This article was downloaded by: [155.246.103.35] On: 05 April 2017, At: 23:12
Publisher: Institute for Operations Research and the Management Sciences (INFORMS)
INFORMS is located in Maryland, USA

Management Science

Publication details, including instructions for authors and subscription information:
http://pubsonline.informs.org

Deciding for Others Reduces Loss Aversion

Ola Andersson, Håkan J. Holm, Jean-Robert Tyran, Erik Wengström

To cite this article:
Ola Andersson, Håkan J. Holm, Jean-Robert Tyran, Erik Wengström (2016) Deciding for Others Reduces Loss Aversion. Management Science 62(1):29-36. http://dx.doi.org/10.1287/mnsc.2014.2085

Full terms and conditions of use: http://pubsonline.informs.org/page/terms-and-conditions

This article may be used only for the purposes of research, teaching, and/or private study. Commercial use or systematic downloading (by robots or other automatic processes) is prohibited without explicit Publisher approval, unless otherwise noted. For more information, contact permissions@informs.org.

The Publisher does not warrant or guarantee the article's accuracy, completeness, merchantability, fitness for a particular purpose, or non-infringement. Descriptions of, or references to, products or publications, or inclusion of an advertisement in this article, neither constitutes nor implies a guarantee, endorsement, or support of claims made of that product, publication, or service.

Copyright © 2016, INFORMS

Please scroll down for article—it is on subsequent pages

INFORMS is the largest professional society in the world for professionals in the fields of operations research, management science, and analytics.
For more information on INFORMS, its publications, membership, or meetings visit http://www.informs.org

MANAGEMENT SCIENCE
Vol. 62, No. 1, January 2016, pp. 29–36
ISSN 0025-1909 (print) | ISSN 1526-5501 (online)

http://dx.doi.org/10.1287/mnsc.2014.2085
© 2016 INFORMS

Downloaded from informs.org by [155.246.103.35] on 05 April 2017, at 23:12 . For personal use only, all rights reserved.

Deciding for Others Reduces Loss Aversion

Ola Andersson
Research Institute of Industrial Economics (IFN), SE-102 15 Stockholm, Sweden; and
Department of Economics, Lund University, SE-220 07 Lund, Sweden, ola.andersson@ifn.se

Håkan J. Holm
Department of Economics, Lund University, SE-220 07 Lund, Sweden, hj.holm@nek.lu.se

Jean-Robert Tyran
Department of Economics, University of Vienna, A-1090 Vienna, Austria; and University of Copenhagen,
DK-1165 Copenhagen, Denmark, jean-robert.tyran@univie.ac.at

Erik Wengström
Department of Economics, Lund University, SE-220 07 Lund, Sweden; and University of Copenhagen,
DK-1165 Copenhagen, Denmark, erik.wengstrom@nek.lu.se

We study risk taking on behalf of others, both when choices involve losses and when they do not. A large-scale incentivized experiment with subjects randomly drawn from the Danish population is conducted. We find that deciding for others reduces loss aversion. When choosing between risky prospects for which losses are ruled out by design, subjects make the same choices for themselves as for others. In contrast, when losses are possible, we find that the two types of choices differ. In particular, we find that subjects who make choices for themselves take less risk than those who decide for others when losses loom. This finding is consistent with an interpretation of loss aversion as a bias in decision making driven by emotions and that these emotions are reduced when making decisions for others.

Keywords: risk taking; loss aversion; experiment
History: Received September 23, 2013; accepted September 1, 2014, by Uri Gneezy, behavioral economics. Published online in *Articles in Advance* December 19, 2014.

1. Introduction

Loss aversion is the tendency to evaluate outcomes relative to a reference point and to be more sensitive to negative departures from this reference point than to positive ones. Since the seminal work by Kahneman and Tversky (1979), numerous experimental studies have demonstrated this tendency. In a recent overview of the experimental studies that estimate the magnitude of loss aversion, Booij et al. (2010) find that the estimates vary but consistently display loss aversion. Outside of the laboratory, loss aversion has been linked to a broad range of empirical findings in economics and finance, including the equity premium puzzle (Benartzi and Thaler 1995), the disposition effect (Odean 1998), the endowment effect (Kahneman et al. 1990), seller behavior on housing markets (Genesove and Mayer 2001, Stephens and Tyran 2012), and labor supply decisions (Camerer et al. 1997, Fehr and Goette 2007, Crawford and Meng 2011). Evidence from professional golf players on the PGA Tour suggests that not even the combination of experience, competition, and high stakes is sufficient to eliminate this bias (Pope and Schweitzer 2011). Overall, loss aversion is one of the most well-established departures from the canonical expected utility model, and it is commonly viewed as an irrational bias. In a survey on loss aversion, Camerer (2005, p. 132) states that "loss aversion is often an exaggerated emotional reaction of fear, an adapted response to the prospect of genuine, damaging, survival-threatening loss.... Many of the losses people fear the most are not life threatening, but there is no telling that to an emotional system that is overadapted to conveying fear signals."

