Effect of Behavioral Biases on the Decision- Investors in Tehran Stock Exchange

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Abstract

This study aims at studying the impact of investors’ behavioral biases in the decision-making process in Tehran Stock Exchange. This study is an applied research in nature of purpose, and a survey in terms of collecting data that are the descriptive information. The relationship between variables in this study is in the correlational research category, and the method of gathering information is cross-sectional in terms of time. Selected based on non-probability sampling (available), the study population comprised of 384 investors in Tehran Stock Exchange. Required data were gathered based on the model of research gathering through questionnaires distributed among investors in Tehran Stock Exchange. The questionnaire’s validity confirmed through face validity. In order to confirm the reliability, Cronbach’s alpha was used: the validity of the independent variable confirmed 0.836 and the dependent variable was approved with reliability counting 0.720. Descriptive statistics employed to describe the data. And, since the data were normally distributed, Pearson parametric test was used to test the hypotheses. The non-normal data was tested by the Spearman non-parametric test. The data were analyzed with SPSS 16 software. Results indicate that there is a significant relationship between behavioral bias and investors’ decision-making. Furthermore, there is a significant relationship between aspects of behavioral biases (short-term thinking, overconfidence, herd behavior, event driven, find fulcrum point) and investors' decision-making.

Keywords: Behavioral bias, Behavioral intentions, Decision-making, investors.
1- Introduction

Qualitative studies conducted on human behavior and the factors influencing it in recent years, especially in the financial and capital markets, have challenged the financial assumptions and theories that scholars have found them fundamental in their research and studies (Michael et al., 2013). One of the most challenging observations in the financial markets is that- contrary to the markets efficient- return on equity is predictable in different time periods (Kim and et al., 2008). One of the most important theories explaining this issue is behavioral finance theories which contains the potential to serve as valuable supplements for neoclassical theories that are dominant subjects in modern financial issues (Peterson, 2010).

Since the modern theories consider psychological factors as important inputs for financial analysis, they tend to explain the reactions in the financial markets that seem to come into conflict with the traditional theory (David, 2014). Accordingly, they play a constructive role and contribute to the decision-making process to avoid mistakes in this process and achieve the determined investment strategies. Today, an assessment of the predictive authority of the behavioral finance theory has turned to an essential and vital issue (Lucas, 2009). On the other hand, extensive behavioral biases that shape the behavior of investors helps to explain the behavior of stock prices in the market (Samadi et al., 2012).

The emerging of behavioral and psychological debates in investment analysis clearly suggests that investment decisions are not only far from economic and rational indicators, but also such other factors as cognitive and behavioral approaches can contribute to the decision making process when they tend to embark on selling or buying stocks (Shams and et al., 2012). The basic paradigm of behavioral finance is based on the idea that investors commit behavioral mistakes and they are predisposed when processing the information related to the value of securities which in turn results in deviation of market prices from what is predicted by a model of rational expectations (Toffler, 2005; quoted from Peterson, 2010).

In addition to various researches conducted in the field of behavioral predisposition, this paper inclined to recognizing the effects of the biases and predisposition in decision made by investors related to the stock selection. Also, the study tends to investigate the direct and indirect impacts on decision-making process.

2. Theoretical Foundations of the Research

1-2. Behavioral bias

Different perspectives have used to define the term behavioral bias in different concepts which one of them is as follows: In general, irrational behaviors are considered as behavioral bias (Badri, 2008). The bias can be defined as deviation from the correct and optimal decisions. Since time and resources of cognition are limited, we cannot obtain data from the environment to be analyzed efficiently (Nofsinger et al., 2008). Consequently, the human mind naturally uses rules of thumb. Properly used innovative methods can be effective; otherwise interfering biases in decision making processes will be inevitable. In general, people would be on the mistaken ground in the process of thinking, and decision-making
would be erroneous (David, 2014). Behavioral features that affect people’s decision-making process would be examined in behavioral finance investigations. The features are called "behavioral biases". Several studies have tried to investigate different aspects of biased-related errors and the way these errors have influenced financial investment decisions which are affected by several errors at the same time (Goudarzi, 2008).

Aspects of Behavioral Biases:

1- Short-term thinking

It motivates people to save for tomorrow rather than spend their money today. (Pompian, 2004). Short-term thinking is a permanent and unconscious issue which is based on the lack of data and information. Short-term thinking metaphorically can be considered as a merciless blade of a harvester machine keep compelling people likened to "avoid using of mind, or the process of mental decline." However, investment in the business and the capital market with short-term thinking attitude is exactly set on the opposite side of health and emotional well-being (Badri, 2008).

