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Are teams prone to myopic loss aversion? An experimental study on individual versus team investment behavior☆

Matthias Sutter *

Department of Economics, University of Innsbruck, Universitaetsstrasse 15, A-6020 Innsbruck, Austria

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Abstract

Myopic loss aversion (MLA) has been found to have a persistent influence on *individual* decision making under risk. In this paper I show that *team* decision making attenuates MLA, but that teams are also prone to MLA.

Keywords: Myopic loss aversion; Team decision making; Risk; Experiment

JEL classification: C91; C92; D80

1. Introduction

Benartzi and Thaler (1995) have proposed the theory of myopic loss aversion (MLA) as an explanation for the equity premium puzzle. This puzzle refers to the fact that given the long-term returns of stocks and bonds one would have to assume unreasonably high levels of risk aversion to explain why investors are willing to hold bonds at all (Mehra and Prescott, 1985). To resolve the puzzle, Benartzi and Thaler (1995) have combined the behavioral concepts of loss aversion (Kahneman and Tversky, 1979) and mental accounting (Kahneman and Tversky, 1984; Thaler, 1985) into MLA. In short, MLA assumes that people are myopic in evaluating outcomes over time, and are more sensitive to losses than to gains. In the context

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* Tel.: +43 5125077170.
E-mail address: matthias.sutter@uibk.ac.at.

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of financial decision making, MLA implies that subjects invest less in risky assets the more frequently their returns are evaluated and the more often subjects can change their investment decision.

In this paper I examine whether decision making in teams can attenuate or eliminate the effects of individuals' MLA on investment decisions. Given that many organizations rely on a "four eyes principle" or a team-management approach when making investment decisions in stocks and bonds (Prather and Middleton, 2002), it seems of imminent practical importance to examine whether teams are also prone to MLA in financial decision making.

So far, the prevalence of MLA has only been examined for *individual* decision makers. In recent years, several experimental papers have provided robust evidence for the existence of MLA. Gneezy and Potters (1997), Thaler et al. (1997), Barron and Erev (2003), Langer and Weber (2003) or Bellemare et al. (2005) have found that in an individual decision making task subjects invest less in risky assets with shorter evaluation and commitment periods than in case of longer evaluation and commitment periods. The effects of MLA even carry over to market conditions, as has been shown by Gneezy et al. (2003), and they even persist with professionals (Haigh and List, 2005).

Yet, it has not been examined whether team decision making under risk is also prone to MLA. Note that the issue of individual versus team decision making under risk has caught attention in social psychology since Stoner's (1961) seminal finding of a risky shift in teams — meaning that teams make riskier decisions than the average group member. However, subsequent research has observed both risky and cautious shifts in team decision making, and, hence, risky shift in teams is no longer considered a general phenomenon (Kerr et al., 1996).

Economics has devoted some attention to team decision making only recently. The general bottom line from studies on interactive games seems to be that teams behave more strategically than individuals (see Cooper and Kagel, 2005, or Kocher and Sutter, 2005, for brief accounts of the literature). Differences between individual and team decision making in non-interactive setting have been assessed by Bone et al. (1999) and Rockenbach et al. (2007). Both papers have failed to detect any significant differences between individuals and teams with respect to maximizing expected utility (in the sense of maximizing expected payoffs). Yet, Rockenbach et al. (2007) find that teams accumulate a given level of expected payoffs at a significantly lower total risk. Given the ambiguous findings from social psychology and the evidence from economic experiments that there are no differences between individuals and teams with respect to maximizing expected utility in portfolio choices, there is no reason to expect *a priori* higher investments in risky assets by teams than by individuals.

The following Section 2 describes the experimental design and procedure. Results are presented in Section 3. Section 4 concludes the paper.

2. Experimental design

The experiment was built upon the design introduced by Gneezy and Potters (1997). Subjects received an endowment of 100 Euro-cents (i.e. 1€) in each of 9 rounds. Then they had to choose in each round how much to invest in the following lottery: With probability of 1/3 a subject won the following amount: $100+2.5X$ Euro-cents, where X is the invested amount. With probability of 2/3 the payoff in a given round was $100-X$ Euro-cents. Thus, the highest expected value is 116.67 Euro-cents if $X=100$ Euro-cents.

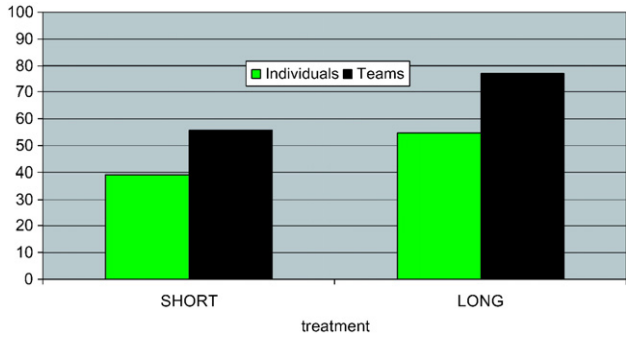

Fig. 1. Investment levels.

Subjects had to make decisions either *individually* or in a *team of three subjects*. In the sessions with teams it was made clear that each of the three team members would get paid the full amount earned by the team in the 9 rounds. This procedure held the per capita payoffs and marginal incentives constant across both types of decision makers.

