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# RISK TAKING AND SOCIAL COMPARISON - A COMMENT ON "BETRAYAL AVERSION: EVIDENCE FROM BRAZIL, CHINA, OMAN, SWITZERLAND, TURKEY, AND THE UNITED STATES"

**GARY E BOLTON**
**AXEL OCKENFELS**

Department of Economics
University of Cologne
Albertus-Magnus-Platz
D-50923 Köln
Germany

http://www.wiso.uni-koeln.de

# Risk Taking and Social Comparison

## A Comment on "Betrayal Aversion: Evidence from Brazil, China, Oman, Switzerland, Turkey, and the United States"

Gary E Bolton & Axel Ockenfels*

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### *I. Introduction*

There is a growing literature showing that social context and social comparison can significantly affect consumption patterns, labor supply, savings, bargaining, cooperation, competition and other kinds of economic behavior.[1] Surprisingly few contributions, however, investigate risk taking in a social context. One recent and notable exception is Bohnet et al. (2008), who investigated laboratory trust and dictator games in six countries and find that people are less willing to take a risk when the source of the risk is another person rather than nature (see our concluding section and Bohnet et al. for other relevant literature). Yet, in their data, social comparison does not seem to affect risk taking. When comparing an individual decision problem with a risky dictator game, extending the risk to a recipient should have decreased risk taking if choosers are motivated by inequality aversion, or increased risk taking if they are motivated by altruism or efficiency motives – but there is no difference. Bohnet et al. (2008) speculate that the different social motives might have cancelled out, or that such social concerns are not so important in their environment.

In this note, we provide evidence that social comparison significantly affects risk taking in simple and very elementary binary decision problems with social context,

* Bolton: 334 Business Building, Smeal College of Business, Penn State University, University Park, PA 16802, USA; gbolton@psu.edu. Ockenfels: University of Cologne, Department of Economics, Albertus Magnus Platz, D-50923 Köln, Germany; ockenfels@uni-koeln.de. Bolton gratefully acknowledges the support of the National Science Foundation. Ockenfels gratefully acknowledges financial support from the Deutsche Forschungsgemeinschaft.

[1] See for example, Duesenberry (1949), Frank (1985), Easterlin (1995), Luttmer (2005), Neumark and Postlewaite (1998) for field evidence, and Kagel and Roth (1995), Fehr and Schmidt (1999), Bolton and Ockenfels (2000), and Camerer (2003) for complementary experimental evidence and behavioral economics modeling of social comparison models.

complementing Bohnet et al.'s results in various ways. More specifically, we find that decision makers generally tend to be more risk-averse when the risk is not only born individually but extended to others. However, when the safe option implies inequality, especially unfavorable inequality, the risky option becomes significantly more attractive. On the other hand, similar to what has been observed by Bohnet et al., the inequality resulting from the risky choice does not affect risk taking. After having described our design and findings in the next section, we discuss the patterns in the concluding section.

| Choice | | Options | | | | | | Data (#Risky out of 26 obs.) |
|---|---|---|---|---|---|---|---|---|
| | | Safe | | Risky 50% | | 50% | | |
| | | *cho* | *rec* | *cho* | *rec* | *cho* | *rec* | |
| A | 1 | 7 | - | 16 | - | 0 | - | 18 |
| | 2 | 7 | 7 | 16 | 16 | 0 | 0 | 15 |
| | 3 | 7 | 16 | 16 | 16 | 0 | 0 | 19 |
| | 4 | 7 | 0 | 16 | 16 | 0 | 0 | 15 |
| | 5 | 7 | 7 | 16 | 0 | 0 | 16 | 13 |
| | 6 | 7 | 16 | 16 | 0 | 0 | 16 | 20 |
| | 7 | 7 | 0 | 16 | 0 | 0 | 16 | 16 |
| B | 1 | 9 | - | 16 | - | 0 | - | 11 |
| | 2 | 9 | 9 | 16 | 16 | 0 | 0 | 9 |
| | 3 | 9 | 16 | 16 | 16 | 0 | 0 | 14 |
| | 4 | 9 | 0 | 16 | 16 | 0 | 0 | 10 |
| | 5 | 9 | 9 | 16 | 0 | 0 | 16 | 7 |
| | 6 | 9 | 16 | 16 | 0 | 0 | 16 | 9 |
| | 7 | 9 | 0 | 16 | 0 | 0 | 16 | 11 |

Table 1. Payoffs for each choice problem, and data

## *II. Experimental design and findings*

*Design.* Like Bohnet et al. (2008) we choose binary decision tasks between and risky and a safe option, and we (partly) compare 'parallel' decision tasks in individual and dictator-game like experiments. Unlike Bohnet et al., we do not employ the strategy method, we keep the source of the risk (nature) and all other parameters of the risky option constant and, for this class of games, we systematically investigate a larger range of binary choices. Specifically, Table 1 lists all 14 binary choice problems in our study. Each choice is between a safe and a risky option and made by the *chooser* ("*cho*" in the table). With the

exception of two tasks (A/B1), all choices are made in a social context in the sense that they also affect the payoff of an anonymous *recipient* ("*rec*" in the table).