2- Overconfidence

Overconfidence doesn’t rely on knowledge of financial affairs as much as we think. In other words, there is no relationship between the overconfidence and the level of knowledge of people about financial knowledge. This is because the vast majority of people who invest in the stock market or other markets cannot even read parts of a financial statement or a balance sheet or they have no ability to interpret it. Or, they can’t understand, interpret and analysis the company's stock price charts deduced from statistical computing techniques. Even beyond that, most people accept and admit that they are not an expert in the field of finance and investment. However, they act as professional investors and make decisions associated to finance and investment. Their decisions are all based on their own personal judgment (Peterson, 2010).

3- Herd behavior

Compliance with total is one of the important issues discussed in behavioral finance paradigms, explaining the situation in which the investors carry out the similar trades and deals in a specified period of time. If the herd behavior of investors is due to their use of the shared information or the same source of information, then the behavior is called unintentional or false collective behavior. Unintentional collective behavior can be a fundamental adjustment in prices signifies the informational efficiency of the market and optimal allocating the financial resources based on fundamental variables of the market. In contrast, intentional herd behavior occurs when investors overlook and discount their personal information and analysis rationally or irrationally and thus follow and imitate others decisions (Chang et al., 2000; quoted from Mohammed et al., 20101).

4- Event-driven

Event-driven biases provoke a false sense in investors who believe that they have lost something that they couldn’t help losing it. Such false reasoning results in shaping attitudes or state of mind in people who they believe they cannot appreciate or take the available
chances in the future and they will miss the opportunities (Patterson, 2010).

5- Find Fulcrum Point

One of the ways to simplify the information by stock market participants or investors is finding fulcrum point. The decision-makers or investors rely on special parts of information as the main facular point, and then adjust it by using other available information. This is the way they make their judgment (Patterson, 2010).

2-2 Investors' decisions

Defining the decision making, it is said that forecasting and evaluating the existing solutions to reach a definite choice is called "decision making." The decisions people are making relying on the level of the knowledge and their information in the decision-making process that can be divided into three categories (certainty, uncertainty, risk). Decision making is a mental process resulting in doing or not doing an activity. It means an intention to do or not to do an action, to choose an idea or a thought or to abandon doubt or uncertainty. It also means the will or determination. Decision-making is a process through which solution for a specific problem is chosen (Zahedi, 2008, quoted from Rezaeian, 2004). Decision making consists of choosing a solution among several options and decision maker's job is to receive possible solutions, to choose the most proper one and to confirm the results and consequences of his/her natural selection. If the decision maker can choose the best proper solution, he will reach to a constructive decision. Decision making is the process of selecting a solution among several solutions and the main decision-making factors include: purpose, guidelines, and potential results of each of the solutions. The relationship of each factor with the purpose is determined according to their values and choosing an optimum solution will be originated from evaluation of results (Ataei Azimi, 2000).

In general, empirical evidence derived from studies of the capital markets indicates that the decision-making process of investors and their behavior is very complex and it is almost impossible to provide an inclusive model to predict their behavior in the market. Generally, it can be said that psychological factors influencing the intention of people to invest in the Tehran Stock Exchange are:

1. Biorhythmic factors
2. Intuitive and natural analysis ability
3. Get the prestige (eminence) and to be a shareholder
4. Compliance of buyer's image with the actual image of the company
5. Degree of risk taking
6. Level of self-confidence (Wyman, 2002; quoted from Aghaie et al., 2004).

3- Literature of Review

The results of studies conducted by Lipe and Salterio (2002) suggest that decision makers faced with both common and unique measures may place more weight on common measures than unique measures. They also showed that managers face with problem when determining the relationships between multiple criteria in different classes of Balanced Scorecard; otherwise, all criteria represent positive or negative performance. Several studies resulted in
identifying the influencing factors contribute to reduce biases associated with the Balanced Scorecard. Libby and et al., (2004) suggest that biases of common criteria are associated with cognitive capacity restraints and data quality resulted from unique criteria. They also assert that these biases can be reduced if they are bound to the accountability of the process and independent validation of the bias (Samadi, 2012).

Camerer et al (2005) in an article titled "a model of investor sentiment," have concluded that there are evidences indicating that investors in some cases show very little reaction to news and information.

