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Am I my peer's keeper? Social Responsibility in Financial Decision Making

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Abstract

Risky decisions are often taken on behalf of others rather than for oneself. Competing theoretical models predict both; higher as well as lower levels of risk aversion when taking risk for others. The experimental literature on this topic has found mixed results. In our comprehensive within-subject design, subjects in the role of money managers have substantial social responsibility by taking investment decisions for a group of six anonymous clients, with own payments either fixed or perfectly aligned with their clients payments. We find that money managers invest significantly less for others than for themselves, which is mainly driven by a less risk averse sub-sample. Digging deeper, we find money managers to act in line with what they believe their clients would invest for themselves. We derive a responsibility weighting function to show that with a perfectly aligned payment the money managers' actions are determined by a mix of egoistic and social risk preferences.

JEL: C91, D03, D81, G11

Keywords: financial decision making, social responsibility, decision making for others, risk preferences, experiment

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1 Introduction

Economic research on risk attitudes has traditionally focused on individual decision making issues without any consideration for potential social influences on risk preferences (see e.g., Dohmen et al., 2011; Eckel and Grossman, 2008b; Harbaugh et al., 2010; Holt and Laury, 2002). As real world decisions are embedded in a social context however, a decision maker is hardly ever the only person affected by the consequences of his actions. Indeed, many risky decisions are specifically taken on behalf of a third party. This third party might be for example the decision maker's family or business partners. On a larger scale CEO's decisions affect a company or even an industry, and political decisions affect a country's future. On financial markets, investors usually put an investment adviser or a money manager in charge of their risky investments. During the financial crisis of 2007-2008 this practice of delegated portfolio investment became the subject of a continuing public as well as a scientific debate as it was perceived to lead to excessive risk taking (Allen and Gorton, 1993; Allen and Gale, 2000; Cheung and Coleman, 2014; Kleinlercher et al., 2014; Robin et al., 2011).

The influence of responsibility in risky decisions has only recently been picked up in the experimental literature (for a review see Trautmann and Vieider, 2012). The results however, provide no consistent answer concerning the question of whether decisions on behalf of others involve higher (risky shift) or lower (cautious shift) levels of risk as compared to decision for oneself.

The terms "risky shift" and "cautious shift" were introduced by Stoner (1961) to describe situations in which the initial, individual level of risk preference is altered due to exogenous impacts. In the case of social responsibility the resulting shift could be in both directions. In the psychological literature, a prominent explanation for a risky shift is the "psychological self-other distance"(e.g., Beisswanger et al., 2003; Cvetkovich, 1972; Stone and Allgaier, 2008; Trope and Liberman, 2010; Wray and Stone, 2005) in which the assessment of a potential loss in a risky situation is decreasing in the distance of the affected party to the decision maker. This finding translates directly to the results from economic experiments (e.g., Harrison, 2006; Holt and Laury, 2002, 2005), as risk aversion is significantly decreased in hypothetical situations without real consequences in the laboratory.[1] Albrecht et al. (2011) find that making inter-temporal decisions for others result in lesser activation of areas of the brain that are thought to be engaged in emotion and reward-related processes than when taking decisions for oneself. The resulting argument would be that decisions made on behalf of

[1] Noussair et al. (2014) find barely a difference between hypothetical and incentivized risk elicitation techniques using lotteries. Though in their study they considered the difference within the online subject pool, but not in the laboratory.

a third party are equivalent to situations without any real outcome.

In contrast, Charness and Jackson (2009) propose "responsibility alleviation" as an explanation for a cautious shift; taking responsibility for a third party's welfare induces pro-social behavior which results in conservative risk taking (Charness, 2000; Charness and Jackson, 2009).

Despite prominent examples of a risky shift in financial markets due to limited liability of money managers (e.g., Allen and Gorton, 1993), there are several empirical observations on cautious shift behavior. Physicians, for example, have been found to prefer treatments with higher mortality rates for themselves than what they recommend to their patients (Garcia-Retamero and Galesic, 2012; Ubel et al., 2011). Managers try to avoid responsibility for decisions with even a minimal probability of hazardous outcomes (Swalm, 1966; Viscusi et al., 1987).

We study the effect of responsiblility in financial decision making on the behalf of others using economic laboratory experiments. We consider a design with high levels of responsibility—the decision maker invests for six clients. Further, we study both, a situation with and without payoff alignment of the decision maker in a within-subjects design, enabling the analysis of individual heterogeneity. Finally, we address and control for potential confound effects.

In our experiment, a decision maker (henceforth "money manager") faces a risky investment situation similar to Gneezy and Potters (1997). In our three treatments, the money manager either invests only for himself, only for a group of six other subjects (henceforth "clients") without any monetary relevance for himself (no payoff alignment), or he invests an equal amount for a group of six clients and for himself (payoff alignment). Our study is the first to systematically compare these theoretically very different situations.

Our aggregate results indicate investment behavior to be in line with responsibility alleviation as the money managers invest significantly less when clients bear the consequences even when the money manager's payoff is perfectly aligned. However, this cautious shift is purely driven by money managers with low levels of risk aversion. For money managers with high levels of risk aversions, the results rather indicate a risky shift. Apparently, when making decisions for others the money managers try to act according to the clients' risk preferences. Eliciting the money manager's beliefs on the clients' propensity to invest for themselves, we find average investments mirroring the believed preferences of the clients. In the case of payoff alignment, we find that the investment decision depends on the money manager's own risk preference as well as the perceived risk preferences of the group. We fit a weighted preference function to our data allowing us to determine the level of altruism of our subjects. On average the money managers display a significant amount of responsibility. Ultimately they assess their individual preferences to be more important than those of their six clients.

In the next section we discuss the related literature. In section 3, we describe the experimental setup along with the hypotheses. Section 4 presents the results, showing that on average risk taking is lower for others but that the money managers risk preferences play a role. The final section discusses these findings in the context of the related literature.

2 Literature Review

There is a small, yet growing body of literature on risky decision making for others with rather mixed results (find an overview in table F.9 in the online supplement). A number of studies find some evidence for a *risky shift* — i.e., money managers taking higher risks for others than for themselves — using first price sealed bid auctions and multiple price list (Chakravarty et al., 2011), or investment decisions (Pollmann et al., 2014; Sutter, 2009)[2].

In contrast, a number of studies find evidence for a *cautious shift* — i.e., money managers take significantly lower risks for the clients than for themselves — using lottery choices (Reynolds et al., 2009; Bolton and Ockenfels, 2010; Eriksen and Kvaløy, 2010), or strategical risk taking in stag-hunt games (Charness and Jackson, 2009).

Using a battery of lotteries and similar decisions for oneself and a third party, Pahlke et al. (2015) provide evidence for a risky shift in the loss domain and a cautious shift in the gain domain for moderate probabilities; and a reversal for small probabilities. They conclude that their results "*discredits hypotheses of a 'cautious shift' under responsibility, and indicates an accentuation of the fourfold pattern of risk attitudes usually found for individual choices*" (p.22). Finally, using a multiple price list Andersson et al. (2016) find little evidence for a significant shift in either direction.