In this paper, we provide evidence showing that making decisions on behalf of others reduces loss aversion. This finding suggests that managing risks for other people, which has its well-known pros and cons in various respects (e.g., related to moral hazard), may also have this very specific debiasing advantage, which to our knowledge has not been demonstrated before. To study this advantage in isolation, we report experimental evidence from situations with no monetary conflict of interest between the decision maker and the other stakeholders. We administer our experiment to a large number of subjects who were randomly drawn from the general Danish population.

We find that when choosing between risky prospects for which losses are ruled out by design,

RIGHTSLINK

Downloaded from informs.org by [155.246.103.35] on 05 April 2017, at 23:12 . For personal use only, all rights reserved.

subjects make the same choices for themselves as for others. In contrast, when losses are possible, we find that the two types of choices differ. In particular, we find that subjects who make choices for themselves are willing to take less risk when losses loom. Using structural estimation techniques, we show that this behavioral difference is not driven by a difference in risk aversion. Instead, it can be explained by a significantly lower estimate of loss aversion when decisions are made on behalf of others.

Taking a broader perspective, risk taking on behalf of others is present in many situations. Examples abound and include behavior related to management, financial investments and hiring. Indeed, in the wake of the recent financial crisis, actors in the financial sector were accused of excessive risk taking on behalf of others, which spurred a public debate. This underlines the importance of understanding risk taking on behalf of others in general. To this end, the current paper adds to a small but emerging literature on this topic.

2. Related Literature on Risky Decision Making on Behalf of Others

Given the obvious importance of studying risk taking on behalf of others, it is surprising that only a handful of experimental studies on the topic are available, and the results of these studies are mixed.[1] For example, Sutter (2009) and Chakravarty et al. (2011) find increased risk taking on behalf of others, and Reynolds et al. (2009) and Eriksen and Kvaløy (2010) find the opposite result.[2] Bolton and Ockenfels (2010) find no effect, and Pahlke et al. (2010) find increased risk taking in the positive domain and decreased risk taking in the negative domain. Montinari and Rancan (2013) find that social distance can matter for risk-taking on behalf of others and observe decreased risk taking on behalf of friends (but not on behalf of anonymous strangers). Yet, the designs of these studies differ in various respects, which makes comparisons of results difficult. For instance, Eriksen and Kvaløy (2010), Sutter (2009), and Montinari and Rancan (2013) use the investment game design introduced by Gneezy and Potters (1997), whereas Bolton and Ockenfels (2010) use binary decisions and Chakravarty et al. (2011) use a multiple price list.

Pahlke et al. (2012) is closely related to our paper in that these authors also demonstrate a debiasing effect on loss aversion, but their debiasing results from a different mechanism and the papers importantly differ in many procedural ways. They report a debiasing effect resulting from being accountable versus not being accountable for the decisions made on behalf of someone else in a lab experiment with a student subject pool.[3]

Our paper demonstrates the debiasing effect of letting others making decisions involving losses in a novel and unique way. First, our paper is the first to study the debiasing effect with a large sample drawn from the general population. We employ a "virtual lab" approach by running our experiment over the Internet with a large and heterogeneous sample of the general population. All previous studies used samples of students and it is well known that student populations may differ from each other with respect to social preferences (see, e.g., Fehr et al. 2006) and risk preferences (see, e.g., von Gaudecker et al. 2012). Second, we use a clean two-by-two factorial design that allows us to vary the relevant factors systematically. In this design, either only the decision maker is paid, one receiver is paid, both are paid or none is paid. This design enables us to obtain proper benchmarks to tease out what is driving behavior. Third, we provide a novel combination of econometric and experimental techniques. To the best of our knowledge, we are the first to fit a structural model of choice to a large experimental data set from a mixed domain (involving risky choices with both gains and losses).[4] This approach enables us to jointly estimate parameters for risk aversion and loss aversion and thereby distinguish treatment effects on risk aversion from effects on loss aversion.

3. A Virtual Lab Approach

By applying a virtual lab approach, we are able to reach a heterogeneous subject pool while maintaining a high level of experimental control. We use the Internet Laboratory for Experimental Economics (iLEE)

[1] We consider investigations concerning situations where there is a strong monetary conflict of interest between the decision maker and the other stakeholders (see, for instance, Agranov et al. 2014, Andersson et al. 2013a, Lefebvre and Vieider 2014) as peripheral to the present study. There is also a small emerging literature on decision making on behalf of others that is not primarily dealing with risk taking. Kvaløy and Luzuriaga (2013), for example, let subjects play the trust game on behalf of others.

[2] Increased risk taking on behalf of others is consistent with Daruvala's (2007) result that people predict that others (especially if these "others" are men) will take more risk than themselves, whereas decreased risk taking is consistent with the finding by Charness and Jackson (2009) that individuals take less strategic risk on behalf of others than on their own.

[3] See also Pollmann et al. (2014) for a similar study where the decision maker is evaluated before or after uncertainty is resolved.

[4] Vieider et al. (2014) have recently also used a similar structural model to analyze data from an experiment conducted with a student sample. Their results confirm the main results presented here.

