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STUDYING THE IMPACTS OF THREE ORIENTATION (LOSS AVERSION, CHANGE AVERSION AND HAVING PROSPECTS) ON DISPOSITION EFFECT IN TEHRAN STOCK EXCHANGE

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ABSTRACT

The present paper aims at finding out the importance of attitudinal effect in stock exchange and investment by studying the relation between disposition effect and three other orientations (loss aversion, having prospects and change aversion). It tries to increase the efficiency of the investors by informing them. According to its aim, it is an applied research. Data was gathered using library research method and field research method. Cronbach's alpha was used for determining the reliability of the questions. The statistical population of the present research includes all the investors present in an exchange forum. According to the obtained results, the relation between loss aversion and disposition effect, the relation between change aversion and disposition effect and the relation between having prospects and disposition effect is significant.

Keywords: *Cognitive Psychology, Limits to Arbitrage, Behavioral Finance, Disposition Effect*

INTRODUCTION

Stock exchange is one of the fields in which behavioral finance is of great importance. Investors' decisions are not always rational and based on the existing data. Their decisions are influenced by various orientations (Jahankhani *et al.*, 1993). Disposition effect makes investors sell profitable stocks early and keep loser stocks longer than what is needed. This reduces investors' profits, increases their losses and makes their portfolio different from their desirable portfolio (Khajavi *et al.*, 2006). Therefore, in terms of predicting investors' behaviors and knowing variables influential in their decision-making, research is of great importance. Studying factors that are influential in disposition effect and informing the investors and investment consultants about these factors help us have better understanding of this effect and reduce the corresponding losses. Being aware of these orientations help investors maximize their profits and minimize their losses (Sarmad *et al.*, 2010).

Behavioral finance and its concepts are useful in all economic activities. However, stock exchange market benefits more from this science because of the nature of its market and its customers. Considering that there are too many investors and a great amount of money is invested in stock exchange, doing researches in this regard and being aware of the effective factors is considered as a strategic tool for investment and a competitive advantage. Knowing this effect and the influential factors help the investor reduce his risk and losses and increase his benefits.

Behavioral Finance Science

In 1970, Fama published an article under the title of "Efficient Capital Markets: A review of Theory and Empirical work". In this article, he redefined his previous views about efficiency of capital markets and claimed that in a market of goods prices reflect everything that can be known about a property (Fama, 1970). In the previous decade, financial scholars tried to determine and come up with reasons of specific cases using other sciences including psychology, social sciences and physics. Therefore, interdisciplinary fields are formed like financial economy, financial econometrics, financial mathematics and decision-making theory (Moradi, 2005). Combination of theories of economics and psychology resulted into what is called behavioral finance. It developed very soon and determined the mentioned phenomena to some

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extent. Daniel Kahneman is a famous psychologist who established this field of financial science. In 2001, he received Nobel price because of proposing models for determining investors' behaviors under the circumstance of uncertainty (Talang, 2004).

Behavioral finance includes two main fields: cognitive psychology and limits to the arbitrage. According to the common paradigm of new financial theory, decision-makers have rational behavior and try to maximize their desirability. On contrary, cognitive psychology declares that human decision-making processes are influenced by some cognitive limits. Limits to arbitrage studies under what circumstance arbitrage forces are effective (Shakeri, 2010).

Classic finance is based on a set of simple assumption (real world). The concept of wise human being is included in this approach and believes that human beings always make rational decisions. Classic finance is formed based on the regulations that describe how an investor should behave. However, behavioral finance tries to recognize psychological phenomena of human being in the market level and in the individual level and learns those (Pompian, 2009).

In fact, behavioral finance science is also based on a set of concepts and assumptions. The difference is that the assumptions of classic finance are based on an ideal world; while the assumption of behavioral finance is based on a real world (Shalhaf Yazdi, 2010).

Behavioral finance is usually defined as the application of psychology in economics. As mentioned before, scholars of economics have found out about the impact of psychology on economic decisions years ago but researches have been done in recent years (Rai et al., 2009).

Limits to Arbitrage

Ritter (2003) considers cognitive psychology and limits to arbitrage as two main components of behavioral finance. Rai and Falahpur (2004) claim that standard finance assumes that investors are rational people and the market is efficient (Baker et al., 2002). In this market no benefit is gained freely. It means none of the investing strategies can provide additional yield regarding the existing risk. The achieved yield corresponds to the risk.

