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The Impact of Feedback Frequency on Risk Taking: How general is the Phenomenon?

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Abstract:

In a recent QJE-article, Gneezy and Potters (1997) present experimental evidence for the impact of feedback frequency on individual risk taking behavior in repeated investment decisions. They find an increased willingness to invest into a risky asset if less frequent feedback about the outcome of previous investments is provided. The observed decision pattern is explained by myopic loss aversion, a combination of mental accounting and loss aversion. In this note, we argue that the findings of Gneezy and Potters on the relationship between feedback frequency and risk taking are not as general as they might seem. We provide theoretical arguments and experimental evidence to demonstrate that the reported phenomenon is not robust to changes in the risk profiles of the given investment options.

Keywords: Myopic Loss Aversion, Feedback,

Repeated Investment Decisions, Risk Taking

I. Introduction

In a recent QJE-article, Gneezy and Potters (1997) report experimental evidence for the impact of feedback frequency on individual risk taking behavior in repeated investment decisions. They found an increased willingness of subjects to invest their endowment into a risky asset if less frequent feedback about the outcome of previous investments was provided. It is noteworthy that the experimental subjects were provided with ex ante information about the exact outcome distribution of the relevant lotteries. Hence, the observed difference in proportions of risky investments for different feedback conditions cannot be attributed to informational causes.

Gneezy and Potters (1997) propose a behavioral explanation for the phenomenon. It is well known from the literature that individuals tend to neglect the overall decision context when making sequential decisions.[1] A decision to accept three identical and independent draws of a gamble (as the uncertain outcomes of the investment) might be based on an isolated evaluation of each single gamble rather than the relevant overall distribution. Gneezy and Potters (1997) argue that feedback frequency has an impact on the framing of a sequential decision problem. Less frequent feedback helps subjects to overcome their myopia since they observe a more aggregated outcome distribution. Thus, subjects base their decisions on longer evaluation periods.

The general question, whether a longer evaluation period and thus a less myopic evaluation of a lottery sequence makes it appear more attractive, was addressed by Benartzi and Thaler (1995). They argued that in a myopic evaluation of a lottery sequence, the effect of time diversification, i.e. the compensation of losses in some draws by gains in other draws, is not appreciated. Because of loss aversion (the well established behavioral insight that losses are more heavily weighted than gains of same size)[2] a sequence will thus look less attractive in a myopic evaluation of its components.

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[1] Cf. Benartzi and Thaler (1999). The general phenomenon was dubbed "Narrow Framing" by Kahneman and Lovallo (1993).

[2] Loss aversion was first introduced by Kahneman and Tversky (1979) as part of their prospect theory. It is reviewed in Kahneman, Knetsch and Thaler (1991).

In this paper, we build on the analysis of Langer and Weber (forthcoming) on the differences between aggregated and segregated (isolated) evaluations of lottery portfolios and argue that the relation between feedback frequency and risk taking behavior is not as clear and general as the existing literature might suggest. In particular, we demonstrate that the experimental evidence of Gneezy and Potters (1997) is driven by the specific risk profile of the lottery used in their study.

The remainder of the paper is structured as follows. In the next section we provide a short description of the experimental design and the results of Gneezy and Potters (1997). In section III we introduce the proposed explanation (myopic loss aversion) and provide some theoretical insights on the predicted robustness of the phenomenon. In section IV we present the design and the results of an own experimental study in which we demonstrate the feedback frequency effect of Gneezy and Potters to be driven by the specific risk profiles of their lotteries. Section V concludes with a short discussion.

II. Experimental Design and Results of Gneezy and Potters (1997)

In a simple paper and pencil experiment, Gneezy and Potters (1997) demonstrated the impact of feedback frequency on individual risk taking behavior. In each of nine rounds, subjects were endowed with the same initial amount of money (about US$ 1) and had to decide which proportion of this endowment to invest into a risky lottery and which to keep at hand.[3] With a 1/3 chance the invested money increased by 250% (i.e. US$ 1 became US$ 3.5), with a 2/3 chance the investment was lost. Subjects knew ex ante about this outcome distribution. The return from the investment as well as the money kept at hand was transferred after each round to the subject's account for real payment. Subjects could not bet the money earned in previous rounds. One group of subjects (high frequency group) had to make investment decisions (choose the amount to invest) every round. After each round they got feedback about the outcome of the lottery. The other group (low frequency group) made binding investment decisions for three rounds (identical investments). They only got feedback about the combined outcome of the three draws before they made the next investment decision.

