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Investment Objectives and Strategies in Behavioural Portfolio: Empirical study in the Iran capital market

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Abstract

Objectives and strategies have a significant relation with investor's performance. In this research, we classified strategies and objects of individual investors in Tehran stock exchange during (2011-2015). Investor's objectives divided to 5 groups such as financial capital growth, Building financial buffer, saving for retirement, hobby and speculation. Then their strategies classified in 3 conventional strategies: fundamental, technical and heuristically. Finally according to behavioral characteristics like risk taking, aspiration levels and over confidence we tested relation among these objectives and strategies with their investors' performance.

Results show that behavioral characteristic of investor's has a significant effect on objectives and investing strategies and their performance. There is a relation between aspiration level and risk taking with investor's objectives, especially there is a strong significant relationship for investors whose object is makes capital grow and investors with technical strategy, has higher aspiration and risk taking level but the average yield of this approach is lower than average yield of fundamental strategy

Behavioral Portfolio Theory (BPT), Investing Strategies, Investment Objectives.

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Introduction

In these paper we examined what are the differences between the investors in terms of their personal characteristics, what are their specified objectives, what are their investment strategies, and what are the effects of these factors on their performance. Graham et al (2009) believe that knowing these factors makes it possible to elaborate a vast range of personal characteristics, strategies, and objectives of the investors. Statman (2002) believes that behavioural preferences play an important role in choosing the stock portfolio. The portfolio choice of the investors and, consequently, their performance is influenced by characteristics such as ambition, hope, fear, and narrow framing in dealing (transaction) decisions. Crossly & Browning (2001) found out that in case of encountering different investment opportunities it is important to realize the investors' differences in a triangular relationship between the decisions made by them, the process which lead to these decisions, and the consequence of the investment performance. Recognizing the invisible differences in the individual level of the investors might help discovering the extensive behavioural abnormalities demonstrated by them while making the investment decisions (Graham et al, 2009).

Heckman (2001) and Pennings & Garcia (2009) express that knowing the type of choice and behaviour of the investors in the financial market requires discovering the invisible variables like their preferences and beliefs. Recognizing the difference in the individual level can help perceiving the factors which cause theses behavioral abnormalities. Also Lee et al (200*) believe that these difference haven't been much used to explain and justify the investors' decision-making or performance.

Muralidhar (2016) believes that applying the behavioural financial and the modern portfolio theory can prevent us from merging the investors' objectives, as the focal point and main center of their investment and savings, with the analyses. Shefrin & Hoffman (2011) examined the information obtained from a questionnaire research in order to achieve a better perception of the relationship between the investors' decisions, the processes which lead to these decisions, and the performance consequences.

The main theme of the present research focuses on the investors' difference and its role on their behaviour and seeks to answer questions such as "what are the differences between the investors in terms of their investment general objective and their attitude toward risk, aspiration, and overconfidence?", "what strategies do they take?", "is there any significant meaningful difference between the investment strategies in terms of their efficiency?", and "is it possible to suggest an appropriate pattern to the investors proportionate to their strategies?".

In this paper we present the research hypotheses and theoretical fundamentals in the first section and the research methodology and data extraction in the second section. The third section includes the research model and discussions related to the simulation of market with regard to the theoretical fundamentals. The findings and the results of the research are presented in the fourth and fifth sections respectively.

Literature

The present research is particularly focused on the theories of the investors' individual behavior in terms of the behavioral characteristics and effect of such behavior on the investment objectives.

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Researches performed by Barber & Odean (2001), pointing out the role of the investors' behavioral and, especially, overconfidence characteristics, emphasize on the role of individual views and beliefs asking why some of the investors are too optimist and have too audacious predictions. Kahneman et al (1991) concluded that if the investors have so much confidence on their own skills in choosing their stocks that assume it improbable to get repentant in future, then they will achieve highly desirable evaluation of their portfolio and will make more audacious predictions besides having the ability to overcome the bias governing their decisions.

Camille & Eleonore (2014) and Lopez (1987) believe that in risky situations the individual's aspiration level is used by the decision-maker as a predetermined pattern to accommodate the efficiency results with their needs level. Diecidue & Van de Ven (2008) consider the aspiration level as related with the results of financial decision-making, so they conclude that in case of encountering a financial decision the investor, consistent with the aspiration level, regards not only the risky projects but also the probability of failure and success in the investment. Therefore, in the present research, we categorized the behavioral characteristics in three groups as risk-taking, aspiration, and overconfidence; then, we tested whether a meaningful relationship exists between the investors' aspiration level and their risk-taking level or not.