The evidence is mixed and although describing a (largely) similar situation, these studies differ in various aspects. With the conflicting findings of a risky as well as a cautious shift, the obvious conclusion is that the differences in design might driving the differing results. We identified the following factors as possible causes:

i) The "Others". All studies listed above consider "*risk taking for others*" and focus on the difference between making a decision for oneself (henceforth OWN) and making the same decision for a client. There is, however, an important variation in the payoff alignment between money managers and clients. Either

[2]In the PAY-COMM treatment of Sutter (2009), a team consisted of three members. One member needed to make a decision for the first three periods, a second member for the second three periods, and the last member for the last three periods. While the first member showed no shift at all, the second and the third showed a significant risky shift.

the money manager decides for the clients only and earns a lump sum payment (henceforth OTH — decision for clients only),[3] or the money manager has to invest the same amount for himself and the clients, i.e., money manager and clients take the same risks, and the money manager takes the lead by making the decision (henceforth LEA — same decision for oneself and clients).[4] The previous studies on decision making for others have each exclusively considered either OTH or LEA.[5] While standard models of rational behavior predict similar investments in OWN and LEA, based on the decision maker's utility function only, there is no standard-theoretical prediction in OTH (Eriksen and Kvaløy, 2010). We conduct a systematic study of the impact impact of these two types of decision making for others, by implementing both treatments using a within-subjects design.

ii) Responsibility. Apart from Sutter (2009) the previous studies consider decision making for one client only.[6] However, most real-world investment situations clearly involve more than one single client (e.g., portfolio management). We expand the responsibility as each money manager has to manage the funds for his six clients. According to responsibility alleviation (Charness, 2000; Charness and Jackson, 2009) the effects of responsibility should be increasing in the number of affected parties. Therefore, any effects observed in previous studies, should be amplified in our setting.

iii) Accountability. Pollmann et al. (2014) provide evidence for a reduction in risk taking for others under accountability. Similar effects might occur when the decision is announced in an group (Reynolds et al., 2009) or when decisions are made for a friend (Humphrey and Renner, 2011).

iv) Repetition. Sutter (2009) as well as Eriksen and Kvaløy (2010) consider the Gneezy and Potters (1997) investment game with repetition. Money managers gain experience in the game, accumulate wealth and may thus adjust their behavior according to gains or losses in earlier rounds. Interestingly, the first study (LEA) finds a risky shift and the second (OTH) finds a cautious shift. While in Eriksen and Kvaløy (2010) one money manager decides in all periods, in Sutter (2009) group members took turns in making decisions for the group every three periods. Implicit accountability might explain these differences as

[3]Studies comparing OWN with OTH are Eriksen and Kvaløy (2010); Chakravarty et al. (2011); Reynolds et al. (2009); Polman (2012); Andersson et al. (2016); Montinari and Rancan (2013); Pollmann et al. (2014). See table F.9 in the online supplement.

[4]Studies comparing OWN with LEA are Charness and Jackson (2009); Sutter (2009); Bolton and Ockenfels (2010); Humphrey and Renner (2011); Pahlke et al. (2012); Andersson et al. (2016); Bolton et al. (2015), see table F.9 in the online supplement.

[5]The only exception is the study by Andersson et al. (2016) who conduct experiments on both OTH and LEA. However, they do not discuss theoretical differences nor do they compare the OTH and LEA in their analysis.

[6]Sutter (2009) implements a LEA setting in which the money manager has to decide for a group of three.

the clients were able to observe the decisions of the money manager. In our study, the clients have to bear consequences of only one decision by the money manager, i.e., money managers were not able to diversify across periods as in the original version of the game.

v) Anchoring. In Reynolds et al. (2009), the money manager first made a decision for himself, observed the results of his investment, and then made a decision for the others. The feedback after the first decision could trigger psychological anchoring effects such as gamblers fallacy or hot hand fallacy. In Sutter (2009), each decision taken was observed by the whole group, so even if the decision maker took his first turn, his decisions were influenced by the observations of previous outcomes. This procedure might explain the observation of decreasing risk aversion over the nine subsequent decisions. In our design, the participants receive information on the outcome of their investment only at the end of the experiment, thereby keeping the information set in all decisions constant.

vi) Self-other distance. Eriksen and Kvaløy (2010) show that investments for hypothetical clients lead to significantly higher risk taking than for real clients in the laboratory. In contrast, Andersson et al. (2016) provide no evidence for a difference between a hypothetical risky decision and decision for others. Hence, laboratory experiments seem to increase the perception of making decisions for real clients (closer social distance) as compared to online experiments (higher social distance).

vii) Fairness. One might argue that fairness preferences play a role when payments for the money managers are fixed or known beforehand in OTH as for example in Eriksen and Kvaløy (2010), Reynolds et al. (2009) or Chakravarty et al. (2011). A money manager receiving a small fixed payoff might make smaller investments for his clients if he perceives that high investments might create payoff inequalities to his disadvantage. Reversely, a high fixed payoff might induce a money manager to make high investments for his clients such that clients are able to catch up. To control for this issue, we varied the fixed payoff for the money manager in OTH. The money manager earns either the lowest or the highest possible payoff the clients could achieve.

To take these arguments into account, we design a situation in which a money manager makes a risky investment for six clients. His payoff is either perfectly aligned with the clients' payoffs (LEA) or not aligned at all (OTH). We are the first to analyze both treatments in a within-subjects design. We do not consider incentive compatible contracting in a principal-agent relationship, but focus on the pure effect of responsibility for a third party. We control for fairness issues, concerning the allocation of resources (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000; Charness and Rabin, 2002, 2005), and ex ante and ex post fairness considerations (see Fudenberg and Levine, 2012), we exclude accountability, and test for order effects. Finally, we do not consider competition among money managers as in Agranov et al. (2014).

3 Design and Procedure

3.1 Treatments

We consider the Gneezy and Potters (1997) investment setting as the "*relative simplicity of the method, combined with the fact that it can be implemented with one trial and basic experimental tools, makes it a useful instrument for assessing risk preferences*" (Charness et al., 2013, p. 45).[7] In our baseline treatment (OWN), each subject is endowed with 9 Euro and is asked to decide on the amount to invest in a risky asset. With a probability of 2/3 the amount invested is lost and with a probability of 1/3 the investment earns a return of 250 percent. For $X \in \{0, 9\}$ being the amount invested, the payoff was either $\pi^{\text{OWN}} = 9 - X$, in case of a loss, or $\pi^{\text{OWN}} = 9 + 2.5\,X$, in case of a win.

In treatment OTH, subjects are organized in groups of seven, consisting of six passive members, the *clients* (c), and one active member, the *money manager* (m). Each client, is endowed with 9 Euro and the money manager decides on the amount to invest in the risky asset for each of the six clients. The amount invested is identical for all clients. The payoff for each client is either $\pi_c^{\text{OTH}} = 9 - X$, in case of a loss, or $\pi_c^{\text{OTH}} = 9 + 2.5\,X$, in case of a win. The payoff for the money manager in any case is $\pi_m^{\text{OTH}} = 0$. To control for potential fairness effects (see section 2), we additionally implemented a treatment in which the money manager's payoff was $\pi_c^{OTH} = 31.5$ — the client's highest possible payoff.

In treatment LEA, we implement the same group protocol as in OTH. In contrast to OTH, all subjects *including* the money manager, are endowed with 9 Euro. The money manager decides on the amount to invest for each of the six clients *and* for himself. The amount invested is identical for all group members. The payoff is either $\pi_c^{\text{LEA}} = \pi_m^{\text{LEA}} = 9 - X$, in case of a loss, and $\pi_c^{\text{LEA}} = \pi_m^{\text{LEA}} = 9 + 2.5\,X$, in case of a win, for all group members including the money manager.

[7] Note that risk-neutral (and, in turn, risk-seeking) individuals should invest their entire endowment. Hence, this method cannot distinguish between risk-seeking and risk-neutral preferences. Though usually only a fairly small fraction of participants choose to invest the entire amount. The amount invested provides a good metric for capturing treatment effects and differences in attitude toward risk between individuals. See Charness et al. (2013) for a detailed discussion.

