Mediating Role of Risk Perception: Relationship of Overconfidence and Loss Aversion Biases with Investor's Decision

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ABSTRACT

Our research aims to analyze the moderating impact of risk perception on the relationship of biases (i.e., Overconfidence and Loss Aversion) and investor's decision Questionnaire was developed to collect the data. The questionnaire was taken from the existing studies. Convenience sampling is used in our study from the financial analyst and finance scholars of Islamabad/ Rawalpindi and Lahore. The consequences of this study are significant that contributes to the acceptance of our all hypotheses. Firstly, the study focuses only on the decision-making behavior of individual equity investor by considering the risk perception as mediator. Secondly, the sample includes investors located in Islamabad/Rawalpindi and Lahore. In the future, researchers can focus on other segments of investors and can also enhance the geographical boundaries for more general conclusions. This study will help investors develop the policies which reduce the element of behavioral biases of an investor during the decision-making process.

Keywords: Overconfidence, Loss Aversion, Decision Making Behavior, Risk Perception

INTRODUCTION

People trends to save money and invest them with the hope of getting high returns. According to Bashir, Javed, Ali, Meer and Naseem (2013) the investor is the one who sacrifices current benefit in the hope of gaining some more future benefit. For better gain, it is always instructed that the investors should put a strong control over their feelings. So that their feelings won't control their decision-making behavior (Babin & Donovan, 2000). In avoiding the uncertainty while making a decision, investor's decisions are normally ruled by cognitive biases (Keil, Tan, Wei, Saarinen, Tuunainen, & Wassenaar, 2000).

Human decision-making process relies upon a combination of cognitive and affective dimensions, as suggested by Behavioral Finance. Personal experience, beliefs, and values combining with social or societal influences an investor's decision-making procedure. Overconfidence is considered a bias for the investor's decision-making process. An investor tends to overvalue his cognitive abilities, information accuracy, and knowledge (Bhandari & Deaves, 2006; Shefrin, 2001). Once the stock market investors overvalue their skills, they take decisions which lead them to invest in the market. So, loss aversion is the tendency to which an investor avoids from losses. It was created by Kahneman and Tversky (1979). They developed it as a portion of original prospect theory. It is the propensity that people feel a stronger desire to escape from losses than to get gains. Risk perception is a mediating variable used. It is described how the situation is risky through an investor's evaluation? Regarding probabilistic forecasts, the

degree of situational uncertainty. And also, to what extent the uncertainty can be controlled (Baird & Thomas, 1985; Bettman, 1973).

Objectives

The objective of this study is to estimate the moderating impact of risk perception on the relationship of biases (i.e., Overconfidence and Loss Aversion) and investor's decision.

Significance

This work will contribute to the current literature of biases influencing the investor's decision. It will also provide knowledge to the investors that how a particular bias is interrupting his decision-making behavior, which would help them in controlling particular bias and making a rational decision for their investment. The results of the study will be helpful for the policymakers, financial advisor, equity investor, Finance Teacher, and Finance Students. The individual equity investor will know which bias interrupted his decision-making process, and who will reduce these biases and stronger their decision-making level.

Policy makers and financial advisor will also use to understand the outcomes of the study. They develop the policies which reduce the element of behavioral biases of an investor during the decision making process. The advisors also give the investor those suggestions which create no conflict with their behaviors. Teacher and students of finance section will get benefit from the findings by seeing the practical aspect of behavioral biases with compare to theoretically. And they will also make a judgment about any difference between them exist or not?

LITERATURE REVIEW

Investor Decisions

The rationality of investors has been the main statement in the majority of theories of finance. Financial theorist of traditional finance often assumes that investor decisions are rational because they are on the base of sound financial knowledge, details, and information. Behavioral finance states that human's nature is irrational. It is based on traditions, belief, and norms (Tversky & Kahneman, 1974). Psychological biases always affect the decisions of investors. Froot and Dabora (1999) have found that same shares and securities have different prices due to the different nature of human beings and the emotion they include in their decision making. The impact psychological biases vary from person to person, due to the difference in the personality (Charles, Reynolds & Gatz, 2001; Gross, Carstensen, Tsai, Goetestam-Skorpen, & Hsu, 1997; Mroczek & Kolarz, 1998; Orgeta, 2009; Yeung, Wong & Lok, 2011).

