

# The Effect of Market Variables and Herding Effect on Investment Decision as Factor Influencing Investment Performance in Iran

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## ABSTRACT

The purpose of this paper is to investigate the effects of market variables and herding effect on investment decision as factor influencing investment performance in Iran. Behavioral finance which considers the human behaviors in finance is a quite new area. Behavioral finance theories, which are based on the psychology, attempt to understand how emotions and cognitive errors influence individual investors' behaviors (investors mentioned in this study are referred to individual investors). Totally, 300 questionnaires were distributed to investors in Tehran stock change, that 275 questionnaires were used for the final analysis, which the results from analysis of them based on structural equation modeling (SEM) show that market variables has a positive influence on investment decision; and also, herding effect has a positive influence on investment decision; that market variables has high influence. Finally, investment decision has a positive influence on investment performance in Tehran stock change. Our findings provide support for the behavioral approach to portfolio theory and shed new light on the traditional approach to portfolio theory. This suggests when buying stocks, investors would choose companies with higher cash/stock dividends, as well as invest in short/mid/long term stock with adequate capital allocation. Investors with higher amounts of investment have multiple gains, investors with more cash reserved for the next investing opportunity would likely gain. This indicates investment decision and capital allocation play important roles.

**KEYWORDS:** Herding Effect, Investment Decision, Investment Performance, Market Variables.

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## 1. INTRODUCTION

Many researchers consider behavioral finance as good theory to understand and explain feelings and cognitive errors affecting investment decision-making [1]. Supporters of behavioral finance believe that the study of social sciences such as psychology can help to reveal the behaviors of stock market, market bubbles and crashes [2]. There are two reasons why behavioral finance is important and interesting to be applied for Tehran stock market. Firstly, behavioral finance is still a new topic for study. Until recently, it is accepted as a feasible model to explain how Investors of financial markets make decisions and then these decisions influence the financial markets [3]. Secondly, due to some evidences—subjective, academic, and experimental – it is concluded that Asian investors, included Iranian, usually suffer from cognitive biases more than people from other cultures [3]. Therefore, the consideration of the factors influencing the Iranian investors' decision-making process cannot ignore the behavioral elements. Behavioral finance studies have been carried out popularly in developed markets of Europe and the USA[4] as well as in emerging and frontier markets, for example Malaysia and Kenya [1, 5]. However, the number of studies using behavioral finance for frontier and emerging markets is much fewer than for developed markets.

Due to the positive correlation between stock market and economy, the rise of stock market will positively affect the development of the economy and vice versa. Thus, the decisions of investors on stock market play an important role in defining the market trend, which then influences the economy. To understand and give some suitable explanation for the investors' decisions, it is important to explore which behavioral factors influencing the decisions of individual investors at the Tehran Stock Exchange and how these factors impact their investment performance. It will be useful for investors to understand common behaviors, from which justify their reactions for better returns. Security organizations may also use this information for better understanding about investors to forecast more accurately and give better recommendations. In this study, exploring the behavioral factors influencing the decision making of investors, which are already “out there”, is the main aim, instead of inferring and building theory, deduction approach seems to be the most appropriate choice. The study starts with reviewing the behavioral finance theories in general and in stock market in particular, to get the theoretical and conceptual context as well as empirical findings of previous researches, from which the research model and hypotheses are proposed. Then, the questions used in interviews and questionnaires are prepared. This process is quite consistent with deductive approach which emphasizes that researchers may know how the world operates, thus using this approach to examine these ideas against “hard data” [6].

The hypotheses are tested through data collection and analysis. Comparison between the results of the research and the existing theories is made to find out the differences. Deductive approach is usually associated with quantitative researches, which involve collecting of quantitative or quantifiable qualitative data and analyzing statistical methods, which is also compatible with quantitative research strategies. In contrast, inductive approach is a process of inducing general explanation from particular phenomenon. The role of inductive research is building theory and typically associated with qualitative methods using interpretative methods[7].