3.2 Implementation

The experiment was conducted at the Ruhr-University Bochum experimental laboratory (**RUB**$\varepsilon\chi$). The experiment was programmed and conducted with the software z-Tree (Fischbacher, 2007). We administered a within-subject design as subjects made their decision in each of the three treatments. Upon arrival subjects were randomly placed at computer terminals separated by blinds. For each treatment, instructions were read aloud and questions were answered privately. The experiment only started once we were sure all participants had comprehended the instructions. Once the treatments started, subjects were endowed with an on-screen calculator where they could enter arbitrary investment levels. The calculator would display a list containing all entered investment levels, the respective own payoff and (in case of OTH and LEA) the clients payoff in case of a loss and in case of a win.[8] Subjects subsequently chose one investment level from the generated list and confirmed their choice.

To exclude repetition effects, participants were only informed that the experiment would consist of three independent parts, without specifying the exact nature of each part upfront. The instructions for each part were distributed only after the previous part was concluded. Subjects did not receive any feedback on their decisions until the very end of the experiment.[9] After the last treatment, subjects had to answer a short debriefing questionnaire.

In OTH and LEA subjects were organized in groups of seven. In the role of a money manager, each subject made the same investment decision for each of the other six subjects only (OTH) or for each of the six clients and himself (LEA). At the end of the session, one of the seven subjects was randomly determined to be the actual money manager and the remaining six became the clients. To avoid accountability effects, we guaranteed anonymity. Neither the money managers knew the identity of the clients nor did the clients know the identity of the money manager.

To elicit beliefs, we *included the question 'What would you say, how much do others in your group on average invest for themselves?'* in the debriefing questionnaire. We abstain from using incentivized believe elicitation methods as this would increase the complexity and duration of the experiment with vague additional benefits (see Trautmann and Kuilen, 2015, for a discussion).

Only one of three treatments was payoff relevant, which was common knowledge. At the end of a session, a volunteer-participant first threw a dice to determine the payoff relevant treatment and then threw a dice for each group to determine whether the investment was successful or not. Subjects were payed

[8]A short description on how subjects decided including a translated screenshot can be found in appendix D.

[9]Find instructions in appendix E.

privately in cash.

We ran 15 sessions with a total of 175 participants. Our participants were mostly bachelor students from all departments of the Ruhr-University Bochum. Subject participated only once in this experiment. We implemented three different setups. In setup one (70 observations), the treatment order was OTH-OWN-LEA. In setup two (70 observations), the treatment order was LEA-OWN-OTH.[10] In setup three (35 observations), we reran setup one, but now the money manager's fixed payment equaled the highest possible amount (31.50 Euro). Comparing setup one to setup two we find no order effect and comparing setup one to setup three we find no effect on the payment condition.[11] We therefore pool the data and end up with 175 independent observations. For those who are interested in gender effects, we provide a short analysis in appendix B showing that investment shifts do not significantly differ comparing male and female money managers. Average payments were 15.60 Euro (max. 34.5, min. 3) including a show-up fee of 3 Euro. The experiments lasted roughly half an hour.

3.3 Hypotheses

We are not interested in individual investments for oneself (OWN) but rather in the shift of investments comparing OWN and OTH, and OWN and LEA respectively.

Standard models of perfectly rational, egoistic agents make no predictions about situations like OTH as the payment for the money manager is not aligned to the investment decision. Eriksen and Kvaløy (2010) as well as Andersson et al. (2016) pick up the social distance hypothesis arguing that loss aversion is less pronounced when deciding for others than when deciding for oneself, i.e., $X_{\text{OWN}} < X_{\text{OTH}}$. The social responsibility hypothesis (Charness, 2000; Charness and Jackson, 2009), in contrast, argues that money managers' behavior will be more conservative when investing for others, i.e., $X_{\text{OWN}} > X_{\text{OTH}}$. When the money manager believes his clients to have similar risk preferences as himself, he would — in line with the false consensus effect (Ross et al., 1977) — invest the same amount for himself as for the clients, i.e., $X_{\text{OWN}} = X_{\text{OTH}} = X_{\text{LEA}}$. In contrast, the self-others discrepancy effect states that money managers evaluate their own risk preferences differently than the risk preferences of their clients (Hsee and Weber, 1997; Eckel and Grossman, 2008a; Leuermann and Roth, 2012). Thus, the predicted shift depends on the risk attitudes of the money managers relative to their clients. If money managers believe their clients to

[10] As we are interested in the differences between OWN and OTH, and OWN and LEA, we decided to implement OWN in the second place and varied LEA and OTH only.

[11] We provide test results in appendix A.

be relatively risk averse, they would invest less for their clients then for themselves ($X_{\text{OWN}} > X_{\text{OTH}}$), while money managers who believe their clients to be relatively risk seeking, would invest more for their clients then for themselves ($X_{\text{OWN}} < X_{\text{OTH}}$). To our knowledge, this effect has not been examined in the previous literature so far.

In contrast to OTH, standard models of perfectly rational, egoistic agents make clear predictions for LEA as the payment for the money manager is perfectly aligned to the investment decision, i.e., $X_{\text{OWN}} = X_{\text{LEA}}$. However, egoistic preferences will be opposed by any social preference theory in line with the predictions for behavior in OTH. In the extreme case social preferences for clients will completely crowd out egoistic preferences, i.e., $X_{\text{LEA}} = X_{\text{OTH}}$. But when both preferences play a role, the investments in LEA should be in-between investments in OWN and OTH, i.e., either $X_{\text{OWN}} \geq X_{\text{LEA}} \geq X_{\text{OTH}}$ (in line with cautious shift) or $X_{\text{OWN}} \leq X_{\text{LEA}} \leq X_{\text{OTH}}$ (in line with risky shift). Note that the interaction of social and/or egoistic preferences in risky decision making can only be studied when all three treatments are considered in a within-subjects design.

4 Results

4.1 Risky or Cautious Shift?

Do the data show an overall risky shift or a cautious shift when making risky decisions for others? To answer this question, we compare each subjects investment in LEA (X_i^{LEA}) and OTH (X_i^{OTH}) to the investment in OWN (X_i^{OWN}) by calculating the shift in investments, i.e., $S_i^{\text{LEA}} = X_i^{\text{LEA}} - X_i^{\text{OWN}}$ and $S_i^{\text{OTH}} = X_i^{\text{OTH}} - X_i^{\text{OWN}}$, as the relevant unit of observation. Note that negative values indicate a cautious shift and positive values indicate a risky shift. The second column in table 1 provides averages of investments and shifts for 175 independent observations.

Table 1: Average Investments in Euro

	all (175)	by X^{OWN} LRA (81)	MRA (24)	HRA (70)
X^{OWN}	4.55 (2.43)	6.67 (1.76)	4.00 (0.00)	2.28 (0.86)
X^{LEA}	3.98 (2.02)	5.39 (1.87)	3.76 (0.78)	2.43 (1.11)
X^{OTH}	3.90 (2.22)	4.97 (2.24)	3.97 (1.95)	2.65 (0.14)
S^{LEA}	-0.57*** (1.59)	-1.29*** (1.95)	-0.24 (0.78)	0.14 (0.76)
S^{OTH}	-0.65*** (2.39)	-1.71*** (2.68)	-0.03 (1.95)	0.37* (1.51)
$S^{\text{OTH}} - S^{\text{LEA}}$	-0.07 (1.84)	-0.42* (2.10)	0.21 (1.77)	0.22 (1.45)

Notes. The second column contains all observations, *LRA* reports observations for subjects investing above the median (4) in OWN, *low risk* reports observations for subjects investing below or at the median in OWN. The last three rows contain the shift between investments in OTH and OWN ($S^{\text{OTH}} = X^{\text{OTH}} - X^{\text{OWN}}$) and between LEA and OWN ($S^{\text{LEA}} = X^{\text{LEA}} - X^{\text{OWN}}$). Standard deviations reported in parentheses. The asterisks refer to the p-value from a Wilcoxon signed rank test testing the H_0 that S equals zero. * = p <0.1, ** = p <0.05, *** = p <0.001.

