Empirical Explanation of Different Models of Decision Making by Individual Investors Based on Regret Aversion Concept- Evidence from Capital Market of Iran

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ABSTRACT

The ultimate goal of social sciences theories is the empirical proof of structural and analytic theories. Investors usually make investment decisions using fundamental, technical and judgmental analysis (market sentiment). Since the investors are regret aversion, in order to evaluate and prove the various models of decision making by them, we can use the amount and intensity of regret of investors after making decisions based on the above mentioned patterns. So, in the present study, we first studied the effect of the regret aversion on applying different patterns of decision making by individual investors in order to determine the dominant pattern in the capital market of Iran and then the empirical proof of this pattern based on the amount and severity of regret after adoption of decision in 2017. Data were collected using questionnaires in two stages. The findings of the research showed that there is merely a positive and significant correlation between regret aversion bias and the decision making model of individual investors based on judgmental analysis (market sentiment). Therefore, it can be concluded that decision-making based on market sentiment is the dominant model of decision making by individual investors in Iran's capital market. However, the dominant decision-making pattern chosen by individual regret aversion investors has more amount and intensity of regret after adoption of decision. Therefore, regret aversion concept isn't confirmed empirically (that is, having a lower sense of regret after decision-making based on the dominant model).

Keywords:

regret aversion, fundamental analysis, technical analysis, market sentiment analysis, and individual investors.

1. Introduction

"One of the funny things about stock market is that at any time, someone is selling and someone else is buying stock, and they both think they are clever and smart."
William Feather

The traditional financial paradigm seeks to understand financial markets by using models in which investors are "rational". Over the last few decades, financial field has evolved based on the assumption that people make logical decisions, and act without bias in their predictions about the future. Investors are seen as logical people who make possible economic decisions at any time. A rational investor refers to a person who updates his ideas in a timely manner and in an appropriate manner through the reception of new information and adopts decisions that are normatively acceptable (Nofsinger, 2016). If these assumptions are correct, decisions made by individual investors on the assumptions of the traditional financial paradigm (decisions made on the basis of fundamental and technical analysis) should have less sense of regret after adoption of decision.

On the other hand, behavioral finance is a branch of finance that studies the effects of psychological inconsistencies in financial decisions and its subsequent Consequences on markets. The models of behavioral finance are usually developed to interpret investor behavior or market imperfections, because rational models cannot provide sufficient explanations in this regard. Behavioral finance contributes to understanding economic decisions and how these decisions influence market prices and resource allocation through research and study on humans and their cognitive, social and emotional biases. Behavioral finance seeks to discover why individuals forget basic (fundamental) principles and adopt emotional-based investment decisions (Chaudhary, 2013). Behavioral finance has been developed as an alternative to financial markets. Based on it, the investor, without paying attention to the amount of information and the amount of his/him research before investing, will behave in an irrational way, because of fearing future losses (Shleifer, 2000). If these interpretations are correct, decisions made by individual investors on the basis of behavioral finance (decisions made on the basis of market sentiment) should have less sense of regret after making of decision.

Brahmabhatt, Kumari, & Malekar (2012) believe that the Mumbai people would like to invest in the stock market, even if they suffer a lot loss. People tend to saving and security in investing, but at the same time, they want more profit at a low risk in the short term. They consult with their family or friends before making a decision about investing.

Since the decision making process of the investors and their behavior are very complex, the possibility of providing a single model to predict their behavior in the market is not easily possible, and in many cases, the behavior of investors in stock exchanges is irrational, and precise identification of behavioral stimuli is not possible.

Hence, in the present study, in order to evaluate and prove the various decision-making patterns of investors (such as fundamental, technical and judgment analysis (market sentiment) patterns) empirically that are derived from their regrettable escape (regret aversion sense), amount of the sense of regret of investors after making decisions based on these patterns was used. It is expected that amount and degree of regret after decision making based on the selected pattern (dominant model) was reduced dramatically.