Another area to be investigated in this research is the investors' objectives and motivation for entering the capital market. Shefrin & Statman (2000) believe that the relationship between the investors' objectives and its effect on choosing the investments options, in case of no-confidence situation, is defined in the focal point of Lopez's risky choice two-factor theory.

The first factor is focused on the financial buffer and security objectives and the second one focuses on the investment potentials. Camille & Eleonore (2014) believe that the investors choose their stock portfolio consistent with their aspiration level; while, according to Lopes's behavioral theory they assume their portfolio as a pyramid of assets. The lower layer indicates the tendency toward security and using low-risk stocks and the upper layer includes assets with higher risk and higher efficiency potential. So based on these theories, we classified the investors' objectives with regard to their preferences into five groups as financial buffer, capital growth, saving for retirement, hobby (entertainment), and speculation, and then tested some related hypotheses. We thought about what kind of investment strategy for choosing the transaction and investment option is taken by those investors whose objective is to achieve capital growth and financial buffer.

Ravindra Jain et al (2015) found out that, under pressure of some behavioral mistakes, the investors make unreasonable decisions and thus achieve weak return and efficiency. Numerous studies have been done on applying specified investment strategies in most of the organized stocks markets. Many of these studies figured out that applying specified transaction strategies can increase the return of exchanges and stocks. Among these researches, Shefrin & Huffman (2014), and Lewellen & Lease & Schlarbaum (1980) are the most well-known ones. In their researches, they classified the investment strategies into technical, fundamental, and heuristic analyzers and professional consultation. In the present research we made some hypotheses in order to figure out that which strategy is chosen by each of the investors, in each category of the objectives and behavioral characteristics. Aimed to achieve the research goals, we classified the investment strategies fundamental, technical, and heuristic strategies and used them as the basis for classifying the investors.

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In this research we presented a new innovation. In fact, we could provide the investors with an appropriate pattern through simulating the market investment strategies and, besides, we could evaluate the simulation results by comparing them with the average stock index return and the questionnaire return. Steps and results of this innovation will be discussed in following sections.

Data and Methodology

The present research is among a few studies in which the researcher collects the data required for evaluating the study objectives through two information sources, namely research by questionnaire based on determination of the investors' behavioral characteristics and statistical test of simulating the investment strategies, and thus can present a pattern appropriate for any category of the investors. To test the research hypotheses, the present research uses descriptive statistics for examining the demographic aspects and inferential statistics for analyzing the data and testing the hypotheses. In this research we used one-sample t-test, simple linear regression, and one-way analysis of variance (ANOVA) for testing the research hypotheses. After determining the existence or lack of difference between the averages of the tested groups, the LSD test was used to determine which groups have meaningful difference.

Variable	Range	Frequency	Abundance %
Age	Lower than 20	0	0.0%
	Between 20 to 25	31	9.0%
	Between 25 to 35	169	49.3%
	Between 35 to 50	104	30.3%
	More than 50	37	10.8%
Educational level	Diploma or less	19	5.5%
	Associate degree	12	3.5%
	Bachelor degree	67	19.5%
	Master of science	184	53.6%
	Ph.D. candidate	45	13.1%

Table 1 Frequency and educational level of respondents.

In order to examine the collected data about the investors' behavioral characteristics including risk-taking, aspiration, and overconfidence, and the investment objectives in the capital growth, financial buffer, saving for retirement, and speculation groups, and also the investors' chosen strategies based on the heuristic, technical, and fundamental analysis, we tried to gather a sample of 343 individuals of the capital market activists by distributing the Shefrin & Huffman standard questionnaire with regard to Graham et al theories. Through 40 categorized questions we could examine and extract the investors' strategies, objectives, and characteristic aspects.

Results from descriptive statistics of the respondents indicate that more than 90 percent of those participating in this survey has a bachelor's degree, master's degree and Ph.D. and most of them are relatively expert investors and in the age range of young and experienced that adds to the credibility of the results and significance of this study.

ISSN-On line: 2444-3204

Cronbach Alpha was used to measure the questionnaire reliability; since the analysis of Cronbach Alpha yielded 0.879 and is higher than 70% thus the general reliability of the questionnaire is acceptable.