Investments in OTH are on average about 14 per cent lower than in OWN. Using a two-sided Wilcoxon signed-rank test, we confirm a significant cautious shift which is on average at $S^{\text{OTH}} = -0.65$ ($p < 0.001$). Even investments in LEA are on average about 13 per cent lower than in OWN which is on average at $S^{\text{LEA}} = -0.57$ (Wilcoxon signed-rank test, $p < 0.001$). Thus, we state observation 1.

Observation 1. *Money managers invest significantly less for their clients than for themselves in OTH and in LEA.*

This result is a clear indication of acting in line with the social responsibility hypothesis. We find a significant cautious shift, not only in OTH but also in LEA, which is in contrast to the prediction of the standard rationality models.

The self-other discrepancy might be seen as a refinement of social responsibility as the money manager tries to act according to the investors risk preferences while deviating from his personal preferences. According to this view, the direction of the observed shift depends on the perceived risk preferences of the clients in comparison to the money managers own risk preferences. We split the whole sample in three groups to categorize risk attitudes measured as the investment in OWN: Group MRA (Median Risk Aversion) consits of subjects who invested the median $X^{OWN} = 4$, group LRA (Low Risk Aversion) consists of subjects with investment levels above median, and group HRA (High Risk Aversion) consits of subjects with investment levels below median. Aggregate results can be found in table 1. We again look at shifts within each group, finding that the risk attitudes of the decision maker play a significant role in decision making for others. For LRA subjects, we find a significant cautious shift in OTH ($S^{\text{OTH}}_{LRA} = -1.71$, $p < 0.001$) and in LEA ($S^{\text{LEA}}_{LRA} = -1.29$, $p < 0.001$).

For HRA subjects, however, we find rather a risky shift which is weakly significant for OTH ($S_{HRA}^{\text{OTH}}0.37$, $p = 0.082$) but not so for LEA ($S_{HRA}^{\text{LEA}}0.37$, $p = 0.168$) (p=0.168). We find no significant differences for MRA subjects. Thus, we state observation 2.

Observation 2. *Money managers with low levels of risk aversion show a cautious shift, while money managers with high levels of risk aversion show rather a risky shift.*

In line with the self-other-distance theory, HRA and LRA money managers both appear to assume that their own risk preferences deviate from the average of the population. The decisions for their clients reflect a propensity towards the perceived average preference of their clients. As the resulting risky shift of the HRA money managers is quite small in comparison to the cautious shift for the LRA money managers, the LRA money managers are driving the aggregate results.

These conclusions are only derived from observed behavior under the assumption that money managers did indeed presume the average risk aversion to be higher or lower than their personal risk preferences. To test whether this assumption was correct or a mere artifact, we elicited the participants beliefs on the other participants investment levels in treatment OWN (EX_j^{OWN}) in the debriefing questionnaire.[12] Table 2 depicts respective measures. The average difference between beliefs and own investment ($EX_j^{\text{OWN}} - X^{\text{OWN}}$) is not significantly different from zero (Wilcoxon signed-rank test, $p = 0.327$). This indicates that money managers on average do not believe others to take less or more risk then they take for themselves.

Table 2: Average Beliefs about Investments of Clients

	all (112)	LRA (49)	MRA (17)	HRA (46)
EX_j^{OWN}	4.44 (1.56)	5.14 (1.65)	4.26 (1.38)	3.75 (1.17)
$EX_j^{\text{OWN}} - X^{\text{OWN}}$	-0.15 (2.27)	-1.68*** (2.27)	0.26 (1.38)	1.33*** (1.31)
$EX_j^{\text{OWN}} - X^{\text{OTH}}$	0.53*** (251)	0.13 (2.98)	0.05 (2.10)	1.12*** (1.96)

Notes. Cells show averages for a sub-sample of 91 participants from which we elicited beliefs. EX_j^{OWN} denotes the beliefs about the investments of others in OWN. The second column contains all observations, *LRA* reports observations for subjects investing above the median (4) in OWN, *low risk* reports observations for subjects investing below or at the median in OWN. Standard deviations reported in parentheses. The asterisks refer to the p-value from a Wilcoxon signed rank test testing the H_0 that S equals zero. * = p <0.1, ** = p <0.05, *** = p <0.001.

On the individual level the investment in OTH can still deviate significantly from the expectation of the average risk preference. Thus, we again look separately at the LRA and HRA sample. And indeed, we find that money man-

[12]Unfortunately, we have elicited the beliefs only for 112 subjects.

agers in the LRA believe others to invest significantly less than themselves ($EX_j^{\text{OWN}} - X^{\text{OWN}} = -1.68$, $p < 0.001$) while money managers in the HRA believe others to invest significantly more ($EX_j^{\text{OWN}} - X^{\text{OWN}} = 1.33$, $p < 0.001$).

The next step is to analyze whether investments for their clients are in line with beliefs about what clients invest for themselves, i.e., whether $EX_j^{\text{OWN}} - X^{\text{OTH}} = 0$. Overall we find money managers to invest significantly less for their clients than what they believe their clients would invest for themselves ($EX_j^{\text{OWN}} - X^{\text{OTH}} = 0.53$, $p = 0.002$). This result is mainly driven by the HRA sample as we find the observed differences to be insignificant in the LRA sample ($EX_j^{\text{OWN}} - X^{\text{OTH}} = 0.13$, $p = 0.676$) but highly significant in the HRA ($EX_j^{\text{OWN}} - X^{\text{OTH}} = 1.12$, $p < 0.001$). Thus, in OTH money managers in LRA roughly invest what they believe their clients would invest for themselves, while in HRA money managers invest less. Overall, we can say that money managers are relatively conservative in that they invest at most what they believe the others would invest for themselves.

Observation 3. *When investing for others without payoff alignment, money managers act according to their believed risk preferences of their clients, by investing at most what they believed their clients invested for themselves.*

In LRA, money managers had indeed expected to be above the average investment as had the money managers in HRA expected to be below. More importantly, we find the investments in OTH not to be different from what the LRA money managers believed their investors would invest for themselves. This result again indicates that subjects act according to social preferences when there are no opposing individual incentives. This is in line with results from Bolton et al. (2015) who show that money managers act according to their clients preferences if information about their clients preferences was revealed beforehand. In the HRA group the risk aversion of the money managers seems to spill over towards the investment for others as although they believe that others would invest more for themselves the money managers own risk preferences shift the investments for the others downwards.

Our design allows us to compare the investment shift when the payment is perfectly aligned and when the payment is not aligned. If the investments in both treatments were equal yet different to OWN ($S^{OTH} = S^{LEA} \neq OWN$) this would mean that the money managers ignore their own risk preferences. We find the cautious shift to be on average lower in LEA ($S^{LEA} = -0.57$) than in OTH ($S^{OTH} = -0.65$); this difference is not significant using a Wilcoxon signed rank test though ($p = 0.529$). Only for LRA subjects we find the shift to be higher in OTH than in LEA ($p = 0.085$). The aggregate results suggest that the money managers ignore their own preferences to fully meet their clients needs.

Observation 4. *The investment shifts in LEA and OTH are not significantly different at the five percent significance level.*

The aggregate observations suggest not only that money managers feature social preferences but also that their individual risk preferences are overridden, once they decide for themselves *and* a group of clients. To examine the origins of this, rather counter intuitive aggregate pattern, we look at individual behavior in the following section.