RIGHTSLINK

Downloaded from informs.org by [155.246.103.35] on 05 April 2017, at 23:12 . For personal use only, all rights reserved.

platform developed at the University of Copenhagen.[5] The platform follows the routines and procedures of standard laboratory experiments (no deception, incentivized choices, randomization, detailed instructions etc.). The main difference to a laboratory experiment is the fact that participants make their choices remotely, e.g., at home, in front of their computer. One could argue that this constitutes a more natural environment than the typical experimental laboratory, since today, many economic decisions and transactions, such as e-banking and online shopping, are made in this environment. However, when it comes to the elicitation of risk preferences, earlier research indicates that estimation results do not depend on whether preferences are elicited using standard laboratory experiments or via Internet experiments.[6]

3.1. Recruitment and Subject Pool

Subjects were recruited in collaboration with Statistics Denmark (the statistics agency of Denmark). In 2008, Statistics Denmark drew a random sample of 22,027 individuals from the Danish population (aged 18–80) and subsequently sent out hardy copy invitation letters to the selected individuals via regular mail. The letters explained that all receivers were randomly selected from the Danish population, that the earnings from the experiment will be paid out via a bank transfer, and that choices are fully anonymous. The recipients were asked to log on to the iLEE webpage using a personal identification code. Anonymity was maintained through the personal identification code, which only Statistics Denmark could decode. Once logged on to the iLEE webpage, the subjects got detailed instructions about the experiment. In addition, they also had access to email and telephone support.[7]

Of the invited individuals, 2,291 participated and completed a first wave of experiments. These participants have subsequently been reinvited three times over the years 2008–2011 (approximately one year apart) to take part in new waves of experiments. Each wave of the panel consists of several modules which can be an incentivized and interactive experiment, a preference elicitation task (as in our case) or a non-incentivized questionnaire. In general, the modules within a wave are constructed to be independent of each other (for a detailed description of the modules contained in each wave, see http://www.econ.ku.dk/cee/ilee). Our primary data in this paper come from the third wave of experiments, although we will also use measures and socioeconomic information provided in the first wave. In total, 740 individuals completed our risk task as decision makers.[8]

3.2. The Experimental Design

The subjects choose between risky lotteries in a version of the well-established multiple price list (MPL) format. Each subject makes choices in four MPLs that differ by whether they include the possibility of incurring losses. Half of the choices involve losses (Loss), and half of the choices exclude losses by design (NoLoss). We implement the following treatment conditions with and without losses:

1. *Individual*: Individual decision with payment to the decision maker.
2. *Hypothetical*: Individual decision without payment.
3. *Both*: Both the decision maker and the receiver are paid.
4. *Other*: Only the receiver is paid.

Each subject was randomly allocated to one of the four treatments, and in Both and Other they were randomly assigned to be either a decision maker or a receiver. In the latter two treatments subjects were matched with another random participant in the experiment and subjects were informed about this fact.[9] Each decision maker went through the four sets of lottery choices (each set was presented on a separate screen; see Table 1).

Screens 1 and 3 involve the possibility of losses, whereas screens 2 and 4 exclude the possibility of losses. The general structure of each MPL is the same in all four sets: each lottery screen involves 10 decisions between two gambles—the left gamble and the right gamble. Each gamble has two different outcomes presented in Danish crowns (DKK) that occur with probability one half. The left gamble is constant

[5] See http://www.econ.ku.dk/cee/iLEE/ (accessed December 9, 2014) for a detailed description of the iLEE platform. The platform has been used for studies on a broad range of topics; see Thöni et al. (2012) for an example.

[6] von Gaudecker et al. (2012) estimate risk preferences both for a student sample in the lab and the general population using the Internet-based CentERpanel (a platform similar to iLEE). They find that the general population is on average more risk averse and displays much more heterogeneity than the student population. However, these results are driven by socio-economic differences between samples rather than the mode of experimental implementation (i.e., lab versus Internet).

[7] The participants could log out at any time and then log in again to continue where they had left off.

[8] Table A1 in §A of the online appendix (available as supplemental material at http://dx.doi.org/10.1287/mnsc.2014.2085) compares our two samples with the Danish population with respect to age, gender and education. Our samples are representative with respect to age and gender, but we have an overrepresentation of highly educated people compared to the Danish population.

[9] On the first screen, all subjects read the instructions describing the decision situation. Further down the screen, they were informed that a random draw was to determine whether they would make the decisions or be assigned the role as the passive receiver. On the following screen, the role was revealed and those assigned to be decision makers continued to the decision screens and the other were routed to another module of the experiment.

RIGHTSLINK

Downloaded from informs.org by [155.246.103.35] on 05 April 2017, at 23:12 . For personal use only, all rights reserved.