2. Review of literature and hypothesis development

The two key paradigms of the traditional financial theory are:

1) Market factors are quite reasonable: quite logical behavior refers to the fact that any new available information is interpreted correctly and consistently by all market agents.
2) Markets are efficient: According to the Efficient Market Hypothesis (EMH), all relevant information is immediately and fully reflected in prices.

Subrahmanyam (2008) classifies the main financial paradigms as follows:

1) Portfolios allocation based on expected return and risk;
2) Risk-adjusted asset pricing models (eg, Capital assets pricing model),
3) Pricing contingent claims

4) Modigliani-Miller's theorem and its expansion based on the theory of agency.

In traditional finance, the presumption is that people act logically when they make financial decisions, because they value wealth. Although these models have changed the financial area, there are still many gaps in the field that these theories did not provide an answer to them. Schindler (2007) provides theoretical and experimental evidence to support the fact that the model of asset pricing, the efficient market hypothesis, and other traditional financial theories have done a great job in predicting and explaining certain and definite events. Nonetheless, academic centers recognized anomalies and behaviors that traditional theories cannot explain them. Psychologists have found that economic decisions are often made in a rather irrational way. Cognitive errors (biases) and extreme emotions can lead to inappropriate investment decisions by investors. Behavioral finance is a relatively new paradigm in the financial field that attempts to complete the standard theories of finance by establishing a link between behavioral aspects and the decision-making process. Some people considered early followers of behavioral finance dreamer. Awarding the 2002 Nobel Prize to the psychologist Daniel Kahneman and the empirical economist Vernon Smith is a proof and confirmation of this discipline. Daniel Kahneman examined judgments and decisions of individuals in conditions of uncertainty, while Smith studied the alternatives mechanisms to the market through empirical research. This was the first time that a psychologist was awarded a Nobel Prize, and this played a key role in convincing the mainstream of financial economists to the fact that investors might behave unreasonably. Chandra (2008) found that contrary to what is assumed in classical financial theory; individual investors do not always make rational investment decisions. Investment decision-making is mainly influenced by behavioral factors such as fear, greed, cognitive dissonance, heuristics (non-verbal behavior), mental accounting, and anchoring on the point of attachment. Waweru, Munyoki, & Uliana (2008) showed that behavioral factors such as representativeness, overconfidence, anchoring, gambler's fallacy, availability, loss aversion, mental accounting, and regret aversion influence institutional investors' decisions in the Nairobi stock exchange. Maheran, Muhammad, & Ismail (2008) believed that Malaysian investors are fairly rational in their decision-making.

One of the important biases in behavioral finance issues is the issue of regret aversion bias; this bias makes to act in order to avoid regret. The fear of reaching a lower level of expectation (neutral regret aversion), staying faithful to previous harmful situations (negative regret aversion), and preventing of suffering worse situations (positive regret aversion) are the results of this bias. People with this bias are always in the avoidance of "action error" and "negligence error". In fact, regret aversion causes the investor to behave in a way that is heavily influenced by emotion and excitement in an effort to compensate for the regrets of the past, or to avoid possible regrets in subsequent transactions.

On the other hand, regret is a feeling that comes when the person makes a mistake. Investors avoid regrets by avoiding the sale of declining (losing) stocks and buying increasing stocks. In addition, investors have more regret sense from the hold of declining (losing) stocks compared with the sale of winning (increasing) stocks over a short period of time (Lehenkari & Perttunen, 2004, and Fogel & Berry, 2010).

Emotional bias of regret is rooted in the attitude and sudden emotions of individuals, and correcting it is not easy (Rekik & Boujelbene, 2013). Recognition of on behavioral bias make investors more aware of their decision-making process, and if they encountered the biases, they can react well and prevent deviations from the decision (fallah poor & abdollahi, 2012).

