Risk-Taking for Others under Accountability

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Abstract

We let subjects take risky decisions that affect themselves and a passive recipient. Adding a requirement to justify their choices significantly reduces loss aversion. This indicates that such an accountability mechanism may be effective at debiasing loss aversion in agency relations.

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1. Introduction

Deviations from economically normative behavior have been found time and again in individual decisions. People often reverse their preferences under alternative systems of preference elicitation (Maafi, 2011), weigh probabilities non-linearly (Abdellaoui, 2000), and take too little risk in investments involving losses (Fellner & Sutter, 2009). These findings have been reproduced for the general population (Booij, van Praag, & van de Kuilen, 2010), and in a variety of countries (Akay, Martinsson, Medhin, & Trautmann, 2011).

An important class of decisions is the one in which a decision-maker takes decisions not (only) for herself, but is responsible (also) for somebody else. Examples include a decision-maker taking decisions that affect her and her family, or an agent taking decisions for a principal where both the principal's and the agent's payoffs depend on the outcome of that decision. It is all the more surprising that we are only beginning to understand risk-taking under conditions of responsibility. Charness & Jackson (2009) studied Rousseau's stag hunt game when decision-makers were responsible either only for themselves or also for somebody else, and found that under responsibility the safer, dominated, strategy was chosen more often. Eriksen & Kvaløy (2010) found myopic loss-aversion in decisions of salaried agents for their principals. Pahlke, Strasser, & Vieider (2011) found that responsibility amplified the fourfold pattern of risk-attitudes predicted by prospect theory relative to an individual baseline.

Instead of comparing decisions under responsibility to individual decisions, we introduce a justification requirement, whereby decision-makers need to justify their decisions to the passive recipient who depends on them. Sutter (2009) found that payoff commonality is sufficient to increase investment levels into a risky asset with positive expected returns relative to an individual baseline. More important for our present study, he found that adding the possibility of sending non-binding messages on top of the salient group membership induced by payoff commonality further increased investment levels. The latter is related to our accountability requirement, with the difference that subjects receive messages *before* taking their decisions, whereas in our experiment they may have to justify their decisions *after* taking them.

Accountability—the expectation on the side of the decision-maker that she may have to justify her decisions (Lerner & Tetlock, 1999)—has been found to be a powerful debiasing mechanism. It activates deeper thinking processes and thus generally leads to better decisions (Vieider, 2011). Introducing an accountability mechanism is interesting for several reasons. For one, some form of accountability is generally present in real-world decisions under responsibility. Furthermore, inasmuch as accountability will induce subjects to think more carefully about their decisions, we may gain important insights into the perceived justifiability or awareness of various decision making biases.

2. The Experiment

Design

We asked subjects to choose repeatedly between two alternatives. Payoffs affect the decision-maker and recipient in a parallel manner to avoid issues of payoff inequality (Bolton & Ockenfels, 2010).

Subjects. 192 subjects were recruited at the MELESSA laboratory at LMU-Munich. The experiment took 1.5 hours, average earnings were €18.48. 41% of subjects were female. The experiment was conducted using z-Tree (Fischbacher, 2007).

Task. Subjects were asked to choose repeatedly between a sure amount of money and a binary prospect. The prospect always gave a 50–50 chance to obtain one of two outcomes.

Prospects. 40 prospect pairs were constructed as follows (for a complete list, see appendix):

- *Gain-prospects*: Subjects had a choice between a sure amount of money and a prospect yielding either twice that amount with a probability of 50% or else nothing. There were 5 such basic prospects, corresponding to five stake levels. From each of these basic prospects additional prospects were constructed to test for sensitivity to various factors. Since choices for these gain prospects follow the choice patterns observed for the basic prospect pairs, they will not be mentioned again.
- *Pure-Loss-Prospects*: Five prospect pairs were inserted which were the mirror image of the five basic prospect pairs with every amount negative instead of positive.
- *Mixed prospects*: The sure amount in the basic prospect pairs was subtracted from all outcomes, thus obtaining prospects with an expected value of €0.

Treatments. Subjects were randomly assigned to one of two treatments. In both treatments half of the subjects were randomly assigned the role of decision-maker and the other half the role of *recipient*. The decision-maker had to take the decision on behalf of herself and the recipient. Recipients were shown the choice of their decision-maker with a lag of one period and indicated whether they were satisfied or not, but this did not affect payoffs nor was it shown to the decision-maker. Decision-makers knew that recipients were asked to indicate their satisfaction with every decision, as well as that this rating would not carry any material consequences. In the *responsibility* treatment the identity of the decision-maker was not disclosed. In the *accountability* treatment one decision-maker in each session (p=1/12) was extracted at random at the end of the experiment and shown to a different room, where the recipient was handed an overview of the decisions and given the opportunity to interrogate the decision-maker about the reasons behind her choices. All of this

was common knowledge.

