Active Choice, Beliefs Updating and Subsequent Risk Taking

Abstract

This paper analyses experimentally whether investors making active choices learn differently from new information than other investors and whether these differences in learning cause differences in the subsequent investment risk taking. The results show that the lack of an active choice reduces the self-serving bias in learning from adverse information. This is evident in the way investors holding risky assets update their beliefs about the prospects of their investments after losses. These investors are more willing to revise their expectations if they did not have actively decided the size of the risk exposure but followed the decision of a manager. The differences in learning from adverse information cause differences in the subsequent risk taking behaviour of risk takers after losses. Eliminating the active choice of risk takers causes an active risk reduction after losses, while a significant part of the effect is caused by difference in the way an active choice affects learning from adverse information. These findings suggest that there is a beliefs channel associated with self-serving needs that explain a significant amount of puzzling differences in the trading behaviour of investors with a different involvement in the investment decision process with important implications for personal investment decision behaviour and financial advisors.

Keywords: cognitive dissonance, learning, self-serving bias, disposition effect, emotions, delegation

JEL codes: D03, D81, D83
**Extended Abstract**

Beliefs updating in the face of new information is essential for decisions under uncertainty. Although there are clear rational benchmarks how new information should be used, experiments show that individuals deviate from this benchmark by developing self-serving beliefs. For example, when judging their own abilities, individuals tend to ignore signal strength (Eil and Rao 2011) and overweight (underweight) positive (negative) feedback (Moebius et al. 2014); they also form beliefs in order to support undertaken efforts (Arrowood and Ross 1966; Yaryan and Festinger 1961), or previous decisions (Arrowood and Ross 1966; Knox and Inkster 1968; Kuhnen et al. 2017; Kuhnen and Knutson 2011; Yaryan and Festinger 1961), which can also be observed in the forecasting behaviour of professional analysts (Eames et al. 2002).

The tendency to develop beliefs supporting past actions can be seen as an example of the psychological phenomenon termed by Festinger (1957) as cognitive dissonance. According to Festinger's theory, individuals distressed by conflicting cognitive elements, such as a discrepancy between empirical evidence and past choice, alter their beliefs to reduce this discomfort. However, from a theoretical perspective, if forward-looking agents generate beliefs strategically to eliminate the cognitive dissonance, they may systematically deviate from optimal decision-making (Akerlof and Dickens 1982) and may never be able to revise wrong beliefs even if infinite information is provided (Rabin and Schrag 1999).

One way to limit the emotional discomfort that new information can trigger is to remove decisions (Kuhnen 2015). This paper considers another possibility, that is to avoid an active choice. Avoiding an active choice may reduce the self-serving bias since active decision makers have a privileged access to their affective reactions (Knobe and Malle 2002), which are tapped by rewards and punishments (Rolls 2004). Avoiding an active choice can also affect the feeling of agency (Frith 2014), which is essential for the experience of cognitive dissonance (Cooper 1971).

In addition to analysing whether avoiding an active choice affects the aspiration to update beliefs in a self-serving manner, the study analyses whether the difference in learning induced by the active choice reduction can explain differences in the subsequent risk-taking behaviour, in particular in the face of investment losses. Fernandez-Duque and Wifall (2007) document that decision-makers who make choices actively take more risks than decision-makers who observe the situation and decide how one should behave. This paper analyses whether avoiding an active choice affects risk taking indirectly by affecting the way investors learn from new information as reflected in the self-serving bias.

Particularly interesting is the question whether avoiding an active choice affects risk taking after losses. Risk taking after gains and losses has been subject of extensive research. Several empirical studies suggest that individual investors find it more difficult to sell losers than winners (Grinblatt and Keloharju 2001; Shefrin and Statman 1985) – an observation known as the disposition effect. So far, most theoretical explanations for the disposition effect are based on preference-based approaches such
as the value function in the prospect theory (Kahneman and Tversky 1979), mental accounting (Thaler 1980) or realization theory (Barberis and Xiong 2012). However, Summers and Duxbury (2012) find that preferences alone are not sufficient to explain the disposition effect. The authors show that removing the control over the initial decisions can eliminate the emotions of regret and elation following losses respectively gains and this can eliminate the disposition effect. Additionally, Staw (1976) suggests that the personal responsibility for the initial decision induces self-justification concerns that cause an escalation of commitment to a previously chosen losing course of action. Indeed, empirical studies show that investors are more willing to sell losers when the initial decision was made by chance (Lehenkari 2012), or by another person (Scherbina and Jin 2005), when they have someone else (e.g. a mutual fund manager) who they can blame for the losses (Chang et al. 2016), or when the selling decision can be delegated (Fischbacher et al. 2014; Richards et al. 2017).