Behavioral finance is established on the base of classical financial theory, but behavioral finance excludes the assumption of traditional finance concept that investors are rational. Behavioral finance declares that investor also includes their emotions and belief along with their financial knowledge while making investment decisions (Barber & Odean, 2001), and which make the decisions of the investor irrational and the term used for this irrationality in the decision making is a known as "narrow framing." While the traditional finance states that the investors are ration in their investment decisions (Fama, 1965) and those investors are considered rational actors in the financial market, and they take their decisions on the base of sound financial knowledge. Behavioral biases have an impact on investor decision-making process.

Overconfidence Bias and Investor Decisions

Overconfidence is a mental characteristic which has been found on financial specialists through bleeding edge research. It makes an overestimation of the financial specialist specialized information and its capacity to control the instability, thinking little of dangers or risk of failure. This bias is measured by four aspects: Market knowledge, self-control, specific skill and ability of stock selection. The studies support that some investors are overconfidence about their knowledge of equity market based upon their years of experience (Alicke, Breitenbecher, Yurak, & Vredenburg, 1995; Kruger, 1999). The decision-making process is getting affected by the biases. Poluch (2011) concluded that the managers at a lower level and high level are more overconfidence than the managers at the middle level.

Soll and Klayman (2004) examined that having appropriate confidence was essential for communicating one's knowledge, making appropriate risky decisions, knowing when to seek information and advice. However, managers can also display overconfidence. Similarly, Bhandari and Deaves (2006) concluded that the precision of their information and overestimate of knowledge is the tendency of overconfidence. Several biases have an impact on decision making including biases confirmation, the illusion of control, overconfidence bias (Bashir et al., 2013). Due to overconfidence, it leads investors to find surprises both as positive and negative that make the inefficient financial market grounded on their incorrect forecasts (Shefrin & Thaler, 1988).

H1: Overconfidence bias is positively associated with the investor's decision.

Loss Aversion Bias and Investor Decisions

Kahneman and Tversky (1979) developed the concept of loss aversion bias by making an addition to the prospect theory. A theory that investor value gains and loss in a different manner. Subsequently, if an individual is given to choose from two equivalent decisions. The individual will opt for the option with the lesser loss. This theory is also known as "loss-aversion theory or prospect theory." So this theory concludes that the tendency of people is generally stronger to avoid losses than to acquire gains (Thaler et al., 1997).

Loss aversion is usually referred to an individual's trend to ease losses as much as possible to acquire gains (Kahneman, Knetsch, & Thaler, 1991). Previous Studies recommend that, psychologically, losses are two times as influential as gains. Therefore loss aversion direct to risk aversion when investor assesses the likely gain, a risk-averse individual when will prefer those options in their decisions having a low level of risk, this is because most slightly than make gains, they would rather stay away from losses (Benartzi & Thaler, 1995). However traditional finance considers this "endowment effect" people are keen to pay more to keep for something they will own than to obtain something possessed by someone else and any other conclusion of loss aversion is irrational (Heidhues & Kőszegi, 2008).

Loss aversion is characterized by three properties. To begin with, riches is measured concerning a given reference point. Second, the reduction in utility intimated by a negligible loss (concerning the reference point) is constantly bigger (in supreme quality) than the increment in utility coming about because of a minimal increase. Third, even though peoples are risk unwilling in the area of increases, they are danger cherishing in the area of losses (Kahneman & Tversky, 1992). So the investors who have more loss averse attitudes will take the least risky decisions. Koszegi and Rabin (2006) stated that with other decisions and events, investors do not

fully incorporate decisions at hand, but the loss aversion attitude of the investor will affect their investment in the financial market.