The tasks can be separated into Block A, where each safe option yielded a payoff of 7€ for the chooser, and into Block B, where the safe option yielded 9€ for the chooser. There are no other differences between blocks. In particular, the risky option in all cases yielded a 50% chance of receiving 16€ and otherwise zero for both chooser and recipient. Thus, a risk-neutral payoff-maximizier, who does not care about social context, would always choose the risky option for all problems in Block A and the safe option for all problems in Block B.

The choices within each block differ with respect to social comparison. Compared to A/B1, in A/B2 the chooser's risk is extended to the recipient, who receives the same payoff as the chooser regardless of the chooser's decision and the outcome of the chance move. The next tasks imply an unfair safe outcome, which is either favorable (A/B3) or unfavorable (A/B4) to the chooser, while keeping the risky option unchanged. The last two problems in each block replicate the two preceding social context problems with the exception that the risky outcomes are all very unequal (payoffs are perfectly negatively correlated).

*Experiment.* We conducted two classroom sessions with undergraduates in business administration and economics at the University of Cologne with in total 663 subjects, 364 choosers and 299 recipients. Each subject participated in only one decision problem, in only one role (no strategy method), with no repetition. All pairing of choosers and recipients was random and anonymous, and all outcomes were paid anonymously, without any signature or other identification of subjects needed (see also instructions in the Appendix). This procedure yielded 26 independent observations for each of the 14 binary choice problems.[2]

*Results.* The last column in Table 1 shows the number of choosers who take the risky option in the corresponding task. Given Bohnet et al.'s (2008) observation, we start out

[2] In the end, we had 13 recipients less than we needed. These recipients were randomly matched with choosers from other encounters and were paid accordingly.

with the null hypothesis that, keeping the source of the risk constant, social preferences do not matter for risk taking. The following three findings summarize our main observations.

**Finding 1 [Individual versus collective risk].** Risk taking is (partly) affected by extending the risk to another subject.

We use a sign test to investigate whether risk taking is affected by adding social context. There are 12 comparisons (A/B1 against A/B2-7), of which 8 show lower rates of risk taking in a social context, 3 higher rates and one is a tie; sign test two-tailed p-value = 0.227. However, all of the higher rates come from comparisons where the safe option implies unfavorable inequality for the choosers – an observation we will come back to in the next paragraph. Removing these four treatments (A/B3 and A/B6), seven comparisons show lower rates in a social context and there is one tie; sign test two-tailed p-value = 0.016. Here, the probability of choosing risk is 56% with social risk compared to 49% without social context. In particular, observe that in all comparisons with identical safe and risky outcomes for the recipient (compare A/B1 with A/B2 and A/B5), choosers are more risk averse with social context. Thus, disregarding cases where the safe option yields unfavorable inequality, decisions tend to be more risk averse when the risk is also born by another person.

**Finding 2 [Social comparison].** For decisions with social context, there is more risk taking when the safe option implies an unfair outcome. In particular, the risky option is chosen most frequently when the safe option yields unfavorable inequality.

Holding all other parameters fixed, there are eight comparisons in each block (A/B2,5 against A/B3,4,6,7). Taken together, 14 are in line with the first part of the finding and two comparisons are a tie. The sign test two-tailed p-value is smaller than 0.001. The percentage of risky choices when the safe option yields unequal payoffs is 55% versus 42% when the safe option is fair. Regarding the second part of Finding 2, there are again eight comparisons in each block (A/B3,6 against A/B2,4,5,7). In total, 13 are in favor,

two are inconsistent, and one comparison is a tie; sign test two-tailed p-value = 0.007. The percentage of risky choices when the safe option yields unfavorable inequality is 60%, versus 46% else.

**Finding 3 [Risk correlation].** The attractiveness of the risky option does not depend on the associated degree of payoff inequality.

Keeping the safe option fixed, there are six comparisons of risky options where payoffs are either perfectly positively or perfectly negatively correlated (A/B2-5, A/B3-6, A/B4-7). Three comparisons are in favor of a negative payoff correlation, and the other three are in favor of the opposite. The average percentages of risky choices are 53% for positive correlation and 49% for negative correlation.

