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Proud to Not Own Stocks: How Identity Shapes Financial Decisions

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Abstract

This paper introduces a key factor influencing households' decision to invest in the stock market: how people view stockholders. Using surveys we conducted with nearly 8,500 individuals from eleven countries, we document that a large majority of respondents view stockholders negatively – they are perceived as greedy, gambler-like, and selfish individuals. We then provide experimental evidence that such perceptions of identity-relevant characteristics causally influence decision-making: if people view stockholders more negatively, they are less likely to choose stock-related investments. Furthermore, by linking survey and administrative data, we show that negative perceptions strongly predict households' stock market participation, more so than leading alternative determinants. Our findings provide a novel explanation for the puzzlingly low stock market participation rates around the world, new perspectives on the malleability of financial decision-making, and evidence for the importance of identity in economic decision-making.

Keywords: identity, perceptions, stock market participation, financial decision-making
JEL Classification: G41, G51, D14, D83

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1 Introduction

The decision to invest in the stock market is a central element of households' financial decision-making. Stock investments offer substantially higher expected returns than other asset classes at the expense of increased short-run volatility (Jordà et al., 2019). They are thus widely recommended by financial experts as a vital aspect of households' long-term saving strategies (e.g., for retirement). Nevertheless, in almost all countries, the majority of households do not invest in stocks (Gomes, Haliassos, and Ramadorai, 2021). Widespread avoidance persists even among wealthy households and remains largely unexplained by classical preference- or constraint-based explanations.[1] The resulting underdiversification of households' portfolios has major implications for societal challenges such as wealth inequality, financial stability, and the design of retirement pension systems (e.g., Fagereng, Gottlieb, and Guiso, 2017; Kuhn, Schularick, and Steins, 2020).

Despite the potential advantages of stock investments for households and their importance to society, the media frequently characterize stock investors in ways that are commonly considered to be objectionable or repulsive. For instance, movies such as the 1987 classic "Wall Street" or the more recent "Wolf of Wall Street" provide vivid examples of stock investors and brokers as selfish individuals who are willing to take extreme risks at the expense of others. Likewise, popular books about stock market investing describe investors as being strongly motivated by greed (Shefrin, 2002; Nofsinger, 2017).

This paper investigates how people view stockholders and how these views influence financial decision-making. Using large-scale surveys conducted in eleven countries, we document widespread negative perceptions of stockholders. To conceptualize the relationship between perceptions and choice behavior, we develop a theoretical framework in which people care about the characteristics of individuals making similar decisions to themselves. This form of identity concern leads people to experience disutility if they associate themselves through their decisions with a group that they perceive to have negative character traits. Testing the framework's predictions in two preregistered experiments, we provide evidence that subjects' perceptions of stockholders causally drive financial decisions. Extending the analysis to field data, we demonstrate that perceptions predict households' stock market participation as identified by administrative data.[2]

In the first step of our empirical analysis, we measure individuals' perceptions of stockholder and non-stockholder characteristics using surveys. Guided by our framework, we focus on identity-relevant characteristics, i.e., character traits that are important to people. To select relevant traits, we provide participants $(N = 194)$ with a set of traits, asking them to rate how important each trait is to them and how strongly they associate them with stockholders. We find that the traits greed, being a gambler, and selfishness are rated highest along these two dimensions. We then measure individuals' perceptions of stockholders and non-stockholders with respect to these three traits using surveys that we fielded to 3,272 Dutch respondents of the LISS panel and 5,130 respondents living in

[1] As an example, among all households in the Netherlands with a net balance of at least 60,000 € in financial assets (top 20% quantile), 55% do not have stock holdings. Instead, their assets are concentrated in banking and saving accounts. See Guiso and Sodini (2013) for similar evidence in other countries. Explaining such behavior through risk attitudes requires implausibly high degrees of risk aversion (Heaton and Lucas, 2000).

[2] In our framework, identity concerns induced by negative views operate even in private, which is important because investment decisions are mostly unobserved by others. While presumably amplified when choices are observable, we show empirically the relevance of identity concerns for financial decisions when choices are made anonymously.

Australia, Germany, Italy, Japan, Mexico, South Korea, Spain, Sweden, the United Kingdom, and the United States ($N \approx 500$ per country). The LISS panel builds upon a probability sample of the Dutch population, employing special efforts to ensure that the sample is representative of the population. The samples from the other countries are quota-representative with respect to age and gender. In the surveys, respondents consider stockholders and non-stockholders of their respective countries and separately rate how they perceive the individuals of each group with respect to the three character traits greed, being a gambler, and selfishness. Since we empirically validate that these traits are considered to be negative traits, comparing ratings between groups reveals whether respondents view one group more negatively.

We document that large fractions of respondents view stockholders negatively. In all eleven countries, stockholders are rated significantly more greedy, gambler-like, and selfish than non-stockholders ($p < 0.001$ in each country). Averaging over the three traits, between 49% and 81% of respondents rate stockholders strictly more negative than non-stockholders. In a series of robustness checks, we replicate widespread negative perceptions using alternative elicitation methods and framing variations. For instance, respondents also rate stockholders significantly more negatively when considering positively framed characteristics. We also verify that negative perceptions do not simply measure a lack of stock market knowledge or financial numeracy.

In the second step of our analysis, we test a key prediction of our framework: since people view stockholders negatively, whether a decision is associated with the stock market should influence their decision-making. An ideal test of this prediction compares the choice behavior of individuals between two identical investments that only differ in their association with the stock market. In reality, however, stock investments differ from other investments in many relevant aspects, such as expected returns, costs, and uncertainty. We thus conduct an experiment (US, $N = 515$) to test whether people dislike stock investments relative to non-stock investments even when all outcome-related features are held constant, a type of behavior we label *stock market aversion*.

In our experiment, we employ a simple incentivized investment choice in which subjects repeatedly choose between a safe and risky option. Choosing the safe option yields an amount with certainty, while choosing the risky option yields a high or low payoff with equal probability. In two treatments, we vary how the options are described to subjects. In the *Stock Description* treatment, the risky option is described as an investment whose outcomes are associated with the stock market, i.e., based on past stock performances. In the *Draw Description* treatment, the risky option is instead described as an investment whose outcomes depend on a random draw. The safe option is described as abstaining from the respective investment. Since the descriptions of options are the only difference between the treatments, the underlying probabilities and payoffs are identical across treatments. By design, both descriptions are of similar length and complexity. We are thus able to identify the effect of varying the association of an investment on behavior, while keeping outcome-related features constant.

We find a 27% decrease in subjects' likelihood of choosing the risky option when the option is described as a stock investment instead of an investment in the outcome of a random draw ($p < 0.001$). Notably, the fraction of subjects who refuse to choose the risky option in any decision almost doubles, from 19% in the *Draw Description* treatment to 36% in the *Stock Description* treatment. Using additional within-subject variation in the descriptions reveals that almost 40% of subjects are stock averse. These participants are willing to invest under the *Draw Description* but exhibit a strictly lower

willingness to invest under the *Stock Description*. Accordingly, we find support for the prediction of our framework that the mere association of an option with the stock market leads to aversion.

In a third step, we provide causal evidence that subjects' negative perceptions of stockholders are responsible for the documented stock market aversion. To establish causality, we conduct an experiment (US, $N = 548$) in which we exogenously shift subjects' perceptions and measure the shift's impact on their decision-making. For each subject, we randomly draw ten stockholders and ten non-stockholders out of a separate sample of 272 stockholders and non-stockholders that allocate money between themselves and a charity. We then inform subjects about the difference in donation behavior between the stockholders and non-stockholders of their draw, leading to between-subject variation in the direction and magnitude of the information generated. For example, some subjects receive the information that in their draw, stockholders donated 10% more to the charity than non-stockholders, while others are informed that in their draw non-stockholders donated 30% more. After providing the information, we elicit subjects' perceptions and ask them to choose whether to bet on risky options described as a stock investment using the choice paradigm employed in the previous experiment.[3] Since deciding how much to donate instead of taking for oneself is a signal about prosociality, we expect the information to shift subjects' perceptions.

We find that providing subjects with information on the difference in donation behavior between stockholders and non-stockholders significantly influences their perceptions, and crucially their investment decisions. The stronger the signal that stockholders donated more, the less negatively the subjects view stockholders compared to non-stockholders ($p < 0.001$). This shift in perception translates into behavior: a 10 pp. increase in the donation difference favoring stockholders increases the likelihood of investments in the stock option by 0.9 pp. ($p = 0.028$). This effect is sizable since a one-standard-deviation increase in the signal mitigates the effect of varying descriptions found in the previous experiment by 25%. Employing an instrumental variable approach, we estimate that a one-standard-deviation decrease in subjects' negative perception of stockholders causally increases investments in the stock option by 14-16 pp. (from an average of 45%). We conclude that negative perceptions are a key contributor to the stock market aversion documented in our experiments.

In a follow-up survey conducted several days later, we show that the treatment variation persistently changes subjects' perceptions of stockholders and influences intentions to invest their own money in the stock market. Subjects who receive the information that stockholders donated more perceive stockholders as less selfish and report a stronger intention to invest than those who received the information that non-stockholders donated more ($p < 0.01$). Furthermore, we purposefully framed the follow-up differently to obfuscate the relation to the main experiment. Since we observe that subjects do not perceive a connection between the main experiment and follow-up, experimenter demand effects cannot explain these results (Haaland, Roth, and Wohlfart, 2023).

Extending our analysis to field data, we demonstrate that negative perceptions (i) significantly predict stock market participation revealed through administrative records and (ii) are quantitatively important compared to leading alternative determinants of investment decisions proposed in the literature. Using the LISS panel enables us to link subjects' perceptions of stockholders to their asset allocations based on tax records provided by Statistics Netherlands. To assess the importance of

[3]Subjects might update about factors influencing investment behavior that are unrelated to perceptions. Our decision environment allows us to abstract from these effects. For instance, even if the information changes subjects' beliefs about the profitability of actual stock investments, the stock decision returns are fixed in our experiment.

perceptions in predicting investment decisions, we link our survey in the LISS panel with previous questionnaires to obtain measures of subjects' risk aversion, beliefs regarding stock returns, financial numeracy, general trust, political orientation, ambiguity aversion, and likelihood insensitivity.

Our results show that negative perceptions of stockholders strongly predict stock market participation. Controlling for alternative determinants and demographic variables, a one-standard-deviation increase in negative perceptions is associated with a 4.8 pp. decrease in the likelihood of owning stocks. This is a considerable effect size because only 23% of our sample owns stocks. Moreover, the coefficient is larger than the marginal effects of almost all other determinants; for instance, it is 33% larger than the standardized coefficient of risk aversion. We further show the generalizability of our results in the surveys we fielded to the ten other countries. Using self-reported stock market participation as the dependent variable, we find a significant negative relationship in nine out of ten countries. In a regression with country fixed-effects, a one-standard-deviation increase in negative perceptions is associated with a 6.9 pp. decrease in stock market participation.

In a series of additional analyses, we highlight the importance of people's perceptions of stockholders for attitudes and behavior beyond financial decisions. First, non-stockholders distribute twice as much money to non-stockholders than to stockholders in an incentivized allocation decision. The more negatively subjects view stockholders, the more strongly they exhibit this type of in-group favoritism. Second, non-stockholders hold strongly polarized opinions regarding the extent to which financial markets should be taxed and regulated. Even after controlling for factors such as subjects' political orientation and redistribution concerns, negative perceptions explain the level of support for increases in taxation and regulation. Third, we examine misreporting behavior in surveys using our linked survey-admin data. Our framework suggests that individuals potentially misreport holding risky financial assets to avoid identity conflicts. Consistent with this hypothesis, we observe that 30% of stock-owning households report not owning stocks in the survey. Importantly, negative perceptions predict this type of misreporting: a one-standard-deviation increase in negative perceptions is associated with a 4.5 pp. decrease in (correctly) reporting being a stockholder.

Turning to potential determinants of observed negative perceptions of stockholders, we find evidence consistent with the stereotypes model of Bordalo et al. (2016). In the model, people overweight a group's representative types, thereby exaggerating actual group differences. We show that stockholders self-assess as more greedy, gambler-like, and selfish and behave more selfishly than non-stockholders, but these differences are small and concentrated in the tail: stockholders are relatively more likely among very greedy, selfish, and gambler-like individuals. The model then predicts that perceptions are stereotypical – exaggerated representations of reality – and we indeed find that subjects significantly overestimate the actual differences when asked to predict them.

This paper makes several contributions to the literature. First, our paper contributes to research on the determinants of stock market participation. Previous literature has primarily focused on explaining people's stock aversion through preferences and beliefs related to investment outcomes as well as constraints (Gomes, Haliassos, and Ramadorai, 2021).[4] However, stock averse behavior

[4]Preference-based explanations investigate how different weightings of outcomes induced by risk-, ambiguity- (e.g., Dimmock et al., 2016), loss averse (Barberis, Huang, and Thaler, 2006) or likelihood insensitive preferences (Dimmock, Kouwenberg, and Wakker, 2016) influence participation. Belief-based explanations have focused on factors such as return beliefs (e.g., Giglio et al., 2021) or optimism (Puri and Robinson, 2007). Constraint-based explanations postulate that factors such as participation costs (Vissing-Jorgensen, 2004), limited financial literacy (e.g., van Rooij, Lusardi, and Alessie, 2011) and cognitive function (Grinblatt, Keloharju, and Linnainmaa, 2011) prevent people from participating.

is prevalent in our experiments although outcome- and constraint-based factors are held constant. Hence, we demonstrate that previous explanations neglect an important factor driving stock aversion and provide evidence that people's negative perceptions of stockholders cause this type of behavior.

A number of studies have examined factors predicting investment behavior unrelated to the potential outcomes and constraints of investments. The identity-based mechanism proposed in our study provides new ways for interpreting these empirical patterns. Kaustia and Torstila (2011) argue that personal values matter for investment decisions by showing that political orientation is correlated with stock market participation in Finland. Our framework and evidence document a precise mechanism of how values shape investment choices. Another strand of literature finds that cultural background, social interactions and social involvement matter for financial decision-making (Haliassos, Jansson, and Karabulut, 2017; Kuchler and Stroebel, 2021). Our framework suggests a specific channel through which culture and social influences matter: they shape people's perceptions of stockholders, which in turn influence their behavior. Furthermore, a nascent literature investigates how anti-finance sentiments influence investment behavior (Grosfeld, Rodnyansky, and Zhuravskaya, 2013; D'Acunto, Prokopczuk, and Weber, 2019; D'Acunto, 2020; Lenz and Mayer, 2023). While these studies consider individuals' trust in financial markets as a potential mechanism predicting stock market participation (Guiso, Sapienza, and Zingales, 2008), anti-finance sentiments fostering negative images of stockholders provide an alternative rationale for the documented patterns.

Second, we contribute to the emerging literature on the relationship between identity and economic behavior (Akerlof and Kranton, 2000; Shayo, 2020). Identity has been found relevant for workers' productivity in firms (Hjort, 2014; Ghosh, 2022), consumption choices (Atkin, Colson-Sihra, and Shayo, 2021), and labor market supply (Oh, 2021).[5] Bauer and Smeets (2015) find that investors' identification with socially responsible investments is associated with a larger wealth share invested in these assets. We show that identity concerns causally influence investment behavior and contribute conceptually by linking identity concerns to people's perceptions of groups making similar decisions.[6]

Third, we contribute to the literature studying people's perceptions of others (Bursztyn and Yang, 2022), such as perceptions about income (Cullen and Perez-Truglia, 2022), political opinions (Ahler, 2014) and gender (Bordalo et al., 2019). We add the investigation of people's perceptions of character traits of others and show that identity concerns lead those perceptions to causally influence behavior. By showing that people's perceptions of stockholders are stereotypical, we also relate to the economic literature on stereotypes (Bordalo et al., 2016). This literature typically considers group categorizations wherein changing group membership is impossible (e.g., ethnicity) or takes considerable effort (e.g., nationality). In contrast, we show that in a setting where groups are based on actions, and thus easily changeable, strong stereotypical beliefs are prevalent and causally influence decisions. A recent study combining identity and stereotypes in a theoretical framework of endogenous group choice is Bonomi, Gennaioli, and Tabellini (2021). We empirically document the connection between identity, stereotypes, and financial decision-making.

[5]More generally, identity influences behavior in settings such as judicial decisions (Shayo and Zussman, 2011), women's income (Bertrand, Kamenica, and Pan, 2015), and conflict (Depetris-Chauvin, Durante, and Campante, 2020).

[6]People's desire to uphold a positive identity or self-image by using behavior as a signaling device has been shown to influence choices (Grossman and van der Weele, 2017; Bursztyn et al., 2020; Falk, 2021; Mechtenberg et al., 2022; Schneider, 2022). However, such identity concerns have not been linked to people's views of others so far. Related is the idea that people care about the opinion of others. Such social image concerns (e.g., Ariely, Bracha, and Meier, 2009), status concerns (Bursztyn et al., 2018), and social pressure (Bursztyn and Jensen, 2017) similarly influence behavior.

2 Conceptual framework

In this section, we formalize the idea that people's perceptions of other people's character traits matter for their decision-making. We use the framework to develop our hypotheses and guide our analyses in the next sections.

In our framework, we consider an individual i who has to take an action a out of a set of available actions A. Each action a is characterized by a state-contingent prospect $z_a = (E_1 : x_1, E_2 : x_2 \dots)$ yielding outcome x_j if event E_j occurs. Individual i's utility from the prospect is denoted by $u_i(z_a)$, a function that flexibly captures attitudes, preferences, and beliefs related to the action's outcomes. In particular, $u_i(z_a)$ may capture different types of weighting functions over the events (e.g., subjective probabilities as special case for subjective expected utility maximizers), and different types of uncertainty preferences over outcomes and endowments (e.g., risk- or ambiguity aversion).

Individuals in our framework not only care about the outcomes of their actions, but also about their identity – their sense of self (Akerlof and Kranton, 2000). Each individual is characterized by a set of attributes or traits $(q_1, q_2, \dots, q_H)$. An individual's identity is based on a subset of these characteristics, which we refer to as identity-relevant characteristics.[7] For these traits, individuals care about whether they and others possess them. For instance, liking the color blue might not be particularly important to an individual, but they may care a lot about being able to see themselves as a caring, selfless person. Indeed, traits related to morality have been found to be central to people (Wojciszke, Bazinska, and Jaworski, 1998; Goodwin, Piazza, and Rozin, 2014; Strohminger and Nichols, 2014). We assume each trait q_h is evaluated on a numerical scale, on which higher values indicate a more positive evaluation and individuals care about the average $\bar{q}$ of the set of identity-relevant traits.[8]

Importantly, individuals have identity concerns: they seek to uphold a positive identity (i.e., a positive $\bar{q}$). The crucial element in our framework is that these concerns are influenced by how individuals view others: individuals care about the characteristics of others making similar decisions as themselves. For each action, there is a group of individuals $g \in G$ that is associated with the action. Let $g : A \to G$ denote a mapping indicating which group is associated with each action. We assume that people care about the average value of the identity-relevant characteristics within a group, although this can be easily expanded to capture more flexible aggregation functions. Accordingly, for a given action a, individual i forms a belief over the characteristics of members of group g: $\hat{\mathbb{E}}_i\left[\bar{q} \mid g(a)\right]$. Identity concerns cause these beliefs to enter the utility function directly:

$$U_i(a) = u_i(z_a) + \theta \hat{\mathbb{E}}_i\left[\bar{q} \mid g(a)\right].$$

Hence, associating oneself through an action with a group that is perceived as negative (positive) creates negative (positive) utility. Actions that are associated with groups that are viewed negatively may be seen as taboos, with violations creating "anxiety and discomfort in oneself" (Akerlof and Kranton, 2000). The importance of this type of identity-based utility relative to outcome-based utility

[7] How individuals view and categorize themselves is thus based on character traits. A large literature in psychology studies the various ways in which individuals categorize themselves and how it forms their identity (see e.g., Burke and Stets, 2009; Stets and Serpe, 2013, for overviews)

[8] Our predictions remain unchanged if we instead assume that people care about a unidimensional score based on all traits, with each trait monotonically influencing the score.

$u_i(z_a)$ is captured by the parameter θ. Since it concerns people's identity, action do not have to be visible to others for identity-based utility to matter. Hence, how people view others may influence their decisions even for decisions that are predominantly unobserved by others, such as investment decisions. A potential micro-foundation of this concern is that individuals are uncertain about their character traits and infer them from actions (Bénabou and Tirole, 2011).

In the context of investment decisions, there exists the group of stockholder S and non-stockholder NS, defined by whether an individual owns stocks or not. Then, actions based on investing in the stock market, such as buying shares of a mutual fund, putting money in stocks of a specific company, or engaging in options trading, are all associated with the group of stockholders. Suppose individuals can either invest $a = I$ or not invest $a = NI$ in the stock market; hence $g(I) = S$ and $g(NI) = NS$. Maximizing $U_i(a)$, individual i chooses $a = I$ if and only if

$$u_i(z_I) - u_i(z_{NI}) \geq \theta \left(\hat{\mathbb{E}}_i \left[\bar{q} \mid NS \right] - \hat{\mathbb{E}}_i \left[\bar{q} \mid S \right] \right).$$

Accordingly, even if the potential material gains from investing are large, people will abstain from investing if the group of stockholders is viewed as sufficiently negative compared to the group of non-stockholders.

Our framework makes two key testable predictions. The first one builds on the idea that the influence of identity concerns depends on which actions are associated with which groups. The attractiveness of an action should, hence, depend on which group the action is associated with.

Prediction 1. *Assume there are two distinct groups G_1 and G_2, over which perceptions differ such that G_1 is perceived more positive ($\hat{\mathbb{E}}_i \left[\bar{q} \mid G_1 \right] > \hat{\mathbb{E}}_i \left[\bar{q} \mid G_2 \right]$). Changing the association of an action a from group G_1 to G_2, keeping all other aspects constant, reduces the attractiveness of a.*

Holding the association of actions and groups fixed, our framework furthermore predicts that identity concerns depend on people's views of the respective groups. The second prediction, thus, states that the attractiveness of an action is directly influenced by people's views of the group associated with the action.

Prediction 2. *Suppose action a is associated with group G. If the perception of the characteristics of the individuals belonging to G becomes more positive (negative), the attractiveness of action a increases (decreases) relative to other actions not associated with G.*

A necessary condition for identity concerns to be relevant for the decision to invest in stocks is that people's views of stockholders and non-stockholders differ. In the next section, we identify identity-relevant characteristics and measure people's views of stockholders and non-stockholders over these characteristics. Based on the results, we test the predictions of our framework in two experiments in Section 4.

3 The prevalence of negative perceptions of stockholders

In this section, we document people's view of stockholders by measuring their perceptions of identity-relevant characteristics of stockholders and non-stockholders. We start by describing the data sources in Section 3.1 and introducing our method of measuring perceptions in Section 3.2. We then provide the results in Section 3.3 and discuss their robustness in Section 3.4.

3.1 Data

We elicit people's views of stockholders using surveys, drawing from two samples with complementary advantages. Our primary sample focuses on a single country, the Netherlands, and contains a broad range of measures for a large and representative population sample. Our secondary sample covers ten countries with different cultural and institutional backgrounds, allowing us to assess the generalizability of our findings.

Netherlands. For the Netherlands, we fielded two surveys to the LISS (Longitudinal Internet studies for the Social Sciences) panel. The panel is based on a true probability sample of the Dutch population drawn from the population registers in collaboration with Statistics Netherlands (CBS) and administered by Centerdata (Tilburg University).[9] We focus on participants of the panel who report to be the main financial decision-maker of their respective household. Overall, 3,272 panelists participated in our first survey in which we elicited their views of stockholders. In addition, we subsequently fielded a second survey to 1,592 non-stockholders to obtain supplementary measures. See Appendix Table B.2 for a summary of demographic characteristics. We chose the LISS panel due to the following three key features that make it ideally suited for our purpose. First, it allows us to measure people's views of stockholders among a broad population sample. Second, we can link participants' responses to Dutch administrative data, which includes information on financial assets of the respective households based on tax records. Third, we can link participants' responses to other surveys fielded to the LISS panel. Through these features we obtain a rich set of individual level measures.

Cross-country. To measure people's views more broadly around the world, we fielded a short survey to individuals living in ten countries in cooperation with the survey company Bilendi. Overall, we have data from 5,130 respondents, around 500 in each of the following countries: Australia, Germany, Italy, Japan, Mexico, South Korea, Spain, Sweden, the United Kingdom, and the United States. Samples are representative for each country with respect to age and gender based on quota sampling. See Appendix Table B.3 for a summary of demographic characteristics. Surveys were translated and back-translated by professional translators. Rare cases of disagreements were resolved by a third translator.

3.2 Measurement

Section 2 formulates two conditions for a character trait q to influence decisions related to the stock market. First, the trait needs to be identity-relevant. Second, subjects need to perceive differences in the extent to which they associate it with the group of stockholders and non-stockholders (in our framework with respect to trait h: $\hat{\mathbb{E}}_i\left[q_h \mid S\right] \neq \hat{\mathbb{E}}_i\left[q_h \mid NS\right]$). Based on these conditions, we identified a list of eight potential character traits through a search in media (articles, books and movies). We then conducted a pre-test to select three character traits based on the two mentioned conditions, see Appendix C for details. We selected the following traits which belonged to the top

[9] Special efforts are made to ensure that the panel represents the adult Dutch population. For example, devices are provided to participates who otherwise would lack access.

four traits for each criterion, supplemented with accompanying definitions:[10]

Greed A strong wish to continuously get more of things like wealth, possessions or social values.

Gambler A person who shows the tendency to risk money or other stakes in the hope of being successful.

Selfishness Being willing to accept negative consequences for other people or the environment to gain a personal advantage as a result.

Elicitation. To elicit perceptions of stockholders, we asked subjects to consider the entire adult population of their respective country to be divided into two groups: those who hold any risky financial assets and those who do not. We provided subjects with the precise list of assets considered risky financial assets. The categorization is based on the corresponding tax category in the Netherlands, ensuring that Dutch subjects are familiar with the categorization. Since the assets categorized as risky financial assets are typically traded on the stock market, we will use the terms "stockholder" and "has risky financial assets" interchangeably. We justify in further detail our choice of defining stockholders and provide evidence that subjects understand the definition well in Appendix D. Subjects then stated separately for the group of stockholders and non-stockholders their assessment for each trait ("People who (do not) own risky financial assets are on average ...") on a scale from 0 "totally disagree" to 10 "totally agree." We chose this measurement because it is easily understood by subjects and straightforward to answer, allowing us to include it even in short surveys.[11]

Variables. Through these trait ratings, we obtain a measure of how subjects perceive the characteristics of each group. We define subjects' *average negative perceptions* about stockholders/non-stockholders as the average rating of each group over the three trait. To obtain a single measure, we define *negative views about stockholders* as the difference between subjects' average negative perceptions of stockholders and their average negative perceptions of non-stockholders.[12] We label the variable "negative views" because the three selected traits are framed negatively. While, in general, these traits may also have positive aspects, subjects view them predominantly negatively (see Appendix C). Hence, higher values indicate that subjects view stockholders more negatively relative to non-stockholders.

3.3 Results

Netherlands. Figure 1 Panel A shows the distribution of subjects' ratings of stockholders and non-stockholders for the three traits greed, being a gambler, and selfishness in the Netherlands. Higher values indicate that the respective group is rated more greedy, gambler-like and selfish. For all three traits, the distribution for stockholders lies to the right of the non-stockholder distribution, indicating

[10]The definitions were based on established psychological formulations, which we slightly altered to increase comprehension. We circulated the definitions among experts and non-experts to ensure that they were both internally valid and easily understood.