The behavioral financial paradigm attempts to understand the phenomenon of investment market by explaining the two concepts of the traditional paradigm: 1) market agents cannot correct their ideas or opinions correctly; 2) there is a systematic deviation from the normative process in the adoption of the choice of investment (Kishore, 2004).The results of previous research indicated the positive effect of the belief and overconfidence of investors and the negative impact of their regret aversion and loss aversion on investment decisions (Ghelichi, Nakhjavan, & Gharehdaghi, 2016), and (Farooq & Sajid, 2015), positive impact of Pakistani investors overconfidence on the use of fundamental analysis and decision-making based on market sentiment or herding behavior (Ghufran, Awan, Khakwani, & Qureshi, 2016), the significant and positive effect of

overconfidence, over thinking, herding, cognitive bias, and hindsight on investment decision (Chhapra, Kashif, Rehan, & Bai, 2018), no effect of overconfidence on the decision of Tunisian investors (Rekik & Boujelbene, 2013), the past performance of the company's shares, stock split, capital increase, expected bonuses, dividend policy, company expected profit and the short term money making on the decisions of investors in Nigeria (Obamuyi, 2013), and the impact of herding behavior, indicators and regret aversion on Iranian investors' decisions.
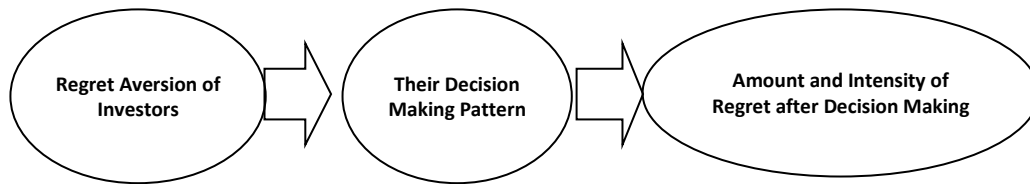
The theoretical model is as follow:

Figure 1. Theoretical model

As explained, the present study seeks to explain the various patterns of decision making by individual investors based on the concept of regret aversion and regret after making the decision empirically. Accordingly, the research hypotheses are as follows:

In order to determine the dominant decision-making model of individual investors based on magnitude of regret aversion (the inferred results in the experimental proof of phenomena), the following hypothesis was developed:

H1: there is a relationship between the regret aversion bias and the decision-making patterns of the individual investors.

Also, in order to identify (the visible phenomenon (reaction) in the experimental proof of phenomena) and, consequently, determine the relationship between the dominant decision-making pattern chosen by the individual regret aversion investors with the level and severity of regret after adoption of decision based on the dominant pattern, the following hypothesis was developed:

H2: the dominant decision-making pattern chosen by the individual regret aversion investors has a lesser amount and degree of regret after decision-making.

3. Methodology

The current research is applied in terms of target type, and in terms of collecting information, it is descriptive-survey based on the Pearson correlation method. The purpose of applied research is the development of applied knowledge in a particular context. The main purpose of the correlation method is identifying the relationship between the two variables,

without any of them being manipulated or controlled. Correlation studies show whether the two variables are related to one another, and the purpose of this information is never to establish a cause and effect relationship. However, the purpose of Correlation studies is to discover the relationship between the variables being studied. The measurement tool in this research is the questionnaire. The information necessary for testing the research hypotheses has been gathered through the questionnaire.

In the first stage, A questionnaire adapted from (Brahmabhatt et al., 2012) was used to measure different decision making patterns of individual investors. The questionnaire consisted of 14 questions of 7 ranked points (from 1 to 7 points) to measure the willingness of individual investors to use fundamental analysis (5 questions), technical analysis (4 questions), and judgment analysis (or based on market sentiment) (5 questions). Also, in order to measure the bias caused by the regret aversion behavior of individual investors, a questionnaire adapted from Mohammed Abu Nada (2013) containing 4 questions of 5 Likert points was used.

In the second phase, To measure the sense of regret of individual investors after making a decision, 4 questions with a rating scale (from points 1 to 7) and based on the amount of the sense of regret caused by the initial regret aversion behavior (2 months after distributing the first questionnaire) was used.

