

ANALYZING THE EFFECTIVE BEHAVIORAL FACTORS ON THE INVESTORS' PERFORMANCE IN TEHRAN STOCK EXCHANGE (TSE)

Dr. Mohammad Hossein Ranjbar¹, Dr. Bijan Abedini², Mohammad Jamali³

Faculty of Management and Accounting, Hormozgan University, Hormozgan, Iran

Faculty of Management and Accounting, Hormozgan University, Hormozgan, Iran

Department of Management and Accounting, Islamic Azad University, Qeshm Branch, Qeshm

Abstract- This study has been done based on the theories of financial behavior. The basis of theories of financial behaviors is based on the psychology. This theory attempts to analyze the effects of cognitive senses and errors on the investors in stock exchange. Therefore, the purpose of this study is to examine the relationship between effective behavioral factors on the investors' performance in Tehran stock exchange. A sample of 148 investors has been selected as sample members. In order to collect the research data, a questionnaire has been employed. Structural equation modeling is the main statistical method that has been used for analyzing the research data. The results of this study revealed that availability bias and anchoring are the main effective dimensions of heuristic methods on the investors' performance. Also the results revealed that herding behavior is another effective factor on the investors' performance. In addition, loss version and mental accounting are the main effective dimensions of expected theory that influence the investors' performance negatively.

Keywords: Expected Theory, Herding Behavior, Heuristic Methods, Tehran Stock Exchange

1. Introduction

Although many studies have been done in terms of capital market in Iran, but some of them have done in terms of investors' behavior formation. Recognition of the participators' decision making process in stock exchange is one of the most important issues for investors and participators in stock exchange. Many authors attempted to study and understand the investors' behavior and examining the effects of these factors on the investors' decision making and performance. The reason is that the effective behaviors on the investors' decision making and performance is very important (Yousefi and Shahrabadi, 2009).

During the past decades, the authors of financial field attempted to find and explain the especial cases through other fields such as psychology, social sciences, and physics. This is why that many interdisciplinary fields are has been formed such as financial economics, financial econometrics, financial mathematics, and decision making theory. The integration of economic theories with prominent psychological theories is one of the main studies that have been done in this area. This field is called behavioral finance. Conman is the most famous psychologist that developed several models for explaining investors' behavior under uncertainty conditions. It is supposed in traditional financial economics that the decision makers act rationally and always attempt to maximize their expected utility. In other words, perfect ration of factors and the decision making based on the maximum expected utility are the main bases of traditional financial paradigm. On the other hand, it is supposed in behavioral finance that the financial phenomenon can be explained through other models that do not suppose economic factor as fully rational ones. In some of the behavioral financial models, the factors have behavior that are nor rational fully. In some others, the factors have sound believes, but their selections are not compatible with maximization of expected utility (Raei and Fallahpor, 2004).

Understanding the effective behavioral factors on the investors' decision making and performance and how they influence investors' investment performance is necessary to understand and explain the investors' decisions. In other words, understanding the normal behavior is important. The reason of this importance is that the investors attempt to justify their reaction in terms of better return.

2. Review of literature

A. *The effective behavioral factors on the investors' decision making process*

According to Ritter (2003), psychology is the basis of behavior and individuals' decision-making process depends on several cognitive errors. These errors can be divided into two sets. These include the errors of heuristic simplification process and the errors of accepting stereotypical mental frames in the theory of expected variable (Waweru et al., 2008: 27). These factors, herding behavior, and market factors are described in the following section.

B. Heuristic methods

Indeed, the heuristic methods are rule of thumb and mental short cues that leads to more convenience in decision making process especially in the complex and uncertainty environments (Kahneman and Tversky, 1974: 1124). All in all, these heuristic methods can be important and beneficial especially in conditions with limited time (Wawro et al., 2008: 27). It is should be remembered about these methods that they lead to bias in some cases (Ritter, 2003: 431). Kahneman and Tversky (1974) are the first authors that introduced the factors of heuristic methods in three sets including representativeness, availability bias, and anchoring (Kahneman and Tversky, 1974: 1124). Wawor et al. (2008) added two factors to the heuristic factors including gambler’s fallacy and overconfidence.

C. Prospect theory

The expected utility theory and prospect variable theory are two main approaches in terms of decision making from different perspectives. The prospect variables theory is focused on the mental decision making that is influenced by investors’ value systems, but the expected utility theory is concentrated on the rational expectations of investors (Filbeck et al., 2005: 171). Expected utility theory is the normal model of rational selection and descriptive model of economic behavior that controls the analysis of risky decision making (Kahneman and Tversky, 1979: 632). Theory of prospect variable described some of the effective mental conditions on the decision making process such as loss aversion, regret aversion, and mental accounting (Wawro et al., 2008: 28).