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## 2. LITERATURE REVIEW

### 2.1 Market Variables

DeBondt and Thaler [8] state that financial markets can be affected by investors' behaviors in the way of behavioral finance. If the perspectives of behavioral finance are correct, it is believed that the investors may have over- or under-reaction to price changes or news; extrapolation of past trends into the future; a lack of attention to fundamentals underlying a stock; the focus on popular stocks and seasonal price cycles. These market variables, in turns, influence the decision making of investors in the stock market. Waweru et al. [1] identifies the factors of market that have impact on investors' decision-making: Price changes, market information, past trends of stocks, customer preference, over-reaction to price changes, and fundamentals of underlying stocks. Normally, changes in market information, fundamentals of the underlying stock and stock price can cause over/under-reaction to the price change [1,8]. These changes are empirically proved to have the high influence on decision-making behavior of investors. Researchers convince that over-reaction [8] or under-reaction[5] to news may result in different trading strategies by investors and hence influence their investment decisions. Waweru et al. [1] conclude that market information has very high impact on making decision of investors and this makes the investors, in some way, tend to focus on popular stocks and other attention-grabbing events that are relied on the stock market information. Moreover, Barber and Odean [9] emphasize that investors are impacted by events in the stock market which grab their attention, even when they do not know if these events can result good future investment performance. Barber and Odean [9] explores that many investors trade too much due to their overconfidence. These investors totally rely on the information quality of the market or stocks that they have when making decisions of investment.

Waweru et al. [1] indicate that price change of stocks has impact on their investment behavior at some level[8-9]. Barber and Odean [9] states that investors prefer buying to selling stocks that experience higher price changes during the past two years. Change in stock price in this context can be considered as an attention-grabbing occurrence in the market by investors. Additionally, Caparrelli et al. [4] propose that investors are impacted by herding effect and tend to move in the same flow with the others when price changes happen. Besides, investors may revise incorrectly estimates of stock returns to deal with the price changes so that this affects their investment decision-making [4, 8-9].

Many investors tend to focus on popular stocks or hot stocks in the market. Barber and Odean [9] proposes that investors usually choose the stocks that attract their attention. Besides, the stock selection also depends on the investors' preferences. Momentum investors may prefer stocks that have good recent performance while rational investors tend to sell the past losers and this may help them to postpone taxes. In contrast, behavioral investors prefer selling their past winners to postpone the regret related to a loss that they can meet for their stock trading decisions[8]. Besides, past trends of stocks are also explored to impact the decision making behavior of the investors at a certain level by Waweru et al. [1]. In this concept, investors usually analyze the past trends of stocks by technical analysis methods before deciding an investment.

In general, market factors are not included in behavioral factors because they are external factors influencing investors' behaviors. However, the market factors influence the behavioral investors (as mentioned above) and rational investors in different ways, so that it is not adequate if market factors are not listed when considering the behavioral factors impacting the investment decisions. Together with the research of Waweru et al. [1], this research treats the market factors fairly as behavioral factors influencing the decisions of investors in the stock market.

### 2.2 Herding Effect

Herding effect in financial market is identified as tendency of investors' behaviors to follow the others' actions. Practitioners usually consider carefully the existence of herding, due to the fact that investors rely on collective information more than private information can result the price deviation of the securities from fundamental value; therefore, many good chances for investment at the present can be impacted. Academic researchers also pay their attention to herding; because its impacts on stock price changes can influence the attributes of risk and return models and this has impacts on the viewpoints of asset pricing theories [10]. In the perspective of behavior, herding can cause some emotional biases, including conformity, congruity and cognitive conflict, the home bias and gossip. Investors may prefer herding if they believe that herding can help them to extract useful and reliable information. Whereas, the performances of financial professionals, for example, fund managers, or financial analysts, are usually evaluated by subjectively periodic assessment on a relative base and the comparison to their peers. In this case, herding can contribute to evaluation of professional performance because low-ability ones may mimic the behavior of their high-ability peers in order to develop their professional reputation[11].