[3] The study of Gneezy and Potters (1997) actually consisted of two parts. We only refer to the first part of their experiment.

Gneezy and Potters reported an increased willingness of their subjects to invest into the risky option if outcome feedback was provided less frequent. In the low frequency group (n=42), subjects invested on average 67,4 % of their endowment into the risky gamble. This percentage is significantly higher than the average 50,5 % of the high frequency group (n=41).

III. Theoretical Analysis of the Myopic Loss Aversion Explanation

Gneezy and Potters (1997) designed their experiment to obtain the above-mentioned effect of feedback frequency on risk taking behavior. In fact, their experiment was set up to be an explicit test of the myopic loss aversion idea, which was first introduced by Benartzi and Thaler (1995) to provide a behavioral explanation for the Equity Premium Puzzle.[4] Myopic loss aversion combines two concepts, mental accounting and loss aversion. The first is an assumption about the way individuals frame and thus process a sequential decision problem, the second is an assumption about properties of the value function used for the evaluation of the lotteries involved.

To illustrate the interplay of these two assumptions, we take up the simple example used by Benartzi and Thaler (1995) as well as by Gneezy and Potters (1997). Assume a loss averse decision maker with a value function of the form $v(x) = \begin{cases} x, & \text{if } x \geq 0 \\ 2.5 \cdot x & \text{if } x < 0 \end{cases}$ has to decide whether to accept a gamble $\left\langle \begin{array}{ll} \scriptstyle 50\% & +\$\ 200 \\ \scriptstyle 50\% & -\$\ 100 \end{array} \right.$.

She would reject the offer since the 2.5 times stronger impact of the loss outweighs the higher gain. However, if the decision maker is confronted with two independent draws of the same lottery, her acceptance decision depends on her framing of the problem. If she neglects the overall decision context and evaluates each lottery in isolation, she would still reject to gamble. In contrast, if she considers the aggregated distribution $\left\langle \begin{array}{ll} \scriptstyle 25\% & +\$\ 400 \\ \scriptstyle 50\% & +\$\ 100 \\ \scriptstyle 25\% & -\$\ 200 \end{array} \right.$ of the two lotteries, she will accept the risk, as she derives a positive evaluation (+25).

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[4] Thaler et al. (1997) provide a similar test. Benartzi and Thaler (1995) show in their original work that the surprisingly high historical equity premium can be explained by the assumption that a typical (loss averse) investor evaluates the investment alternatives for one year time periods despite his much longer investment horizon.

The decision reversal in this example is driven by the fact that the loss, which is hidden in the mixed outcome of the overall distribution, is actually not treated as a loss in the evaluation process. There is a strong intuition that this kind of effect is not limited to specific types of lotteries. Because of loss aversion, sequences of mixed lotteries (i.e. with both potential losses and potential gains) should generally appear less attractive in a myopic evaluation.

Gneezy and Potters (1997) rely on this intuition when they predict their subjects' higher willingness to invest into the risky option in the low feedback frequency condition. They argue that less frequent feedback leads to a less myopic evaluation of the lottery sequence causing the investment options to look more attractive. Combining the intuitive robustness of the myopic loss aversion idea with the obvious ability of the feedback frequency to induce different evaluation periods, there seems no reason why the experimental results of Gneezy and Potters (1997) on the relation between feedback frequency and risk taking should not be general.

However, the piecewise linear function in the above example is a very specific type of value function. Prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992), the most prominent descriptive decision theory, assumes not only loss aversion, but also diminishing sensitivity in the gain as well as in the loss domain. By this diminishing sensitivity the value function turns out to be concave for gains and convex for losses. Taking into account this curvature, Langer and Weber (forthcoming) recently pointed out that the attractiveness of a lottery portfolio does not necessarily increase if the aggregated distribution is evaluated instead of the isolated lotteries. For specific risk profiles they even proposed a reverse effect.

Comparison of relative attractiveness

These findings can be applied to the scenario of Gneezy and Potters (1997). If we take up their assumption that the low feedback frequency condition leads to an evaluation of the aggregated distribution of three independent gambles while the high feedback frequency causes subjects to make isolated evaluations of each gamble, we can formalize the relevant question:

- If A denotes the “aggregated evaluation” (i.e. the evaluation of the overall distribution of three independent gambles) and S denotes the “segregated evaluation” (i.e. three times the evaluation of each gamble), what is the sign of the difference D:= A-S ?[5]

For the analysis of the evaluation difference D, we assume a general value function:

$$v_k^\alpha(x) = \begin{cases} x^\alpha, & \text{if } x \geq 0 \\ -k \cdot (-x)^\alpha & \text{if } x < 0 \end{cases} \quad \text{with } k \geq 1 \text{ and } 0 \leq \alpha \leq 1$$

as proposed by Tversky and Kahneman (1992).[6] This value function reflects loss aversion via the parameter k as well as diminishing sensitivity via the parameter α.