Odin (1999) believes that one of the reasons for the high volume of trades is overconfidence. He suggested that overconfidence provides a state in which other people's decisions are regarded as decisions affected by other interests, thus people consider their own decisions more rational. This behavior can be intensified, especially in areas where people have knowledge. For example, people prefer familiar local stock or national stock rather than shares of companies abroad because they feel they have more information about that. However, this may be a misleading impression. Another example is a fallacious belief that a person who has experienced success with a random event has a greater chance of further success in additional attempts. This phenomenon is described as "hot hand fallacy" (Zanjirdar and et al., 2013).

Fernandez et al. (2009) categorize the behavioral biases into two groups: cognitive and heuristics (Emotional) biases which both results in irrational human decision making. Such emotional bias as loss aversion is rooted in insight and sudden emotions and they cannot be easily modified (Badri, 2014). Cognitive biases such as availability are originated from false reasoning, and receiving information can improve or reduce the erroneous decision making. Nevertheless, Shefrin showed that choosing portfolios with outlined perspectives theory is different with portfolio selection within the expected utility theory (Badri, 2014).

Aghaie et al (2004) in an article entitled "Factors influencing the decision making of investors in the Tehran Stock Exchange," were considered a wide range of factors and suggested that limited research have been conducted to determine the different method of selections taken by investors; though, investors decision making is getting more complex and risky and the results of these investments can leave a significant impact on people's lives. In this paper, they use an analytical approach to investigate the factors influencing the decision making of investors when buying shares and the results show that most investors have little interest in speculative and risky transactions. In the decision to buy a stock such factors as financial measures, dividend and earnings per share are very pertinent.

Feng & Seasholes (2005) in an article titled "Do Investor Sophistication and Trading Experience Eliminate Behavioral Biases in Financial Markets?" suggest that the sophistication (static differences across investors) and trading experience (evolving behavior of a single investor) eliminate the reluctance to realize losses. This ability makes it possible to track the evolution of the disposition effect as it is reduced and/or disappears.

Amir Shahi et al (2012) in a paper entitled "Determining the Factors Influencing Investment Decisions in Stock Exchange" showed that marketing communications channels of firms listed in Stock Exchange (brokerage agencies and verbal communication) are considered as
consequences of all the company's activities which are important factors influencing the decision to purchase stock by investors.

4. Conceptual model and hypotheses

![Conceptual Model Diagram]

**Figure 1: the Source of conceptual model; (Peterson, 2010)**

**The main hypothesis:**
Behavioral bias can influence on decision making of investors in companies listed in Tehran Stock Exchange.

**Secondary hypotheses:**
- The short-term thinking influences on investor's decisions.
- Overconfidence influences on investor's decisions.
- Herd behavior influences on investor's decisions.
- Event oriented influences on investor's decisions.
- Finding Fulcrum Point influences on investor's decisions.

5. The methodology, research population

This research is applied in nature of purpose, and a survey in collecting the descriptive information. The study population in this research consists of all investors in the stock exchange. However, according to unlimited number of investors' community Cochran's formula was used to make the infinite population available for sampling. Thus, 384 investors were selected for the analysis. The questionnaires, including Peterson's standard questionnaire...
containing 29 questions (questions 1 to 29) and Nasseri's standard questionnaire containing 15 questions (Questions 29 to 43), were used to collect data used to evaluate the behavioral bias. All the questions have been designed based on the Likert scale. The overall reliability of the questionnaires is calculated by taking aid of Cronbach's alpha for the two variables. The results are mentioned in the table below.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Aspects</th>
<th>Items</th>
<th>Cronbach's alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral bias</td>
<td>Short-term thinking</td>
<td>5-1</td>
<td>0.812</td>
</tr>
<tr>
<td></td>
<td>overconfidence</td>
<td>10-6</td>
<td>0.751</td>
</tr>
<tr>
<td></td>
<td>Herd behavior</td>
<td>17-11</td>
<td>0.779</td>
</tr>
<tr>
<td></td>
<td>Event Driven</td>
<td>24-18</td>
<td>0.748</td>
</tr>
<tr>
<td></td>
<td>Find Fulcrum Point</td>
<td>29-25</td>
<td>0.731</td>
</tr>
<tr>
<td>Behavioral bias</td>
<td></td>
<td>1-29</td>
<td>0.836</td>
</tr>
<tr>
<td>Investors' decision</td>
<td></td>
<td>44-30</td>
<td>0.720</td>
</tr>
</tbody>
</table>

Source: Research Data

6- The method of analyzing data

SPSS software is used to collect information and data, and descriptive statistics, tables and graphs and inferential analysis of the correlation tests were used to analysis data. Tests are performed at the 5% level of error. The Kolmogorov–Smirnov test (K–S test) was used to determine whether sample data are normally distributed. Normality distributed data were tested by Pearson test; while the other data was tested by the Spearman test.