Table 1 **Payoff Configurations (DKK)**

	Screen 1 (Loss)				Screen 2 (NoLoss)				Screen 3 (Loss)				Screen 4 (NoLoss)			
	Left gamble		Right gamble		Left gamble		Right gamble		Left gamble		Right gamble		Left gamble		Right gamble	
	Heads	Tails	Heads	Tails	Heads	Tails	Heads	Tails	Heads	Tails	Heads	Tails	Heads	Tails	Heads	Tails
Decision 1	11	65	−25	65	49	70	12	70	−9	40	−51	40	72	86	20	80
Decision 2	11	65	−25	90	49	70	12	90	−9	40	−51	80	72	86	20	100
Decision 3	11	65	−25	100	49	70	12	110	−9	40	−51	90	72	86	20	120
Decision 4	11	65	−25	110	49	70	12	120	−9	40	−51	100	72	86	20	130
Decision 5	11	65	−25	120	49	70	12	130	−9	40	−51	115	72	86	20	150
Decision 6	11	65	−25	135	49	70	12	140	−9	40	−51	135	72	86	20	160
Decision 7	11	65	−25	150	49	70	12	150	−9	40	−51	160	72	86	20	180
Decision 8	11	65	−25	175	49	70	12	175	−9	40	−51	190	72	86	20	200
Decision 9	11	65	−25	220	49	70	12	220	−9	40	−51	220	72	86	20	230
Decision 10	11	65	−25	370	49	70	12	350	−9	40	−51	280	72	86	20	290

whereas the payoffs of the favorable outcome (tails) in the right gamble are increasing.

The order of screens was randomized and subjects received no information about the outcome of the lottery until all decisions were made. After the experiment, one decision problem was randomly selected to be played out and participants were paid according to the outcome of that gamble. See §D of the online appendix for further details about the experiment including a sample of screenshots.

The choice to keep the probability fixed at $p = 0.5$ and vary only the payoffs at each screen has several advantages (similar procedures have been used by. e.g., Binswanger 1980. Tanaka et al. 2010). Using 50–50 gambles makes the procedure easy to understand. This is especially important in our study, since we targeted a very heterogeneous population. We believe that even though people may have problems interpreting probabilities, the situation in which two outcomes have the same chance of occurring is quite straightforward also for our subjects. This approach appears to get support from Dave et al. (2010) who find that people with a low level of numeracy may have problems to understand MPL formats with varying probabilities. Keeping probabilities fixed, we disregard some of the potential effects from probability weighting (Quiggin 1982, Fehr-Duda and Epper 2012).

Our treatments are motivated by our interest in understanding how the risk exposure of a passive receiver affects the decision maker's behavior. Indeed, comparing Other with Individual is the main objective for this study, but simply comparing the outcomes in the two treatments would not reveal the causes of behavioral differences. The reason is that going from one treatment to the other involves changing two aspects. In particular, going from Individual to Other means to remove incentives for the decision maker *and* to introduce payoff consequences for the receiver at the same time. We therefore ran Hypothetical and Both as control treatments. By comparing Hypothetical and Other, we can test how the risk exposure of the passive receiver affects behavior when the decision maker has no individual incentives. Comparing Individual and Both addresses the effect of the risk exposure of the passive receiver while keeping the decisions maker's individual incentives constant. Our systematic approach in our two-by-two design involves "ceteris paribus" changes which allows us to properly identify causal effects.

4. Results

In this section, we analyze the data in two steps. First, we compare summary measures of risky choices across treatments. Second, we report estimates from a structural model of choice that allows us to distinguish between treatment effects on risk aversion and loss aversion.