There were two *conditions* for decision making. The amount X had to be chosen in each round separately in condition SHORT, whereas decisions on X had to be identical and fixed for three consecutive rounds (i.e., for rounds 1–3, 4–6, or 7–9) in condition LONG.

Subjects were informed about the lottery's outcome, the resulting payoff in each single round and the accumulated payoffs up to the present round under both conditions. Under the LONG condition subjects were additionally informed about the sum of payoffs earned in a sequence of three rounds.

The experiment was run at the Max Planck Institute of Economics in Jena (using the z-Tree of Fischbacher, 1999).[1] Sessions lasted less than 40 min, with average payoffs of 11.3€ per subject (including a show-up fee of 2€). I used a between-subjects design for the 294 participants. In total, I had 28 teams in each of the two conditions SHORT and LONG, respectively 64 individuals in SHORT, and 62 individuals in LONG.

3. Experimental results

Fig. 1 shows the overall investment levels.[2] Notice that investment levels are significantly higher in LONG than in SHORT, both for individuals (39.4 versus 54.7; $p=0.014$; $N=126$; two-sided Mann–Whitney U-test) and teams (55.7 versus 76.8; $p=0.004$; $N=56$).

Result 1. The investment decisions of both teams and individuals are affected by MLA. Both types of decision makers invest more with longer commitment periods than with shorter commitment periods.

[1] In order to check whether the determination of the lottery's outcome via computer influenced subjects' behavior I also ran some control sessions with paper and pen where the lottery's outcome was determined by drawings from an urn. Investment decisions in the paper and pen sessions are very similar to and not significantly different from those in the computerized sessions ($p>0.3$; Mann–Whitney U-test). Detailed figures are available upon request.

[2] All results reported here do not depend on the gender of individuals or the gender composition of teams (all p-values are larger than 0.2).

Table 1
Investments across rounds

	Average investments				Mann–Whitney *U*-tests (two-sided *p*-values)			
	Individuals SHORT $N=64$	Individuals LONG $N=62$	Teams SHORT $N=28$	Teams LONG $N=28$	Individuals SHORT versus LONG	Teams SHORT versus LONG	SHORT Indiv. versus teams	Long Indiv. versus teams
Overall	39.39	54.72	55.70	76.82	0.014	0.004	0.018	0.002
Rounds 1–3	39.62	55.03	53.39	70.18	0.028	0.020	0.067	0.034
Rounds 4–6	38.48	55.06	56.06	78.21	0.013	0.008	0.017	0.006
Rounds 7–9	40.05	54.06	57.64	82.07	0.040	0.002	0.008	0.002
Excluding $X=0$, rounds 1–9	47.76	60.95	58.24	77.75	0.015	0.005	0.116	0.033

However, Fig. 1 and Table 1 also reveal that teams invest significantly higher amounts than individuals for a *given* length of commitment. This is true for SHORT (39.4 versus 55.7; $p=0.018$; $N=92$) as well as for LONG (54.7 versus 76.8; $p=0.002$; $N=90$).

Result 2. Controlling for the length of commitment, teams invest significantly higher amounts than individuals do.

Result 2 might be driven by less individuals investing positive amounts (i.e. $X>0$) or by smaller investments of individuals than of teams. It turns out that both explanations are valid. 17.5% of individual choices in SHORT are zero investments ($X=0$), but only 4.4% of team choices ($p<0.05$; χ^2-test). In the LONG treatment, 10.2% of individuals choose $X=0$, compared to 1.2% of teams ($p<0.05$; χ^2-test). From the bottom row of Table 1 it emerges that even those individuals who invest positive amounts invest less than teams. In SHORT, individuals with positive investment invest on average 47.8, but teams 58.2 ($p=0.116$; Mann–Whitney *U*-test). In LONG, the difference is even larger (61.0 versus 77.8) and clearly significant ($p=0.033$). Hence, Result 2 is not only driven by what psychologists would call risky shift (more teams making positive investments), but also by teams making significantly higher investments than even those individuals who invest a positive amount.

From Fig. 1 one can see that the average investment level of teams in SHORT (55.7) is practically the same as the one of individuals in LONG (54.7). Judging from this fact we may conclude that decision making in teams (under SHORT commitment) can attenuate individuals' MLA (as measured by the difference between individuals' investment levels between SHORT and LONG), even though teams themselves are prone to MLA.

4. Conclusion

We have found (1) that team decision making is also prone to myopic loss aversion, but (2) that teams make significantly higher investments than individuals do, meaning (3) that team decision making attenuates the effects of MLA on decision making under risk. Result (1) implies that MLA as a "general feature of human cognition" (Thaler et al., 1997, p. 659) is obviously not confined to individual decision making but also covers team decision making. The first result also shows that MLA is a valid explanation for the equity premium puzzle, irrespective of which type of decision maker is acting on financial markets.

The higher investment levels of teams (Results (2) and (3)) show that teams accumulate higher expected value (by putting higher amounts at risk). This finding complements the paper by Rockenbach et

al. (2007) who have shown that teams take the better risks by selecting portfolios with lower risk, but the same expected value as the portfolios picked by individuals. Hence, theirs and my results suggest that "three heads are better than one".

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