7. Results

As it is mentioned above, since the variable distribution was ranked normal for investors' decision, the Pearson parametric test was used for statistical analysis. All aspects of behavioral bias are significantly lower than the level of 0.05, so they have non-normal distribution and the Spearman non-parametric test was used for the statistical analysis.
**Results of the main hypothesis:**

The main hypothesis was proposed first to examine the effects of behavioral bias on decision making of investors in Tehran Stock Exchange. Accordingly, Pearson's parametric test was used to study the significant effects between two variables. Since the correlation coefficient is 0.687 and significant level is less than 0.05, the hypotheses are confirmed. The results of this research found consistent with those in studies of Camerer (2005), Philip (2015), Falah Shams (2012) and Goudarzi (2009). Investing in a coherent state needs to analyze the nature of investment decisions. In this case, the activities related to the decision making process become an important factor for the investors’ decision-making action which in turn affects their psychological factors such as cognitive errors in financial decision makings.

**7-2: Results of the first sub-hypothesis**

Analyzing the first sub-hypothesis, the short-term thinking influences on investor's decisions in Tehran Stock Exchange, the Spearman non-parametric test was used to investigate the
significance level of the relationship between the two variables. Since the significance level is less than 0.05 and the correlation coefficient is 0.535, the hypothesis was confirmed. The outcomes of this research are consistent with results of Nikoomaram et al. (2011) and Falah Shams (2012).

7-3: Results of the second sub-hypothesis

Analyzing the second sub-hypothesis, overconfidence influences on investor's decisions in Tehran Stock Exchange, the Spearman non-parametric test was also used to investigate the significance level of the relationship between the two variables. Since the significance level is less than 0.05 and the correlation coefficient is 0.411, the hypothesis was confirmed. The outcomes of this research are consistent with results of Nikoomaram et al. (2011) and Shafrin and et al (2012).

7-3: Results of the third sub-hypothesis

Analyzing the third sub-hypothesis, herd behavior influences on investor's decisions in Tehran Stock Exchange, the significance level of the relationship between the two variables was investigated using the Spearman non-parametric test. The significance level was proved less than 0.05 while the correlation coefficient was 0.489, so the hypothesis was confirmed. The outcomes of this research are consistent with results of Samadi et al. (2011) and Shafrin and et al (2011).

7-4: Results of the fourth sub-hypothesis

Analyzing the fourth sub-hypothesis, event oriented influences on investor's decisions Tehran Stock Exchange, the significance level of the relationship between the two variables was investigated using the Spearman non-parametric test. The significance level was proved less than 0.05 while the correlation coefficient was 0.418, so the hypothesis was confirmed. The results of this research are consistent with results of Falah Shams (2012) and Farlin et al. (2011). And, shareholders are recommended to use the available and adequate information to make decisions.

7-4: Results of the fifth sub-hypothesis

Analyzing the fifth sub-hypothesis, finding the fulcrum point influences on investor's decisions in Tehran Stock Exchange, Spearman non-parametric test was used to prove the significance level of the relationship between the two variables which was less than 0.05 while the correlation coefficient was 0.397. So, the hypothesis was confirmed. The results of this research are consistent with those outcomes found in Zhan (2003).

8- Conclusion

Studying the correlation of the variables, the authors conclude that component of independent variable (behavioral bias) are consistent with the components of investors' decision making and we can say that behavioral biases were proved to have a significant relationship with the investors' decision making in Tehran Stock Exchange.
9- Recommendations and limitations of the research

1- To provide the capital market analysts and authorities of the stock exchange with the fast and accurate information in a timely manner to prevent investors from making hasty decisions.

2- To acquaint investors and stockholders with behavioral bias and its potential risks. Encourage them to use extensive training programs and help them to appreciate that analysis of the firms and long-term attitudes in investment affords both their country and them with a better profit prospect. This may help to have a profounder market with more rational behaviors.

3- To hold various workshops to teach people and investors with working data analysis software in order to take aid of the optimal use of the analysis in the decision making process.

4- To hold workshops on behavioral finance issues for shareholders and investors in the Stock Exchange.

5- To cooperate with research institutions, students and universities to conduct research in the field of behavioral finance and employ and enjoy the results of the researches in the decision making process in various investments on the stock exchange.

6- Limitations of the research can only be applied to the population of the study. Some behavioral bias and other factors are not considered in the decision making process.
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