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The effect of short-term information on long-term investment: An experimental study☆

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ABSTRACT

We present a multi-trial experiment that extends the classic experiment of Thaler et al. (1997) by adding short-term information to long-term investment. The allocation to the risky asset is reduced in the long-term, when we add short-term information.

1. Introduction

Myopic Loss Aversion (henceforth, MLA), suggests that the longer an investor intends to hold an asset, the more attractive a risky asset will appear, because the investment is not evaluated frequently (Benartzi and Thaler, 1955). Due to loss aversion (Kahneman and Tversky, 1979), investors are likely to experience disappointment if they check their portfolios very frequently. The aggregation of outcomes in a long-term investment is sufficient to reduce the experience of loss and thus increase investment levels (Thaler et al., 1997). Experimental studies show that when subjects were given the option of making a single decision for the entire period, they made better allocations for maximizing payoffs than they did when making separate decisions for each investment period (Bellemare et al., 2005; Gneezy et al., 2003; Gneezy and Potters, 1997; Sutter, 2007; Thaler et al., 1997).

Fellner and Sutter (2009) conducted experiments in which subjects were asked to invest in risky lottery. Subjects had to commit to an investment horizon of either one or three periods. The feedback on the investment was given either after each single period or provided in an aggregated form for a sequence of three periods. They found that when the investment horizon was three periods, feedback frequency had no effect on the allocation to the risky asset.

This study aims to further explore how the information on short-term returns affects the individual's long-term allocation to assets. We present a multi-trial experiment (120 trials) based on the one conducted by Thaler et al. (1997). In two treatments, the subjects allocated their funds between the assets for eight periods in advance. In one treatment, the subjects received information about the aggregate return and the return in each of the eight periods, while in the second treatment the subjects received information only about the aggregate return. Although the rational portfolio theory (Von Neumann and Morgenstern, 1947 and Savage, 1954) suggests that investors should only care about the expected utility of their portfolios and not about the

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specific portfolio's components, we find that when investors are asked to make a single decision for the long term but exposed to information on the short-term returns, they are affected by MLA.

The remainder of this paper is organized as follows: Section 2 presents the experimental procedures and Section 3 the results. Section 4 summarizes and concludes.

2. The experiments

Sample: The subjects in the computerized experiment were 41 undergraduate who had taken at least one course in statistics. They participated voluntarily and were paid for their participation. They were divided randomly into two groups: the "information" condition (21 subjects) and the "no information" condition (20 subjects).

Procedure: In 120 repetitive trials, subjects were asked to allocate 100 tokens between two assets with the same distributions as in Thaler et al. (1997). Asset A was drawn from a normal distribution with a mean return of 1% and a standard deviation of 3.54%. Asset B was drawn from a normal distribution with a mean return of 0.25% and a standard deviation of 0.177% and was truncated at 0 to prevent negative return. The returns on the assets in each trial were selected randomly by a computer from the possible distributions.

In both conditions the subjects were asked to make allocations for eight periods in advance for each trial. After each trial, subjects in the "no information" condition, received feedback in aggregated form for each sequence of eight periods.[1] In the "information" condition, subjects received feedback (after each trial) in aggregated form for each sequence of eight periods but also on the return of each period. The instructions spelled out the experimental procedure in a simple, non-technical manner but without giving any information about the actual payoff distribution for each asset.

To create concrete incentive the participants were paid 20 New Israeli Shekels (NIS)[2] plus a payment that was relative to their earnings in the experiment. The subjects were told that at the end of the experiment we will sum the earnings (in tokens) of all the 120 periods, and the tokens they earned would be converted into money in a conversion rate of 100 tokens to 1 NIS. This means that the final payment would be 20 NIS plus 1% of the total earnings in NIS. The average payment in the "information" condition was 27.0 NIS and in the "no information" condition was 27.6 NIS.

3. The results

Table 1 presents the average allocation to the risky asset A for each treatment.