H2: Loss aversion bias is positively associated with the investor's decision.

Risk Perception as a Mediator

Investor fear comprises an investor's general tendency toward financial risk which represents risk tolerance level and its current interpretation of the stock market's riskiness which showed risk perception. Malmendier and Nagel (2011) proposed that experiences about bad risk can decline the investors' willingness to take risks by lessening their risk tolerance (i.e., the preference channel). Risk perception is affected by cognitive biases that come up through ways of thinking known as heuristics (Diacon, 2004).

H3a: Risk perception plays a mediated role between overconfidence bias and an investor's decision.

H4a: The relationship between loss aversion bias and investor's decision is mediated by Risk perception.

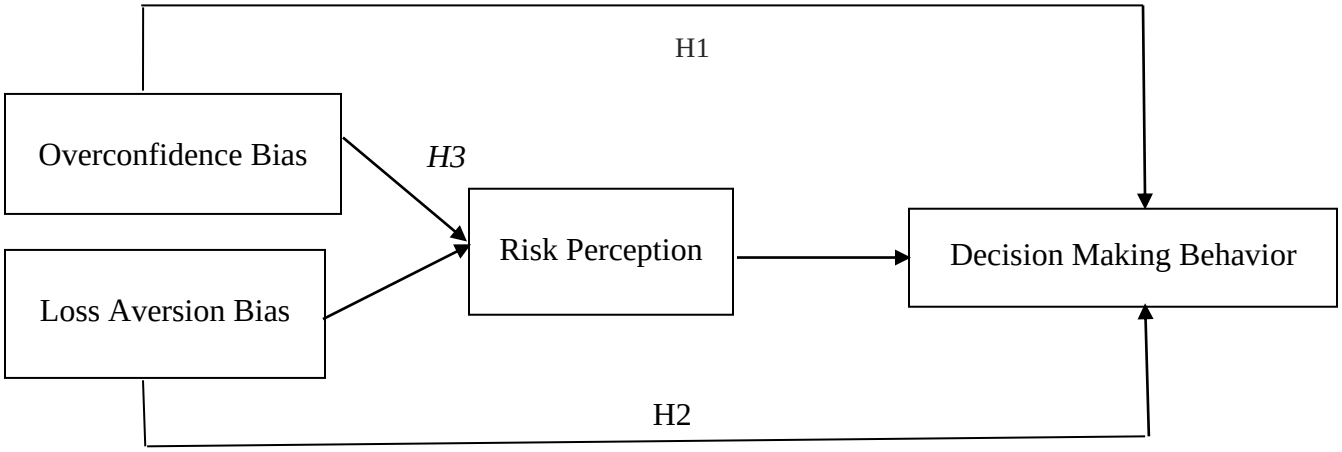

Figure1: Theoretical Framework

METHODOLOGY

Instruments

The study was conducted to estimate the moderating impact of risk perception on the relationship of biases (i.e., Overconfidence and Loss Aversion) and investor's decision. Data were collected using questionnaires. The respondents were the investors of Pakistan stock exchange. The distributed questionnaires were 250. 170 were returned from 250. So, the response rate was approximately about 68%. A five-point likert scale with 5 corresponding "very much" satisfaction/agreement and 1 presenting "very much" dissatisfaction/disagreement with each item is used. The questionnaire was adopted from (Bashir et al., 2013), and it consists of 3 items for measuring overconfidence and 3 items for measuring loss aversion. For risk perception, 8 closed-ended questions adapted from Simon et al. (2000). Decision-making behavior during stock investment 18 adapted from (Samuelson & Zeckhauser, 1988).

Population and Sample

The population of our study was the investors of the Pakistan stock exchange (Islamabad and Lahore regions). Convenient sampling technique was used.