The statistical population of this study was individual investors in the year 2017. Since the studied community is unlimited, the convenience sampling method was used to determine the statistical sample

and 160 questionnaires were distributed in the first stage. Finally, 143 questionnaires were received that only 125 questionnaires that could be used for the second phase (questionnaires containing e-mail of individual investors) were analyzed in order to test the first hypothesis of the study. In the second stage (2 months after the distribution of the initial questionnaire), the second questionnaire consisting of questions of the sense regret after the decision-making caused of the behavioral bias based on regret aversion in first stage, were distributed among the 125 previous individual investors, via email, and the final responses were received from 102 people. However, Only 90 questionnaires (questionnaires with complete answers) were tested in the second hypothesis.

In this research, before testing the research hypotheses, the reliability of the questionnaire, and analysis of the data was done in two stages:

In the first stage, the frequency distribution and frequency of general information of the first and second questionnaires were calculated and then descriptive statistics (mean, mode, median, and standard deviation) were evaluated for specialized research questions in the first and second questionnaires.

In the second stage, using Pearson correlation test, the relationship between the regret aversion bias and decision patterns of individual investors were investigated to determine the dominant model. Then, based on the second set of the questionnaires received and according to the corresponding initial questionnaires, the statistical sample was divided into four groups including investors with high regret aversion behavior and maximum use of the dominant pattern (the first group), investors with high regret aversion behavior and minimum use of the dominant pattern (the second group), investors with low regret aversion behavior and maximum use of the dominant model (the third group) and investors with low regret aversion behavior and minimum use of the dominant pattern (the fourth group). To test the second hypothesis of the research, the regret sense of the four groups were analyzed using one-way ANOVA (due to normal distribution of regret sense). It needs to be explained that the criterion for dividing the levels of regret aversion and the rate of tendency to use the dominant pattern was the average of the responses received in the initial questionnaires. SPSS software was used in analyzing all statistical techniques.

4. Analyzing the data and testing the hypotheses

4.1. Reliability assessment of the questionnaire

Different methods are available to calculate reliability, including: re-test, parallel or peer-to-peer methods, two-way sampling and Cronbach's alpha coefficient (Sarmad, Bazargan, & Hejazi, 2004). Theoretical and empirical studies have shown that among the above methods, Cronbach's alpha method has more power and accuracy. Therefore, in this research, Cronbach's alpha method was used to measure the reliability of questionnaires. This method is used to calculate the internal coordination of measuring instruments, including questions or tests that measure different characteristics (Sarmad et al., 2004). In this method, if the alpha coefficient is more than 70%, the test is reliable (Nunnally, 1978).

Using SPSS software, Cronbach's alpha has been calculated to check the reliability of the each questionnaire separately. The results indicate that Cronbach's alpha is high for all questionnaires, thus the questionnaire questions are reliable based on Cronbach's alpha. The results are presented in Table 1.

Table 1. Cronbach alpha results

Category	Items	Cronbach alpha
Total primary questionnaire	18	0.864
Decision making pattern questionnaire	14	0.896
Regret aversion questionnaire	4	0.752
Regret Sense after adoption of decision (Second questionnaire)	4	0.850

4.2. Descriptive statistics of research variables

4.2.1. Investigating individual characteristics of respondents

In the first part of the questionnaire, 6 general questions related to the individual characteristics of the respondents including gender, age, marital status, educational level, investment objectives and investment experience were investigated. The results of the descriptive analysis of these questions are reflected in Table 2. The results of the descriptive analysis of general questions showed that among 125 respondents to the first stage questionnaire, 84 people

(67.2%) are men and the rest are women. Also, 99.2% of respondents were married. The results of the analysis of the level of education showed that 40.8% of respondents had a bachelor's degree. The study of age, investment objectives, and investment experience of respondents indicated that over 68.8% of respondents were between the ages of 26 and 35, 67.2% of them had a goal of short-term profits and about 37.6% of respondents have been in the stock market for between one and three years. Meanwhile, of 90 respondents to the second-phase questionnaire, 63 people (70%) are men and the rest are women. 98.9% of them were married and 41.1% of them had a bachelor's degree. More than 65.6% of the respondents in the second stage were between the ages of 26 and 35, 67.8% of them had short-term profits goals, and about 41.1% of the respondents have been in the stock market between 1 to 3 years. These factors can be used to validate research findings.