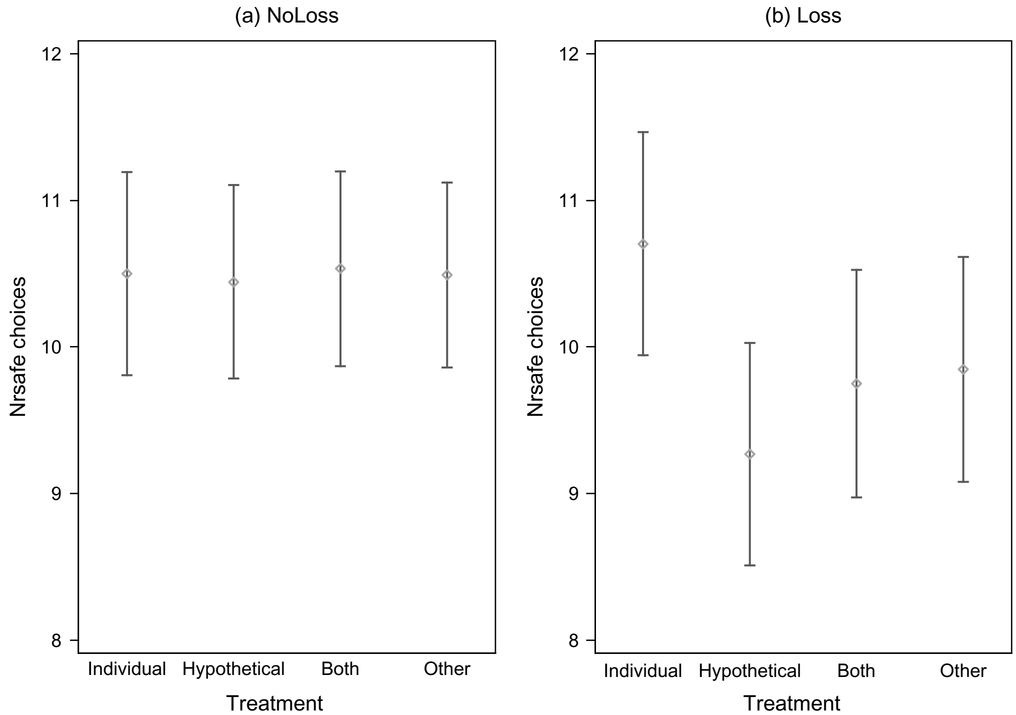
4.1. Descriptive Statistics

In total, 740 subjects completed the experiment between July 14 and September 19, 2010. We exclude subjects whose decision times were among the fastest 10% of the sample because they are likely to have rushed through the screens without paying sufficient attention to the content.[10] The remaining 668 decision makers are evenly spread across the four treatments (Individual: 166; Hypothetical: 155; Both: 176; Other: 171). The average time for the full sample to complete the four screens was slightly above 5 minutes. Ninety percent of the participants finished within 8 minutes or less. It took participants in Both and Others around 25–40 seconds longer to complete than participants of the Individual and Hypothetical treatments, most likely due to the increased complexity of the situation and longer instructions. Total average earnings in the whole wave were DKK 297 (USD 49.2), and the average earnings in the experiment discussed here were DKK 45 (USD 7.5), which includes the one-third of

[10] However, our results are qualitatively robust to including the fastest 10% of the sample. See §C of the online appendix for details.

Downloaded from informs.org by [155.246.103.35] on 05 April 2017, at 23:12 . For personal use only, all rights reserved.

Figure 1 **Average Nrsafe by Treatment with 95% Confidence Intervals**



subjects that did not get paid since they were decision makers in Hypothetical or Other.[11]

We begin to analyze the data by studying how many times subjects chose the safe lottery (Nrsafe), i.e., the left lottery. Figure 1(a) shows the average Nrsafe in the two MPL without losses (NoLoss) and Figure 1(b) the average Nrsafe in the two MPL where losses can occur (Loss) by treatment, along with the 95% confidence intervals.

Figure 1(a) shows that the treatment variation had only a small, if any, effect on risk taking when the decision situation involves only gambles without losses. That is, decision makers make the same choices irrespective of whether these choices only affect their own payoffs or only someone else's payoff when losses are not an option. This impression is confirmed by Mann–Whitney tests, which are insignificant in all comparisons in NoLoss. (See §B of the online appendix for test details.)

Figure 1(b) shows substantial variation between treatments when losses are possible.[12] Indeed, compared to Individual, all other treatments display more risk-taking behavior. The most stark difference is between Individual and Hypothetical (Mann–Whitney test: p-value $= 0.008$).[13]

There is also a difference between Both and Individual (Mann–Whitney test: p-value $= 0.071$). The difference between Individual and Other is not statistically significant with a p-value just above the 10% level (Mann–Whitney test: p-value $= 0.107$). We also run the same set of tests after removing all subjects that were inconsistent in the sense of switching back and forth on a screen.[14] Again, there is no statistically significant difference between treatments on the screens without losses (Mann–Whitney tests, all p-values > 0.29) and less risk taking in the Individual treatment when gambles do involve losses (Mann–Whitney tests: Individual versus Hypothetical, p-value $= 0.007$; Individual versus Both, p-value $= 0.099$; Individual versus Other, p-value $= 0.074$). In summary, when losses are possible, subjects seem to take more risk with other peoples' money.

We now show that structural estimation supports our conclusions from the nonparametric tests. In particular, we show that the treatment effects can be

[11] At the time of the experiment, DKK 1 was traded for USD 0.166.

[12] Note that it is not meaningful to compare the average number of safe choices between the NoLoss and Loss screens since the gambles differ between these screens. For instance, the fact that the average numbers of safe choices for the individual treatment are almost identical across the two panels in Figure 1 does not imply that there is no loss aversion.

[13] All Mann–Whitney tests in this paper are two-sided.

[14] We here follow the argument of Charness et al. (2013, p. 50), who state that "If inconsistent choice data is treated as noise and dropped, it can be said with some confidence that the individuals who are left understood the instructions and are revealing their true preferences."

RIGHTSLINK

Downloaded from informs.org by [155.246.103.35] on 05 April 2017, at 23:12 . For personal use only, all rights reserved.

Table 2 **Structural Estimation**

	Hypothetical	Both	Other
Risk aversion	−0.027	0.035	0.028
Loss aversion	−0.379**	−0.383***	−0.424***

Notes. The numbers are the coefficients of the treatment dummies for the risk-aversion and loss-aversion parameters. The estimations include controls for gender, age, education, cognitive ability and cognitive reflection. The Individual treatment is the baseline (left out) category. See §C of the online appendix for more details and complete estimation results.

** $p < 0.05$; *** $p < 0.01$.

explained by differences in loss aversion across treatments. To do this, we estimate a standard constant relative risk-aversion (CRRA) utility function and allow for a kink at zero to capture loss aversion. (See §C of the online appendix for a detailed description of the estimation procedure and the results.) We estimate separate treatment effects on the parameters of risk aversion and loss aversion.

Table 2 presents a short summary of the estimated coefficients. The fact that the coefficients of the treatment dummies are significant for loss aversion but not for risk aversion clearly shows that the main effects operate through loss aversion. The treatment coefficients for Hypothetical, Both, and Other are all negative, indicating lower loss aversion in all of these conditions compared to our baseline (i.e., the Individual treatment). In the structural estimations, we also control for gender, age, education, cognitive ability and cognitive reflection since these have been found to be important determinants of risky behavior in previous studies (e.g., Dohmen et al. 2010, Andersson et al. 2013b). Our findings confirm previous studies showing that females are more risk and loss averse (see Charness and Gneezy 2012 for evidence on risk aversion and von Gaudecker et al. 2011 for loss aversion). Croson and Gneezy (2009) argue that the gender difference is driven by different emotional reactions to risk between men and women. In §C of the online appendix, we show that our estimation results are robust to a set of alternative specifications and sample restrictions.