Objectives	Number	Average	Standard deviation	Mean rank	Rank
Capital growth	343	4.379	0.847	4.390	1
Financial buffer	343	3.579	1.005	3.420	2
Saving for retirement	343	3.010	1.083	2.740	3
Speculation	343	2.793	1.039	2.460	4
Entertainment (hobby)	343	2.291	1.066	1.990	5

Table 2 Friedman test for investment objectives ranking

Since t tests, simple linear regression and analysis of variance are of parametric tests which their utilization requires assumptions about population parameters that one of these main assumptions is the normality of the used data in these tests so Kolmogorov–Smirnov test is used to assess the normality of the main variables of research before conducting and analyzing tests. Cronbach's alpha was obtained 0.879 for questionnaires' stability.

Variable	Confidence level	K-S
Overconfidence	<0.95	0.029
Ambition	<0.95	0.027
Risk-taking	<0.95	0.04

Table 3 Kolmogorov-Smirnov test values

According to Table 3 all values of Kolmogorov-Smirnov test are less than 0.05 which the normality assumption of data at the significance level of 95 percent is accepted.

The ranks average in the table of the ranks average is consistent with results of the research performed by Roudposhti et al (1389).

The responder regarded the most priority (preference) and importance to investment growth, financial buffer (security), saving, speculation, and hobby respectively.

Strategy	Number	Average	Standard deviation	Standard error	Confidence interval for mean95%		Mean rank	Rank
					Lower bound	Upper bound		
Fundamental	343	3.656	0.7263	0.0392	3.579	3.733	2.45	1
Technical	343	3.067	0.791	0.0427	2.983	3.151	1.86	2
Heuristic	343	2.959	0.7462	0.0403	2.88	3.038	1.70	3
Total	1029	3.227	0.8141	0.0254	3.178	3.277		

Table 4 Friedman test for investment strategies ranking

In terms of frequency, more than 50% of the capital market activists and responders had chosen the fundamental strategy, 26% had chosen the technical strategy, and about 16% had chosen the heuristic strategy as their strategy.

After collecting and analyzing the data obtained from questionnaire the new classification of the capital market active investors will be presented. In this classification, every individual's behavioral characteristics will be recognized proportionate to the investment strategies and objectives; thereby, results of the statistical test and hypotheses test will demonstrate that every investor, by choosing a specified strategy for his investment, would accept what range of objectives and behavioral errors such as risk, aspiration, and overconfidence.

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Model for evaluation of the behavioral portfolio choosing strategies

Later in this research, in order to evaluate the investors' performance, we will require their trading data extraction which, in this particular case, Shefrin & Huffman (2014 & 2011) studies are based on the online trading real data. However, in the Iranian capital market, with regard to the difference of return measurement methods and measurement time, numerousness of brokers, possibility of using multiple online codes and brokers, confidentiality of the users' information, and insufficiency of the online data, the researcher has attempted to extract the capital market data for simulating the stocks of active companies in capital market in heuristic, technical, and fundamental groups in order to achieve the individuals' trading data in the Iranian capital market; because the investors choose the stocks whose features are consistent with their chosen strategy. For example, an investor whose investment strategy is fundamental he seeks to find stocks with strong fundamental features in the capital market but a technicality investor, by testing previous prices and future trade volume, predicts the prices and specifies the opportunities of purchase and sales through assessing the range of market oscillations (John Murphy, 1999).

Simulation of investment strategies

In the present research in order to simulate the capital market investment strategies, to extract risk and return for evaluating the performance of each investment strategy, and to extract the infrastructural data of financial statements, risk, and return of the stocks of active companies in Tehran Stocks & Exchange Market.

Simulation of fundamental portfolio

There are various models for extracting the fundamental companies' stocks but in this research we regarded the financial health of companies, taken from Altman model (1983), as the basis of choosing.

This model specifically focuses on operating profit, asset, market value, and liability reimbursement ability; thus it is used to recognize those stocks with desirable status and financial statement and high financial power. This model is called Altman-Z model.

$z = 0x_4 + 1x_5/3x_3 + 6/1x_2 + 3/1x_1 + 4/2$

In this model:

x_1: Ratio of gross working capital to assets,
x_2: Ratio of accumulated profit to assets,
x_3: Ratio of operating profit to assets,
x_4: Ratio of the stocks' market value to liabilities
x_5: Ratio of sales to assets.

The definition domain of Z is introduced as follows:

If $Z<81$ the financial health is low; if $1.81 \leq Z \leq 2.99$ the financial health is medium, and if $Z \geq 2.99$ the fundamental variables are strong and the financial health is high. The researcher has selected the value domain of Z above 2 in order to choose the stocks with medium to high financial health.