4.2 Responsibility weights

Apparently, in LEA the money managers deviate substantially from their own risk preferences and act in line with the risk preferences of their clients. This observed behavior raises the question of how these opposing preferences are weighted when making an investment in LEA. Our experimental design allows us to model the relationship between individual risk preferences and the perceived risk preferences of their clients by considering the link-treatment LEA; the combination of OWN and OTH. If the money managers only care about themselves, we would predict $X^{\text{OWN}} = X^{\text{LEA}}$ independent of X^{OTH}. Thus, the decision reflects the risk attitude of the decision maker only. If the money managers only care for their clients, we would predict $X^{\text{LEA}} = X^{\text{OTH}}$ independent of X^{OWN}. And indeed the previous section indicates that on average $X^{\text{OWN}} > X^{\text{LEA}} = X^{\text{OTH}}$. Hence, the average money managers take responsibility for their clients and put their own needs in LEA on hold, as they are willing to reduce the investment levels for themselves in LEA in comparison to OWN. Whether a money manager "cares" more for himself or rather for his clients can be inferred by estimating a responsibility weight α given by the relationship in (1).

$$X_i^{\text{LEA}} = (1-\alpha_i)X_i^{\text{OWN}} + \alpha_i X_i^{\text{OTH}} \Longrightarrow \alpha_i = \frac{S_i^{LEA}}{S_i^{OTH}}. \tag{1}$$

The interpretation is straight forward given $S^{OTH} \neq 0$. For $\alpha = 0$, the money manager cares only for himself which implies that $X^{LEA} = X^{OWN}$. For $\alpha = 1$, the money manager cares only for his clients and puts his own preferences to hold implying $X^{LEA} = X^{OTH}$. For $0 < \alpha < 1$, the money managers weights egoistic preferences and social preferences. Suppose a money manager opts for a cautious shift such that $\alpha = 0.70$. This result indicates that the money manager takes his clients' risk preferences with a weight of 70 percent into account, and his own risk preferences with a weight of 30 percent. Table 3 provides aggregates for the responsibility weight α.

Table 3: Responsibility Weight

	All		Cautious shift		Risky shift	
	# obs	Mean (sd)	# obs	Mean (sd)	# obs	Mean (sd)
All	94	0.36***(0.37)	60	0.42 (0.38)	34	0.25*** (0.33)
$\alpha = 0$	37	0	21	0	16	0
$0 < \alpha < 1$	41	0.43* (0.18)	27	0.48 (0.17)	14	0.32*** (0.17)
$\alpha = 1$	16	1	12	1	4	1

Note: The table reports the average α along with the standard deviation in line with equation (1), separated by cautious shift subjects ($S^{\text{OTH}} < 0$) and risky shift subjects ($S^{\text{OTH}} > 0$).* = p <0.1, ** = p <0.05, *** = p <0.001 of two-sided Wilcoxon signed rank test that $\alpha = 0.5$.

We can calculate a valid α if X^{LEA} is in-between $X^{\text{OWN}}$and X^{OTH} which is the case for 94 subjects.[13] Table 3 provides aggregates on the responsibility weight α for all 94 subjects, and separated by types, i.e., the cautious shift types ($S^{\text{OTH}} < 0$) and the risky shift types ($S^{\text{OTH}} > 0$). One intuitive benchmark for a preference weight might be an equal consideration of the money manager's own preferences and the preferences of the client group, i.e., $\alpha = 0.50$. In our sample, the mean responsibility weight is 0.36, and even increases to 0.43 if we exclude pure preferences for oneself ($\alpha = 0$) and pure preferences for others ($\alpha = 1$). These results again support social preference motives for investments. However, using a Wilcoxon signed rank test we found these weight to be significantly lower than 0.50 indicating that the preferences of the money manager plays a larger role in his decisions than the preferences of the investors ($p < 0.001$ and $p = 0.062$, respectively).[14]

Observation 5. *Money managers take their client's risk preferences into account when making decisions for both clients and themselves. However, their decisions depend more strongly on their own preferences.*

Obviously, the decision situation of a money manager who is a cautious shift type is different to the situation of a risky shift type. Let's assume for the moment that α is fixed somewhere between zero and one. Then cautious shift types are willing to invest less in LEA — i.e., to reduce personal risk in LEA — to sacrifice potential earnings for oneself in order to reduce potential losses for their clients. In contrast, risky shift types need to invest more in LEA — i.e., too increase personal risk — to reach a similar α. Consequently, they have to accept potentially higher losses to satisfy the pretended needs of their clients.

[13]In line with the false consensus effect, 39 participants chose the same investment in all treatments. For 42 subjects a weight cannot be calculated as either $\alpha < 0$ or $\alpha > 1$.

[14]Observation 4 indicates an α equal or at least close to one, but this holds true only on the aggregate level.

Due to loss aversion however, it then can be hypothezise that risky shift types have a lower α than cautious shift types.

The average α for a cautious shift type equals 0.42 which is not significantly different from 0.5 (Wilcoxon signed rank test, $p = 0.150$). The risky shift types show an average α of 0.25 which is significantly lower than 0.5 (Wilcoxon signed rank test, $p < 0.001$). Hence, risky shift types show a significantly lower α than the cautious shift types (two-sided Mann Whitney U test, $p = 0.039$). This result indicate that indeed the risky shift types take their own preferences stronger into account than the cautious shift types.

5 Discussion and Conclusion

We study the effects of responsibility in risky decision making, using a one-shot Gneezy and Potters (1997) investment game while controlling for some confounding effects detected in the literature. First, in line with responsibility alleviation, we find a significant cautious shift in risky decisions for others, irrespective of whether the decision makers payoffs are perfectly aligned with their clients or independent. Second, in line with self-other discrepance, we find that money managers invest what they believe others would invest for themselves (in line with Bolton et al., 2015). In particular, money makers exhibiting low risk aversion make rather conservative investments for others, resulting in a cautious shift, while highly risk averse money managers take higher risks for their clients, resulting in a risky shift. Third, using a responsibility weighting model we find that cautious shift types take own preferences and the preferences of their clients about equally into account when making investment decisions in LEA. However, risky shift types put a higher weight on their own preferences as a higher weight for their clients would increase their personal risk and, thus, their potential losses.

But how can we explain the mixed results in the literature? In the following, we discuss some suggestions.

i) Risk attitude of the population. The conclusions from the literature are based on aggregate results only and the heterogeneity of subjects with respect to risk attitudes has barely be considered. Due to our within-subject design we are able to take the relative risk attitudes of the money manager into account. We find that our results are driven by the relatively risk seeking subjects. Therefore, any study with a rather risk averse subject pool would find an aggregate risky shift, of course. Differences to for instance Andersson et al. (2016) might be due to the fact that their subject pool is taken from the general Danish population which has been found to be more risk averse than the common student population (von Gaudecker et al., 2012).

ii) Social Distance. Among others, Eriksen and Kvaløy (2010) report that hypothetical decision making for others - the most extreme social distance - leads to higher risk taking in comparison to a situation with monetary consequences. Thus, experiments with higher social distance, as is the case for internet experiments as opposed to laboratory experiments, might lead to higher risk taking for others. On the other hand, our experimental design allows the potential money managers to put themselves into the position of their clients as the money manager becomes a client with a probability of 6/7. This might lead to a higher empathy for the others leading to a cautious shift (as in the equal opportunity mode treatment in Bolton and Ockenfels, 2006).

iii) Domains. The results from the literature suggest that the domain of the lotteries plays a relevant role. Lotteries in the loss domain or in the mixed domain seem to support a risky shift while lotteries in the gain domain support a cautious shift (Pahlke et al., 2015). In the Gneezy and Potters (1997) investment game however, we cannot control the subjects' reference point as we have no record of the editing phase (Kahneman and Tversky, 1979). When the endowment is integrated, the decision takes place in the gain domain only ($9 + 2.5X$ vs. $9 - X$). When the endowment is segregated, the decision takes place in the mixed domain ($2.5X$ vs. $-X$). As we provide integrated outcomes on the decision screen the subjects might have perceived the task in a pure gain domain (see appendix D).

iv) Ambiguity Aversion. While money managers might know their own preferences, they are uncertain about their clients' preferences; in particular when estimating the preferences of six clients. This creates an ambiguous situation when deciding for others in contrast to when deciding for oneself. From that point of view, our results are in line with ambiguity aversion as subjects take less risk in a situation with higher ambiguity (e.g., Trautmann and Van De Kuilen, forthcoming). This effect might be even amplified due to *comparative ignorance* (Fox and Tversky, 1995) as in a within-subject design subjects are able to compare decisions for others and for themselves.