[11]For these reasons, similar trait ratings have been employed in the context of political ideology in political science (e.g., Iyengar, Sood, and Lelkes, 2012; Hobolt, Leeper, and Tilley, 2021)

[12]Our results do not rely on averaging over traits. In particular, our analyses in Section 5 yield similar results if we consider each trait separately.

that stockholders are rated more negatively ($p < 0.001$, Kolmogorow-Smirnow test)[13]. At the individual level, a large fraction of subjects rates stockholders strictly more negatively than non-stockholders (64% for greed, 81% for gambler, and 47% for selfishness, $p < 0.001$, Wilcoxon signed-rank test). Moreover, ratings between traits are strongly correlated and show a high degree of internal consistency (Cronbach's $\alpha = 0.80$ for stockholder and $\alpha = 0.86$ for non-stockholder ratings). Comparing average negative perceptions, we observe that 81% of respondents rate stockholders more negatively than non-stockholders. In conclusion, subjects in the Netherlands hold substantial negative views about stockholders.

Cross-country. Panel B of Figure 1 shows that negative views about stockholders are not limited to the Netherlands. For our set of eleven countries, the figure displays subjects average negative perceptions about stockholders and non-stockholders. In every country, stockholders are rated more negatively on average than non-stockholders, often by more than 50%. These differences are significant in every instance ($p < 0.001$, Wilcoxon signed-rank test). In the Appendix, Figures A.1 and A.2 replicate the figure of Panel A, showing that the distribution of ratings differ in all countries. At the individual level, the data similarly reveal strong negative views. Overall, 64% of subjects rate stockholders strictly more negatively than non-stockholders, with fractions for each country ranging from 49% to 73%. Thus, negative views about stockholders are a general finding in various countries around the world.

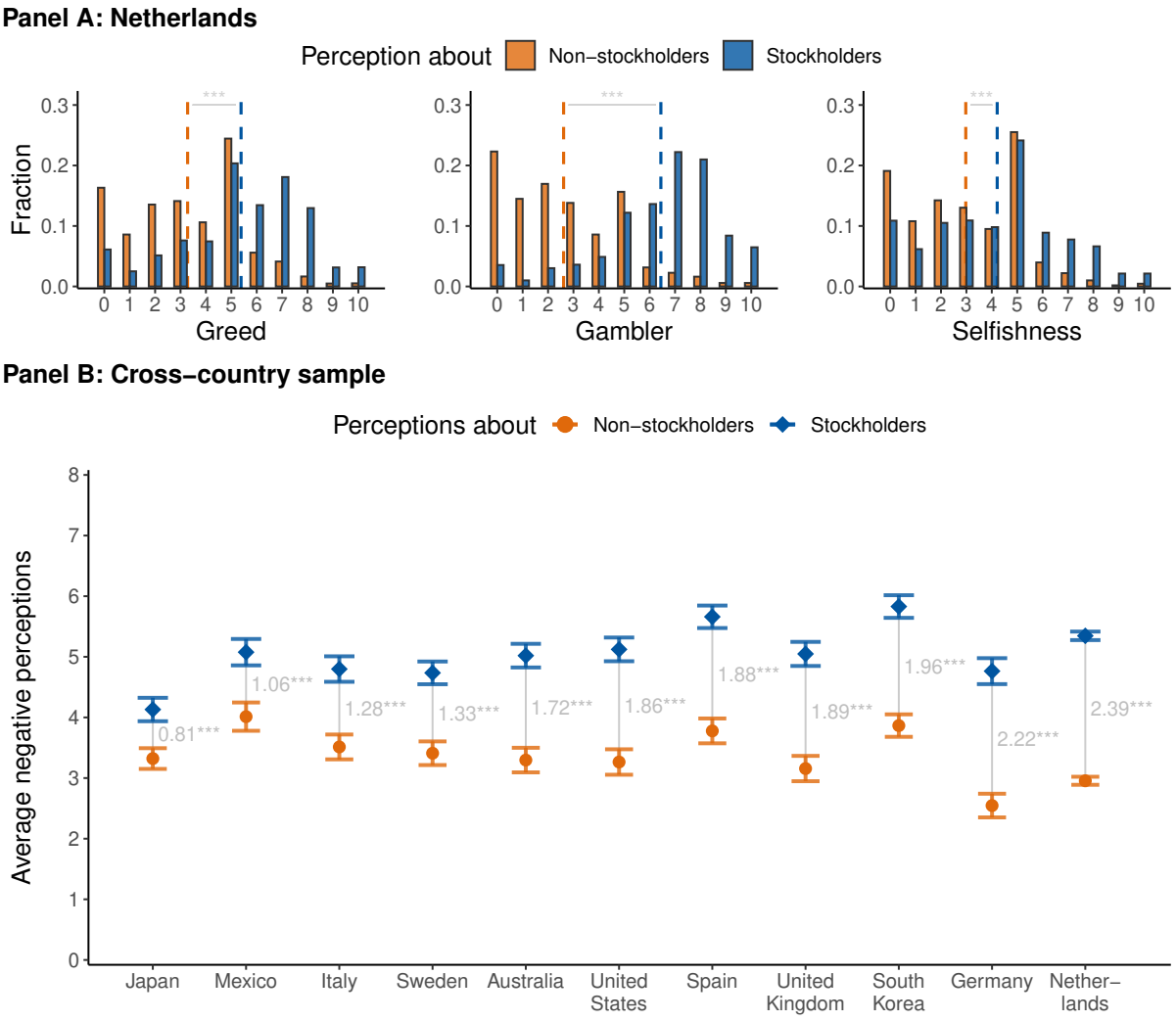
3.4 Robustness and correlates

In the following, we show the robustness of our previously documented result. Specifically, we extend our analysis to alternative measures of people's views of stockholders and the relation of views with potential confounds as well as investigate whether views vary with respect to types of investments and socio-demographic background.

Robustness to measurement. Is our finding that people view stockholders negatively an artifact of how we measure views of stockholders? For instance, the use of negative traits and Likert scales might bias subjects' responses. It is important to emphasize, however, that our main measure concerns the difference between subjects' ratings of stockholders and non-stockholders. Thus, biases arising from Likert scales are unlikely to drive the large differences in ratings we find. To further show the robustness of our results, we use a more quantitative elicitation measure and vary whether views are measured over negatively or positively framed items in a separate sample of 1,016 Dutch individuals. We elicit perceptions over nine items that are related to the previously used character traits. For each, we replicate our main finding: subjects view stockholders significantly more negatively if views are elicited over a negatively framed item and less positively if elicited over a positively framed item (in every instance, $p < 0.001$, Wilcoxon signed-rank test, Bonferroni corrected). For example, a majority of subjects state that stockholders act less prosocial in an incentivized dictator game. See Appendix E for details on design and results.

[13]All tests refer to two-sided tests. We adjusted these p-values and the subsequent ones in this section for multiple hypothesis testing using Bonferroni correction.

Figure 1: People's perceptions of characteristics of stockholders and non-stockholders



Notes: **Panel A** displays the distribution of subjects' ratings of the group of stockholders and non-stockholders elicited in the LISS panel ($N = 3,272$). Higher values indicate that subjects rate the respective group as more greedy (left graph), gambler-like (middle graph), and selfish (right graph). The dotted lines display mean ratings. **Panel B** displays subjects' ratings of the group of stockholders and non-stockholders averaged over the three traits greed, being a gambler, and selfishness for our set of ten countries ($N = 5,130$) and the LISS panel (Netherlands). Higher values indicate that subjects rate the respective group as more negative on average. Bars indicate 95% confidence intervals. Stars indicate significance levels, where *p<0.1, **p<0.05 and ***p<0.01, obtained from Kolmogorov-Smirnov tests (Panel A) and Wilcoxon signed-rank tests (Panel B).

Relation to stock market knowledge and numeracy. Are views about stockholders merely a proxy for individuals' financial numeracy or stock market knowledge? From a theoretical perspective, perceptions of stockholders' characteristics are distinct from the later concepts. To test whether perceptions are also empirically distinct, we collected self-assessed stock market knowledge, a standard measure of financial numeracy, subjects' self-assessed belief whether they would be successful in the stock market and their belief over stock returns in our second LISS survey (see Appendix K.2 for variable definitions). We find that neither self-assessed stock market knowledge ($r = -0.13$), financial numeracy ($r = 0.12$), success belief ($r = -0.07$), or return beliefs ($r = 0.06$) are meaningfully correlated with negative views about stockholders.

Perceptions over different investments. How do people view different types of stock investors? Going beyond eliciting views of the general group of stockholders, we presented participants of our second LISS survey with investors that (i) only invest in socially responsible investments (SRI), (ii) only invest in market index funds, and (iii) explicitly use financial derivatives (options, swaps, and warrants). Participants rated how selfish they perceived each group of investors. We find that participants differentiate perceptually between types of stock investors: compared to stockholders in general, SRI and index fund investors are perceived significantly less negative ($p < 0.001$, paired Student's t-test, Bonferroni corrected), while investors that use derivatives are perceived as more negative ($p = 0.017$). Nonetheless, all three groups are still viewed significantly more negative relative to non-stockholders ($p < 0.001$).

Relation to socio-demographic variables. Do negative views vary with socio-demographic background? Using the first LISS survey, we regress negative views about stockholders on a set of background variables. We find that women and older subjects have significantly higher negative views and observe no difference with respect to education, income, and wealth. Thus, more wealthy individuals do not hold systemically less negative views of stockholders. For details on the regression results, see Appendix Table B.10.

4 The causal effect of perceptions of stockholders on financial decision-making

This section investigates whether people's perceptions of stockholders causally influence financial decision-making. Our conceptual framework of Section 2 provides an explanation for why perceptions influence behavior: people have identity concerns, i.e., want to uphold a positive identity. Choosing an option that is associated with a negatively viewed group creates an identity conflict, which people seek to avoid.

Motivational evidence. To collect motivational evidence that identity concerns operate in the stock market context, we adopted five items from established identity scales to the stock market context and fielded them to our non-stockholder sample in the second LISS survey (see Appendix K.5 for details on the scale). We find that a substantial share of subjects agrees with the items' statements, revealing identity concerns. For instance, 50% agree that "Not having risky financial investments is an important part of my identity" and 41% agree that they are "proud to not own risky financial investments." The extent of these identity concerns is significantly associated with how negatively subjects view stockholders ($p < 0.001$).[14]

Moving from qualitative statements to behavior, our framework provides a revealed preference test of the relevance of identity concerns in the stock market context. All else equal, non-stockholders

[14]While we focus on the influence of identity when choices are anonymous, we also collected suggestive evidence that visibility to others matters for investment decisions. We elicited non-stockholders intention to invest (7-point Likert scale) under two hypothetical situations. First, everyone they know will find whether they invest in the stock market. Second, no one will find out. Investment intentions are significantly lower in the first situation compared to the second ($p < 0.001$, paired Wilcoxon signed-rank test). Overall, 24% of subjects indicated a strictly lower intention to invest if others found out. Hence, on top of generating identity concerns that materialize in private, the negative image of stockholders might also generate social image concerns.

should avoid options that are associated with stockholders (Prediction 1 of our framework). Importantly, the degree to which non-stockholders avoid these options should depend on the degree to which they view stockholders negatively (Prediction 2 of our framework). We use two experiments to test our framework's predictions, one for each prediction.

Data. We use US participants recruited on Prolific for the experiments. We choose Prolific because it is one of the leading market research companies used in social science research and its participants have been shown to provide high-quality responses in terms of attention and comprehension (Eyal et al., 2021; Gupta, Rigotti, and Wilson, 2021). The experiments were preregistered, see Appendix J for details. We used oTree (Chen, Schonger, and Wickens, 2016) for programming.

4.1 Description experiment

To test whether non-stockholders avoid choice options associated with stockholders, we present subjects with simple incentivized investment decisions and exogenously vary the association of the decisions' options with the stock market.

Decisions. Subjects in the experiment face two decision parts. Each decision part consists of four investment decisions. In each decision, subjects are endowed with \$30 and choose between a safe and a risky option. By choosing the risky option, subjects pay an amount $c < \$30$ and receive with 50% probability a high outcome $x_h > c$ and with 50% probability a low outcome $x_l < c$ as additional payment. Choosing the safe option yields the endowment as additional payment with certainty. The price and outcomes of the risky option vary between the four decisions of each part.

Descriptions. To vary the association of the decisions with the stock market, we use two different ways to describe the risky and safe options to subjects. In the *Stock Description* treatment, the risky option is described as a bet on past stock market prices. Subjects are told that they could buy one share of an (actual, existing) ETF[15] at a price that the ETF had traded at a specific point of time in the past (pay amount c). The share would then be randomly sold at one of two subsequent past points in time. We selected the points such that the selling price was higher than the buying price at one point and lower at the other. Subjects would then receive the value of the ETF at the selected selling date as payment (receive x_h or x_l). The safe option is described as abstaining from betting on the stock market (receive the endowment with certainty). See the first column of Table 1 on how the options were introduced to subjects and an example of the decision described as a stock investment.

In the *Draw Description* treatment, all references to the stock market are replaced by neutral wording. The risky option is described as a bet on the outcome of a random draw. Instead of an ETF share, subjects could buy a ticket for a random draw (pay amount c). One out of two outcomes would then be randomly selected. One outcome was higher than the cost of the ticket, while the other was lower. Subjects would then receive the corresponding amount as payment (receive x_h or x_l). The safe option is described as abstaining from betting on the outcome of a random draw (receive the endowment with certainty). See column 2 of Table 1 for illustration.

Importantly, the treatments vary only in how the options are described. The buying prices c and outcomes x_l and x_h are identical between treatments. Moreover, we designed the descriptions to be

[15]We used year-end share prices of the following four ETF's: iShares Nasdaq 100, MSCI World iShares, iShares MSCI EM and Invesco FTSE RAFI US 1000.

Table 1: Description experiment illustration of choice options

Stock description	**Draw description**
In this section, you will make 4 decisions. In each decision, you will separately receive $30 from us. With this money, you can choose between two options:	In this section, you will make 4 decisions. In each decision, you will separately receive $30 from us. With this money, you can choose between two options:
Option A: Participate in the stock market by buying a share. The value of the share depends on the movement of the stock market.	**Option A:** Participate in a random draw by buying a ticket. The value of the ticket depends on the outcome of the random draw.
Option B: Do not participate in the stock market.	**Option B:** Do not participate in the random draw.
In each decision, you will have the option to buy a different share. Each share has a different price and offers different returns. The decisions are presented independently of each other. That is, your choice in one decision does not affect the other decisions.	In each decision, you will have the option to buy a different ticket. Each ticket has a different price and offers different prizes. The decisions are presented independently of each other. That is, your choice in one decision does not affect the other decisions.
Example of Option A:	Example of Option A:

	Share Price MSCI World ETF
2010 (Buying Price)	$27.19
2011	$25.06
2016	$37.21

	Prize
Buying Price	$27.19
Outcome 1	$25.06
Outcome 2	$37.21

Notes: The table presents an excerpt of the instructions of the description experiment. The experiment features four choices between two options, Option A and Option B. Subjects first receive the displayed text and a more detailed explanation on the next screen. See Appendix L.2 for the full wording. The table furthermore displays an example of Option A. In the *Stock Description* treatment, choosing Option A in this example means buying the share of an MSCI World ETF to a price of $27.19 in 2010. A computer then sells the share either to a price of $25.06 in 2011 or $37.21 in 2016 with equal probability. In the *Draw Description* treatment, choosing Option A means buying a lottery ticket to a price of $27.19 that offers a prize of $25.06 or $37.21 with equal probability. The alternative in both cases is choosing Option B, in which case subjects receive $30 with certainty.

as similar as possible in terms of complexity and length, changing only the labels of the options. To further reduce the scope for misunderstandings between descriptions, we gave subjects the respective expected value of the risky option. Subjects were thus able to easily compare expected payments between risky and safe options.[16]

Between-subject variation. For the first decision part, we randomly assigned subjects to either the *Draw Description* treatment (where options are described neutrally) or to the *Stock Description* treatment (where options are described as stock investments). Comparing choices between treatments thus identifies the effect of varying the association of the options with the stock market.

Within-subject variation. After the first decision part, subjects answered a couple of general demographic questions intended as filler questions and subsequently faced the second decision part.[17] Here, subjects again make four decisions. Subjects who received the *Stock Description* before subsequently receive the *Draw Description*, and vice versa. This variation allows us to investigate preferences at the individual level since we observe the same subjects making choices under the different

[16]Nieddu and Pandolfi (2021) also vary descriptions to study the influence of financial literacy. They describe a simple lottery either as a coin toss or using financial terms such as defaults, net return, current and future value. Thus, to understand the payoff structure of the latter, financial literacy is required. We deliberately described the payoff structure without financial terms in both cases and provided the expected value to ensure that subjects understood both descriptions equally well.

[17]In the first decision part, subjects were not aware that a second decision part would follow.

descriptions. To avoid consistency effects[18], we obfuscate that the values of the options are repeated by changing the presentation of the decision's options in two aspects. First, outcomes are visualized in the form of tables in one set of questions and as figures in the other. Second, the currency used is either dollar or the British pound. Since payments on Prolific are always made in pounds and subjects are located in the US, they are familiar with both currencies. Figure A.3 in the appendix displays the four possible visualizations. The visualization and currency used for each decision part is randomized at the subject level independently of the description.

Validation. Since the outcome-related features are kept constant between treatments, outcome-based theories of decision-making predict no difference in choice behavior. However, if the risky option in the *Stock Description* treatment is, to a higher degree, associated with stockholders compared to the *Draw Description* treatment and subjects view stockholders negatively, our framework predicts a difference (Prediction 1). We argue that the risky option in the *Stock Description* treatment features a higher association because instead of betting on a random draw, subjects bet on the value of an index traded on the stock market. This option is thus more similar to real-world stock investments compared to the *Draw Description* option. Indeed, we validate that the *Stock Description* risky option is empirically more strongly associated with stockholders: even controlling for risk attitudes, stockholders are significantly more likely to choose the option than non-stockholders. We further show that participants on Prolific hold substantial negative views about stockholders, just as the general US population. For details, see Appendix F.

Procedure. At the beginning of the experiment, subjects made two choices between a certain amount and a binary lottery. We use these responses to calibrate the payout values of the risky options in the subsequent decision parts (by picking different selling years for the stock option). Subjects who reveal a high degree of risk averse behavior during the initial two questions receive less risky options later, which reduces the fraction of subjects who either always select the safe option or the risky option in all decisions. This procedure thus increases the power of our experimental comparison, but is independent of treatments, ensuring that the outcomes of the draw and stock options were identical as previously described.

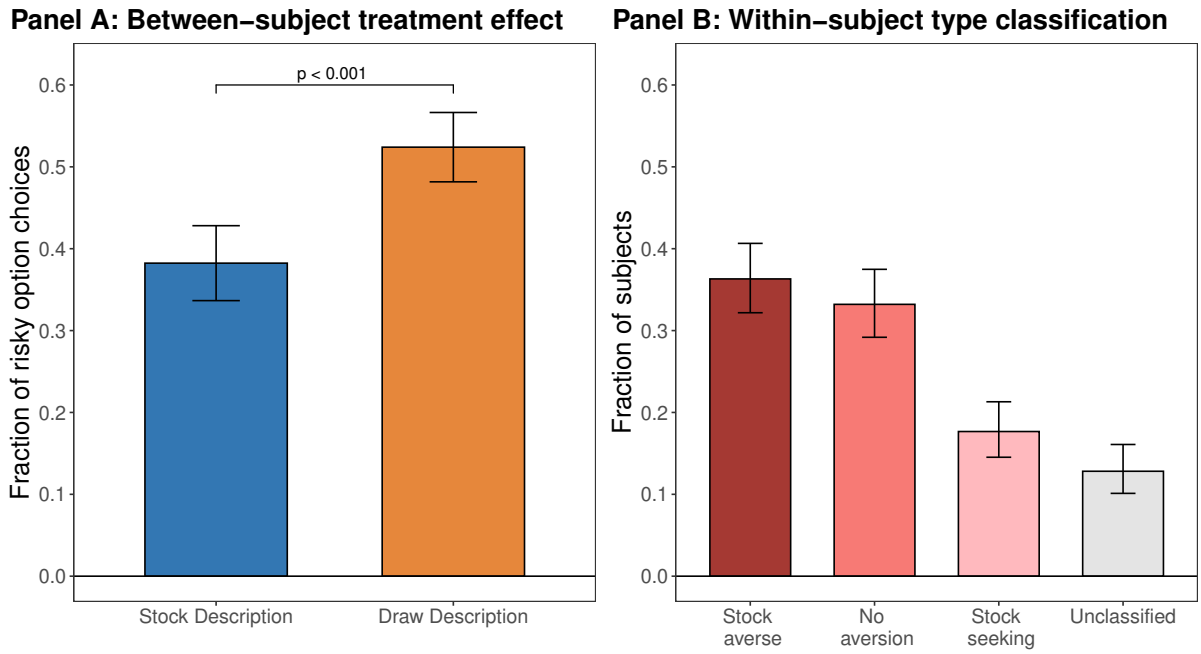
Sample and incentives. 651 subjects on Prolific with residence in the US completed the experiment. The median completion time was slightly above 7 minutes, and subjects received £0.9 ($\approx$ $\$1.13$) for completion. Additionally, ten randomly selected subjects had one of their decisions implemented with real consequences. Overall, the average payment was £1.38 per subject ($\approx \$14.80$ per hour), which is well above the US federal minimum wage level. In accordance with the preregistration, we exclude 136 subjects who indicated that they are stockholders. Our sample thus consists of 515 subjects. See Appendix Table B.5 for sample demographics.

4.2 Description experiment results

Between-subject analysis. Overall, 260 subjects were part of the *Draw Description* treatment and 255 were part of the *Stock Description* treatment. Appendix Table B.6 shows that treatments were

[18]Subjects could be motivated to choose the same options across decision parts because they want to appear congruous in their choice behavior (Falk and Zimmermann, 2017). This behavior would mitigate the within-subject influence of the descriptions. Naturally, it cannot play a role in the between-subject comparison.

Figure 2: Description experiment results: aggregate and individual behavior



Notes: **Panel A** displays the between-subject treatment effect of the description experiment. The outcome variable denotes the average fraction where the risky instead of the safe option is chosen. *Stock Description* denotes the treatment in which the risky option is described as a stock investment and *Draw Description* the treatment in which the option is described as a random draw. **Panel B** displays the distribution of types identified by the within-subject analysis. Subjects are *stock averse* if they weakly prefer the risky option described as a random draw to the risky option described as a stock investment, with at least one preference being strict. A preference being strict means choosing the risky option under the draw description and the safe option under the stock description. Subjects are *stock seeking* if they weakly prefer the risky option described as stock to the draw one, with at least one strict preference. Subjects show *no aversion* if they consistently choose the same option between descriptions in all decisions. Remaining subjects who do not show a consistent choice pattern are labeled *unclassified*. Error bars indicate 95% confidence intervals.

balanced across demographic variables. Panel A of Figure 2 displays the treatment effect on decision-making. We find that subjects in the *Draw Description* treatment choose the risky option in, on average, 52% of their decisions (i.e., in 2.10 out of the 4 possible decisions). In comparison, subjects in the *Stock Description* treatment choose the risky option in only 38% of decisions. Hence, once the risky option is described as a bet on the stock market instead of a bet on a random draw, subjects are 27% less likely ($p < 0.001$, Wilcoxon rank-sum test) to choose the option, even though the values underlying the option are identical.[19] Panel A of Appendix Table B.7 provides complimentary regression results. In the table, we pool decisions and regress a dummy indicating if the risky option was chosen on a dummy indicating the *Stock Description* treatment. The regression confirms a large and significant treatment effect. Notably, we find that while only 19% of subjects never choose the risky option within the *Draw Description* treatment, this fraction almost doubles to 36% in the *Stock Description* treatment.

Within-subject analysis. For the within-subject analysis, we use the choices of both decision parts. We find that the within-subject effect is very similar to the between-subject effect. While subjects choose the risky option in 50% of decisions when described as a bet on a random draw, this fraction

[19]Reassuringly, neither the form of visualization ($p = 0.83$, Wilcoxon rank-sum test) nor the currency ($p = 0.85$, Wilcoxon rank-sum test) had any effect on how often the risky choice is chosen.

decreases to 38% when described as a bet on stock market movements. Panel B of Table B.7 in the Appendix shows the corresponding regression results. We again find a significant effect that is robust to the inclusion of demographic controls.

Utilizing the fact that we vary descriptions within-subject, we can categorize subjects into distinct behavioral types. Since subjects face the same four decisions between risky and safe options under both descriptions, we have four choice pairs that reveal people's preferences. For a given choice pair, we define a strict preference for the random draw if a subject chooses the risky option when it is described as random draw and the safe option when the risky option is described as stock investment. We define a strict preference for the stock investment if the reverse happens: a subject chooses the safe option under the draw description but the risky option under the stock description. Subjects are *stock averse* if they, across the four choice pairs, show a strict preference for the random draw for at least one pair and for none of the pairs a strict preference for the stock investment. Accordingly, subjects are *stock seeking* if they show at least once a strict preference for the stock investment and no strict preference for the random draw. Subjects display *no aversion* if they have no strict preference, meaning they consistently choose the same option within each choice pair. The remaining subjects are labeled *unclassified*.[20] Figure 2 displays the distribution of types. Overall, 36% of subjects are *stock averse*, 18% are *stock seeking*, 33% display *no aversion*, and the remaining 13% show no consistent preferences across descriptions (*unclassified*).

In summary, the description experiment reveals a strong aversion against a choice option if it is associated with the stock market – even if we hold any other aspect of the choice option constant. Hence, we find evidence supporting Prediction 1 of our model.

4.3 Information experiment

Next, we examine whether subjects' negative perception of stockholders is the mechanism driving the stock market aversion documented in the last section. Specifically, we test Prediction 2 of our framework: a change in people's views of stockholders changes their attitude towards stock investments. For this purpose, we require an exogenous shift to people' perceptions of stockholders. We thus conduct a second experiment in which we provide subjects with information about the difference in donation behavior between stockholders and non-stockholders. We choose information about donation behavior because it is closely linked to people's perception of traits such as greed and selfishness, and people consider it relevant and informative.[21] Therefore, we expect this information to shift subjects' perceptions of the difference in the traits of selfishness and greed between stockholders and non-stockholders.

Information generation. In order to generate data for the information, we ran a separate experiment on Prolific with 272 participants, which we label allocators. Allocators consisted of both stockholders and non-stockholders. They were given $100, which they could freely divide between themselves and a charity that supports children with critical illnesses. For a randomly selected subset, this donation decision was implemented with real consequences.

[20] These subjects show at least one strict preference for the stock investment and at least one for the random draw across the four choice pairs.

[21] See e.g., Ariely, Bracha, and Meier (2009), Grossman and van der Weele (2017), Bénabou et al. (2022), and Exley, Pezzuto, and Serra-Garcia (2023)

Experimental variation. The key feature of the design is that we exogenously vary the information that subjects receive. For each subject, we individually and randomly selected ten allocators who indicated that they hold stocks and ten who indicated that they do not hold any stocks. To control for the fact that stockholders often have higher income, which could interfere with subjects' interpretation of the signal, we drew these 20 allocators from the same income bin (using three bins). The entire procedure was transparently described to subjects.[22] As information, subjects received the percentage difference in donation behavior between the randomly drawn stockholders and non-stockholders. Specifically, subjects were presented the following sentence: "For the randomly selected participants, we found that [GROUP 1] donate [X]% more than [GROUP 2]." See Appendix Figure A.4 for a screenshot. Consequently, some subjects receive the information that stockholders donated more than non-stockholders, while others learn that in their draw non-stockholders donated more with different percentage differences. To ensure that subjects paid attention, they had to repeat the information on the subsequent page.

Treatment variables. For the analyses, we use the signal about differences in donation behavior as independent variables in two different ways. First, a dummy variable equal to one if the subject received the signal that stockholders donated more than non-stockholders, and equal to zero if they donated a lesser or an equal amount.[23] Second, the full signal as continuous variable where higher values indicate that the selected stockholders donated more relative to the selected non-stockholders.

Outcome variable. To cleanly identify the causal effect of varying perceptions on financial decision-making, we make use of the controlled decision environment of the previous experiment (Section 4.1). After receiving the information about donation behavior, subjects made four incentivized decisions between a safe option and a risky option described as a stock investments (stock option). Our main outcome variable is thus subjects' willingness to invest in the stock option.

