the survey used in Study 2. The survey begins with a recruitment page that outlines how participants can influence the pension fund's impact

investment decisions. It also announces a lottery incentive: five €250 Amazon gift cards will be awarded to randomly selected respondents. Following this introduction, participants receive background information on investing and sustainable investing. Specifically, we explain: 1) that the pension fund invests its contributions; 2) the concepts of sustainable and impact investing and its costs; and 3) concrete examples of how Pensioenfonds Detailhandel implements impact investing in practice, and the associated financial trade-offs. Following the information provision stage, we ask knowledge, beliefs, and preference questions on impact investing. Subsequently, we randomly divide the sample into three groups: 30% of participants to a mini-public treatment, 30% to a peer information treatment group, and 40% to a control group. Next, we ask three questions on the extent, topic, and location of impact investing, on which the board made a binding commitment to implement the most chosen answer. We wrap up the survey by asking for demographic information and posing an attention check question.

5.2 Commitment Question: How much Impact Investing?

Participants cast a vote on a real-stakes decision regarding the pension fund's impact investment strategy. Eliciting preferences with real consequences is essential (Vossler, Doyon and Rondeau, 2012). Prior research shows that responses to hypothetical questions often differ from those involving real consequences (Cummings, Harrison and Rutström, 1995; Cummings, Elliott, Harrison and Murphy, 1997). The board of Pensioenfonds Detailhandel committed to implementing the most commonly selected answers for three key decisions: 1) the extent of impact investing (ranging from stopping impact investing 0%, keeping it unchanged 1%, or expanding it 2% to 5% of assets), 2) the geographic focus (Netherlands, developed countries, or developing countries), and 3) the thematic focus (environmental vs. social issues). This binding commitment was communicated to participants before voting to elicit preferences in an incentive-compatible manner. In particular, they were told: "*Your choice matters! The board of Pensioenfonds Detailhandel has promised to carry out the most chosen answer to the following question. This means that your pension will be invested in more impact investments if most participants vote for "expand", will remain the same if participants vote for "keep unchanged," and will no longer be invested in impact investments if participants vote for "stop". We ensure that your opinion has a representative influence within Pensioenfonds Detailhandel.*"

We investigate whether participants vote for expanding impact investing, the first objective of Study 2. Regarding the extent of impact investing, we informed participants that their votes would influence up to 5% of total assets under management. We informed them that this corresponds to approximately €1.5 billion of total assets, equivalent to €15 per month in contributions per person.[21] We also explained that the board had committed to implementing the most chosen answer, the plurality vote, meaning that their votes could have real implications for

[21]The total assets under management of the pension fund were approximately €30 billion at the end of 2024. Expanding impact investing from the current 1% to the 2% to 5% range results in an increase of €300 million to €1.2 billion. Further, current contributions are roughly €375 per month, of which €15 is 4%.

their pension.[22] We asked participants "*What do you think? How much should Pensioenfonds Detailhandel invest in impact investing?*" with answer options "*Stop (0%)*", "*Keep unchanged (1%)*", "*Expand (2% to 5%)*", and "*I have no opinion / Don't know*".

To mitigate potential anchoring effects based on the order of the answer options, we mirrored the order of the first three answer choices. When introducing the concept of impact investing, we emphasized that such investments are likely costly, and involve a trade-off between pension payments at retirement and social-environmental impact (Barber et al., 2021).[23] Specifically, we told participants "*Achieving a positive financial return remains important. However, returns may sometimes be lower than expected or lower than typical market outcomes. The risk may also be higher. This can affect the eventual value of your pension.*"

5.3 Mini-public and peer treatments

The second objective of Study 2 is to examine how members of the broader pension fund population respond to information generated by the deliberative mini-public conducted in Study 1. To this end, we expose 60% of participants to the preferences expressed by mini-public participants before the commitment question. They were informed that fellow Pensioenfonds Detailhandel participants voted on whether to expand, maintain, or reduce the impact of impact investing, as well as their financial expectations and impact beliefs. The exact picture shown to them is depicted in Figure 7. We also communicated that this information stemmed from a representative group of participants. The purpose of this treatment is to test whether participants align their voting behavior with those of the mini-public's recommendations, relative to untreated participants.

This treatment introduces two potential effects. First, it creates an informational shock regarding peers' investment preferences. Peer effects are a well-documented factor in financial decision-making, where knowledge about the actions of similar individuals shapes participants' own choices in some but not all settings (Banerjee, 1992; Duflo and Saez, 2003; Brown, Ivković, Smith and Weisbenner, 2008; Allcott, 2011; Beshears, Choi, Laibson, Madrian and Milkman, 2015; Bauer, Eberhardt and Smeets, 2022). Second, it provides participants with knowledge that these peer choices on impact investing were formed in a deliberative setting, where participants received expert input and engaged in multi-day deliberations. In other words, it describes not only the behavior of peers but also of those educated on the topic through expert information and

[22] We urged the pension fund to adopt the plurality vote as a decision-making tool rather than a majority vote, more commonly used in referendums. We did so because we have four answer options, and a majority vote might not lead to a binding commitment when none of the 4 options receives at least 50% support. In a referendum where you have two choices, a majority vote is effectively a plurality vote, and there is always a binding outcome. To ensure that there would always be a binding vote, we opted for using a plurality vote as a commitment. This binding commitment is needed to make the question incentive-compatible for participants as their voting decisions will certainly affect their pension allocation.

[23] This explicit focus on the trade-offs between sustainable performance and financial consequences is a clear distinction from Bauer et al. (2021), who inquired about participants' general interest in sustainable investing without highlighting this.

deliberation among peers. Such distinction can matter as the extent to which participants believe information treatments often depends on their credibility (Haaland et al., 2023). In the field of deliberative democracy, scholars have studied the same phenomena, examining the impacts of deliberatively generated 'cues' on a wider public (Már and Gastil, 2020; Suiter, Muradova, Gastil and Farrell, 2020; Van Reybrouck, 2025). Survey research indicates that the results of mini-publics can, in particular circumstances, influence wider public opinion (Boulianne, 2018; Ingham and Levin, 2018).

We isolate the first effect from the latter by providing some but not all treated individuals with knowledge that the peer recommendations, expectations, and beliefs originated in a deliberative mini-public. Specifically, half of this group (30% of the full sample) received the mini-public treatment. They were informed that fellow Pensioenfonds Detailhandel participants had participated in a three-day deliberative mini-public and shared their views on impact investing. The other half received the peer treatment. Treatments differed in the framing of the information source: peers were told the information originated from a 15-minute survey. This information is truthful and accurate: the survey we conducted during the mini-public took about 15 minutes. The only difference in treatment is that we did not mention that the survey took place during a three-day mini-public. We expect that participants who receive information about deliberative mini-public outcomes will be more likely to vote in line with those recommendations because they know their peers made better-informed decisions.

Following the information treatment, participants will receive two control questions to reiterate the presented information. We ask them about the percentage of mini-public/peer participants who voted in favor of expanding impact investing (85%) as well as the medium through which we collect this information (a 3-day deliberative mini-public or a 15-minute survey). After participants answered the comprehension questions, we showed them the correct answers and informed them of their accuracy. As pre-registered, we did not exclude participants on any attention-check question, as a democratic vote requires all participants to have an equal voice, not only those who are better-informed.

5.4 Demographic information and comprehension of impact investing

After completing the binding commitment questions, participants responded to a series of demographic questions. These included age, education, income, political orientation, and employment status, as well as measures of social and risk preferences drawn from Falk et al. (2018). We also elicited participants' trust in the pension fund using the following question: To what extent do you trust Pensioenfonds Detailhandel in general? Responses were recorded on a

10-point Likert scale ranging from 1 ("no trust") to 10 ("complete trust").[24] Table 1 Panel B provides summary statistics on these demographic questions.

Finally, to verify participants' comprehension of the concept of impact investing, we included a control question at the end of the survey. Participants were asked: *Impact investing can best be described as investing:*, and were given the following response options: (1) *with impact for your pension payments at retirement. It ensures you have enough income once you retire*; (2) *in firms that strive to have a positive environmental or social impact, while trying to generate financial returns*; (3) *in financially aiding people in developing countries without the purpose of generating financial returns*. This question aims to assess whether respondents can distinguish between conventional investing (Option 1), impact investing (Option 2), and charitable donations (Option 3). Option 2 represents the correct definition aligned with our treatment framing. 67.5% of participants answered this comprehension question correctly. As pre-registered, we again did not exclude participants who failed this attention check question to ensure all participants had an equal vote. Selecting those who correctly answered the attention question increases the share of votes for expanding impact investing (see Appendix B).

5.5 Sample representativeness

In Study 2, we attained a total of 13,691 pension participants who completed the survey. 13,372 of which originated from the email campaign sent through the pension fund, and 319 were collected through the fund's quarterly newsletter. This results in an overall response rate of $\frac{13{,}372}{220{,}000}$ or 6.1% to our email campaign. This rate is comparable to prior estimates of 2.5% to 6.7% studying pension and mutual fund participants (Bauer et al., 2021; Giglio, Maggiori, Stroebel and Utkus, 2021; Giglio et al., 2025).

Table 1 Panel B reports answers to several key questions of the survey and demographics of the participants in Study 2. We find that the sample is predominantly male (55.5%), with an average age of 62.6 years. 30.9% of respondents have completed a university degree or a higher vocational qualification. The average reported monthly household income is €3,567. Participants' average Falk et al. (2018) social preferences score is 5.1.[25]

[24] We adopt this format from the World Values Survey. We also ask them for all treatment and control groups *To what extent do you trust Pensioenfonds Detailhandel to honor its commitment and implement the most chosen answer on impact investing from the questionnaire?* Additionally, we ask a third trust question in the accuracy of the provided information, tailored to the control or treatment group a participant was in. For the control, mini-public treatment, and peer treatment groups, we ask *To what extent do you trust the information on impact investing in this questionnaire?*, *To what extent do you trust that fellow participants who partook in the three-day deliberative mini-public carefully considered their recommendations to Pensioenfonds Detailhandel?*, and *To what extent do you trust that fellow participants who partook in the 15-minute survey carefully considered their recommendations to Pensioenfonds Detailhandel?*.

[25] We winsorised the data based on time spent in the survey at the 1% (3.4 minutes) and 99% (58.9 minutes) levels. We also remove participants who report being younger than 18 (1 participant reported an age of 13) or older than 100 (9 participants reported an age of 125). These sanity checks on the data quality are not preregistered but do not affect findings. We dropped a total of 284 out of 13,975 observations, which is less than 2.5% of the total. The response rate already incorporates the dropped observations.

Unlike the sortitioned sample of Study 1, we do not expect Study 2 to yield a representative sample due to selection effects stemming from email availability. Pensioenfonds Detailhandel does not maintain email addresses for all participants, as these are only collected at the time of first contribution or when retirement benefits are disbursed. Consequently, the share of retired and active participants is substantially higher: 51.9% and 36.1% in our sample vs. 13.1% and 20.5% in the population, respectively. Consistent with the over-representation of retired individuals, respondents in Study 2 were, on average, 17 years older, earned 10% less, and were 14.1 percentage points more likely to be male compared to the broader Pensioenfonds Detailhandel population (see Table 2).[26]

We pre-registered a reweighting procedure to correct voting outcomes in Study 2 for selection bias arising from email availability.[27] The correction accounts for all demographic dimensions available to Pensioenfonds Detailhandel: income, age, gender, and participation status (i.e., retired, currently contributing participant, or former participant). The procedure constitutes two steps. First, we regress indicator variables equal to 1 for participants who want to expand, keep unchanged, or stop impact investing on demographic characteristics: pension fund status (with retirees as the reference group), age, gender (coded as male), and income. Second, we calculate the differences between the demographic distribution of the survey sample and that of the pension fund population. These differences are then multiplied by the corresponding regression coefficients to estimate and correct for selection-induced bias in votes.[28] All results presented in this paper reflect these demographic adjustments unless explicitly stated otherwise.

Alongside demographic comparability, we consider political views when assessing participants' willingness to impact invest. Political ideology is frequently associated with sustainability-related choices, as it reflects underlying views on fairness, redistribution, and social responsibility (Fisman, Jakiela and Kariv, 2017; Kerschbamer and Müller, 2020; Fehr, Epper and Senn, 2024). It also correlates with preferences for sustainable investment strategies (Hong and Kostovetsky, 2012; Gutsche and Ziegler, 2019).

In terms of political orientation, nearly 70% of respondents reported voting for center-right-wing or right-wing parties in the 2023 Dutch general elections. Table 3 compares the political orientation of survey participants with that of the general Dutch population. Of the 13,691 survey participants, 10,826 disclosed their voting behavior. Among these, 69.3% supported right-wing parties, slightly above the national average of 66.6%. At the party level, respondents were 5.4 percentage points more likely to vote for the center-right VVD and 4.9 percentage points less likely to vote for the right-wing populist PVV, mirroring patterns previously documented by Bauer et al. (2021) among the same population. If anything, the predominance of right-leaning

[26] Participants in Study 2 reported their net household monthly income, whereas the pension fund records individual monthly income. To ensure comparability, we adjusted household income by dividing it by 1.49, the Dutch average ratio of household to individual income (CBS, 2022).

[27] See `https://www.socialscienceregistry.org/trials/15994` for the pre-registration, and Appendix B for additional details on the reweighting methodology.

[28] This reweighting approach was developed in consultation with and unanimously approved by the board of Pensioenfonds Detailhandel before the launch of the survey.

respondents suggests that our sample may be more conservative toward impact investing than the general population. Our estimates thus reflect a lower bound.

6 Study 2: Maxi-Public Results

6.1 Commitment votes on impact investing

In the mini-public, there was broad support for expanding impact investing after participants became better informed. We want to verify if this support extends to the less informed maxi-public participants. We pre-registered a commitment by the board to implement the plurality vote (most chosen answer) among participants to ensure incentive compatibility; see `https://www.socialscienceregistry.org/trials/15994`.

As in the mini-public, respondents voted to expand impact investing, see Figure 8. The plurality of participants (41.5%) voted to allocate between 2% and 5% of assets under management to impact investments, an increase from the current 1%. Following their commitment, Pensioenfonds Detailhandel will expand its impact investing by €300 million to €1.2 billion, equivalent to an additional 1% to 4% of its AUM. These results indicate that pension members choose to impact invest a greater share of their pension funds when asked democratically.

The second-largest group (31.3%) preferred maintaining the status quo at 1%. The least often chosen option by respondents was to stop impact investing, with only 13.2% favoring discontinuing impact investing entirely. Excluding the 14.0% of undecided respondents, nearly 85.3% of respondents who expressed an opinion supported continuing impact investing in some form. This overall support indicates that the majority of respondents supported continuing or expanding to invest with impact, even when explicitly informed of the likely financial consequences of such an investment approach.

6.1.1 Return expectations on impact investing

Pension members make this choice knowing the trade-off between value and values. In Table 1 Panel B, we show that among those who expressed an opinion, 50.9% expected impact investing to reduce or strongly reduce their pension payments.[29] Furthermore, 62.3% of those who expressed an opinion also expected impact investing to mitigate the environmental and social consequences of their pension investing. In other words, the majority of respondents understood that impact investing could result in reduced pension payments at retirement, yet they still voted in favor of expansion. Moreover, participants who understood the definition of impact investing at the end of the survey were more likely to vote for expansion than those who did not; see Appendix B.

[29] 41.8% of participants expressed no opinion. Divide the share of participants expecting lower pension payments, 29.6%, by one minus this fraction to get $\frac{29.6\%}{1-0.418} = 50.9\%$.

This voting pattern aligns with consequentialist sustainable investment preferences. The most chosen answer indicates that a substantial share of respondents care about impact by being willing to sacrifice returns for it. Moreover, they care about the extent of impact by voting for expansion at additional costs rather than keeping it at 1%.

6.1.2 Demographic heterogeneity

We find that votes to expand impact investing are associated with common predictors in (sustainable) finance (see Table 4).[30] Column (1) finds that participants who voted right-wing were 25.9% less likely to vote for expanding impact investing. Column (2) shows that a one-standard-deviation increase in social preference scores is associated with an 18.38 percentage-point increase in the likelihood of voting to expand impact investing.[31] In Column (3), we show that respondents with positive return expectations regarding impact investing are 4.91 percentage points more likely to support expansion compared to those with neutral expectations, and 20.81 percentage points more likely than those anticipating negative financial consequences. Among demographic predictors, Column (4) shows that higher education is associated with a 13.41 percentage point increase in support. Female respondents are 1.58 percentage points more likely to favor expansion. Age also matters: individuals vote for expansion 0.08 percentage points more frequently for every year of age. In Column (5), we find no impact of high or median income relative to low-income households. Column (6) displays compatible results in a multivariate specification that includes all covariates simultaneously. Results are comparable to the individual estimations.

6.1.3 Original mini-public respondents

We conducted a separate survey in which we asked mini-public participants the same commitment question on impact investing. We hired an external agency to contact them individually by email and phone, invite them to participate in the survey, and offer a €25 participation payment. Out of the initial 43 mini-public respondents, 30 completed the second survey. This recontact rate of 69.8% is high compared to the literature (as noted in Stantcheva, 2023, Appendix Table A4).

We asked about their willingness to expand impact investing in an identical manner to the general population survey. Figure 9 shows that the majority (70.5%) of mini-public participants desired to expand impact investing, 16.7% preferred to maintain the current level, 5.9% wanted to discontinue impact investing, and 6.9% were undecided or expressed no opinion. Their support is higher than the maxi-public average. These findings suggest that: 1) mini-public participants are persistent in their choice to expand impact investing even a year later, and 2) that

[30] See Appendix B for variable construction details based on survey responses.

[31] In our sample, Falk et al. (2018) social preferences have a standard deviation of 2.719. Multiply this by the coefficient of 2.719 in the regression table to get $2.719 * 6.759 = 18.38$.

they choose to expand impact investing when facing explicit stakes to their future pension.[32]

6.2 Pension beneficiaries follow mini-public recommendations

In democratic theory, the legitimacy of mini-publics is affected by their acceptance by the broader maxi-public (Parkinson, 2006; Smith, 2009; Cooper and Bauer, 2024; Lafont and Urbinati, 2024). Since the purpose of this paper is to democratize investing, it is critical to examine whether mini-public recommendations are accepted by the wider population. Curato, Farrell, Geissel, Grönlund, Mockler, Pilet, Renwick, Rose, Setälä and Suiter (2021) define this dimension of legitimacy as external legitimacy, and Parkinson (2006) argue that it depends on legitimizing linking processes that connect mini-publics to the broader maxi-public. Accordingly, we empirically study mini-public legitimacy in three steps. First, we ask whether the broader public follows the mini-public impact investing recommendation when treated. Second, we investigate whether participants with different dispositions toward impact investing adopt expansion recommendations when informed. Third, we test whether trust in the institution organizing the mini-public moderates the influence of its recommendations.

Respondents follow the mini-public recommendation on impact investing. Panel A of Table 5 presents regressions of a variable indicating support for expanding impact investing on mini-public and peer treatment indicator variables, with the control group as the baseline. It uses a waterfall of controls as described in Table 4. Respondents are significantly more likely to vote in favor of expanding impact investing when exposed to the mini-public recommendation in all specifications. In the most stringent specification, respondents in the mini-public and peer treatment groups are 7.53 (t-test, $p<0.001$) and 7.50 percentage points (t-test, $p<0.001$) more likely to support expansion relative to the control group. This represents an economically relevant 20.3% increase compared to the control group, of which 36.9 percentage points voted for expansion.

However, respondents are agnostic to which treatment information they receive. In contrast to our expectations, we find that they react equally strongly to informed peer treatments as to mini-public treatments. Particularly, the effects of mini-public and peer treatments are statistically indistinguishable from each other (t-test, $p=0.979$). This suggests that while respondents follow mini-public recommendations, they might not consciously distinguish between them and generic peer recommendations.[33]

The legitimacy of deliberative mini-publics is shaped by how their recommendations are received among a broader population with diverse political stances. Are deliberative mini-publics' recommendations only impactful on those who agree with their recommendations, or do

[32] Appendix A shows that participants are generally persistent in sustainable investment knowledge and sustainable investment preferences a year after the mini-public. This mirrors findings on the long-term effects of deliberation on political preferences (Fishkin, Bolotnyy, Lerner, Siu and Bradburn, 2024).

[33] We observe a similar effect when we rerun the previous analysis on a subset of respondents who correctly remembered whether the information treatment they received stemmed from a 15-minute survey or a three-day deliberative mini-public.

they have an impact on those with opposing views? In our sample, there are stark discrepancies in support for impact investing before participants are treated. Specifically, there appears to be a political polarization in participants' votes on expanding impact investing. On average, 51.4% of left-leaning respondents in the control group voted to expand impact investing, see Figure 10. Support for impact investing among right-wing voting participants was almost half that of left-leaning respondents, with only 26.8% voting in favor of expansion.

How do participants with views opposing impact investing react to deliberative mini-public information? The literature on polarization reveals mixed evidence in how information provision shapes polarization and anti-democratic behavior (Andreoni and Mylovanov, 2012; Voelkel et al., 2023). Therefore, it is not immediately clear how mini-public information affects votes across the political divide. Some of the adverse effects arise when participants discount the opinions of others and expect them to disclose information selectively (Bowen et al., 2023). Since the pension fund board provides the information, it is uncertain whether participants fear such selective disclosure. Specifically, the pension fund has no incentive to selectively disclose information and bias the vote, as it already holds executive power to adopt or reject the recommendation without seeking broader support. The sole purpose of the maxi-public is to assess broader support among the maxi-public in an unbiased way. Accordingly, it remains an open question whether participants across the political spectrum, whose views do not necessarily align with the expanding impact investing, follow this mini-public recommendation.

Our results suggest that deliberative mini-publics can depolarize decisions, at least within the scope of this study. In Table 5 Panel B, we find that left-wing voting participants increase the share of votes for expanding impact investing by 9.4 (t-test, $p<0.001$) and 8.0 (t-test, $p<0.001$) percentage points when exposed to the mini-public and peer treatments, respectively. Mini-public recommendations therefore further increase support among participants whose political preferences are already more favorable toward impact investing.[34]

Increasing support for expanding impact investing is not confined to treated participants with political views predisposed to favor impact investing. Specifically, right-wing voting participants experience a 6.9 (t-test, $p<0.001$) and 7.8 (t-test, $p<0.001$) percentage point increase in votes for expanding impact investing in the mini-public and peer treatments, respectively. This increase in support is comparable in absolute and bigger in relative terms, given the 26.8% vs 51.4% a priori support for expansion.[35] Accordingly, mini-public information fosters support for the recommendation among participants across the political spectrum, suggesting mini-publics are legitimate even for those initially less supportive of a recommendation. These findings confirm the second hypothesis: that deliberative mini-public recommendations are adopted by a broader pension fund population when faced with real financial choices in a democratic mechanism.

Alongside prior support, we analyze the role of trust. Trust is a critical element in the

[34] See Table 4 for the general disposition of left-leaning voters to expanding impact investing.

[35] These differences between mini-public and peer treatments are not statistically different at the 10% level, showing broader support for the provided information.

legitimacy perceptions of deliberative mini-publics (Germann, Marien and Muradova, 2024). Trust also plays an essential role in stock markets and investing (Guiso, Sapienza and Zingales, 2008). We expect participants to react more strongly to mini-public treatments than peer treatments when they have relatively low trust in the pension fund. We expect this because low-trust participants are likely to be more positively surprised when their pension fund solicits their peers' opinions through a deliberative mechanism. Consequently, the mini-public treatment effects are likely bigger than peer effects for low-trust participants.

Contrary to this expectation, we find that individuals who express higher trust in the pension fund react more strongly, not less, to both types of information treatment. A one-unit increase on the 1–10 World Values Survey trust scale raises the probability of voting to expand impact investing by 2.0 percentage points (t-test, $p<0.001$) under the mini-public treatment and 1.4 percentage points (t-test, $p<0.001$) under the peer treatment. These effects are statistically indistinguishable (F-test, $p=0.195$) and roughly one-quarter in magnitude of the uninteracted treatment effects. Our findings suggest that a limited level of trust in the pension fund is necessary for participants to adopt mini-public or peer information.