Simulation of technical portfolio

As for companies with technical features, recognizing and purchasing the chosen stocks was done using AMIBROKER software and one-filter programming. In this section, common and conventional indicators of the technical analyzers have been chosen for filtering, and validity of this method had been evaluated and confirmed based on a group of experts and five technical experts. The portfolio choosing filter has been compiled as follows:

ISSN-On line: 2444-3204

Buy=(Cross(TEMA(Close,5) ,MA(Close,5)) AND TEMA(Close,5)> MA(Close,5))

OR (Cross (RSI, (14),30) AND RSI(14)>30) OR Cross(CCI(14),-100)

OR (StochK(15)<30 AND Volume>MA(Volume,15)) OR Volume>MA(Volume,15);

In this filter which is programmed for AMIBROKER software, TEMA stands for "Triple Exponential Moving Average Oscillator", CCI stands for "Commodity Channel Index" (comparing the current price level with average price), StochK stands for "Stochastic Oscillator" (a momentum index which indicates the resistance and support points), MA stands for "Moving Average", and RSI stands for "Relative Strength Index".

Simulation of heuristic portfolio

The trading volume filter was used to extract stocks of the companies with heuristic features; this means that stocks having the highest trading ratio compared to their weight (compared to the capital or number of the stocks) in choosing date were evaluated as stocks which have high attractiveness and the stockholders have more tendency to buy them in the trading day.

$$x = \frac{trading\ day\ value}{total\ market\ value\ of\ share}$$

After extracting and classifying the stocks in defined strategies, the researcher will be able to calculate the risk and return of each share using RAHAVARDNOVIN software and then allocate it to each portfolio.

In order to achieve more accommodation between the return reported in the questionnaire and the simulated market real data, the high-risk and low-risk stocks in each portfolio were determined and classified for each strategy.

To do this, using quartiles, the stocks in the first and fourth quartile ranges were recognized, respectively, as high-risk and low-risk shares. According to table-5, the performance resulted by the simulated market strategy was compared to the responders' strategy thus the researcher could evaluate and compare the performance of these two databases (according to table-6) with the performance of the Stocks Average Index. The obtained results indicate that the simulation model's return demonstrates a better performance compared to Tehran Stocks Average Index.

Return of simulated strategies				Result	Return of responders in questionnaire			
Strategy	Year	Risk range	Simulated return	Difference	Responders' return	Risk range	Year	Strategy
Technical	89	*Low-*	5.3	14.1	-8.8	*Low-*	89	*Technical*
		High-	113.0	114.0	-1.0	*High-*		
	90	*Low-*	-39.3	60.6	21.3	*Low-*	90	
		High-	42.6	10.1	32.5	*High-*		
	91	*Low-*	-30.5	-50.3	19.8	*Low-*	91	
		High-	46.7	23.1	23.6	*High-*		
	92	*Low-*	70.8	42.6	28.1	*Low-*	92	
		High-	249.8	203.7	46.1	*High-*		
	93	*Low-*	-52.1	-104.6	52.5	*Low-*	93	
		High-	53.6	-18.9	72.5	*High-*		
Fundamental	89	*Low-*	6.6	-3.3	9.9	*Low-*	89	*Fundamental*
		High-	99.7	96.6	3.1	*High-*		
	90	*Low-*	-10.9	-42.8	31.9	*Low-*	90	
		High-	74.6	35.1	39.5	*High-*		
	91	*Low-*	-19.9	38.5	18.6	*Low-*	91	
		High-	82.2	59.9	22.3	*High-*		
	92	*Low-*	38.8	2.0	36.8	*Low-*	92	
		High-	181.0	131.6	49.4	*High-*		
	93	*Low-*	-46.1	-96.4	50.3	*Low-*	93	
		High-	39.2	-58.7	98.0	*High-*		
Heuristic	89	*Low-*	-3.5	-15.9	12.4	*Low-*	89	*Heuristic*
		High-	131.9	135.0	-3.1	*High-*		
	90	*Low-*	-33.1	-56.4	23.3	*Low-*	90	
		High-	78.7	48.9	29.8	*High-*		
	91	*Low-*	-46.1	-68.7	22.6	*Low-*	91	
		High-	95.9	75.3	20.6	*High-*		
	92	*Low-*	52.4	18.1	34.3	*Low-*	92	
		High-	235.1	205.9	29.1	*High-*		
	93	*Low-*	-58.9	096.4	37.5	*Low-*	93	
		High-	53.18	06.11	59.3	*High-*		