In the security market, herding investors base their investment decisions on the masses' decisions of buying or selling stocks. In contrast, informed and rational investors usually ignore following the flow of masses, and this makes the market efficient. Herding, in the opposite, causes a state of inefficient market, which is usually recognized by speculative ebubbles. In general, herding investors act the same ways as prehistoric men who had a little knowledge and information of the surrounding environment and gathered in groups to support each other and get safety[4]. There are several elements that impact the herding behavior of an investor, for example: overconfidence, volume of investment, and so on. The more confident the investors are, the more they rely on their private information for the investment decisions. In this case, investors seem to be less interested in herding behaviors. When the investors put a large amount of capital into their investment, they tend to follow the others' actions to reduce the risks, at least in the way they feel. Besides, the preference of herding also depends on types of investors, for example, individual investors have tendency to follow the crowds in making investment decision more than institutional investors[12]. Waweru et al. [1] propose that herding can drive stock trading and create the momentum for stock trading. However, the impact of herding can break down when it reaches a certain level because the cost to follow the herd may increase to get the increasing abnormal returns. Waweru et al. [1] identify stock investment decisions that an investor can be impacted by the others: buying, selling, choice of stock, length of

time to hold stock, and volume of stock to trade[8]. Waweru et al. [1] conclude that buying and selling decisions of an investor are significantly impacted by others' decisions, and herding behavior helps investors to have a sense of regret aversion for their decisions. For other decisions: choice of stock, length of time to hold stock, and volume of stock to trade, investors seem to be less impacted by herding behavior. However, these conclusions are given to the case of institutional investors; thus, the result can be different in the case of individual investors because, as mentioned above, individuals tend to herd in their investment more than institutional investors[8-9]. Therefore, this research will explore the influences of herding on individual investment decision making at the Tehran Stock Exchange to assess the impact level of this factor on their decisions.

### **2.3 Investment Decision**

Barber and Odean [9] provides several understandings about the preferable stocks that individual investors would like to buy. As mentioned above, selling decisions mainly prioritize winning stocks; whereas, buying decisions are related to both prior winning and losing stocks. Barber and Odean [9] states that the buying decisions may be a result of an attention effect. When making a decision of stock purchase, people may not find a good stock to buy after considering systematically the thousands of listed securities. They normally buy a stock having caught their interest and maybe the greatest source for attention is from the tremendous past performance, even good or bad.

According to Barberis and Thaler [13], individual investors seem to be less impacted by attention-grasping stock for their selling decisions because the selling decision and the buying decision are differently run. Because of short-sale restraints, when deciding to choose a stock for selling, they can only focus on the stocks that currently belong to them. Whereas, with a buying decision, individuals have a lot of chances to choose the wanted stocks from the wide range of selective sources, this explains why factors of attention impact more on the stock buying decisions than the selling decisions[13]. Barber and Odean [9] already prove that the selling decisions are less determined by attention than buying decisions in case of individual investors. To give this conclusion, they create the menu of attention-grasping stocks with several criteria: unusually high trading volume stocks, abnormally high or low return stocks, and stocks including news announcements. Eventually, the authors explore that the individual investors in their sample are more interested in purchasing these high-attention stocks than selling them.

As such, from the viewpoints of behavioral finance, the investor behaviors impact both selling and buying decisions at different levels, and then they also impact the general returns of the market as well as the investment performance of individuals [12].