The lottery L, used in the experiment of Gneezy and Potters (1997), offered a 2/3 chance of losing the invested money and a 1/3 chance of gaining 2.5 times the investment. Coded in terms of gains and losses, the subjects thus faced lotteries of the form: $\begin{array}{ll} \scriptstyle 1/3 & +250\% \\ \scriptstyle 2/3 & -100\% \end{array}$

To demonstrate the relevance of the risk profile, we embed this gamble L into a broader set of lotteries. This set is sufficiently rich, even if we restrict our attention to „all or nothing“ gambles, i.e. gambles with some probability to lose all the invested money and some chance to get a positive return on the investment. We define a general lottery (p,g) to be of the form: $\begin{array}{ll} \scriptstyle p & +\ g\% \\ \scriptstyle 1-p & -100\% \end{array}$ with $p \in [0,1]$ and $g \in (0\,\%, \infty\,\%)$. For each of these lotteries (p,g), we compute the evaluation difference D. Lotteries with positive D-values look more attractive in aggregated evaluation, lotteries with negative D-values are more attractive in segregated (myopic) evaluation.[7]

As each lottery (p,g) is defined by two parameters only we can display a bounded part of the lottery space as a two-dimensional grid and present the computed D-values via iso-D-lines. In figure 1 such a diagram is displayed for a value function v_k^α with k=2.25 and α=0.88. These parameters were determined by Tversky and Kahneman (1992) to be the median values of the estimates for their experimental subjects. Lotteries in the upper right corner are

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[5] We can omit an index for the number of replications n as we exclusively focus on the case n=3 in this paper.

[6] In fact, they did not require the exponent for gains and losses to be the same. However, they found identical exponents in an estimation based on an experimental study.

[7] We are only interested in the sign of the evaluation difference. This sign does not depend on the absolute size of the lottery outcomes. We base, however, all our computations and graphical illustrations on a normalized investment of 1$.

very attractive, lotteries in the lower left corner are extremely unattractive. We printed the lottery L = (1/3, 250%) of Gneezy and Potters (1997) into the diagram. It is slightly above the bold line, which represents all lotteries with an expected value of zero.

The most important iso-D line for D=0 is easy to recognize as the boundary between the dark (D<0) and the light (D>0) area of the diagram. It can be seen that, though for most lotteries positive D-values are computed, the sign of D turns negative if high gain probabilities are involved. It is interesting to note that there even exist negative D-values for lotteries with moderate expected values (in the lower right corner). Hence negative D-values are not restricted to very attractive lotteries, but exist for lotteries with the same expected value as the lottery L of Gneezy and Potters (1997).