Table 2. General information of the questionnaire

	Question Description		%	Frequency	%	Frequency
			Second stage		First stage	
1	gender	Man	70	63	67.2	84
		woman	30	27	32.8	41
		Total	100	90	100	125
2	Marital status	Single	1.1	1	0.8	1
		Married	98.9	89	9.2	124
		Total	100	90	100	125
3	Age	Between 18 to 25	13.3	12	12.8	16
		Between 26 to 35	65.6	59	68.8	86
		Between 36 to 45	12.2	11	12	15
		Between 46 to 55	8.9	8	6.4	8
		Upper than 55	0	0	0	0
		Total	100	90	100	125
4	Educational degree	Associate Degree	2.2	2	1.6	2
		B.A.	41.1	37	40.8	51
		M.A.	40	36	39.2	49
		Ph.D.	6.7	6	0.4	13
		others	10	9	8	10
		Total	100	90	100	125
5	Investment goals	Short term profit	67.8	61	67.2	84
		Receive cash dividends	4.4	4	6.4	8
		Long term profit	27.8	25	26.4	33
		Total	100	90	100	125
6	Investment experience	under 1 year	20	18	20	25
		between 1 to 3 years	41.1	37	7.6	47
		between 4 to 5 years	25.6	23	5.6	32
		higher 5 year	13.3	12	16.8	21
		Total	100	90	100	125

4-2-2. Descriptive statistics for questionnaire specific questions

The descriptive statistics of questions related to regret aversion (one of the aspects of behavioral bias in individual investors) as well as decision-making based on technical, fundamental, emotional, and regret sense after the decision-making represented in Table 3 shows that the average of the answers for all questions in these categories, except for Question 17 (the amount of attention to the recommendations of some friends, family and peers), is more than the average of the spectrum (3 for the category of 5 items) or (4 for the category 7 items).

Table 3. Descriptive statistics for Questionnaire specific questions

		No.	1	2	3	4	Regret aversion
statistics		Mean	3.58	3.63	3.4	3.04	3.41
		Median	4	4	4	3	3.5
		Mode	4	4	4	4	3.75
		S.D.	0.93	0.87	0.90	1.02	0.65
		No.	5	6	7	8	Technical analysis
Statistics		Mean	4.86	4.78	4.70	4.57	4.72
		Median	5	5	5	5	5
		Mode	5	5	6	5	5
		S.D.	1.42	1.41	1.84	1.50	1.28
	No.	9	10	11	12	13	Fundamental analysis
statistics	Mean	4.86	4.67	4.60	4.52	4.38	4.61
	Median	5	5	5	5	5	4.60
	Mode	6	3	5	5	6	4.20
	S.D.	1.68	1.63	1.67	1.73	1.90	1.33
	No.	14	15	16	17	18	Market emotion analysis
statistics	Mean	4.72	4.59	4.82	3.92	4.47	4.50
	Median	5	5	5	4	5	4.80
	Mode	5	5	6	4	5	5
	S.D.	1.55	1.52	1.56	1.54	1.51	1.07
	No.	19	20	21	22		Regret sense
statistics	Mean	4.90	4.82	4.80	4.58		4.78
	Median	5	5	5	5		5
	Mode	5	5	6	5		5.75
	S.D.	1.46	1.41	1.81	1.47		1.28

4.3. Test of research hypotheses
4-3-1. A survey of the normal distribution of data and variables

It should be noted that before testing the hypotheses, the normal distribution of variables was investigated using the Kolmogorov-Smirnov test. Results this test is presented in Table 4. The results showed that the distribution of all data and research variables was normal, because the probability of K-S statistics for all research variables was more than 5% (Sarmed et al., 2006).