Table 5 Difference of return between market simulation strategies and investors' strategy

Time Return		Average Index Return		Market Simulated Return		
Year	3-month return	Annual stocks	Average stocks	Technical return	Fundamental return	Heuristic return
1389	89.3	0.85	13.00	30.0	21.5	27.4
	89.6		29.00	53.6	44.4	55.1
	89.9		-2.00	1.6	2.7	3.3
	89.12		27.00	27.9	31.1	46.1
1390	90.3	0.09	6.00	9.4	12.3	9.3
	90.6		7.00	25.1	19.7	28.2
	90.9		-8.00	1.1	15.8	12.5
	90.12		6.00	7.1	26.8	28.7
1391	91.3	0.45	0.00	10.9	9.3	6.7
	91.6		2.00	1.5	11.6	21.2
	91.9		33.00	19.3	36.4	45.6
	91.12		6.00	15.0	25.0	22.5
1392	92.3	1.05	27.00	67.5	60.2	73.9
	92.6		27.00	59.2	43.0	57.5
	92.9		38.00	94.9	57.9	72.5
	92.12		-9.00	28.2	19.9	31.2
1393	93	-0.21	-8.00	11.2	0.3	11.9
	93.6		-2.00	12.4	17.6	9.9
	93.9		-3.00	24.6	21.0	28.0
	93.12		-11.00	5.4	0.3	3.3

Table 6 comparison of market simulation strategies with Tehran Stocks & Exchange Market Average Index

Research findings

Results show that, with regard to the test statistic, F equals 10.048 and the significance level of the test is equal to 0.000 thus H_0 is rejected; that is, the average overconfidence of those investors who apply fundamental strategy is equal to technical strategy but more than heuristic strategy.

Moreover, testing the investors' risk-taking level showed that F test statistic value is 4.39 and significance level of the test is 0.013; thus, there is a meaningful difference between the fundamental, technical, and heuristic investors in terms of risk-taking level such that the technical-analysis-based investors show more risk-taking level compared to fundamental and heuristic investors. These findings are inconsistent with findings of Shefrin & Huffman (2011) since they believe that investors who are based on fundamental analysis have more aspiration and trading turnover, take more risk, have too much overconfidence, and demonstrate better performance compared to the technical-analysis-based investors.

As for the aspiration level, the research results are not consistent with Shefrin's results. This study shows that the technical analyzers' aspiration level is much more than that in heuristic and fundamental ones. With regard to the significance level, the analysis of variance shows that there is a meaningful relationship between heuristic, technical, and fundamental investors in terms of aspiration level; furthermore, the average aspiration of the technical analyzers is more than the other ones.

The descriptive analysis and Friedman test results for investors' objectives show that the significance level of the test is 0.00 and, with regard to the average ranks obtained from the rankings average table, the responders have regarded the highest priority and importance for capital growth, financial buffer, saving for retirement, speculation, and hobby respectively.

Results obtained by Shefrin & Huffman (2014) show that investors with speculation objectives accept more aspiration and risk and consider themselves more progressed than those ones whose objective is building financial buffer or saving for retirement. However, regarding the results of hypotheses testing for investors' objectives in the present research, the Pearson correlation coefficient is 0.168, the significance level is 0.003, and there is a meaningful positive relationship between the investors' risk-taking and aspiration, that is, the higher the level of aspiration, the higher the level of risk-taking.

As for the relationship between the investors' strategies and objectives, the obtained results show that since the value of F test statistic is 4.215 and the significance level is 0.028 thus different investors have different capital growth objectives. That is, capital growth objective in heuristic investors is less than that in fundamental and technical ones but no difference is observed between the technical and fundamental investors in terms of capital growth objective.

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Besides, with regard to the significance level of the test (0.017), no meaningful difference is observed between technical and fundamental investors in term of financial buffer objective while the financial buffer objective in fundamental investors in less than that in the heuristic ones. Results show that those investors with heuristic strategy follow less financial buffer and capital growth objectives compared to the technical and fundamental investors but technical and fundamental strategies have no meaningful difference. So although there exist a positive meaningful relationship between the investors' aspiration level and risk-taking level but this relationship is absent in the investors' risk-taking and speculation objectives. On this basis, the results obtained in this research for risk-taking and speculation objectives are not consistent with the results of Shefrin & Huffman (2014) research.