What drives investments when payments are perfectly aligned: Egoistic preferences or social preferences? The literature so far has not considered the link between LEA and OWN on the one hand, and LEA and OTH on the other hand. These links however, are quite important to answer the question, as it combines decision making for oneself only and decision making for others only in one decision. On average, we observe a cautious shift in LEA and in OTH but the cautious shift tends to be higher in the latter. Hence, in LEA the social preferences play a certain role but the money managers cannot be expected to fully disregard their own preferences. While this consideration is straight forward, we are (to the best of our knowledge) the first to directly compare these two situations. Using the decisions for others only and for oneself as reference points, we are able to construct a weighted risk preference model allowing us to determine the individual responsibility weight of our participants. On average the money managers take not only their own risk preferences (egoistic preferences) into account but also the risk preferences of their clients (one could speak of 'social risk preferences'). Though they seem to weight their egoistic preferences stronger than the social preferences.

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Online Supplement

A Pool Data

To test whether an order effect has an impact on investment levels, we compare 70 observations in which subjects made investment decisions in the order OTH-OWN-LEA and 70 observations in the order LEA-OWN-OTH. First, we make use of a Mann-Whitney U test to evaluate the H_0 that investment levels do not differ between orders. In neither treatment we can reject the H_0 (OWN $p = 0.474$, LEA $p = 0.770$, OTH $p = 0.375$). Second, we test the H_0 that differences in investment levels between treatments do not differ between orders. Again, we cannot reject the H_0 for either comparison ($X^{\mathrm{OWN}} - X^{\mathrm{OTH}}$, $p = 0.858$, $X^{\mathrm{OWN}} - X^{\mathrm{LEA}}$ $p = 0.348$, $X^{\mathrm{OTH}} - X^{\mathrm{LEA}}$, $p = 0.154$,). To test whether the payment condition for the money manager in OTH has an impact on investment levels we compare 70 observations with a zero payment for the decision maker and 35 observations with a payment of 31.50 Euro for the decision maker (both in the order OTH-OWN-LEA). In neither treatment we can reject the H_0 that investment levels do not differ between payment conditions (OWN $p = 0.981$, LEA $p = 0.561$, OTH $p = 0.924$). We also cannot reject the H_0that differences in investment levels between treatments do not differ between payment conditions for either comparison ($X^{\mathrm{OWN}} - X^{\mathrm{OTH}}$, $p = 0.521$, $X^{\mathrm{OWN}} - X^{\mathrm{LEA}}$ $p = 0.179$, $X^{\mathrm{OTH}} - X^{\mathrm{LEA}}$, $p = 0.488$). Thus, preferences for equal outcomes do not have a strong impact on the shifts in investment (in line with Bolton et al., 2015). As a consequence, we pool the data, obtaining in total 175 observations. Find also the regressions below to confirm this decision.

Table A.4: Order Differences

	OTH-OWN-LEA (70)	LEA-OWN-OTH (70)	Difference (p-value)
X^{OWN}	4.68	4.37	-0.31 (0.474)
X^{LEA}	3.85	4.00	-0.15 (0.770)
X^{OTH}	3.90	3.84	-0.06 (0.375)
S^{OTH}	-0.77***	-0.53*	-0.24 (0.858)
S^{LEA}	-0.83***	-0.37*	-0.46 (0.348)

Notes. The table shows averages in investments in the three treatments OWN, LEA, and OTH separated by treatment order. The last two rows contain the shift between investments in OTH and OWN($S^{\mathrm{OTH}} = X^{\mathrm{OTH}} - X^{\mathrm{OWN}}$) and between LEA and OWN ($S^{\mathrm{LEA}} = X^{\mathrm{LEA}} - X^{\mathrm{OWN}}$). The last column shows the p-values from a Mann-Whitney U test comparing the two previous columns. The asterisks refer to the p-value from a Wilcoxon signed rank test testing the H_0 that differences equal zero. * = p <0.1, ** = p <0.05, *** = p <0.001.

Table A.5: Payment differences

	$\pi_m = 0$ (70)	$\pi_m = 31.50$ (35)	Difference (p-value)
X^{OWN}	4.68	4.65	0.03 (0.981)
X^{LEA}	3.85	4.21	-0.36 (0.561)
X^{OTH}	3.90	4.03	-0.13 (0.924)
S^{OTH}	-0.77***	-0.63	-0.14 (0.521)
S^{LEA}	-0.83***	-0.45	-0.38 (0.179)

Notes. The table shows averages in investments in the three treatments OWN, LEA, and OTH separated by payment differences in OTH. The last two rows contain the shift between investments in OTH and OWN ($S^{\text{OTH}} = X^{\text{OTH}} - X^{\text{OWN}}$) and between LEA and OWN ($S^{\text{LEA}} = X^{\text{LEA}} - X^{\text{OWN}}$). The last column shows the p-values from a Mann-Whitney U test comparing the two previous columns. The asterisks refer to the p-value from a Wilcoxon signed rank test testing the H_0 that differences equal zero. * = p <0.1, ** = p <0.05, *** = p <0.001.

B Gender Effects

Charness and Gneezy (2012) provide evidence for a gender effect in the Gneezy and Potters (1997) environment with varying payments and probabilities. To test whether a gender effect has an impact on investment levels, we compare 82 observations in which females made investment decisions to 93 observations in which males made investment decisions. Usingf a Mann-Whitney U test we evaluate the H_0 that investment levels do not differ between gender. Although investment levels are on average higher for males than for females (male average minus female average: OWN 0.67, LEA 0.43, OTH 0.55), we can reject the H_0 in neither treatment (OWN $p = 0.210$, LEA $p = 0.525$, OTH $p = 0.178$). Next, we test the H_0 that differences in investment levels between treatments do not differ between gender. Again, we cannot reject the H_0 for all comparisons ($X^{\text{OWN}} - X^{\text{OTH}}$, $p = 0.972$, $X^{\text{OWN}} - X^{\text{LEA}}$ $p = 0.371$, $X^{\text{OTH}} - X^{\text{LEA}}$, $p = 0.541$). Hence, we find no significant gender effect.

Table B.6: Gender differences

	females (81)	male (93)	Difference (p-value)
X^{OWN}	4.20	4.87	-0.67 (0.210)
X^{LEA}	3.75	4.18	-0.44 (0.525)
X^{OTH}	3.61	4.16	-0.55 (0.178)
S^{OTH}	-0.44**	-0.69**	0.25 (0.972)
S^{LEA}	-0.59***	-0.70**	0.11 (0.371)

Notes. The table shows averages in investments in the three treatments OWN, LEA, and OTH separated by payment differences in OTH. The last two rows contain the shift between investments in OTH and OWN ($S^{\text{OTH}} = X^{\text{OTH}} - X^{\text{OWN}}$) and between LEA and OWN ($S^{\text{LEA}} = X^{\text{LEA}} - X^{\text{OWN}}$). The asterisks refer to the p-value from a Wilcoxon signed rank test testing the H_0 that differences equal zero. * = p <0.1, ** = p <0.05, *** = p <0.001. The p-values in brackets refer to a Mann Whitney U test comparing the unit of interest across treatments.