Our combined mini-public and maxi-public approach (Studies 1 and 2) provides the foundation for democratizing investing. We show that a descriptively representative group of pension beneficiaries learned to understand a complex social-financial trade-off, updated their priors when given the opportunity to deliberate, and made a recommendation that garnered support among the investor base in a maxi-public. This provides a foundation for democratizing investing.

7 Conclusion

This paper brings democracy into investing by integrating a deliberative mini-public (Study 1) with the organization of a maxi-public field experiment with a binding vote based on one of the mini-public's recommendations (Study 2). In collaboration with a Dutch collective defined contribution pension fund, preferences on sustainable investing are meaured in a three-day in-person mini-public. In this process, participants 1) learn from external experts on investing and sustainable investing, 2) deliberate with each other and draft recommendations, and 3) vote on these recommendations to the board of the pension fund. We find that participants' stances on sustainable investing change significantly. The share of participants supporting sustainable investing increases from 23.8% to 62.8%. This change is associated with increases in sustainable investing knowledge and impact beliefs, rather than developments in financial return expectations. Strikingly, participants display significant shifts in sustainable investment preferences. Where the most chosen reason why participants pursue sustainable investing is deontological before the mini-public at 34.9% (in line with Heeb et al., 2023; Bonnefon et al., 2025; Brodback et al., 2025), this share fell by 73.3% to 9.3 percentage points afterwards. Most of these participants shifted toward expressing consequentialist views, increasing from 20.9%

to 44.2%, in which they valued the extent to which their investments affected environmental and social issues. Increased knowledge of sustainable investment plays a role in the decline of deontological and the increase of consequentialist preferences.

Following the deliberative mini-public, we conducted a second field experiment with the broader pension fund population on the mini-public's recommendation to extend impact investing. Participants of the fund were presented with a binding vote on the extent of impact investing in their pension fund, as previously committed to by the board. We find that participants choose to expand impact investing through a democratic mechanism with real stakes from 1% to between 2% to 5% of AUM. We observe these results even while explicitly mentioning its potential risks and costs for a sample that voted predominantly center-right or right-wing. Subsequently, we studied whether the general pension fund population would follow recommendations made by the deliberative mini-public by treating 60% of participants with this information. These recommendations increase the share of votes in favor of expanding impact investing by 7.5 percentage points, or 20.3%. Moreover, providing participants with recommendations appears to bridge the political divide with a 25.9% relative increase in support for right-wing voting participants compared to an 18.3% increase for left-wing voting participants.

The mini-maxi-public provides a new tool to elicit preferences in the toolkit of experimental economists. While it marries the better-informed decision-making of lab experiments (Falk and Heckman, 2009) with the real-world consequences of field experiments (Levitt and List, 2009), mini-maxi publics have three distinct features that are beneficial for revealed preference elicitation. First, participants deliberate on their preferences, reducing decision complexity and increasing the likelihood that they reveal preferences more closely aligned with their true normative preferences (see also Lichtenstein and Slovic, 2006; Beshears et al., 2008). Second, the sortition process ensures sample representativeness and removes selection bias concerns (Flanigan et al., 2021). Third, mini-publics encourage collective decision-making as participants vote on recommendations that collectively affect them. Such collective rather than individual decision-making can reach welfare-enhancing outcomes in tragedy-of-the-commons or other collective-action problem settings, such as reducing externalities (Nordhaus, 2019).

Although we find that mini-public recommendations carry legitimacy in the maxi-public, we are the first to combine them for a financial institution. Our study provides only preliminary evidence that mini-publics, combined with a maxi-public, can serve as a stand-alone decision-making tool for this context. To this end, we recommend that scholars and policymakers who pursue future mini-publics also conduct a matching maxi-public to identify empirical evidence on the uptake and legitimacy of mini-public recommendations among a broader population. Moreover, while mini-publics elicit better-informed revealed preferences, we recommend that these models be carefully combined with trusteeship during this early phase of experimentation to ensure that governing fiduciaries have oversight over mini-public recommendations and play an important role in turning these recommendations into practical realities.

Mini-maxi-publics have broader applications in finance and economics beyond pension

funds. For example, Hart, Landemore and Zingales (2024) propose using mini-publics to elicit ultimate owner preferences in a mutual fund setting. Since mini-maxi-publics are time-intensive and require substantial financial resources, we suggest they are most useful in scenarios that require a high level of knowledge to understand the trade-off, are politically polarized, or are riddled with collective-action problems. The (defined benefit) pension fund setting aligns with this, as participants face democratic deficits. They are often unable to decide how much to contribute, are locked into pension providers, have little autonomy over investment decisions, and have no ability to exit the fund. Particularly in such settings, it is important to give ultimate owners voice.

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Table 1: Summary statistics (Studies 1 & 2)

This table describes summary statistics of the deliberative mini-public participants in Study 1 in Panel A and the broader pension participant group of Study 2 in Panel B. For Study 1, we report the demographics of participants who completed the mini-public (N = 43). The four dropouts originated from a flu epidemic in the Netherlands around the time of the mini-public, and their demographics are statistically equivalent ($p < 0.05$). Political leaning is assessed on a 1 (extreme left) to 10 (extremely right) scale following the World Values Survey. Prioritization for the environment or profits is also in the World Value Survey format. Postal area captures buckets of ZIP codes. Highly educated indicates the completion of a university or higher vocational education degree. Return expectations are defined as participants expecting impact investing to generate higher or much higher, the same, or lower and much lower pension payments at retirement compared to conventional investing. *Social Preferences* are participant answers to the Falk et al. (2018) social preferences question. Participation status in the pension fund is *Current Contributor* when the participant of our survey currently works in the retail sector, *Former Contributor* when the participant does not work in the retail sector, and *Retired* when the participant is currently receiving a pension from the pension fund. *Definition Impact Investing* is equal to 1 when participants can distinguish impact investing from conventional investing or charity at the end of the Study 2 survey. *Treatment Nature* and *Treatment Amount* are equal to one when participants answered the control question on how the information was collected (3-day mini-public or 15-minute survey) and how many participants voted for expanding impact investing). For an exact coding of each variable, see Table B1. Results originate from Study 1 and Study 2.

	Mean	**Median**	**s.d.**	**N**
Panel A. Study 1				
Demographics				
Female	58.1%	1.0%	49.9%	43
Age	47.0	46.0	15.7	43
Political leaning (1-10)	4.78	5.00	2.14	27
Participation status				
Active contributors	62.3%	100.0%	48.6%	43
Former contributors	26.4%	0.0%	44.1%	43
Retired	11.3%	0.0%	31.7%	43
Financial background				
Monthly net income	2,282	2291	790	43
Low income (€0 to €2,000)	48.8%	0.0%	50.6%	43
Middle income (€2,000 to €3,000)	25.6%	0.0%	44.1%	43
High income (above €3,000)	25.6%	0.0%	44.1%	43
Country of birth				
Netherlands born, and both parents Netherlands born	76.7%	100.0%	42.7%	43
Netherlands born, parent(s) born abroad	9.3%	0.0%	29.4%	43
Born abroad	14.0%	0.0%	35.1%	43
Prioritization environment or economy				
Environment	62.8%	100.0%	49.9%	43
Economy	23.3%	0.0%	42.7%	43
Don't know	14.0%	0.0%	35.1%	43
Postcode area				
1000–1999	23.3%	0.0%	42.7%	43
2000–2999	11.6%	0.0%	32.4%	43
3000–3999	25.6%	0.0%	44.1%	43
4000–4999	2.6%	0.0%	15.2%	43
5000–5999	11.6%	0.0%	32.4%	43
6000–6999	16.3%	0.0%	37.4%	43
7000–7999	7.0%	0.0%	25.8%	43

(Continued)

	Mean	Median	s.d.	N
8000–8999	2.3%	0.0%	15.2%	43
Panel B. Study 2				
Demographics				
Female	44.5%	0.0%	49.7%	13,691
Age	62.6	67.0	15.1	13,691
Highly educated	30.9%	0.0%	46.2%	13,653
Education missing	0.3%	0.0%	5.3%	13,691
Participation status				
Current contributor	36.1%	0.0%	48.0%	13,691
Former contributor	12.1%	0.0%	32.6%	13,691
Retired	51.9%	100.0%	50.0%	13,691
Financial background				
Monthly net *household* income	3,567	3,500	1,891	11,616
High income (above €4,000)	24.6%	0.0%	43.1%	13,691
Middle income (€2,500 to €4,000)	32.9%	0.0%	47.0%	13,691
Low income (€0 to €2,500)	27.3%	0.0%	44.6%	13,691
Income missing	15.2%	0.0%	35.9%	13,691
Financial expectations				
Pension payments at retirement				
Higher	8.6%	0.0%	28.0%	13,691
Unchanged	20.0%	0.0%	40.0%	13,691
Lower	29.6%	0.0%	45.7%	13,691
Missing	41.8%	0.0%	49.3%	13,691
Impact beliefs				
Environmental and social consequences				
Higher	46.4%	0.0%	49.9%	13,691
Unchanged	15.0%	0.0%	35.7%	13,691
Lower	13.1%	0.0%	33.7%	13,691
Missing	25.5%	0.0%	43.6%	13,691
Preferences				
Social preferences (1–10)	5.07	5.07	2.72	13,691
Social preferences missing	5.2%	0.0%	22.3%	13,691
Control questions				
Definition impact investing	67.5%	100.0%	46.8%	13,691
Treatment nature	70.1%	100.0%	45.8%	7,466
Treatment amount	62.0%	100.0%	48.6%	7,466

Table 2: Demographic Representativeness (Studies 1 & 2)

This stable tests the demographic representativeness of Study 1 & 2 samples relative to the Pensioenfonds Detailhandel population of participants' demographics. We analyze representativeness on participants' age, gender, and monthly net income across surveys. Columns (1) to (3) display pension fund population (s.d. in parentheses), Study 1, and Study 2 demographics. We test the representativeness of more variables for Study 1 due to stratified random sampling. Ethnicity and postal codes are computed using country-level averages from the Bureau of Labor Statistics (CBS). Prioritization of environmental or financial issues is collected from the World Value Survey averages for the Netherlands. For Study 2, we solely asked for information on the monthly net household income of participants, not their personal monthly income. We corrected this number by dividing it by a multiplier of 1.49, matching the Dutch average between individual and household income (CBS, 2022). The pension fund has only income information available for active participants (n=366,882) and pension payment amounts of retirees (n=168,859). To compute means and standard deviations of monthly net income, we assume active and inactive contributors earn a similar wage. Moreover, we convert retiree pension payments to monthly income by adding the Dutch government retirement pension, correcting for marital status (European Commission, 2025), and assuming retirees had one additional pension of equal value in another branch. Columns (4) and (5) display the p-values of a two-sided t-test on their difference. Results originate from Study 1 and Study 2.

	Participants Pension fund *(n=1,287,674)* (1)	Participants Study 1 *(n=43)* (2)	Participants Study 2 *(n=13,691)* (3)	Δ(1) vs. (2) *p-values* (4)	Δ(1) vs. (3) *p-values* (5)
Demographics					
Female	58.61% (49.3%)	58.14% (49.9%)	44.49% (49.7%)	0.952	0.000
Age	45.5 (16.3)	47.0 (15.7)	62.6 (15.1)	0.539	0.000
Net income	2,661 (796)	2,282 (790)	2,396 (1,221)	0.002	0.000
Ethnicity					
Netherlands born	75.3% (43.1%)	76.7% (42.7%)	-	0.951	-
Parent(s) foreign	11.6% (32.0%)	9.3% (29.4%)	-	0.829	-
Born abroad	14.5% (35.2%)	14.0% (35.1%)	-	0.606	-
Prioritization					
Environment	61.8 (48.6%)	62.8% (49.9%)	-	0.893	-
Economy	23.5 (42.4%)	23.3% (42.7%)	-	0.975	-
Don't know	14.7 (35.4%)	14.0% (35.1%)	-	0.895	-
Postcode area					
1000–1999	16.4% (37.0%)	23.3% (42.7%)	-	0.291	-
2000–2999	13.9% (34.6%)	11.6% (32.4%)	-	0.640	-
3000–3999	16.4% (37.0%)	25.6% (44.1%)	-	0.174	-
4000–4999	9.1% (27.3%)	2.6% (15.2%)	-	0.011	-
5000–5999	13.5% (34.2%)	11.6% (32.4%)	-	0.699	-
6000–6999	10.2% (30.3%)	16.3% (37.4%)	-	0.285	-
7000–7999	10.0% (30.0%)	7.0% (25.8%)	-	0.445	-
8000–8999	6.1% (23.9%)	2.3% (15.2%)	-	0.104	-

Table 3: Political Representativeness (Study 2)

This stable tests the political representativeness of Study 2 participants relative to the Dutch population's voting behavior. We display a comparison of reported voting behavior within our sample (Columns (1) and (2)) with the official 2023 Dutch parliamentary election results (Column (3)). Column (4) displays the p-values of a t-test between the Pensioenfonds Detailhandel sample mean and the political voting of the Netherlands. Results originate from Study 2.

	Reported voting behavior (n=10,826)		**Official 2023 Voting results** (n≈10.5m)	Δ(2) vs. (3) *p-values two-sided t-test*
	Absolute (1)	**Relative** (2)	(3)	(4)
Prefer not to answer				
Answered	11,912	87.01%		
Prefer not to answer	1,779	12.99%		
Voting selection				
Voted in 2023	10,826	90.88%	77.75%	
Did not vote in 2023	1,086	9.12%	22.25%	
Political leaning				
Right-wing	7,504	69.31%	66.60%	0.000
Left-wing	3,322	30.08%	31.52%	0.001
Reported party				
Partij voor de Vrijheid (PVV)	2,010	18.57%	23.49%	0.000
GroenLinks/Partij van de Arbeid (PvdA)	1,626	15.02%	15.75%	0.033
Volkspartij voor Vrijheid en Democratie (VVD)	2,238	20.66%	15.24%	0.000
Nederland Scoaial Contract (NSC)	1,612	14.89%	12.88%	0.000
Democraten 66 (D66)	650	6.00%	6.29%	0.204
Boer Burger Beweging (BBB)	386	3.57%	4.65%	0.000
Christen-Democratisch Appèl (CDA)	698	6.45%	3.31%	0.000
Socialistische Partij (SP)	386	3.57%	3.15%	0.019
Denk	15	0.14%	2.37%	0.000
Partij voor de Dieren (PVDD)	370	3.42%	2.25%	0.000
Forum voor Democratie (FvD)	79	0.73%	2.23%	0.000
Staatkundig Gereformeerde Partij (SGP)	170	1.57%	2.08%	0.000
ChristenUnie (CU)	208	1.92%	2.04%	0.363
Volt	209	1.93%	1.71%	0.096
JA21	83	0.77%	0.68%	0.284
Other	86	0.79%	1.88%	0.000

Table 4: Expanding Impact Investing and demographics (Study 2)

This table regresses participants' willingness to expand impact investing on demographic information and stated preferences. In Columns (1) to (4), we respectively introduce Falk et al. (2018) social preferences; financial return expectations; income; and age, gender, & education. Column (5) displays the above demographics and preferences measures simultaneously. For all demographics, we replaced observations with sample averages when participants answered "Prefer not to say/no opinion" and introduced indicator variables to prevent losing observations. We introduce indicator variables as missing in the table below (abbreviated as mis.). We use keeping impact investing unchanged, stopping, and no opinion as a reference category. See Table 1 for summary statistics and Appendix B for the exact construction of these variables. Robust standard errors in parentheses. ***, **, and * denotes significance at the 1%, 5%, and 10% level. Results originate from Study 2.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	**Vote for expanding impact investing (%)**					
Right-wing	-25.948***					-15.590***
	(0.878)					(0.863)
Right-wing mis.	-14.385***					-6.109***
	(0.891)					(0.881)
Social preferences		6.759***				5.644***
		(0.126)				(0.136)
Social preferences mis.		-19.915***				-14.835***
		(1.298)				(1.324)
Expected return higher			4.913***			9.333***
			(1.727)			(1.630)
Expected return lower			-15.901***			-10.382***
			(1.190)			(1.085)
Expected return mis.			-18.826***			-11.440***
			(1.110)			(1.045)
Age				0.083***		0.139***
				(0.028)		(0.026)
Female				1.576*		1.550**
				(0.810)		(0.730)
Highly educated				13.408***		6.368***
				(0.919)		(0.842)
Education mis.				-25.898***		-12.730***
				(3.463)		(3.617)
Income high					0.921	-4.311***
					(1.133)	(1.046)
Income median					1.902*	-1.243
					(1.043)	(0.944)
Income missing					-16.412***	-6.820***
					(1.123)	(1.062)
Observations	13,691	13,691	13,691	13,691	13,691	13,691
Adjusted R-squared	0.076	0.163	0.035	0.017	0.014	0.218

Table 5: Expanding Impact Investing: Mini-public and Peer Treatments (Study 2)

Table 5 regresses two indicator variables equal to 1 for participants who were treated with mini-public and peer information on whether they voted to expand impact investing, with the control group as the reference category. In Panel A, Column (1), this regression is performed without controls. In Columns (2) to (5), we respectively add 2) indicator variables for financial return expectations, 3) demographic controls for age, a female indicator variable, and a higher vocational or university education indicator variable, 4) household income indicator variables, and 5) Falk et al. (2018) social preferences. In Panel B, we examine heterogeneous treatment effects across different political views and participants' trust in their pension fund. Column (1) displays the most stringent specification Panel A analysis as a reference. In Columns (2) and (3), we perform sub-sample analyses for left-wing and right-wing participants. In Column (1), we test for the role of trust, participants' answer to the question *To what extent do you trust Pensioenfonds Detailhandel in general?* on a 1 (low trust) to 10 (high trust) scale following the World Value Survey. We do so by introducing an interaction term with both treatment indicator variables and introducing trust in level terms. Robust standard errors in parentheses. ***, **, and * denotes significance at the 1%, 5%, and 10% level. Results originate from Study 2.

Panel A: Mini-public and peer treatment and voting to expand impact investing

	(1)	(2)	(3)	(4)	(5)
VARIABLES	**Vote for expanding impact investing (%)**				
Mini-public Treatment	7.993***	8.180***	8.328***	8.438***	7.525***
	(0.972)	(0.953)	(0.947)	(0.940)	(0.866)
Peer Treatment	8.975***	8.738***	8.611***	8.704***	7.499***
	(0.971)	(0.956)	(0.949)	(0.944)	(0.879)
Observations	13,691	13,691	13,691	13,691	13,691
Adjusted R-squared	0.008	0.043	0.058	0.069	0.202
Financial Expectations	No	Yes	Yes	Yes	Yes
Demographics	No	No	Yes	Yes	Yes
Financial Background	No	No	No	Yes	Yes
Social Preferences	No	No	No	No	Yes
Mini-public VS Peer Treatment t-test: *(p-value)*	0.475	0.679	0.833	0.842	0.983

Panel B: The political divide and trust across: mini-public and peer treatments

	(1)	(2)	(3)	(4)
VARIABLES	Full sample	Right-wing	Left-wing	Full sample
Mini-public Treatment	7.525***	6.931***	9.428***	-5.531**
	(0.866)	(1.315)	(1.422)	(2.544)
Peer Treatment	7.499***	7.789***	8.046***	-2.065
	(0.879)	(1.369)	(1.411)	(2.657)
Mini-public X Trust				1.999***
				(0.378)
Peer X Trust				1.439***
				(0.389)
Trust				1.382***
				(0.242)
Observations	13,691	5,193	5,633	13,691
Adjusted R-squared	0.202	0.125	0.213	0.211
Financial Expectations	Yes	Yes	Yes	Yes
Demographics	Yes	Yes	Yes	Yes
Financial Background	Yes	Yes	Yes	Yes
Social Preferences	Yes	Yes	Yes	Yes
Mini-public VS Peer Treatment t-test: *(p-value)*	0.983	0.302	0.583	0.381

Figure 1: How Study 1 and Study 2 Interconnect

Figure 1 shows how Study 1 and Study 2 relate. We start with a three-day deliberative mini-public. This mini-public created 49 recommendations to the board. The board decided whether to directly implement these recommendations, disregard them, or ask for broader support. In Study 2, this broader support was tested in a maxi-public field experiment where we asked participants using a binding vote whether they wanted to adopt impact investing (one of the 49 recommendations). Based on this vote, the pension fund decides to increase, keep unchanged, or decrease its impact investing. We have three moments of observation (in blue), one pre-survey on the first day before the mini-public, one post-survey after the mini-public at the end of day 3, and one commitment survey in which we asked participants about their willingness to impact invest their pensions.

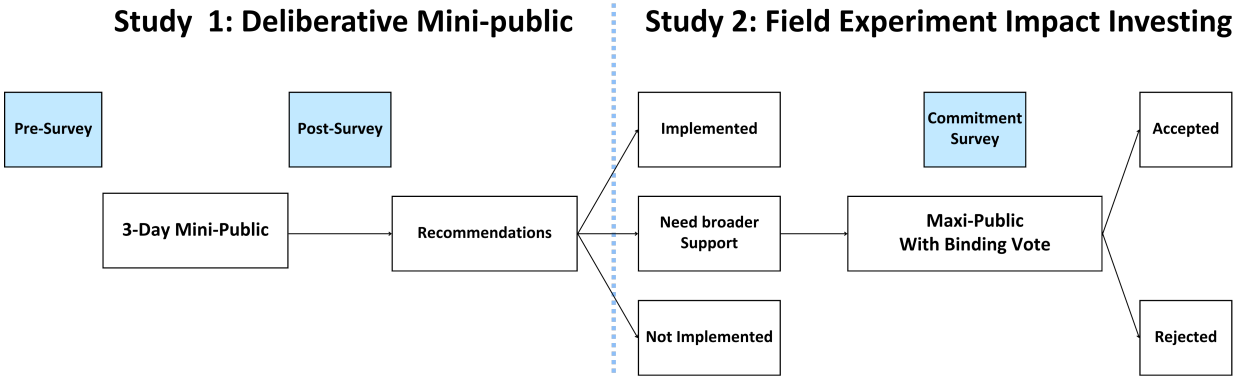
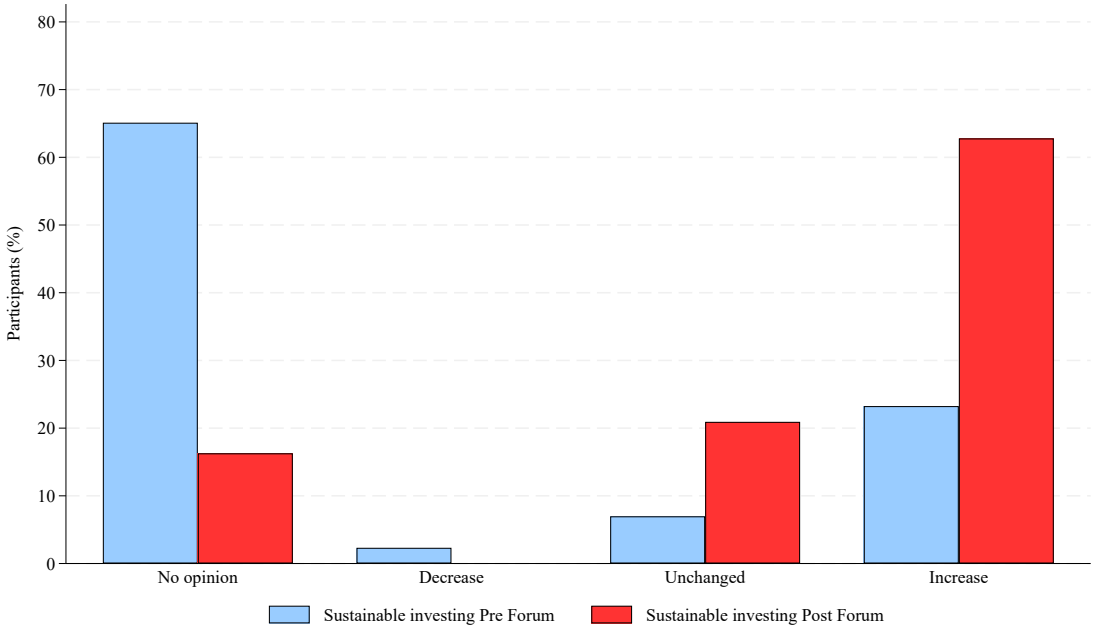


Figure 2: Extensive margin of sustainable investing (Study 1)

Figure 2 displays participants' answers to the question: *I want Pensioenfonds Detailhandel's sustainable investing to increase, keep unchanged, or decrease.* In blue, you find participants' answers before the start of the deliberative mini-public on day 1. In red, you will find answers to an identical question after the deliberative mini-public at the end of day 3. Panel A displays the results, including responses with "I do not know/no opinions". Panel B illustrates the distribution of participants' willingness to invest sustainably, excluding those who did not know or did not express an opinion. Results originate from Study 1.