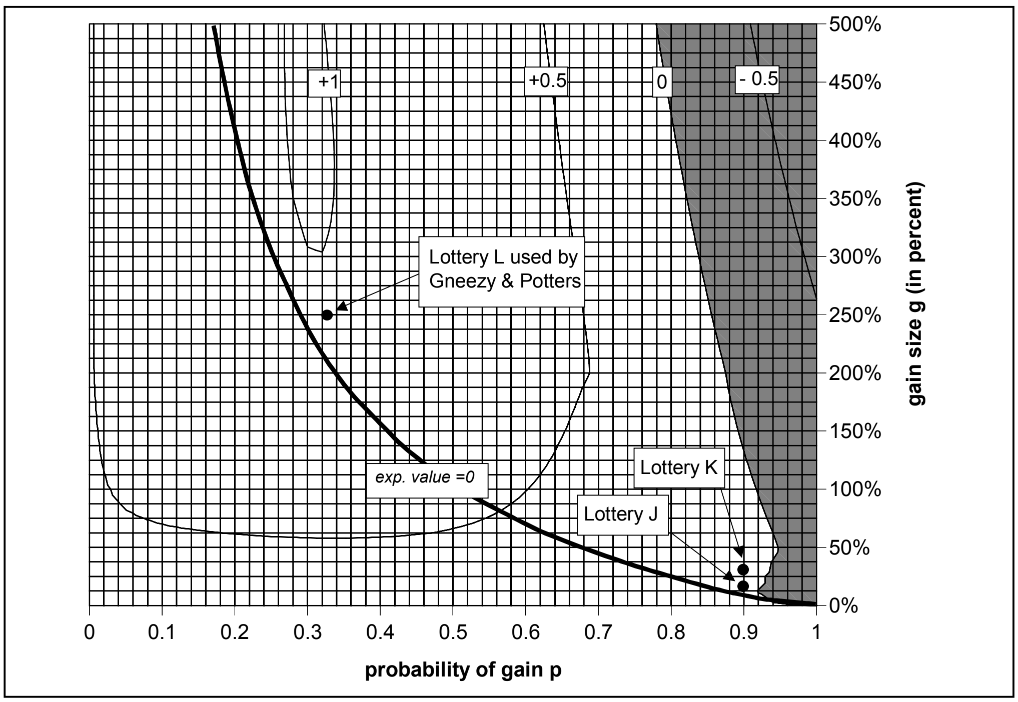

Figure 1: Iso-D lines for k=2.25 and a = 0.8.

In figure 1 two further lotteries are marked which will later reappear in our experimental study. The lottery K= $\begin{array}{ll} 90\% & +30\% \\ 10\% & -100\% \end{array}$ has about the same expected value (+17%) as lottery L, but a significantly lower D-value. The lottery J= $\begin{array}{ll} 90\% & +15\% \\ 10\% & -100\% \end{array}$ has a lower, but still positive expected value (+3.5%). For the parameters k=2.25 and α=0.88, used in figure 1, the

D-values for both lotteries are still slightly positive. However, the exact size of the dark bulge in the lower right corner strongly depends on the parameters k and α.

Figure 1 nicely demonstrates the relevance of the risk profile for the increase or decrease of attractiveness through a myopic evaluation. However, the figure is not suited for a direct explanation of the results of Gneezy and Potters (1997) and according predictions for other risk profiles.[8] For this purpose, it is more appropriate to examine for which subjects (i.e. for which value functions) different investment decisions in the two evaluation modes are predicted.

Dependence of the investment decisions on the value function

First it should be mentioned that this kind of formal analysis cannot explain why the subjects in the design of Gneezy and Potters (1997) chose intermediate levels of investment.[9] If individuals frame the decision situation in the proposed way, they should either invest all the available endowment or nothing. This holds, because for a value function v_k^α the aggregated evaluation A as well as the segregated evaluation S are scaled by a factor c^α if the investment level is scaled by a factor c. Hence, if an individual is willing to invest in one of the conditions (i.e. positivity of A or S respectively) the highest possible investment provides the highest evaluation. A perfect fit of the theoretical argument with the experimental results would thus require only extreme choices with the different mean investment proportions (for the different feedback conditions) resulting from different proportion of 100%-investors.[10]

Following this idea, we examine how the variability in value function parameters should influence the proportion of investors from a theoretical point of view. If we assume that subjects vary in their degree of loss aversion and the strength of diminishing sensitivity, it is interesting to analyze, which combinations of k and " in fact drive the difference in investment proportions. In figure 2, we display for each (k, ") combination with k in [1, 6] and " in [0.25, 1] the acceptance of a 3-lottery portfolio in both evaluation modes. These

[8] It just provides a hint which risk profiles promise to be particularly interesting.

[9] We do not have the individual data of the Gneezy and Potters study, but in our replication of their experiment, we found a lot of intermediate investment levels.

[10] Intermediate investment levels could be explained by a naïve diversification heuristic (Benartzi and Thaler, forthcoming). Cf. Siebenmorgen and Weber (2000) for an explicit incorporation of naïve diversification into an evaluation model.

computations are based on the lottery L used by Gneezy and Potters. Note, that each point in the plane now corresponds to a specific individual (that is: a specific value function) not to a lottery as in figure 1. A risk neutral subject is placed in the lower left corner; the above-mentioned typical (k, ") combination (2.25, 0.88) is further marked in the plane