Why is there no significant gender effect? It is argued that the gender effect is rather due to loss aversion than due to risk aversion. Especially, in the Gneezy and Potters (1997) environment the reference point is unclear; it might be the endowment or zero. In our z-Tree screen design the reference point might be shifted toward zero. Subjects first generated a list of payoffs by entering investment levels and then chose one of these investment levels. In this screen we provide information on the payoff when successful and on the payoff when not successful; both above or at zero. Thus, we virtually reduce loss aversion as we provide information in the gain domain only and, thus, set the reference point to zero.

In a debriefing questionnaire, we ask several questions on risk aversion in line with Dohmen et al. (2011). Using a Mann-Whitney U test, we find significant gender differences in questions about risk taking in general ($p = 0.004$), while driving a car ($p = 0.019$), when making financial decisions ($p = 0.002$), and to some extent in sports and leisure ($p = 0.074$). We find no effect in questions on risk taking in career ($p = 0.319$), health ($p = 0.937$), trust in strangers($p = 0.567$), or in a hypothetical investment decision ($p = 0.132$).

C Regressions

In the OLS regressions in table C.7 and in table C.8, we regress the shift in investments, S^{OTH} and S^{LEA} respectively, on treatment conditions (Dummy variables *Order* and *High payment* in OTHt), subjects characteristics (*Female*, *Age*, and *Econ student*), and elicited measures *RS* and *General Risk* (*RS*= -1 if HRA, = 0 if MRA, = 1 if LRA, i.e. higher *RS* indicates higher risk taking, *General Risk* equals the number of a likert scale question (1-10) taken from a Dohmen et al. (2011) with a higher number indicating less risk aversion of the subject) and *SRS*, the social responsibility score, taken from Berkowitz and Lutterman (1968)). Model (1) shows that even if we control for treatment conditions we find the constant to be significantly negative and appendix A. In model (2) and model (3) we see, however, that the relatively risk seeking subjects drive the cautious shift as the *RS* coefficient is negative and highly significant. When we add *General Risk*, *RS* becomes less pronounced and therefore *General Risk* becomes significently negative. In line with appendix B we find no gender effect. Finally, we elicited the SR-score to test whether social responsible subjects act in line with responsibility alleviation. We find no correlation with the dependent variables, and we also find no indication that subjects who score high on the SR-score act more in line with what they think their clients would do for themselves.

Table C.7: OLS with S^{OTH} as dependent variable

	(1)	(2)	(3)	(4)
Order	0.2389	0.0902	0.0952	0.1508
	(0.4051)	(0.3724)	(0.3729)	(0.3689)
High Payment	0.1427	0.0981	0.0333	0.0219
	(0.4962)	(0.4551)	(0.4572)	(0.4513)
RS		-1.0405***	-1.0955***	-0.9172***
		(0.1797)	(0.1813)	(0.1949)
Female			0.1921	0.0306
			(0.3381)	(0.3410)
Age			0.0938**	0.1045**
			(0.0404)	(0.0401)
Econ student			0.3464	0.4729
			(0.3402)	(0.3403)
SRS			-0.0218	-0.0126
			(0.0309)	(0.0308)
General Risk				-0.2066**
				(0.0895)
Constant	-0.7713***	-0.6375**	-2.2221	-1.8167
	(0.2865)	(0.2637)	(1.6787)	(1.6665)
Observations	175	175	174	174
R-squared	0.002	0.166	0.195	0.220

Notes: The table shows OLS regressions. The independent dummy variables are *Order*, being 1 when LEA is played first, *High Payment*, being 1 when the money manager receives a payment of 31.50 Euro instead of a zero payment, *RS* being 1 if LRA, 0 if MRA, -1 if LRA, *Female*, being 1 if the participant was a woman, and *Econ student*, being 1 if the student was an economics student. Further variables are *Age, General risk* (a higher score indicates a higher propensity to take risks), and *SRS* (Social Responsibility Score), taken from Berkowitz and Lutterman (1968) (a higher score indicates higher social responsibility). Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table C.8: OLS with S^{LEA} as dependent variable

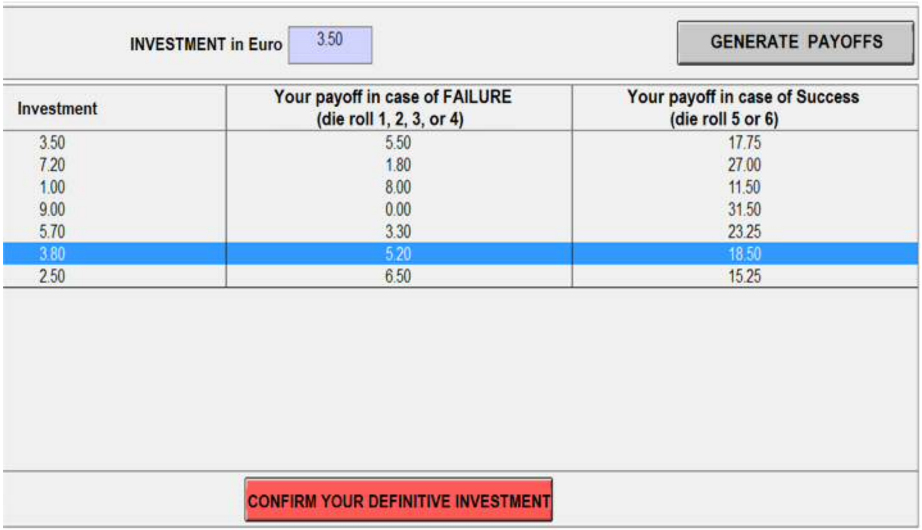
	(1)	(2)	(3)	(4)
Order	0.4550*	0.3538	0.3730	0.4148*
	(0.2676)	(0.2445)	(0.2476)	(0.2438)
High Payment	0.3857	0.3554	0.3335	0.3249
	(0.3278)	(0.2988)	(0.3035)	(0.2983)
RS		-0.7084***	-0.7229***	-0.5887***
		(0.1180)	(0.1204)	(0.1288)
Female			0.2609	0.1394
			(0.2245)	(0.2254)
Age			0.0309	0.0389
			(0.0268)	(0.0265)
Econ Student			0.0614	0.1567
			(0.2259)	(0.2249)
SRS			-0.0036	0.0034
			(0.0205)	(0.0204)
General Risk				-0.1554***
				(0.0591)
Constant	-0.8314***	-0.7403***	-1.4891	-1.1841
	(0.1892)	(0.1731)	(1.1146)	(1.1014)
Observations	175	175	174	174
R-squared	0.018	0.189	0.200	0.232

Notes: The table shows OLS regressions. The independent dummy variables are *Order*, being 1 when LEA is played first, *High Payment*, being 1 when the money manager receives a payment of 31.50 Euro instead of a zero payment, *RS* being 1 if LRA, 0 if MRA, -1 if LRA, *Female*, being 1 if the participant was a woman, and *Econ student*, being 1 if the student was an economics student. Further variables are *Age, General risk* (a higher score indicates a higher propensity to take risks), and *SRS* (Social Responsibility Score), taken from Berkowitz and Lutterman (1968) (a higher score indicates higher social responsibility). Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

D Decision Screen

Figure 1 provides a screenshot of an investment decision in OWN. Subjects were able to enter arbitrary investment levels in the gray field ("INVESTMENT in Euro"). A click on the gray button ("GENERATE PAYOFFS") added a new line to a table. The table listed the investment in the first column, the payoff in case of a loss along with the probability in the second column, and the payoff in case of a win along with the probability in the last column. The ultimate investment was chosen by marking one line in the list and by clicking the red button ("CONFIRM YOUR DEFINITIVE INVESTMENT"). Then a pop-up asked whether the decision is ultimate or whether the subject wants to revise it. The decisions in LEA and OTH additionally displayed the payoff for their clients. The z-Tree code is available upon request.

