

Determinants of Investors Financial Behavior in Tehran Stock Exchange

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Abstract

Decision making and investors' behavior are affected by various factors in Tehran stock exchange. Based on theoretical perspective; investors collect the key information of decision making by study of the macro and micro levels of investment environments. In order to analyze the research data, path analysis and LISREL software are used.

The results indicate that political factors with 62%, psychological factors with 53%, economic factors with 47% and internal factors with 31% are the most important factors that affect the stocks trading in Tehran Stock Exchange. Not only political and psychological factors have direct effect, but also they affect the investor's financial decision making indirectly (through intended interest rate) 16% and 11%, respectively. Total effect of political and psychological factors on investors financial decision making are 79% and 64%, respectively.

Key words: Decision making, behavioral finance, Tehran Stock Exchange (TSE), Expected Return.

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1- Introduction

At the time of decision making, investors concentrate on risk and return. In contrast with institutional investors, personal investors often don't have extensive instruments for balancing these two variables. Factors such as high economic and political volatility rate and instability of rules and regulations lead to high risk in stock exchange's decision makings.

All these factors lead to a secondary risk in capital market that derives from unpredictable investors' behavior. This research seeks to find an answer for this question: "which factors affect investors' financial behavior?" Lintner (1958) stated that financial behavior studies and analyzes the effect of informational interpreting and operating in order to solve personal structured decision makings. It should be stated that not only the financial behavior does not try to indicate that rational behavior is incorrect ,but also it tries to indicate the application of psychological decision making in forecasting and recognizing financial markets. Studies in these fields indicate that several factors affect decision making of investors that can be categorized into two sets of macro and micro variables. Chang Ivsia (2001) investigated some of important economic factors such as interest rate and inflation rate changes and investing substitutions on financial behavior of investors. Furthermore, in this research, effective social and political variables such as internal and regional changes, political volatilities and psychological factors such as the macro effect of news and gossips were investigated. Also, in micro level, degree of effect, financial ratios, stocks' risk and return was investigated.

David Dreaman and Donald Mc Gregor (2001) investigated the effective factors on investors' behavior in New York Stock Exchange (NYSE). The objective of this research, that was handled based on 309 investors, was to investigate investors' expectations and risk tolerating degree in NYSE. The results show a slight difference among investors' expectations. These slight differences can be condensed as follow:

- 1-Degree of assurance and reliability to short-term and mid-term price procedures of stock exchange
- 2-Inclination for purchasing stocks at ideal political and economic situation
- 3-Forming a portfolio instead of investing in fixed interest debentures

4- Degree of risk that investors can tolerate.

They also believe that gossips and news that are related to high return of stock, might affect the investors' purchase.

NASD institute investigated different aspects of investors' decision making in US stock exchange based on decision knowledge of investors and other effective factors on financial behavior in 2003. Data were gathered from 1086 investors in stock exchange using a 55 question questionnaire. Investors were selected between the ages of 21 to 69 and they had at least one decision making activity (related to stocks, debentures or investment mutual funds) during October 2002-April 2003. Results shows that 50 percent of investors expected stock exchange improvement, 34 percent expected stock exchange stability and 16 percent expected stock exchange declination in the near future, respectively. Furthermore, 53 percent of investors believe that increase in decision making knowledge is relatively important and also 44 percent of them believe that this advancement is very important and 3 percent believe that this is not important. In addition, 40 percent of investors believe that increase in interest rate leads to higher stock prices and 25 percent believe in lower stock prices, 23 percent don't have any comments and 12 percent believe that there is no relationship between interest rate and stocks' price. Finally 80 percent of investors believe that balance sheet data of audited firms can be used to make an ideal decision in stock exchange.

Gang Zhou (2004) investigated the expectations and inclinations of personal investors in China stock exchange. In this research, effective political, economic and cultural factors on stockholders behavior have been investigated. In order to analyze the effects, 2120 investors of this market have been interviewed. The results show that approximately 40 percent of investors use at least two investment instruments in their decision makings. Also, investors believe that economic factors are much more important than other factors in their decision makings and they use a combination of capital goods in order to reduce their risks.