### **2.4 Investment Performance**

Some opponents of behavioral finance criticize that the bad performance of irrational investors can remove them from the security market. In contrast, some others believe that overconfident investors who have the extreme trading behavior could benefit with elevated results [14]. Kyle and Wang [15] define overconfidence as someone's behavior that over-evaluate the preciseness of his own information and consider a table overconfident investor as one whose "subjective probability distributions are too tight." "In the balanced condition, the overconfident investors trade much higher than their rational opponent, and expect a higher investment profit over the long term. Wang [16] recognizes that under-confidence and high overconfidence are not likely to exist in the long term, but moderate overconfidence can endure and dominate the rational behavior. Anderson, Henker and Owen [14] conclude that individual investors who make higher amount of transactions may result greater returns than individuals with fewer transactions may. Kim and Nofsinger [17] claim that stocks experiencing the greatest increase in individual possession can earn a negative abnormal return during the year; whereas, stocks that experience the most decrease in individual ownership may earn appositive abnormal return. They also go additionally insight into buying and selling behaviors and study the past performance of these bought and sold stocks. The authors find that stocks that have significant increases in individual ownership (purchased stocks) are the past winning stocks. Besides, they are also surprised to explore that stocks getting significant decreases in individual ownership (sold stocks) are also the past winners. This finding does not match to the momentum trading, but consistent with the disposition effect, which causes investors to be pre-disposed to selling their winners and holding their losers [17]. Lin and Swanson [18] measure investment performance using three criteria of returns (raw returns, risk-adjusted returns, and momentum-adjusted returns) through five time horizons (daily, weekly, monthly, quarterly, annually). They recognize that investors achieve excellent performance, which exists in the short run and is partially driven by short-term price momentum rather than by risk-taking. Excellent performance vanishes or is deteriorated for mid-term and long-term periods. This means that superior performance is reached from short-term effects of excessive demand for past winning stocks and/or excessive supply of past losing stocks rather than from any advantage of familiar information. Investors may take benefits from a better comprehension and implementation [18-19].

## **3. Research hypothesis**

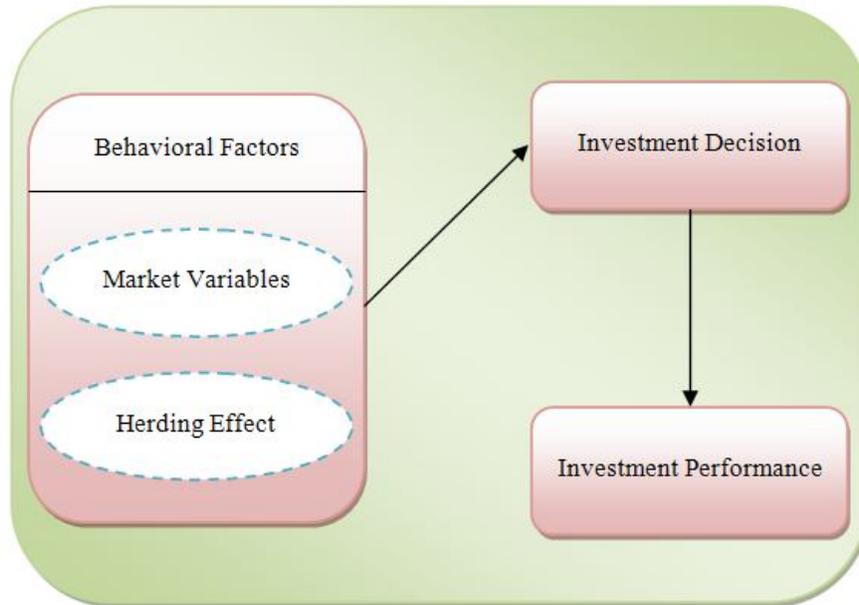
Based on the facts raised in research theoretical framework section, the following hypotheses are addressed:

**H1:** The market variables have a positive influence on investment decision in Tehran stock change.

**H2:** The herding effect has a positive influence on investment decision in Tehran stock change.

**H3:** The investment decision has a positive influence on investment performance in Tehran stock change.

Therefore, based on the hypothesis, figure 1 is a conceptual model to this study.

**Fig. 1: The conceptual model for research**

#### 4. METHODOLOGY

##### 4.1 Procedure and Questionnaire Design

Present research is of correlation type and is a survey one from implementation viewpoint. In present research both field and library method were used for data collection. In order to complete theoretical bases, library method was employed and in order to collect required data on investors in Tehran stock change, a questionnaire developed by researchers was used which consisted of 28 questions (market variables with 8 items; herding effect with 9 items; investment decision with 6 items and investment performance with 5 items). Some of the questions were extracted from other similar questionnaires developed in other countries and the other ones were designed and put into questionnaire by the researchers according to specific conditions of Iran. Responses were organized based on Likert's five-point scale (very much, much, moderate, little, too little). In order to confirm validity of questionnaire, some experts were asked to review it and declare their correctional ideas. After required modifications, in pilot study, 40 copies of questionnaire were distributed to study population, Cronbach alpha was calculated as shown in Table 1 and after ensuring reliability of research instrument, final questionnaire administered to selected sample of statistical population.