Table 1: Hypotheses Testing for Outcomes

Predictors	β	t	Sig.
Overconfidence Bais	0.13**	2.41	0.06
Loss Aversion Bais	0.89***	24.5	0.03

n=170, ***p<0.001, **p<0.01, * p<0.05

*** Add R Square and Change in R Square

The results of Table 1 indicates that overconfidence bias is significantly and positively associated with the investor's decision (β = 0.13; p<0.01). Hence, it gives the acceptance of our Hypothesis 1. Results of Table 1 also indicates that loss aversion bias is positively and significantly related with investor's decision (β = 0.89; p<0.001). Therefore, hypothesis 2 is also accepted.

Mediation Analysis

For testing mediation hypotheses, Model 4 from Hayes process macro was used, and the results for mediation are shown in Table 2.

To check the impact of the risk perception as a mediator effect on the overconfidence bias and investor's decision, it is observed that the direct effect of overconfidence bias on investor's decision has been considerably reduced after controlling for the mediator (β = 0.64). Though after reduction, the results are still significant. Moreover the upper limit CI (0.04) and lower limit CI (0.19) do not contain zero between them which suggests the risk perception as a mediating role in this relationship. This leads to acceptance of H3.

To indicate the effect of risk perception as a mediator between the loss aversion bias and investor's decision, it is observed that the direct effect of loss aversion bias on investor's decision has been considerably reduced after controlling for the mediator (β = 0.98 to 0.54). Though after reduction, the results are still significant. Moreover the upper limit CI (0.641) and lower limit CI (0.93) do not contain zero between them which suggests the risk perception as a mediating role in this relationship. This leads to acceptance of H4.

Table 2: Results of Mediation Analysis

Risk Perception	Effect of IV on M (a path)		Effect of M on DV (b path)		Total effect of IV on DV (c path)		Direct effect of IV on DV (c' path)	
	B	T	B	T	B	t	B	t
Overconfidence Bias	0.65***	14.6	0.17***	2.84	0.98**	28.3	0.64***	13.3
Loss Aversion Bias	0.86***	21.9	0.22***	3.54	0.98***	28.3	0.54***	10.6

n=170, * p<0.05, ** p<0.01, *** p<0.001, No. of bootstrap resamples = 5000

CONCLUSION

Our study aims to check the moderating effect of risk perception on the relationship of biases (i.e., Overconfidence and Loss Aversion) and investor's decision in the Pakistan stock exchange. The study provides empirical evidence on the significant positive association of both biases (i.e., Overconfidence and Loss aversion) with the investor's decision. Moreover, it also conforms the significant mediating role of risk perception between these relationships. Individual biases are one of the key significant reason behind the irrational investor's decision-making behavior. These results would help the investors to know that which bias interrupted his decision-making process.

REFERENCES

Alicke, M. D., Klotz, M. L., Breitenbecher, D. L., Yurak, T. J., & Vredenburg, D. S. (1995). Personal contact, individuation, and the better-than-average effect. *Journal of Personality and Social Psychology*, *68*(5), 804-825.

Babin, C. E., & Donovan, W. J. (2000). *Investing secrets of the masters: Applying classical investment ideas to today's turbulent markets*. New York: McGraw Hill.

Baird, I. S., & Thomas, H. (1985). Toward a contingency model of strategic risk taking. *Academy of Management Review*, *10*(2), 230-243.

Barber, B. M., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. *The Quarterly Journal of Economics*, *116*(1), 261-292.

Bashir, T., Javed, A., Ali, U., Meer, U. I., & Naseem, M. M. (2013). Empirical testing of heuristics interrupting the investor's rational decision making. *European Scientific Journal, ESJ*, *9*(28), 432-444.

Benartzi, S., & Thaler, R. H. (1995). Myopic loss aversion and the equity premium puzzle. *The Quarterly Journal of Economics*, *110*(1), 73-92.

Bettman, J. R. (1973). Perceived risk and its components: A model and empirical test. *Journal of Marketing Research*, *10*(2), 184-190.