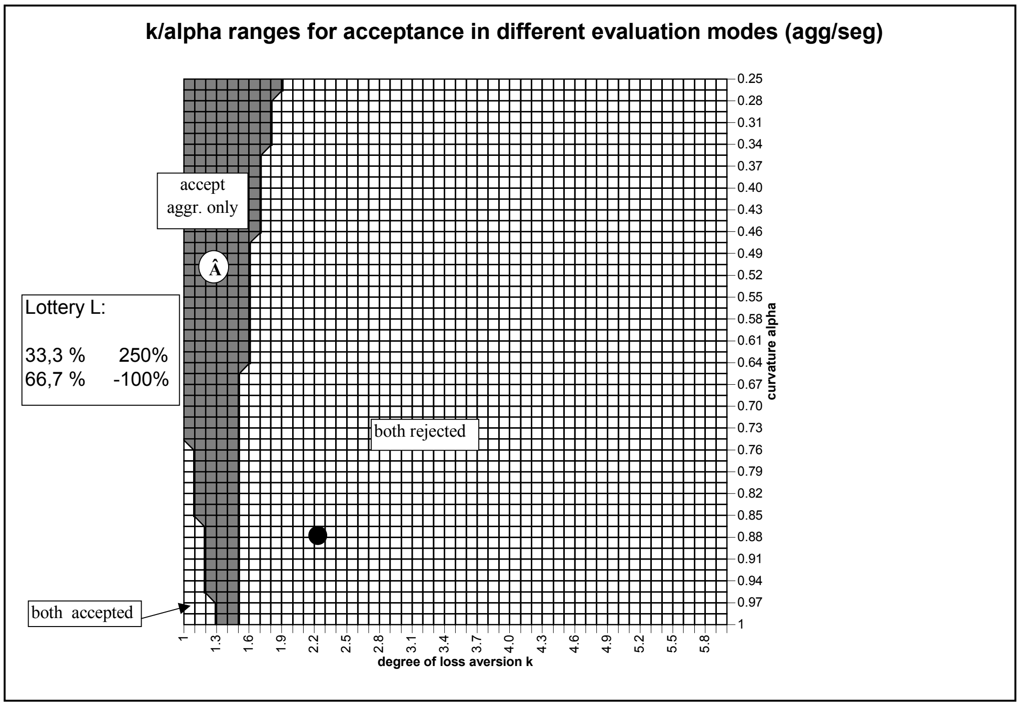

Figure 2: Investment decisions for different evaluation modes for the lottery L.

Under this analysis, all individuals with high degrees of loss aversion are unwilling to invest into the lottery sequence in both evaluation modes. Only subjects with a very low degree of loss aversion and moderate diminishing sensitivity are willing to invest into the sequence of L-lotteries independent of the evaluation mode. Most interesting, however, is the dark area named $\widehat{A}$ in the upper left corner. These subjects would only invest if they evaluate the aggregated distribution of the portfolio. There are no (k, ")-combinations for which the individuals would invest in segregated, but not in aggregated evaluation.[11] We do not need to know the exact distribution of real subjects in the (k, ") plane to predict the experimental findings of Gneezy and Potters (1997) from this figure. The proportion of subjects placed in

[11] This fact is not driven by the restriction of the maximum degree of loss aversion and strength of diminishing sensitivity. It would require a descriptively unrealistic ">1 (i.e. risk proneness for gains and risk aversion for losses) to find this choice pattern.

the dark area causes the investment proportion to be higher for the low feedback frequency group.

Now we will look at the same kind of picture for the lottery K, which has about the same expected value as L, but a higher gain probability (see figure 3). As the most interesting fact for lottery K there also exists a portion $\widehat{S}$ of (k, ") combinations for which an investment is predicted for segregated, but not for aggregated evaluation. Hence the sign of the difference in investment proportions does now depend on assumptions about the distribution of subjects in the (k, ") plane. While for the lottery K the (k, ") combinations in the region $\widehat{S}$ seem to be less typical of individual decision makers than the (k, ") combinations in the region $\widehat{A}$ (and we would thus not predict a higher investment proportion in the high frequency group from this analysis), the situations gets even more interesting if we decrease the expected value of the lotteries involved.

In figure 4 we display the investment decisions for a lottery J with a 90% chance of a 15% gain. Note that this type of lottery should be considered quite typical for real world financial investments. The expected return on investment is 3,5%. The risk profile with its comparably high interest rate of 15%, but a considerable default probability could be interpreted as a junk bond (low rated) investment. For the J-lottery it turns out that the area $\hat{A}$ almost disappeared and the size of the $\widehat{S}$ area increased. For reasonable distributions of individuals in the (k, ") plane a higher investment proportion can thus be predicted for the high frequency feedback group.