Panel A: Willingness to invest sustainably



Panel B: Willingness to invest sustainably without "No opinion"

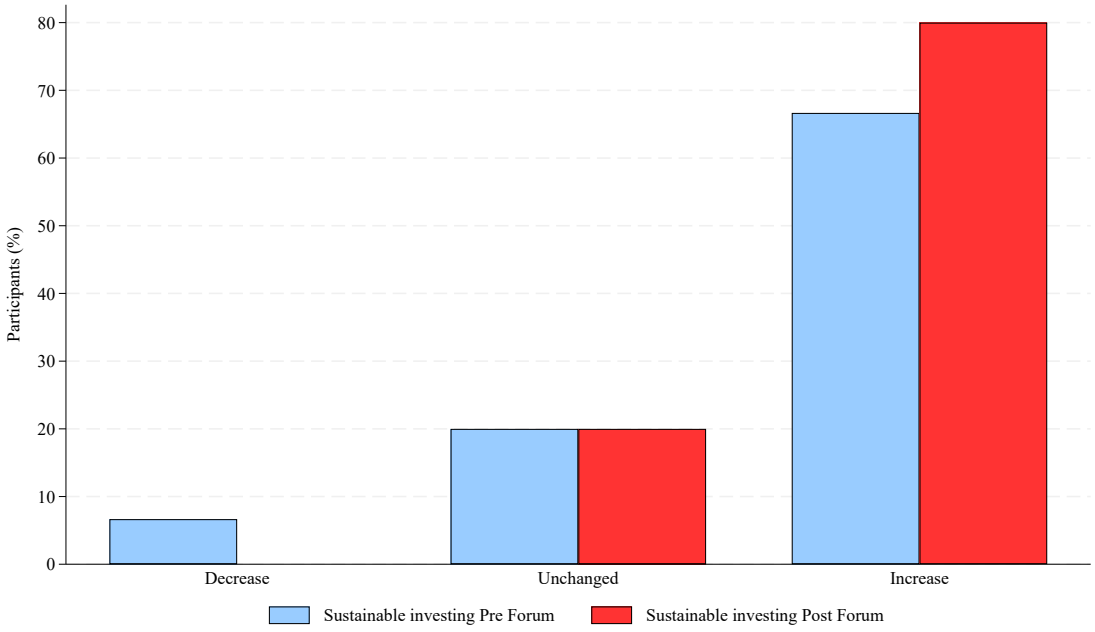
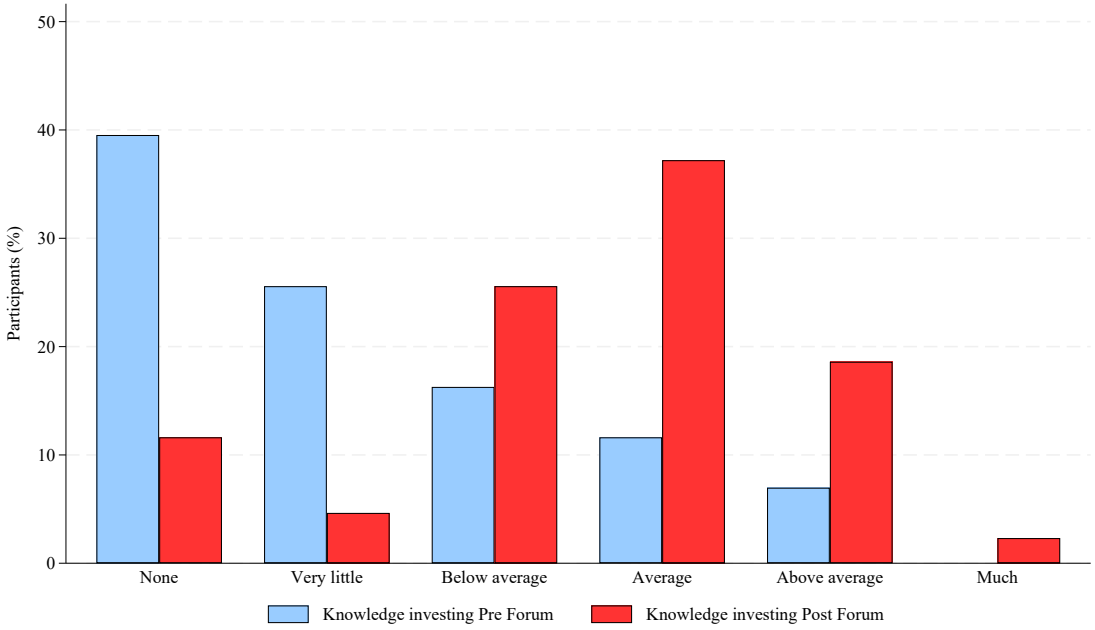


Figure 3: Knowledge through deliberative mini-public (Study 1)

Figure 3 displays participants' self-assessed investing and sustainable investing knowledge in Panels A and B. The deliberative nature of the mini-public leads us to ask participants to self-assess their knowledge of (sustainable) investing rather than quizzing participants. This ensured an open and inclusive environment in which participants could express their opinions, regardless of their prior knowledge levels. We display answers to the question: *My knowledge on (sustainable) investing is: None, very limited, below average, average, above average, much, very much.*. We asked these questions before the mini-public on the first day (blue) and after the mini-public on the third day (red). Results originate from Study 1.

Panel A: Investing Knowledge



Panel B: Sustainable Investing Knowledge

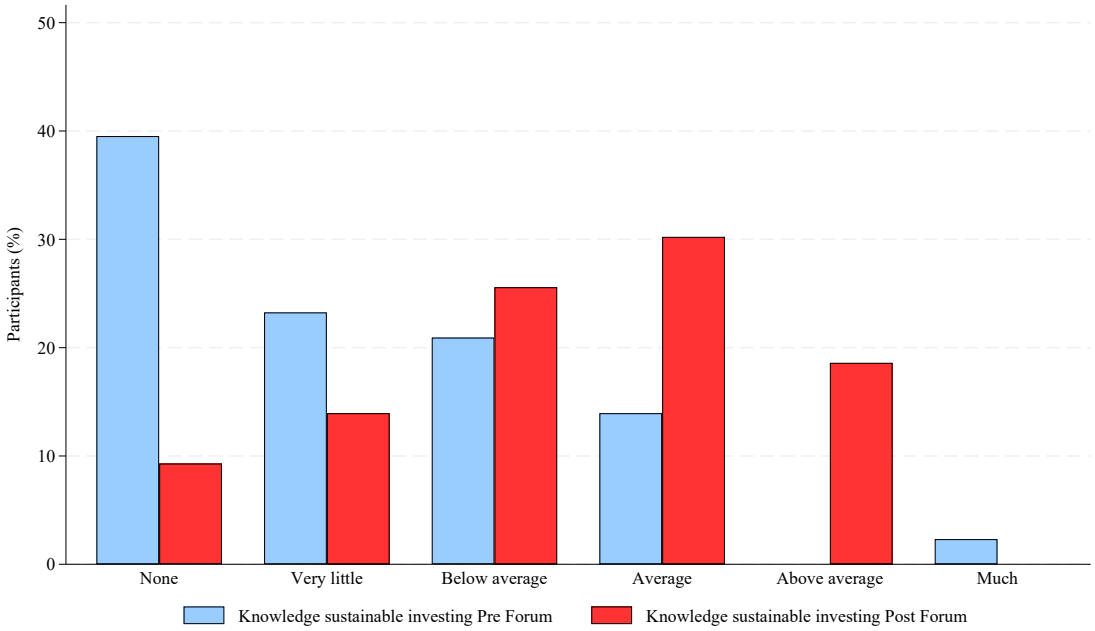
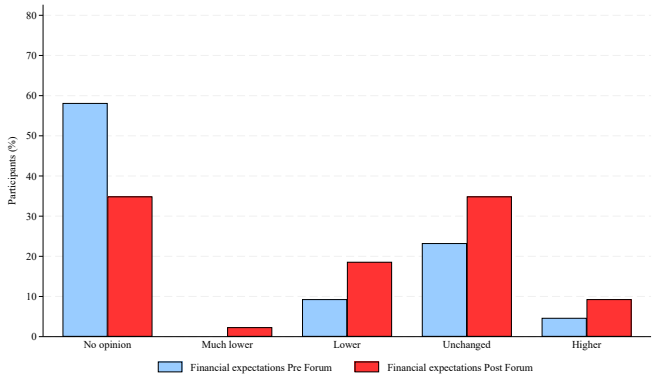


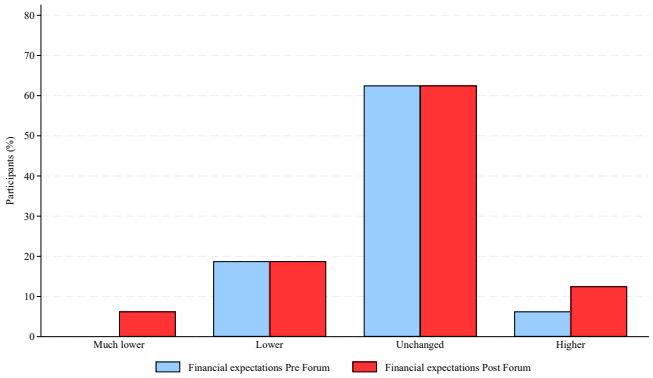
Figure 4: Financial return expectations and impact beliefs (Study 1)

Figure 4 assesses how participants think about the return expectations and expected impact of sustainable investing before and after the mini-public. Panel A displays participants' answers to the question: *I expect my pension payments at retirement with sustainable investing to be: much lower, lower, unchanged, higher, or much higher*. Panel B shows financial expectations excluding the 'no-opinion' category, as a high proportion of participants indicated they have no opinion or are unsure about the financial implications of sustainable investing. Panel C shows answers to: *I expect the impact of my pension investments with sustainable investing on environmental and social issues to be: much lower, lower, unchanged, higher, or much higher.* We asked these questions before the mini-public on the first day (blue) and after the mini-public on the third day (red). Results originate from Study 1.

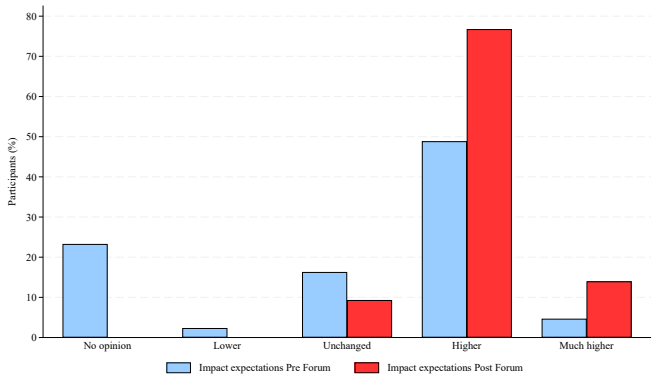
Panel A: Financial Expectations



Panel B: Financial Expectations without "No opinion"



Panel C: Impact Beliefs



Panel D: Impact Beliefs without "No opinion"

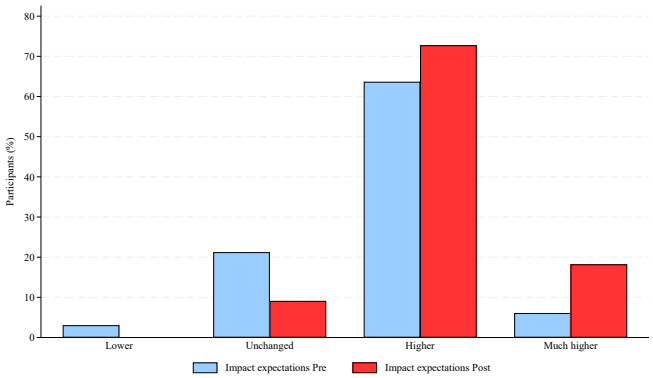


Figure 5: Sustainable investment preferences (Study 1)

Figure 5 displays participants' answers to the question: *Which of the following statements best reflects your preferences for sustainable investing? I want Pensioenfonds Detailhandel to perform sustainable investing: (1) I have no opinion, (2) I do not want Pensioenfonds Detailhandel to invest sustainably, (3) when it increases my pension payments at retirement, (4) for social norms or moral reasons. I do not want to invest in firms with a negative influence on the environment or society. I am indifferent as to whether my investments have a real influence on these firms, nor whether this might entail potential reductions in pension payments at retirement, (5) if it has a positive impact on the environment, climate change, nature, and social issues. I am indifferent whether this could have potential negative consequences on my pension payments at retirement.* We code these answers as no opinion, no sustainable investing, profit-oriented, deontological, and consequentialist, respectively. We asked these questions before the mini-public on the first day (blue) and after the mini-public on the third day (red). Results originate from Study 1.

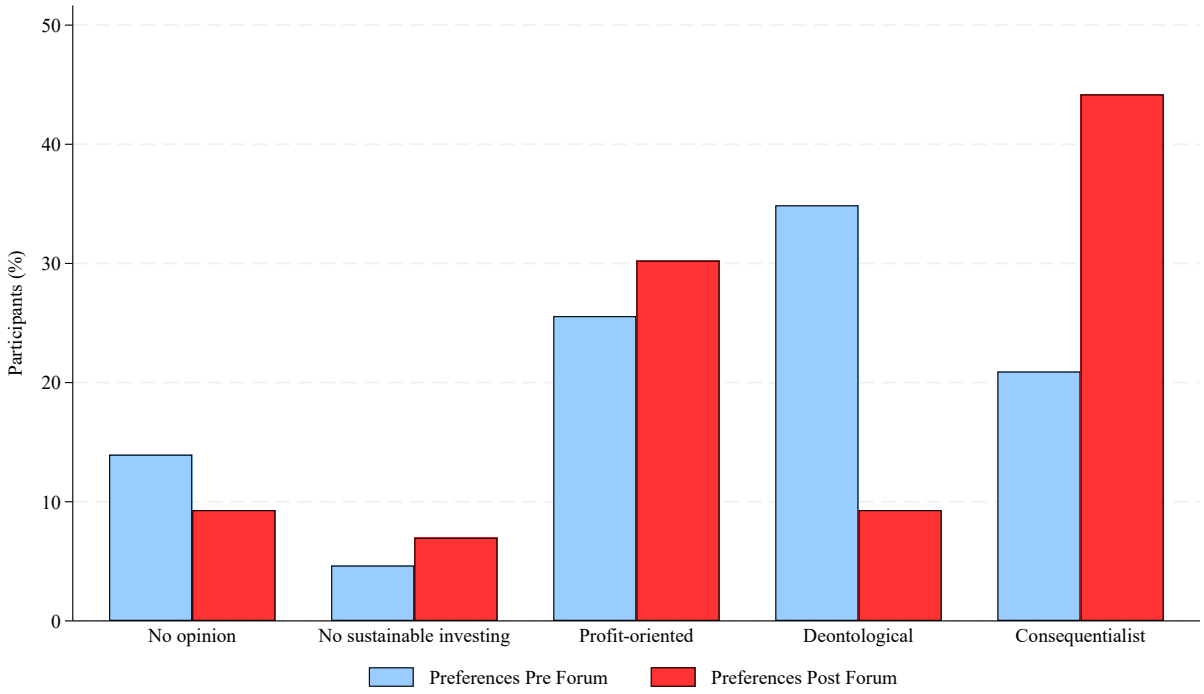


Figure 6: Survey Flow (Study 2)

Figure 6 displays the survey overview of Study 2. We begin with a loading page on impact investing and the consequential choices made by participants. After that, participants receive general information on impact investing. Subsequently, we divide the sample into three groups: 30% who receive information on the choices of mini-public participants from Study 1 on impact investing, 30% of participants who receive identical information but are not informed that it stems from a deliberative mini-public, and 40% of participants who serve as a control group. Consecutively, participants face three binding votes where they can choose the amount (0% to 5% of AUM) of impact investment at Pensioenfonds Detailhandel, the location (the Netherlands, developed countries, developing countries, or a mix), and the topic (environmental, social, or a mix). Lastly, we request demographic information and test if participants understood the definition of impact investing.

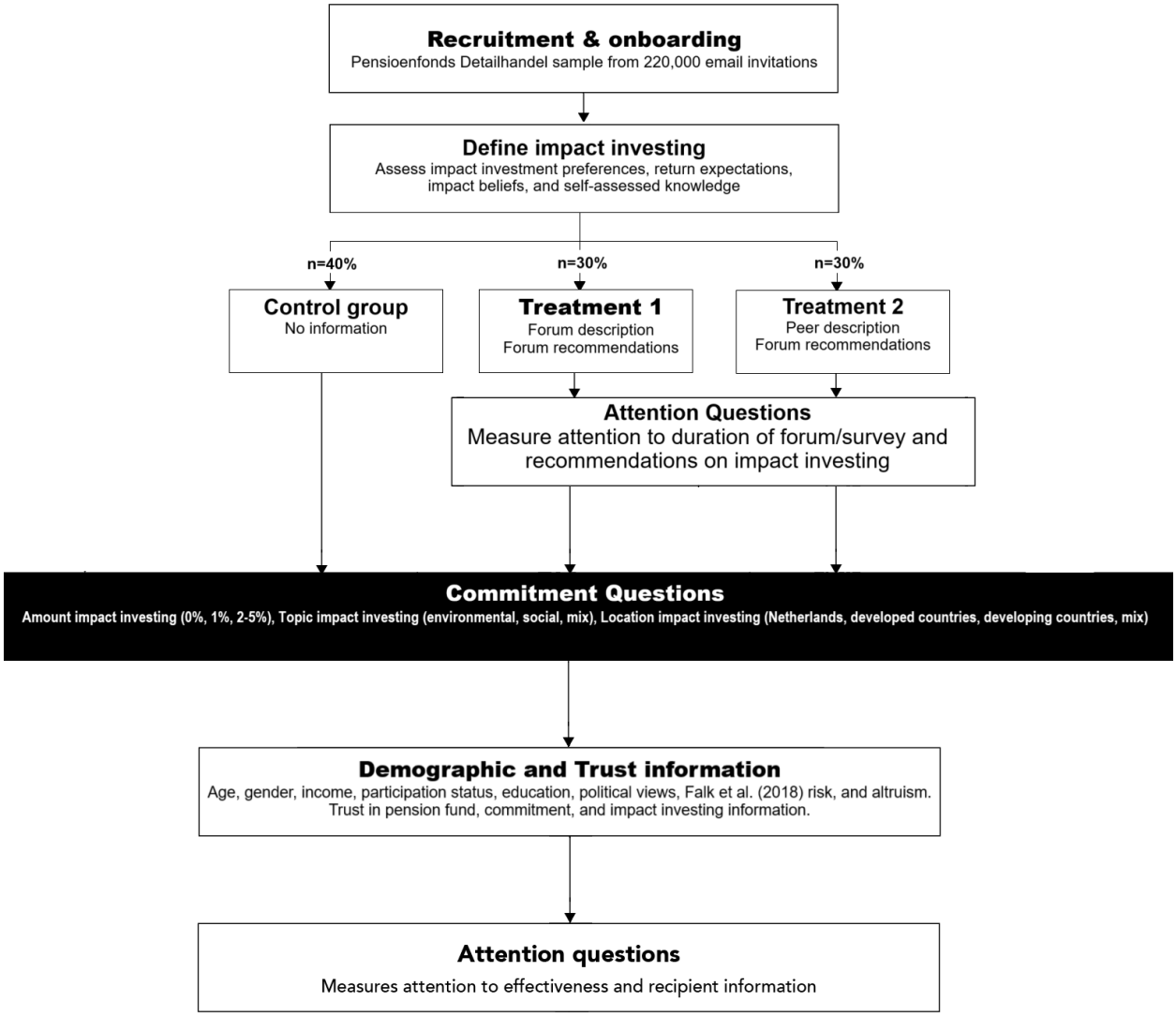


Figure 7: Information Treatment (Study 2)

Figure 7 displays the recommendations from the deliberative mini-public survey that treated participants received information about. Both treatments received the same pictogram, but only the mini-public treatment group was informed that it originated from a 3-day deliberative mini-public, as well as details on what such a mini-public entails. This enables us to separately analyze whether the general population of Pensioenfonds Detailhandel participants follows deliberative mini-public recommendations, as well as the knowledge that these recommendations originate from a mini-public. Alongside the pictograph, both treatment groups receive information on the representativeness of the information and that it is retrieved from their peers, as well as knowledge of the upcoming vote to draw their attention to the information. For simplicity, we omitted "I have no preference/do not know" answers in this pictograph, resulting in slight variations from the numbers reported elsewhere in this paper. For the exact text, see Appendix D.