The benefit of having someone else making a choice on your behalf is quite sizeable. To exemplify, consider decision 6 on screen 1, which is a decision that involves the possibility of loss and an intermediate level of risk. A subject with average risk- and loss-aversion parameters in the Individual treatment will choose the left gamble while the average subject in the Other treatment will chose the right gamble. The expected payoff of the right gamble is DKK 55 compared with DKK 38 for the left gamble. Hence, in this case, having someone else making the decision on your behalf would increase the expected payoffs by 45%. This increase in expected payoffs translates into an 8% increase in terms of certainty equivalents (assuming the average preferences parameters of the Other treatment). See §C of the online appendix for details.

4.2. Discussion

The decrease in loss aversion reported above is potentially due to two quite different mechanisms, and our design allows us to discuss their relative relevance. First, the lower degree of loss aversion in Hypothetical may simply indicate that subjects are less careful when their decisions have no monetary consequences. The observation that there is a gap between hypothetical and incentivized choices in risky decision making is not new (see, e.g., Battalio et al. 1990, Holt and Laury 2002), but there is little previous evidence from choices in the mixed domain and we find no evidence regarding loss aversion. The lack of individual incentives for the decision maker could potentially also explain the decrease in loss aversion in Other. This would then suggest that subjects treat others' money just like "hypothetical money," and the fact that the social distance in this experiment is large may add to this effect. However, hypothetical payoffs cannot explain the decrease in the Both treatment because the subject's own money is also at stake in this condition. Hence, there must be an additional mechanism.

A plausible explanation is that, in contrast to risk aversion, loss aversion is not so much a manifestation of a "deep" preference but rather a type of emotional bias and being responsible for someone else's payoff may mitigate such emotional biases.[15] The idea that decision making under risk is affected by immediate emotional reactions in addition to cognitive processes, such as the anticipation of future utility, has been highlighted by Loewenstein et al. (2001). These authors present a risk-as-feeling hypothesis, and stress that emotional and cognitive processes may be in conflict. In a similar vein, the more general dual-process models (Kahneman 2003, Loewenstein and O'Donoghue 2004, Rustichini 2008) also view decision making as an interplay of emotional (affective/hot) and cognitive (deliberative/cold) processes. Ashraf et al. (2005) consider loss aversion to be driven more by emotional than deliberate decision making and recent neuroeconomic evidence supports this interpretation. In two studies of loss aversion, using lottery choices, subjects in a treatment group are asked to "think like a trader" (Sokol-Hessner et al. 2009, 2013). These participants displayed significantly lower degree of loss aversion than those in a control group that were not instructed to think like a trader. By using skin conductance as a measure of

[15] A similar debiasing effect regarding myopia by taking decisions on behalf of others is reported by Eriksen and Kvaløy (2010).

RIGHTSLINK

Downloaded from informs.org by [155.246.103.35] on 05 April 2017, at 23:12 . For personal use only, all rights reserved.

emotional response, Sokol-Hessner et al. (2009) relate the moderation of loss aversion to a decrease in emotional activity connected to negative outcomes. Sokol-Hessner et al. (2013) go on to show, using functional magnetic resonance imaging (fMRI), that the moderation of loss aversion is correlated with a decrease in amygdala activity, which is known to be crucial for emotional information processing. We conjecture that the same mechanism is at work in our experiment. In particular, in our Both and Other treatments we (implicitly) ask decision makers to take a different perspective by letting them make decisions on behalf of others, and it is likely that this induces the same dampening of activity in the amygdala. Further support for this interpretation comes from Albrecht et al. (2011), who present fMRI evidence from intertemporal decision making. The results indicate that decision makers show less emotional engagement when decisions are made on behalf of others.

5. Conclusion

This paper investigates experimentally how people take risks on behalf of others, which is an issue in a broad range of economic and financial decisions. The experimental method is well suited for addressing this question since it allows for controlled variation in incentives while holding constant the multitude of contextual factors that surround these decisions outside the lab.

When decisions are concerned with situations in which losses are excluded by design, subjects choose about the same risk exposure when they decide for themselves, for some other person or for themselves together with another person.[16] When losses are possible, we find that decision makers are less loss averse when they also decide for someone else. These findings are consistent with the interpretation of loss aversion as a bias rather than a reflection of a deep preference; decision making on behalf of others reduces this bias and brings decisions closer in line with rationality. The mechanism behind this effect may be that people make more "dispassionate" choices when they put themselves into the shoes of others. This interpretation is in line with recent findings in neuroeconomics (e.g., Sokol-Hessner et al. 2009, 2013).

Loss aversion is a costly bias because the loss averse shy away from profitable investments. The reason is that losses loom large in people's minds when making choices on their own. But when making choices on behalf of others, losses are less salient and people therefore make more rational choices. Our results thus suggest an upside for delegating choices in a situation when moral hazard by the decision maker is not an issue: deciding for others reduces loss aversion.