In behavioral finance, some features of prices of properties are interpreted as deviation from natural value. Irrational investors are regarded as the reason of these deviations. Standard finance believes that when there is a deviation from the natural value, an attractive opportunity is formed for investing. The rational investor benefits from this opportunity and corrects this wrong pricing (Barber et al., 1999).

Behavioral finance does not agree that deviation from natural value provides a proper opportunity for investing. Behavioral finance believes that even when a property is wrongly priced, proposed strategies do not have a risk for using this opportunity and this make the opportunity unattractive. Therefore, the wrong pricing will not be challenging (Barber et al., 2001).

The four things that make arbitrage opportunities unattractive include fundamental risk, disruptive traders' risks, expenses of execution and model risk.

Cognitive Psychology

Cognitive psychology considers human being as a creature who processes information and solves problems. This approach tries to determine behavior by studying how an individual pay attention to the data, analyzing this and using it (Barber et al., 2001).

As with psychoanalysis, cognitive psychology regards internal processes. This approach focuses on how individuals gain and interpret information and not on the desires, requirements and motivations. Unlike psychoanalysis, the base of cognitive psychology is not desires, emotions and conflicts, but mental processes which we are aware of or can be easily aware of. This approach is in contrast with the learning theories which consider external environment as the main reason of behaviors. In fact, cognitive approach discusses current thoughts and solutions and not the personal history. This approach reveals the relation between emotions and cognitive processes and subsequently the overlap between cognitive approach and other approaches.

Cognitive psychology has its roots in Gestalt psychology which was proposed in 1920s. A remarkable feature of cognitive approach is not paying attention to stimuli-response relation and neural activities. This approach focuses on perception and problem-solving through intuition, decision-making and

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understanding. In all these processes, cognition is of great importance. Cognition is a general concept which includes all forms of recognition and includes understanding, thinking, imagining, inferring, judging and etc. cognition revolution includes all the approaches that regard these issues as highly important (Barber et al., 2002).

Scholars of this field study issues like how a human being understands, recognizes and solve problems, how mind understands the data received through seeing or hearing or how human’s memory works. Researchers of cognitive psychology regard mind as a tool which processes information. They study minds based on their similarities with computers (Barberis et al., 2009).

MATERIALS AND METHODS

Method

Based on its aim, it is an applied research. Library method and field method were used for gathering data. Validity of the questionnaire was confirmed by professors and five people knowledgeable in this field. Cronbach’s alpha was used for determining the reliability of the questions. Higher Cronbach’s alpha displays more reliability. In the present research Cronbach’s alpha coefficient is in its acceptable range which means more than 7%.

SPSS software was used for determining the Cronbach’s alpha of the questionnaire. The research was done Tehran Stock Exchange because it is the official market of stock in Iran. The statistical population of this research includes all the shareholders present at the stock forum.

Since the population includes all the experts and shareholders present in Tehran stock forum, the population is regarded as indefinite. The following equation was used for determining the sample size.

$$n = \frac{(Z\alpha/2)^2 \times P(1 - P)}{\epsilon^2}$$

where

P: estimation of ratio of variable feature (P=0.5)

Z: the amount of unit normal variable, correspondent to significance level of 90% (Zα/2=1.96)

ε: allowed error (ε= %07)

P is considered as 0.5, because if P=0.5, n will have its maximum amount. It let the sample be big enough (Momeni, 2001). Therefore, the size of the research sample is determined as follows.

$$\frac{(1.96)^2 \times 0.5 \times 0.5}{(0.07)^2} = 196$$

220 questionnaires were distributed and 213 of them were returned. 13 questionnaires had errors. Therefore, 200 questionnaires were used. Since the statistical population is not clear and one can have access to people present in the stock forum, the simple random sampling was used. After gathering data, demographical features of respondents are determined using descriptive statistical methods. in the inferential statistic section two-sample t-test, one-sample t-test and one-way ANOVA were used. Modeling structural equations were used for testing the research hypotheses. Research hypotheses include:

First Hypothesis: Disposition effect exists in Tehran Stock Exchange.

Second Hypothesis: There is a significant relation between loss aversion and disposition effect.

Third Hypothesis: There is a significant relation between change aversion and disposition effect.

Fourth hypothesis: There is a significant relation between having prospects and disposition effect.

RESULTS AND DISCUSSION

Table 1: Distribution of respondents based on their gender

Gender	Frequency	Percent	Percentile
Female	33	16.5	16.5
Male	167	83.5	100
Total	200	100	

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The results of the table reveal that 16.5% of the respondents are female and 83.5% of the respondents are male. Most of the respondents are male.