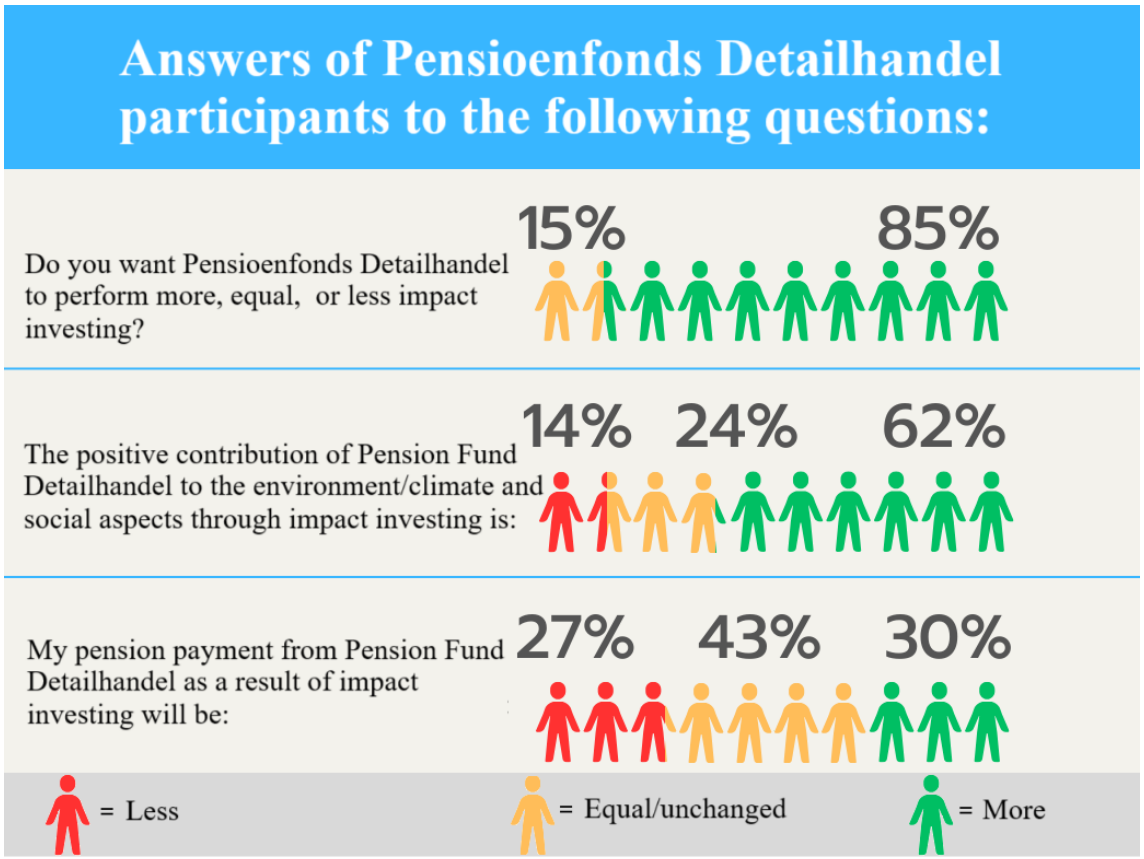
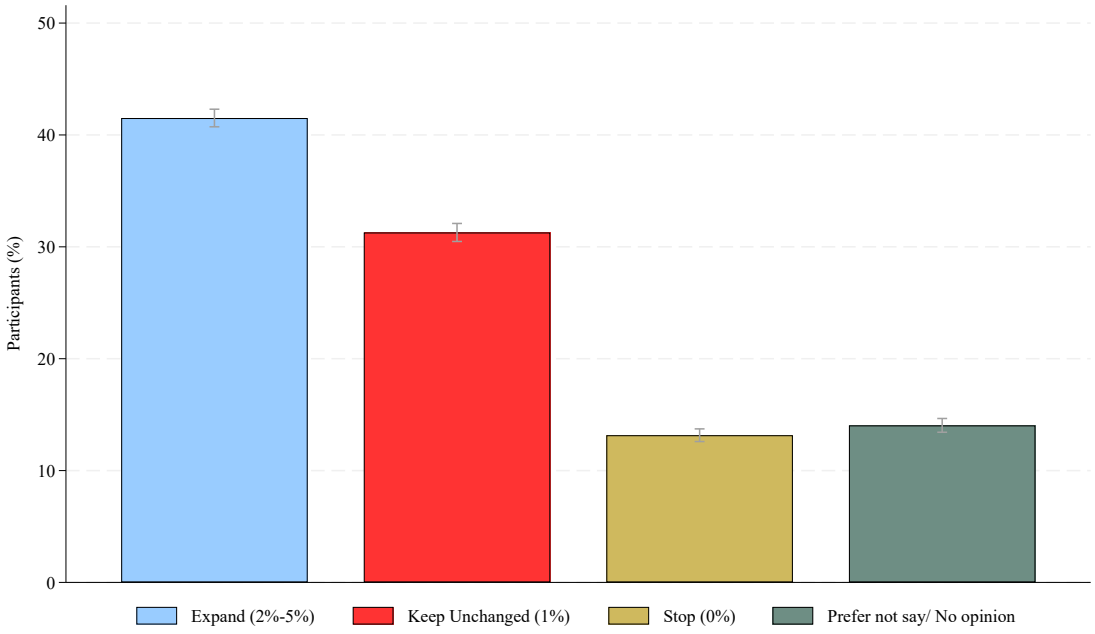


Figure 8: Extensive margin of Impact Investing (Study 2)

Figure 8 Panel A displays the share of participants who voted to expand (2%-5%, blue), keep unchanged (1%, red), or stop (0%, brown) impact investing. It displays the answer to the question: *What do you think? How much should Pensioenfonds Detailhandel invest in impact investing?* Panel B splits participants' answer to this question across the control group (blue), the peer information treatment group (red), and the mini-public information treatment group (brown). The most chosen answer will be implemented by the pension fund. Participants are notified of this commitment in the survey; for the exact text, see Appendix D. Error bars represent 95% confidence intervals. Results originate from Study 2.

Panel A: Full sample



Panel B: Across the control group, peer treatment, and mini-public treatment

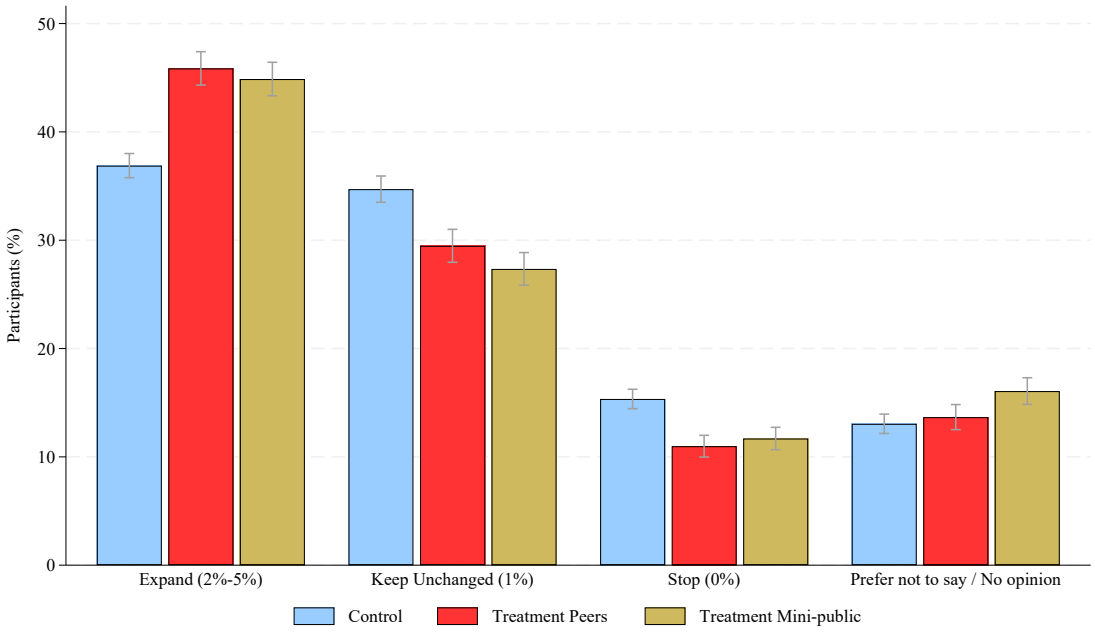


Figure 9: Deliberative mini-public participants' preferences for expanding impact investing

Figure 9 replicates the results of Figure 8 for participants originally partaking in the survey. It displays the answer to the question: *What do you think? How much should Pensioenfonds Detailhandel invest in impact investing?*. Error bars represent 95% confidence intervals. Results originate from Study 2.

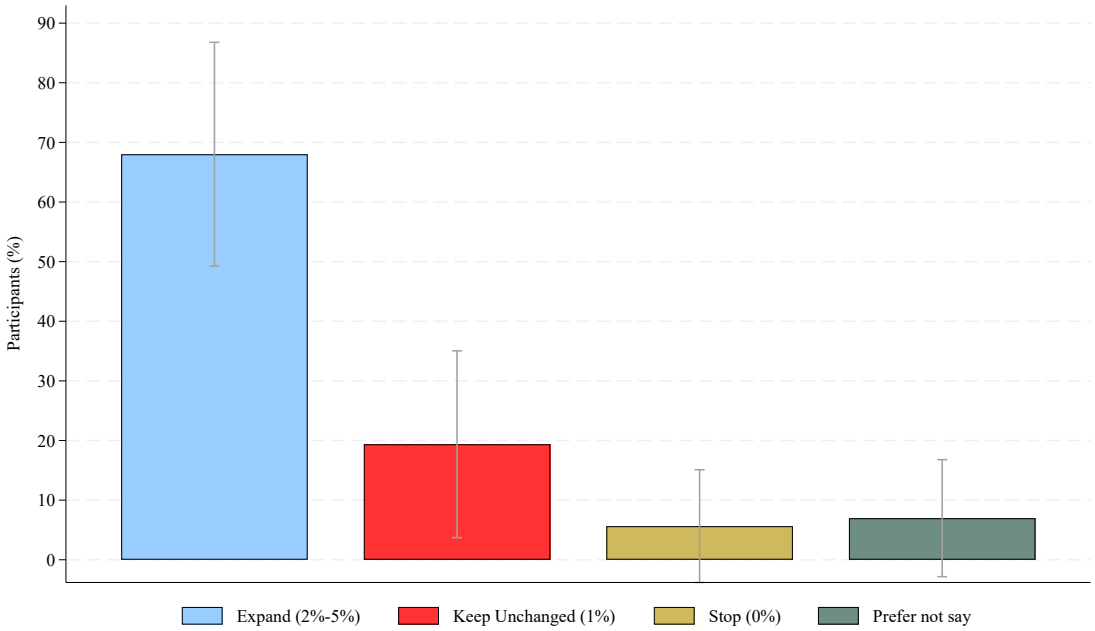
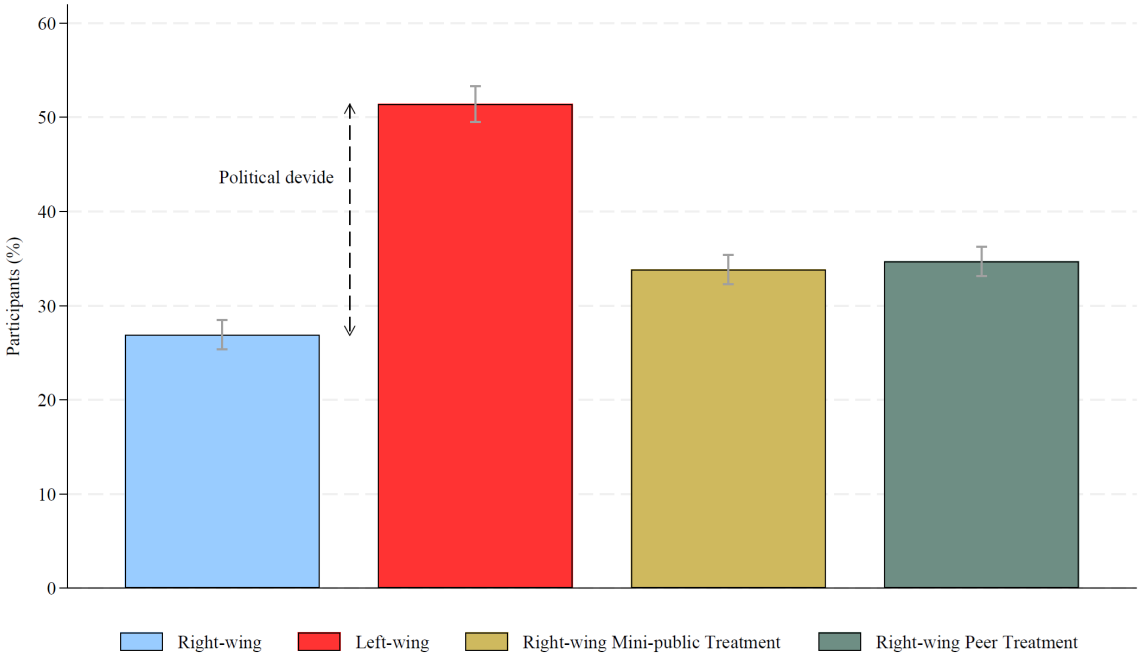


Figure 10: Political divide and impact investing (Study 2)

Figure 10 displays the average percentage of participants that voted for expanding impact investing across the political spectrum. The political divide, or difference between left-wing and right-wing participants, is indicated by the arrow. It reflects a 24.5 percentage point difference, the distance between the 51.4% support for left-wing participants, and the 26.8% support for right-wing participants. Treatment of right-wing participants increase the share of expansion votes by 6.9 and 7.8 percentage points, or between 28.2% to 31.8% of the political divide for mini-public and peer treatments, respectively. Means conditional on political affiliation are selected in the first two bars. Adjustments are made to the right-wing bar using estimates from Table 5, Panel B. Participants who did not declare a political affiliation are omitted from this analysis. Results originate from Study 2.



Internet Appendix

Appendix A Study 1: Deliberative Mini-public Details

A.1 Information provision choice

On Day 1 of the deliberative mini-public, we allowed participants to choose what information to receive during the second day to reduce the likelihood that what we as researchers deemed important would drive ultimate outcomes. Participants did this voting by allocating 25 points each across the topics depicted in list A1. Their ultimate score is depicted in the second Column and half of the topics with the highest score were selected (7 out of 14).

Table A1: Deliberative mini-public Day 2 Information Choices

Participant choices during Day 1 on information provision in Day 2. Participants could allocate 25 points to each category.

Rank	Score	Topic	Name of speaker (if topic selected)
Chosen			
1	195	Pension investments vis-à-vis oil and gas companies	Mark van Baal (Follow This, NGO shareholder engagement)
2	132	Social and environmental dimensions of pension fund investments	Laure Wesselius-Chibrac (Netherlands Advisory Board on impact investing, non-profit organisation)
3	131	Corporate governance	Frank Wagemans (Achmea, insurance company)
4	115	Wage policies and compensation practices in portfolio companies	Ellen Kunst (MN, asset management company)
5	109	External influence in pension funds and sustainable investing	Will-Jan Jacobs (Pension Federation, industry organization of Dutch pension funds)
6	99	Human rights considerations in investment decision-making	Kees Gootjes (ABN-AMRO, bank)
7	92	Pension fund collaboration in investments	Rik Teeuwen (PRI, industry organization)
Not chosen			
8	83	Pension funds and climate change	(not selected)
9	75	Pension investments and nature-loss risks	(not selected)

Rank	Score	Topic	Name of speaker (if topic selected)
10	68	Pension fund investment strategies related to climate risk	(not selected)
11	50	Domestic labor rights considerations in pension fund investments	(not selected)
12	39	Corporate policies and practices on human and labor rights	(not selected)
13	34	Sustainable Fashion	(not selected)
14	32	Pension funds and biodiversity	(not selected)

A.2 Participant perception on the Deliberative mini-public

For deliberative mini-publics to be effective, they must allow participants to express divergent and sometimes conflicting ideas and ideologies on the topic (Mansbridge, 2010; Bardhi and Bobkova, 2023). This is critical in retrieving participants' normative perspectives, as select outspoken participants could otherwise dominate a conversation and drive the outcomes of a mini-public. We validate that participants could speak up and express their views in our survey through their answers to seven validation questions in Figure A1.

Participants were generally supportive of the mini-public's execution. We asked participants whether they had sufficient opportunity to express their opinions, whether fellow participants had time to express their opinions, whether all views were heard, whether they felt their standpoints were respected by fellow participants even though they might have disagreed, whether the process of the mini-public was transparent, whether its meaning for the investing practices of Pensioenfonds Detailhandel was clear, and whether the recommendations of the mini-public were well reflecting the breadth of participants' opinions on sustainable investing. At least 90% of the participants agreed or strongly agreed with six of the seven questions, fewer than 5% disagreed, and no participant strongly disagreed. We observe that 76.7% of participants agreed or strongly agreed that they knew the influence of the deliberative mini-public on Pensioenfonds Detailhandel's investment policy. These questions support the idea that participants could express diverse views during the mini-public and highlight its deliberative nature.

In addition to ensuring that everyone has a fair say in the mini-public, we must also rule out the possibility that a potential bias among experts, who may prefer sustainable investments, could have influenced the results. We selected many potential expert speakers to discuss diverse sustainable investing topics. Although individual participants could choose which experts they wanted to receive information from, it is plausible that experts might have been positively biased toward sustainability. This is not unthinkable, as those who specialize in it could be prone to think it effective.

To rule out this potential bias, we asked participants how they perceived the views of experts versus peers on sustainable investing after the mini-public in Figure A2 Panel A. Although experts appear slightly more positive than their peers, their views are economically similar, with a 0.24 difference on a 7-point Likert scale, equivalent to about a quarter of a standard deviation. To provide further evidence that it is not only expert views that influence participants, we asked them whether experts, peers, a mix of both, or other stakeholders led them to change their views on sustainable investing most, as shown in Panel B. We find that the majority of participants claim both peer and expert communication jointly contributed to shaping their perception of sustainable investing. Accordingly, we validate that experts in a deliberative mini-public shaped participants' beliefs, but propose that a potential bias imposed by them is likely slight, if any, as they were not the only party influencing participants and did not seem substantially different in their views.

Figure A1: Mini-public Validity

Figure A1 displays participants' answers to the following seven questions: *1) I received a fair number of opportunities to express my opinions, 2) Fellow participants had a fair opportunity to express their opinions, 3) Everyone's opinion was heard, 4) Fellow participants respected my opinions even when they disagreed, 5) The process of the deliberative mini-public was transparent and clear, 6) The influence of the deliberative mini-public on Pensioenfonds Detailhandel's investment policy was clear and transparent, 7) The recommendations reflect diverse opinions.* Participants could answer these questions on a 5-point Likert scale, ranging from strongly disagree to strongly agree.

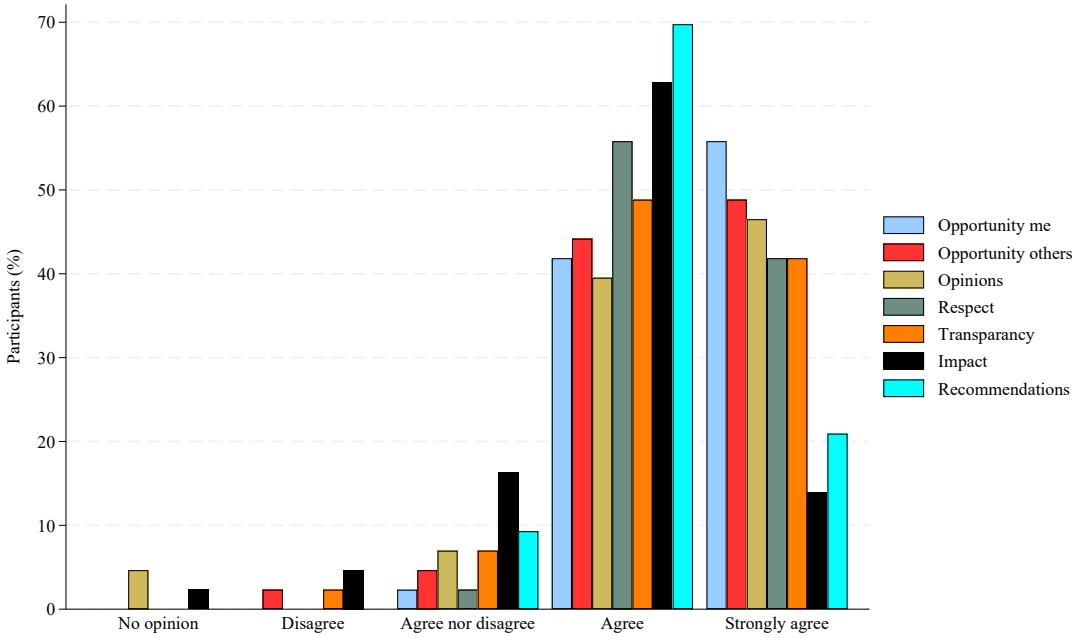
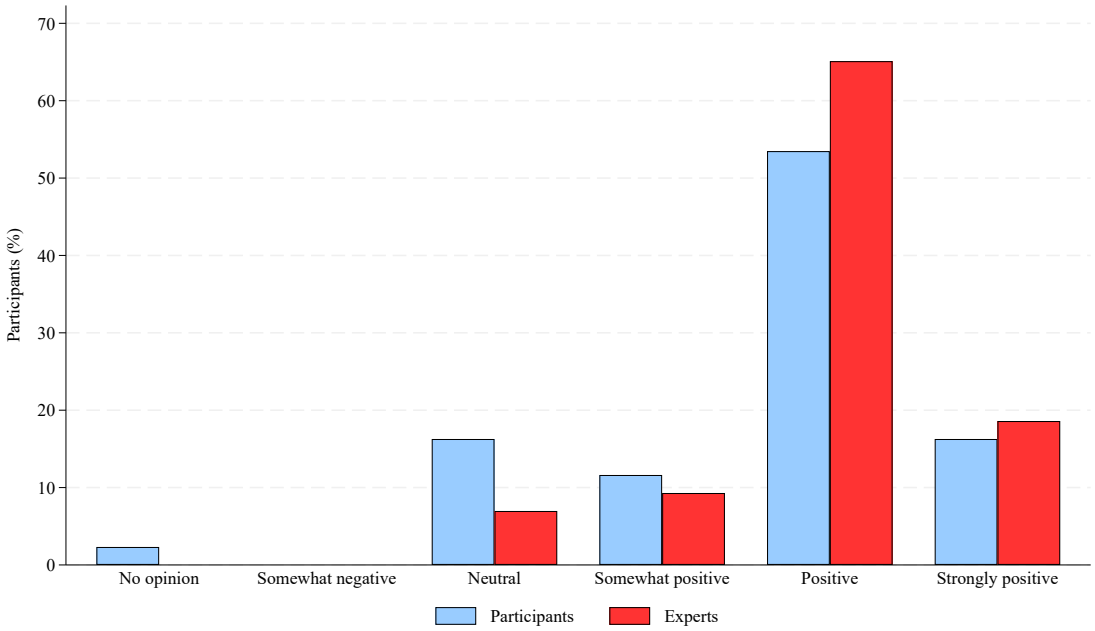


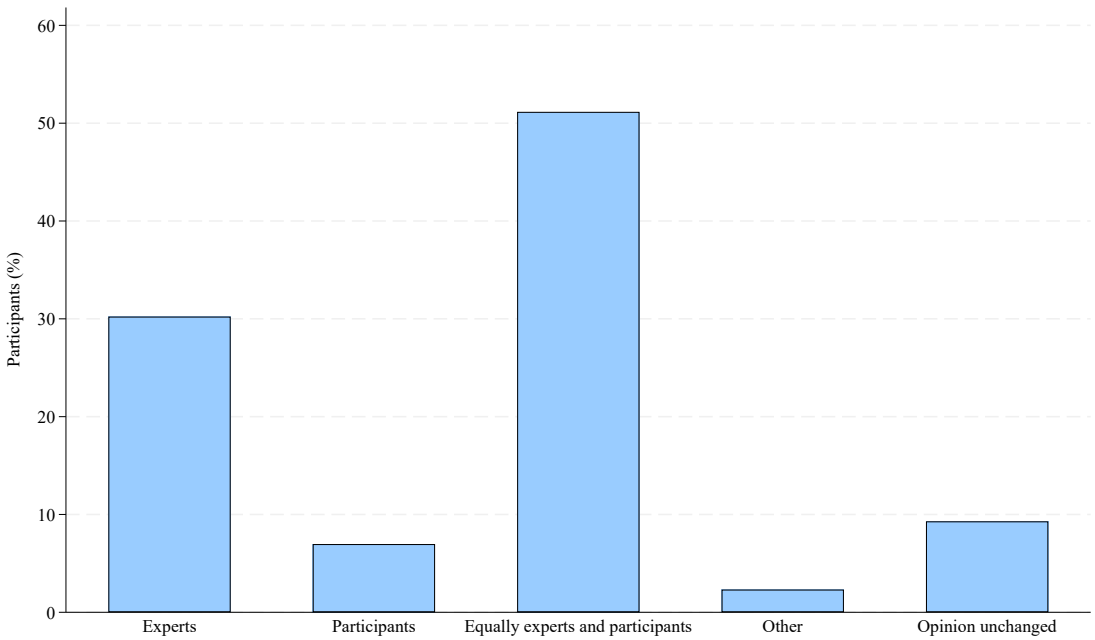
Figure A2: Perception and Learning from Peers and Experts

Figure A2 Panel A displays participants' answers to the questions: *On average, the opinion of Dialogue Participants about sustainable investing was & On average, the opinion of experts about sustainable investing was:* with answers representing a 7-point Likert scale. Panel B reflects the answers of participants on the question: *The dialogues that changed my view on sustainable investing the most were with:* with answers dialogue participants, experts, both dialogue participants and experts, my opinion did not change, I have no opinion, and other.