Bhandari, G., & Deaves, R. (2006). The demographics of overconfidence. *The Journal of Behavioral Finance*, *7*(1), 5-11.

Charles, S. T., Reynolds, C. A., & Gatz, M. (2001). Age-related differences and change in positive and negative affect over 23 years. *Journal of Personality and Social Psychology*, *80*(1), 136-151.

Diacon, S. (2004). Investment risk perceptions: Do consumers and advisers agree? *International Journal of Bank Marketing*, *22*(3), 180-199.

Fama, E. F. (1965). The behavior of stock-market prices. *The Journal of Business*, *38*(1), 34-105.

Froot, K. A., & Dabora, E. M. (1999). How are stock prices affected by the location of trade? *Journal of Financial Economics*, *53*(2), 189-216.

Gross, J. J., Carstensen, L. L., Tsai, J., Goetestam-Skorpen, C. G., & Hsu, A. Y. C. (1997). Emotion and aging: Experience, expression, and control. *Psychology and Aging*, 12, 590–599.

Houghton, S. M., Simon, M., Aquino, K., & Goldberg, C. B. (2000). No safety in numbers: Persistence of biases and their effects on team risk perception and team decision making. Group & Organization Management, 25(4), 325-353.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decisions under risk. *Econometrica*, 47, 263–291.

Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1991). Anomalies: The endowment effect, loss aversion, and status quo bias. *Journal of Economic Perspectives*, *5*(1), 193-206.

Keil, M., Tan, B. C., Wei, K. K., Saarinen, T., Tuunainen, V., & Wassenaar, A. (2000). A cross-cultural study on escalation of commitment behavior in software projects. *MIS quarterly*, *24*(2), 299-325.

Kőszegi, B., & Rabin, M. (2006). A model of reference-dependent preferences. *The Quarterly Journal of Economics*, *121*(4), 1133-1165.

Kruger, J. (1999). Lake Wobegon be gone, the" below-average effect" and the egocentric nature of comparative ability judgments. *Journal of Personality and Social Psychology*, *77*(2), 221-237

Malmendier, U., & Nagel, S. (2011). Depression babies: do macroeconomic experiences affect risk taking? *The Quarterly Journal of Economics*, *126*(1), 373-416.

Mroczek, D. K., & Kolarz, C. M. (1998). The effect of age on positive and negative affect: a developmental perspective on happiness. *Journal of Personality and Social Psychology*, *75*(5), 1333-1349.

Orgeta, V. (2009). Specificity of age differences in emotion regulation. *Aging and Mental Health*, *13*(6), 818-826.

Paluch, D. (2011). Overconfidence bias in decision-making at different levels of management (Doctoral dissertation, University of Pretoria).

Samuelson, W., & Zeckhauser, R. (1988). Status quo bias in decision making. *Journal of Risk and Uncertainty*, *1*(1), 7-59.

Shefrin, H. (2001). Behavioral corporate finance. *Journal of Applied Corporate Finance*, *14*(3), 113-126.

Shefrin, H. M., & Thaler, R. H. (1988). The behavioral life-cycle hypothesis. *Economic Inquiry*, *26*(4), 609-643.

Simon, M., Houghton, S. M., & Aquino, K. (2000). Cognitive biases, risk perception, and venture formation: How individuals decide to start companies. *Journal of Business Venturing*, *15*(2), 113-134.

Soll, J. B., & Klayman, J. (2004). Overconfidence in interval estimates. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *30*(2), 299-331.

Thaler, R. H., Tversky, A., Kahneman, D., & Schwartz, A. (1997). The effect of myopia and loss aversion on risk taking: An experimental test. *The Quarterly Journal of Economics*, *112*(2), 647-661.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, *185*(4157), 1124-1131.

Yeung, D. Y., Wong, C. K., & Lok, D. P. (2011). Emotion regulation mediates age differences in emotions. *Aging & Mental Health*, *15*(3), 414-418.