We conclude this section with a short comment on the relevance of probability weighting. Prospect theory does not only assume value transformation, but also a probability distortion (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992). Such a weighting of probabilities is supposed to be particularly relevant for the lotteries J and K as extreme probabilities are involved. However, it turns out that the figures 3 and 4 do not qualitatively change if we incorporate probability weighting into our computations.[12] Thus, the ignorance of probability weighting is not critical for our above hypotheses.

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[12] The area $\widehat{S}$ moves a little further to the left in the figures 3 and 4 if probability weighting is incorporated.

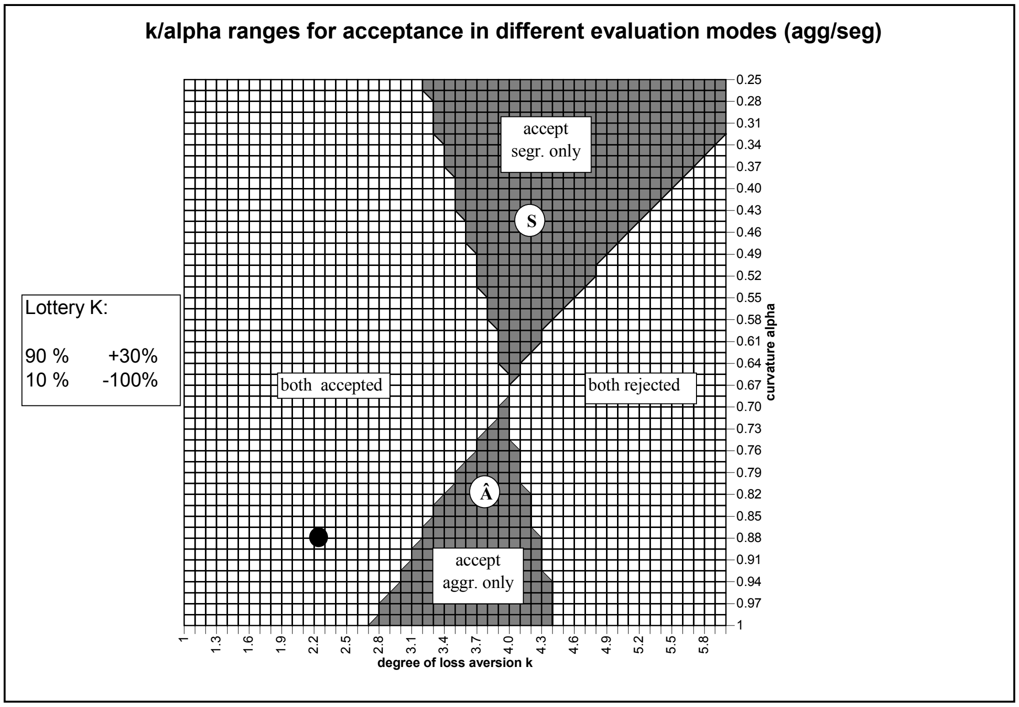

Figure 3: Investment decisions for different evaluation modes for the lottery K.