Panel A: Perception on sustainable investing



Panel B: Impact of experts and participants sustainable investing views



A.3 Persistence of mini-public participants results

How persistent are the choices on impact investing, knowledge, and preferences of mini-public participants? We are interested in whether the knowledge creation, changes in preferences, and ultimate choices on impact investing of participants that took place during the mini-public persist over time one year later. To this end, we asked mini-public participants to participate in Study 2 by offering them a separate €25 incentive to fill out the survey. As mini-public participants created the mini-public treatment information themselves and thus did not need it, we placed all mini-public participants in the control group. Out of the 43 mini-public participants who answered the post-mini-public survey, 30 completed the Study 2 survey.

Mini-public participants in Study 2 vote in line with their choices for impact investing in Study 1, a year earlier. Table A2 Panel A displays a transition matrix of participants' answers to their willingness to impact invest (reduce, keep unchanged, or increase) during the mini-public and during the field experiment. In all cases, participants' answers appeared persistent. Those participants who answered a certain way during the mini-public answered similarly during Study 2, with 22 out of 30 answers being identical in both surveys. Moreover, the most chosen answer in both surveys is to expand impact investing, with a majority of 73.3% and 66.7% in the mini-public and the field experiment, respectively.

Participants display persistence in sustainable investing knowledge and preferences. Table A2 Panel B plot participants' self-assessed sustainable investing knowledge during the mini-public and Study 2. Participants assessed their knowledge on sustainable investing as roughly similar to or slightly more extensive than they did during the deliberative mini-public. Out of the 30 participants, 14 expressed an identical level of knowledge, 14 more knowledge, and 2 less self-assessed knowledge. Moreover, these participants expressed significantly higher levels of self-assessed knowledge than the general Pensioenfonds Detailhandel population, with a mean of 3.5 compared to the population's 2.5 when knowledge is numerically converted using a 1 to 7 Likert scale.

Participants also expressed persistent sustainable investment preferences. Table A2 Panel C shows a transition matrix of sustainable investment preferences. Here, participants who expressed a certain preference during the mini-public expressed the same preference most frequently during the field experiment. The only exception to this is that there are no participants who answered "no opinion" to the sustainable investment preferences question in Study 2. In short, participants in the mini-public voted in line with their prior votes when faced with real choices in a democratic manner, while exhibiting similar knowledge and preferences over a year after experiencing a deliberative mini-public.

Table A2: Consistency of Mini-public participants

Table A2 displays the persistence of participants' answers during the third day of the deliberative mini-public and the field experiment using transition matrices. For Panel A, it concerns the question *What do you think? How much should Pensioenfonds Detailhandel invest in impact investing?* Reading from the top down, you see the responses of mini-public participants during the deliberative mini-public. Reading from left to right, you see these participants' responses during the current survey. The diagonal shows the extent of identical answers in both surveys. Panel B asks *How much knowledge do you have about sustainable investing?*. For Panel C, we could not ask participants an identical question and asked *I would like Pensioenfonds Detailhandel to impact invest ...* in the field experiment, and *I would like Pensioenfonds Detailhandel to sustainably invest ...* during the mini-public. Answer options similarly replace sustainable investing with impact investing. We made these adjustments to the survey as we explain impact investing in more detail, but give less information on sustainable investing in general.

Panel A: More or less impact investing

		Deliberative mini-public (Study 1)				
Field Experiment		Do not know	Reduce	Keep unchanged	Expand	Total
	Do not know	1	0	0	1	2
	Reduce	0	0	1	1	2
	Keep unchanged	1	0	3	2	6
	Expand	1	0	1	18	20
	Total	3	0	5	22	30

Panel B: Sustainable investment knowledge

		Deliberative mini-public (Study 1)				
Field Experiment		None	Very little	Below average	Average	Above average	Total
	None	1	0	0	0	0	1
	Very little	1	1	0	1	0	3
	Below average	1	2	5	1	0	9
	Average	1	2	3	5	2	13
	Above average	0	0	1	1	2	4
	Total	4	5	9	8	4	30

Panel C: Sustainable investment preferences

		Deliberative mini-public (Study 1)				
Field Experiment		No opinion	No sustainable investment	Profit-oriented	Deontological	Consequentialist	Total
	No opinion	0	0	0	0	0	0
	No sustainable investment	0	1	0	0	0	1
	Profit-oriented	3	0	2	0	2	7
	Deontological	1	1	2	3	4	11
	Consequentialist	0	0	1	1	9	11
	Total	4	2	5	4	15	30

A.4 Heterogeneity across sustainable investment approaches

We further investigate the role of return expectations and impact beliefs on participants' willingness to expand sustainable investing by examining their inclination to adopt sustainable investing approaches. The sustainable investment preferences of participants, i.e., their willingness to invest for impact, deontological, or financial motives, should be consistent for a participant across investment approaches. If this were not the case, scenarios could occur where participants would pursue divestment solely for financial motives, rather than to make an impact on environmental or social issues and engage with firms. This would be inconsistent. Accordingly, the differences in their willingness to adopt sustainable investment approaches should originate from different return expectations and impact beliefs. This provides us with a way to study the role of such return expectations and impact beliefs by keeping sustainable investment preferences constant.

We asked participants whether they wanted their pension fund to engage in 1) divestment, 2) portfolio tilting, 3) engagement, and 4) impact investing, and assessed their return expectations and impact beliefs. We only asked participants about these approaches at the end of the mini-public, anticipating they would need context to understand them. We defined impact investing as private-market investments only to ensure there is no overlap in approaches. We remain neutral regarding the accuracy of participants' assessments of the return expectations and impact beliefs associated with these sustainable investment approaches; our focus is on separating their preferences from expectations and beliefs.

Assessing the financial, social, and environmental contributions of these approaches is challenging as they are still debated in academic discourse. First, divestment involves excluding and liquidating holdings in firms within certain industries (such as weapons, tobacco, gambling, or alcohol) or those with low sustainable performance (Hong and Kacperczyk, 2009; Duchin, Gao and Xu, 2025). Divestment is generally viewed as a normative approach, where an investor chooses not to take ownership in a firm that misaligns with their ethical considerations (Liang and Renneboog, 2017). From a financial perspective, shrinking the investable universe will deteriorate financial performance due to the loss of diversification (Hong and Kacperczyk, 2009; Pástor et al., 2022). The mechanism of achieving impact lies in its ability to deprive divested firms of access to capital, increase their capital costs, and reduce their growth rates, thereby diminishing the share of sustainable firms in the economy. Second, portfolio tilting implies investors reallocate portfolios to sustainable firms within an industry (Pástor, Stambaugh and Taylor, 2023). The channel for impact is twofold: 1) to starve "unsustainable" firms of capital and 2) to provide them with an incentive to improve. For this approach, the financial burden to sustainable investors directly relates to their impact, which depends on the ability of investors to affect capital costs (Pástor et al., 2023; Berk and Van Binsbergen, 2025; Feldhütter and Pedersen, 2025; Pedersen, 2025) and consequently managerial decisions (Hartzmark and Shue, 2023; Bams and van der Kroft, 2025). Third, engagement consists of private communication with company management (Dimson, Karakaş and Li, 2015; McCahery, Sautner and Starks,

2016; Slager, Chuah, Gond, Furnari and Homanen, 2023) and submitting environmental and social shareholder proposals (Flammer, 2015). While less is known about private engagement, shareholder proposals generally add financial value (Cuñat, Gine and Guadalupe, 2012; Cuñat, Giné and Guadalupe, 2020) and positively impact environmental issues (Akey and Appel, 2019). Last, impact investing involves directly providing debt financing to private firms for sustainable projects that would not otherwise proceed without more favorable financing conditions (Cole et al., 2023). Such projects typically yield lower returns (Barber et al., 2021; Geczy et al., 2021). However, they are likely to have an impact by financing sustainable projects that would otherwise not take place. We are aware that this list of literature is not exhaustive. We observe a general tendency among participants to seek sustainable investment approaches deemed to have a greater impact by the literature.

We validate the role of financial return expectations and impact beliefs in shaping participants' post-mini-public support for sustainable investing. Holding preferences constant, participants are more likely to expand sustainable investing when they anticipate higher returns and greater impact. Participants voted positively for divestment (39.5%), portfolio tilting (62.8%), engagement (65.1%), and impact investing (79.1%) in Figure A3. This variation in support of sustainable investment approaches aligns with participants' financial return expectations in Panel A of Figure A4. Here, divestment and portfolio tilting are associated with the most negative expected returns, only 10.3% and 17.1% of participants who voiced an opinion expected positive returns. At the same time, engagement and impact investing receive more favorable financial outlooks with 27.0% and 29.7%. A similar pattern emerges for impact beliefs in Panel B of Figure A4. Specifically, participants who expressed an opinion expected impact investing to most frequently attain a positive environmental and social impact (62.2%), followed by engagement (57.5%), tilting (48.8%), and divestment (46.2%). Accordingly, participants differentiate between sustainable investing strategies at least partially based on their perceived financial and impact effectiveness. As these expectations remain roughly unchanged, preferences are likely shifting sustainable investment decisions throughout the mini-public.

Figure A3: Willingness to adopt sustainable investing approaches (Study 1)

Figure A3 displays the willingness of participants to invest their pensions sustainably through divestment (blue), portfolio tilting (red), shareholder engagement (brown), or impact investing (teal). These responces are based on the question *Pensioenfonds Detailhandel should:* with answer options 1) *expand its divestment universe; keep divestment unchanged; reduce its divestment universe, I have no opinion / don't know*, 2) *expand tilting portfolios based on sustainability aspects; keep portfolio tilting unchanged; reduce tilting portfolios based on sustainability aspects; I have no opinion / don't know*, 3) *expand its engagement and voting efforts, keep them the same, reduce them, I have no opinion / don't know*, 4) *expand its impact investments; keep them the same; reduce them; I have no opinion / don't know*. A brief explanation of the investment approach precedes each question and is available in Appendix C. Results originate from Study 1.

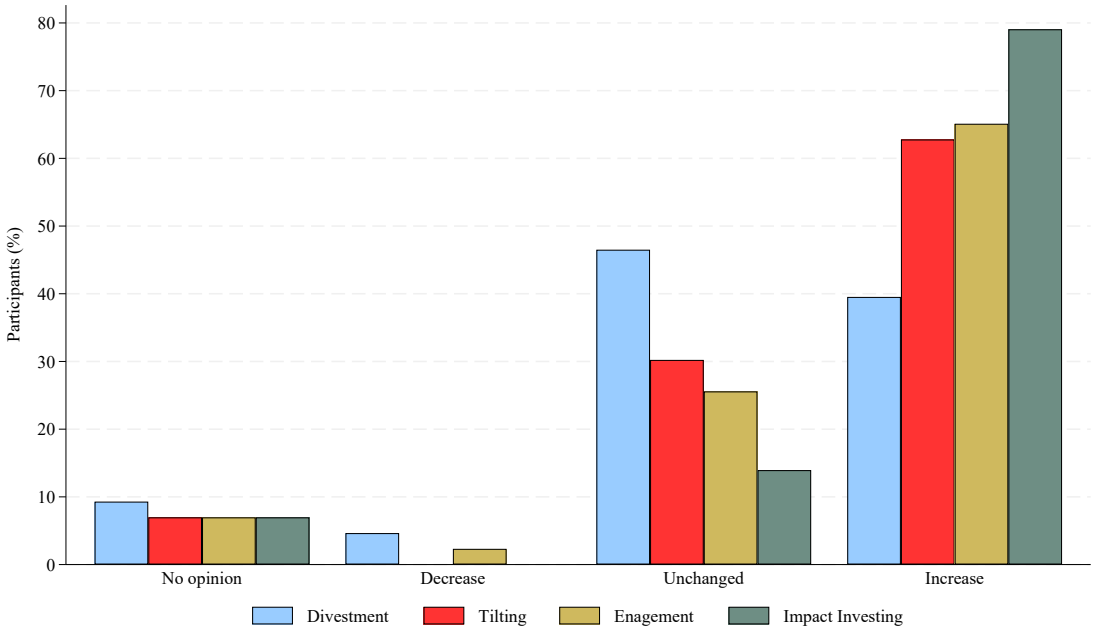
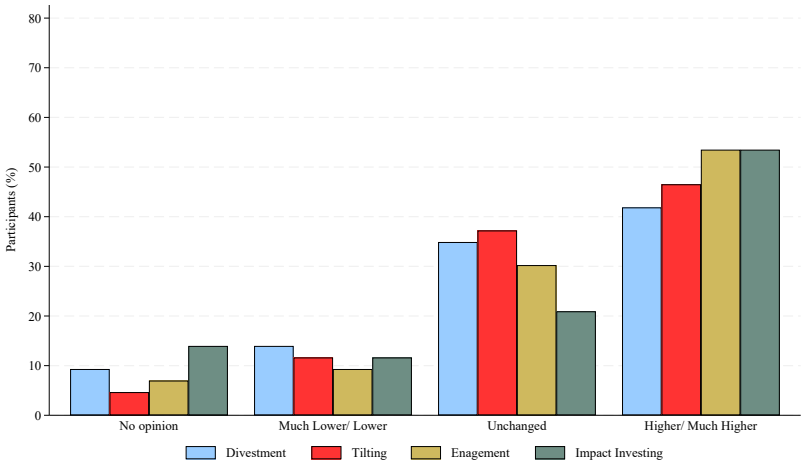


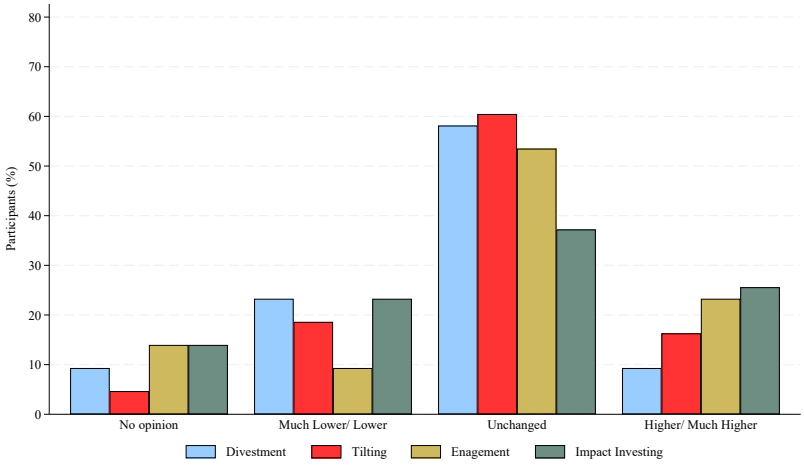
Figure A4: Financial Return Expectations and Impact Beliefs across sustainable investing approaches (Study 1)

Figure A4 Panels A and B display the return expectations and impact beliefs of participants to invest their pensions sustainably through divestment (blue), portfolio tilting (red), shareholder engagement (brown), or impact investing (teal). Panel A reflects the question: *I expect that [Insert approach] will affect my pension payments at retirement in the following manner:* and Panel B the question: *I expect that [Insert approach] will affect the societal impact of my pension investments in the following manner:*, with [Insert approach] being divestment, tilting portfolios to sustainable firms, impact investing, or engagement and voting efforts. Answer options are: *significantly decrease it; decrease it; keep it unchanged; increase it; significantly increase it; and I have no opinion / don't know*. For ease of interpretation, we have combined "significantly decrease it" with "decrease it" and "increase it" with "significantly increase it". Doing so does not obviate the current observed pattern; results are available upon request. A brief explanation of the investment approach precedes each question and is available in Appendix C. Results originate from Study 1.

Panel A: Financial Expectations



Panel B: Impact Beliefs



Appendix B Variable Definitions and Robustness Analyses Study 2

B.1 Variable Definitions

This subsection discusses how we construct each variable used in the analyses of Study 2 using survey questions. We reported the questions exactly as presented in the survey. For the complete field experiment survey, see Appendix F.

Table B1: Variable definitions

This table shows how we convert survey questions into the variables employed in our empirical analyses in Study 2. On the left, you see the variable name and topic by study. On the right, you see the question from which we constructed the variable and the associated answer options.

Variable	Description
Demographics	
Female	This is an indicator variable equal to one if participants answered "Female" rather than "Male", "Other", or "Prefer not say" to the question: I am:
Age	Answer to the question: My age in years is:
Highly educated	This indicator variable is equal to one if participants answered this question: My highest completed level of education is: with "University", "Higher professional education", or "PhD" in the other bucket, and zero otherwise. Missing values (of which there were very few) and manually entered education types with two typos were set to zero.
Education missing	This indicator variable is one if participants did not indicate their education level and zero if they did.
Participation status	
Current contributor	For all contributor questions, we used the question I am currently: with answers: Employed in the retail sector, Employed outside the retail sector, Retired, and other. Current contributor is equal to one when participants answered Employed in the retail sector or indicated this in the other field, and zero otherwise.
Former contributor	For the same question as above, this variable is equal to one if participants indicated to be employed outside the retail sector or indicated other in a way not clearly identifiable as currently contributing or retired.
Retired	Using the same question as above, this variable is one if participants indicated to be "Retired" or indicated so in the other field, and zero otherwise. Since participants could select multiple answers, we assigned priority to retired, current, and former contributors when multiple answers were selected.
Financial background	
Monthly net household income	This question reflects the answer to the question What is your household's net monthly income? Add up the salary and/or pension that you (and possibly your partner) receive each month. with answer options Less than €930, Between €930 and €1,500, Between €1,500 and €2,000, Between €2,000 and €2,500, Between €2,500 and €3,000, Between €3,000 and €4,000, Between €4,000 and €7,000, Between €7,000 and €10,000, €10,000 or more. We converted these ranges to values by taking their midpoint. For less than €930 and more than €10,000, we took respectively 25% less than this value and 25% more, i.e., €697.5 and €12,500. Missing values are replaced by the mean.
High income (above €4,000)	This indicator variable is equal to one when income is in the buckets €4,000 to €7,000, €7,000 to €10,000, and €10,000 and up, and zero otherwise.
Middle income (€2,500 to €4,000)	This indicator variable is equal to one when income is in the buckets €2,500 to €3,000 and €3,000 to €4,000, and zero otherwise. Missing values when participants preferred not to answer are put in this category as this reflects the average.
Low income (€0 to €2,500)	This indicator variable is equal to one when income is in the buckets less than €930, between €1,500 and €2,000, and between €2,000 and €2,500, and zero otherwise.
Missing income	This variable is one when participants preferred not to answer the question What is your household's net monthly income? Add up the salary and/or pension that you (and possibly your partner) receive each month., and zero otherwise.
Financial beliefs: Return expectation	

(Continued)

Variable	Description
Higher	We coded this variable if participants' answers to the question My pension payments at retirement, compared to a scenario without sustainable investing, are: was either "Much higher" or "Higher" and zero otherwise.
Unchanged	We coded this variable if participants' answers to the question My pension payments at retirement, compared to a scenario without sustainable investing, are: was "The same" and zero otherwise.
Lower	We coded this variable if participants' answers to the question My pension payments at retirement, compared to a scenario without sustainable investing, are: was either "Much lower" or "Lower" and zero otherwise.
Missing	We coded this variable if participants' answers to the question My pension payments at retirement, compared to a scenario without sustainable investing, are: was "I have no opinion / Don't know" and zero otherwise.
Preferences	
Social preferences (1–10)	We directly adopt the question from Falk et al. (2018) and ask participants How willing are you to give to a charity without expecting anything in return? on a 0 (Not at all willing) to 10 (Very willing) scale. Participants who answered "Prefer not to say" were assigned the mean.
Social preferences missing	This variable is one when participants answered "Prefer not to say" at the question How willing are you to give to a charity without expecting anything in return? as given above.
Control questions	
Definition impact investing	This variable is equal to one when participants answered Which of the following best describes impact investing? with Investing in companies that aim to make a positive impact on social issues and the environment/climate/nature, while also seeking financial returns. and zero if they answered Investing with an impact on your pension benefits at retirement. It ensures you have more money for your old age., Investing to help people in developing countries by providing financial resources, without aiming for financial returns., or I don't know.
Treatment nature	Only for those who received an information treatment, we asked the following question. On the previous page, we described how participants from Pensioenfonds Detailhandel felt about impact investing. Participants expressed this opinion: with answer options: in a questionnaire of approximately 15 minutes about impact investing; in a questionnaire of approximately 60 minutes about impact investing; after receiving detailed information from experts for 3 days and participating in a deliberative mini-public; after a one-day training on investing, risk, and return; I don't know. Correct answers are coded as one, and zero otherwise. For the mini-public treatment, the correct answer is after receiving detailed information from experts for 3 days and participating in a deliberative mini-public, for the Peers treatment, the correct answer is in a questionnaire of approximately 15 minutes about impact investing.
Treatment amount	Only for those who received an information treatment, we asked the following question. What proportion of participants wanted your pension fund to invest more in impact investing? with answer options: 0%–29%, 30%–59%, 60%–89%, 90%–100%, I don't know. The correct answer 60%–89% with 85% displayed in the information treatment for both treatment groups, is coded as one. The other answers are coded as zero.
Political representativeness	
Prefer not to answer	We asked participants During the 2023 general election, I voted for. This indicator variable is equal to one when participants answered "Prefer not to say" or clearly indicated that they preferred not to say in the "other, namely" category, and zero otherwise.
Did not vote in 2023	This indicator variable is equal to one when participants answered "I filed a protest vote" or "I did not vote/could not vote" on the question During the 2023 general election, I voted for. This variable is only computed for the sub-sample of participants who did not choose "prefer not to say".
Right-wing	This indicator variable is only computed for the sub-sample of participants who answered and voted. For those, we assigned a vote to PVV, VVD, NSC, BBB, CDA, FVD, SGP, JA21, and CU as right-wing (indicator variable equal to one) and zero otherwise.
Left-wing	This indicator variable is only computed for the sub-sample of participants who answered and voted. For those, we assigned a vote to GroenLinks/PvdA, D66, SP, Partij voor de Dieren, Volt, and Denk as left-wing (indicator variable equal to one) and zero otherwise.
Individual parties	This entry represents the individual voting indicator variables in Table 2. Each indicator variable is equal to one if participants indicated that party as their answer to During the 2023 general election, I voted for.
Extensive margin Impact Investing	
Expand impact investing	This variable reflects a reweighted indicator variable equal to one if participants answered the question: What do you think? How much should Pensioenfonds Detailhandel invest in impact investing? with "Expand (**2% to 5%**)". We reweigh this question as described in Appendix B3.
Expand impact investing (unadjusted)	This variable reflects a reweighted indicator variable equal to one if participants answered the question: What do you think? How much should Pensioenfonds Detailhandel invest in impact investing? with "Expand (**2% to 5%**)". We do not apply a weighing here.
Treatment indicator variables	

(Continued)

Variable	Description
Mini-public Treatment	This indicator variable equals 1 if participants received mini-public treatment information, as described in Section 4. It is zero if participants received control information or Peer information.
Peer Treatment	This indicator variable equals 1 if participants received Peer treatment information, as described in Section 4. It is zero if participants received control information or mini-public information.
Interaction analysis	
Trust	This question reports the 1 (No trust) to 10 (Full trust) answer to the question To what extent do you trust Pensioenfonds Detailhandel in general?.
Impact	This variable is constructed using the question: The positive contribution of impact investing to the environment, climate, nature, and social well-being, compared to regular investing, is:. We convert the Likert-scale answers from "Much lower" to "Much higher" to the numbers 1 to 5. Participants who answered "I have no opinion / Don't know" are removed.
Returns	This variable is constructed using the question: My pension payments at retirement, compared to a scenario without sustainable investing, are:. We convert the Likert-scale answers from "Much lower" to "Much higher" to the numbers 1 to 5. Participants who answered "I have no opinion / Don't know" are removed.

B.2 Partial survey completion

Not all participants finished the survey. Ideally, we would want there to be no difference in the tendency of participants to vote for expanding impact investing between those who finished the study and those who started it. To this end, we provide a step-by-step overview of when participant dropout occurred, along with the share of participants who voted for expanding impact investing at each of these steps, in Table B2. We cannot report this ratio for every step of the analysis as we ask about how much participants want their pension fund to expand impact investing later in the survey.