Table 2: Distribution of respondents based on their age

Age	Frequency	Percent	Percentile
Less than 30	82	41.0	41.0
31-40 years	57	28.5	69.5
41-50 years	34	17.0	86.5
51-60 years	19	9.5	96.0
More than 60	8	4.0	100
Total	200	100	

The results reveal that 41% of the respondents aged less than 30 years, 28.5% aged between 31 and 40, 17% aged between 41 and 50 and 13.5% of the respondents aged more than 51. Most of the respondents aged less than 30.

Table 3: Distribution of respondents based on their experience in stock

Experience in stock	Frequency	Percent	Percentile
1-3 years	119	59.5	59.5
3-6 years	32	16.0	75.5
6-9 years	25	12.5	88.0
More than 9 years	24	12.0	100
Total	200	100	

Research results reveal that 59.5% of the respondents have 1-3 years of experience, 16% has 3-6 years of experience, 12.5% has 6-9 years of experience and 12% has more than 9 years of experience is Tehran Stock Exchange. Most of the respondents belonged to the first group.

Table 4: Distribution of respondents based on their education

Experience in stock	Frequency	Percent	Percentile
Lower than high school diploma	18	9.0	9.0
High school diploma	50	25.0	34.0
Associate's degree	43	21.5	55.5
BA	64	32.0	87.5
MA	23	11.5	99.0
Ph.D.	2	1.0	100
Total	200	100	

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Table 4 displays that 34% has high school diploma or lower degrees, 21.5% has associate’s degree, 32% has BA degree and 12.5% has MA or Ph.D. degrees. Most of the respondents have BA degrees.

Table 5: The results of Kolmogorov-Smirnov test

	Mean	Standard deviation	Significance	Test results
Total	3.3	0.39	0.95	H ₀ is confirmed

According to the results of the above table, sig is 95% which is more than 5%. Therefore, the null hypothesis is confirmed. It can be said that normal condition and integrated distribution of the data is taking place. So, parametric statistical tests can be used.

Testing the first research hypothesis

The first hypothesis is as follows.

H₀: $\mu \leq 3$

H₁: $\mu > 3$

In this hypothesis it is studied whether disposition effect exists in the statistical population or not. In order to test this hypothesis, the mean of a population has been tested. The results revealed that this hypothesis is confirmed. The following table displays the results of testing the disposition effect mean comparison in the statistical population of the research.

Table 6: The results of testing disposition effect mean comparison in the population

Variable	Mean	Standard deviation	T value	Sig	Upper limit	Lower limit	Test results
Disposition effect	3.17	0.54	3.35	0.001	0.28	0.07	H ₀ is rejected

In the above test, the mean of disposition effect of this sample is 3.17, the standard deviation is 0.54 and the t value is 3.35. Significance level equals 0.001 which is less than 5%. Therefore, it can be concluded that H₀ is rejected and H₁ is confirmed. In other words, the hypothesis that the mean of disposition effect is more than 3 is accepted at the error level of 5. So, disposition effect exists in the population.

This reveals peoples intentions for maintaining loser stocks for a long time (risk-taking behaviors) and selling the profitable investments early (risk aversion behavior) in Tehran Stock Exchange. Investors may expect than current loser stock become a profitable one in future or vice versa. In other words, if the price of stock increases, the investor recognizes the profit by selling the stock. And if the price of the stock reduces, the investors convince themselves that the price of the stock will increase and this maintains the loser stock. This means that investors affected by disposition effect are eager to know their profits and their losses. Also, investors may avoid selling the loser stock in order to minimize their exchange expenses. Investors may response to excessive increase in the prices of stocks by selling these stocks in order to maintain the diversity in their portfolio. The other reason is confidential information. Since the information regarding the stock with high price is completely reflected in the price, investors sell them.

However, the stock which has a low price is not affected by the information and is kept by the investors.

Testing loss aversion mean comparison in the population

The hypotheses of this test are as follows.

H₀: $\mu \leq 3$

H₁: $\mu > 3$

The following table displays the results of testing loss aversion mean.

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Table 7: The results of testing loss aversion mean comparison in the population

Variable	Mean	Standard deviation	T value	Sig	Upper limit	Lower limit	Test results
Loss aversion	3.50	0.55	9.24	0.000	0.60	0.39	H ₀ is rejected

In the above test, the mean of loss aversion of this sample is 3.50, the standard deviation is 0.55 and the t value is 9.24. Significance level equals 0.000 which is less than 5%. Therefore, it can be concluded that H₀ is rejected and H₁ is confirmed. In other words, the hypothesis that the mean of loss aversion is more than 3 is accepted at the error level of 5. So, loss aversion exists in the population.