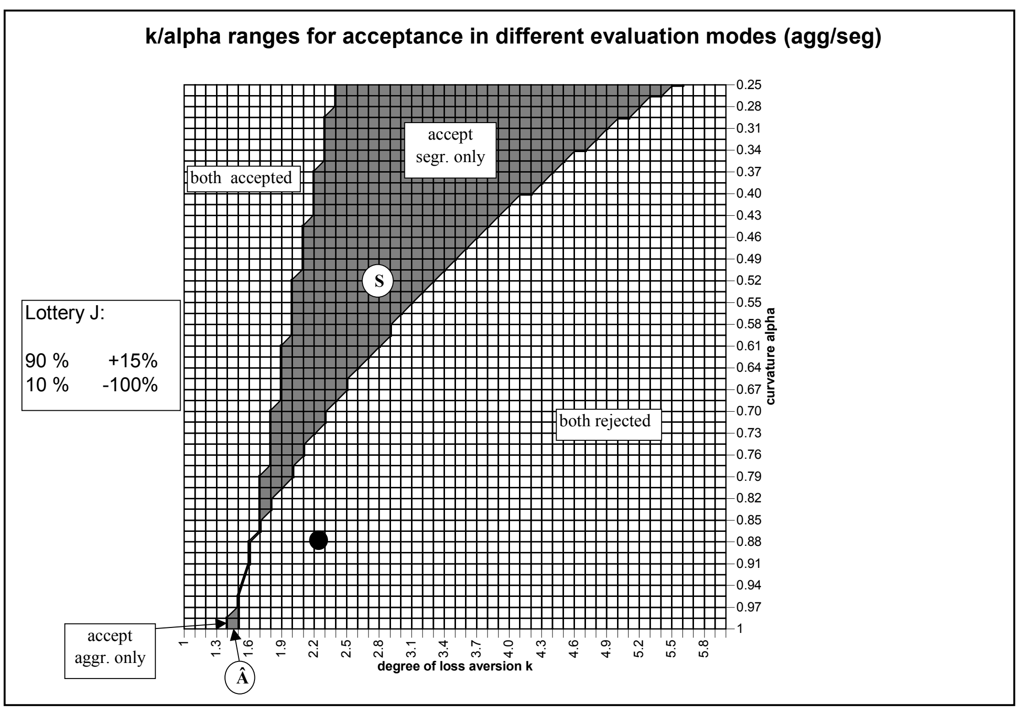

Figure 4: Investment decisions for different evaluation modes for the lottery J.

IV. Replication of Gneezy and Potters (1997) with Different Risk Profiles

To test the predictions of the theoretical analysis, we replicated the basic study of Gneezy and Potters (1997) with three different risk profiles. In contrast to the paper and pencil procedure of Gneezy and Potters, we conducted a computerized experiment and had a total of 18 rounds instead of the 9 rounds of the comparable first part in the Gneezy and Potters study. Overall, 105 advanced business students from the University of Mannheim took part in the experiment. Thirty-six of them were used to replicate the results of Gneezy and Potters and received a lottery L. The other subjects were faced with either the lottery K or J from section III. From our theoretical analysis we hypothesized that the lottery J should be more appropriate (than K) to disprove the robustness of the results of Gneezy and Potters (1997). Nevertheless, we included the lottery K into the experimental analysis as we were interested in the impact of risk profile manipulation for an unchanged expected value, too. We refrained from choosing a lottery with an even higher gain probability than K (which by figure 1 should be more appropriate to find the reverse effect of feedback frequency on risk taking), since for a higher gain probability most subjects would not have experienced any losses in their complete session.[13]

As in the Gneezy and Potters design, we had a low and a high frequency condition. Subjects in the high frequency group had to decide in each of the 18 rounds which part of their endowment of 100 Pfennig[14] they were willing to invest into the risky lottery. After each round they got outcome feedback and the remaining endowment plus the return from the lottery draw was booked into a personal account, which was used for real payment at the end of the experiment.[15] In the low frequency group subjects had to make binding decisions for three rounds. They only got feedback about the combined outcome of the three draws.

From the theoretical insights of section III we hypothesized that there would be a strong positive impact of a lower feedback frequency on the willingness to accept risks (i.e. a significantly higher investment proportion in the low frequency group) for the lottery L only.

[13] For the lotteries K and J we had 14 out of 69 subjects that experienced no losses in all 18 draws.

[14] At the time of the experiment 100 Pfennig were worth about 50 US cents.

[15] 1000 Pfennig were subtracted from the collected money to determine the real pay off. Subjects knew ex ante about this payment pattern; in particular, they were informed about the total number of rounds.

We predicted the effect to be much less pronounced for the lottery K, and even reversed for the lottery J.

Table 1 summarizes the results of the study. For the lottery L, the replication of the Gneezy and Potters design, the high frequency group (n=16) invested an average of 44,6% of their endowment in the risky asset. Meanwhile, the low frequency group (n=20) had an average investment proportion of 59,9%. Though the proportions itself are a little lower, the difference is remarkably similar to the original results of Gneezy and Potters (50,5% vs. 67,4%). A non-parametric Mann-Whitney test determines the difference to be statistically significant ($p<0.05$).[16]

	Lottery L		Lottery K		Lottery J	
	1/3 +250% 2/3 - 100%		90% + 30% 10% - 100%		90% + 15% 10% - 100%	
Condition	High Freq.	Low Freq.	High Freq.	Low Freq.	High Freq.	Low Freq.
Number of subjects	N= 16	N=20	N=16	N=18	N=18	N=17
Mean proportion of invested endowment	**44.6%**	**59.9%**	**82.4 %**	**75.5%**	**76.1%**	**67.9%**
Average investment of median subject	**36.0%**	**61.7%**	**85.3%**	**76.3%**	**85.3%**	**66.7%**
	(**)		**(*)**			

*Table 1: Investment proportions for lotteries L, K and J (** and * denote significance on a 5% and 10% level)*