Throughout the survey, we faced attrition with 44.2% of initial participants completing the survey. However, we observe little to no selection among participants who drop out, given the near-identical shares of participants who vote for expanding impact investing. The largest attrition occurs at the informed consent page (21.3 percentage points) followed by when we show participants the definition of impact investing (16.4 percentage points), and the first commitment question (12.3 percentage points). The stable nature of votes for expansion and limited drop-out after the main question suggests that selection in participants' willingness to invest with impact is unlikely to explain our results.

Table B2: Survey drop-out

This table analyzes the survey drop-out rates and consequences of this for the main dependent variable of the paper, the extent to which participants vote for expanding impact investing. Column (1) displays the stage of the survey; see also the survey overview in 6. Column (2) shows the number of participants, Column (3) displays the share of the original remaining, and Columns (4) and (5) the percentage of votes in favor of expanding impact investing adjusted and unadjusted. We report the adjusted votes only at a later stage in the survey, as we need demographic information to compute them, which we ask after the commitment question.

	(1)	(2)	(3)	(4)
	Number of participants participants	Share remaining	Unadjusted votes for expansion	Reweighted votes for expansion
Opened the survey	31,006			
Accepted informed consent	24,409	78.72		
Answered pre-treatment knowledge questions	19,333	62.35		
Answered the first commitment question	15,525	50.07	32.44%	
Answered the second and third commitment	14,539	46.89	33.16%	
Answered demographic questions	14,251	45.96	33.24%	40.15%
Answered political views	14,227	45.88	33.53%	40.42%
Answered trust questions	14,027	45.24	33.68%	40.56%
Finished Survey	13,975	45.07	33.73%	40.62%
Cleaning steps	13,691	44.16	33.67%	41.51%

B.3 Balancing test

To ensure treatment assignment is random, we display balancing tests below in Table B3. Columns (1) to (3) present the variable means of the control group, the mini-public treatment group, and the peer treatment group, respectively. Columns (4) and (5) display the p-values of two-sided t-tests that analyze whether the control means are different from the mini-public means, and whether the mini-public means differ from peer means, respectively. Throughout the board, treatment allocation appears random, with economically similar observable means. Statistically, we find two instances where there are significant differences in means: missing expected return information between mini-public (42.5%) and peer (40.0%) treatment groups, and participant age between control (62.9 years) and mini-public (62.2 years) groups. These differences are economically small and could be partially attributed to multiple hypothesis testing, given the 34 tests. Given the above, we find no strong indication that there are imbalances in demographics across control and treatment groups.

Table B3: Balancing test

This table provides a balancing test to demonstrate that randomization is well-executed. Columns (1) to (3) show for the control group, the mini-public treatment, and the peer treatment the mean return expectations, age, share of females, share of highly educated participants, income distribution, Falk et al. (2018) social preferences, and pension fund contribution status. Columns (4) and (5) display t-test p-values testing whether control versus mini-public and mini-public versus peer effects differ.

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Control	mini-public	Peer	p-value *Control - Mini-public*	p-value *Mini-public - Peer*
Expected return higher	0.086	0.086	0.085	(0.90)	(0.97)
Expected return unchanged	0.625	0.613	0.611	(0.26)	(0.81)
Expected return lower	0.289	0.301	0.304	(0.20)	(0.78)
Expected return missing	0.425	0.425	0.400	(0.95)	(0.03)
Age	62.929	62.209	62.528	(0.02)	(0.37)
Female	0.449	0.442	0.440	(0.50)	(0.85)
Highly educated	0.306	0.301	0.322	(0.61)	(0.05)
Education missing	0.003	0.003	0.002	(0.94)	(0.47)
Income high	0.242	0.245	0.254	(0.71)	(0.40)
Income median	0.481	0.481	0.479	(0.99)	(0.91)
Income low	0.277	0.274	0.267	(0.73)	(0.49)
Income missing	0.149	0.156	0.151	(0.38)	(0.58)
Retired	0.527	0.506	0.518	(0.05)	(0.31)
Former contributor	0.120	0.124	0.118	(0.56)	(0.38)
Current contributor	0.353	0.370	0.364	(0.10)	(0.65)
Observations	6,225	3,710	3,756	9,935	7,466

B.4 Attention checks

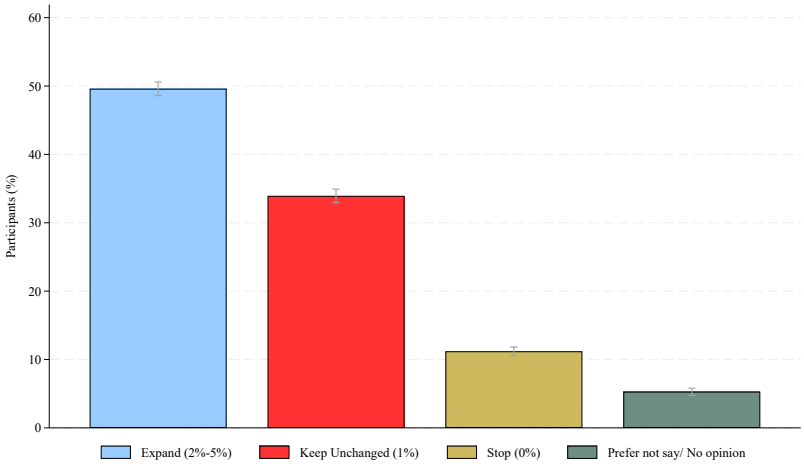
Not all participants might be equally informed about impact investing or pay equal attention to the survey. We have two sets of attention checks to test for this. First, we ask participants to distinguish the definition of impact investing from conventional investing and donations at the end of the survey. Second, we ask participants to enter the share of peers who preferred to expand impact investing (85%) and the source of the information (15-minute survey, or 3-day mini-public).

Answers to whether participants want to increase impact investing differ for this sample compared to those who failed the attention questions, see Figure B1. Specifically, the average share of participants who wanted to expand impact investing is 49.6% if they understood the definition, and 24.7% otherwise. 67.5% answered this question correctly, see Panel A. Of those participants who correctly answered both treatment attention check questions, the average was 56.0% compared to 23.2% (Panel B). For those with both questions correct, the share was 58.7%, compared to 18.9%.

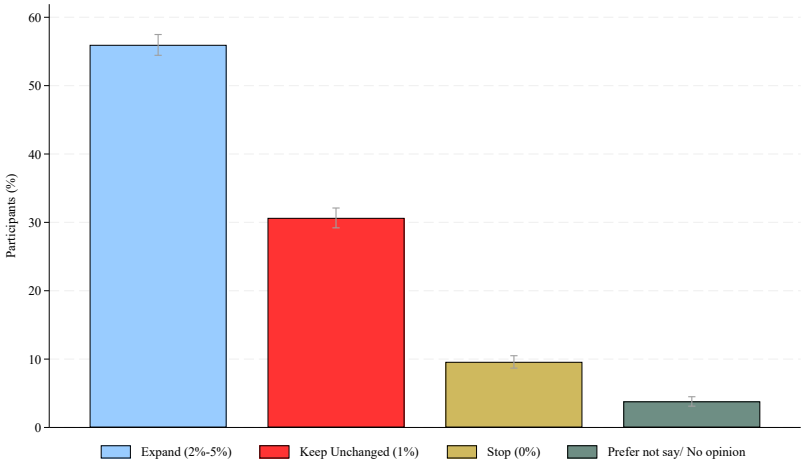
Figure B1: Unadjusted extensive margin impact investing votes

Figure B1 displays the share of participants who voted to expand (2%-5%), keep unchanged(1%), or stop (0%) impact investing. It displays the answer to the question: *What do you think? How much should Pensioenfonds Detailhandel invest in impact investing?* Panel A captures answers of participants who understood the definition of impact investing at the end of the survey. Panel B includes those in the treatment groups who answered the two attention check questions correctly. Panel C shows the intersection of both. Error bars display a 95% confidence interval.

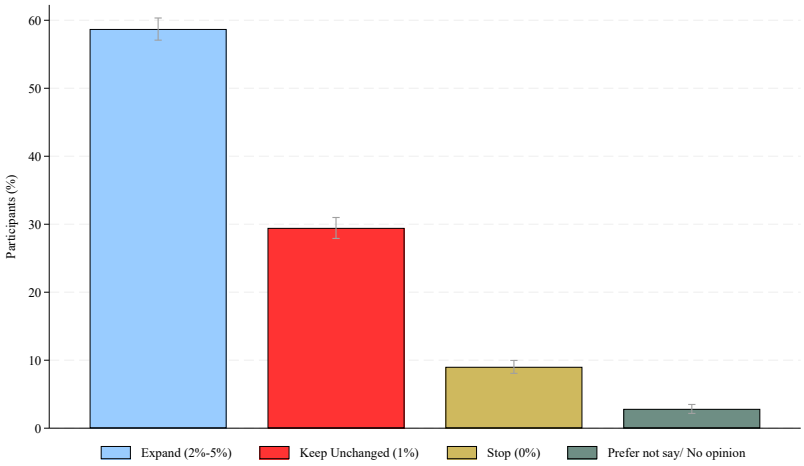
Panel A: Definition correct



Panel B: Treatment attention checks correct



Panel C: Definition and attention checks correct



B.5 Reweighing voting outcomes

Pensioenfonds Detailhandel sent our survey to all available email addresses. However, the pension fund does not have information on all its participants, with a particular over-representation of recently retired and active participants. We propose that this bias may arise because participants forget to update their email address when they adopt a new one. New active or retired members have recently entered their email addresses, resulting in lower attrition rates. Regardless of the reason for this selection, we anticipated that it could be a potential driver of voting behavior on impact investing, and therefore, wrote a formal agreement with the pension fund to reweight responses to the commitment questions for participation status, age, gender, and income. We chose to reweight these demographics as the pension fund did not have access to more detailed information for every participant. This agreement was approved by the board it before the survey was executed, and the reweighing is pre-registered at `https://www.socialscienceregistry.org/trials/15994`.

More formally, we reweight in the following three steps. First, we perform a regression analysis of participants' contribution status in the pension fund (actively contributing and former contributors indicator variables, with retirees as the reference category), age, gender (female indicator variable), and income on an indicator variable for whether participants voted to expand impact investing. This illustrates how specific demographics influence voting behavior. On average, female participants are 3.4 percentage points less likely to vote for expanding impact investing, participants who are one year older 0.5 percentage points less likely to vote for expanding, households who earn €1,000 more a month 1.3 percentage points less likely to vote for expansion, and current contributors 4.7 percentage points less likely to vote for expanding impact investing than retirees and former contributors.

Second, we compute the distance between the average pension fund participant in our survey and the average participant in Pensioenfonds Detailhandel. This allows us to determine the extent to which the results might not be fully representative. Participants were on average less frequently female (14.1 percentage points), 17.1 years older, €265 a month poorer, 7.6 percentage points more likely a current contributor, and 38.8 percentage points more likely retired. From these demographics, it appears that retired male and currently contributing participants are indeed overrepresented.

Last, we correct for the differences in how participants vote based on their demographic information. Precisely, we adjust the final voting outcomes by multiplying the regression coefficient estimates for each demographic information by the differences in individual participants and population means.

In the upcoming paragraphs, we will replicate some of the analyses used to validate hypotheses 1 and 2 using unadjusted voting outcomes. First, in Figure B2 Panel A, we display the unadjusted voting results on the extensive margin of impact investing. We find that the most chosen category is keeping impact investing unchanged (36.7%), followed by expanding impact investing (33.7%), no opinion/I do not know (16.4%), and stopping with impact investing (13.2%). Given the demographics described below, it appears that the over-representation of retired men leads to votes less supportive of impact investing.

Results are more closely aligned with the adjusted votes when we correct for knowledge.

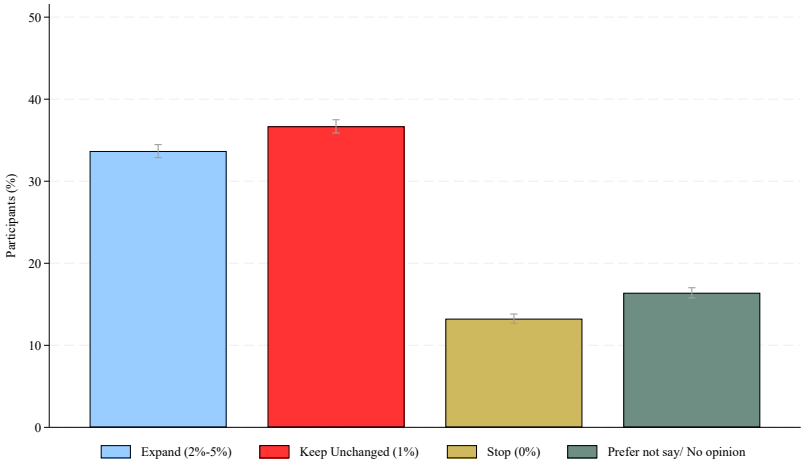
From Study 1, we found that knowledge plays a critical role in shaping sustainable investing preferences. During the field experiment of Study 2, we asked participants to define impact investing and to self-assess their knowledge about the topic. Knowledge on sustainable investing is not a given, as only 67.5% of participants knew the definition of impact investing at the end of the survey, and only 28.1% of participants expressed at least average knowledge on sustainable investing, with 5.9% above average knowledge. When we exclude participants who were unfamiliar with the definition of impact investing and therefore did not comprehend what they were voting on in Panel B, we observe that expanding impact investing is the most frequently chosen option, as in the pre-registered specifications displayed in the main manuscript. Furthermore, when we exclude participants who did not possess at least average knowledge on the topic, we observe an identical pattern in votes compared to the main manuscript, with an even more pronounced preference for expanding impact investing.

Alongside voting for more impact investing, we find that treatment effects have a similar impact on unadjusted votes as on reweighted votes, validating the robustness of Hypothesis 2. We replicate the results in Table 4 using unadjusted votes. Throughout the specifications, we consistently find significant effects for mini-public and peer information treatments on their decision to vote for expanding impact investing. The mini-public treatment coefficients range between 8.4 to 7.5 percentage points more, and the peer treatment coefficients between 9.2 to 7.5 percentage points. These coefficients are economically indistinguishable to those in the primary analysis, which range from 8.4 to 7.5 and 9.0 to 7.5 percentage points. Therefore, we provide evidence supporting the second hypothesis, using voting outcomes that are not reweighted based on demographics.

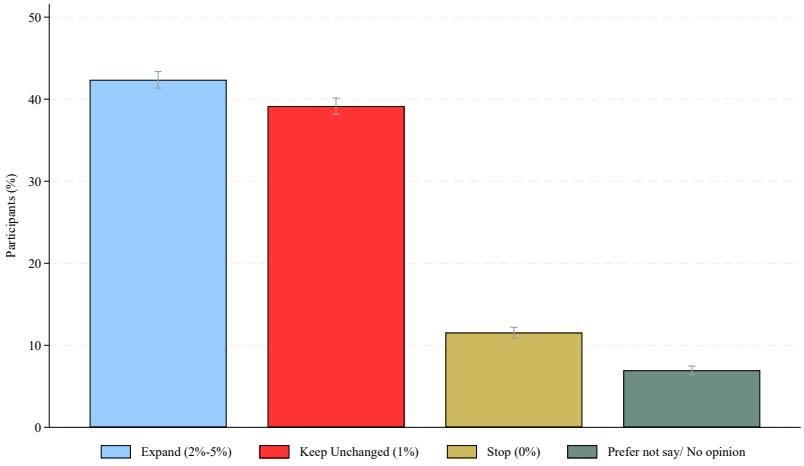
Figure B2: Unadjusted extensive margin impact investing votes

Figure B2 displays the share of participants who voted to expand (2%-5%), keep unchanged(1%), or stop (0%) impact investing. It displays the answer to the question: *What do you think? How much should Pensioenfonds Detailhandel invest in impact investing?* Answers are not reweighted in Panel A. We take a subset of observations of participants who understood the definition of impact investing in Panel B, and those who self-assessed having at least average knowledge on impact investing in Panel C. Error bars display a 95% confidence interval.

Panel A: Unadjusted more or less impact investing votes



Panel B: Unadjusted votes knowing the definition of impact investing



Panel C: Unadjusted votes at least average sustainable investing knowledge

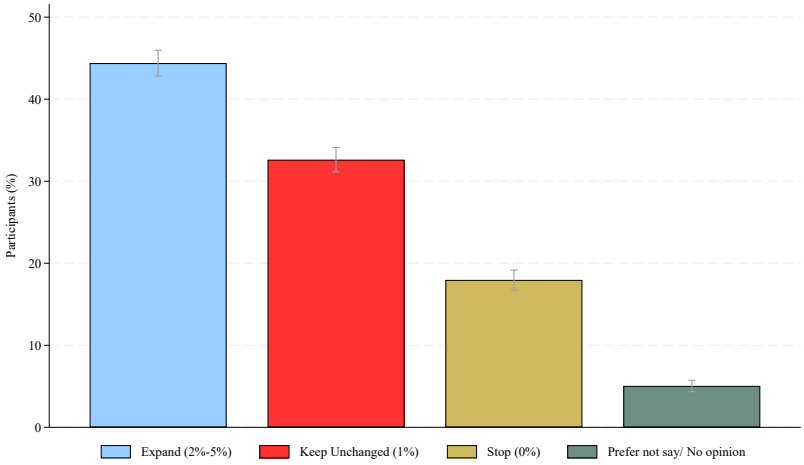


Table B4: Unadjusted Votes for Expanding Impact Investing: Mini-public and Peer Treatments

Table B4 replicates Panel A of 5 using an unadjusted vote for expansion indicator variable. It regresses two indicator variables, indicating whether participants were treated with mini-public and peer information, on whether they voted to expand impact investing, with the control group serving as the reference category. In Column (1), this regression is performed without controls. In Columns (2) to (5), we respectively add 2) indicator variables for financial return expectations, 3) demographic controls for age, a female indicator variable, and a higher vocational or university education indicator variable, 4) household income indicator variables, and 5) Falk et al. (2018) social preferences. Robust standard errors in parentheses. ***, **, and * denotes significance at the 1%, 5%, and 10% level.

	(1)	(2)	(3)	(4)	(5)
VARIABLES	**Unadjusted vote for expanding impact investing (%)**				
Mini-public Treatment	8.254***	8.429***	8.314***	8.411***	7.493***
	(0.980)	(0.960)	(0.947)	(0.941)	(0.866)
Peer Treatment	9.183***	8.930***	8.622***	8.694***	7.483***
	(0.979)	(0.962)	(0.948)	(0.944)	(0.879)
Observations	13,691	13,691	13,691	13,691	13,691
Adjusted R-squared	0.008	0.046	0.074	0.084	0.216
Financial Expectations	No	Yes	Yes	Yes	Yes
Demographics	No	No	Yes	Yes	Yes
Financial Background	No	No	No	Yes	Yes
Social Preferences	No	No	No	No	Yes

B.6 Reference Categories

To validate the second hypothesis, we use a reweighted indicator variable for expanding impact investing. This indicator variable takes all other votes as the reference category. However, it is conceivable that the economic impact could be different across reference category choices. To illustrate, providing mini-public information might equally well shift a participant from voting for stopping impact investing to keeping impact investing unchanged, as from keeping it unchanged to expanding. However, only one of these changes the expansion indicator variable. We iteratively change reference categories in Table B5 to test whether they have a sizable impact on the economic impact of the result.

Results are economically and statistically similar, independent of the reference category. When taking a sub-sample of votes that answered with keeping impact investing unchanged or stopping it (i.e., did not vote: I do not know/have no preference) in Column (2), the treatment effects are slightly more pronounced at 9.5 percentage points for the mini-public treatment compared to the 7.5 percentage points baseline. A baseline considering just "keep unchanged" is similarly slightly more pronounced at 9.9 percentage points in Column (3). A baseline of "stop" impact investing only results in a coefficient of 7.3 percentage points, similar to the baseline specifications.

In Table B5 Column (5), we deployed an ordered logit model as further robustness. Ordered logit models are logit models that consider a step-wise nature in the dependent variable. In our example, it jointly captures jumps from stop, to keep unchanged, keep unchanged to expand, and stop to expand impact investing. We remove observations with "I do not know/no opinion" answers as ordering them is hard. Specifically, we assign expand impact investing a value of 3, keep impact investing unchanged a value of 2, and stop impact investing a value of 1 as the dependent variable. Using this specification, we find that both treatments have a positive impact on votes for impact investing. On average, participants treated with mini-public information vote 0.4 steps more on this 3-point scale. These results validate hypothesis 2 using different reference categories and specifications.

Table B5: Reference category robustness to treatment information on impact investing decisions

Table B5 provides robustness analyses on the impact of mini-public and peer treatments on participants' choice to vote for expanding impact investing. Column (1) repeats the baseline results of Table 4 with the most conservative controls as reference. In Columns (2) to (4), we replicate the same analysis but adjust the reference category of the vote for expansion indicator variables to test whether participants voting I do not know could drive the effect. In Columns (5) to (8), we replicate the main analysis and these reference category analyses using unadjusted votes for expansion. Column (9) adopts an ordered logit model with values of 1 for stopping, 2 for keeping unchanged, and 3 for expanding as the dependent variable. For this model, we report the Pseudo R^2. Robust standard errors in parentheses. ***, **, and * denotes significance at the 1%, 5%, and 10% level.

Dependent	Main Specification				Ordered Logit
Reference category	All	Stop + Unchanged	Unchanged	Stop	
VARIABLES	(1)	(2)	(3)	(4)	(5)
mini-public Treatment	7.525***	9.453***	9.885***	7.344***	0.408***
	(0.866)	(0.992)	(1.123)	(1.080)	(0.046)
Peer Treatment	7.499***	8.940***	8.907***	8.776***	0.421***
	(0.879)	(0.993)	(1.117)	(1.085)	(0.045)
Observations	13,691	11,446	9,633	6,423	11,446
Adjusted R-squared	0.202	0.206	0.166	0.371	0.139
Financial Expectations	Yes	Yes	Yes	Yes	Yes
Demographics	Yes	Yes	Yes	Yes	Yes
Financial Background	Yes	Yes	Yes	Yes	Yes
Social Preferences	Yes	Yes	Yes	Yes	Yes

B.7 Return expectations and Impact Beliefs Updating Through Treatments

Providing participants with treatments on the extent to which mini-public participants want to increase impact investing, their impact beliefs, and return expectations might result in heterogeneous effects given participants' priors. When a participant of the general population survey expected impact investing to have negative financial or environmental/social implications, they would be positively surprised by the provided information. Conversely, those with higher expectations may be negatively surprised. To this end, we examine the role of respondents' impact and financial return expectations in the context of providing mini-public information on impact investing. Despite this proposed channel, we find a limited response of Bayesian updating of priors. Specifically, we see no economically significant interaction effect between either impact or financial expectations and either treatment in Table B6, with respective p-values of 0.195, and 0.197. In short, deliberative mini-publics appear more effective in shifting the voting behavior of trusting respondents in a broader population, regardless of their initial expectations on the topic or the way it is communicated to them.

Table B6: Updating of Priors and Mini-public and Peer Treatments (Study 2)

Table B6 regresses two indicator variables equal to 1 for participants who were treated with mini-public and peer information on whether they voted to expand impact investing, with the control group as the reference category. We introduce interaction effects of the treatments with impact beliefs and return expectations in Columns (1) and (2). In Column (1), we test for the role of impact beliefs, participants' answer to the question *The positive contribution of impact investing to the environment, climate, nature, and social well-being, compared to regular investing, is: much lower, lower, unchanged, higher, much higher.* In Column (2), we test for the role of trust, participants' answer to the question *My pension payments at retirement, compared to a scenario without sustainable investing, are: much lower, lower, unchanged, higher, much higher.* We use keeping impact investing unchanged, stopping, and no opinion as a reference category. Robust standard errors in parentheses. ***, **, and * denotes significance at the 1%, 5%, and 10% level. Results originate from Study 2.