Table 4. Examining normality

Variables / Statistics	Decision making based on market emotions	Decision making based on fundamental analysis	Decision making based on technical analysis	Regret aversion	Regret sense
N	125	125	125	125	90
Mean	4.50	4.60	4.72	3.41	4.78
SD	1.07	1.33	1.28	0.65	1.28
K-S	1.351	0.935	1.319	1.348	1.297
K-S Prob.	0.052	0.346	0.062	0.054	0.069
Normality	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**

Since the distribution of all variables is normal, in the analysis of the hypotheses, Pearson correlation and one-way analysis of variance (ANOVA) were used respectively. In this test, if the probability of a statistic is greater than alpha (a significant level of 5%), there is no evidence indicating H_0 rejection, and if the probability of the statistic is smaller than alpha, the hypothesis H_0 is rejected and the opposite hypothesis accepted.

2.3.4. Test of the first hypothesis

There is a relationship between the regret aversion bias and the decision-making patterns of the individual investors.
The first hypothesis is expressed as follow:

H_0: Regret aversion of the individual investors does not affect their decision based on technical, fundamental analysis and market sentiment.
H_1: Regret aversion of individual investors influences their decision on the basis of technical, fundamental analysis and market sentiment.

As Table 4 shows, the distribution of decision-making patterns and regret aversion variables are normal. So, to test this hypothesis, "Pearson correlation" has been used in three different situations.
Table 5 showed the results of the first hypothesis test using "Pearson correlation".

The results obtained from the first hypothesis test in Table 5 indicated rejection of H_0 assumption, that is, individual investors' regret aversion does not affect decision-making of them based on emotional market analysis at the error level of 5 %. Therefore, the opposite hypothesis is confirmed. Therefore, it can be said that the regret aversion of individual investors is directly influencing their decisions based on market sentiment. Therefore, the first hypothesis is confirmed.

In other words, individual investors with a regret aversion behavioral tendency often make their own decisions based on market sentiment. That is, individual investors with regret aversion behavior pursue market sentiment and weight gossip. Therefore, it can be concluded that decision- making based on market sentiment is the dominant model of decision making by individual investors in the capital market of Iran.

Table 5. The results of the main first hypothesis

Decision making level	Pearson	Sig	Test results
Decision making based on technical analysis	-0.085	0.348	Acceptance of H_0
Decision making based on fundamental analysis	-0.167	0.063	Acceptance of H_0
Decision making based on market sediments	0.591	0.000	Rejection of H_0

3.3.4. Test of the second hypothesis

The dominant decision-making pattern chosen by the individual regret aversion investors has a lesser amount and degree of regret after decision-making.
It is expected that the dominant decision-making pattern chosen by individual investors with regret aversion has lower amount and intensity of regret after decision making. As the distribution of regret sense is normal, to analyze the difference between regret senses based on 4 groups, parametric test of "one way ANOVA" was used. Also, descriptive statistics of regret sense was presented in four groups. The second hypothesis is expressed as follow:

H_0: There is no difference in respondents' responses to the sense of regret within 4 groups.
H_0: $\mu1 = \mu2 = \mu3 = \mu4$

H_1: There is a difference in respondents' responses to the sense of regret within 4 groups.
H_1: At least one of the couples is different

The results of one-way variance analysis are presented in Table 6. The results show that there is a significant difference between the regret senses from the viewpoint of the four groups of respondents, because the probability of the F statistic is less than the significance level of 5%. The result of the Scheffe test in Table 6 indicates that there is a significant difference between the regret's senses of the first group after making the decision with the fourth group. So that investors with high regret aversion behavior and maximum use of dominant pattern (the first group) feel more regret than investors with low regret aversion behavior and minimum use of dominant pattern (the fourth group) after making decision. Therefore, it can be concluded that the dominant decision-making pattern chosen by individual investors with regret aversion has more regret. Hence, the second hypothesis is not confirmed. Because that amount and degree of regret after decision making based on the selected pattern (dominant

decision-making pattern), not only was not decreased, but it was increased significantly.

Descriptive statistics of questions related to the sense of regret after the decision made by individual investors in the four groups in Table 7 showed that the mean of responses in group 4 is much lower than that of group 1. This also showed that investors with high regret aversion behavior and maximum use of the dominant pattern (the first group) feel more regret compared to investors with low regret aversion behavior and minimum use of the dominant pattern (the fourth group) after making a decision.