D. Herding behavior

The herding behavior in the financial market is defined as the investors’ tendency toward following other investors’ behavior. The academic authors and researchers focused on the herding behavior. The reason is that herding behavior influences equity price and can influences the attributions of risk and return models. This is effective on the vision of assets pricing (Tan et al., 2008: 61). From behavioral perspective, herding behavior can leads to some emotional biases such as confirmatory, congruity and cognitive conflict, home bias, and gossip. The investors may prefer herding behaviors, if they believe that herding information can help them in find the beneficial and reliable information (Kallanteriks et al., 2010: 306). All in all, investors like to prehistoric men that had a few information about their surrounding environment and support themselves collectively (Caparrelli et al., 2004: 223). A summary of the effective behavioral factors on the investors’ decision making have been presented in table 1.

Table 1: the effective behavioral factors on the investors’ decision making (Wawor et al., 2008)

Factors	Behavioral variables
Heuristic factors	Agency
	Overconfidence
	Anchoring
	Gambler’s fallacy
	Availability of bias
Prospect theory	Loss aversion
	Regret aversion
	Mental accounting
Herding behavior	Other investors’ decisions on selling and purchasing equity
	Selecting equity by other investors for exchange
	Volume of the selected equity by investors for exchange
	Dering speed

Exchange decisions and performance of investors

There are several decisions in terms of stock exchange such as equity sale and purchase, equity selection, equity maintenance time, and volume of equity for exchange. Equity sale and purchase are the main decisions in terms of equity exchange that are described in the following section.

Sale decision: the results of previous studies revealed that the investors decrease the decisions of selling assets that are disadvantageous in comparison to their purchase price. Shefrinand Statman (1985) refer to this phenomenon as disposition effect. Odean confirmed this result and pointed out that the investors tend to sale their equities with regard to its purchase price. However, describing this phenomenon is difficult in a rational scale. There is not any reliable reason for concluding that the investors sale their equities rationally, because they can predict their poor performance. In addition, Odean (1998) believes that the average return of sold equity is more than average return of preserved equities.

Purchase decision: Odean (1999) presented several agreements about the prominent equities that the investors tend to purchase them. As indicated in the previous sections, sale decisions prioritize the winner equities. On the other hand, it is should be remembered that purchase decisions are focused on the winner and loser equities. Odean (1999) pointed out that purchase decisions may have considerable effect. When purchase decision is made, individuals may does not find the best equity for purchase after considering different equities systematically. They purchase the equities that absorb their attention.

Investment performance

Some of the opponents of financial behavior criticize that the bad performance of irrational investors can eliminate them from stock exchange. In the other hand, some other believe that overconfidence of the investors with extremist exchange behavior can has considerable benefit (Anderson et al., 2005: 72). Oberlechner and Osler (2004) present the level of overconfidence effect on the investors' performance that can be measured through investment rate and commercial experience of measurement. They believe that return of investment is the actual performance of investment. Return rate can be measured by investors in comparison to peers' profit rate. The investors' commercial experience is considered as a continuous scale that the investor has in the stock exchange. They believe that investment return cannot be influenced through overconfidence. However, overconfidence can influence the investors' commercial experience. Therefore, the purpose of this study is to examine the investors' evaluation of their investment performance. The conceptual model of this study has been presented in figure 1.

Conceptual model and hypotheses development

Hypothesis 1: the heuristic methods influence investors' investment performance in Tehran Stock Exchange.

Hypothesis 2: the prospect theory influence investors' investment performance in Tehran Stock Exchange.

Hypothesis 3: the herding behavior influence investors' investment performance in Tehran Stock Exchange.