	(1)	(2)
VARIABLES	**Vote for expanding impact investing (%)**	
Mini-public Treatment	2.563	4.044
	(3.177)	(3.619)
Peer Treatment	6.960**	5.935
	(3.281)	(3.686)
Mini-public X Impact	1.738*	
	(0.890)	
Peer X Impact	0.427	
	(0.909)	
Impact Beliefs	9.815***	
	(0.584)	
Mini-public X Returns		1.321
		(1.391)
Peer X Returns		0.189
		(1.399)
Return Expectations		8.633***
		(0.861)
Observations	10,201	7,966
Adjusted R-squared	0.238	0.202
Financial Expectations	Yes	No
Demographics	Yes	Yes
Financial Background	Yes	Yes
Social Preferences	Yes	Yes
Mini-public VS Peer Treatment t-test: *(p-value)*	0.251	0.566

Appendix C Commitments on Topic and Location of Impact Investing

Exploratively, we also asked participants about the topics and location of impact investing, with a similarly binding commitment by the board as for the extent of impact investing. A significant portion of finance research focuses on environmental issues, placing relatively less emphasis on the social dimension (Bolton and Kacperczyk, 2023; Hsu, Li and Tsou, 2023). To assess whether investors display a similar predicament, we offered participants the choice to invest in environmental issues, social issues, or a mix of the two.

Regarding the location of impact investing, developing countries might arguably offer more cost-effective impact investing solutions, assuming decreasing marginal returns and a lower baseline of environmental and social performance. From a moral universalism perspective, participants might perceive this choice as preferable (Enke, Rodríguez-Padilla and Zimmermann, 2023). However, participants might be inclined to vote for impact investing in the Netherlands if they expect benefits to be partially local, especially given the rise of populism in Europe, and the Netherlands in particular. Since multiple forces are affecting these topic and location choices, we did not pre-register hypotheses on these questions. Specifically, we asked them:

C.1 Commitment Question: Location and Topic of Impact Investing

In addition to how much you want Pensioenfonds Detailhandel to impact invest, we would also like to know how it should implement its impact investing policy. Below are two questions related to impact investing. Even if you previously indicated that you do not want Pensioenfonds Detailhandel to engage in impact investing, we kindly ask you to answer these questions. We would still like to know your preference in case participants decide that Pensioenfonds Detailhandel should pursue impact investing.

Close to home or further away

Pensioenfonds Detailhandel can invest for impact in several regions: in low- and middle-income countries, in developed regions (EU, North America, Oceania), within the Netherlands, or in a mix of these three options. In developing countries, the social or environmental, climate, and nature-related impact of investing is likely greater, since businesses in places like Kenya, India, or Chile have more difficulty accessing funding. However, the benefits of this impact occur far away. Within developed countries — and especially within the Netherlands — the impact is likely smaller, but the benefits are closer to home.

Your choice counts! Good to know: this is another question for which the board of Pensioenfonds Detailhandel has committed to carrying out the most selected response. This means your choice can influence how your pension is invested.

Where would you like Pensioenfonds Detailhandel to direct its impact investments?

- Mostly in the Netherlands
- Mostly in developed regions (outside the Netherlands)
- Mostly in low- and middle-income countries
- A mix of the Netherlands, developed regions, and low- and middle-income countries
- I don't know / No opinion

<<< Next Page >>>

Environment, Climate, and Nature or Social Topics

Pensioenfonds Detailhandel can focus its impact investing on different themes, for example, more on the environment, climate, and nature, or more on social topics such as investing in improved hygiene, access to and quality of healthcare, affordable housing, and companies committed to safe working conditions.

Your choice counts! Good to know: this is another question for which the board of Pensioenfonds Detailhandel has pledged to carry out the most selected response. This means your choice can influence how your pension is invested.

On which theme would you like Pensioenfonds Detailhandel to focus its impact investments?

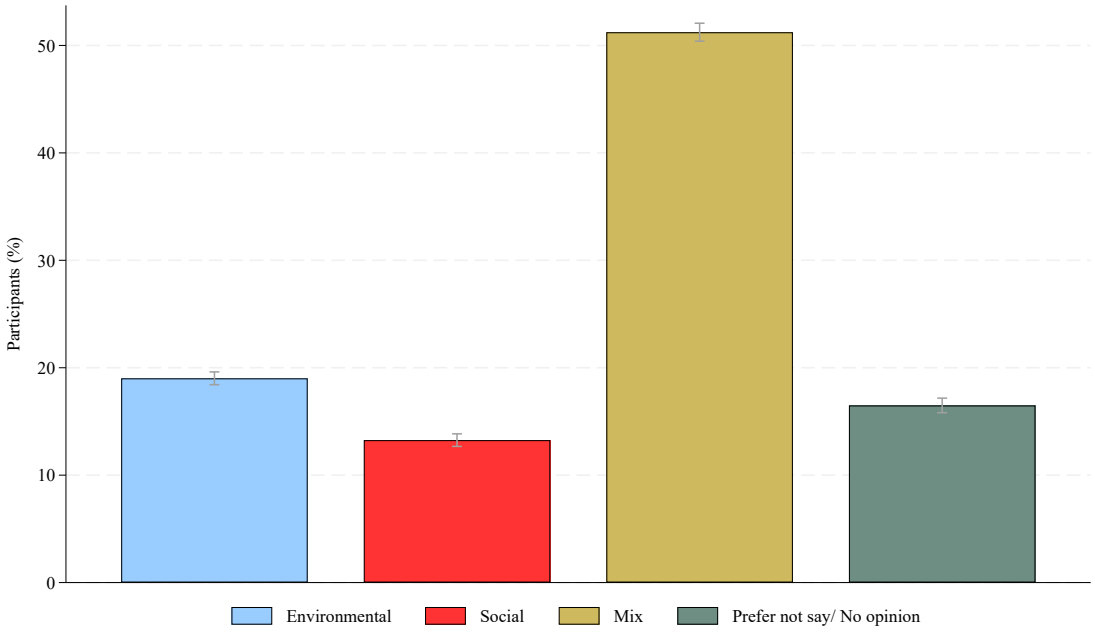
- Mostly on the environment, climate, and nature
- Mostly on social topics
- A mix of environment, climate, nature, and social topics
- I don't know / No opinion

Participants preferred a mix of impact investing across topics and geographic areas. Figure C1 Panels A and B reflect participants' answers to the questions In which theme would you like Pensioenfonds Detailhandel to focus its impact investments? and Where would you like Pensioenfonds Detailhandel to direct its impact investments? For topics, a majority of 51.2% of participants chose a mix of environmental and social topics, with 19.0% preferring just environmental issues and 13.3% preferring just social issues. The remaining 16.5% indicated that they did not know or preferred not to answer. For location, 41.1% chose a mix of the Netherlands, other developed countries, and developing countries, the most chosen answer. Alongside a mix, the second most chosen option was impact investing in the Netherlands with 32.9%. Only 5.2% and 3.3% of participants chose solely in developing or other developed countries, with 17.5% of participants indicating that they did not know or preferred not to answer. Participants thus expressed a preference to engage in impact investing across a broad range of topics and geographies when faced with real consequences for their pension by voting in a democratic fashion.

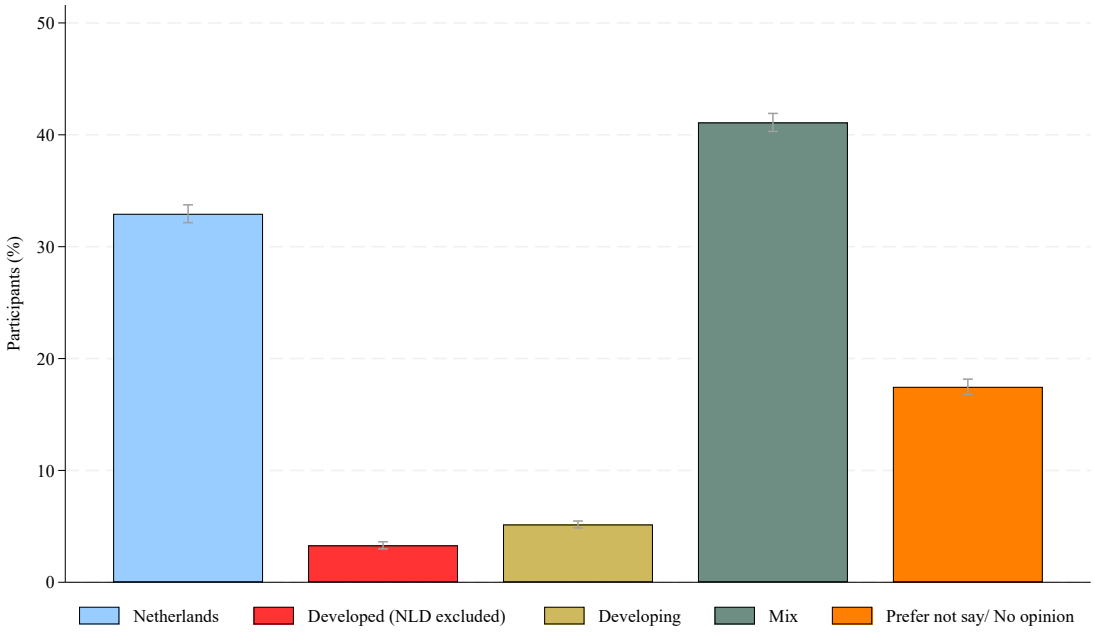
Figure C1: Topic and Location of Impact Investing

Figure C1 displays participants' answers to the question: *On which theme would you like Pensioenfonds Detailhandel to focus its impact investments?* in Panel A and *Where would you like Pensioenfonds Detailhandel to direct its impact investments?* in Panel B. Results are from Study 2. Error bars display 95% confidence intervals.

Panel A: Topic of Impact Investing



Panel B: Location of Impact Investing



Appendix D Survey design - Study 1: Pre-survey

For every survey and every survey question without a Likert scale, we have randomized the order of answer options or flipped them if they are ordinal. "I do not know/have no opinion" is always given last. The order of demographic and background knowledge questions is randomized within the page. Notes to the reader of this article not displayed in the survey are indicated in mid blue. Light orange indicates that some form of randomization or treatment and control takes place. Headers starting with Page X are not displayed to participants.

D.1 Page 1

Thank you for participating in the Deliberative mini-public on **Sustainable Investing** at Pensioenfonds Detailhandel! Over the next three days of the mini-public, you will engage with experts and with one another to discuss sustainable investing. You will have the opportunity to **share your views on the investment practices of Pensioenfonds Detailhandel**.

We are very interested in your opinion! In 2018, Pensioenfonds Detailhandel conducted a survey on sustainable investing. The results of that survey influenced the fund's investment policy. This deliberative mini-public will once again help shape the fund's investment strategy.

This questionnaire helps us understand your views on sustainable investing before the mini-public begins. After the third day, we will ask you to complete a short follow-up survey as well.

This questionnaire consists of two parts:

- First, we will ask you general questions about sustainable investing.
- Then, we will ask for your opinion on the sustainable investment policy of Pensioenfonds Detailhandel.

Completing this questionnaire will take approximately **15 minutes**. You can select one answer per question, unless stated otherwise.

(Don't know your personal code? Please ask one of the organizers.)

Please enter your personal code here: _____

D.2 Page 2

Part 0: Informed Consent

Please **read** this information **carefully** before deciding whether you would like to participate in this survey.

- Your participation consists of completing this survey, which will take approximately 15 minutes.
- During this survey, we will collect information. This information cannot be linked to you in any way and will be fully anonymized. Your anonymized responses will be used solely for research purposes and within Pensioenfonds Detailhandel.
- This survey has received ethical approval. If you would like more information, please contact Prof. Dr. Paul Smeets at `p.m.a.smeets@uva.nl`.

D.3 Page 3

Part 1: Sustainable Investing

In this first part of the questionnaire, we would like to ask you a few questions about sustainable investing.

D.4 Page 4

Part 1.1: Background Knowledge

How much knowledge do you have about investing?

- no knowledge
- very little knowledge
- less than average knowledge
- average knowledge
- more than average knowledge
- much knowledge
- very extensive knowledge

How much knowledge do you have about sustainable investing?

- no knowledge
- very little knowledge
- less than average knowledge
- average knowledge
- more than average knowledge
- much knowledge
- very much knowledge

From which sources have you received information about sustainable investing? (Multiple answers possible)

- family and friends
- my pension fund
- newspapers

- investment advisors
- social media
- internet search results
- I have not received any information
- other, please specify below: _____

D.5 Page 5

Part 1.2: Preference in Sustainable Investing

*Could you **describe** in a **few sentences** your **opinion** on **sustainable investing** in general and specifically at Pensioenfonds Detailhandel?*

_____

Which of the following statements best reflects your **preference** regarding **sustainable investing**?
I would like Pensioenfonds Detailhandel to invest sustainably...

- if this increases my expected pension payments at retirement age.
- if sustainable investing has a direct positive impact on the environment or society. I don't mind if this potentially leads to a reduction in my pension payments at retirement.
- based on social norms or moral reasons. I am determined not to invest in companies that negatively impact the environment or society. I don't mind whether this actually affects the impact of my investments or potentially lowers my pension payments at retirement.
- I do not want Pensioenfonds Detailhandel to invest sustainably.
- I have no opinion.

D.6 Page 6

Part 2: Sustainable Investing at Pensioenfonds Detailhandel
In this second part of the questionnaire, we would like to ask you a few questions about sustainable investing at Pensioenfonds Detailhandel.

D.7 Page 7

Part 2.1: More or Less Sustainable Investing
Companies play an important role in society by offering goods and services. Alongside profits for shareholders, firms also affect our daily lives. Think, for example, of environmental and social impacts. Companies contribute to climate change through CO_2 emissions and play a

significant role in providing jobs and ensuring good working conditions. These themes fall under **corporate social responsibility** and are tied to **sustainability**.

In **sustainable investing**, the **focus** is **not only on achieving financial performance**, but also on **improving** the **sustainability performance** of companies.

What do you think? In your opinion, how sustainably does Pensioenfonds Detailhandel invest?

- not sustainably
- less than average
- average
- more than average
- very sustainably
- I have no opinion / don't know

I would like Pensioenfonds Detailhandel to:

- increase its sustainable investing
- keep its sustainable investing unchanged
- decrease its sustainable investing
- I have no opinion / don't know

D.8 Page 8

Part 2.2: Returns and Impact of Sustainable Investing

My pension payments at retirement, when investing sustainably compared to a scenario without sustainable investing, are :

- much lower
- lower
- the same
- higher
- much higher
- I have no opinion / don't know

The impact of sustainable investing on society through improvements in environmental and social aspects is:

- very negative
- negative
- neutral
- positive
- very positive
- I have no opinion / don't know

D.9 Page 9

My age is: _____

I am a:

- woman
- man
- non-binary
- prefer not to say

In politics, people often speak of left-wing or right-wing ideologies. *Where would you place your own political views?*

Far Left **Far Right**

1 2 3 4 5 6 7 8 9 10

I don't want to answer / I don't know

D.10 Page 10

Part 2.4: Conclusion

You have reached the end of this questionnaire.

Thank you for your participation!

Appendix E Survey design - Study 1: Post-survey

E.1 Page 1

Thank you for participating in the final day of the Deliberative mini-public on Sustainable Investing!

We hope this mini-public has helped broaden your perspective on sustainable investing. That's why we would like to ask you a few final questions, just like we did on day 1.

Specifically, we will ask you:

- General questions about sustainable investing.
- Your recommendations on sustainable investing for the board of Pensioenfonds Detailhandel.
- Whether and how your opinion on sustainable investing has changed as a result of the mini-public.

Completing this questionnaire will take approximately **15 minutes**. You can give one answer per question, unless otherwise specified.

(Don't know your personal code? Please ask one of the organizers.)

Please enter your personal code here: _____

E.2 Page 2

Part 1: Sustainable Investing
Just like in the initial questionnaire, we would like to ask you a few questions about sustainable investing by Pensioenfonds Detailhandel. These questions correspond to those asked on the first day of the Deliberative mini-public.

E.3 Page 3

Part 1.1: Background Knowledge
How much knowledge do you have about investing?

- no knowledge
- very little knowledge
- less than average knowledge
- average knowledge
- more than average knowledge
- much knowledge
- very much knowledge

How much knowledge do you have about sustainable investing?

- no knowledge
- very little knowledge
- less than average knowledge
- average knowledge
- more than average knowledge
- much knowledge
- very much knowledge

E.4 Page 4

Part 1.2: Preference in Sustainable Investing

Could you describe in a few sentences your opinion on sustainable investing in general and specifically at Pensioenfonds Detailhandel?

_____

Which of the following statements best reflects your preference for sustainable investing?

I would like Pensioenfonds Detailhandel to invest sustainably...

- if this increases my expected pension payments at retirement age.
- if sustainable investing has a direct positive impact on the environment or society. I don't mind if this potentially leads to a reduction in my pension payments at retirement.
- based on social norms or moral reasons. I am determined not to invest in companies that negatively impact the environment or society. I don't mind whether this actually affects the impact of my investments or potentially lowers my pension payments at retirement.
- I do not want Pensioenfonds Detailhandel to invest sustainably.
- I have no opinion.

E.5 Page 5

Part 2: Sustainable Investing at Pensioenfonds Detailhandel
In this second part of the questionnaire, we would like to ask you a few questions about sustainable investing by Pensioenfonds Detailhandel.

E.6 Page 6

Part 2.1: Sustainable Investing

What do you think? In your opinion, how sustainably does Pensioenfonds Detailhandel invest?

- not sustainably
- less than average
- average
- more than average
- very sustainably
- I have no opinion / don't know

I would like Pensioenfonds Detailhandel to:

- expand its sustainable investment policy
- keep it the same
- reduce it
- I have no opinion / don't know

E.7 Page 7

My pension payments at retirement, when investing sustainably compared to a scenario without sustainable investing, are :

- much lower
- lower
- the same
- higher
- much higher
- I have no opinion / don't know

The impact of sustainable investing on society through improvements in environmental and social aspects is:

- very negative
- negative
- neutral
- positive
- very positive
- I have no opinion / don't know

E.8 Page 8

Part 2.2: Different Sustainability Actions

Pensioenfonds Detailhandel would like to hear your opinion on various sustainable investing approaches. This includes the divestment of companies, the integration of sustainability aspects

into investments through portfolio tilting, impact investing, and engagement & voting. We will first provide a short description of each of these investment approaches and then ask you whether, and why, you would like Pensioenfonds Detailhandel to engage in sustainable investing in these ways.

E.9 Page 9

Part 2.2.1: Divestment

Divestment means not investing in certain companies or sectors. Pensioenfonds Detailhandel divests from firms that do not align with the fund's norms and values. For example, it excludes companies involved in cluster munitions, chemical weapons, nuclear weapons, and tobacco. It also excludes buying government debt of undemocratic countries.

Pensioenfonds Detailhandel should:

- expand its divestment universe
- keep divestment unchanged
- reduce its divestment universe
- I have no opinion / don't know

I expect that divestment will affect my pension payments at retirement in the following manner:

- significantly decrease it
- decrease it
- not change it
- increase it
- significantly increase it
- I have no opinion / don't know

I expect that divestment will affect the societal impact of my pension investments in the following manner:

- significantly decrease it
- decrease it
- not change it
- increase it
- significantly increase it
- I have no opinion / don't know

If I could choose, I would want Pensioenfonds Detailhandel to exclude the following types of

companies (you may select multiple options):

- companies that produce weapons demonstrably used in violations of the laws of war
- companies that produce weapons used by the Dutch military and police
- companies that produce tobacco
- companies that produce alcohol
- companies that offer gambling as a service
- companies that produce or sell pornographic materials
- companies that produce fur
- companies that produce coal
- companies that produce fossil fuels
- companies that produce nuclear energy
- companies involved in serious human rights violations
- companies involved in serious labor rights violations
- companies involved in serious environmental violations
- companies involved in serious corruption or bribery scandals
- companies involved in tax avoidance

E.10 Page 10

Part 2.2.2: Integration of Sustainability Aspects into Investments
When integrating sustainability aspects into investments, Pensioenfonds Detailhandel takes sustainability into account by tilting its portfolio. The fund invests less in companies that do not operate responsibly and more in companies that do. Pensioenfonds Detailhandel considers factors like biodiversity, climate, pollution, labor conditions, and human rights to determine how much to tilt its portfolio investments.

Pensioenfonds Detailhandel should:

- expand tilting portfolios based on sustainability aspects
- keep portfolio tilting unchanged
- reduce tilting portfolios based on sustainability aspects
- I have no opinion / don't know

I expect tilting portfolios to sustainable firms will affect my pension at retirement age as follows:

- significantly decrease it
- decrease it
- not change it
- increase it
- significantly increase it

- I have no opinion / don't know

I expect tilting portfolios to sustainable firms will affect the societal impact of my pension investments as follows:

- significantly decrease it
- decrease it
- not change it
- increase it
- significantly increase it
- I have no opinion / don't know

E.11 Page 11

Part 2.2.3: Impact Investing

Impact investing involves investing with the goal of generating a positive, measurable social and environmental impact, alongside a positive financial return. This often involves investing in startups or projects that are not publicly listed but aim to create a positive impact on society. Currently, Pensioenfonds Detailhandel invests 1% of its portfolio in impact investments. These focus on providing loans to Dutch small and medium-sized enterprises (SMEs) in circular technology, SMEs in emerging markets, sustainability improvements in European companies, and loans with a green or social purpose.

Pensioenfonds Detailhandel should:

- expand its impact investments
- keep them the same
- reduce them
- I have no opinion / don't know

I expect that impact investing will affect my pension at retirement age as follows:

- significantly decrease it
- decrease it
- not change it
- increase it
- significantly increase it
- I have no opinion / don't know

I expect that impact investing will affect the societal impact of my pension investments as follows:

- significantly decrease it
- decrease it
- not change it
- increase it
- significantly increase it
- I have no opinion / don't know

E.12 Page 12

Part 2.2.4: Engagement and Voting

Pensioenfonds Detailhandel engages in dialogue with companies and votes at shareholder meetings. It votes globally at shareholder meetings to support sustainability and also holds closed-door discussions to address controversial environmental and social issues. The aim is to improve corporate sustainability performance and bring important societal topics onto companies' agendas. Pensioenfonds Detailhandel also collaborates with other investors to amplify its voice.

Pensioenfonds Detailhandel should:

- expand its engagement and voting efforts
- keep them the same
- reduce them
- I have no opinion / don't know

I expect that engagement and voting efforts will affect my pension at retirement age as follows:

- significantly decrease it
- decrease it
- not change it
- increase it
- significantly increase it
- I have no opinion / don't know

I expect that engagement and voting efforts will affect the societal impact of my pension investments as follows:

- significantly decrease it
- decrease it
- not change it
- increase it
- significantly increase it

- I have no opinion / don't know

E.13 Page 13

Part 3: Deliberative mini-public

During the Deliberative mini-public, you discussed sustainable investing in depth with experts and other participants. In this final part of the questionnaire, we would like to know whether and why your opinion on sustainable investing has changed.

Part 3.1: Sustainable Investing Before and After the Deliberative mini-public

My initial view on sustainable investing at the start of the Deliberative mini-public was:

- very positive
- positive
- somewhat positive
- neutral
- somewhat negative
- negative
- very negative
- I have no opinion / don't know

After participating in the Deliberative mini-public, my view on sustainable investing is:

- very positive
- positive
- somewhat positive
- neutral
- somewhat negative
- negative
- very negative
- I have no opinion / don't know

E.14 Page 14

Part 3.2: Dialogue Participants and Experts

During the Deliberative mini-public, you had in-depth conversations about sustainable investing with other participants and with experts.