This indicates that in Tehran Stock Exchange people’s intentions for avoiding losses are more than their intentions for gaining profits. People experience excessive risk aversion.

Testing change aversion means comparison in the population

The hypotheses of this test are as follows.

H₀: $\mu \leq 3$

H₁: $\mu > 3$

The following table reveals the results of testing change aversion mean.

Table 8: The results of change aversion mean comparison in the population

Variable	Mean	Standard deviation	T value	Sig	Upper limit	Lower limit	Test results
Change aversion	3.44	0.68	6.63	0.000	0.57	0.31	H ₀ is rejected

In the above test, the mean of change aversion of this sample is 3.44, the standard deviation is 0.68 and the t value is 6.63. Significance level equals 0.000 which is less than 5%. Therefore, it can be concluded that H₀ is rejected and H₁ is confirmed. In other words, the hypothesis that the mean of change aversion is more than 3 is accepted at the error level of 5. So, change aversion exists in the population.

This indicates that in Tehran Stock Exchange people prefer that phenomena remain the same and choose options that confirm the existing conditions. Since loss is less possible in the current condition, people choose change aversion. People resist to changes and are afraid of the regrets that may be caused by changing the current situation.

Table 9: The results of the second, third and fourth hypotheses

	Second, third and fourth hypotheses	Impact factor	p
Loss aversion	→	Disposition effect +0.42	0.000
Change aversion	→	Disposition effect +0.34	0.000
Having prospects	→	Disposition effect +0.53	0.016

Testing the first hypothesis revealed that disposition effect exists in Tehran Stock Exchange. Significance level of this test is 0.001. Since this number is less than 5, it can be concluded that H₀ is rejected and the hypothesis that disposition effect is more than 3 is accepted at the error level of 5%. Therefore, disposition effect exists in the population. In Tehran Stock Exchange people intend to maintain loser stocks for a long time and sell profitable stocks at an early time.

One of the most important researches done regarding existence of disposition effect among investors is the research that was conducted by Shefrin and Statman (1984). They used prospect theory¹⁸.

According to the obtained results there is a significant relation between loss aversion and disposition effect. Since significant level is less than 5%, the hypothesis is confirmed. Impact factor equals 0.42. Therefore, it can be said that in Tehran Stock Exchange there is positive and significant relation between

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loss aversion and disposition effect. As loss aversion increases, disposition effect increases as well. Also, as loss aversion decreases, disposition effect decreases as well (Shefrin *et al.*, 1984).

According to the obtained results, the relation between change aversion and disposition effect is significant. Since the significant level is less than 5%, this hypothesis is confirmed. The impact factor equals 0.34; therefore, there is a significant relation between change aversion and disposition effect in Tehran Stock Exchange.

According to the obtained results, there is a significant relation between having prospects and disposition effect. Since the significant level is less than 5%, this hypothesis is confirmed. The impact factor equals 0.53; therefore, there is a significant relation between having prospects and disposition effect in Tehran Stock Exchange.

Sun and Hsiao (2006) studied the impact of over confidence, regret aversion and self-control on disposition effect. The research studied the impacts of overconfidence, mental accounting, regret aversion and self-control on the disposition effect. The findings display that overconfidence, mental accounting and self-control positively affect the disposition effect and self-control negatively affects the disposition effect (Sun *et al.*, 2004).

Conclusion

The obtained results revealed that disposition effect exists in Tehran Stock Exchange. According to the results, the relation between loss aversion and disposition effect, the relation between change aversion and disposition effect and the relation between having prospects and disposition effect are significant.

1- Due to disposition effect, investors can avoid fast reactions. They can exchange stocks through proper analyses.

2- Investors should avoid behavioral orientations including loss aversion, change aversion, having prospects or disposition effect.

3- Investors should consider implicit expenses of the exchanges besides the explicit expenses.

4- According to the results of testing second, third and fourth hypotheses, disposition effect has a significant relation with loss aversion, change aversion and having prospects. Therefore, it is suggested that investors use change aversion and having prospects in order to decrease disposition effect.

5- Issuers of securities can use the obtained results of this research to design financial tools that are in accordance with psychological features of their target market.

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