We chose the same choice paradigm as in the last experiment to fix the investments' outcomes and probabilities. Thus, even if subjects update about secondary factors unrelated to their perceptions of stockholders such as their beliefs of the profitability or riskiness of stock investments, this secondary updating should not influence decision-making in our experiment. Furthermore, since all subjects receive information, we hold constant factors such as priming or attention that could influence decision-making independent of the information's content. We are, hence, confident in assuming that outcome-based utility $u_i(z_I)$ is unaffected by our treatment variation, allowing us to directly observe the causal effect of varying perceptions about characteristics of stockholders compared to non-stockholders $\hat{\mathbb{E}}_i\left[\bar{q} \mid S\right] - \hat{\mathbb{E}}_i\left[\bar{q} \mid NS\right]$.

Procedure. At the start of the experiment, subjects made two calibration choices and then four incentivized choices between a safe option and a risky option described as a random draw using the same procedure as in Section 4.1. This allows us to use subjects' decisions in a non-stock-related setting as a control when analyzing the effect of the information, increasing statistical power. Subjects

[22] They were also informed about the relationship between behavior in the donation decision and other relevant real-life behavior. For example, we explained that previous research has shown that people who donate more in such a decision are also more likely to do voluntary work (e.g., Falk et al., 2018).

[23] Less than 5% (25 subjects) received the signal that both groups donated an equal amount. We chose to pool them to maintain a dichotomous variable. Our results are quantitatively very similar if we pool these subjects with those that received the signal that stockholders donated more or if we exclude them altogether from the analysis.

subsequently state their prior belief over the difference in donation behavior between stockholders and non-stockholders, and then receive the signal about the difference in donation behavior. After receiving this information, subjects made four incentivized decisions between a safe option and a risky option described as a stock investment, as previously described. Finally, we elicited subjects' perceptions of stockholders and non-stockholders (posterior belief) using the module developed in Section 3.

Sample and incentives. 652 subjects on Prolific with residence in the US completed the experiment. The median completion time was 9.5 minutes and subjects received £1.2 for completion. Additionally, ten randomly selected subjects had one of their decisions implemented with real consequences. Overall, average payment was £1.71 per subject ($\approx \$13.50$ per hour). In accordance with the preregistration, we exclude 104 subjects who indicated that they are stockholders. Our sample thus consists of 548 subjects. See Appendix Table B.5 for sample demographics.

4.4 Information experiment results

Signal distribution and prior beliefs. Overall, 61% of subjects received the information that non-stockholders donated more than stockholders or that they donated the same amount, while 39% of subjects received the information that stockholders donated more. The mean of the full signal variable is -10% (median -6%), but with substantial variation, see Appendix Figure A.5 for the entire distribution. Replicating the results of Section 3, we find that prior to receiving the actual difference, subjects believe the randomly selected group of stockholders donate 15 pp. less than the group of non-stockholders. Appendix Figure A.6 displays the distribution. Reassuringly, prior beliefs were not correlated with the randomly generated signal ($r = 0.01, p = 0.89$). Table B.8 in the appendix further shows that signals were not correlated with demographic variables either.

Effect on posterior beliefs. We start by investigating the impact of the signal on posterior beliefs. In Table 2, we regress differences in subjects' rating of the selfishness (column (1)) and greed (column (2)) of stockholders compared to non-stockholders on the signal about the difference in donation behavior between the two groups. As intended, the information significantly shifts perceptions: the higher the signal, the lower the subject's negative perception of stockholders. At the same time, we observe only a limited and insignificant impact of the signal on differences in ratings of the trait "gambler" (column (3)), which is reassuring as the information provided was not related to this trait.

Effect on behavior. Our main variable of interest is subjects' likelihood of choosing the stock option. Panel A of Figure 3 displays the results for the binarized signal variable. Subjects who receive the information that non-stockholders donated more choose the stock option in 42% of cases. This number increases to 50% for those subjects who learn that stockholders donated more ($p = 0.014$, Wilcoxon rank-sum test). In Panel B of Figure 3, we repeat our classification of subjects into the four behavioral types (*stock averse, stock seeking, no aversion, unclassified*). When subjects receive the information that stockholders donate more than non-stockholders, they are significantly less likely to be *stock averse* ($p = 0.002$, two sample test of proportions), and instead are more likely to show *no aversion* or *stock seeking* behavior.[24] At the same time, the fraction of unclassified subjects is not

[24] Similarly, we see a significant decrease in the fraction of subjects who refuse to choose the stock option in any decision ($p = 0.039$, two sample test of proportions).

Table 2: Information experiment treatment effect on negative perceptions

	Dependent variable: Perceptions about stockholders		
	Selfishness	Greed	Gambler
	(1)	(2)	(3)
Signal over donation behavior	-0.190^{***}	-0.150^{***}	-0.049
	(0.034)	(0.033)	(0.031)
Constant	1.516^{***}	1.963^{***}	5.010^{***}
	(0.132)	(0.130)	(0.152)
Prior beliefs	X	X	X
Observations	548	548	548
R^2	0.071	0.053	0.028

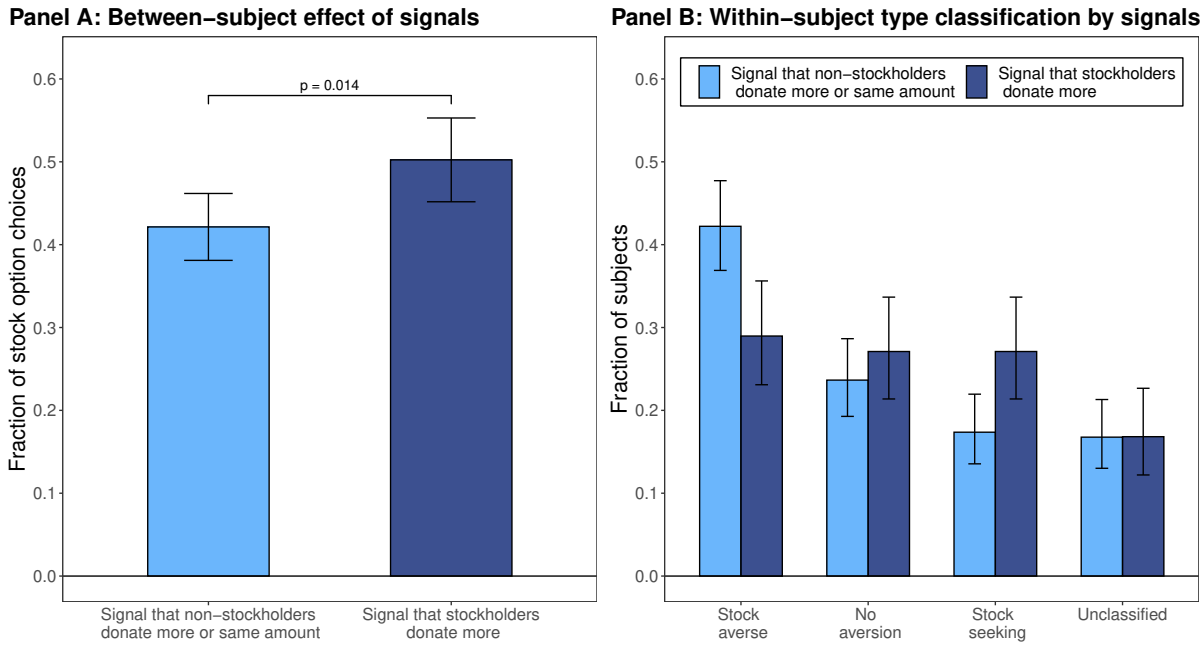
Notes: The table displays OLS estimates. The dependent variable is the difference in perceptions between stockholders and non-stockholders, with higher values indicating that stockholders are perceived to be more selfish in column (1), greedy in column (2) and gambler in column (3). Signal over donation behavior denotes the signal received over the difference in donation behavior. Higher values indicate a higher signal in the direction that stockholders donate more relative to non-stockholders, with the unit being 10% differences. Accordingly, a one-unit increase means a signal that stockholders donate 10% more than non-stockholders. Prior beliefs is subjects belief over the differences in donation behavior between stockholders and non-stockholders. Robust standard errors in parentheses. Significance levels are $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$.

affected by the information. Therefore, we obtain causal evidence that information about differences in donation behavior influences stock investment behavior.

In Table 3, we include the full distribution of signals, controlling for subjects' prior beliefs and their respective choice when options are described as a random draw. The dependent variable is the choice of the risky option when described as a stock investment. The independent variable is the signal that subjects receive over the difference in donation behavior between stockholders and non-stockholders as continuous variable, with higher values indicating that stockholders donate more relative to non-stockholders. We find a significant effect of the signal on behavior: the more positive the information that subjects receive regarding the donation behavior of stockholders, the higher the likelihood that they choose the stock option. More specifically, a 10% increase in the signal increases the likelihood by 0.9 pp. This effect is sizable, because a one-standard-deviation (40%) increase in the signal helps to decrease the description effect found in the previous experiment by 25% (3.6 out of 14.2 pp.).

Heterogeneity. In Appendix G, we investigate heterogeneity in the effect of the information on behavior. Since we elicited people's prior beliefs about the difference in donation behavior, we can compare subjects who received positive or negative information relative to their priors with subjects who received information confirming their priors. We find, as expected, that receiving positive information about stockholders increases stock option choices, while receiving negative information decreases it. However, the effect of information is not symmetric: positive information has a stronger effect on behavior than negative information of the same magnitude.

Figure 3: Information experiment results: aggregate and individual behavior



Notes: **Panel A** displays the effect of varying the signal in the information experiment. The outcome variable denotes the average fraction that the risky option described as a stock investment instead of the safe option is chosen. The left bar displays the choice behavior of subjects who received a signal that non-stockholders donated more or the same amount compared to stockholders. The right bar displays behavior for subjects who received a signal that stockholders donated more than non-stockholders. **Panel B** displays the distribution of types identified by the within-subject analysis. Subjects are *stock averse* if they weakly prefer the risky option described as a random draw to the risky option described as a stock investment, with at least one preference being strict. A preference being strict means choosing the risky option under the draw description and the safe under the stock description. Subjects are *stock seeking* if they weakly prefer the risky option described as stock to the draw one, with at least one strict preference. Subjects show *no aversion* if they consistently choose the same option between descriptions in all decisions. Remaining subjects who do not show a consistent choice pattern are labeled *unclassified*. Error bars indicate 95% confidence intervals.

Instrumental variable analysis. Complementary to our regression analysis, we use the exogenously assigned signal as an instrumental variable to estimate the causal effect of perceptions on financial decision-making. The analysis rests on the assumption that the documented effect of our treatment on financial decision-making operates solely through changes in perceptions of stockholders. This assumption seems plausible, as by design, the identifying variation comes from differing information about the difference in donation behavior between stockholders and non-stockholders. Empirically, as indicated in Table 2, we have a strong first stage. For the two treated traits of greed and selfishness, the respective F-statistic are 21.01 and 32.24. Table 4 displays the results of the 2SLS-regressions. Columns (1) and (2) focus on perceptions of greed. A one-standard-deviation increase in subjects perceptions of stockholders, induced by the signal, decreases the likelihood of investing in the stock option by about 16 pp. Columns (3) and (4) reveal that when focusing on perceptions of stockholders' selfishness, the effect is also statistically significant and very similar. We further find that both effects are stronger than the reduced form effects obtained by regressing the likelihood of investing in the stock option on negative perceptions of greed and selfishness. In these specifications capturing the correlational effect, a one-standard-deviation increase in negative perceptions is associated with a 5 pp. decrease in subjects' likelihood to choose the stock option.

Table 3: Information experiment treatment effect on decision-making

	Dependent variable:	
	Choice of stock option	
	(1)	(2)
Signal over donation behavior	0.009**	0.009**
	(0.004)	(0.004)
Choice of draw option	0.239***	0.240***
	(0.025)	(0.025)
Mean dep. variable	0.45	0.45
Demographic controls		X
Prior beliefs	X	X
Subjects	548	541
Observations	2,192	2,164

Notes: The table displays OLS estimates. All four binary choices between the risky option described as a stock investment and the safe option of a subject enter as separate observations. The dependent variable is an indicator whether the risky option described as a stock investment is chosen. "Signal over donation behavior" denotes the signal subjects receive regarding the difference in donation behavior between non-stockholders and stockholders. Higher values indicate that subjects receive the signal that stockholders donate more relative to non-stockholders, with the unit being 10% differences. "Choice of draw option" is an indicator of whether the risky option is chosen when described as a random draw investment. "Prior beliefs" refers to subjects' belief over the difference in donation behavior between stockholders and non-stockholders. "Choice of draw option" and "Prior beliefs" are both elicited before subjects receive the signal. Demographic controls include age, gender, education, income, total financial assets and involvement in financial decision-making. Standard errors (in parentheses) are clustered at the subject level. Significance levels are $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$.

4.5 Follow-up survey for robustness

We conducted a follow-up survey after the information experiment to (i) address the concern that experimenter demand effects drive our results, (ii) assess the persistence of our effects on perceptions, and (iii) investigate whether the information changed subjects' intentions to invest their own money in the stock market. Experimenter demand effects occur when participants try to guess the experimenter's objective from the instructions and alter their behavior accordingly. However, since our primary outcome is incentivized, previous literature suggests that demand effects are unlikely to drive our results.[25] Nevertheless, to address this concern in the context of our study, we obfuscated the follow-up survey. The idea is to run a separate study where the same subjects are invited, but they are unaware that the studies are connected. If this obfuscation is successful, demand effects cannot drive effects found in the follow-up study.

Design. Two days after conducting the information experiment, we fielded another study via Prolific. We invited only subjects of the main experiment, utilizing that subjects on Prolific regularly receive survey invitations. In the survey, we elicited subjects intention to invest in the stock market

[25]Experimental evidence shows that demand effects often have little impact on responses (De Quidt, Haushofer, and Roth, 2018; Danz et al., 2023) even for hypothetical questions where it is presumably less costly for subjects to alter their answers relative to their "natural" choice (Mummolo and Peterson, 2019).

Table 4: Information experiment causal effect of negative perceptions on decision-making

	Dependent variable:			
	Choice of stock option			
	(1)	(2)	(3)	(4)
Perceptions about stockholders' greed	-0.161^{**}	-0.165^{**}		
	(0.075)	(0.075)		
Perceptions about stockholders' selfishness			-0.135^{**}	-0.140^{**}
			(0.061)	(0.062)
Choice of draw option	0.233^{***}	0.233^{***}	0.235^{***}	0.234^{***}
	(0.026)	(0.026)	(0.025)	(0.026)
Mean dep. variable	0.45	0.45	0.45	0.45
F-statistic first stage	21.01	21.26	32.24	32.16
Demographic controls		X		X
Prior beliefs	X	X	X	X
Subjects	548	541	548	541
Observations	2,192	2,164	2,192	2,164

Notes: The table displays 2SLS-estimates. All four binary choices between the risky option described as a stock investment and the safe option of a subject enter as separate observations. The dependent variable is an indicator whether the risky option described as a stock investment is chosen. The instrument is the signal received regarding the difference in donation behavior between stockholders and non-stockholders (see Table 2 for the first stage results). The instrumented variable is in columns (1-2) "Perceptions about stockholders' greed" and in (3-4) "Perceptions about stockholders' selfishness." Both denote difference in ratings between stockholders and non-stockholders, with higher values indicating that stockholders are rated to more selfish (1-2) and more greedy (3-4). "Choice of draw option" is an indicator whether the risky option is chosen when described as a random draw investment. "Prior beliefs" is subjects' belief over the difference in donation behavior between stockholders and non-stockholders. Demographic controls include age, gender, education, income, total financial assets and involvement in financial decision-making. Standard errors (in parentheses) are clustered at the subject level. Significance levels are *p<0.1; **p<0.05; ***p<0.01.

in the future using a 7-point Likert scale. We elicited perceptions by asking subjects how selfish they view non-stockholders compared to stockholders (9-point Likert scale).

Obfuscation. To obfuscate the follow-up survey, we altered the survey's description, visual style, responsible researcher and institution. We also embedded our variables of interest within a battery of questions on other topics. In particular, we elicited subjects intention to engage in a variety of behaviors such as the intention to behave more environmentally friendly or buy disability insurance. Similarly, our perception question was embedded in a larger battery of questions asking subjects about different groups and personality traits. Hence, in both cases did our variable of interest appear to subjects as one of many variables. Appendix H provides further details.

Obfuscation validation. By offering high incentives (an extrapolated hourly wage of $\$18.65$), we were able to recruit 428 subjects (78%) of the main experiment for the follow-up survey.[26] Between the main experiment and the follow-up survey, subjects completed, an average of 15 other studies. At the end of our survey, we asked subjects to indicate the number of similar studies they had completed

[26]We see no evidence of selection effects. Whether subjects participated in the follow-up or not was not correlated with whether they received positive or negative information about stockholders ($r = -0.02, p = 0.65$), the magnitude of the signal ($r = 0.01, p = 0.78$) or prior beliefs ($r = -0.06, p = 0.17$). Demographics were similarly balanced.

in the past two weeks. Overall, 82% of subjects answered with "none," indicating that we successfully created a survey that was perceived being distinct from the main study.[27] Furthermore, not a single subject of the follow-up referenced our main experiment when asked "If you had to guess, what would you say was the purpose of this study?". It thus appears that our obfuscation measures were successful in creating a survey that subjects perceive as distinct from the main experiment.

Results. We find that subjects who received information that stockholders donated more for a good cause are significantly more willing to consider investing in the future ($p = 0.020$, Wilcoxon rank-sum test) compared to those that received the information that non-stockholders donated more or the same amount. They also view non-stockholders significantly more selfish compared to stockholders ($p = 0.005$, Wilcoxon rank-sum test). We find slightly weaker but still persistent and significant effects when we look at the full continuous signal variable. As placebo check, we also assess the influence of the information on the other non-stock market related variables of the survey. Reassuringly, we generally find no systematic effect of the information on intentions and perceptions of other traits and groups. We show the details of these results in Appendix H.

In summary, our data confirm Prediction 2: perceptions about characteristics of stockholders causally change the attractiveness of choices associated with the stock market and influence subjects' investment intentions.

5 The association between perceptions of stockholders and stock market participation

Having established that negative views about stockholders causally influence financial decisions in experiments, we next turn to field data for external validity. In this section, we show that negative views are (i) predictive of households' actual stock market participation and (ii) a quantitatively important determinant of stock market participation relative to leading alternative determinants proposed by the literature.

5.1 Data

To investigate the relationship between people's views about stockholders and their stock market participation, we require individual-level asset data that can be related to our survey-based perception measure. The LISS panel is ideal for this purpose, because it allows us to link survey responses with tax record data provided by Statistics Netherlands. Thus, for each subject who consented to the linkage (89% of our sample), we observe their respective households' financial asset allocation.[28] To assess how well our explanation predicts stock market participation relative to the previous literature, we utilize the broad scope of the LISS panel. By linking our data to previous surveys, we obtain several preference, attitude and belief measures. We focus on variables that the literature has identified as the most important predictors of households' portfolio choices, namely risk aversion, beliefs about stock returns, financial numeracy, general trust, political orientation, ambiguity aversion, and

[27] Our results are similar if we only consider these subjects in the analysis.

[28] Whether we can link a subject to administrative data is unrelated to their views about stockholders and the demographic variables we observe in the LISS: age, gender, and education (more details in Table B.13).

likelihood insensitivity (full set available for 46% of our sample). Each measure was elicited using state-of-the-art elicitation methods; see Appendix K.3 for details. In our cross-country sample, we naturally do not have access to these measures and rely on self-reported stock market participation. Nevertheless, this sample allows us to generalize our findings to different countries.

Table 5: The relationship between negative views about stockholders and stock market participation

	Dependent variable: Has risky financial assets			
	Full sample		Determinants sample	
	(1)	(2)	(3)	(4)
Negative views about stockholders	-0.058***	-0.052***	-0.060***	-0.048***
	(0.007)	(0.007)	(0.010)	(0.010)
Behavioral variables				
General trust				0.024**
				(0.010)
Ambiguity aversion				-0.021**
				(0.010)
Likelihood insensitivity				-0.021*
				(0.011)
Belief over positive stock returns				0.063***
				(0.011)
Risk aversion				-0.036***
				(0.010)
Financial numeracy				-0.000
				(0.011)
Right-wing political orientation				0.011
				(0.010)
Socio-demographic variables				
Female		-0.075***	-0.050**	-0.017
		(0.015)	(0.021)	(0.021)
Age		0.000	0.000	0.001
		(0.000)	(0.001)	(0.001)
Education: upper secondary		0.021	0.015	0.007
		(0.018)	(0.026)	(0.026)
Education: tertiary		0.123***	0.121***	0.102***
		(0.019)	(0.028)	(0.030)
Income 2nd tercile		-0.009	-0.013	-0.011
		(0.017)	(0.026)	(0.026)
Income 3rd tercile		0.083***	0.061*	0.048
		(0.021)	(0.032)	(0.032)
Wealth 2nd tercile		0.070***	0.090***	0.074***
		(0.017)	(0.024)	(0.025)
Wealth 3rd tercile		0.267***	0.315***	0.289***
		(0.020)	(0.029)	(0.030)
Mean dep. variable	0.228	0.226	0.238	0.238
Observations	2915	2903	1410	1410

Notes: The table shows OLS estimates. The dependent variable is an indicator variable equal to one if the subject owns stocks and zero otherwise. "Negative views about stockholders" is defined as the mean of the negative perceptions over the traits greed, being a gambler and selfishness, with higher values indicating that stockholders are perceived more negatively. See Appendix K.3 for details on the other independent variables. All behavioral variables displayed have been standardized. Robust standard errors in parentheses. Significance levels: $^{*}p<0.1$, $^{**}p<0.05$ and $^{***}p<0.01$.

5.2 Results

Netherlands. We regress a dummy variable indicating whether the household holds any risky financial assets on their standardized views of stockholders using OLS.[29] Table 5 displays the results. Column (1) reveals that the more negatively subjects view stockholders compared to non-stockholders, the less likely they possess risky financial assets themselves: an increase in negative views about stockholders by one standard deviation is associated with a reduced likelihood of possessing risky financial assets by almost 6 percentage points. This is a substantial effect as the baseline likelihood is 23 percentage points. Column (2) reveals that the relation is only slightly smaller and remains significant when we control for the demographic variables age, gender, education, income, and wealth. In columns (3) and (4), we focus on the smaller sample of subjects for which we have measures of behavioral variables that possibly influence portfolio choice.[30] We replicate the relationship with stock market participation documented by the literature for all other behavioral predictors except for financial numeracy and political orientation.[31] The effect of negative perceptions remains substantial and significant. We find that a one-standard-deviation increase in negative views is associated with a 4.8 percentage point decrease in the likelihood of owning risky financial assets. The marginal effect is larger than the marginal effect of, for instance, risk or ambiguity aversion. Views about stockholders are, therefore, among the strongest behavioral predictors.[32] In Appendix Table B.9, we focus on the set of households that hold a non-zero amount of risky financial assets and use as the dependent variable the share of risky financial assets of total financial assets. Since decisions over the share of one's portfolio in stocks conditionally on owning stocks are associated with the group of stockholders, our framework predicts that negative perceptions of stockholders should play no, or only a limited role. Indeed, we find no significant association between the share invested in risky financial assets and negative perceptions of stockholders in the full sample and only a small association in the determinants sample.

Cross-country. Do negative perceptions of stockholders also predict stock market participation in other countries? Figure 4 displays for each country the result of an OLS regression with negative views of stockholders as independent and a dummy variable indicating whether a subject holds any risky financial assets as the dependent variable. We find that negative views of stockholders predict participation in all countries except Japan, with seven out of ten countries having a coefficient significantly different from zero at the 5% level. Running a regression on the full set of countries with country fixed-effects, we find that a one-standard-deviation increase in negative perceptions is associated with a 6.9 percentage point decrease in stock market participation (see Appendix Table

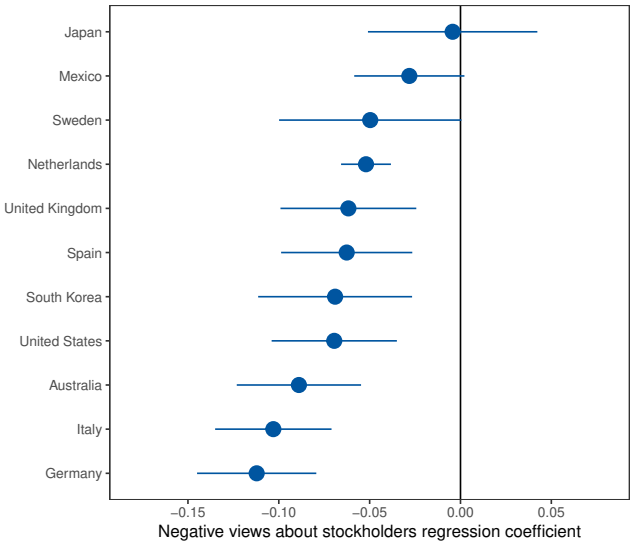
[29] Probit regressions yield similar results, see Table B.15.

[30] The determinants sample differs from the full sample along some demographic variables (e.g., age). This is expected, as most of the variables are elicited in earlier questionnaires. Importantly, negative views about stockholders and stock market participation rates do not vary significantly between the samples (more details in Appendix Table B.14).

[31] Without including other variables, financial numeracy and political orientation significantly predict whether households own risky financial assets. However, once we include the other behavioral and demographic variables in the regression, financial numeracy and political orientation are no longer significant predictors.

[32] A complementary approach to comparing the coefficients of the variables is to compare how well each variable explains variation in stock market participation. For this purpose, we apply the Shapley value method (Lipovetsky and Conklin, 2001). This method provides the marginal contribution of each independent variable in explaining variance in the dependent variable by aggregating the R^2 of each possible combination of independent variables. The results further support the relevance of perceptions: with the exception of the return belief variable, perceptions explain the highest share of variance among the behavioral variables presented in Table 5.

Figure 4: The relationship between negative views about stockholders and stock market participation across countries



Notes: This figure shows OLS coefficients from regressing a dummy variable indicating whether subjects' report to hold any risky financial assets on their (standardized) negative views about stockholders, controlling for age and gender. Negative views about stockholders is defined as the mean of the negative perceptions over the traits greed, being a gambler and selfishness, with higher values indicating that stockholders are perceived more negatively. For the Netherlands the coefficient of the specification of column (2) in Table 5 is used. Bars indicate 95% confidence intervals.

B.4). Hence, our findings from the Netherlands generalize to our larger set of surveyed countries.

Heterogeneity. Among which demographic groups is the effect of negative perceptions on stock-ownership concentrated? We use the rich demographic data from the LISS panel and interact them with our negative perception measure. We find that the effect of negative perceptions is more strongly associated with stock-ownership among wealthy, male, educated and older subjects (see Figure A.7 in the Appendix for details). Our identity-based explanation thus can descriptively account for the fact that even wealthy and educated households abstain from participating in the stock market.

Overall, we conclude that the extent to which individuals hold negative perceptions of stockholders robustly predict their stock market participation. The estimated effect size is large, also relative to the effect size of other predictors brought forward by the literature, and present among a diverse set of countries.

6 Determinants and implications of perceptions of stockholders

This section first investigates the origins of the documented negative perceptions of stockholders. In Section 6.1, we test the idea that negative perceptions emerge from stereotypical beliefs about stockholders, applying insights from the stereotypes model of Bordalo et al. (2016). We then explore important implications of negative perceptions of stockholders beyond investment decisions. They are related to subjects (i) favoring non-stockholders over stockholders, (ii) supporting policies that are less favorable towards stockholders (both Section 6.2) and (iii) misreporting financial assets in surveys (Section 6.3).

6.1 Determinants and accuracy of perceptions of stockholders

As starting point in examining the origin of negative perceptions of stockholders, we investigate whether they are based on accurate or stereotypical beliefs, i.e., correct or overly negative representations of reality. To assess their accuracy, we need to compare actual differences between stockholders and non-stockholders with subjects' predictions over these differences.