Figure 1: How to make the investment decision



E Instructions

Find below the translated instructions for setup one, OTH-OWN-LEA. The instructions were split into three subsets (labelled F.1 to F.3 here). The instructions for F.1 were distributed at the beginning of the experiment, the other parts were distributed only when the preceding part was concluded. The German instructions are available upon request.

E.1 Treatment OTH

INSTRUCTIONS

Welcome to the experiment. Please do not talk to any other participant from now on. We kindly ask you to use only those functions of the PC that are necessary for the conduct of the experiment. The purpose of this experiment is to study decision behavior. You can earn real money in this experiment. Your payment will be determined solely by your own decisions according to the rules on the following pages. The data from the experiment will be anonymized and cannot be related to the identities of the participants.

Neither the other participants nor the experimenter will find out which choices you have made and how much you have earned during the experiment.

SUB EXPERIMENTS

You will participate in three independent sub experiments followed by a short questionnaire. For each sub experiment you receive a new set of instructions. Of the three sub experiments only one will be paid out at the end of the experiment. The payoff relevant experiment will be randomly determined by the roll of a die.

EXPERIMENT 1

Groups - At the begin of the experiments you will be randomly organized in groups of seven participants. Your group affiliation has no impact on your tasks or your payment.

Role - In this part participants are either *active* or *passive* members. In each group there is only one active member. This member decides for the other six members and, thereby, determines their payoff. The active group member will randomly be determined at the end of the experiment. *First, all participants decide as the active member for all other group members.* At the end of the experiment the real active member will be determined and his decision will be implemented.

Task - In the following your decision as an active member will be explained. The passive members receive 9 Euro each. You now decide for each of the other members how much of their 9 Euro to invest in a risky project. *The investment is the same for each passive group member, i.e., when you invest a certain amount then you invest this amount for each passive group member.* The remaining amount (9 Euro - Investment) will be paid out to each passive member independent of the project's success.

The project is either a success or a failure. In case of a success each passive member gets her invested amount back and in addition receives 2.5 times of the investment as a gain:

Payment in case of success $= 9 + 2.5\times$ *Investment.*

In case of a failure the investment is lost:

Payment in case of failure $= 9-$ *Investment.*

Whether the project is successful will be determined by the throw of a six-sided die at the end of the experiment. In case of a five or six, the project is a success, in case of a one, two, three or four the project is a failure. The probability of success is therefore 33.33%.

The active member receives *no payoff* in this sub experiment..

Procedure - Details on how to enter the investments - calculation of potential payments, fields of entry, etc - will be displayed on the upper part of your screen once the experiment has started.

E.2 Treatment OWN

EXPERIMENT 2

In this experiment you decide only for yourself, *independent of the other participants*. You receive 9 Euro and decide how much of their 9 Euro to invest in a risky project. The remaining amount (9 Euro - Investment) will be paid out independent of the project's success.

The project is either a success or a failure. In case of a success You will get your invested amount back and in addition receive 2.5 times of the investment as a gain:

$\textit{Payment in case of success} = 9 + 2.5 \times \textit{Investment}.$

In case of a failure the investment is lost:

$\textit{Payment in case of failure} = 9 - \textit{Investment}.$

Whether the project is successful will be determined by the throw of a six-sided die at the end of the experiment. In case of a five or six, the project is a success, in case of a one, two, three or four the project is a failure. The probability of success is therefore 33.33%.

Procedure - Details on how to enter the investments - calculation of potential payments, fields of entry, etc - will be displayed on the upper part of your screen once the experiment has started.

E.3 Treatment LEA

EXPERIMENT 3

Groups - At the begin of the experiments you will be randomly organized in groups of seven participants. You will be regrouped, this means that the group members are not the same as in the first sub experiment. Your group affiliation has no impact on your tasks or your payment.

Role - In this part participants are either *active* or *passive* members. In each group there is only <u>one</u> active member. This member decides for himself and the other six members and, there by, determines the payoffs for the whole group. The active group member will randomly be determined at the end of the experiment. *First, all participants decide as the active member for all group members.* At the end of the experiment the real active member will be determined and his decision will be implemented.

Task - In the following your decision as an active member will be explained. Each group member (active and passive) members receives 9 Euro each. You now decide for each member of the group, including yourself, how much of the 9 Euro to invest in a risky project. *The investment is the same for each passive group member, i.e., when you invest a certain amount then you invest this amount for yourself and for each passive group member.* The remaining amount (9 Euro - Investment) will be paid out to each group member independent of the project's success.

The project is either a success or a failure. In case of a success each group member gets her invested amount back and in addition receives 2.5 times of the investment as a gain:
Payment in case of success $= 9 + 2.5\times$*Investment.*
In case of a failure the investment is lost:
Payment in case of failure $= 9-$*Investment.*
Whether the project is successful will be determined by the throw of a six-sided die at the end of the experiment. In case of a five or six, the project is a success, in case of a one, two, three or four the project is a failure. The probability of success is therefore 33.33%.

Procedure - Details on how to enter the investments - calculation of potential payments, fields of entry, etc - will be displayed on the upper part of your screen once the experiment has started.

END OF EXPERIMENT
At first we will determine, by the roll of a die, which experiment will determine your payoff. Thereafter, a separate dice roll for each group will determine whether the project was successful or not. After you answered a short questionnaire your payment will be shown at your screen. Please enter the amount on your receipt. You will be called individually to the payoff desk. Please bring the small number plate and the signed receipt with you. The payment will be in cash, private and anonymous.

F Literature Overview

Table F.9: Literature Review

Article	Game	Design	Support	Potential Confound Effects
OWN vs. OTH				
Reynolds et al. (2009)	BP	WS	CS	Accountability, Recency Effect[a]
Eriksen and Kvaløy (2010)	GP	BS	CS	
Chakravarty et al. (2011)	MPL/FPA	WS	RS/RS	
Polman (2012)	Invest in Coin Toss	WS	RS	Deception, Misaligned Incentives[b]
Andersson et al. (2016)	MPL	BS	No significant effect	High Social Distance
Montinari and Rancan (2013)	GP	WS	RS (friends only)	Accountability, Order[c]
Pollmann et al. (2014)	GP	BS	RS	
OWN vs. LEA				
Charness and Jackson (2009)	Stag-Hunt Game	BS	Indication for CS	
Sutter (2009)	GP[d]	BS	RS	Implied Accountability, Recency Effect
Pahlke et al. (2012)	BP	BS	CS	
Humphrey and Renner (2011)	MPL	BS	No significant effect	Accountability
Andersson et al. (2016)	MPL	BS	No significant effect	High Social Distance
Bolton et al. (2015)	MPL	WS	CS	

Notes: In the table, only results in the gain domain are considered. We consider significant levels of 5 percent. Abbreviations: BP = binary prospects, a choice between two lotteries (or one risky lottery and a guaranteed payment). MLP = multiple price list in line with Holt and Laury (2002), FPA = first price auction against the computer, GP = design similar to (Gneezy and Potters, 1997). WS/BS = within subject design/between subject design. The studies find support for either a ***cautious shift*** (CS), i.e., more risk in OWN than in OTH/LEA, or a ***risky shift*** (RS), i.e., less risk taking in OWN than in OTH/LEA.

[a] Results might be biased. First clients inferred the identity of the investment manager (accountability). Second, investment manager decided always first for himself, received feedback, and decided afterward for the others.

[b] See their implementation on page 119.

[c] In contrast to GP they apply a lottery with expected value below endowment. Each subject went through three times 12 decisions with order OWN, OTH (strangers), OTH (friends).

[d] In PAY-COMM one of three in a group decided for repetitions 1-3, the second for 4-6, and the third for 7-9.