For the lotteries K and J opposite results were found. In line with our hypothesis for the lottery J, the 76,1% average investment proportion of the high frequency group (n=18) is higher (n.s.) than the average investment proportion 67,9% of the low frequency group (n=17). Somewhat surprisingly, we also observe a reversal for the lottery K. The high frequency group (n=16) invested an average of 82,4% of their endowment in the risky option, whereas the low frequency group (n=18) invested an average of 75,5%. A Mann-Whitney test determines this difference in investment proportions to be marginally statistically significant ($p<0.1$). In table 1 we also present median values, i.e. the average investment proportion of the median subject in each group. These values further demonstrate that the

[16] Following Gneezy and Potters' (1997) null hypothesis (no difference) and alternative hypothesis (higher proportion for low frequency) we report one-tailed significance levels.

relation between feedback frequency and risk taking behavior, reported by Gneezy and Potters (1997), strongly depends on the risk profiles of the lotteries.

V. Conclusion

In this note, we argue that the previously reported increase in willingness to take risks, when feedback frequency is diminished, is not as general as the existing literature might suggest. An analysis based on Prospect Theory (Kahenman and Tversky, 1979; Tversky and Kahneman, 1992) and Narrow Framing (Kahneman and Lovallo, 1993; Benartzi and Thaler, 1995) shows that myopia does not generally decrease the attractiveness of a lottery sequence. A reverse effect is predicted for lotteries with specific risk profiles, as e.g. the risk profile of a junk bond. Since a higher feedback frequency supports myopia, we should expect an even higher willingness to invest into these lotteries if more frequent feedback is provided. We support these predictions by experimental evidence. For lotteries with a high gain probability, but a rather small gain size our experimental subjects invest a higher proportion of their endowment into this risky option if they receive more frequent feedback. Our research confirms the results of Gneezy and Potters (1997) that the feedback frequency influences the evaluation period and thereby the risk taking behavior. At the same time it demonstrates, however, that a more thorough analysis of the relation between evaluation period length and risk taking behavior is required to avoid the erroneous impression that the individual willingness to accept risks generally increases with a decreasing feedback frequency. The result of Gneezy and Potters (1997) regarding the impact of feedback frequency on the willingness to take risks is not robust to changes in the risk profiles of the investment options.

Literature:

Benartzi, S. and Thaler, R.H. (1995): *Myopic Loss Aversion and the Equity Premium Puzzle*. Quarterly Journal of Economics, Vol. 110, 73-92.

Benartzi, S. and Thaler, R.H. (1999): *Risk Aversion or Myopia? Choices in Repeated Gambles and Retirement Investments*. Management Science, Vol. 45, 364-381.

Benartzi, S. and Thaler, R.H. (in press): *Naive Diversification Strategies in Retirement Saving Plans.* American Economic Review.

Gneezy, U. and Potters, J. (1997): *An Experiment on Risk Taking and Evaluation Periods*. Quarterly Journal of Economics, Vol. 112, 631-645.

Kahneman, D.; Knetsch, J.L. and Thaler, R.H. (1991): *The Endowment Effect, Loss Aversion, and Status Quo Bias: Anomalies*. Journal of Economic Perspectives, Vol. 5, 193-206.

Kahneman, D. and Lovallo, D. (1993): *Timid Choices and Bold Forecasts: A Cognitive Perspective on Risk Taking*. Management Science, Vol. 39, 17-31.

Kahneman, D. and Tversky, A. (1979): *Prospect Theory: An Analysis of Decicion Under Risk*. Econometrica, Vol. 47, 263-291.

Langer, T. and Weber, M. (in press): *Prospect-Theory, Mental Accounting and Differences in Aggregated and Segregated Evaluation of Lottery Portfolios*. Management Science.

Siebenmorgen, N. and Weber, M. (2000): *A Behavioral Approach to the Asset Allocation Puzzle*. SFB working paper 00-46, University of Mannheim.

Thaler, R. (1985): *Mental Accounting and Consumer Choice*. Marketing Science, Vol. 4, 199-214.

Thaler, R.; Tversky, A., Kahneman, D. and Schwarz, A. (1997): *The Effect of Myopia and Loss Aversion on Risk Taking: An Experimental Test*. Quarterly Journal of Economics, Vol. 112, 647-661.

Tversky, A. and Kahneman, D. (1992): *Advances in Prospect Theory: Cumulative Representations of Uncertainty*. Journal of Risk and Uncertainty, Vol. 5, 297-323.

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