Table 6: Comparison of average actual and predicted differences

	Greed	Gambler	Selfishness
Panel A: Actual average self-assessment			
Stockholders	3.71	3.38	2.91
Non-stockholders	2.54	2.10	2.05
Difference	1.17	1.29	0.86
Panel B: Predicted average self-assessment			
Stockholders	4.27	5.22	3.47
Non-stockholders	2.70	2.40	2.53
Difference	1.57	2.82	0.94
Panel C: Exaggeration (Predicted / Actual)			
Exaggeration of difference (%)	34.8%	119.3%	9.4%

Notes: Panel A displays the average response of subjects in the LISS panel when asked to self-assess themselves regarding the characteristics greedy, gambler and selfish (agreement to "I'm kind of [...]", 0-10 Likert scale). Panel B displays the average prediction of subjects over these self-assessments. Panel C displays the ratio of predicted differences between stockholders and non-stockholders and actual differences.

Actual differences. We measure actual differences by asking subjects in the LISS panel to rate themselves with respect to the selected traits greed, being gambler, and selfishness (agreement to "I'm kind of greedy/a gambler/selfish" 0-10 Likert scale). Comparing the answers of stockholders and non-stockholders gives us a direct measure of the differences in self-assessments. We indeed find differences between the two groups, as displayed in Panel A of Table 6. Stockholders rate themselves on average as being significantly more greedy, selfish, and as gamblers compared to non-stockholders ($p < 0.001$, Wilcoxon rank-sum test).

Predicted differences. We measure predicted differences by asking subjects to guess how stockholders and non-stockholders rate themselves on average for each of the three character traits. By comparing actual with predicted differences, we can thus test whether subjects have biased perceptions.[33] Panel B of Table 6 shows the results. While subjects are, on average, quite close to the true average for non-stockholders, they systematically overestimate the answers of stockholders. Actual differences are significantly exaggerated, ranging from 9% for selfishness to nearly 120% for gambler-like (Panel C). Thus, subjects in our representative sample of Dutch financial deciders incorrectly believe that stockholders assess themselves more negatively than they actually do.

[33]Such a clean comparison would not be possible with our negative views about stockholders measure, as it concerns subjects' subjective opinions of stockholders and non-stockholders, for which no objective truth exists. Empirically, negative views about stockholders and predictions about response behavior are strongly correlated ($r = 0.42$).

Formation of stereotypes. How do the documented stereotypical representations of reality emerge? The stereotypes model of Bordalo et al. (2016) provides a potential explanation. In the model, the formation of stereotypes is linked to the representativeness heuristic by Tversky and Kahneman (1983). When assessing groups, people base their judgment on attributes that are diagnostic and thus representative of a group. Applied to our context, negative perceptions of stockholders emerge because stockholders are *relatively* more likely among very greedy (and selfish and gambler, respectively) individuals. Subjects then perceive individuals holding stocks to be strongly representative of greedy individuals, leading them to (vastly) overestimate the existing group differences.[34]

We indeed find evidence for the explanation proposed by the stereotypes model. While average differences are quite small, we find them substantially more pronounced in the tails of the distribution. Stockholders are twice as likely to rate themselves as very greedy, gambler-like, and selfish (7-10 on the 10-point scale) compared to non-stockholders (see Panel A of Appendix Table B.12). At the same time, there is almost no difference between the groups among the moderately greedy, gambler-like, and selfish (1-3 on the 10-point scale) subjects.

Validation. In order to show that the previous results extend beyond self-assessments, we employ a behavioral measure with US participants on Prolific. We ask stockholders and non-stockholders to allocate 100€ between themselves and a charity ($N = 272$, sample used to generate information for the information experiment of Section 4.3) and a separate sample to predict the resulting difference in donation behavior between the two groups ($N = 652$, information experiment full sample). We find that stockholders donate, on average, 6 percentage points less compared to non-stockholders. These differences are again concentrated in the tails. While both groups do not differ in their likelihood of taking between 51€ and 99€ for themselves, stockholders are over 75% more likely to allocate the entire endowment to themselves (see Panel B of Appendix Table B.12). In line with the stereotypes model, we find a large exaggeration of the true difference. On average, subjects believed stockholders donate 15 percentage points less, more than twice the actual difference.

Correcting stereotypical perceptions. Since perceptions of stockholders are overly negative, an immediate policy question is whether a debiasing intervention could influence people's investment behavior. We thus tested in our second survey fielded to the LISS panel the effectiveness of providing subjects with information on the actual differences between stockholders and non-stockholders. A randomly selected half of the participants receive information on the actual differences in self-assessments for the traits greed, being a gambler, and selfishness, while the other half received no new information. Afterwards, subjects faced a (probabilistically incentivized) investment choice, in which they could allocate 100 € between a safe option and an ETF that tracks the Amsterdam Exchange index.

We find that this information successfully mitigates biased beliefs. Subjects with biased prior perceptions hold less bias perceptions after receiving information and subjects with approximately correct prior perceptions do not change their perceptions. This pattern translates to behavior. Subjects in the former group are now significantly more likely to invest money into the ETF compared

[34]We believe this explanation to be intuitively compelling in our context because a small subclass of stockholders, namely traders and brokers, is the main focus of popular media's display of stockholders. These individuals are usually painted as extremely greedy, selfish, and gambler-like. Consequently, people might view them as being representative of stockholders in general and form negative perceptions of the entire group of stockholders.

to subjects in the control group with similar prior perceptions, while the investment behavior of the latter group does not significantly differ. These findings suggest that interventions that provide information on actual differences between stockholders and non-stockholders have the potential to effectively increase investment behavior without producing backlash effects. See Appendix I for details on the experiment and results.

6.2 Affective polarization and political attitudes towards stockholders

In Sections 4 and 5, we focused on the influence of negative views about stockholders on investment behavior. However, research has shown that identification processes affect not only behavior, but also attitudes. We would therefore expect that negative views about stockholders predict attitudes towards the stock market more generally. Consequently, we investigate the relationship of negative views about stockholders with affective polarization, i.e., animosities towards stockholders and with political attitudes towards stockholders and the stock market in our second survey fielded to the LISS panel.

Table 7: Implications of negative perceptions on in-group favoritism and political attitudes

	Dependent variable:			
	Money allocated to non-stockholder		Support for higher taxation and regulation of stock market	
	(1)	(2)	(3)	(4)
Negative views about stockholders	0.103***	0.086***	0.175***	0.152***
	(0.027)	(0.026)	(0.026)	(0.024)
Moral universalism		−0.132***		
		(0.033)		
Support for wealth tax				0.416***
				(0.027)
Right-wing political orientation				-0.028**
				(0.012)
Opposition to income inequality				0.118***
				(0.027)
Demographic controls		X		X
Observations	1,594	1,594	1,594	1,397
R^2	0.011	0.063	0.031	0.307

Notes: The table displays OLS estimates. The dependent variable in columns (1) and (2) is subjects' behavior in an allocation game, with higher values indicating more money is allocated to non-stockholders and thus less to stockholders. In columns (3) and (4), the dependent variable is subjects' mean answers on the five item scale capturing political attitudes towards stock market, with higher values indicating a higher support for taxation and regulation of the stock market and stockholders. "Negative views about stockholders" is defined as the mean over the negative perceptions over the traits greed, being a gambler and selfishness, with higher values indicating that stockholders are perceived more negatively. See main text and Appendix K.4 for details on the other independent variables. All independent variables displayed have been standardized. Robust standard errors in parentheses. Demographic controls include age, gender, education, income and total financial assets. Significance levels are $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$.

Affective polarization. Do people not only view stockholders differently, but also treat them differently? To answer this question, we investigate the degree to which non-stockholders display affective polarization in the form of in-group favoritism. Building on Enke, Rodríguez-Padilla, and Zimmermann (2022) and related work, we measure in-group favoritism using an allocation decision. We endow subjects with 100€, which they can freely distribute between two other participants of the LISS panel. One participant is a stockholder, the other a non-stockholder, and we inform subjects that both have a similar amount of income and wealth. Since stockholders are, on average, wealthier than non-stockholders, this feature allows us to abstract from animosities towards individuals of higher status. This decision was incentivized, as for one randomly selected subject, the allocation decision was implemented with real consequences. To benchmark subjects in-group favoritism towards non-stockholders and control for general in-group tendencies, we subsequently employ the Moral Universalism short-scale (Enke, Rodríguez-Padilla, and Zimmermann, 2022) in the survey.

We observe substantial in-group favoritism among non-stockholder, resulting in strong discriminatory behavior against stockholders. Non-stockholders allocate, on average, 67.23€ out of the 100€ endowment to the recipient not holding stocks. This degree of favoritism is even stronger than subjects' favoritism towards individuals of their own nationality (compared to individuals living anywhere in the world), to whom they distribute, on average, 62.08€. Column (1) in Table 7 reveals that subjects' in-group favoritism towards non-stockholders is significantly influenced by their views about stockholders. An increase in negative views by one standard deviation is associated with an 0.1 standard deviations increase in in-group favoritism towards non-stockholders. Furthermore, column (2) shows that when controlling for several demographic variables and, in particular, their in-group favoritism along the other dimensions of the universalism scale (higher values indicate more universalism, i.e., less in-group favoritism), the relation remains largely unchanged. Accordingly, even comparing subjects who show similar degrees of general in-group favoritism, we find a strong relationship between perceptions and allocations to non-stockholders.

Political attitudes towards stock market. To measure the relation of negative views with political attitudes towards the stock market, we elicit subjects' support for five policy proposals concerning the taxation and regulation of stockholders and the stock market (using 7-point Likert scales). For example, we ask subjects whether they support the introduction of a financial transaction tax and whether the existing wealth tax in the Netherlands should be higher for investments in risky assets than for safe assets (Table K.2 in the Appendix reports the full list). We aggregate the items to obtain a measure for which higher levels indicate political preferences that are less favorable for stockholders in terms of regulation and taxation.

We find substantial variation in non-stockholders' attitudes towards all five policy proposals. For instance, 26% support introducing a financial transaction tax, while 44% oppose it, and 43% support a higher wealth tax for risky assets, to which 32% oppose. Importantly, the extent of negative views about stockholders moderate these polarized opinions. As column (3) in Table 7 shows, the more negatively subjects view stockholders, the more strongly they support policies that are less favorable for stockholders. In column (4), we control for several measures capturing subjects' redistributional concerns. In particular, we elicited subjects' support for an increase in wealth taxation (independent of asset classes), their self-reported political orientation and opposition to income inequality. Negative views about stockholders remains a strong and significant predictor of support for policies

favoring non-stockholders.

6.3 Misreporting in surveys

As administrative data on wealth is not available in most countries, researchers often need to rely on self-reported asset data. Negative views about could lead individuals to misreport having risky financial assets to avoid identity conflicts. For instance, suppose that somebody has received stocks not by choice but through inheritance, a gift, or some company participation program. If this person perceives stockholders negatively, merely thinking about their stock-related assets might create disutility (Bénabou and Tirole, 2011). Moreover, reporting stock ownership in a survey makes the association with stockholders explicit and "official" to the individual, which could create an identity conflict. Some might resolve this conflict by simply denying holding any risky financial assets.

Measurement. Since we observe both administrative and self-reported survey data, we can test whether negative perceptions predict directional misreporting. As described before, for each subject we observe their households' asset holdings identified through tax records. At the same time, the LISS panel surveys every adult member of the respective subject's household, and asks for their asset holdings. We aggregate reports on the household level to match administrative records.[35] Since the survey uses the same asset categories and subjects are asked to state the balance at exactly the same time point for which we have the administrative data balance, deviations are likely to be caused by misreporting.

Aggregate results. We first note that for 7% of the households, the dummy variable indicating if the household reports holding any risky financial assets in the LISS contradicts the respective variable in the administrative data. This result is in line with previous findings, which find substantial response errors in self-reported income and asset data (e.g., Hill, 2006; Meyer, Mok, and Sullivan, 2015; Bollinger et al., 2019). Importantly, the differences are asymmetric: 30% of households with risky assets do not report their holdings, while only 2% of the households without risky assets report having them. This leads to a severe under-reporting of risky assets. Based on the self-reported data only 16% of all households report holding any risky financial assets even though 21% actually own them based on administrative data.[36] At the same time, for those households that correctly report their stock-ownership status, there is no asymmetric misreporting in the share of assets invested in risky financial assets. While households on average invest 39% of their total financial assets in stock market related assets, their reported share is 40%.

Predicting misreporting. In Table 8, we show that negative perceptions of stockholders predict the documented under-reporting of risky financial assets. We focus on the subset of households that hold risky financial assets based on official data and use as the dependent variable an indicator of whether they (correctly) state that they hold them in the survey. As column (1) reveals, the higher a subject's negative perceptions, the more likely the subject self-reports that they do to hold any risky

[35]Only the financial decider is asked to report assets jointly owned by the household which ensures that assets are not counted multiple times when we aggregate the individual data.

[36]The numbers in this paragraph are based on the sample of households (65 %) for which we observe self-reported asset data for all adult household members. In Table 8, we use the full set of households and add a dummy indicating whether we observe all adult household members as control variable.

financial assets. This effect is economically important: a one-standard-deviation increase in negative perceptions is associated with a more than five percentage point decrease in reporting ownership of risky assets. When we include demographic controls and financial numeracy in column (2), the coefficient is still on a similar level and statistically significant at the 10% level. We furthermore examine whether negative perceptions are related to survey response error per se. Negative perceptions neither predict misreporting on the intensive margin of risky financial assets (Appendix Table B.16) nore misreporting in house ownership. Both findings are in line with the identity concerns mechanism. Thus, our results suggest that negative perceptions are related to misreporting due to identity concerns.

Table 8: Misreporting of risky financial assets ownership

	Dependent variable: Reports having risky financial assets	
	(1)	(2)
Constant	0.519***	
	(0.035)	
Negative views about stockholders	-0.051**	-0.045*
	(0.022)	(0.025)
Financial numeracy		0.139***
		(0.033)
Demographic controls		X
Observations	593	354

Notes: The table shows OLS regression coefficients. The dependent variable is a dummy variable equal to one if anybody in the household reports that they have any risky financial assets in the LISS panel. The sample is restricted to all households which hold any risky financial assets based on Dutch administrative data. "Negative views about stockholders" is defined as the mean over the negative perceptions over the traits greed, being a gambler and selfishness, with higher values indicating that stockholders are perceived more negatively. "Financial numeracy" is defined as the number of correct answers to the four numeracy questions of van Rooij, Lusardi, and Alessie (2011). Both independent variables have been standardized. Robust standard errors in parentheses. Controls include age, gender, education, income, wealth, and a dummy whether we observe all adult household members. Significance levels: $^{*}p<0.1$, $^{**}p<0.05$ and $^{***}p<0.01$.

7 Conclusion

This paper proposes that people's views of stockholders matter for their investment decisions. Using a series of surveys, we document that a large fraction of individuals perceives stockholders negatively. We then show experimentally that these negative perceptions of stockholders causally influence people's decision-making. Furthermore, they are an important predictor of actual stock market participation, which we show using linked survey-administrative data. Moreover, perceptions significantly contribute to affective polarization, political attitudes towards stockholders, and misreporting behavior in surveys.

Our results highlight limitations to the persuasive power of outcome-based strategies to influence

households' financial decisions and offer perspectives on designing alternative, potentially more effective strategies. The strong aversion towards stock-related options found in our experiments suggests that classic strategies, such as highlighting potential gains from investing or improving knowledge might have limited effects on the substantial share of strongly identity-minded households. Similarly, interventions or advertisements that appeal to the skills and knowledge of financial experts may not convince households whose decisions are strongly motivated by identity concerns to invest in stocks. Such strategies could even backfire if they reinforce the belief that the population of stockholders is fundamentally different. Being confronted with individuals perceived as representative of selfish or greedy people could further support stereotypical views of the entire population of stockholders.

Instead, our results suggest that interventions aimed at decreasing negative perceptions of stockholders have the potential to substantially influence behavior. We show that a relatively light-touch intervention – providing subjects with information about differences between stockholders and non-stockholders – significantly affect decision-making in our experiment. Broader interventions, such as providing detailed information about differences over a longer duration of time, could thus induce changes in households' actual stock market participation. In particular, combining the insights from our results and framework with concepts developed from research on inter-group relations (Böhm, Rusch, and Baron, 2020) may be very effective in reaching the group of identity-motivated households. For instance, "decategorization" is a strategy whose goal is to alleviate the belief that opposing groups form homogeneous units. Applied to the current context, it means highlighting that very different members of society invest in stocks. Another example is the concept of "recategorization," which proposes the communication of similarities and common goals between stockholders and non-stockholders.

Since we have documented that a substantial fraction of people hold stereotypical and thus biased beliefs regarding stockholders, normative arguments favoring such interventions can be made. This is an important factor distinguishing our explanation of limited participation from preference-based explanations. Not only are deeply held preferences difficult or even impossible to change, but it is also normatively questionable whether an attempt to change them through interventions should be made at all. In contrast, our results indicate that perceptions of stockholders are malleable and frequently incorrect, providing a much larger normative scope for behavioral change. However, the presence of identity concerns complicates a straightforward welfare assessment. We view disentangling the welfare effects of changing perceptions when one's identity depends on perceptions as an exiting avenue for future research.

We conclude by highlighting that our framework and methodology are not tied to financial decision-making. It can readily be applied more generally to other economic contexts in which strong aversion behavior appears to be at odds with outcome- or constraint-based explanations. For instance, our mechanism could help to explain the widespread non-take-up of social transfers (Currie, 2006). Similarly, significant fractions of people abstain from holding debt and avoid insurance markets (Guiso and Sodini, 2013). Since people naturally form perceptions over groups defined by economic decisions, our channel has the potential to significantly influence decision-making and particularly aversion behavior in these domains.

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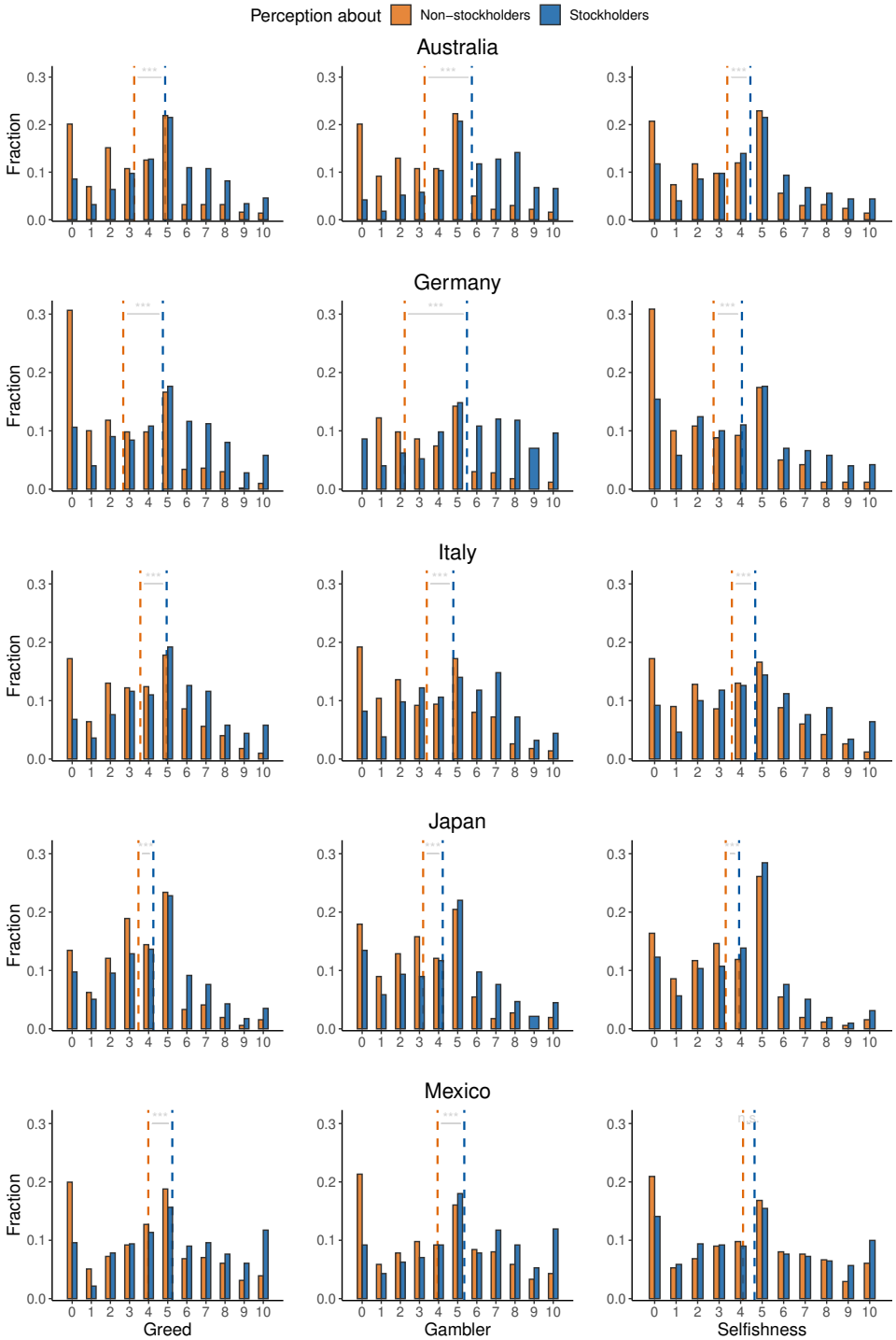
Appendix for online publication

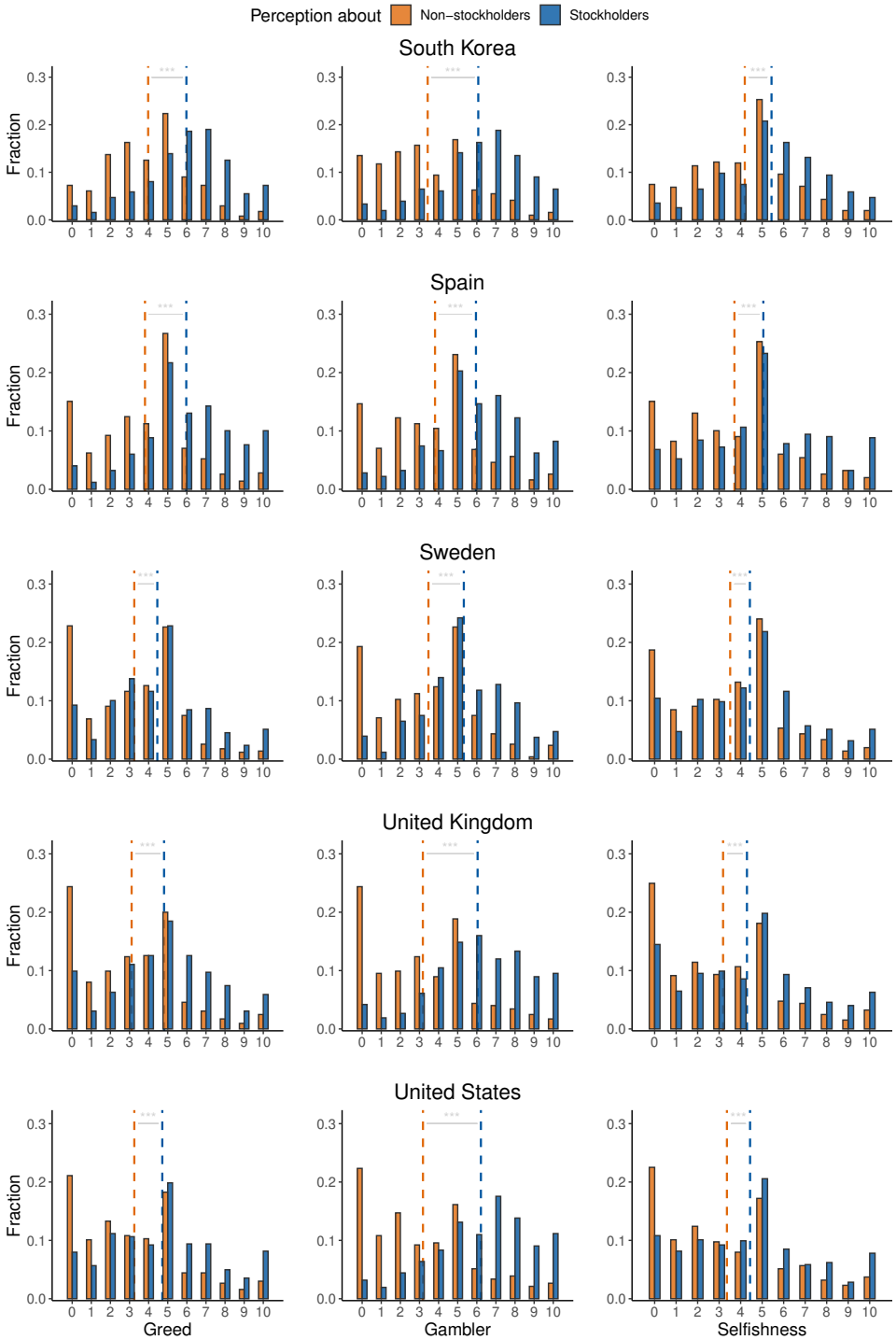
A Additional figures

Figure A.1: People's perceptions of characteristics of stockholders and non-stockholders around the world part 1



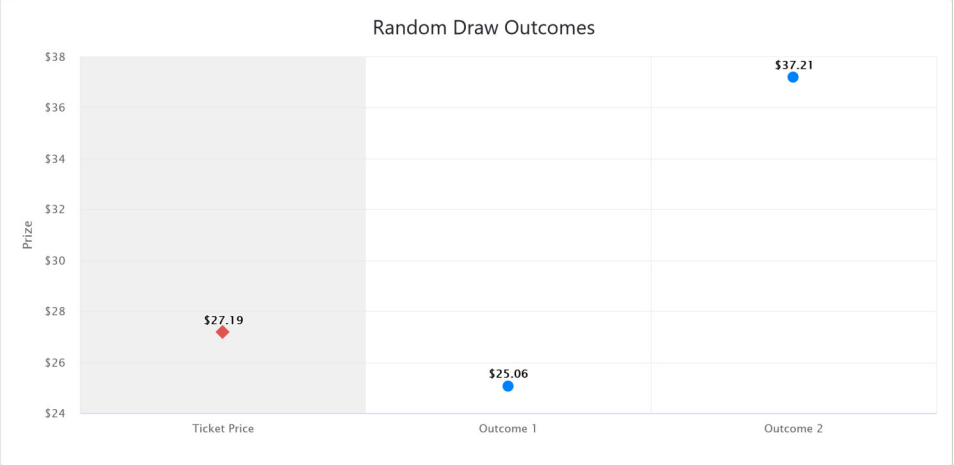
Notes: The figure displays for each country the distribution of subjects' ratings of the group of stockholders and non-stockholders. Higher values indicate that subjects rate the respective group as more greedy (left column), gambler-like (middle column), and selfish (right column). The dotted lines display mean ratings. Stars indicate significance levels, where $^{*}p<0.1$, $^{**}p<0.05$ and $^{***}p<0.01$, obtained from Kolmogorov-Smirnov tests.

Figure A.2: People's perceptions of characteristics of stockholders and non-stockholders around the world part 2

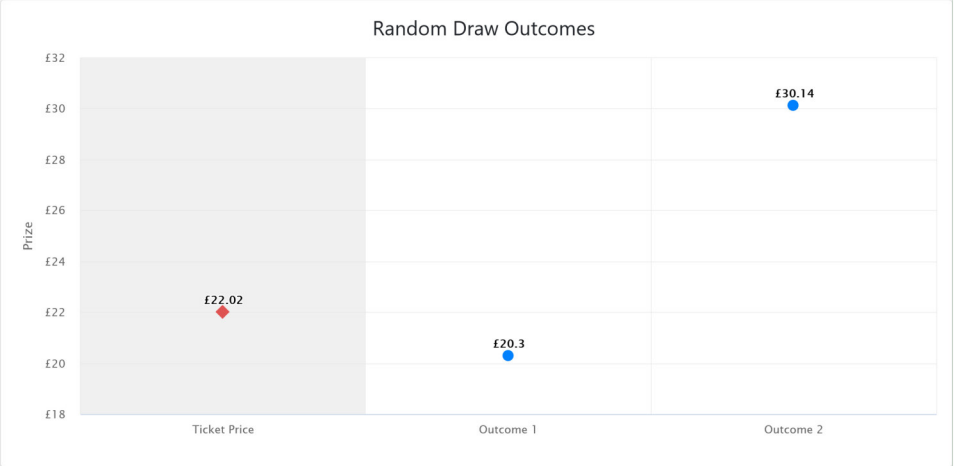


Notes: The figure displays for each country the distribution of subjects' ratings of the group of stockholders and non-stockholders. Higher values indicate that subjects rate the respective group as more greedy (left column), gambler-like (middle column), and selfish (right column). The dotted lines display mean ratings. Stars indicate significance levels, where $^{*}p<0.1$, $^{**}p<0.05$ and $^{***}p<0.01$, obtained from Kolmogorov-Smirnov tests.