In order to introduce an appropriate solution to investors for choosing portfolio in each of the above-mentioned strategies, the researcher has used Tehran Stocks & Exchange Market data for simulating the investment portfolios in for of three fundamental, technical, and heuristic strategies correspondent to the presented theoretical literature.

Considering the analyses performed for simulation of the heuristic, technical, and fundamental strategies of the Iranian capital market, the results show that the average return in the five-year period from 2011-2015 for simulated strategies with low risk-taking is less than the Average Stocks Index; however, the average return during the same time period for simulated strategies with high risk-taking is meaningfully more than the Average Stocks Index.

The three-month average return resulted by simulated strategies is more than the three-month average return of the Average Stocks Index. Results obtained from evaluation of the returns announced by the responders, return of the market simulated model, and return of the Average Stocks Index indicate that the return of the simulated model with high risk can yield more return compared to the Average Index.

Conclusions

The analytical-descriptive results obtained from 343 behavioral questionnaires related to the market activists show that, in terms of frequency, more than 50% of the responders have chosen fundamental strategy, and the technical and heuristic strategies have been chosen by, respectively, 26% and 16% of the responders. However results of Friedman test, in significance level 0.05, have shown that the responders regard the most importance and priority to the fundamental, technical, and heuristic strategies, respectively; but there is no meaningful difference between heuristic and technical strategies. Inconsistent with results of Shefrin & Huffman (2014), the obtained results indicate that the average of overconfidence and diversity of portfolios in fundamental strategies are equal to technical strategy and more than heuristic strategy; on the other hand, the technical investors demonstrate more risk-taking and aspiration level compared to the fundamental ones.

Results of testing the hypotheses in terms of investors' objectives show that, consistent with Shefrin & Huffman (2011), there is positive meaningful relationship between aspiration and risk-taking levels but no meaningful relationship is observed between speculation and risk-taking level.

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The innovation of the present research is manifested in the results obtained from comparison of the capital market strategies simulated model with Tehran Stocks & Exchange Market Average Index. In this research, using simulation of the investment strategies in the capital market, we could create higher average return compared to Tehran Stocks & Exchange Market Average Index by choosing the high-risk portfolios.

General results obtained from testing the hypotheses show that the Iranian capital market enjoys a particular behavioral method among the investors with various investment strategies which affects their performance. But the simulation results indicate that if the investors use the simulated models and elaborated filters of the present study simulating the strategies, in case of choosing high-risk portfolio, they will be able to achieve higher and more desirable return compared to the Average Stocks Index.

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Technical in high Return		Technical in high Risk		History
30.0	H Return	**12.3**	H Risk	**8903**
4.7	L Return	**4.1**	L Risk	
53.6	H Return	**13.6**	H Risk	**8906**
12.2	L Return	**3.8**	L Risk	
1.6	H Return	**8.5**	H Risk	**8909**
-17.2	L Return	**2.5**	L Risk	
27.9	H Return	**10.5**	H Risk	**8912**
5.7	L Return	**5.2**	L Risk	
9.4	H Return	**13.8**	H Risk	**9003**
-11.1	L Return	**4.2**	L Risk	
25.1	H Return	**13.7**	H Risk	**9006**
-6.0	L Return	**6.5**	L Risk	
1.1	H Return	**7.7**	H Risk	**9009**
-12.8	L Return	**3.0**	L Risk	
7.1	H Return	**8.4**	H Risk	**9012**
-9.4	L Return	**2.7**	L Risk	
10.9	H Return	**11.9**	H Risk	**9103**
-3.2	L Return	**4.9**	L Risk	
1.5	H Return	**15.6**	H Risk	**9106**
-6.3	L Return	**3.2**	L Risk	
19.3	H Return	**12.4**	H Risk	**9109**
-6.5	L Return	**3.2**	L Risk	
15.0	H Return	**10.2**	H Risk	**9112**
-14.6	L Return	**3.7**	L Risk	
67.5	H Return	**22.2**	H Risk	**9203**
26.2	L Return	**10.1**	L Risk	
59.2	H Return	**30.5**	H Risk	**9206**
13.5	L Return	**12.4**	L Risk	
94.9	H Return	**32.8**	H Risk	**9209**
35.4	L Return	**10.4**	L Risk	
28.2	H Return	**20.5**	H Risk	**9212**
-4.4	L Return	**8.8**	L Risk	
11.2	H Return	**13.8**	H Risk	**9303**
-21.8	L Return	**5.9**	L Risk	
12.4	H Return	**16.2**	H Risk	**9306**
-9.8	L Return	**5.4**	L Risk	
24.6	H Return	**20.0**	H Risk	**9309**
-4.4	L Return	**6.9**	L Risk	
5.4	H Return	**14.6**	H Risk	**9312**
-16.1	L Return	**6.9**	L Risk	