Incentives. 3 out of the 40 decisions were randomly drawn to be payoff-relevant. We had three extractions in order to minimize the probability that subjects would leave the lab with actual losses. In total, one subject incurred actual losses, while an additional three subjects left with less than the show-up fee of €4. Subjects were told that any losses could be either paid or worked off in the lab for a wage of €5 per half hour.

Results

Figure 1 shows choice proportions of the safe option. For gains, a majority of subjects is risk-averse ($p<0.01$, binomial-test)[2]. For pure-loss-prospects, subjects are considerably more risk-seeking than for gains, and risk-neutrality cannot be rejected ($p=0.48$). Finally, for mixed-prospects, subjects are considerably more risk-averse than for gains on average.

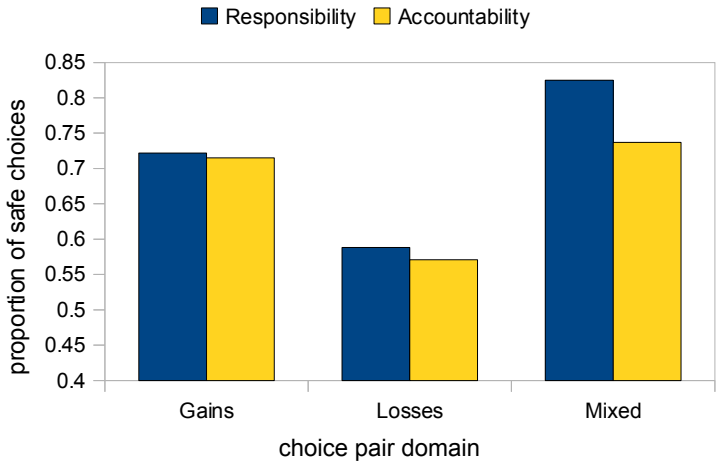

Figure1: proportion of safe choices in the different domains by treatment

Table 1 shows a random-effects Probit regression. The effects described above are highly significant, as shown by the simple effects of pure-loss-prospects and mixed-prospects. Subjects become more risk-averse the higher the stakes. This effect is quite typical and has been found many times. While the accountability manipulation has no effect on choices in the gain domain or the loss domain, the interaction between accountability and the mixed-lottery dummy is significant. This indicates that subjects choose the sure amount for mixed prospects significantly less often when

[2] Following Wakker (2010), we categorize a choice as risk averse whenever a sure amount of money is preferred to a prospect with equal or superior expected value; risk seeking is defined similarly. Changes in risk attitudes are used in relative terms, so that the expressions "more risk seeking" and "less risk averse" can be used interchangeably.

accountable, and thus that their level of loss aversion is reduced.

Table1: Random Effects Probit: coefficients show marginal effects; *** p=0.001, ** p=0.01, * p=0.05, and † p=0.10.

Dep.Var.: choice of safe prospect	**I**	**II**
accountability	–0.009 (0.033)	0.023 (0.051)
pure-loss-prospects	–0.134*** (0.034)	–0.134*** (0.034)
mixed-prospect	0.192*** (0.025)	0.201*** (0.026)
accountability*pure loss	–0.006 (0.044)	–0.008 (0.044)
accountability*mixed-prospect	–0.101* (0.046)	–0.133* (0.065)
female	0.054† (0.032)	0.060 (0.046)
stakes	0.018*** (0.002)	0.021*** (0.004)
female*accountability		–0.012 (0.067)
accountability*stakes		–0.004 (0.005)
Nr. Observations (subjects)	3840 (96)	3840 (96)
Wald Chi2	116.58	117.39

3. Discussion

The finding that accountability reduces loss aversion may be surprising at first. It is however in agreement with previous findings by one of the authors. Vieider (2009) found that loss aversion was reduced when subjects had to justify their *individual* decisions in front of the experimenter. Since that experiment was conducted without incentives, it was costless to conform to what the student-subjects may have thought to be the experimenter's expectations. Our new finding gives the original finding broader economic validity: it was obtained under the provision of real incentives, and with decisions being justified in front of a passive recipient who was directly affected by those decisions.