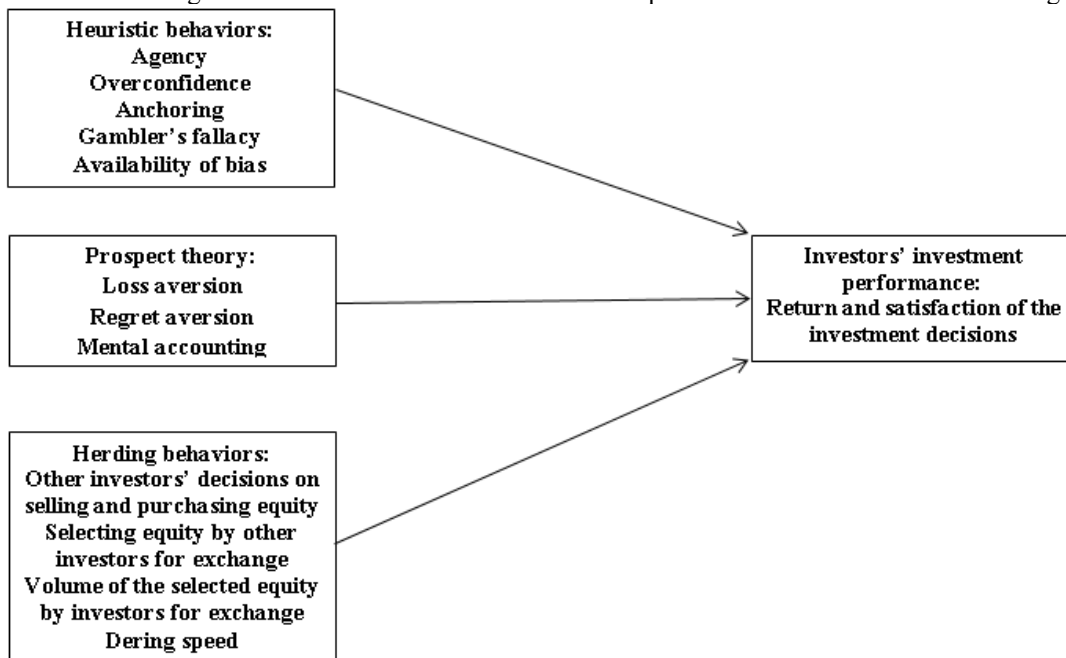


Fig 1: the conceptual model of study

3. Research methodology

This study is a practical research from goal perspective and is a descriptive-correlation research from methodology view. Data-collection instrument is a questionnaire that consists of two parts. This has been developed by Loung and Thu Ha. The first part of this questionnaire includes 27 questionnaires for measuring investors' performance and its effective behavioral factors. This part of the questionnaire has been developed in Likert seven-point scale. The second part includes questions for measuring demographic characteristics of the respondents such as age, gender, educational level, experience of investment in stock exchange, monthly income, experience of stock exchange, volume of investment, and others. The statistical population of this study includes the investors and shareholders in Tehran Stock Exchange. A sample of 155 investors and shareholder has been selected and then 148 ones of them indicated the questionnaire successfully. The sampling method was convenience sampling. Final data analysis has been done through 148 questionnaires. In order to examine validity of the questionnaire, face validity has been used. For this purpose, the questionnaire has been distributed among academic experts and professors and then they have been asked to review and correct the questionnaire. The final version of the questionnaire has been prepared after doing these corrections and modifications. In order to examine reliability of the questionnaire, confirmatory factor analysis has been used that its results have been presented in table 3.

4. The findings

The descriptive and inferential findings of the study have been presented in this section. In order to this, descriptive findings of the study (the respondents' demographic characteristics) have been presented in table 2.

Table 2: the respondents' demographic characteristics

Demographic characteristics	Distribution	Frequency	%	Demographic characteristics	Distribution	Frequency	%
Gender	Male	117	79.1	Educational levels	Diploma	12	8.1
	Female	31	20.9		M.Sc.	74	50
Age	18-25	12	8.1		M.A.	44	29.7
	26-35	41	27.7		Ph.D.	18	12.2
	36-45	50	33.8	Experiences in stock exchange (years)	Less than 1	24	16.2
	46-55	12	8.1		1-3	12	8.1
	More than 55	33	22.3		3-5	47	31.8
					5-10	33	22.3
			More than 10		32	21.6	

The primary questionnaire of heuristic methods includes eight questions that refer to agency, overconfidence, and anchoring. Two questions of agency were eliminated from final analysis. The reason of this elimination is that their factor loading was less than 0.5. The questions of prospect variable were 6 that two of them eliminated because of their factor loading. These two questions were about regret aversion and so this dimension was eliminated from model. The primary questionnaire of market factor includes 6 questions that all of them were eliminated, because of their factor loading that is less than 0.5. The questionnaire of herding behavior includes 4 questions that one of them was eliminated because of its factor loading. Finally, the questionnaire of investment includes 3 questions and none of them were not eliminated from final analysis. All in all, 11 questions of 27 questions were eliminated from final analysis.