Figure A.3: Combinations of risky option visualization (Draw description)



(a) Figure visualization and dollar currency



(b) Figure visualization and pound currency

	Prize in Dollar
Buying Price	**$27.19**
Outcome 1	$25.06
Outcome 2	$37.21

(c) Table visualization and dollar currency

	Prize in Pound
Buying Price	**£22.02**
Outcome 1	£20.3
Outcome 2	£30.14

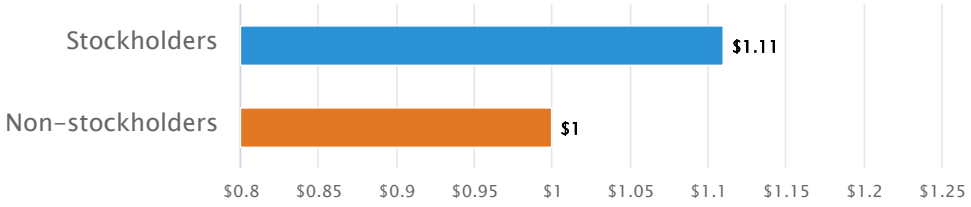
(d) Table visualization and pound currency

Figure A.4: Example of information provided to subjects

We will now inform you about the **actual** difference between stockholders and non-stockholders. For the randomly selected participants, we found that ...

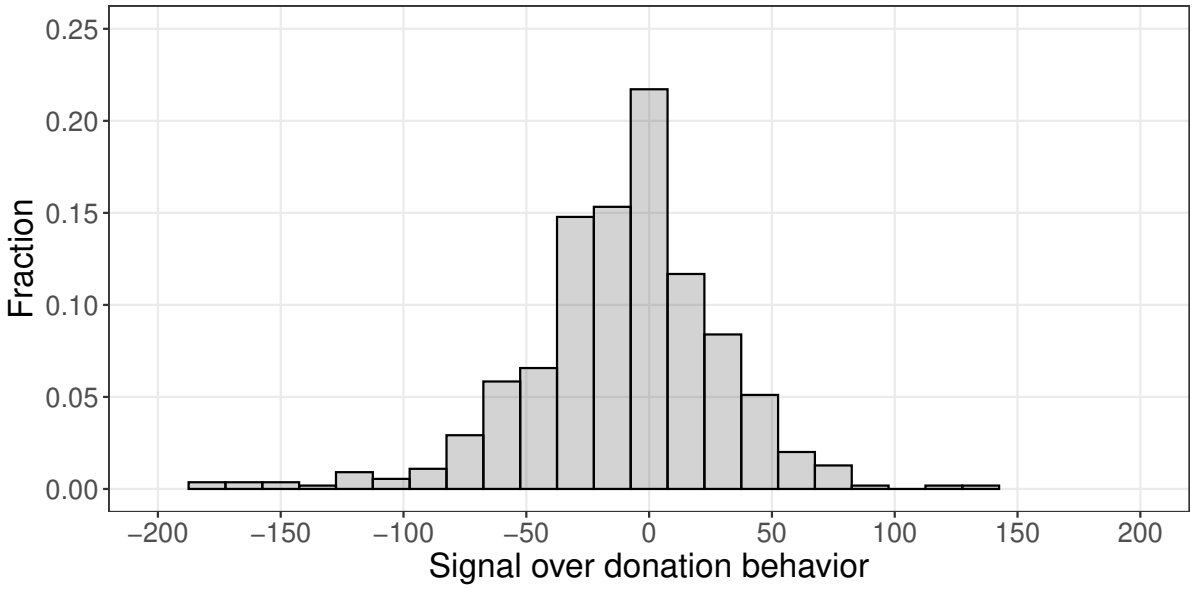
... **stockholders donate 11% more than non-stockholders.**

That is, for every $1 that non-stockholders donate, stockholders donate on average $1.11 for a good cause.



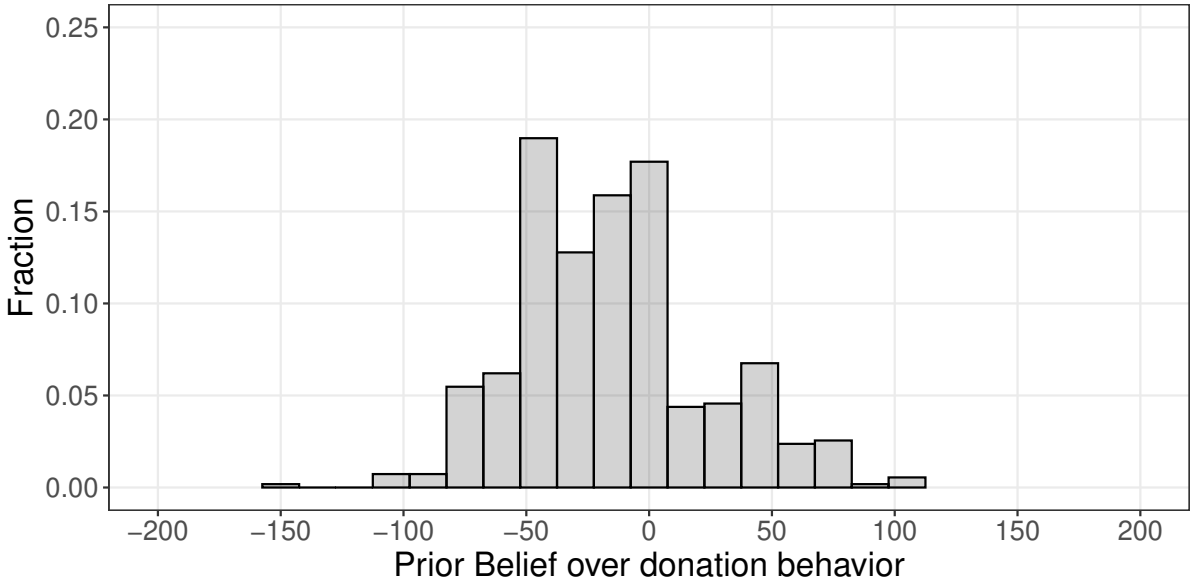
Next

Figure A.5: Distribution of signals generated in the information experiment



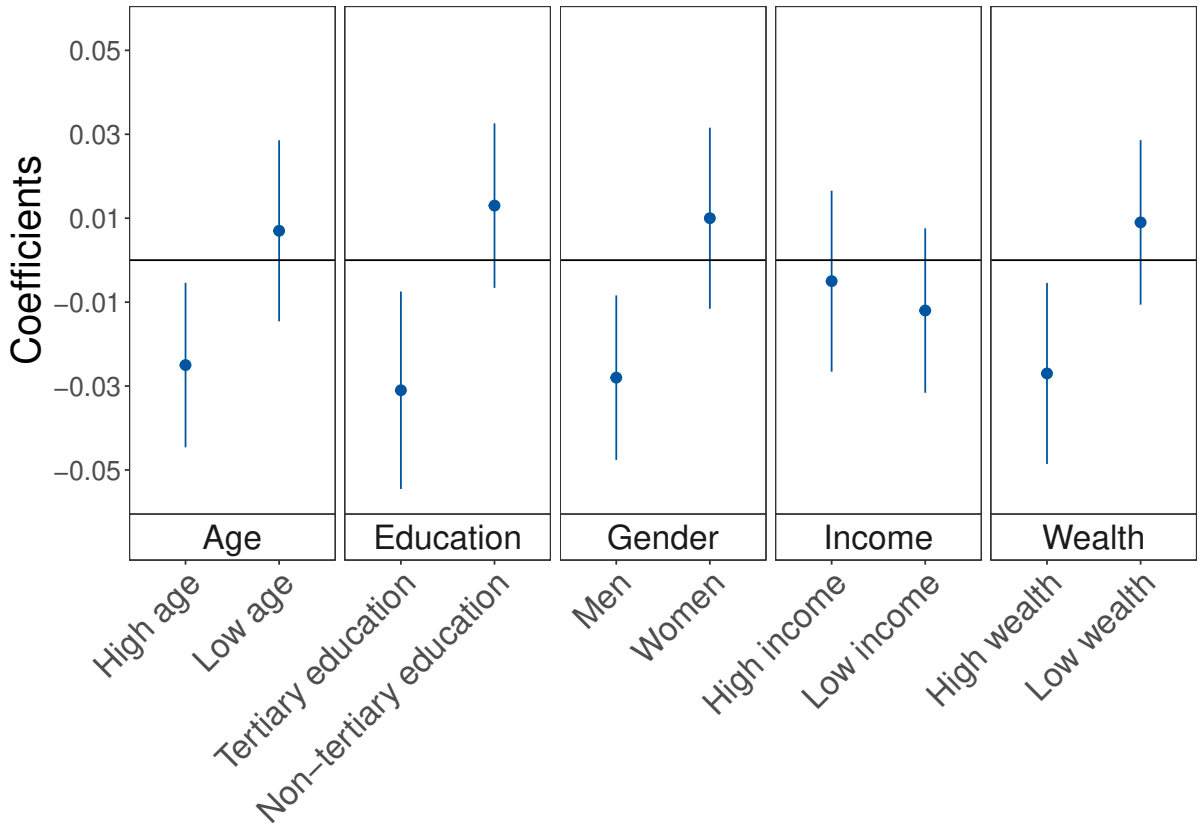
Notes: This figure displays in a histogram the distribution of signals subjects received in the information experiment over the difference in donation behavior between stockholder and non-stockholder. Higher values indicate signals that stockholder donated more relative to non-stockholder.

Figure A.6: Distribution of prior beliefs in the information experiment



Notes: This figure displays in a histogram the distribution of subjects' prior beliefs over the difference in donation behavior between stockholder and non-stockholder in the information experiment. Higher values indicate subject's beliefs that stockholders donate more relative to non-stockholders.

Figure A.7: Heterogeneity in the relationship between negative views and stock market participation



Notes: This figure displays interactions term coefficients obtained from an OLS regression. The specification is the same as in column (4) of Table 5, with the addition of interactions of negative views about stockholders with the displayed demographic variables. The more negative the coefficient, the stronger is the association of increases in negative views with decreases in stock market participation among the specified subgroups.

B Additional tables

Table B.1: Overview of samples

Label	Provider	N	Covered in	Description
Perception pre-test	Pureprofile	194	Section 3, Appendix C	Survey to select character traits based on identity-relevance and association with stockholders.
First LISS panel survey	Centerdata	3,272	Sections 3, 5, 6.1 and 6.3	Survey to measure people's perceptions of stockholders and non-stockholders in the Netherlands.
Second LISS panel survey	Centerdata	1,594	Sections 3, I and 6.2	Follow-up to the first survey to collect additional measures, investigate implications and the effect of correcting stereotypes.
Cross-country survey	Bilendi	5,130	Sections 3 and 5	Survey to measure people's perceptions of stockholders and non-stockholders in Australia, Germany, Italy, Japan, Mexico, South Korea, Spain, Sweden, the United Kingdom, and the United States.
Perception robustness survey	Panel Inzicht	1,016	Section 3, Appendix E	Additional surveys to measure perceptions using different elicitation methods
Information generation survey	Prolific	272	Section 4.3 and 6, Appendix F	Survey to generate the information about the donation behavior of stockholders and non-stockholders for the information experiment.
Description experiment	Prolific	515	Section 4.1	Experiment to test Prediction 1 of the conceptual framework.
Information experiment	Prolific	548	Section 4.3	Experiment to test Prediction 2 of the conceptual framework.
Information experiment follow-up survey	Prolific	428	Section 4.3	Survey to investigate experimenter demand effects as well as persistence and validity of the treatment effects of the information experiment.

Table B.2: Overview of sample demographics Netherlands

Variable	CBS (2020)	Full LISS panel	First survey LISS panel	Second survey LISS panel
Gender				
Women	51%	54%	51%	53%
Age				
16 - 34 years	29%	25%	13%	9%
35 - 64 years	48%	46%	49%	46%
65 years and older	23%	28%	38%	45%
Education				
University degree	33%	40%	29%	27%
Net income				
Below 20,000 euros/dollars	20%	20%	17%	20%
20,000 - 50,000 euros/dollars	51%	51%	59%	61%
Above 50,000 euros/dollars	30%	29%	24%	19%
Sample size		6,462	3,272	1,594

Notes: CBS stands for Centraal Bureau voor de Statistiek, the statistical bureau of the Netherlands.

Table B.3: Overview of sample demographics cross-country study

Variable	Australia	Germany	Italy	Japan	Mexico	South Korea	Spain	Sweden	United Kingdom	United States
Gender										
Women	50%	50%	50%	50%	52%	50%	51%	51%	48%	50%
Age										
16 - 34 years	30%	27%	24%	25%	44%	27%	23%	31%	29%	26%
35 - 64 years	52%	58%	59%	55%	51%	62%	62%	54%	61%	51%
65 years and older	18%	15%	16%	20%	5%	12%	15%	15%	11%	23%
Sample size	502	499	500	513	511	510	498	508	525	564

Table B.4: The relationship between negative views about stockholders and stock market participation across countries

	Dependent variable: Participates in the Stock Market					
	All countries	Australia	Germany	Italy	Japan	Mexico
	(1)	(2)	(3)	(4)	(5)	(6)
Negative views about stockholders	-0.069^{***}	-0.089^{***}	-0.112^{***}	-0.103^{***}	-0.004	-0.028^{*}
	(0.006)	(0.017)	(0.017)	(0.016)	(0.024)	(0.015)
Observations	5,130	502	499	500	513	511

	Dependent variable: Participates in the Stock Market				
	South Korea	Spain	Sweden	United Kingdom	United States
	(7)	(8)	(9)	(10)	(11)
Negative views about stockholders	-0.069^{***}	-0.063^{***}	-0.050^{*}	-0.062^{***}	-0.069^{***}
	(0.022)	(0.018)	(0.026)	(0.019)	(0.018)
Observations	510	498	508	525	564

Notes: The table shows OLS regression coefficients. The dependent variable is an indicator variable equal to one if the subject reports to own stocks and zero otherwise. "Negative views about stockholders" is defined as the mean of the negative perceptions over the traits greed, being a gambler and selfishness, with higher values indicating that stockholders are perceived more negatively. The variable is standardized. Robust standard errors in parentheses. The regression further includes as control variables subjects' age and gender as well as country fixed effects in column (1). Significance levels: $^{*}p<0.1$, $^{**}p<0.05$ and $^{***}p<0.01$.

Table B.5: Overview of sample demographics Prolific (US)

Variable	ACS (2020)	Information generation survey	Description experiment	Information experiment
Gender				
Women	51%	79%	69%	78%
Age				
16 - 34 years	46%	72%	58%	70%
35 - 64 years	38%	27%	38%	28%
65 years and older	16%	1%	4%	2%
Education				
University degree	28%		36%	34%
Net income				
Below 20,000 euros/dollars	29%	20%	24%	28%
20,000 - 50,000 euros/dollars	34%	37%	36%	32%
Above 50,000 euros/dollars	37%	43%	40%	40%
Sample size		272	515	548

Notes: ACS stands for American Community Survey, administered by the US Census Bureau. Education was not elicited in the survey used to generate the donation information (third column).

Table B.6: Description experiment balance test

Variable	Treatment stock description (1)	Treatment draw description (2)	H_0 : (1) = (2) p-value (3)
Age	35.52	35.03	0.89
Women	0.70	0.68	0.58
High income	0.53	0.48	0.23
High wealth	0.65	0.62	0.40
Is financial decider	0.65	0.62	0.45
Has college degree	0.35	0.38	0.51

Notes: Column (1) and (2) displays mean values of variables for both treatments of the description experiment. The last column shows p-values obtained using Wilcoxon rank-sum tests comparing the variables of both treatments.

Table B.7: Description experiment treatment effect on decision-making

Panel A: Between-subject effect		
	Dependent variable: Choice of risky option	
	(1)	(2)
Constant	0.524^{***}	0.600^{***}
	(0.021)	(0.084)
Stock description	-0.142^{***}	-0.132^{***}
	(0.032)	(0.032)
Demographic controls		X
Subjects	515	509
Observations	2,060	2,036
Panel B: Within-subject effect		
	Dependent variable: Choice of risky option	
	(1)	(2)
Constant	0.498^{***}	0.583^{***}
	(0.016)	(0.069)
Stock description	-0.117^{***}	-0.117^{***}
	(0.016)	(0.016)
Demographic controls		X
Subjects	515	509
Observations	4,120	4,072

Notes: The table displays OLS estimates. The dependent variable is an indicator variable equal to one if the risky option is chosen and zero if the safe option is chosen. Stock description is an indicator variable equal to one if the risky option is described as a stock investment and zero if described as a random draw investment. Standard errors (in parentheses) are clustered at the subject level. Demographic controls include age, gender, education, income, total financial assets and involvement in financial decision-making. Significance levels are *p$<$0.1; **p$<$0.05; ***p$<$0.01.

Table B.8: Information experiment balance test

Variable	Correlation coefficient r (1)	$H_0 : r = 0$ p-value (2)
Prior Belief	0.01	0.89
Number of random draw option choices	-0.05	0.24
Age	0.03	0.46
Women	0.02	0.57
High income	-0.01	0.84
High wealth	-0.03	0.51
Is financial decider	-0.05	0.20
Has college degree	-0.02	0.70

Notes: The table displays in column (1) are pairwise Pearson correlation coefficients between the displayed variable and the variable indicating the signal over donation behavior that subjects received. Higher values for this variable indicate signals that stockholder donated more relative to non-stockholder. Column (2) show p-values obtained using Pearson correlation tests.

Table B.9: The relationship between negative views about stockholders and the share of risky financial assets

	Dependent variable: Share of risky financial assets			
	Full sample		Determinants sample	
	(1)	(2)	(3)	(4)
Negative views about stockholders	-0.015	-0.013	-0.038**	-0.030*
	(0.013)	(0.013)	(0.017)	(0.017)
Behavioral variables				
General trust				0.011
				(0.021)
Ambiguity aversion				-0.004
				(0.019)
Likelihood insensitivity				0.012
				(0.019)
Belief over positive stock returns				0.030*
				(0.016)
Risk aversion				-0.040*
				(0.021)
Financial numeracy				0.011
				(0.023)
Right-wing political orientation				-0.007
				(0.018)
Socio-demographic variables				
Female		-0.006	-0.012	0.023
		(0.023)	(0.033)	(0.035)
Age		0.004***	0.002*	0.003**
		(0.001)	(0.001)	(0.001)
Education: upper secondary		0.023	0.076	0.080
		(0.040)	(0.047)	(0.049)
Education: tertiary		0.072*	0.116**	0.116**
		(0.039)	(0.048)	(0.049)
Income 2nd tercile		-0.023	-0.036	-0.032
		(0.035)	(0.045)	(0.045)
Income 3rd tercile		-0.001	-0.022	-0.030
		(0.034)	(0.047)	(0.047)
Wealth 2nd tercile		-0.015	0.088	0.084
		(0.041)	(0.061)	(0.062)
Wealth 3rd tercile		0.030	0.160***	0.158***
		(0.045)	(0.060)	(0.060)
Mean dep. variable	0.359	0.352	0.345	0.345
Observations	665	657	335	335

Notes: The table shows OLS regression coefficients. The dependent variable is the share of risky financial assets as a percentage of all financial assets. The sample is restricted to households with any risky financial assets. "Negative views about stockholders" is defined as the mean over the negative perceptions over the traits greed, being a gambler and selfishness, with higher values indicating that stockholders are perceived more negatively. See Appendix K.3 for details on the other independent variables. All behavioral variables displayed have been standardized. Robust standard errors in parentheses. Significance levels: $^{*}p<0.1$, $^{**}p<0.05$ and $^{***}p<0.01$.

Table B.10: The association of demographic variables with negative views about stockholders

	Dependent variable: Negative views about stockholders
	(1)
Female	0.083**
	(0.038)
Age	0.004***
	(0.001)
Education: upper secondary	-0.006
	(0.058)
Education: tertiary	-0.055
	(0.058)
Income 2nd tercile	0.071
	(0.051)
Income 3rd tercile	0.004
	(0.052)
Wealth 2nd tercile	0.045
	(0.049)
Wealth 3rd tercile	-0.054
	(0.055)
Observations	2903
R^2	0.008

Notes: The table show coefficients of an OLS regression. The dependent variable is "Negative views about stockholders" defined as the mean over the negative perceptions over the traits greed, being a gambler and selfishness, with higher values indicating that stockholders are perceived more negatively. Robust standard errors in parentheses. Significance levels: *p$<$0.1, **p$<$0.05 and ***p$<$0.01.

Table B.11: OLS regression on the relationship between being a stockholder and self-assessed character traits

	Dependent variable:					
	Self-assessed greed		Self-assessed gambler		Self-assessed selfishness	
	(1)	(2)	(3)	(4)	(5)	(6)
Is stockholder	1.166***	0.733***	1.287***	1.136***	0.860***	0.461***
	(0.111)	(0.114)	(0.105)	(0.112)	(0.098)	(0.102)
Constant	2.541***	4.056***	2.097***	2.734***	2.049***	3.303***
	(0.050)	(0.234)	(0.046)	(0.218)	(0.043)	(0.202)
Demographic controls		X		X		X
Observations	3,271	3,267	3,271	3,267	3,271	3,267
R^2	0.034	0.126	0.047	0.091	0.025	0.101

Notes: The table displays OLS estimates. The dependent variable in columns (1) - (6) is subjects self-assessment over the character traits greed (1-2), gambler (3-4), and selfishness (5-6) on a scale from 0 to 10 (LISS data, Netherlands). Higher values indicate higher degrees of greed, being a gambler, and selfishness, respectively. Is stockholder is a dummy variable equal to one if the subject self-reports to have risky financial assets and zero otherwise. Robust standard errors in parentheses. Controls include age, gender, education, income and total financial assets. Significance levels are $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$.

Table B.12: Distribution of self-assessments and allocations

Panel A: Netherlands

	Self-assessed greed (0-10 point scale)			
	0	1-3	4-6	7-10
Stockholder	14.7%	35.7%	31.6%	17.9%
Non-stockholder	32.7%	35.6%	22.8%	9%
	Self-assessed gambler (0-10 point scale)			
	0	1-3	4-6	7-10
Stockholder	14.7%	41.5%	30.3%	13.4%
Non-stockholder	37%	38.7%	18.3%	6.1%
	Self-assessed selfishness (0-10 point scale)			
	0	1-3	4-6	7-10
Stockholder	16.6%	48.1%	26.8%	8.5%
Non-stockholder	35.6%	40.6%	19.7%	4.1%

Panel B: United States

	Amount allocated to self (0€ - 100€)			
	0-49	50	51-99	100
Stockholder	17.0%	24.5%	35.8%	22.6%
Non-stockholder	19.6%	30.6%	37%	12.8%

Notes: This table shows in Panel A the distribution of subjects' self-assessment over the character traits greed, being a gambler, and selfishness. Elicited on a scale from 0 to 10, the proportions of subjects rating themselves as 0, 1-3, 4-6, or 7-10 for the respective traits separately for the group of stockholders and non-stockholders are displayed. Panel B shows in a similar fashion the distribution of money allocated by subjects to themselves instead to a charity in an allocation game. The proportions of subjects allocation 0-49, exactly 50, 52-99 and exactly 100 € to themselves separately for the group of stockholders and non-stockholders are displayed.

Table B.13: Linking of administrative data balancing test

	Not linked to admin data	Linked to admin data	H_0 : (1) = (2)
	(1)	(2)	(3)
Age	56.15	56.15	0.86
Female	0.56	0.51	0.12
Education: upper secondary	0.33	0.34	0.88
Education: tertiary	0.44	0.44	0.96
Negative views about stockholders	2.31	2.40	0.29
Observations	365	2903	

Notes: Column (1) displays mean values of variables of subjects we could not link to administrative income and wealth data. Column (2) does the same for subjects we could link. The last column shows p-values obtained using Wilcoxon rank-sum tests comparing the variables of the two samples.

Table B.14: Determinants sample balancing test

	Any determinant missing	Determinants sample	H_0 : (1) = (2)
	(1)	(2)	(3)
Age	51.18	61.41	0.00
Female	0.56	0.45	0.00
Education: upper secondary	0.34	0.33	0.59
Education: tertiary	0.46	0.42	0.06
Negative views about stockholders	2.37	2.43	0.39
Income 2nd tercile	0.32	0.34	0.39
Income 3rd tercile	0.34	0.33	0.58
Wealth 2nd tercile	0.33	0.33	0.97
Wealth 3rd tercile	0.28	0.39	0.00
Has risky financial assets	0.22	0.24	0.31
Observations	1493	1410	

Notes: Column (1) displays mean values of variables of subjects for which any of the determinants displayed in Table 5 is missing. Column (2) does the same for the determinants sample. The last column shows p-values obtained using Wilcoxon rank-sum tests comparing the variables of the two samples.

Table B.15: The relationship between negative views and stock market participation (Probit)

	Dependent variable: Has risky financial assets			
	Full sample		Determinants sample	
	(1)	(2)	(3)	(4)
Negative views about stockholders	-0.205***	-0.208***	-0.249***	-0.212***
	(0.027)	(0.030)	(0.043)	(0.045)
Behavioral variables				
General trust				0.127***
				(0.047)
Ambiguity aversion				-0.102**
				(0.044)
Likelihood insensitivity				-0.076*
				(0.045)
Belief over positive stock returns				0.221***
				(0.040)
Risk aversion				-0.157***
				(0.041)
Financial numeracy				0.004
				(0.052)
Right-wing political orientation				0.058
				(0.044)
Socio-demographic variables				
Female		-0.283***	-0.186**	-0.040
		(0.057)	(0.085)	(0.090)
Age		-0.001	-0.001	0.003
		(0.002)	(0.003)	(0.003)
Education: upper secondary		0.099	0.053	0.019
		(0.088)	(0.120)	(0.127)
Education: tertiary		0.459***	0.442***	0.392***
		(0.084)	(0.115)	(0.125)
Income 2nd tercile		0.012	-0.003	-0.013
		(0.080)	(0.115)	(0.119)
Income 3rd tercile		0.296***	0.216*	0.160
		(0.081)	(0.120)	(0.125)
Wealth 2nd tercile		0.422***	0.607***	0.582***
		(0.082)	(0.135)	(0.138)
Wealth 3rd tercile		1.039***	1.332***	1.299***
		(0.083)	(0.133)	(0.138)
Mean dep. variable	0.228	0.226	0.238	0.238
Observations	2915	2903	1410	1410

Notes: The table shows Probit regression coefficients. The dependent variable is an indicator variable equal to one if the subject owns stocks and zero if not. "Negative views about stockholders" is defined as the mean over the negative perceptions over the traits greed, being a gambler and selfishness, with higher values indicating that stockholders are perceived more negatively. See Appendix K.3 for details on the other independent variables. All behavioral variables displayed have been standardized. Robust standard errors in parentheses. Significance levels: $^{*}p<0.1$, $^{**}p<0.05$ and $^{***}p<0.01$.