Appendix 1 High Risk and Low Risk V.S High Return Low Return of simulated Technical portfolio

ISSN-On line: 2444-3204

Fundamental in high Return		Fundamental in high Risk		History
21.5	H Return	**12.2**	H Risk	**8903**
1.8	L Return	**3.3**	L Risk	
44.4	H Return	**13.9**	H Risk	**8906**
10.8	L Return	**4.7**	L Risk	
2.7	H Return	**9.1**	H Risk	**8909**
-11.8	L Return	**2.8**	L Risk	
31.1	H Return	**10.4**	H Risk	**8912**
5.8	L Return	**3.1**	L Risk	
12.3	H Return	**9.6**	H Risk	**9003**
-1.8	L Return	**3.2**	L Risk	
19.7	H Return	**11.7**	H Risk	**9006**
0.2	L Return	**3.9**	L Risk	
15.8	H Return	**14.3**	H Risk	**9009**
-8.6	L Return	**4.3**	L Risk	
26.8	H Return	**11.9**	H Risk	**9012**
-0.8	L Return	**4.5**	L Risk	
9.3	H Return	**9.1**	H Risk	**9103**
-5.8	L Return	**2.7**	L Risk	
11.6	H Return	**15.8**	H Risk	**9106**
-6.2	L Return	**2.3**	L Risk	
36.4	H Return	**18.0**	H Risk	**9109**
-0.7	L Return	**4.2**	L Risk	
25.0	H Return	**17.7**	H Risk	**9112**
-7.2	L Return	**4.5**	L Risk	
60.2	H Return	**17.9**	H Risk	**9203**
15.5	L Return	**7.1**	L Risk	
43.0	H Return	**24.4**	H Risk	**9206**
9.3	L Return	**7.8**	L Risk	
57.9	H Return	**21.4**	H Risk	**9209**
21.0	L Return	**8.9**	L Risk	
19.9	H Return	**15.6**	H Risk	**9212**
-6.9	L Return	**5.7**	L Risk	
0.3	H Return	**9.9**	H Risk	**9303**
-16.3	L Return	**3.8**	L Risk	
17.6	H Return	**11.7**	H Risk	**9306**
-8.0	L Return	**4.2**	L Risk	
21.0	H Return	**16.8**	H Risk	**9309**
-5.7	L Return	**5.2**	L Risk	
0.3	H Return	**10.3**	H Risk	**9312**
-16.0	L Return	**3.6**	L Risk	

Appendix 2 High Risk and Low Risk V.S High Return Low Return of simulated Fundamental portfolio

Heuristically in high Return		Heuristically in high Risk		History
27.4	H Return	**18.7**	H Risk	**8903**
3.3	L Return	**6.3**	L Risk	
55.1	H Return	**18.7**	H Risk	**8906**
14.7	L Return	**5.6**	L Risk	
3.3	H Return	**13.4**	H Risk	**8909**
-22.1	L Return	**4.6**	L Risk	
46.1	H Return	**14.8**	H Risk	**8912**
0.6	L Return	**6.2**	L Risk	
9.3	H Return	**18.0**	H Risk	**9003**
-11.4	L Return	**5.3**	L Risk	
28.2	H Return	**18.4**	H Risk	**9006**
0.3	L Return	**7.1**	L Risk	
12.5	H Return	**15.0**	H Risk	**9009**
-15.7	L Return	**5.4**	L Risk	
28.7	H Return	**17.7**	H Risk	**9012**
-6.3	L Return	**7.6**	L Risk	
6.7	H Return	**11.8**	H Risk	**9103**
-23.0	L Return	**6.5**	L Risk	
21.2	H Return	**19.2**	H Risk	**9106**
-5.6	L Return	**7.4**	L Risk	
45.6	H Return	**27.3**	H Risk	**9109**
-0.1	L Return	**10.0**	L Risk	
22.5	H Return	**17.2**	H Risk	**9112**
-17.4	L Return	**6.9**	L Risk	
73.9	H Return	**23.7**	H Risk	**9203**
26.8	L Return	**10.5**	L Risk	
57.5	H Return	**31.2**	H Risk	**9206**
12.9	L Return	**14.1**	L Risk	
72.5	H Return	**23.3**	H Risk	**9209**
22.8	L Return	**11.3**	L Risk	
31.2	H Return	**26.4**	H Risk	**9212**
-10.0	L Return	**10.7**	L Risk	
11.9	H Return	**15.3**	H Risk	**9303**
-21.3	L Return	**7.2**	L Risk	
9.9	H Return	**12.8**	H Risk	**9306**
-11.5	L Return	**6.2**	L Risk	
28.0	H Return	**25.0**	H Risk	**9309**
-7.2	L Return	**12.0**	L Risk	
3.3	H Return	**14.3**	H Risk	**9312**
-18.9	L Return	**7.1**	L Risk	