Table 3: the results of confirmatory factor analysis

Variables	Questions	Factor loading
Heuristic methods	Q1	0.85
	Q3	0.63
	Q4	0.73
	Q5	0.52
	Q6	0.79
	Q7	0.82
Prospect behavior	Q9	0.68
	Q10	0.53
	Q13	0.91
	Q14	0.63
herding behavior	Q21	0.67
	Q22	0.47
	Q23	0.85
Investment performance	Q25	0.76
	Q26	0.87
	Q27	0.59

In order to examine reliability of the questionnaire, Cronbachs' Alpha Coefficient has been used. Cronbachs' Alpha Coefficient was 0.72 for heuristic methods, 0.76 for prospect variables, 0.81 for herding behavior, and 0.846 for investment performance. In order to examine fitness of the research model, six criteria of structural equation modeling have been examined. The first criterion is X²/df. If the value of this criterion is between 1 and 3, it can be said that the model fitness is confirmed. This value was 3.38 for our model. The second fitness criterion is Root mean squared error of approximation (RMSEA). If this criterion is close to 0.05, it can be said that model model fitness is confirmed. The value of this criterion is 0.071 in our study. GFI, IFI, NFI, and CFI are other model fitness criteria that their values are 0.86, 0.92, 0.80, 0.84 for our model. The summary of model fitness criteria have been presented in table 4.

Table 4: the summary of model fitness

RMSEA	CFI	NFI	IFI	GFI	X ² /df
0.071	0.84	0.80	0.92	0.86	3.38

Structural equation modeling of the study and confirmatory factor analysis has been presented in figure 2.