### *III. Discussion*

Our findings complement Bohnet et al.'s results. For one, we find that social comparison significantly affects risk taking, in a way that goes beyond what is captured by simple theories of social preferences. Finding 1 shows that the willingness to take risk is reduced when the risk is also born by others; people seem more resistant to imposing risks on others than on themselves.[3] However, this only holds as long as the safe option does not imply an unfavorable relative standing for the chooser, which makes the risky option more attractive (Finding 2). Observe that the latter result holds even though, in our environment, the unfair safe option is more efficient.

Finding 2 is in line with models of inequality aversion and, moreover, with the idea by Kahneman and Tversky (1979) that people tend to be risk-seeking when their payoffs fall below some point of reference. To our knowledge, however, no previous experiment or field study has identified the role of social comparison in risk taking in controlled

[3] Simple fairness theories such as Fehr and Schmidt (1999) and Bolton and Ockenfels (2000) would predict an irrelevance of social context in those cases where the chooser and the recipient always receive identical payoffs, and a greater attraction of the *safe* option in those cases where the risky option always yields unequal payoffs, regardless of the outcome of the chance move. Intentionality models (e.g., Rabin 2003) do not apply because we only deal with a one-person decision tasks. In standard models of risk behavior, social context is irrelevant.

environments. Bohnet et al. (2008) did not find social comparison effects (more on this next paragraph). Field and survey studies often take into account income, wealth and some other social parameters (Barsky et al. 1997, Donkers et al. 2001, Dohmen et al. 2005, Haisley et al. 2008). For instance, it has been found that lotteries are most appealing to the poor, probably because lottery tickets may be seen as a vehicle to correct for low-income status (Clotfelter and Cook 1989, Haisley et al. 2008), which appears to be in line with our results. Other studies, however, consistently found that low income or wealth levels decrease the willingness to take risks, probably because high income protects against the impact of bad outcomes (e.g., Dohmen et al. 2005). Part of the reason for such mixed results might be that the field studies typically do not (and perhaps cannot) control for the relevant peer group of the respondents for social comparison; e.g., a wealthy investment banker may be more willing to take risks if her colleagues in her peer group have closed more successful deals recently. The advantage of our experimental study is that social comparison effects can be identified by controlling the relevant peer groups (chooser and recipient).

Our Finding 3 suggests that it does not matter for the attractiveness of the risky option whether the risky outcomes are fair or unfair. This contradicts inequality aversion, but is in line with the Bohnet et al. (2008) finding that inequality, when the result of a chance move, does not affect risk taking. Together with Finding 2 (along with other evidence in the experimental social comparison literature), this suggests that a random payoff allocation changes the way unequal payoff distributions are evaluated (see also Bolton et al. 2005): an unequal outcome appears more acceptable when brought about by a chance move.

Overall, our results complement Bohnet et al.'s findings by showing that, beyond the potential social context activated through the source of risk, social comparison can significantly affect risk taking.

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*Appendix: Instructions*

**General Information**

You are participating in an experimental economics study. In case you have any queries, please raise your hand at any time and we will come to your place. Any kind of communication with other participants is strictly prohibited.

In this study you can earn money as described in these instructions. Your earnings will be paid out in the next lecture on presentation of the attached certificate showing your identification number.

Please choose *one* alternative:

**[WITHOUT SOCIAL CONTEXT]**

**Decision**

Please choose between the following two alternatives:

◯ Alternative 1: You get €8.

◯ Alternative 2: The rolling of a dice decides on your payout:

- In case of a 1, 2, or 3 (50% probability), you get €16.
- In case of a 4, 5, or 6 (50% probability), you get €0.

**[WITH SOCIAL CONTEXT]**

**Decision**

Please choose *one* alternative:

You are randomly assigned to another person in this room. One of the two persons is Participant A and the other one is Participant B. If your Identification Number begins with the letter A, you are Participant A. Otherwise, you are Participant B.

Participant A has to choose between the following two alternatives:

◯ Alternative 1: Participant A gets €7 and Participant B gets €7.

◯ Alternative 2: The rolling of a dice decides on the payoff:

- In case of a 1, 2, or 3 (50% probability), Participant A gets €16 and Participant B gets €16.
- In case of a 4, 5, or 6 (50% probability), Participant A gets €0 and Participant B gets €0.

The dice will be rolled clearly visible for everyone as soon as all participants have made their decision.

Participant B does not have to make any decision. If you are Participant B, we nevertheless ask you to check off the alternative you would have chosen if you had been Participant A.

Take your time and make sure that you fully understand these instructions. Then check off the preferred alternative. All decisions and payments are confidential. None of the other participants gets to know the amount of your payment. Moreover, none of the other participants gets to know which other participant he/she was assigned to, neither during nor after the study.