Table 6. Test of difference in regret sense from the perspectives of respondents in 4 groups

Variable	Stat Stat	Sum of squares	DF	Average squares	F	P-Value
Regret sense	Between groups	86.276	3	28.759	40.894	0.000
	Within groups	60.480	86	0.703		
	Total	146.76	89			
Scheffe test						
Regret sense	Mean difference		SD	Sig.		
First group minus second group	-0.46		0.34	0.607		
First group minus third group	-0.37		0.32	0.612		
First group minus fourth group	2.49		0.36	0.000		

Table 7. Descriptive statistics of questions related to regret sense

	Statistics	Group 1	Group 2	Group 3	Group 4
statistics	N	50	7	7	26
	Mean	5.29	5.75	5.68	3.26
	Median	5	6	5.75	3.25
	Mode	5	6	6	3.25
	S.D.	0.83	0.46	0.44	1.02

5. Discussion and conclusion

As stated, behavioral finance tries to explain the patterns of investor's arguments, as well as the emotional processes involved in decision making, and increase our understanding of it. On the other words, behavioral finance is trying to explain what, why, and how financial and investment can be described from a human perspective. Traditional financial theory has always ignored the psychology of investors and believed that people are free of emotions. In contrast to traditional financial theory, behavioral financial theorists believe that humans become irrational at the time of decision-making. According to the findings of (Kahneman & Tversky, 1979), investing decisions are not logical. Investors' decisions are inevitably influenced by the factors of psychology and behavioral bias, which leads to irrational decisions. This phenomenon is more related to the behavior of investors in the stock market. Investor decisions in the stock market play an important role in determining the market trend, which affects the economy. To understand and provide a proper definition for investors' decisions, it is vital to examine which behavioral and psychological factors and behavioral bias affect the decisions of individual investors in Tehran Stock Exchange. There are Behavioral biases in different ways in all human environments, and include broad concepts. In this study, we focused on concepts that relate to financial actors. The full understanding of this area helps financial actors identify their mistakes and others. It also enables financial advisers to better understand the psychology of their customers and can create a set of behavioral factors that meet the needs of their clients. On the other hand, it also helps investment banks (capital supply institutions) to have a better understanding of market sentiment. In addition, it helps the designers of financial strategies to make better predictions and analyzes for stock advisories. Ultimately, individual investors need to be familiar with behavioral bias in order to make effective financial decisions.

Therefore, in the present study, we first studied the effect of the regret aversion on different patterns of decision making by individual investors in order to determine the dominant pattern in the capital market of Iran, and then the empirical proof of the dominant pattern based on the degree and severity of regret after the decision was made in 2017. The results show that:

Individual investors who have regret aversion behavioral bias often make their own decisions based on market sentiment. That is, individual investors with behavioral bias of regret aversion follow market sentiment, and weight gossip. On the other words, decision making based on market sentiment is the dominant model of decision making by individual investors in Iran's capital market. The results obtained in this hypothesis are somewhat in line with the previous results of the study by (Ghufran et al., 2016). They believe there is a herding attitude among investors, so that they follow market sentiment and weigh on rumors.

Also, investors with high regret aversion behavior and maximum use of the dominant pattern (the first group) feel more regret compared to investors with low regret aversion behavior and minimum use of the dominant pattern (the fourth group) after making a decision. Hence, the decision making model of individual investors based on regret aversion and regret sense after the decision making is not empirically confirmed. In other words, amount and degree of regret after decision making based on the selected pattern (dominant decision-making pattern) not only was not decreased, but it was increased significantly.

6. Suggestions

1) It is suggested that capital market analysts to become more acquainted with the decision making pattern of individual and small investors in the market, should be aware of different aspects of behavioral bias, such as regret aversion of investors, in addition to quantitative decision models.

2) Considering the fact that recognizing the decision-making process of stock-traders in the stock exchange is an important issue for the supervisory authority (Stock Exchange), and given the positive impact of the regret aversion behavior of individual investors on their decision-making based on market-based

emotional analysis and empirical disapproval of the model (reducing the sense of regret after making a decision based on the market sentiment); It is suggested that the Tehran Stock Exchange (TSE), obliges companies to provide transparent and timely financial information in order to make the right investments by individual investors, and in particular the individual investors with a regret aversion behavior. They should provide the necessary background and culture for the use of this information and avoidance of judging behavior based on the sentiment of the market of individual investors.