Appendix 3 High Risk and Low Risk V.S High Return Low Return of simulated Heuristically portfolio

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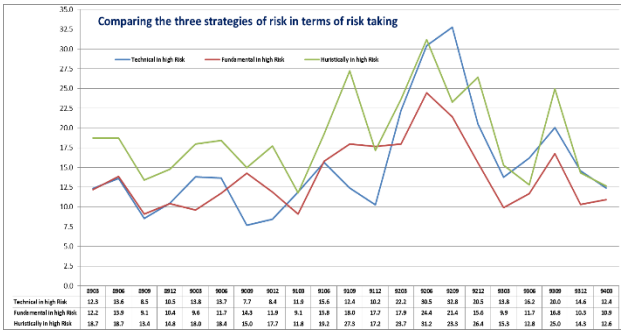
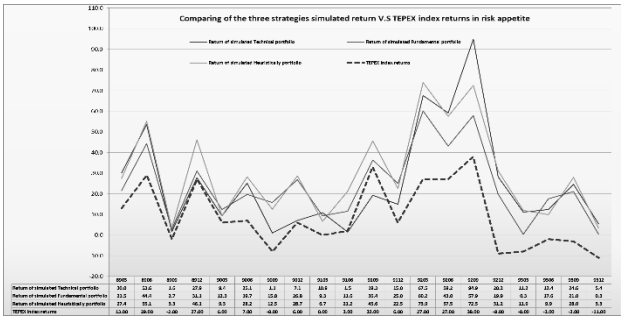


	1903	1906	1909	1912	2003	2006	2009	2012	2103	2106	2109	2112	2203	2206	2209	2212	2303	2306	2309	2312	2403
Technical in high Risk	12.3	13.6	8.5	10.5	13.8	13.7	7.7	8.4	11.9	15.6	12.4	10.2	22.2	30.5	32.8	20.5	13.8	16.2	20.0	14.6	12.4
Fundamental in high Risk	12.2	13.9	9.1	10.4	9.6	11.7	14.3	13.9	9.1	15.8	18.0	17.7	17.9	24.4	21.4	15.6	9.9	11.7	16.8	10.3	10.9
Heuristically in high Risk	18.7	18.7	13.4	14.8	18.0	18.4	15.0	17.7	11.8	15.2	27.5	17.2	25.7	31.2	25.5	26.4	15.3	11.8	25.0	14.5	12.6



	0045	0106	0305	0512	0903	0906	1009	1032	1125	1306	1509	1132	1525	1606	1209	1232	1503	1606	1503	1532
Return of simulated Technical portfolio	30.0	22.6	2.5	27.0	8.7	22.1	1.3	7.1	48.8	1.5	39.2	15.0	67.2	58.2	89.9	26.3	44.3	13.4	34.6	5.4
Return of simulated Fundamental portfolio	21.5	49.0	3.7	51.1	12.3	39.7	15.8	26.9	9.3	11.5	35.4	25.0	65.2	43.6	77.9	18.9	6.5	17.5	31.8	9.3
Return of simulated Heuristically portfolio	27.4	55.1	5.3	46.1	8.5	28.2	12.5	28.7	6.7	33.2	49.6	22.5	73.3	57.5	72.5	51.5	11.9	0.9	28.8	5.3
TEPEX Index returns	13.50	28.00	-1.00	27.00	6.00	7.00	-8.00	0.00	0.00	5.00	10.00	0.00	27.00	27.00	38.00	-8.00	-8.00	-5.00	-3.00	-11.00

SHAHMANSURI- Esfandyar, RAHNAMAY ROODPOSHTi-Fereydon, NIKOUMARAM-Hashem. Investment Objectives and Strategies in Behavioural Portfolio: Empirical study in the Iran capital market. ECORFAN Journal-Spain 2015, 2-3: 198-210