On average, the opinion of Dialogue Participants about sustainable investing was:

- very positive
- positive

- somewhat positive
- neutral
- somewhat negative
- negative
- very negative
- I have no opinion / don't know

On average, the opinion of experts about sustainable investing was:

- very positive
- positive
- somewhat positive
- neutral
- somewhat negative
- negative
- very negative
- I have no opinion / don't know

The dialogues that changed my view on sustainable investing the most were with:

- dialogue participants
- experts
- both dialogue participants and experts
- my opinion did not change
- I have no opinion
- other (please specify in the box below): _____

E.15 Page 15

Part 3.3: Evaluation of the Deliberative mini-public

We would like to conclude with a few questions about your experience of the Deliberative mini-public.

I had a fair opportunity to express my opinion:

- strongly agree
- agree
- disagree
- strongly disagree
- no opinion

Other participants had a fair opportunity to express their opinion:

- strongly agree
- agree
- disagree
- strongly disagree
- no opinion

Everyone's opinion mattered:

- strongly agree
- agree
- disagree
- strongly disagree
- no opinion

Other participants respectfully considered my opinion, even if they disagreed with it:

- strongly agree
- agree
- disagree
- strongly disagree
- no opinion

The Deliberative mini-public process was transparent and clear:

- strongly agree
- agree
- disagree
- strongly disagree
- no opinion

The impact of the Deliberative mini-public on Pensioenfonds Detailhandel's investment policy was transparent and clear:

- strongly agree
- agree
- disagree
- strongly disagree
- no opinion

The final recommendations reflected the diversity of opinions:

- strongly agree
- agree
- disagree
- strongly disagree
- no opinion

E.16 Page 16

Part 4: Conclusion

Thank you for completing this questionnaire and for your valuable contribution to the Deliberative mini-public!

Appendix F Survey design - Study 2: Survey

F.1 Page 1

Thank you for participating in our **survey** on **impact investing at Pensioenfonds Detailhandel!** We will raffle **5 digital Amazon gift cards** worth **250 euros each** among the participants. With this study, we aim to give you more **influence** over **how your pension is invested**, especially when it comes to **sustainability**.

Your opinion is incredibly valuable and can **truly make a difference**. We are very curious to hear what you think! In 2018 and 2020, previous surveys and their results had a **real influence on our investment policy** regarding sustainable investing. With this new questionnaire, you again have the **opportunity to shape how your pension is invested** at Pensioenfonds Detailhandel. This is your chance to make your voice heard and help shape the future of impact investing!

The survey consists of three parts:

- First, we will briefly explain what impact investing actually means.
- Then, we would love to hear your opinion on impact investing.
- Finally, we will ask a few general questions to complete the picture.

Filling out the questionnaire will take less than 15 minutes. We've made it as simple as possible: one answer per question is enough.

F.2 Page 2

Informed Consent

Please **read** the following information **carefully** before deciding whether you would like to participate in this survey.

- Completing this questionnaire will take less than 15 minutes.
- During the survey, we collect personal information, including your political preferences. Your responses will be processed anonymously and used solely for research purposes related to this study. Pensioenfonds Detailhandel wants to understand your opinion in order to make investment decisions that better reflect the preferences of its participants.
- For more information, please contact Prof. Dr. Rob Bauer from Maastricht University and the pension fund at `info@pensioenfondsdetailhandel.nl`.

Do you agree with the above and choose to participate in this study?

- Yes, I agree and choose to participate in this study.
- No, I do not agree and choose not to participate in this study. (If you choose this option, you will not be able to complete the survey or share your opinion on impact investing.)

F.3 Page 3

Part 1: Explanation of Impact Investing

Every pension fund invests its pension assets to ensure it can pay out pensions in the long term. Pensioenfonds Detailhandel does the same and will continue to do so. There are several ways to invest, and we would like to hear your opinion on this.

Pensioenfonds Detailhandel engages in sustainable investing, meaning it takes into account not only financial returns but also societal factors such as the environment, climate, nature, and social well-being. Impact investing is part of this approach and aims to make a positive and measurable contribution to these themes.

Achieving a positive financial return remains important. However, returns may sometimes be lower than expected or lower than typical market outcomes. The risk may also be higher. This can affect the eventual value of your pension.

Currently, Pensioenfonds Detailhandel has allocated a portion (1%) of its assets to impact investing. This includes providing loans to Dutch companies to scale up proven innovative circular technologies (such as recycling raw materials) in order to reduce CO_2 emissions and the use of natural resources.

Pensioenfonds Detailhandel also provides loans in emerging markets to small and medium-sized enterprises (SMEs) that make a positive impact in areas such as sustainable production, decent work, and climate action.

F.4 Page 4

We've just explained what impact investing is. Now, we'd like to know your opinion about potential returns and risks. There are no right or wrong answers—this is about your expectations.

Part 1.1: Background Knowledge

How much knowledge do you have about investing?

- No knowledge
- Very little knowledge
- Less than average knowledge
- Average knowledge
- More than average knowledge
- A lot of knowledge
- Very extensive knowledge

How much knowledge do you have about sustainable investing?

- No knowledge
- Very little knowledge
- Less than average knowledge
- Average knowledge
- More than average knowledge
- A lot of knowledge
- Very extensive knowledge

F.5 Page 5

My pension payments at retirement, compared to a scenario without sustainable investing, are:

- Much lower
- Lower
- The same
- Higher
- Much higher
- I have no opinion / Don't know

The financial risks of impact investing, compared to regular investing, in my opinion are:

- Much lower
- Lower
- The same
- Higher
- Much higher
- I have no opinion / Don't know

The positive contribution of impact investing to the environment, climate, nature, and social well-being, compared to regular investing, is:

- Much lower
- Lower
- The same
- Higher
- Much higher
- I have no opinion / Don't know

F.6 Page 6

Which of the following statements best reflects your preference regarding impact investing?

I would like Pensioenfonds Detailhandel to impact invest ...

- if this is expected to increase my pension payments at retirement.
- I do not want Pensioenfonds Detailhandel to impact invest.
- for social or moral reasons. I do not want to invest in companies that have a negative impact on the environment or society. I do not mind whether my investments truly have an impact or whether this might lead to a lower pension at retirement.
- if sustainable investing has a positive effect on the environment, climate, nature, and social well-being. I do not mind whether this might lead to a lower pension at retirement.
- I have no opinion.

F.7 Page 7

Part 2: Your Preference for Impact Investing
In this part of the questionnaire, we will ask you several questions about impact investing at Pensioenfonds Detailhandel.

As a reminder: impact investing is a way of investing that aims to make a positive impact on social, environmental, climate, and/or nature-related issues. Achieving a positive financial return remains important. However, returns may sometimes be lower than expected or lower than typical market outcomes. The risk may also be higher. This can affect the eventual value of your pension.

F.8 Page 8a - Information treatment: mini-public

- After receiving this information, we will ask you how you want Pensioenfonds Detailhandel to approach impact investing. In 2024, Pensioenfonds Detailhandel conducted a **Deliberative mini-public** with 43 randomly selected participants and retirees of the fund. We asked them for their views on sustainable investing at Pensioenfonds Detailhandel.
- A Deliberative mini-public is a way to make decisions together. Participants receive clear explanations about a topic and engage in **in-depth deliberation** with one another. They were also **informed** on impact investing by **experts**. It is similar to a citizen's assembly. The goal is to provide advice to the pension fund's board. The mini-public lasted **three full days** and was held in Utrecht.
- During the mini-public, participants received extensive information on sustainable investing from ten experts and were given ample opportunity to deliberate and form a shared

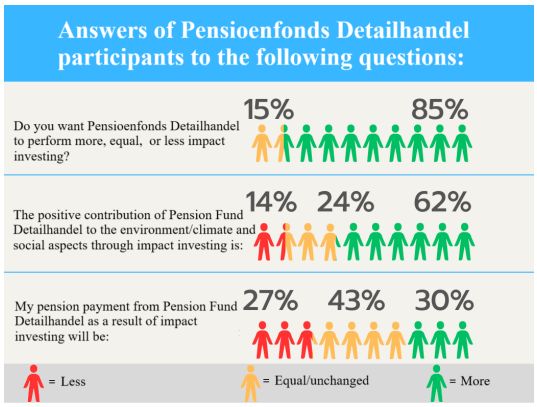
view on how Pensioenfonds Detailhandel should address sustainability. Everyone was encouraged to express their views, and this was facilitated by professional moderators. Based on the dialogue, participants made 49 recommendations to Pensioenfonds Detailhandel, several of which concerned impact investing.

- Participants were randomly selected and are comparable to other members of Pensioenfonds Detailhandel in terms of age, gender, and retirement status. They also represent the average Dutch citizen in terms of where they live, where they were born, and their preferences regarding economic growth and the environment.
- At the end of the Deliberative mini-public, we asked whether the pension fund should increase, decrease, or maintain its level of impact investing. We also asked what they thought the effects of impact investing are on environmental and social outcomes and on pension payouts. You will see their responses on the next page.

F.9 Page 9a

Responses from the 3-Day Deliberative mini-public

To help you make a better-informed decision, we have visualized participants' responses from the 3-day deliberative mini-public to these questions in the icon below. The figures are red if participants chose less, orange if they chose the same, and green if they chose more. For example, 85% of participants opted to expand impact investing (in green), and 15% chose to keep it the same (in orange). The more figures shown, the more participants from Pensioenfonds Detailhandel shared that view.



F.10 Page 10a

Control Question

On the previous page, we described how participants from Pensioenfonds Detailhandel felt about impact investing. Participants expressed this opinion:

- in a questionnaire of approximately 15 minutes about impact investing

- in a questionnaire of approximately 60 minutes about impact investing
- after receiving detailed information from experts for 3 days and participating in a deliberative mini-public
- after a one-day training on investing, risk, and return
- I don't know

What proportion of participants wanted your pension fund to invest more in impact investing?

- 0%–29%
- 30%–59%
- 60%–89%
- 90%–100%
- I don't know

F.11 Page 11a

If correct:
Correct!

Participants gave these answers in a 15-minute questionnaire, and 85% of participants chose to increase impact investing.

If incorrect:
One or more answers are unfortunately incorrect.

Participants gave these answers in a 15-minute questionnaire, and 85% of participants chose to increase impact investing.

F.12 Page 8b - Information treatment: Peers

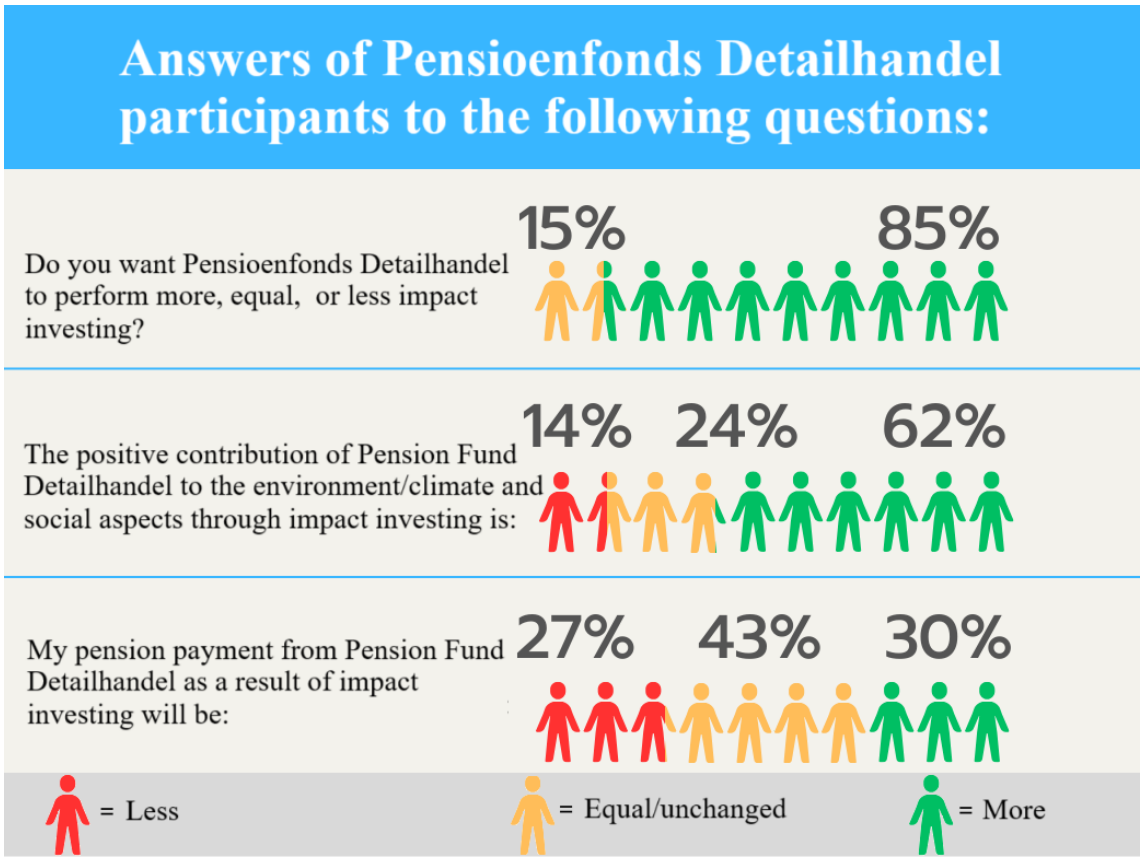
- After receiving this information, we will ask you how you want Pensioenfonds Detailhandel to approach impact investing.
- To help you make a more informed choice, we conducted an in-depth survey in 2024 with 43 participants and retirees from Pensioenfonds Detailhandel.
- We asked them whether the pension fund should increase, decrease, or maintain its level of impact investing, and what they believe the effects of impact investing are on environmental and social outcomes as well as on pension payments.
- In this earlier questionnaire, respondents received extensive information about sustainable investing and impact investing.
- Participants spent an average of 15 minutes on the survey and answered carefully.

- Participants were randomly selected and are comparable to other members of Pensioenfonds Detailhandel in terms of age, gender, and retirement status. They also represent the average Dutch citizen in terms of where they live, where they were born, and their preferences regarding economic growth and the environment. You will see their responses on the next page.

F.13 Page 9b

Responses from the 15-minute questionnaire

In the icon below, you see the responses of participants from the 15-minute questionnaire. The figures are colored red if participants chose less, orange if they chose the same, and green if they chose more. For example, 85% of participants opted for expanding impact investing (in green), and 15% chose to keep it the same (in orange). The more figures shown, the more participants of the Pensioenfonds Detailhandel shared that view.



F.14 Page 10b

On the previous page, we explained how participants from Pensioenfonds Detailhandel felt about impact investing.

Participants expressed this opinion:

- in a questionnaire of approximately 15 minutes about impact investing
- in a questionnaire of approximately 60 minutes about impact investing
- after 3 days of receiving extensive information from experts and engaging in a **deliberative mini-public**
- after a one-day training on investing, risk, and return
- I don't know

What proportion of participants wanted your pension fund to invest more in impact investing?

- 0%–29%
- 30%–59%
- 60%–89%
- 90%–100%
- I don't know

F.15 Page 11b

If correct:
Well done!

Participants gave their answers after a 3-day Participant Dialogue, during which they received extensive information from experts and deliberated with one another.

85% of participants chose to increase impact investing.

If incorrect:
One or more answers are unfortunately incorrect.

Participants gave their answers after a 3-day Participant Dialogue, during which they received extensive information from experts and deliberated with one another.

85% of participants chose to increase impact investing.
Participants in the control group did not receive any information

F.16 Page 12a

We randomly assigned participants to page 12a and 12b, which reverses the order of explanation and answers.

Your Choice Counts!

Pensioenfonds Detailhandel wants to include your opinion in its decision on how much to invest in **impact investing**. How does this work?

1. You can let Pensioenfonds Detailhandel know whether you want the fund to stop impact investing (**0%**), keep it unchanged (**1%**), or expand it (to **2% to 5%** of total investments). An investment of 1% corresponds to approximately 350 million euros of the pension fund or a monthly contribution of 3 euros per participant.

2. **Your choice counts!** The board of Pensioenfonds Detailhandel has pledged to carry out the most selected option. This means your pension will no longer include impact investing if "stop" is selected, will remain the same if "keep unchanged" is chosen, and include more impact investments if most participants vote to "expand". We ensure your voice has a representative influence within Pensioenfonds Detailhandel.

What do you think? How much should Pensioenfonds Detailhandel invest in impact investing?

- Stop (**0%**)
- Keep unchanged (**1%**)
- Expand (**2% to 5%**)
- I have no opinion / Don't know

F.17 Page 12b

Your Choice Counts!

Pensioenfonds Detailhandel wants to include your opinion in its decision on how much to invest in **impact investing**. How does this work?

1. You can let Pensioenfonds Detailhandel know whether you want the fund to expand impact investing (to **2% to 5%** of total investments), keep it unchanged (**1%**), or stop impact investing (**0%**). An investment of 1% corresponds to approximately 350 million euros of the pension fund or a monthly contribution of 3 euros per participant.

2. **Your choice counts!** The board of Pensioenfonds Detailhandel has pledged to carry out the most selected option. This means your pension will include more **impact investments** if most participants vote to "expand", will remain the same if "keep unchanged" is chosen, and will no longer include impact investing if "stop" is selected. We ensure your voice has a representative influence within Pensioenfonds Detailhandel.

What do you think? How much should Pensioenfonds Detailhandel invest in impact investing?

- Expand (**2% to 5%**)
- Keep unchanged (**1%**)
- Stop (**0%**)
- I have no opinion / Don't know

F.18 Page 13

Explain your choice in one to two sentences: _____

F.19 Page 14

In addition to how much you want Pensioenfonds Detailhandel to impact invest, we would also like to know how it should implement its impact investing policy. Below are two questions related to impact investing. Even if you previously indicated that you do not want Pensioenfonds Detailhandel to engage in impact investing, we kindly ask you to answer these questions. We would still like to know your preference in case participants decide that Pensioenfonds Detailhandel should pursue impact investing.

Close to home or further away

Pensioenfonds Detailhandel can invest for impact in several regions: in **low- and middle-income countries**, in **developed regions** (EU, North America, Oceania), within the **Netherlands**, or in a mix of these three options. In developing countries, the social or environmental, climate, and nature-related impact of investing is likely greater, since businesses in places like Kenya, India, or Chile have more difficulty accessing funding. However, the benefits of this impact occur far away. Within developed countries — and especially within the Netherlands — the impact is likely smaller, but the benefits are closer to home.

Your choice counts! Good to know: this is another question for which the board of Pensioenfonds Detailhandel has committed to carrying out the most selected response. This means your choice can influence how your pension is invested.
Where would you like Pensioenfonds Detailhandel to direct its impact investments?

- Mostly in the Netherlands
- Mostly in developed regions (outside the Netherlands)
- Mostly in low- and middle-income countries
- A mix of the Netherlands, developed regions, and low- and middle-income countries
- I don't know / No opinion

F.20 Page 15

Environment, Climate, and Nature or Social Topics

Pensioenfonds Detailhandel can focus its impact investing on different **themes**, for example, more on the **environment, climate, and nature**, or more on **social topics** such as investing in improved hygiene, access to and quality of healthcare, affordable housing, and companies committed to safe working conditions.

Your choice counts! Good to know: this is another question for which the board of Pensioenfonds Detailhandel has pledged to carry out the most selected response. This means your choice can influence how your pension is invested.

On which theme would you like Pensioenfonds Detailhandel to focus its impact investments?

- Mostly on the environment, climate, and nature
- Mostly on social topics
- A mix of environment, climate, nature, and social topics
- I don't know / No opinion

F.21 Page 3

Demographics

I was born in the year: _____

I am:

- Male
- Female
- Other
- Prefer not to say

F.22 Page 16

These questions are directly adopted from Falk et al. (2018).

In general, how willing or unwilling are you to take risks?

Not at all willing to take risks **Very willing to take risks**

1 2 3 4 5 6 7 8 9 10

How willing are you to give to a charity without expecting anything in return?

Not at all willing **Very willing**

1 2 3 4 5 6 7 8 9 10

F.23 Page 17

My highest completed level of education is:
(With the exception of primary education, this refers to a diploma you have obtained.)

- Primary education
- Pre-vocational secondary education (VMBO), Lower general secondary education (MAVO), Extended primary education (MULO)
- Higher general secondary education (HAVO)
- Pre-university education (VWO), including Gymnasium
  Secondary vocational education level 1 (MBO)
- Secondary vocational education level 2 (MBO)
- Secondary vocational education level 3 (MBO)
- Secondary vocational education level 4 (MBO)
- Higher professional education (HBO)
- University (WO)
- Other: _____
- I have not completed any of these education levels

I am currently:

- Employed in the retail sector, namely _____ hours per week
- Employed outside the retail sector, namely _____ hours per week
- Retired
- Other (e.g., not employed)

What is your household's net monthly income? Add up the salary and/or pension that you (and possibly your partner) receive each month.

- Less than €930
- Between €930 and €1,500
- Between €1,500 and €2,000
- Between €2,000 and €2,500
- Between €2,500 and €3,000
- Between €3,000 and €4,000
- Between €4,000 and €7,000
- Between €7,000 and €10,000
- €10,000 or more
- I don't know
- Prefer not to say

During the 2023 general election, I voted for:

- PVV
- GroenLinks/PvdA
- VVD
- NSC
- D66
- BBB
- CDA
- SP
- Denk
- Partij voor de Dieren
- FVD
- SGP
- Christen Unie
- Volt
- JA21
- Other, namely:
- I filed a protest vote
- I did not vote/could not vote
- Prefer not to say

F.24 Page 18a

We ask participants three trust questions. These are tailored for the control group, the mini-public information treatment group, and the peer information treatment group in Pages 18a-c, respectively.

Earlier in this questionnaire, you were asked about increasing or decreasing impact investing. We would now like to ask you three questions related to that topic.

To what extent do you trust that Pensioenfonds Detailhandel will actually implement the choice made by participants in this questionnaire?

No trust **Full trust**

1 2 3 4 5 6 7 8 9 10

To what extent do you trust the information in this questionnaire about impact investing?

No trust **Full trust**

1 2 3 4 5 6 7 8 9 10

To what extent do you trust Pensioenfonds Detailhandel in general?

No trust **Full trust**

1 2 3 4 5 6 7 8 9 10

F.25 Page 18b

Earlier in this questionnaire, you received information about how fellow participants felt about impact investing. We would now like to ask you three questions about this.

*To what extent do you trust that fellow participants who took part in the 3-day **deliberative mini-public** carefully considered their recommendation to Pensioenfonds Detailhandel regarding impact investing?*

No trust **Full trust**

1 2 3 4 5 6 7 8 9 10

To what extent do you trust that Pensioenfonds Detailhandel will actually implement the choice made by participants in this questionnaire?

No trust **Full trust**

1 2 3 4 5 6 7 8 9 10

To what extent do you trust Pensioenfonds Detailhandel in general?

No trust **Full trust**

1 2 3 4 5 6 7 8 9 10

F.26 Page 18c

Earlier in this questionnaire, you received information about how fellow participants feel about impact investing. We would now like to ask you three questions about this.

To what extent do you trust that fellow participants who completed the 15-minute questionnaire carefully considered their recommendation to Pensioenfonds Detailhandel regarding impact investing?

No trust **Full trust**

1 2 3 4 5 6 7 8 9 10

To what extent do you trust that Pensioenfonds Detailhandel will actually implement the choice made by participants in the questionnaire you are currently completing?

No trust **Full trust**

1 2 3 4 5 6 7 8 9 10

To what extent do you trust Pensioenfonds Detailhandel in general?

No trust **Full trust**

1 2 3 4 5 6 7 8 9 10

F.27 Page 19

Control Question

Earlier in this questionnaire, we explained what impact investing means.

Which of the following best describes impact investing?

- Investing with an impact on your pension benefits at retirement. It ensures you have more money for your old age.
- Investing in companies that aim to make a positive impact on social issues and the environment/climate/nature, while also seeking financial returns.
- Investing to help people in developing countries by providing financial resources, without aiming for financial returns.
- I don't know