**Table: Cronbach alpha for pilot study**

	Sample number (N)	%	Cronbach $\alpha$	Questionnaire number
Acceptable sample	39	97.5	.864	31
Non-acceptable sample	1	2.5		
total	40	100		

##### 4.2 Research Sample

The research population contains investors in Tehran stock change. That totally, 300 questionnaires were distributed to investors in Tehran stock change, that 275 questionnaires were used for the final analysis.

##### 4.3 DATA ANALYSIS

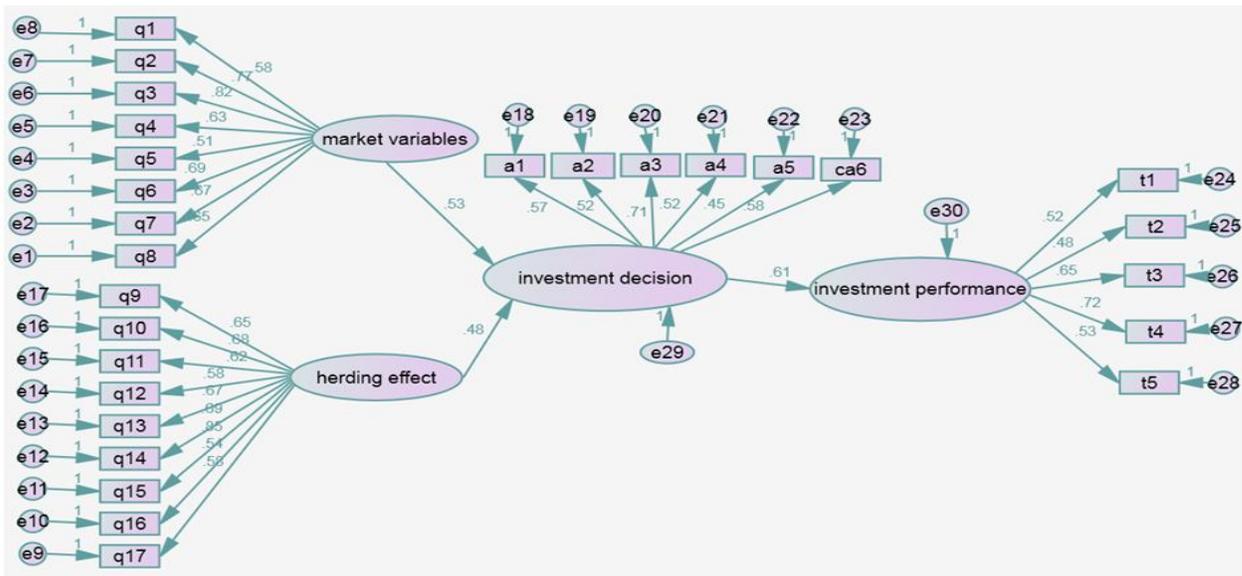
Structural equation modeling (SEM) with Lisrel software was used for the data analysis. SEM is a comprehensive statistical approach for testing hypotheses about relations between observed and latent variables. It combines features of factor analysis and multiple regressions for studying both the measurement and the structural properties of theoretical models. SEM is formally defined by two sets of linear equations called the inner model and the outer model. The inner model specifies the relationship between unobserved or latent variables, and the outer model specifies the relationships between latent variables and their associated observed or manifest variables [20]. SEM methodology can account for independent variable errors and model multiple relationships simultaneously, which results in more powerful tests of mean differences [21]. The correlation matrix of data is shown in table 2; Table 2 shows General indexes of measuring patterns (CFA) and all of measuring patterns  $p > 0.05$ , could result that the chi-square is fit for measuring models. RMR for all measuring patterns is below 0.05, it means that acceptable fitness of them and minimum error in patterns. Goodness-of-fit index (GFI) for all measuring patterns is more than 0.9 ( $GFI > 0.9$ ), showed that data are fit to patterns. Comparative fit index (CFI) for all patterns except actual use is above 0.90 can be resulted that data

support measuring patterns clearly. RMSEA index for measuring patterns is less than 0.05 (RMSEA < 0.05), showed that data are fit to patterns. After validations a SEM with analysis of the paths was run. Figure 2 depicts the results.