These studies suggest that the disposition effect can be mitigated by reducing the emotional burden of losses, which is mainly based on utility considerations. But since risk taking is determined by expected utility, it could be potentially affected by the expectations. This paper tests whether risk taking after gains and losses and in particular the occurrence of the disposition effect is affected by the way investors update expectations after observing gains and losses, i.e. by differences in the prevalence of a self-serving bias between investors.

This conjecture is tested experimentally using a sample of 660 Internet users in Germany, which has been balanced with respect to their age and gender. The experiment was based on an incentivized investment game with two different tasks. In the probability estimation task, participants have been asked to estimate the probability that the payoff of a risky asset that they can observe is drawn from one of two possible distributions. Afterwards, the individuals have been asked to complete an investment task, which consisted of two choices. First, participants have been asked to choose between cash and investing in a risky asset. In the second choice, one group of participants was asked to decide how many shares of the risky asset they would like to hold and in the other group the number of shares of the risky asset was decided by a virtual manager so that participants in this group decided only if they accept the manager’s choice or prefer to hold cash instead. The participants in this group have been instructed that the virtual manager has no skills and decides about the number of shares randomly each time. Importantly, participants in both groups received the same information about the payoff of the risky asset in the same order and they performed the same beliefs updating task; they also had the same options regarding the number of risky asset they can hold. The difference between the groups was only in whether their choice regarding the shares of the risky asset were active or not.

The results suggest that investors react to the same information differently in dependence of the amount of active choices they made. In cases where participants in both groups choose to hold cash, there are no significant differences in the way participants updated their expectations. In contrast, in cases where participants decide
to invest in the risky asset, there are significant group differences in the expectations of risk takers after losses. Risk takers investing with a virtual manager deciding the size of the losses were more willing to revise their beliefs than risk takers who decided the risk exposure by themselves. These differences in learning from information associated with losses have a causal effect on the subsequent risk taking behaviour of risky asset holders. Mediation analysis show that having a manager to decide the size of the risk exposure causes an active reduction in risk taking after losses, while a significant part of the effect is caused by difference in the way risk takers investing with a manager learn from adverse information.

The effect of reducing the amount of active choices on learning from adverse information can explain puzzling rebalancing behaviour of households across asset classes. Using administrative data from about 4.8 million Swedish households Calvet et al. (2009) find that households use different rebalancing strategies across stocks and funds. In particular, the authors find that losses have a larger impact on the probability to sell mutual funds than stock investments. Similarly, Chang et al. (2016) observe that mutual fund investors find it easier to sell losers than investors holding stocks. The variation in the rebalancing behaviour across asset classes exists even among investors holding multiple asset classes. To explain these patterns in investment behaviour, Chang et al. (2016) employ utility-based considerations, which rely only on the standard instrumental value of expectations. The authors consider the possibility that expectations might affect the investment behaviour, but the employed experimental design did not allow analysing how such expectations might affect the decision behaviour of mutual fund investors and stock holders.

This paper brings forward a novel mechanism through which reducing the amount of active choices can affect risk taking and explain the differences in the observed household behaviour across asset classes. The results show that delegating decisions to a manager eliminates the motivation to discount information that does not match with the decision to invest with the manager and this makes selling after losses more likely. The results are unlikely to be driven by learning about manager’s skills since the manager’s decisions were random and investors were aware of this as tested at the beginning of the experiment and additionally highlighted when reporting the number of shares that the manager held in each period.

In addition to pointing out to an additional mechanism that influences investment risk taking, this paper contributes to the literature on preference formation suggesting that preferences can change endogenously as a function of previous choices (for a review see Ariely and Norton 2008). The free-choice paradigm pioneered by Brehm (1956) and replicated numerous times (for a review see Mills and Harmon-Jones 1999) is an example of how previous choices can influence preferences. In this paradigm, after choosing between equally attractive alternatives, people evaluate chosen items as more attractive and unchosen items as less attractive, i.e. they are changing their attitudes to be in line with their past choices. This effect is observed because the previous decision conflicts with the desirable aspects of the rejected alternative, and with the undesirable
aspects of the selected alternative (Festinger 1957). To resolve this conflict, alternatives are re-evaluated, which can be also seen as a drive for internal consistency (Hornsby and Love 2019). This paper shows that previous choices may influence decisions not only by changing the hedonic value of alternatives, but also indirectly by changing the way new information is employed when the attractiveness of these alternatives is re-assessed.

The results of this paper have implications for the personal investment decisions and for financial advisors. The results suggest that the performance of individual investors can be moderated by measures that influence the individual involvement in the investment process. Investors learn better from new information if they do not make active decisions, in particular in the face of adverse information associated with losses. An implication of this result is that investing with a mutual fund manager trying to time the market could be beneficial for the performance of individual investors holding additionally direct investment even if the mutual fund manager does not have any skills and this is common knowledge as in this experimental setting.
References