Table B.16: Misreporting of share of risky financial assets

	Dependent variable: Reported share of risky financial assets	
	(1)	(2)
Constant	0.154***	
	(0.022)	
Negative views about stockholders	-0.009	-0.009
	(0.010)	(0.013)
Financial numeracy		0.011
		(0.022)
Share of risky assets	0.735***	0.742***
	(0.036)	(0.049)
Demographic controls		X
Observations	372	228
R^2	0.584	0.624

Notes: The table shows OLS regression coefficients. The dependent variable is the share of risky financial assets as a percentage of all financial assets. The sample is restricted to all households which hold any risky financial assets based on Dutch administrative data and report any risky financial assets. "Negative views about stockholders" is defined as the mean over the negative perceptions over the traits greed, being a gambler and selfishness, with higher values indicating that stockholders are perceived more negatively. "Financial numeracy" is defined as the number of correct answers to the four numeracy questions of van Rooij, Lusardi, and Alessie (2011). Both independent variables have been standardized. Robust standard errors in parentheses. Controls include age, gender, education, income, wealth, and a dummy whether we observe all adult household members. Significance levels: *p$<$0.1, **p$<$0.05 and ***p$<$0.01.

C Selection of character traits

This section describes the pilot experiment that we used to select three character traits for our measure capturing perceptions of stockholders. As explained in Section 3.2, we used two criteria to select the traits: the traits need to be associated with stockholders and identity-relevant to subjects. Based on these conditions, we searched media outlets (articles, books, and movies) and gathered a list of eight candidates. For each candidate, we adapted a description from established psychological definitions. We further added two additional characteristics (non-religiousness and non-athleticness) as a validity check. We predicted no association with stockholders for these two characteristics and thus would expect subjects to rate them accordingly. Table C.1 displays the ten characteristics together with the respective definitions.

Table C.1: List of character traits used for selection

Variable	Definition
Aggressiveness	The tendency towards social dominance, threatening behavior, and hostility.
Arrogance	The tendency to show an attitude of overbearing superiority or make presumptuous claims or assumptions.
Dishonesty	The tendency to lack truthfulness, uprightness, and integrity.
Gambler	A person who shows the tendency to risk money or other stakes in the hope of being successful.
Greed	The tendency to continuously want more of things like wealth, possessions or social values.
Impatience	The tendency to be restless or short of temper, especially under irritation, delay, or opposition
Impulsiveness	The tendency to act hastily and without adequate reflection on the possible consequences.
Selfishness	The tendency to accept negative consequences for other people or the environment to gain a personal advantage as a result.
Non-athleticness	A person who lacks agility, muscular strength, or broad-shouldered physique.
Non-religiousness	The tendency to not have a religious character or not relate to or believe in a religion.

We presented this list (in randomized order) and the accompanying definitions to 194 subjects in a Dutch Online Panel supplied by the provider Pureprofile. In order to check the first condition, subjects were asked to rank the traits according to how strongly they associate the traits with stockholders. We used the same definition for stockholders as employed throughout the paper. Using subjects' rankings, we computed for each trait the average rank, with one being ranked highest (most strongly associated) and ten the lowest rank. Table C.2 displays the results. We observe that people perceive the trait greed to be most strongly associated with stockholders, followed by being a gambler and selfishness. All three traits differ significantly from the random benchmark ($p < 0.001$, Wilcoxon rank-sum test). Reassuringly, we find that the characteristics non-athletic and non-religious are ranked last, indicating that subjects answered deliberately.

To test the second condition, we asked subjects to state for each trait how "important it is for you that you do not appear to have this characteristic and that others do not see you as such a person." Subjects could rate the traits using a scale from one ("not at all important") to ten ("very important"). As displayed in Table C.3, the previously highest ranked traits greed, being a gambler and selfishness are also among the four highest-rated traits with respect to their identity relevance. Based on these results, we chose the three character traits greed, being a gambler, and selfishness

as our leading variables used to measure perceptions of stockholders. Because subjects indicate that it is important to them that they do not appear to have the three selected traits, these traits are considered negatively by subjects.

Table C.2: Association of traits with stockholder ranking results

Characteristic	Average rank
Greed	3.85
Gambler	4.31
Selfishness	4.83
Arrogance	4.84
Impulsiveness	5.02
Impatience	5.51
Aggressiveness	5.89
Dishonesty	6.48
Non-athleticness	6.70
Non-religiousness	7.58

Notes: The table show the ordered average rank of the ten selected characteristics. Lower values indicate higher rank, i.e., a stronger association of the trait with stockholders.

Table C.3: Identity relevance of traits results

Characteristic	Identity importance
Gambler	6.34
Greedy	5.90
Impulsiveness	5.68
Selfishness	5.65
Aggressiveness	5.53
Arrogance	5.30
Impatience	4.77
Dishonesty	4.49
Non-athleticness	4.47
Non-religiousness	3.35

Notes: The table show the ordered average identity relevance score of the ten selected characteristics. Higher values indicate higher self-assessed importance.

D Defining the group of stockholders

The definition of stockholders we use in our surveys is based on the official asset categorization of Statistics Netherlands. Throughout our surveys, we define stockholders as individuals "who possess any risky financial investments," where "risky financial investments include growth funds, share funds, bonds, debentures, stocks, options, and warrants. They do not include banking accounts, saving accounts, bank savings schemes, insurance policies, or real estate." We chose this definition because the assets categorized as risky financial investments form a specific tax category in the Netherlands and this definition is used in the asset questionnaire of the LISS panel which panelist answer every other year. For these reasons, our Dutch participants are familiar with the definition we provided. Furthermore, this categorization allows us to compare our survey data with administrative data because the latter is based on tax records. To guarantee comparability between countries, we used the same definition also in our surveys fielded to other countries.

However, an important question is whether the objective definition we use coincides with subjects' subjective definition of stockholders. In particular, subjects could consider other types of investments relevant for their definition of what defines a stockholder. Notably, our definition does not include "indirect" stock market investments through retirement saving plans. The distinction between direct and indirect investments is particularly important in the Netherlands because the vast majority of employed Dutch individuals are automatically enrolled in retirement saving plans that contain stock market investments to varying degrees.[37]

Results based on the linking of survey data from the LISS panel with administrative records indicate that individuals correctly disregard indirect investments in their subjective definition of stockholders. In the linked data, we can directly compare subjects' own categorization with the categorization of our definition. If subjects consider other types of investments outside of our definition as an important part of being a stockholder, we would expect many individuals self-reporting to be stockholders even if they are not based on our definition. Reassuringly, we observe no evidence of such over-reporting of being a stockholder. Only 2% of subjects who are non-stockholders based on our definition report being a stockholder. If anything, we find that some stockholders report being non-stockholders, a phenomenon we explore in further detail in Section 6.3. The evidence thus supports the notion that our definition of stockholders coincidences with subjects' subjective distinction between stockholders and non-stockholders.

[37] In our framework, only active decisions matter for identity. Thus, participating indirectly in the stock market through automatic enrollment should not influence group identification. We indeed find substantial group identification in our Dutch sample despite most subjects being enrolled in retirement saving plans that contain stock market investments (see Section 4).

E Additional evidence on people's perceptions of stockholders

This section describes the additional surveys that we used as robustness exercise for the main result presented in Section 3.

Design. Overall, we collected data from 1,016 subjects who are broadly representative of the Dutch population in terms of age and gender provided by Panel Inzicht. After answering a couple of demographic questions, subjects were presented with a list of activities. The activities were selected to be related to the three character traits selfishness, being a gambler and greed. For each activity, subjects were asked to estimate the proportion of people engaging in the activity. Subjects could enter any percentage number from 0 to 100 as answer and were asked separately about stockholders and non-stockholders. In order to avoid overloading subjects with too many activities, we varied between subjects some of the activities. Table E.1 displays the set of activities used together with the respective number of observations and formulations of the survey questions.

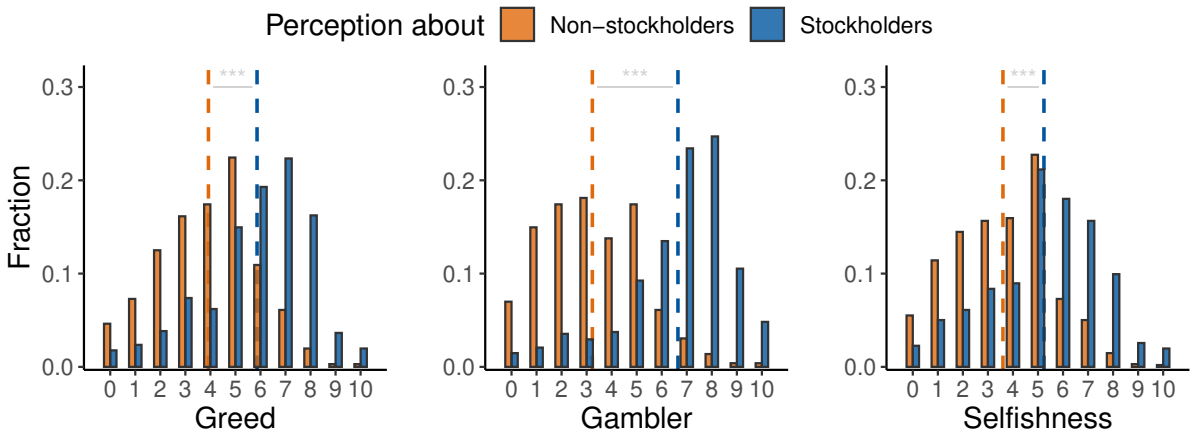
Table E.1: List of activities used for robustness

Variable	Related trait	Observations	Survey question Out of [GROUP], how many stated that they...
Voluntary work	Selfishness	1,016	...currently do voluntary work or did so in the past two years?
Donating money	Selfishness	670	...donated money to a good cause in the past two years?
Helping strangers	Selfishness	346	...helped a stranger in need at some point in the past two years?
Casino loss	Gambler	1,016	...lost money in a casino at least once?
Excessive risk	Gambler	346	...at least once been in a situation where they regretted that they took too much risk?
Unnecessary buying	Greed	1,016	...at least once bought a product which they didn't really need just for the sake of having it?
Dissatisfaction	Greed	1,016	...felt dissatisfied because they wanted to possess more things at some point during the past two years?

Additionally, we described a dictator game to a subset of 346 subjects. We told them that survey participants are provided an endowment of five euros. The participants can allocate the endowment between themselves and the charitable organization Artsen zonder Grenzen (Doctors Without Borders). A randomly selected subset gets their decision implemented with real consequences. Similar to the elicitation of the activities, we ask subjects to estimate how these participants allocate the money. Specifically, they were asked to estimate the average amount donated to the charity as percentage of the endowment (0-100%). Subjects make their guess separately for the group of stockholders and non-stockholders.

Finally, we wanted to replicate our finding of negative perceptions over the three selected character traits presented in the main text for the LISS panel also for this sample. Accordingly, after eliciting subjects' estimates regarding the activities and dictator game, we included the standard module that elicits perceptions of the character traits greed, being a gambler, and selfishness, as described in Section 3.

Figure E.1: Replication of Panel A of Figure 1 using robustness sample

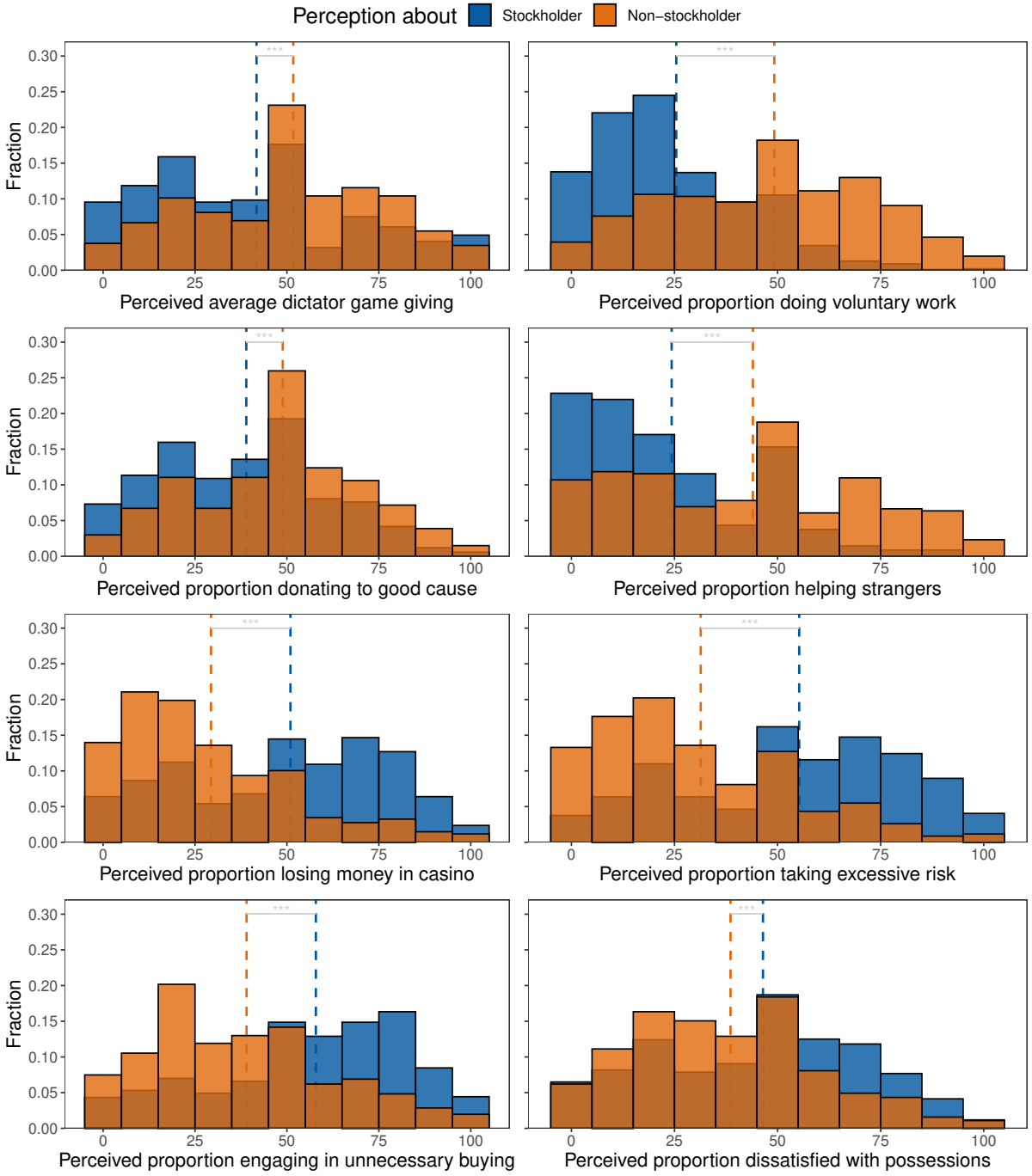


Notes: The figure displays the distribution of subjects' ratings of the group of stockholders and non-stockholders elicited using the Panel Inzicht sample. Higher values indicate that subjects rate the respective group as more greedy (left graph), gambler-like (middle graph), and selfish (right graph). The dotted lines display mean ratings. Stars indicate significance levels, where *p<0.1, **p<0.05 and ***p<0.01, obtained from Kolmogorov-Smirnov tests.

Results. Figure E.1 shows that we can replicate the finding of large negative perceptions of stockholders with respect to character traits in this sample. The distribution of ratings for stockholders again lie to the right of the non-stockholder distribution in all three cases ($p < 0.001$, Kolmogorow-Smirnow test). At the individual level, we again observe that a majority views stockholders as strictly more greedy, gambler-like and selfish, with 80% holding strictly negative views about stockholders.

Figure E.2 shows the results for the dictator game and activities. In all nine cases, the distributions of estimates differs significantly ($p < 0.001$, Kolmogorow-Smirnow test). If the activities are positively described (dictator game, voluntary work, donating money, helping strangers), subjects predict stockholder to be significantly less likely to be engaged in the activity. If the activities are negatively described (casino loss, excessive risk, unnecessary buying, and dissatisfaction), subjects predict stockholder to be significantly more likely to be engaged in the activity. In almost all cases, the average perceived difference is larger than 10, in some cases even larger than 20 percentage points. Furthermore, in all cases does a majority of subjects view stockholder as more negative or less positive, respectively. For instance, 58% of subjects predicting stockholder to give strictly less to charity compared to non-stockholder in the dictator game and 51% predict the fraction of stockholders that have donated money to a good cause in the past two years to be strictly lower than the fraction of non-stockholders.

Figure E.2: Perceptions of differences in activities between stockholder and non-stockholder



Notes: The figure displays the distribution of subjects' estimates of the fraction of stockholders and non-stockholders engaging in the described activities. Higher values indicate that subjects estimate a higher fraction of individuals engaging in the activity. The dotted lines display mean values. Stars indicate significance levels, where $^{*}p<0.1$, $^{**}p<0.05$ and $^{***}p<0.01$, obtained from Kolmogorov-Smirnov tests.

F Validation of the stock description experiment

Our framework predicts a difference (Prediction 1) between the *Stock Description* and *Draw Description* treatment if (i) the risky option in the former is, to a higher degree, associated with the stock market compared to the risky option in the latter and (ii) subjects view stockholders negatively. In the following, we provide evidence supporting these two necessary conditions underlying the prediction.

F.1 Validating the stock investment decision

To vary the association of the risky option with the stock market, we describe the option as either a stock investment or an investment in a random draw. Our experimental stock investments differ in two important aspects from real stock investments. First, we use stock prices that have already materialized, allowing us to control the uncertainty process generating stock price movements. This process is ambiguous in reality, i.e., generally not quantifiable by exact probabilities. Since subjects in our experiment still bet on stock price movements, we argue that the *Stock Description* investments are more strongly associated with actual stockholders than respective *Draw Description* investments. Second, subjects in our experiment do not receive fractional ownership of a company through their investment as they would in reality. Since households use stock investments mainly for wealth accumulation and not to exercise voting rights over a company, we argue that this difference also does not equalize associations.

Sample. To show empirically that the investment decision in *Stock Description* is to a higher degree associated with the group of stockholders, we use the full sample of 651 subjects of the description experiment. While the sample used for the main analysis consists solely of non-stockholders (as preregistered), the full sample also contains 136 stockholders. We thus use the full sample to compare the likelihood that the stock option is chosen among stockholders compared to non-stockholders.

Results. As hypothesized, these stockholders are significantly more likely to choose the stock option, i.e., the risky option described as stock investment. While non-stockholders choose this option in 38% out of all decisions, stockholders choose the option in 57% of decisions. Table F.1 shows that this result remains significant when controlling for demographic variables and the respective choice in the *Draw Description* treatment. Accordingly, controlling for subjects' choice behavior towards an investment with identical risk and returns outside the stock market context, stockholders are still significantly more likely to choose the stock option than non-stockholders. This result provides evidence that the stock option in our experiment is, to a higher degree, associated with the group of stockholders than the random draw option.

F.2 Validating negative views about stockholders on Prolific

The goal is to replicate the main finding of Section 3 - people view stockholders negatively - for our experimental population on Prolific. For this purpose, we ran a separate survey on Prolific to measure participants' views about stockholders.

Sample. 272 subjects on Prolific with residence in the US completed the survey. See Appendix Table B.5 for sample demographics. The median completion time was less than 5 minutes, and subjects

Table F.1: Description experiment validation that the stock option is associated with the group of stockholders

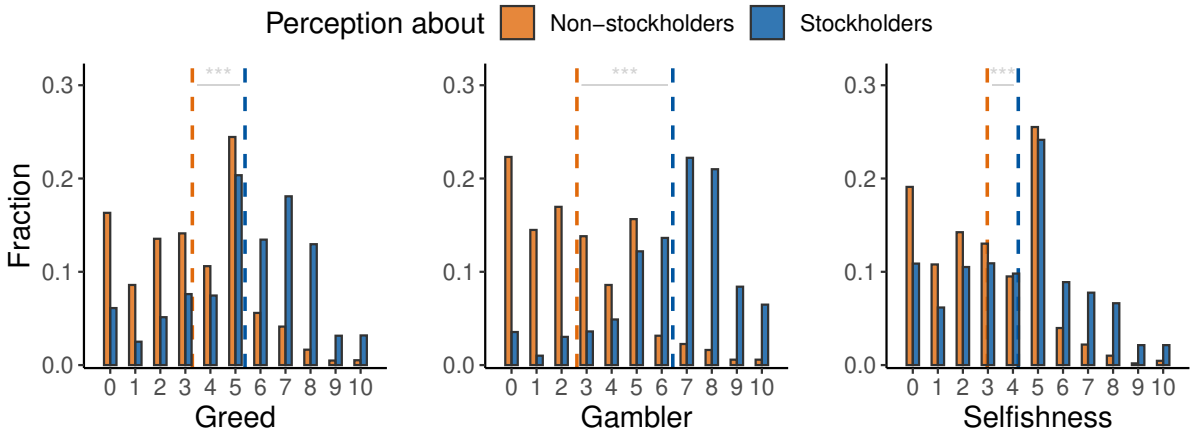
	Dependent variable:			
	Choice of stock option			
	(1)	(2)	(3)	(4)
Constant	0.381***	0.444***	0.222***	0.269***
	(0.017)	(0.078)	(0.016)	(0.075)
Is stockholder	0.193***	0.184***	0.152***	0.148***
	(0.037)	(0.038)	(0.035)	(0.036)
Choice of draw option			0.318***	0.312***
			(0.024)	(0.024)
Demographic Controls		X		X
Subjects	651	643	651	643
Observations	2,604	2,572	2,604	2,572

Notes: The table displays OLS estimates. The dependent variable is an indicator variable equal to one if the risky option described as stock investment is chosen and zero if the safe option is chosen. Is stockholder is a indicator variable equal to one if the subject self-reports to have risky financial assets and zero otherwise. Choice of draw option is an indicator variable equal to one if the risky option described as random draw investment is chosen and zero if the safe option is chosen. Standard errors (in parentheses) are clustered at the subject level. Demographic controls include age, gender, education, income, total financial assets and involvement in financial decision-making. Significance levels are *p<0.1; **p<0.05; ***p<0.01.

received £0.5 ($\approx \$0.63$) for completion. We also used this sample to generate the donation behavior used for the information experiment of Section 4.3. Hence, we presented subjects with an allocation decision and afterward elicited their perceptions of stockholders as described in 3.2 together with demographic variables.

Results. Figure F.1 displays for all three traits the distribution of ratings separately for each group. For all three traits, we can reject the null hypothesis that both distributions are drawn from the same distribution (all $p < 0.01$, Kolmogorov-Smirnov test, Bonferroni corrected). At the individual level, 55% of subjects view stockholders as strictly more greedy, 88% view them as strictly more as gamblers, and 46% strictly more selfish. On average, 83% of subjects view stockholders strictly more negative than non-stockholders. In Table F.2, we further show that these views predict subjects' stock market participation. A one-standard-deviation increase in negative views is associated with a 5.7 pp. decrease in (self-reported) stock market participation. Hence, we replicate the existence of negative views about stockholders among respondents on Prolific and additionally show their predictive power for stock market participation.

Figure F.1: Replication of Panel A of Figure 1 using Prolific sample



Notes: The figure displays the distribution of subjects' ratings of the group of stockholders and non-stockholders elicited using the Prolific sample. Higher values indicate that subjects rate the respective group as more greedy (left graph), gambler-like (middle graph), and selfish (right graph). The dotted lines display mean ratings. Stars indicate significance levels, where *p<0.1, **p<0.05 and ***p<0.01, obtained from Kolmogorov-Smirnov tests.

Table F.2: The relationship between negative views about stockholders and stock market participation on Prolific

	Dependent variable:	
	Participates in the stock market	
	(1)	(2)
Negative views about stockholders	−0.057**	−0.058**
	(0.023)	(0.023)
Constant	0.195***	
	(0.024)	
Demographic Controls		X
Subjects	272	269

Notes: The table shows OLS estimates. The dependent variable is an indicator variable equal to one if the subject owns stocks and zero otherwise. "Negative views about stockholders" is defined as the mean of the negative perceptions over the traits greed, being a gambler and selfishness, with higher values indicating that stockholders are perceived more negatively. The variable has been standardized. Robust standard errors in parentheses. Controls include age, gender, education, income and wealth. Significance levels: *p<0.1, **p<0.05 and ***p<0.01.

G Heterogeneous effects of information about stockholders on behavior

In Section 4.3, subjects received information on the difference in donation behavior between stockholders and non-stockholders. This section analyzes heterogeneity in the effect of the information on behavior. By design, some subjects in our experiment receive a signal that the difference in donation behavior is more in favor of stockholders than they thought. Other subjects receive a more favorable signal towards non-stockholders relative to their prior beliefs. Finally, there is a fraction of subjects who receive confirming information because their signal is close to their prior beliefs. Therefore, we can use this variation to investigate whether the information has asymmetric effects on behavior: do subjects react stronger if they receive positive or negative news about stockholders?

Variable. We define the variable *signal relative to prior* as the signal over the difference in donation behavior subjects receive minus their belief over this difference, which was elicited prior to the information provision. Higher values indicate that subjects receive, relative to their prior belief, a more positive signal of stockholders donation behavior compared to non-stockholders. Based on this variable, we create three bins representing the three previously described groups, with -20 and 20 as the cutoffs. We chose these cutoffs to have symmetric cutoffs around zero while balancing the number of subjects in each bin. Overall, there are 162 subjects whose signal is 20 percentage points or more below their prior beliefs (category *Negative signal relative to prior*). 163 subjects receive a signal that is within 20 percentage points of their prior belief, and 223 subjects receive a signal that is 20 percentage points or more above their prior beliefs (category *Positive signal relative to prior*). The larger number of subjects in the last bin is caused by subjects' beliefs being skewed in favor of non-stockholders compared to the actual difference (see Section 6.1).

Results. In Table G.1, we regress the categorical variable's three groups on subjects' likelihood to choose the stock option. Subjects who receive confirming information act as a reference group in the regression, and we control for the level of subjects' prior beliefs and their respective choice when options are described as a random draw. We observe that subjects receiving a signal favoring non-stockholders (relative to their prior) choose the stock option less, while subjects receiving a positive signal over stockholders donation behavior are more likely to choose the stock option. Crucially, only the latter is statistically significant, and about 50% larger in magnitude. Hence, subjects receiving positive information of stockholders react more strongly than subjects receiving negative information of the same magnitude relative to subjects priors. In Table G.2, we replicate this effect using a different binning approach: instead of using -20 and 20 as cutoffs, we choose the cutoffs such that each bin has the same number of subjects (183 subjects each, which results in cutoffs of -13 and 31).

Table G.1: Heterogeneity in the effect of information about stockholders on decision-making using symmetric cutoffs

	Dependent variable:	
	Choice of stock option	
	(1)	(2)
Negative signal relative to prior	−0.051	−0.052
	(0.045)	(0.045)
Positive signal relative to prior	0.078**	0.083**
	(0.040)	(0.040)
Choice of draw option	0.241***	0.241***
	(0.025)	(0.025)
Demographic controls		X
Prior beliefs	X	X
Subjects	548	541
Observations	2,192	2,164

Notes: The table displays OLS estimates. All four binary choices between the risky option described as a stock investment and the safe option of a subject enter as separate observations. The dependent variable is an indicator whether the risky option described as a stock investment is chosen. "Negative signal relative to prior" and "Positive signal relative to prior" are categories indicating whether subjects received negative or positive news over the donation behavior of stockholders relative to their priors. The reference category captures receiving news aligned with subjects' prior beliefs. Cutoffs defining the categories were chosen to achieve symmetry around 0. "Choice of draw option" is an indicator whether the risky option is chosen when described as a random draw investment. "Prior beliefs" is subjects' belief about the difference in donation behavior between stockholders and non-stockholders. Both, "Choice of draw option" and "Prior beliefs," are elicited before subjects receive the signal. Demographic controls include age, gender, education, income, total financial assets and involvement in financial decision-making. Standard errors (in parentheses) are clustered at the subject level. Significance levels are $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$.