Table 1
Average allocation to the risky asset.

Condition	Average allocation[a]
Information	62.49 (15.89)
No information	72.02 (16.18)
Mann–Whitney test	$Z = 1.98,\ p = 0.02$

[a] SD in the brackets.

The allocation to the risky asset A in the "no information" condition is higher than it is in the "information" condition. This means that when investors are asked to make a single, advance decision for eight periods but were exposed to the returns in each period, they are more affected by MLA. This result is inconsistent with Fellner and Sutter (2009) who found no effect for the information frequency.

Table 2 presents the average allocation to the risky asset after aggregate loss or after aggregate gain in the sequence of the last eight periods in each condition.

In the "information" condition, we see significantly lower average allocation to the risky assets after a loss than after a gain. However, in the "no information" condition we find no significant difference between allocations after gain or loss. This means that the aggregate return in the last sequence of eight periods has an impact only when the investor is exposed to the return in each one of the periods. In addition, the table indicates that both after a gain and after a loss, the allocation of the risky asset is significantly lower for the "information" than for the "no information" condition, consistent with the findings in Table 1.

In the "information" condition, subjects are more exposed to losses because they can see the returns for each period. When the aggregate return is positive (gain), there are on average 2.69 periods (STDV = 0.13) with loss, which is significantly lower (Wilcoxon Signed Ranks Test: $Z = 4.02$, $p = 0.00$) than the average number of periods with loss, 4.69 (STDV = 0.19), when the aggregate return is negative.

In the "information" condition, the exposure to the losses of each period emphasizes the loss of the aggregate return. This may explain why after negative aggregate return in the "information" condition, the average allocation to the risky asset is relatively low.

4. Discussion and conclusion

The rational portfolio theory suggests that the allocation in the "information" condition should be the same as in the "no information" condition, because the investors in both conditions should care only about the accumulative return on the portfolio, after eight periods. However, our experimental results show that this is not the case. We show that even if the subjects are asked to decide in advance on their investment for several periods and do not experience the loss after each period, they still suffer from MLA when they are exposed to information on the return in each period. We suggest two possible explanations for our findings.

First, individuals tend to rely on small samples of past experiences for decision-making, which leads them to chase after past returns in the financial markets (Barron and Erev, 2003; Chevalier and Ellison, 1997; Sirri and Tufano, 1998). Adaptive reaction to feedback implies under-diversification when an investor receives complete feedback on the performance of both a diversified fund and its components during a given period (Benzion et al., 2010; De Bondt and Thaler, 1990; Nosic and Weber, 2009), as we found in the "information" condition.

Alternately, the explanation could be related to the "disappointment aversion" (Bell, 1985; Loomes and Sugden, 1986; Gul, 1991). According to this explanation, the subject is disappointed if the outcome of a risky asset falls short of the outcome of the riskless asset. Fielding and Stracca (2007) suggested, "It is reasonable to interpret loss and disappointment aversion in terms of the losses and disappointments that one might face, not from investing at all, but rather from investing in a risky asset instead of a safe one" [p. 225]. We suggest that when subjects are exposed to feedback in the "information" condition they are more disappointed when they face losses, because for each period of the eight, where there is loss the subject is disappointed that she did not allocate her money to the low risk asset which is always positive.

[1] The data from this condition was also used in Benzion et al. (2011).

[2] The exchange rate at the time of the experiment was: 3.7 NIS = 1 US$.

Table 2
Average allocation to the risky asset after aggregate loss or aggregate gain.

Condition	Average allocation after loss[a]	Average allocation after gain[a]	Wilcoxon signed ranks test
Information	54.64 (21.09)	64.35 (16.44)	$Z = 2.10$, $p = 0.02$
No information	74.07 (14.71)	73.96 (16.34)	$Z = 0.15$, $p = 0.44$
Mann–Whitney test	$Z = 2.92$, $p = 0.00$	$Z = 1.96$, $p = 0.03$	

[a] SD in the brackets.

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