3) It is recommended that education be directed towards micro-investors, because it will eliminate the adverse outcomes of investment from behavioral bias. In order to manage and inform individual investors about the effects of behavioral factors on investment decisions, it is recommended that educational programs be implemented for present and potential individual investors in order to raise awareness among them and increase the ability to detect and counteract behavioral bias that leads to bad investment.

4) It is recommended that the knowledge of financial management be taught to individual investors in such a way that the ability to manage funds in them is strengthened.

The following suggestions are recommended for future research:

1) Investigation of the relationship between different aspects of behavioral bias of institutional investors with decision making based on technical, fundamental and market analysis.

2) 2. Investigating the relationship between different aspects of behavioral behavior of individual investors with decision making based on technical, fundamental analysis and market sentiment in different industries.

3) 3. Future research can focus on other behavioral biases such as meta-analysis, mental accounting, and so on.

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First stage questionnaire

Specialized Questions- regret aversion

Please determine the amount of your agreement with any of the following questions:

1. I will immediately sell the winning (profitable) stock.
I quite agree ☐ I agree ☐ No idea ☐ I totally disagree ☐ I disagree ☐

2. I keep the loser (losing) stock for a long time and won't sell it.
I quite agree ☐ I agree ☐ No idea ☐ I totally disagree ☐ I disagree ☐

3. I invest in low-risk companies.
I quite agree ☐ I agree ☐ No idea ☐ I totally disagree ☐ I disagree ☐

4. I always justify my investment decisions by saying that "everyone is doing this".
I quite agree ☐ I agree ☐ No idea ☐ I totally disagree ☐ I disagree ☐

Specialized Questions- Technical analysis

Please specify the amount of your agreement with each of the following factors, depending on their importance in your decision making process, from 1 (lowest) to 7 (most important):

5. Magnitude of Usage of price movements to predict future prices:

1	2	3	4	5	6	7

6. The magnitude of Attention to daily fluctuations of prices:

1	2	3	4	5	6	7

7. The magnitude of Usage of graphs, patterns and trends:

1	2	3	4	5	6	7

8. The amount of consideration for the volume / return of active transactions:

1	2	3	4	5	6	7

Specialized Questions- Fundamental analysis

9. The magnitude of Usage of annual reports:

1	2	3	4	5	6	7

10. The magnitude of Usage of P/E.

1	2	3	4	5	6	7

11. The amount of attention to the ratio of debt to equity:

1	2	3	4	5	6	7

12. The amount of attention to regulations / government interventions:

1	2	3	4	5	6	7

13. The amount of attention to quality of senior executives:

1	2	3	4	5	6	7

Specialized Questions- Market emotion analysis

14. The amount of attention paid to market rumors:

1	2	3	4	5	6	7

15. The amount of attention to news stories in the media:

1	2	3	4	5	6	7

16. The amount of attention to the recommendations of professional brokers /venture capitalists:

1	2	3	4	5	6	7

17. The amount of attention to the recommendations of some friends, family and peers.

1	2	3	4	5	6	7

18. The amount of attention to companies and institutions that are currently purchasing shares of the company of your interest:

1	2	3	4	5	6	7

Second stage questionnaire

Specialized Questions- amount of regret after making decisions

Determine the amount of your agreement with any of the following questions from 1 (lowest) to 7 (most important):

1. I feel sorry for the fact that I have quickly sold winning (profitable) stock:

1	2	3	4	5	6	7

2. I feel sorry for the fact that I have kept the loser (losing) stock for a long time and didn't sell it:

1	2	3	4	5	6	7

3. I feel sorry for the fact that I have invested in low-risk companies and earned less profit:

1	2	3	4	5	6	7

4. I feel sorry for the fact that I have always justified my investment decisions by saying that "everyone is doing this":

1	2	3	4	5	6	7