Subjects who have to justify their decisions generally consider the options at their disposal more carefully (Lerner & Tetlock, 1999). They thus may identify loss aversion as a bias and try to move away from it. This points in the direction that loss aversion—while being the strongest component of risk-aversion (Köbberling & Wakker, 2005)—also appears to be the least stable (List, 2004). The increased accountability felt by subjects in groups may also go some way towards explaining why teams have been found to suffer less from myopic loss aversion than individuals (Sutter, 2007). Creating the expectation of having to discuss one's choices seems thus to have

similar effects as introducing the possibility to communicate *ex ante* (Sutter, 2009)

Subjects seem much less aware of the other components determining their risk attitudes, probability-weighting and utility-curvature, as shown by the insignificant effects of accountability in the gain and loss domains, as well as the insignificant interaction between accountability and stake levels. Pahlke, Strasser, & Vieider (2011) found that the fourfold pattern of risk-attitudes typical of individual decisions was even accentuated under responsibility. There thus seems to be superior awareness of loss aversion relative to other determinants of risk attitude.

Our results lead us to speculate on the design of agency relationships. Whenever decision biases such as loss aversion threaten to affect investment decisions adversely, it may help to make investors accountable towards their principals. While such accountability does generally exist in the real world, it seems important to specifically provide the opportunity to agents to explain the reasons behind their choices. Eriksen & Kvaløy (2010) found reduced myopic loss aversion relative to an individual baseline by salaried agents deciding on behalf of others. Introducing an additional accountability mechanism whereby agents are given the opportunity to explain their decisions may well additionally reduce or even eliminate loss aversion in such cases.

4. Conclusion

We compare risky decisions in a situation of responsibility to an identical situation in which the decision-maker may have to justify her decisions to the recipient. While decisions in the gain and loss domains are unaffected, decision-makers are less risk-averse for mixed prospects, indicating reduced levels of loss aversion under accountability. The findings indicate that accountability requirements introduced by principals may be an effective mechanism to reduce loss aversion in agents.

Appendix: Overview of Prospect Pairs

	Option A ("Safe")				Option B ("Risky")				
Nr	Prob Left	Amount Left	Prob Right	Amount Right	Prob Left	Amount Left	Prob Right	Amount Right	Category
1	1	2	0	0	0.5	4	0.5	0	Base
7	1	2.5	0	0	0.5	4	0.5	0	Sensitivity Up
6	1	1.5	0	0	0.5	4	0.5	0	Sensitivity Down
8	1	3	0	0	0.5	5	0.5	1	Positive Shift
4	0.5	3	0.5	1	0.5	4	0.5	0	Lottery Choice
3	1	0	0	0	0.5	2	0.5	-2	Mixed Prospect
5	1	2	0	0	0.5	5	0.5	-1	MPS
2	0	0	1	-2	0.5	0	0.5	-4	Loss shift
9	1	4	0	0	0.5	8	0.5	0	Base
10	1	5	0	0	0.5	8	0.5	0	Sensitivity Up
11	1	3	0	0	0.5	8	0.5	0	Sensitivity Down
12	1	6	0	0	0.5	10	0.5	2	Positive Shift
13	0.5	6	0.5	2	0.5	8	0.5	0	Lottery Choice
14	1	0	0	0	0.5	4	0.5	-4	Mixed Prospect
15	1	4	0	0	0.5	10	0.5	-2	MPS
16	0	0	1	-4	0.5	0	0.5	-8	Loss shift
17	1	6	0	0	0.5	12	0.5	0	Base
18	1	7.5	0	0	0.5	12	0.5	0	Sensitivity Up
19	1	4.5	0	0	0.5	12	0.5	0	Sensitivity Down
20	1	9	0	0	0.5	15	0.5	3	Positive Shift
21	0.5	9	0.5	3	0.5	12	0.5	0	Lottery Choice
22	1	0	0	0	0.5	6	0.5	-6	Mixed Prospect
23	1	6	0	0	0.5	15	0.5	-3	MPS
24	0	0	1	-6	0.5	0	0.5	-12	Loss shift
25	1	8	0	0	0.5	16	0.5	0	Base
26	1	10	0	0	0.5	16	0.5	0	Sensitivity Up
27	1	6	0	0	0.5	16	0.5	0	Sensitivity Down
28	1	12	0	0	0.5	20	0.5	4	Positive Shift
29	0.5	12	0.5	4	0.5	16	0.5	0	Lottery
30	1	0	0	0	0.5	8	0.5	-8	Mixed
31	1	8	0	0	0.5	20	0.5	-4	CE
32	0	0	1	-8	0.5	0	0.5	-16	Loss shift
33	1	10	0	0	0.5	20	0.5	0	Base
34	1	12.5	0	0	0.5	20	0.5	0	Sensitivity Up
35	1	7.5	0	0	0.5	20	0.5	0	Sensitivity Down
36	1	15	0	0	0.5	25	0.5	5	Positive Shift
37	0.5	15	0.5	5	0.5	20	0.5	0	Lottery Choice
38	1	0	0	0	0.5	10	0.5	-10	Mixed Prospect
39	1	10	0	0	0.5	25	0.5	-5	MPS
40	0	0	1	-10	0.5	0	0.5	-20	Loss shift

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