Table G.2: Heterogeneity in the effect of information about stockholders on decision-making using equal observation cutoffs

	Dependent variable:	
	Choice of stock option	
	(1)	(2)
Negative signal relative to prior	−0.035	−0.032
	(0.043)	(0.043)
Positive signal relative to prior	0.082**	0.099**
	(0.039)	(0.039)
Choice of draw option	0.241***	0.242***
	(0.025)	(0.025)
Demographic controls		X
Prior beliefs	X	X
Subjects	548	541
Observations	2,192	2,164

Notes: The table displays OLS estimates. All four binary choices between the risky option described as a stock investment and the safe option of a subject enter as separate observations. The dependent variable is an indicator whether the risky option described as a stock investment is chosen. "Negative signal relative to prior" and "Positive signal relative to prior" are categories indicating whether subjects received negative or positive news over the donation behavior of stockholders relative to their priors. The reference category captures receiving news aligned with subjects' prior beliefs. Cutoffs defining the categories were chosen such that every category has the same number of subjects. "Choice of draw option" is an indicator whether the risky option is chosen when described as a random draw investment. "Prior beliefs" is subjects' belief about the difference in donation behavior between stockholders and non-stockholders. Both, "Choice of draw option" and "Prior beliefs," are elicited before subjects receive the signal. Demographic controls include age, gender, education, income, total financial assets and involvement in financial decision-making. Standard errors (in parentheses) are clustered at the subject level. Significance levels are $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$.

H Follow-up survey for information experiment

This section provides a detailed description of the follow-up survey we conducted after the information experiment. As explained in the main text, one of the main goals of the survey was to address experimenter demand concerns. For this purpose, we designed the survey to appear to subjects as a completely distinct study that is unrelated to the information experiment. If subjects indeed perceive no connection between follow-up and information experiment, but we still find treatment effects in the survey, then experiment demand effects cannot confound them.

H.1 Survey design

We invited participants of the information experiment to our follow-up survey two days after the experiment finished. This invitation appeared on participants' messaging boards on Prolific alongside invitations to studies from other researchers. Invitations include a title, short description, and name of the responsible researcher, which we thus all varied between information experiment and follow-up survey. We described the former as a decision-making experiment with the first author as researcher and the University of Bonn as institution, and the latter as an opinion survey about general topics with the second author and IZA as researcher and institution. Once subjects accepted the invitation, they were directed to the survey, which used a different welcome page and visual style compared to the information experiment. The survey itself consisted of two parts, one eliciting intentions and one eliciting perceptions.

Intentions. In the first part (see Appendix L.4 for a screenshot), we elicit intentions to engage in specific behaviors for five items using 7-point Likert scales ranging from strongly disagree to strongly agree. The five items were the following:

> In the next five years, I will under no circumstances or situations whatsoever ...
>
> - donate more money to a good cause than I currently do.
> - invest any of my own money into financial assets traded on the stock market such as funds or shares.
> - do more sports than I currently do.
> - make more environmentally friendly decisions.
> - buy disability insurance or increase coverage.

Our main variable of interest is the second item on investment intention. We choose the formulation "under no circumstances or situation whatsoever" to retain variation in answers given the strong opposition to the stock market in our sample. The other items function as filler items to obfuscate our interest in investment intentions.

Perceptions. In the second part, we elicit subjects' perceptions about group differences for a list of three groups and four personality traits using 9-point Likert scales. We ask about the difference in personality traits between:

- Those who regularly make donations for a good cause ('Regular donors') and those who do not regularly make donations for a good cause ('No regular donors')
- Those who invest any money into financial assets traded on the stock market such as funds or shares ('Stockholder') and those without financial assets traded on the stock market ('Non-stockholder')
- Those who have a disability insurance ('Insured') and those who do not have a disability insurance ('Non-insured').

For each of these groups, we elicit perceptions of the traits intelligence, selfishness, generosity, and close-mindedness. Our main variable of interest is how different subjects perceive stockholders and non-stockholders with respect to selfishness (see Appendix L.5 for a screenshot). Again, we added the other groups and traits to obfuscate the connection to the information experiment.

H.2 Validation

To attract as many subjects of the main experiment as possible, we offered more than twice the minimum pay required by Prolific (an extrapolated hourly wage of $\$18.65$). With these incentives, we were able to recruit 428 subjects (78%) of the main experiment for the follow-up survey. As displayed in Table H.1, we find no evidence of selection effects. Which information subjects received or which decisions they made in the information experiment does not differ between the group of subjects participating in the follow-up survey and those not participating.

Table H.1: Follow-up experiment balance test

Variable	Participated in follow-up survey (1)	Did not participate in follow-up survey (2)	H_0 : (1) = (2) p-value (3)
Prior belief	-16.52	-10.99	0.34
Signal over donation behavior	-10.02	-11.16	0.98
Signal over donation behavior (dummy)	0.39	0.41	0.65
Number of stock option choices	1.85	1.69	0.36
Number of random draw option choices	2.25	2.17	0.51
Age	31.53	29.62	0.19
Women	0.76	0.85	0.04
High income	0.49	0.57	0.10
High wealth	0.58	0.61	0.57
Is financial decider	0.64	0.57	0.23
Has college degree	0.35	0.34	0.93
Observations	428	120	

Notes: Column (1) displays mean values of variables of subjects who participated in the obfuscated follow-up survey conducted after the information experiment. Column (2) does the same for subjects who did not participate. The last column shows p-values obtained using Wilcoxon rank-sum tests comparing the variables of the info experiment with the follow-up survey.

Between the main experiment and the follow-up survey, subjects completed an average of 15 other studies. At the end of the follow-up survey, we asked subjects to indicate the number of similar studies they had completed in the past two weeks. Overall, 82% of subjects answered with "none," indicating that we successfully created a survey perceived as distinct from the main study. This fraction

is a lower bound on the fraction of individuals who do not perceive a connection between follow-up and main experiment, as our survey might be similar to one of the other studies that subjects participated in. Furthermore, not a single subject of the follow-up referenced our main experiment when asked "If you had to guess, what would you say was the purpose of this study?". It thus appears that our obfuscation measures were successful in creating a survey that subjects perceive as distinct from the main experiment.

H.3 Results

We find that subjects who received information that stockholders donated more for a good cause are significantly more willing to consider investing in the future ($p = 0.020$, Wilcoxon rank-sum test) compared to those that received the information that non-stockholders donated more or the same amount. They also view non-stockholders as significantly more selfish compared to stockholders ($p = 0.005$, Wilcoxon rank-sum test). Table H.2 shows these effects using an OLS regression, controlling for prior beliefs. We find slightly weaker but still persistent and significant effects when we look at the full continuous signal variable (see Table H.3). A weaker effect compared to the binary classification of information seems plausible because information on which group donated more is easier to memorize than the exact percentage difference.

Table H.2: Follow-up experiment effect of binary coded information on investment intention and perceptions

	Dependent variable:			
	Investment intention		Perception over non-stockholder selfishness	
	(1)	(2)	(3)	(4)
Signal over donation behavior (dummy)	0.469***	0.433**	0.293**	0.342***
	(0.174)	(0.176)	(0.127)	(0.125)
Prior belief	0.074***	0.084***	0.041**	0.052***
	(0.023)	(0.024)	(0.017)	(0.016)
Constant	4.722***	4.982***	4.354***	4.022***
	(0.118)	(0.522)	(0.085)	(0.348)
Demographic controls		X		X
Observations	428	422	428	422
R^2	0.039	0.107	0.025	0.100

Notes: The table displays OLS estimates. The dependent variable in columns (1) and (2) is subjects' intention to invest in the stock market at some point in the next five years on a scale from 1 to 7. In columns (3) and (4), the dependent variable is the extent to which subjects perceive non-stockholder to be more selfish than stockholders on a scale from 1 to 9. Signal over donation behavior is a dummy variable equal to one if subjects received the signal that stockholders donated more than non-stockholders and zero if non-stockholders donated more or the same amount. Prior beliefs is subjects belief over the differences in donation behavior between stockholders and non-stockholders. Higher values indicate that subjects believe stockholders to donate more relative to non-stockholders, with the unit being 10% differences. Accordingly, a one unit increase means that a subject believes stockholders to donate 10% more than non-stockholders. Robust standard errors in parentheses. Demographic controls include age, gender, education, income, total financial assets and involvement in financial decision-making. Significance levels are *p<0.1; **p<0.05; ***p<0.01.

As a placebo check, we also assess the influence of the information on the other variables of the

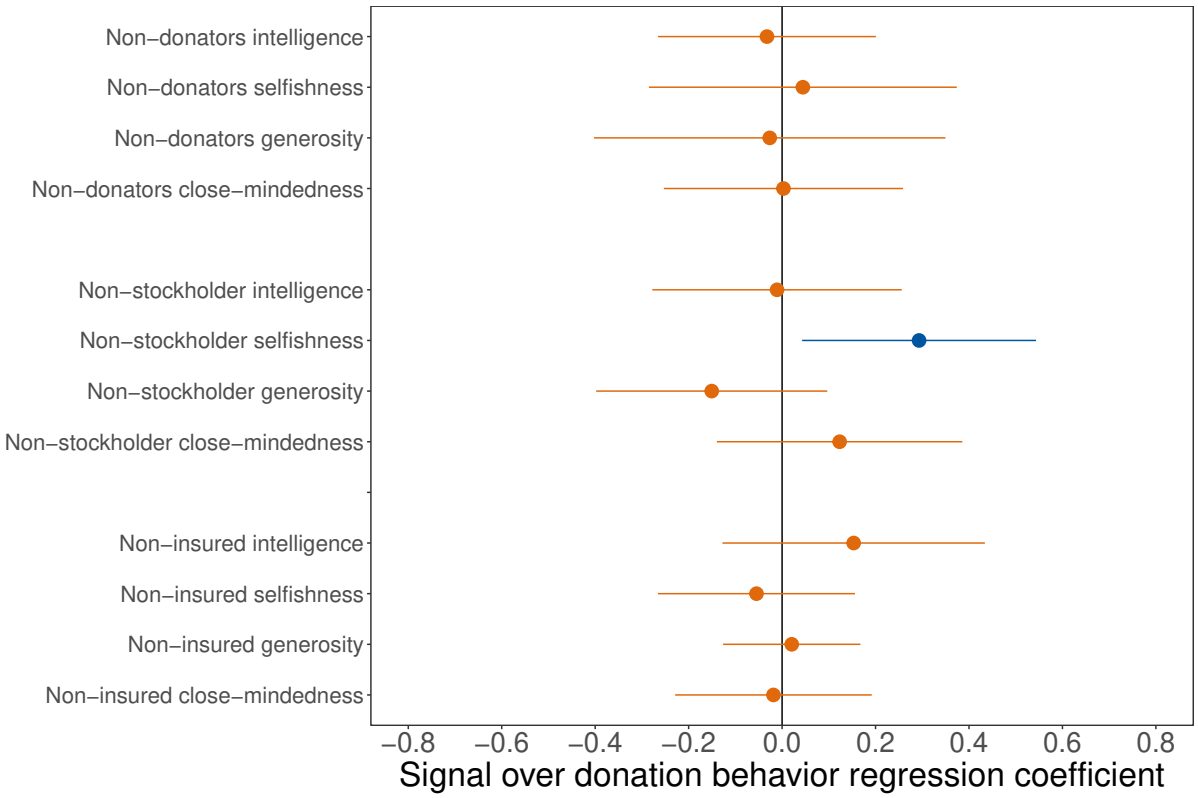
Table H.3: Follow-up experiment effect of information on investment intention and perceptions

	Dependent variable:			
	Investment intention		Perception over non-stockholder selfishness	
	(1)	(2)	(3)	(4)
Signal over donation behavior (full signal)	0.051**	0.044*	0.030	0.036**
	(0.025)	(0.025)	(0.019)	(0.017)
Prior belief	0.076***	0.086***	0.042**	0.053***
	(0.023)	(0.024)	(0.017)	(0.016)
Constant	4.956***	5.271***	4.499***	4.253***
	(0.089)	(0.522)	(0.065)	(0.340)
Demographic controls		X		X
Observations	428	422	428	422
R^2	0.036	0.103	0.022	0.096

Notes: The table displays OLS estimates. The dependent variable in columns (1) and (2) is subjects intention to invest in the stock market at some point in the next five years on a scale from 1 to 7. In columns (3) and (4), the dependent variable is the extent to which subjects perceive non-stockholder to be more selfish than stockholders on a scale from 1 to 9. Signal over donation behavior denotes the signal received over the difference in donation behavior. Higher values indicate a higher signal in the direction that stockholders donate more relative to non-stockholders, with the unit being 10% differences. Accordingly, a one unit increase means a signal that stockholders donate 10% more than non-stockholders. Prior beliefs is subjects belief over the differences in donation behavior between stockholders and non-stockholders, with the same coding and unit as the signal over donation behavior variable. Robust standard errors in parentheses. Demographic controls include age, gender, education, income, total financial assets and involvement in financial decision-making. Significance levels are $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$.

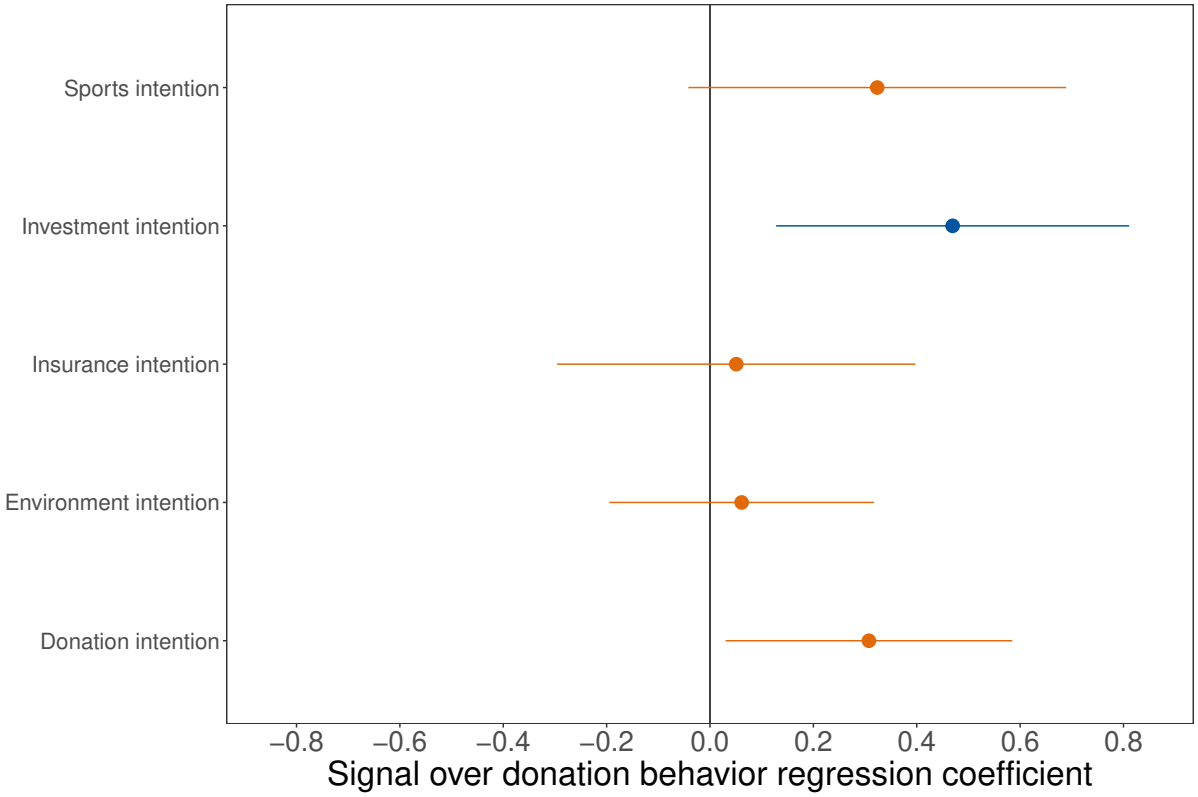
survey. Reassuringly, we find neither an effect of the information on perceptions of other traits, nor on other groups (Figures H.1). For intentions, only the intention to donate has a coefficient that is significantly different from zero (Figures H.2). Given the large number of placebo checks, it is unsurprising that one of them also proves to be significant. The general pattern clearly shows that there is no systematic relation between the information and the elicited non-stock market related perceptions and intentions.

Figure H.1: Information experiment treatment effect on beliefs in follow-up



Notes: This figure shows OLS estimates of the dummy variable equal to one if subjects received the signal that stockholders donated more than non-stockholders and zero if non-stockholders donated more on different belief variables elicited in the follow-up to the information experiment. Beliefs are elicited for different characteristics and groups using scales from 1 to 9. Higher values indicate that the displayed group is rated higher with the respective trait than the complementary group. Bars indicate 95% confidence intervals.

Figure H.2: Information experiment treatment effect on intentions in follow-up



Notes: This figure shows OLS estimates of the dummy variable equal to one if subjects received the signal that stockholders donated more than non-stockholders and zero if non-stockholders donated more or the same amount on different intention variables elicited in the follow-up to the information experiment. The intention variables measure subjects' intention to engage in the described activity. Their intention is elicited as agreement to the statement "In the next five years, I will under no circumstances or situations whatsoever..." on 7-point Likert scales, which we reverse code for ease of exposition. Higher values thus indicate a higher intention to perform the displayed activity. Bars indicate 95% confidence intervals.

I Correcting stereotypical perceptions

This section describes the design and results of the information experiment conducted in the LISS panel mentioned in Section 6.1. The idea of the experiment is to investigate the effect of providing subjects with information on the actual differences between stockholders and non-stockholders. Since subjects' perceptions are overly negative, this type of information could be a natural policy intervention. That such a debiasing intervention could be effective appears plausible in light of the experiment described in Section 4.3, which was designed to identify the causal effect of negative perceptions on investment behavior. However, based on the previous literature it is not obvious that such a debiasing intervention is successful in changing beliefs and behavior in the general population. While providing information on actual differences has generally been found to be successful in reducing misperceptions and changing behavior (Bursztyn and Yang, 2022), notable exceptions exist (e.g., Alesina, Miano, and Stantcheva, 2023). Moreover, direct attempts to correct people's beliefs could even backfire, instead increasing stereotypes and animosities (Nyhan and Reifler, 2010; Fouka, 2020). After all, there are difference between stockholders and non-stockholders we show in Section 6.1, which, albeit small, could strengthen subjects' confidence of holding stereotypical beliefs or trigger resistance.

I.1 Design

To investigate the effect of correcting people's stereotypes about stockholders, we conducted an experiment in the second survey we fielded to the LISS panel. Overall, 1,596 non-stockholders participated in the survey. These subjects had participated in our first survey, where we elicited their perceptions (see Section 3) and predicted differences in response behavior (see Section 6.1). We randomly selected half of the subjects and provided them with information on the actual differences between stockholders and non-stockholders. Specifically, they learned the difference in self-assessments for the traits greed, being a gambler, and selfishness (1.17, 1.29, and 0.86 points, respectively, see Section 6.1). They also received complementary information on differences in activities related to these self-assessments. As a reference, we reminded subjects of their predictions of these differences. The other half received no information on the actual difference, only the reminder of their predictions. Afterwards, we elicited subjects' posterior negative perceptions using the module described in Section 3. We subsequently gave them an incentivized investment choice: subjects were endowed with 100 €, which they could allocate between a savings account that pays no interest (safe option) and an ETF that tracks the Amsterdam Exchange index (stock option). A randomly selected subset of 16 subjects had their decisions implemented with real consequences. For them, the money was invested in the savings account and/or the ETF for a year and paid out afterward. By comparing the treatment group with the control group, we are thus able to identify the effect of attempting to debias subjects on beliefs and investment behavior in a representative sample of non-stockholders.

I.2 Results

Effect on posterior perceptions. We find that providing information on the actual differences successfully reduces people's negative perception of stockholders. In the control group, subjects rated stockholders on average 2.83 Likert scale points more negatively than non-stockholders. In the treat-

ment group, stockholders are only rated 2.19 points more negatively ($p < 0.001$, Wilcoxon rank-sum test). An important question, however, is how subjects who hold beliefs close to the actual differences react. To investigate their behavior, we split our sample along the median of subjects' predictions about the response behavior of subjects.[38] We find that subjects with median or below stereotypes in the treatment group do not show a significant change in their negative perceptions ($p = 0.91$, paired Wilcoxon signed-rank test). At the same time, subjects in the treatment group with above median stereotypes strongly decrease them when comparing their prior with posterior negative perceptions ($p < 0.001$, paired Wilcoxon signed-rank test).

Effect on behavior. What is the impact of the information on investment behavior? In the full sample, we observe a 6% increase in the average amount invested in the ETF, an insignificant positive effect ($p = 0.55$, Wilcoxon rank-sum test). However, this average effect once again masks substantial heterogeneity. Since subjects with priors close to the actual differences are given information that confirms their beliefs, we would not predict changes in their investment behavior. Instead, the effect should be concentrated on subjects who receive information correcting their stereotypes. Using the same median split as before, Table I.1 displays the treatment effect of providing information about the true differences on the amount of money invested in the stock option. We find in Column (1) that subjects with ex-ante above median stereotypes significantly increase the amount invested in the stock option by about 20%. At the same time, as displayed in Column (3), subjects with median or below median stereotypes reduce their investment only by an insignificant amount. Adding controls in Columns (2) and (4) does not change the results. Hence, we observe a significant effect on subjects who receive information correcting their stereotypes, and no backlash effects by subjects who receive information more closely aligned with their prior beliefs.[39]

[38]The median prediction is 2 (on a scale of 0 to 10). Within the group of subjects on or below the median, average predictions are 0.55 for greed, 1.46 for gambler, and 0.33 for selfish. Thus, this group has, on average, beliefs close to the actual differences. Within the group of subjects with above median predictions, averages are 3.91, 5.70, and 2.86, revealing substantial stereotypes. Using instead the negative views of stockholders measure defined in Section 3 or other splits yield similar results.

[39]We also elicited investment intentions both in the short run (six months) and long run (five years). In line with the strong stock market aversion previously documented, we find intentions to be very low. For instance, 68% agree with the statement that they would under no circumstance whatsoever invest in the stock market in the next five years. Although the treatment increases intentions in the expected direction, the effects are not significant.

Table I.1: Effect of providing information about actual differences between stockholders and non-stockholders on investment behavior

	Dependent variable: money invested in exchange-traded fund			
	Above median stereotypes		Median or below stereotypes	
	(1)	(2)	(3)	(4)
Information treatment	6.083**	5.415**	−1.774	−1.006
	(2.721)	(2.620)	(2.608)	(2.541)
Constant	29.743***		33.214***	
	(1.846)		(1.830)	
Demographic controls		X		X
Observations	736	736	858	858

Notes: The table displays OLS estimates. The dependent variable denotes the amount of money (out of 100€) that subjects allocate to the stock option instead of the safe option. Information treatment is an indicator variable equal to one if the subject receives information about the actual differences between stockholders and non-stockholders in self-assessed greed, being a gambler, and selfishness and related activities and zero otherwise. Demographic controls include age, gender, education, income and total financial assets. Robust standard errors in parentheses. Significance levels are *p<0.1; **p<0.05; ***p<0.01.

J Research transparency

All surveys that include experimental variation were preregistered at aspredicted.org. The preregistrations include details on the experimental design, the sampling process and planned sample size, exclusion criteria, hypotheses, and the main analyses. This section documents deviations from the preregistration.

J.1 Description experiment

The description experiment (Section 4.1) was preregistered at https://aspredicted.org/66D_2XD. In the preregistration, we specified that we would exclude subjects who chose the safe option each time in the calibration part. To maximize sample size and comparability with the information experiment, we report the results in the main text without excluding these subjects. Table J.1 replicates the results using the preregistered exclusion restrictions. The resulting treatment effect is highly significant and slightly larger than the one reported in the main text.

Table J.1: Replication of Table B.7 using preregistered sample

Panel A: Between-subject effect		
	Dependent variable: Choice of risky option	
	(1)	(2)
Constant	0.579^{***}	0.648^{***}
	(0.022)	(0.085)
Stock description	-0.154^{***}	-0.147^{***}
	(0.034)	(0.034)
Demographic controls		X
Subjects	418	412
Observations	1,672	1,648
Panel B: Within-subject effect		
	Dependent variable: Choice of risky option	
	(1)	(2)
Constant	0.560^{***}	0.614^{***}
	(0.017)	(0.071)
Stock description	-0.139^{***}	-0.140^{***}
	(0.018)	(0.019)
Demographic controls		X
Subjects	418	412
Observations	3,344	3,296

Notes: The table displays OLS estimates. The dependent variable is an indicator variable equal to one if the risky option is chosen and zero if the safe option is chosen. Stock description is an indicator variable equal to one if the risky option is described as a stock investment and zero if described as a random draw investment. Standard errors (in parentheses) are clustered at the subject level. Controls include age, gender, education, income, wealth and involvement in financial decision-making. Significance levels are $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$.

Table J.2: Replication of the result of Table 3 using preregistered specification

	Dependent variable:	
	Choice of risky option	
	(1)	(2)
Constant	0.558***	
	(0.016)	
Stock description	−0.080***	−0.082***
	(0.019)	(0.019)
Prior belief	0.002	0.001
	(0.004)	(0.004)
Prior belief × stock description	0.009**	0.009**
	(0.004)	(0.004)
Signal over donation behavior	−0.004	−0.006
	(0.004)	(0.004)
Signal over donation behavior × stock description	0.012***	0.012***
	(0.005)	(0.005)
Demographic controls		X
Subjects	548	541
Observations	4,384	4,328

Notes: The table displays OLS estimates. All eight binary choices between the risky option described as a stock investment and the safe option of a subject enter as separate observations. The dependent variable is an indicator variable equal to one if the risky option is chosen and zero if the safe option is chosen. "Stock description" is an indicator variable equal to one if the risky option is described as a stock investment and zero if described as a random draw investment. "Prior beliefs" is subjects belief over the difference in donation behavior between stockholders and non-stockholders. Higher values indicate that subjects believe stockholders to donate more relative to non-stockholders, with the unit being 10% differences. Accordingly, a one unit increase means that a subject beliefs stockholders to donate 10% more than non-stockholders. "Signal over donation behavior" denotes the signal received over the difference in donation behavior, with the same coding and unit as "Prior beliefs". Standard errors (in parentheses) are clustered at the subject level. Controls include age, gender, education, income, total financial assets and involvement in financial decision-making. Significance levels are $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$.

J.2 Information experiment

The information experiment (Section 4.3) was preregistered at https://aspredicted.org/1B8_MXD. In the preregistration, instead of the OLS analysis shown in Table 3 with the choice of the stock option as the dependent variable, we specified a slightly different specification in which choices of stock option and draw options enter as separate observations. Table J.2 replicates the results using the preregistered specification. As in the specification reported in the main text, the preregistered specification documents that the information about donation behavior significantly influences the likelihood that the stock option is chosen. The follow-up survey reported at the end of Section 4.4 was not preregistered.

J.3 Correcting stereotypes experiment

The experiment that corrected stereotypes (Section 6.1, with details in Appendix I) was preregistered at https://aspredicted.org/blind.php?x=DF3_5YR. The preregistration specified four exclusion restrictions. Our analysis only employs the first two restrictions. The latter two restrictions concern the time respondents spend on the survey. Due to errors in the time spent variable, we cannot employ these restrictions. However, judging from previous experience with LISS surveys, these restrictions would have affected only a very small set of respondents anyway (less than 5%). Furthermore, the preregistration included three outcomes related to financial decision-making. To keep the analysis aligned with the previous experiments reported in Section 4, we mainly focus on the first, the incentivized investment decision. In Footnote 39, we discuss the other two. The preregistration also specified a series of additional heterogeneity and exploratory analyses. These are not included in the paper. The analyses using the median split were not preregistered.

K Variables

K.1 Demographic and financial variables

This section provides further information about the calculation of background variables for the Dutch sample. For the US samples on Prolific we elicited all demographic variables during our own data collection.

Age Refers to the financial decider who participated in the survey. Obtained from the Dutch administrative data (or the LISS background questionnaire for regressions not involving admin data).

Gender Refers to the financial decider who participated in the survey. Obtained from the Dutch administrative data (or the LISS background questionnaire for regressions not involving admin data).

Education Based on achieved educational level. Obtained from the LISS background questionnaire. The Dutch educational levels are categorized as follows:

Lower secondary and below: primary school, vmbo

Upper secondary: mbo, havo, vwo

Tertiary: hbo, wo

In the US sample, we use the following categories: "Less than high school degree," "Graduated High school or equivalent," "Associate degree," "Professional degree (JD, MD)," "Some college but no degree," "Bachelor's degree," "Post-graduate degree."