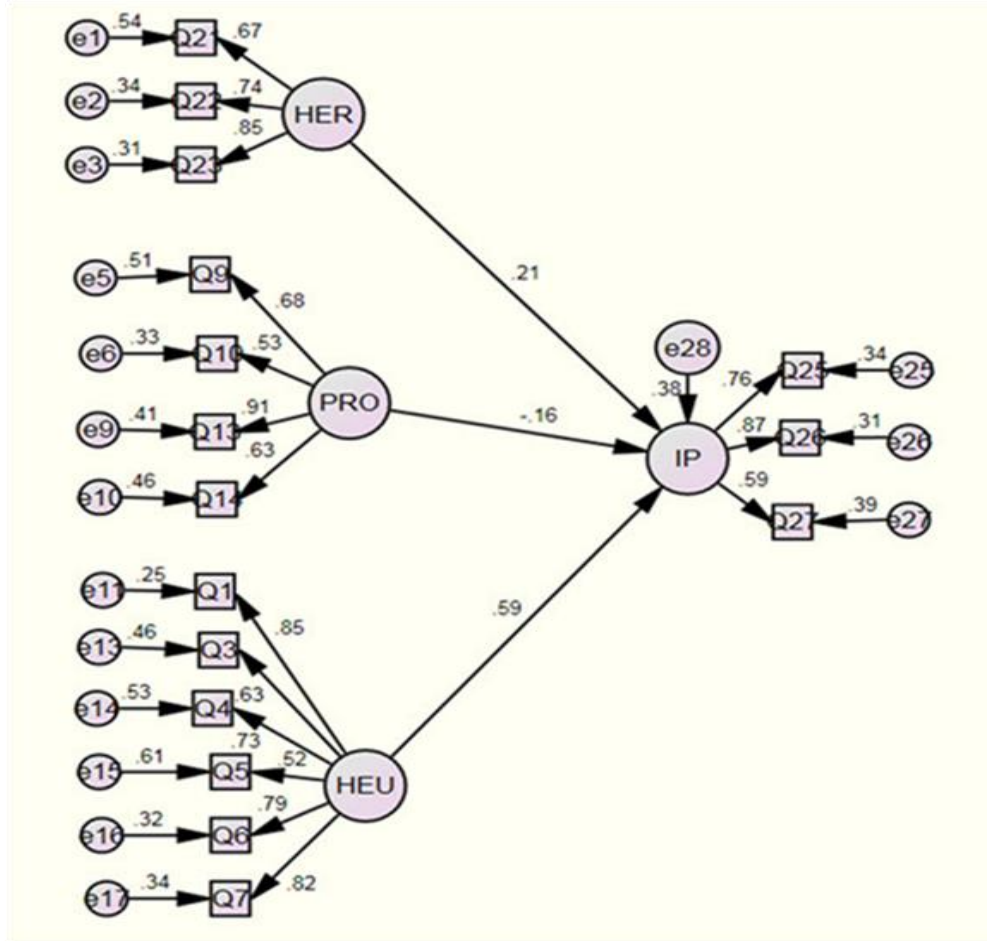


Fig 2: structural equation modeling and confirmatory factor analysis

As shown in the model, there are three effective factors on the investors' investment performance in Tehran stock exchange. These include herding behavior (Q21, Q22, Q23), prospect variable (Q9, Q10, Q13, and Q14), and heuristic methods (Q1, Q3, Q4, Q5, Q6, Q7). Factor loading of these factors is more than 0.5. The results revealed that the heuristic methods have the most effect on the investors' investment performance and its predicted variance is 0.59. Also herding behavior has significant positive effect on the investors' investment performance and its predicted variance is 0.21. Finally, the results showed that prospect variable (loss aversion and mental accounting) has negative effect on the investors' investment performance. It is should be remembered that predicted variance of this hypothesis is -0.16. All in all, these factors explain 58% of the dependent variable's variance. Based on the results of hypotheses analysis, it can be said that the first, second, and fourth hypothesis is supported and third hypothesis is not supported. As the results revealed, the investors' investment performance can be improved through encouraging herding behaviors and heuristic methods and discouraging prospect behaviors. In addition, one of the main findings of our study is that market factors have not any significant effect on the investors' investment performance. The summary of structural equation modeling findings has been presented in table 5.

Table 5: summary of the structural equation modeling findings

Hypotheses	standard Prediction	Critical rate (CR)	Sig	Hypotheses results
H1: the heuristic methods influence investors' investment performance in Tehran Stock Exchange.	0.59	4.48	0.008	Supported
H2: the prospect theory influence investors' investment performance in Tehran Stock Exchange.	-0.16	-2.31	0.006	Supported
H3: the herding behavior influence investors' investment performance in Tehran Stock Exchange.	0.21	2.58	0.017	Supported

5. Discussion and conclusion

As the results of this study revealed there are three effective factors on the investors' investment performance. These include herding behaviors, heuristic methods, and prospect variable. The positive effect of heuristic methods on the investors' performance refers to this fact that overconfidence and anchoring are two main effective factors on the investment. Many authors believe that overconfidence is a desirable variable. Barber and Odean believe that overconfidence is very an important for difficult functions and predicting low probabilities. Selecting the equity that has the best performance is a difficult function. Therefore, selecting equity is a function that investors need overconfidence in them (Barber and Odean, 2001). Some other authors believe that the investors with higher levels of overconfidence have more interactions than rational investors. This is why that they may influence exchange volume, market deep, wealth distribution, and other incomes (Allen and Evans, 2005: 108).

In addition to the heuristic methods, herding behaviors are effective factors on the investors' investment performance. Hirshleifer and Teoh (2003) pointed out that overconfidence can be helpful in improving herding behaviors in the stock exchange. Although the investors with herding behaviors attempt to be better, but the investors with non-herding behaviors seek to be better than their competitors (Lutje, 2009: 825). Therefore, it is necessary to consider the positive and negative effects of herding behaviors before than decision making in order to achieve higher levels of return.

As the results revealed heuristic methods and herding behaviors influences investors' investment performance positively. On the other hand, prospect variable influences investors' investment performance negatively. Therefore, loss aversion is a natural behavior among investors. This idea is consistent with beliefs of Adin (1999). Indeed, there is not any riskless investment. This is why that we can say that the investors cannot achieve higher levels of return without undertaking risks. Although investors shall to consider different aspects before decision making, but over-accuracy can leads to few operations among investors. Therefore, they may loss opportunity of investment and achieving higher profits. In addition, investors should organize their portfolios in autonomous accounts (Ritter, 2003: 431). Finally, it should be said that every section is a part of market and can be influenced through market changes. Therefore, the investors cannot make the best decision in the market, if they do not compare every equity with others.

6. Empirical suggestions

- a. As the results of this study revealed, heuristic methods influence investors' performance positively. Therefore, it is suggested that the investors of Tehran Stock Exchange shall to rely on their skills and abilities so that their investment outcomes can be improved. In addition, overconfidence can help the investors to predict the future trend in uncertainty conditions.
- b. Another part of the results revealed that herding behavior influences investors' performance in Tehran Stock Exchange positively. Because Tehran Stock Exchange is not a matured stock exchange and there is shortage of reliable information, it is suggested that the investors should select good partners for them and also create a coalition as an investment source. Also the investors can establish an association for collecting reliable information.
- c. Final part of our results revealed that prospect variable (loss aversion and mental accounting) influences investors' performance negatively in Tehran Stock Exchange. Therefore, it is suggested that the investors consider information carefully and do not consider previous losses in their decision making. Finally, it is suggested that investors should not examine portfolios autonomously. The reason is that there is a serious relationship between different parts of portfolio. Considering portfolios simultaneously results in better investment decisions.

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