[16] The absence of conflicts of interests seems to be crucial for the moral imperative to be effective. Andersson et al. (2013a) investigate behavior when the decision maker is facing hedged payoff schemes or has to compete for reimbursement. Under those circumstances, they find evidence for increased risk taking on behalf of others also in gambles with positive outcomes.

Supplemental Material

Supplemental material to this paper is available at http://dx.doi.org/10.1287/mnsc.2014.2085.

Acknowledgments

The authors are grateful to Ulrik H. Nielsen for effective research assistance and to the Carlsberg Foundation for generous financial support. The Swedish authors thank the Swedish Competition Authority for funding. Earlier versions of the paper have been presented at the 5th Nordic Behavioral and Experimental Economics Conference (in Helsinki, 2010), the 6th Nordic Behavioral and Experimental Economics Conference (in Lund, 2011), the Copenhagen Network of Experimental Economics Workshop in Copenhagen, European Economic Association Meeting in Gothenburg, the University of Innsbruck, the University of Oslo, the Research Institute of Industrial Economics, and the Royal Institute of Technology in Stockholm. The authors are grateful for comments by session participants on these occasions.

References

Agranov M, Bisin A, Schotter A (2014) An experimental study of the impact of competition for other people's money: The portfolio manager market. *Experiment. Econom.* 17(4):564–585.

Albrecht K, Volz KG, Sutter M, Laibson DI, von Cramon DY (2011) What is for me is not for you: Brain correlates of intertemporal choice for self and other. *Soc. Cognitive Affective Neuroscience* 6(2):218–225.

Andersson O, Holm HJ, Tyran J-R, Wengström E (2013a) Risking other people's money: Experimental evidence on bonus schemes, competition, and altruism. Working Paper 989, Research Institute of Industrial Economics, Stockholm.

Andersson O, Tyran J-R, Wengström E, Holm HJ (2013b) Risk aversion relates to cognitive ability: Fact or fiction? Working Paper Series 964, Research Institute of Industrial Economics (IFN), Stockholm.

Ashraf N, Camerer CF, Loewenstein G (2005) Adam Smith, behavioral economist. *J. Econom. Perspect.* 19(3):131–145.

Battalio RC, Kagel JC, Jiranyakul K (1990) Testing between alternative models of choice under uncertainty: Some initial results. *J. Risk Uncertainty* 3(1):25–50.

Benartzi S, Thaler RH (1995) Myopic loss aversion and the equity premium puzzle. *Quart. J. Econom.* 110(1):73–92.

Binswanger HP (1980) Attitudes toward risk: Experimental measurement in rural India. *Amer. J. Agricultural Econom.* 62(3): 395–407.

Bolton G, Ockenfels A (2010) Betrayal aversion: Evidence from Brazil, China, Oman, Switzerland, Turkey, and the United States: Comment. *Amer. Econom. Rev.* 100(1):628–633.

Booij A, van Praag BMS, van de Kuilen G (2010) A parametric analysis of prospect theory's functionals for the general population. *Theory Decision* 68(12):115–148.

Camerer CF (2005) Three cheers–psychological, theoretical, empirical–for loss aversion. *J. Marketing Res.* 42(2):129–133.

Camerer CF, Babcock L, Loewenstein G, Thaler R (1997) Labor supply of New York city cabdrivers: One day at a time. *Quart. J. Econom.* 112(2):407–441.

RIGHTSLINK

Chakravarty S, Harrison G, Haruvy EE, Rutström E (2011) Are you risk averse over other peoples' money? *Southern Econom. J.* 77(4):901–913.

Charness G, Gneezy U (2012) Strong evidence for gender differences in risk taking. *J. Econom. Behav. Organ.* 83(1):50–58.

Charness G, Jackson MO (2009) The role of social responsibility in strategic risk-taking. *J. Econom. Behav. Organ.* 69(3):241–247.

Charness G, Gneezy U, Imas A (2013) Experimental methods: Eliciting risk preferences. *J. Econom. Behav. Organ.* 87:43–51.

Crawford VP, Meng J (2011) New York city cab drivers' labor supply revisited: Reference-dependent preferences with rational-expectations targets for hours and income. *Amer. Econom. Rev.* 101(5):1912–1932.

Croson R, Gneezy U (2009) Gender differences in preferences. *J. Econom. Literature* 47(2):448–474.

Daruvala D (2007) Gender, risk and stereotypes. *J. Risk Uncertainty* 35(3):265–283.

Dave C, Eckel C, Johnson C, Rojas C (2010) Eliciting risk preferences: When is simple better? *J. Risk Uncertainty* 41(3):219–243.

Dohmen T, Falk A, Huffman D, Sunde U (2010) Are risk aversion and impatience related to cognitive ability? *Amer. Econom. Rev.* 100(3):1238–1260.

Eriksen KW, Kvaløy O (2010) Myopic investment management. *Rev. Finance* 14(3):521–542.

Fehr E, Goette L (2007) Do workers work more if wages are high? Evidence from a randomized field experiment. *Amer. Econom. Rev.* 97(1):298–317.