Income Monthly net income of the household. The measure is equivalized by dividing through the square root of the number of household members (square root scale). In regressions, we add terciles of this variable as categorical variable. Obtained from Dutch admin data (or the LISS background questionnaire for analyses not involving admin data). In the US sample, we use household net income as elicited in our own questionnaire and do not equivalize the measure as we do not have information about the number of household members.

Wealth Wealth of the household including financial assets (safe and risky financial assets) and non-financial assets like real estate. Debts are subtracted. The measure is equivalized by dividing through the square root of the number of household members (square root scale). In regressions, we add terciles of this variable as categorical variable. Obtained from Dutch admin data for the beginning of 2020.

Financial assets Total financial assets of the household including safe and risky financial assets. The measure is equivalized by dividing through the square root of the number of household members (square root scale). In regressions, we add terciles of this variable as categorical variable. We use this measure for analyses not involving admin data. Elicited in the LISS asset questionnaire. In the US sample, we use personal total financial assets as elicited in our own questionnaire.

Owns any risky financial assets Dummy variable if risky financial assets in the household are larger than 0. Obtained from Dutch admin data for the beginning of 2020.

Share of risky financial assets Risky financial assets of the household divided by total financial assets of the household. Set to missing if total financial assets do not exceed 0. Obtained from Dutch admin data for the beginning of 2020.

K.2 Stock market knowledge variables

Self-assessed stock market knowledge Based on the agreement on a 7-point likert scale to the statement "At the moment, I am confident in my knowledge about how the stock market works." Elicited in our second survey fielded to the LISS panel.

Financial numeracy We employ the four questions of van Rooij, Lusardi, and Alessie (2011) measuring financial numeracy. We count the number of correct answers and standard normalize the measure. Included in the LISS panel by von Gaudecker, Wogrolly, and Zimpelmann (2022) in May 2021.

Self-assessed ability to be successful in the stock market Based on the agreement on a 7-point Likert scale to the statement "I currently do not have what it takes to be successful in trading on the stock market." Variable is reverse coded for ease of interpretation. Elicited in our second survey fileded to the LISS panel.

Belief over stock returns Following Hurd, van Rooij, and Winter (2011), subjects are asked "Suppose someone invests 1000 euros in the AEX today and in six months looks at what the AEX has done. How likely is it that this investment will be worth more than 1000 euros?". Elicited in the LISS panel in May 2020.

K.3 Behavioral determinants of portfolio choice

Risk aversion index We employ a quantitative lottery choice task and a qualitative risk questions for general decisions under risk based on Falk et al. (2022). We use the experimentally validated weights by Falk et al. (2022) to calculate the index such that the qualitative risk component is weighted slightly higher at 53% (after standard normalizing both components). Included in the LISS panel by von Gaudecker, Wogrolly, and Zimpelmann (2022) in May 2021.

Financial numeracy We employ the four questions of van Rooij, Lusardi, and Alessie (2011) measuring financial numeracy. We count the number of correct answers and standard normalize the measure. Included in the LISS panel by von Gaudecker, Wogrolly, and Zimpelmann (2022) in May 2021.

Ambiguity aversion We calculate the ambiguity aversion index as defined in Baillon et al. (2018). The measure is based on up to 28 binary choices between an ambiguous option related to a bet on the stock market and a risky option with known winning probability. Included in the LISS panel by von Gaudecker, Wogrolly, and Zimpelmann (2022) in May 2021.

Likelihood insensitivity We calculate the index of ambiguity induced likelihood insensitive as defined in Baillon et al. (2018). The measure is based on up to 28 binary choices between an ambiguous option related to a bet on the stock market and a risky option with known winning probability. Included in the LISS panel by von Gaudecker, Wogrolly, and Zimpelmann (2022) in May 2021.

Belief over stock returns Following Hurd, van Rooij, and Winter (2011), subjects are asked "Suppose someone invests 1000 euros in the AEX today and in six months looks at what the AEX has done. How likely is it that this investment will be worth more than 1000 euros?". Elicited in the LISS panel in May 2020.

General trust Following Guiso, Sapienza, and Zingales (2008), we use the response to the question "Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people? Please indicate a score of 0 to 10." Obtained from the 2020 personality questionnaire of the LISS panel.

Right-wing political orientation Following Kaustia and Torstila (2011), we use the response to the question "In politics, a distinction is often made between "the left" and "the right". Where would you place yourself on the scale below, where 0 means left and 10 means right?". Obtained from the 2020 politics and values questionnaire of the LISS panel.

K.4 Determinants of political attitudes

Opposition to income inequality Based on the question "Some people believe that differences in income should increase in our country. Others feel that they should decrease. Still others hold an opinion that lies somewhere in between. Where would you place yourself on a scale from 1 to 5, where 1 means that differences in income should increase and 5 means that these should decrease?" Obtained from the 2020 politics and values questionnaire of the LISS panel.

K.5 Scales

This section describes the identity and political attitudes towards stock market scales mentioned in Sections 4 and 6.2 in further detail.

Identity scale. Table K.1 provides the wording of the items used for the identity scale. As mentioned in the main text, we selected five items from established identification scales (Doosje, Ellemers, and Spears, 1995; Klor and Shayo, 2010)[40] and applied them to the stockholder/non-stockholder context. We use the same asset categorization to define the group of stockholders and non-stockholders as in our elicitation of people's views of stockholders (Section 3). For each item, subjects were asked whether they agree or disagree with the respective statement on a scale from one ("fully disagree") to seven ("fully agree"). Following standard practice, we code a subject as agreeing to a statement if they select at least five on the 7-point scale.

[40]Henkel et al. (2023) show that this scale, used in the context of vaccination identification, is strongly related to the broader identification scale of Leach et al. (2008).

Table K.1: Identity scale items

	Item
1	Not having risky financial investments is an important part of my identity.
2	I am proud that I have no risky financial investments.
3	When a person or the media criticizes people for not having risky financial investments it feels like a personal insult.
4	I have very little in common with people who have risky financial investments.
5	If I would learn that a person has risky financial investments, I would immediately feel less connected to that person.

Political attitudes towards stock market scale. Table K.2 shows the items we used to elicit political preferences towards stockholders and the stock market. As it is common in the literature, we provided subjects with additional explanations for some of the more technical items. These are marked in *italic* in the Table. As before, subjects were asked whether they agree or disagree with the respective statement of each item on a scale from one ("fully disagree") to seven ("fully agree"). Following standard practice, we code a subject as agreeing to a statement if they select at least five on the 7-point scale, disagreeing if they select at most 3, and undecided if they select four. The first item was purposefully designed to be unrelated to the stock market and instead designed to measure subjects' general distributional preferences in the context of wealth taxation.[41] Therefore, it is not part of the political preferences measure and instead used as a control variable in Table 7. We define our measure capturing subjects' political attitudes toward the stock market as the average over the remaining five items. In doing so, we reverse code the responses to item three so that higher values on the scale indicate political attitudes in favor of non-stockholder compared to stockholder in terms of regularization and taxation.

[41]Note that such a tax currently exists in the Netherlands. In the instructions, we use the commonly used Dutch term for the tax.

Table K.2: Political preferences items

	Item
1	The tax on personal investments and savings should be increased. *Currently, the effective tax rate is 0.59% each year for individuals with a net asset value (after deducting tax free amount) below EUR 100,001, 1.39% for a value between EUR 100,001 and EUR 1,000,000, and 1.60% above EUR 1,000,000.*
2	Investments in risky financial assets like stocks or funds should be taxed with a higher tax rate than savings on a banking account. *Currently, they are taxed with the same tax rate.*
3	Investments into stocks and funds for private retirement should be incentivized more strongly by the government; for example, through subsidies or tax exemptions. [Reverse coded]
4	There should be a financial transaction tax introduced to the Netherlands. *The financial transaction tax is a small tax applied every time a financial asset (stocks and derivative) is sold. Currently, there is no such tax in the Netherlands.*
5	Investment products that enable the betting on prices of staple food should be prohibited.
6	There should be a tax on gains from trading risky financial assets in the Netherlands. *Currently, gains from trading risky financial assets are not taxed extra in the Netherlands (except when a substantial interest exists, which is the case when at least 5% of the shares, options or profit-sharing certificates in a company are owned).*

L Instructions

This appendix shows the central experimental decisions screens and instructions. The complete instructions are available at the following link:
https://osf.io/qz8ab/?view_only=8a6ac9a3c6894138ab77721a79bd35f7.

L.1 Perception survey view of stockholders elicitation screens

Figure L.1: Perception survey view of stockholders elicitation Netherlands

We now ask you about **other people of the general Dutch population** who take care of financial matters in their household. Consider the population is divided into two groups of people: First, individuals who **possess** any risky financial investments (e.g., stocks or funds [details]). Second, individuals who **do not possess** any risky financial investments. We would like to know **what you think** about the individuals in those two groups**.** Please indicate to what extent you agree or disagree with each statement.

[Details: Risky financial investments include growth funds, share funds, bonds, debentures, stocks, options and warrants. They do not include banking accounts, saving accounts, bank savings schemes, insurance policies, or real estate.]

Individuals who **possess** any risky financial investments such as stocks are, on average, ...

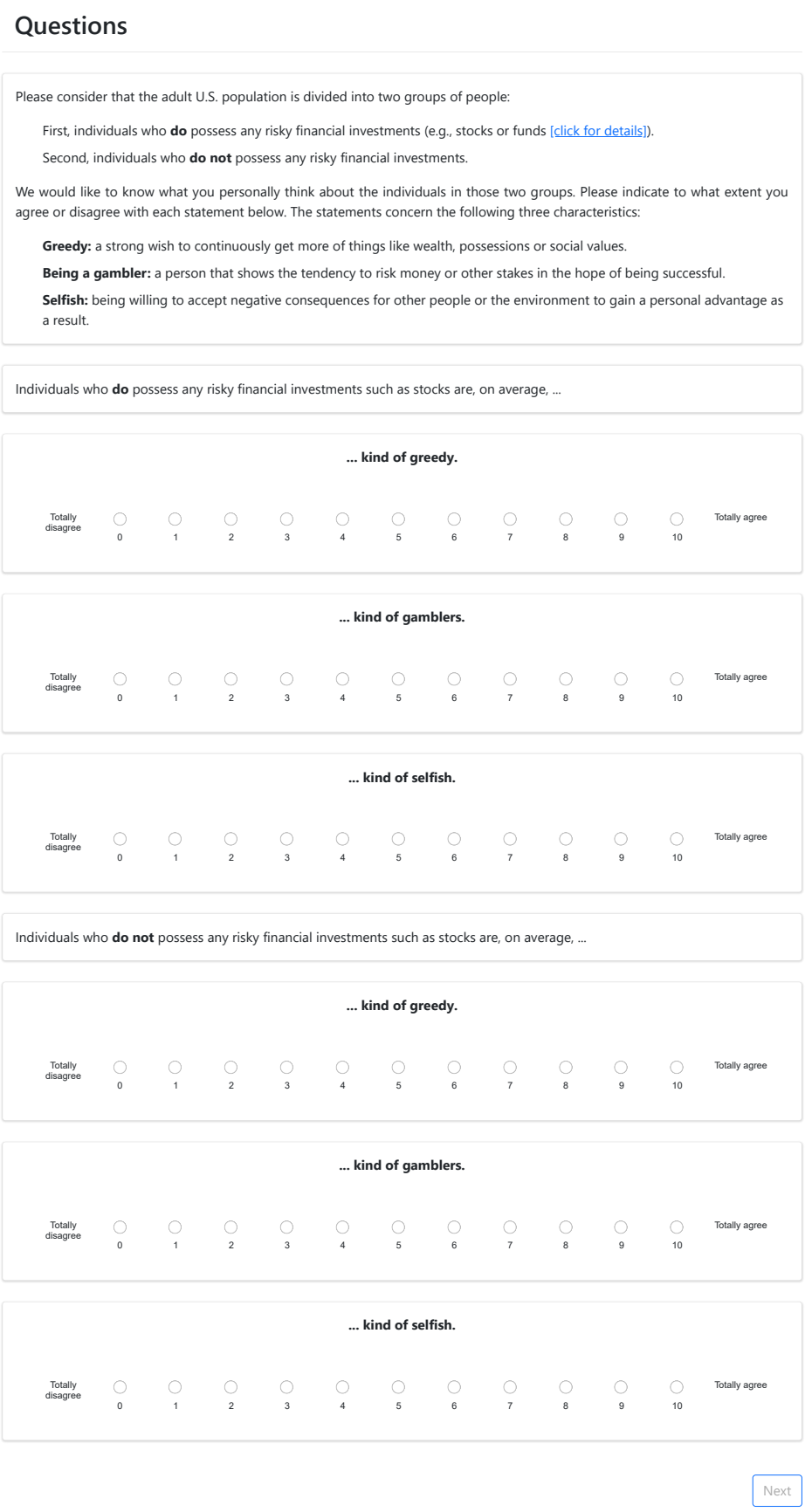
kind of greedy	[Likert scale]
[info-box: greedy - a strong wish to continuously get more of things like wealth, possessions or social values.]	
kind of gamblers	[Likert scale]
[info-box: being a gambler - a person that shows the tendency to risk money or other stakes in the hope of being successful.]	
kind of selfish	[Likert scale]
[info-box: selfish - being willing to accept negative consequences for other people or the environment to gain a personal advantage as a result.]	

Individuals who **do not possess** any risky financial investments such as stocks are, on average, ...

kind of greedy	[Likert scale]
[info-box: greedy - a strong wish to continuously get more of things like wealth, possessions or social values.]	
kind of gamblers	[Likert scale]
[info-box: being a gambler - a person that shows the tendency to risk money or other stakes in the hope of being successful.]	
kind of selfish	[Likert scale]
[info-box: selfish - being willing to accept negative consequences for other people or the environment to gain a personal advantage as a result.]	

[Likert scales from 0 (strongly disagree) to 10 (strongly agree)]

Figure L.2: Perception survey view of stockholders elicitation United States



L.2 Description experiment decision screens

Figure L.3: Description experiment stock description intro

Instructions

In this section, you will make 4 decisions. In each decision, you will separately receive $30 from us. With this money, you can choose between two options:

Option A: Participate in the stock market by buying a share. The value of the share depends on the movement of the stock market.

Option B: Do not participate in the stock market.

In each decision, you will have the option to buy a different share. Each share has a different price and offers different returns. The decisions are presented independently of each other. That is, your choice in one decision does not affect the other decisions.

Note that each decision is going to have the bonus sign. Your choices thus have a chance of being implemented.

Next

Figure L.4: Description experiment stock description decision

Decision 2

You have $30. This decision features a different share of an exchange-traded fund with different prices than before. Accordingly, you can choose whether to participate in the stock market (Option A) or not (Option B). We start by explaining Option A.

Option A: Participate in the stock market by buying a share of an exchange-traded fund (ETF) that replicates the MSCI World index.

Below you can see how the price of a share of the ETF has developed in the years 2010, 2011 and 2016. Each row represents the actual price in a particular year. The first row shows the price to which you can buy the share.

	Share Price of the MSCI World ETF in Dollar
2010 (Buying Price)	**$27.19**
2011	$25.06
2016	$37.21

Consequences of Option A: If you choose Option A, you buy in the year 2010 the share of the ETF that replicates the MSCI World index to the corresponding price of **$27.19**. You receive the money not invested in the stock market, $30 - $27.19 = **$2.81**, as additional payment with certainty. Additionally, you receive further money depending on the movement of the stock market.

This works as follows: A computer randomly selects one of the two selling years (2011 or 2016). Each year has the same chance of being selected. At the selected selling year, the share you bought will be sold. You then additionally receive the price of the share at the selected year as payment on top of the money that was not invested.

Accordingly, this investment has an expected value of $31.13. Together with the money not invested ($2.81), in expectation you receive **$33.94** from choosing Option A.

Option B: Do not participate in the stock market.

Consequences of Option B: If you choose Option B, you receive the $30 as additional payment. Your payment does not depend on the movement of the stock market in this case.

Your Choice

Which option do you choose?

- ○ Option A: I want to participate in the stock market
- ○ Option B: I do not want to participate in the stock market

Confirm decision

Figure L.5: Description experiment draw description intro

Instructions

In this section, you will make 4 decisions. In each decision, you will separately receive $30 from us. With this money, you can choose between two options:

Option A: Participate in a random draw by buying a ticket. The value of the ticket depends on the outcome of the random draw.

Option B: Do not participate in the random draw.

In each decision, you will have the option to buy a different ticket. Each ticket has a different price and offers different prizes. The decisions are presented independently of each other. That is, your choice in one decision does not affect the other decisions.

Note that each decision is going to have the bonus sign. Your choices thus have a chance of being implemented.

Next

Figure L.6: Description experiment draw description decision

Decision 2

You have $30. This decision features a different random draw with a different price and outcomes than before. Accordingly, you can choose whether to participate in a random draw (Option A) or not (Option B). We start by explaining Option A.

Option A: Participate in a random draw by buying a ticket. The random draw yields different outcomes. Each outcome pays a different prize.

Below you can see the prizes that come with the potential outcomes of the random draw. Each row represents one prize for a potential outcome. The first row shows the price to which you can buy the ticket.

	Prize in Dollar
Buying Price	**$27.19**
Outcome 1	$25.06
Outcome 2	$37.21

Consequences of Option A: If you choose Option A, you buy the ticket at a price of **$27.19**. You receive the money not used for the ticket, $30 - $27.19 = **$2.81**, as additional payment with certainty. Additionally, you receive further money depending on the outcomes of a random draw.

This works as follows: A computer randomly selects an outcome (1 or 2). Each outcome has the same chance of being selected. You then additionally receive the prize of the selected outcome as payment on top of the money that was not used to buy the ticket.

Accordingly, this ticket has an expected value of $31.13. Together with the money not used ($2.81), in expectation you receive **$33.94** from choosing Option A.

Option B: Do not participate in the random draw.

Consequences of Option B: If you choose Option B, you receive the $30 as additional payment. Your payment does not depend on the outcome of the random draw in this case.

Your Choice

Which option do you choose?

- ○ Option A: I want to participate in the random draw
- ○ Option B: I do not want to participate in the random draw

Confirm decision

L.3 Information experiment information provision screens

Figure L.7: Information experiment instructions screen 1

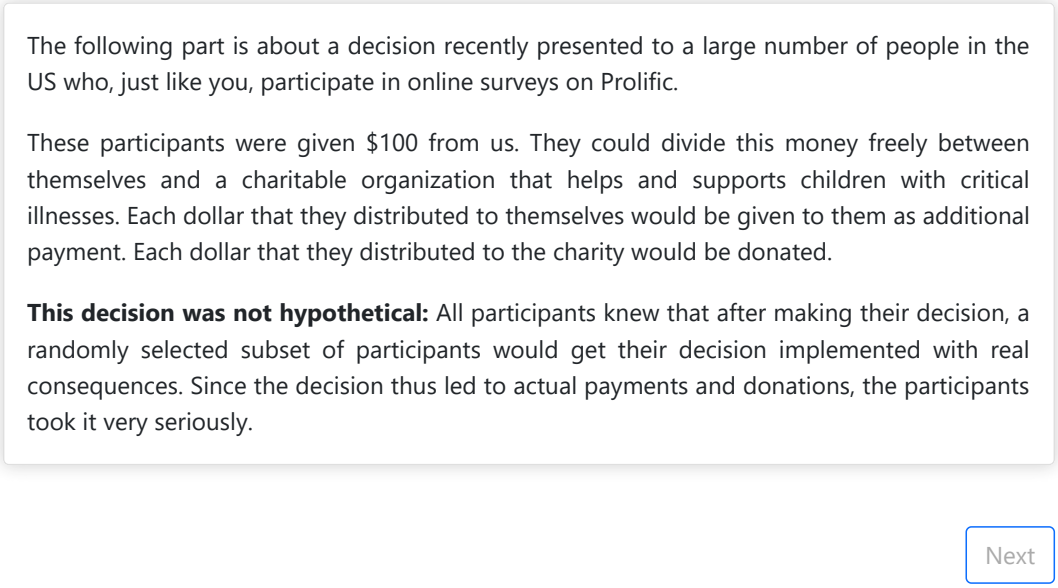


Figure L.8: Information experiment instructions screen 2

The decision of how much to donate to a charity in such a situation has been found to be strongly associated with people's behavior in relevant real-life situations and their general personality.

For example, the people that donate less, also tend to be less supportive of their friends and relatives and less willing to help people in need. They are also less likely to engage in voluntary work for a good cause. Conversely, the more people donate, the more they tend to be supportive, helpful, and willing to work voluntarily.

It is also well established that the donation decision is related to how egoistic, self-centered, and greedy a person is. The less people donate, the more egoistic and greedy they are. That is, the decision is indicative of people's pattern of thinking and feelings alongside these characteristics.

To summarize, the result of many research studies is the following: The more people donate money to a good cause when given an amount to freely distribute, the more they care about the well-being of other people in general and act to improve it. Note that this finding is not driven by differences in people's financial situation. For example, comparing people with the same income, it is well documented that people who donate more also generally care more about others.

Next

Figure L.9: Information experiment instructions screen 3

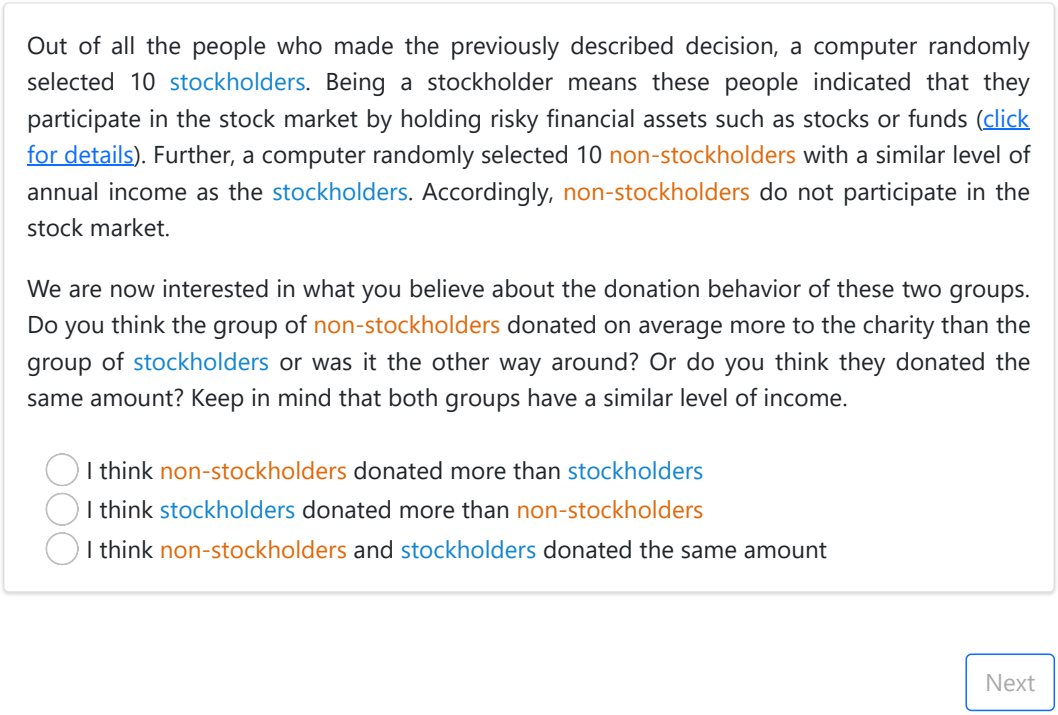


Figure L.10: Information experiment instructions screen 4

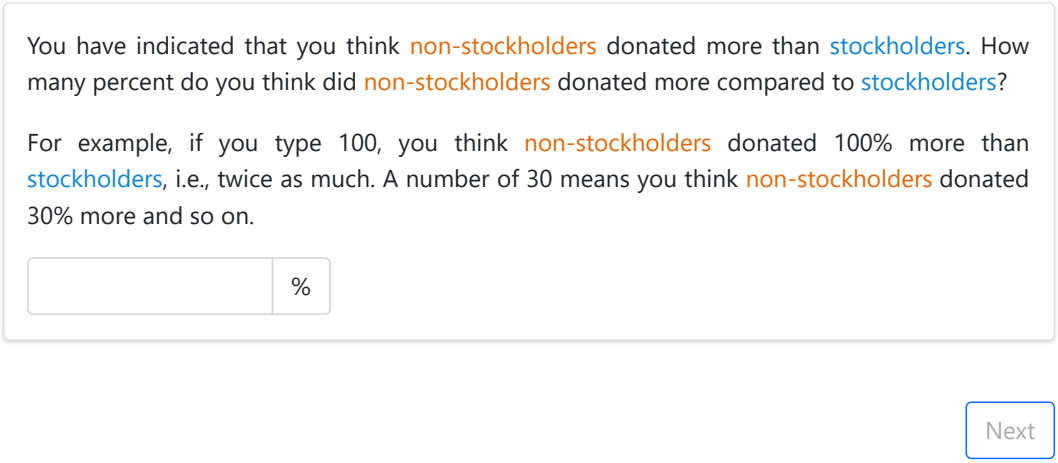
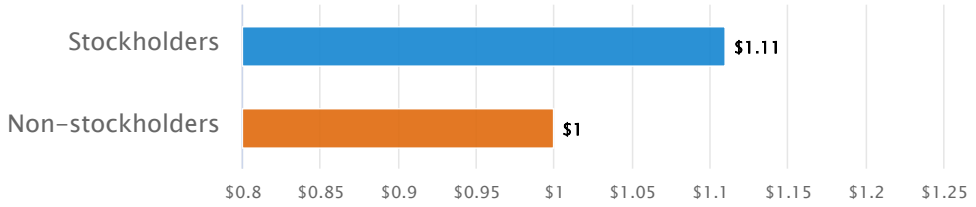


Figure L.11: Information experiment instructions screen 5

We will now inform you about the **actual** difference between stockholders and non-stockholders. For the randomly selected participants, we found that ...

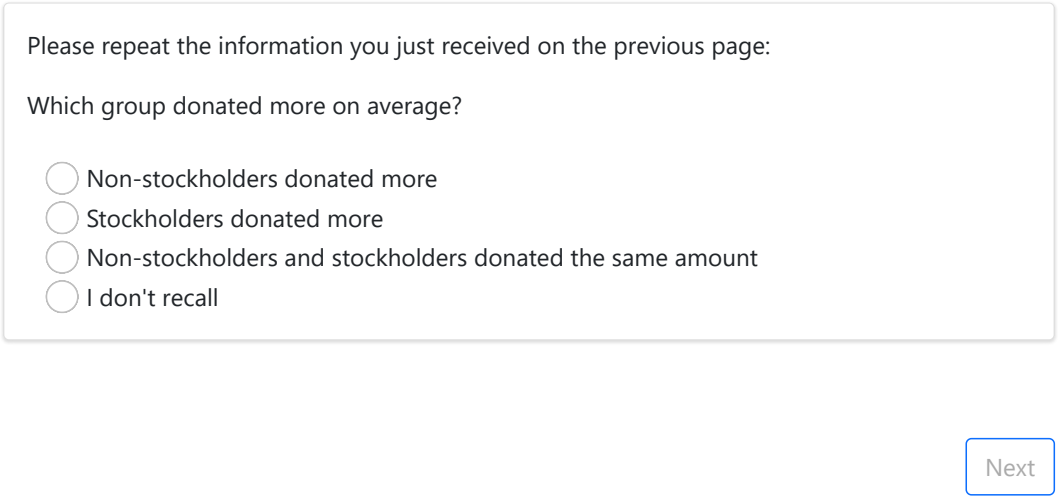
... **stockholders donate 11% more than non-stockholders.**

That is, for every $1 that non-stockholders donate, stockholders donate on average $1.11 for a good cause.



Next

Figure L.12: Information experiment instructions screen 6



L.4 Follow-up survey behavior intention elicitation screen

Figure L.13: Follow-up survey investment intention elicitation screen

L.5 Follow-up survey perceptions elicitation screen

Figure L.14: Follow-up survey perceptions elicitation screen