**Table2: General Indexes**

Index	Market Variables	Herding Effect	Investment Decision	Investment Performance
CMIN	94.382	46.632	15.77	12.37
P	0.128	0.06	0.073	0.057
CMIN/DF	3.7752	4.2392	3.9425	1.767
RMR	0.047	0.022	0.044	0.031
GFI	0.921	0.949	0.956	0.968
AGFI	0.934	0.876	0.810	0.860
TLI	0.970	0.964	0.935	0.956
CFI	0.949	0.871	0.865	0.861
RMSEA	0.015	0.024	0.019	0.038

**Figure 2 - Structural Model**



## 5. RESULT

### 5.1 Hypothesis Testing

**Hypothesis 1:** Findings from structural equation modeling (SEM) in relation to hypothesis 1 (t-value = 6.121; estimate = 0.53) show that market variables influences positively on investment decision; thus hypothesis 1 is supported.

**Hypothesis 2:** Findings from structural equation modeling (SEM) in relation to hypothesis 2 (t-value = 5.154; estimate = 0.48) show that herding effect influences positively on investment decision; thus hypothesis 2 is supported.

**Hypothesis 3:** Findings from structural equation modeling (SEM) in relation to hypothesis 3 (t-value = 6.891; estimate = 0.61) show that investment decision influences positively on investment performance; thus hypothesis 3 is supported.

### 5.2 Conclusion

The purpose of this paper is to investigate the effects of market variables and herding effect on investment decision as factor influencing investment performance in Iran. Behavioral finance which considers the human behaviors in finance is a quite new area. Behavioral finance theories, which are based on the psychology, attempt to understand how emotions and cognitive errors influence individual investors' behaviors (investors mentioned in this study are referred to individual investors).

The study draws an overall picture of impacts of behavioral factors on the investment decisions and performance of individuals at the Tehran Stock Exchange. The study is based on the approaches of behavioral finance. This research is one of very few studies of factors impacting the stock investment decisions using behavioral finance in Iran. The study tries to use a full set of behavioral factors to assess their impacts on Iranian individual investors while prior studies only consider the impacts of some limited dimensions of behavioral factors. The 5-point measurements are tested for their consistency and reliability by Factor Analysis and Cronbach's Alpha, which prove that behavioral finance can be used for Tehran stock market. Besides, the measurements of investment performance in this research are designed to ask the investors to evaluate their own performance based on the criteria: the investment return rate and the level of investment satisfaction. This measurement method is different from prior authors, for example: Lin and Swanson [18], Kim and Nofsinger [17] and so on, who used the secondary data of investors' results in the security markets [22,23].

The findings show that herding has positive impact on investment performance. Tehran stock market is not mature and lack of reliable information, so that individual investors should choose good investment partners or alliance to consider as references for their investment. They can establish the forums to support each other in finding reliable information of stock market. The cooperation of a crowd of investors can help them limit the risks and increase the chances to have good investment results.

Besides, the investors should not reduce their regret in investment by avoiding selling decreasing stocks and selling increasing ones. As discussed above, this can lead to the fact that the investors can keep all losing stocks and this impact negatively the investment performance. Finally, the investors should not divide their investment portfolio into separate accounts because each element of the portfolio may have a strict relation to the others and the treating each element as an independence can be result a bad investment performance.

Our findings provide support for the behavioral approach to portfolio theory and shed new light on the traditional approach to portfolio theory. This suggests when buying stocks, investors would choose companies with higher cash/stock dividends, as well as invest in short/mid/long term stock with adequate capital allocation. Investors with higher amounts of investment have multiple gains, investors with more cash reserved for the next investing opportunity would likely gain. This indicates investment decision and capital allocation play important roles.

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