Fehr E, Naef M, Schmidt K (2006) Inequality aversion, efficiency, and maximin preferences in simple distribution experiments: Comment. *Amer. Econom. Rev.* 96(5):1912–1917.

Fehr-Duda H, Epper T (2012) Probability and risk: Foundations and economic implications of probability-dependent risk preferences. *Annual Rev. Econom.* 4(1):567–593.

Genesove D, Mayer C (2001) Loss aversion and seller behavior: Evidence from the housing market. *Quart. J. Econom.* 116(4): 1233–1260.

Gneezy U, Potters J (1997) An experiment on risk taking and evaluation periods. *Quart. J. Econom.* 112(2):631–645.

Holt CA, Laury SK (2002) Risk aversion and incentive effects. *Amer. Econom. Rev.* 92(5):1644–55.

Kahneman D (2003) A perspective on judgment and choice: Mapping bounded rationality. *Amer. Psychologist* 58(9):697–720.

Kahneman D, Tversky A (1979) Prospect theory: An analysis of decision under risk. *Econometrica* 47(2):263–291.

Kahneman D, Knetsch JL, Thaler RH (1990) Experimental tests of the endowment effect and the Coase theorem. *J. Political Econom.* 98(6):1325–1348.

Kvaløy O, Luzuriaga M (2013) Playing the trust game with other people's money. *Experiment. Econom.* 13(1):1–16.

Lefebvre M, Vieider F (2014) Risk taking of executives under different incentive contracts: Experimental evidence. *J. Econom. Behav. Organ.* 97:27–36.

Loewenstein G, O'Donoghue T (2004) Animal spirits: Affective and deliberative processes in economic behavior. Mimeo, Carnegie Mellon University, Pittsburgh.

Loewenstein G, Weber E, Hsee C, Welch N (2001) Risk as feelings. *Psych. Bull.* 127(2):267–286.

Montinari N, Rancan M (2013) Social preferences under risk: The role of social distance. Jena Economic Research Paper 2013-050, Max Planck Institute of Economics, Jena, Germany.

Odean T (1998) Are investors reluctant to realize their losses? *J. Finance* 53(5):1775–1798.

Pahlke J, Strasser S, Vieider F (2010) Responsibility effects in decision making under risk. Munich Discussion Paper 2010-37, Department of Economics, University of Munich, Munich, Germany.

Pahlke J, Strasser S, Vieider F (2012) Risk-taking for others under accountability. *Econom. Lett.* 114(1):102–105.

Pollmann MMH, Potters J, Trautmann ST (2014) Risk taking by agents: The role of ex-ante and ex-post accountability. *Econom. Lett.* 123(3):387–390.

Pope DG, Schweitzer ME (2011) Is Tiger Woods loss averse? Persistent bias in the face of experience, competition, and high stakes. *Amer. Econom. Rev.* 101(1):129–157.

Quiggin J (1982) A theory of anticipated utility. *J. Econom. Behav. Organ.* 3(4):323–343.

Reynolds DB, Joseph J, Sherwood R (2009) Risky shift versus cautious shift: Determining differences in risk taking between private and public management decision-making. *J. Bus. Econom. Res.* 7(1):63–78.

Rustichini A (2008) Dual or unitary system? Two alternative models of decision making. *Cognitive, Affective, and Behavioral Neuroscience* 8(4):355–362.

Sokol-Hessner P, Camerer CF, Phelps EA (2013) Emotion regulation reduces loss aversion and decreases Amygdala responses to losses. *Soc. Cognitive Affective Neuroscience* 8(3):341–350.

Sokol-Hessner P, Hsu M, Curley NG, Delgado MR, Camerer CF, Phelps EA (2009) Thinking like a trader selectively reduces individuals' loss aversion. *Proc. Natl. Acad. Sci. USA* 106(13): 5035–5040.

Stephens TA, Tyran J-R (2012) "At least I didn't lose money." Nominal loss aversion shapes evaluations of housing transactions. Discussion Paper 12-14, Department of Economics, University of Copenhagen, Copenhagen, Denmark.

Sutter M (2009) Individual behavior and group membership: Comment. *Amer. Econom. Rev.* 99(5):2247–2257.

Tanaka T, Camerer CF, Nguyen Q (2010) Risk and time preferences: Linking experimental and household survey data from Vietnam. *Amer. Econom. Rev.* 100(1):557–571.

Thöni C, Tyran J-R, Wengström E (2012) Microfoundations of social capital. *J. Public Econom.* 96(7–8):635–643.

Vieider F, Villegas-Palacio C, Martinsson P, Mejia M (2014) Risk taking for oneself and others: A structural model approach. Working paper, WZB Berlin Social Science Center, Berlin.

von Gaudecker H-M, van Soest A, Wengström E (2011) Heterogeneity in risky choice behavior in a broad population. *Amer. Econom. Rev.* 101(2):664–694.

von Gaudecker H-M, van Soest A, Wengström E (2012) Experts in experiments: How selection matters for estimated distributions of risk preferences. *J. Risk Uncertainty* 45(2):159–190.

Downloaded from informs.org by [155.246.103.35] on 05 April 2017, at 23:12 . For personal use only, all rights reserved.