SIA organization investigated stockholders needs and their decision making process among 1504 investors with least assets amount of \$100000 in US stock exchange in 2003. The results of this research can be abbreviated as follow:

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1- Political and economic risk taking of investors decreased in comparison with the year 2002.

2- Investors were more satisfied from the operation of financial consultants and brokers.

3- Investors' reliability to financial data and firms accounting were decreased due to financial disgrace.

4- Investors indicated their needs to higher education.

Mckinsy institute made a comprehensive investigation on investors' decision making in several countries in 2002. The results showed that, according to different regions of Eastern Europe, Africa, Latin America, Asia, North America and Western Europe, Accounting disclosure and financial indices important factors that investors rely on them when they want to make a decision about stock exchanges. Furthermore, investors apply a combination of fundamental methods, such as macro and micro investigation of firms and industry, in their decision makings.

Clayer A. Hill (1997) investigated the reaction of 1450 investors to political-social changes in South Eastern Asia. The investors' assets were at least \$30000. In order to investigate the effect, 13 factors such as political economics expectations, failure in governmental planning, political leadership, Foreign struggles, administrative anarchy of government and internal political struggles and problems were analyzed. The researcher believes that unpredictability of political environment, especially in the case of South Eastern Asian countries which political structure is instable, is the most important factor on investors' decision makings and price volatility.

Bollen and Cohen (2005) studied the dynamics of investor cash flows in socially responsible mutual funds. Consistent with anecdotal evidence, they found that the monthly volatility of investor cash flows is lower in socially responsible funds than conventional funds. In addition, annual flows in socially responsible funds are less sensitive to lagged negative returns than flows in conventional funds, but more sensitive to lagged positive returns. They argued that these results can be explained by a non-financial component of the utility functions of socially responsible investors.

Sun and Chun (2006) examined the influences of overconfidence, mental accounting, regret aversion and self-control on the disposition effect of selling winners too early and holding losers too long. The results of empirical data analysis of 290 investors indicated that all four psychological factors have significant influences on the disposition effect. The findings showed that (1) overconfidence, mental accounting and self-control positively influence the disposition effect, and (2) self-control negatively influences the disposition effect. The results also indicated that self control can reduce irrational behavior of investor. The literature is abbreviated in table (1).

Table 1: A comparative analysis among the literature of financial decision making of investors

NO	Research title	Researcher/ Researchers	Year	Market/ Markets	Research variables	Research findings	Strengths and weaknesses of the research
1	Investigate the effective factors on financial decision making of investors in New York stock exchange (NYSE)	Dreaman Johnson Mc Gregor	2001	309 of investors in NYSE	1- the effect of market trends on investors' decision making 2- the effect of economic and political factors on decision making 3- the degree of risk suffering of investors	1- news and gossips have a high effect on investors' decision making 2- there are no differences between the degree of risk and economic and political factors of investors	1- attention to the degree of risk taking based on different criteria 2- investigate the effect of economic factors and its difference with other factors
2	Investigate the effective factors on stocks price and investors' decision making in wall street stock exchange	NASD institute	2003	1086 of investors in wall street stock exchange	1- the degree of decision making knowledge 2- the effect of interest rate on decision making 3- financial data and their effect on decision making	1-an increasing need for financial knowledge among investors 2-direct relationship between interest rate and stocks price 3- the effect of audited financial data on investors decision making	1- extensive statistical universe 2- attention to the degree of knowledge of investors for decision making 3- prepare a decision making model
3	The effective factors on decision making about purchasing firms' stocks	Zhou	2003	2120 of investors	1- economic factors 2- political factors	Greater importance of economic factors	Comprehensive investigation of investors needs
4	Investigate the aspects of decision making of investors in USA and the effective factors on decision making	SIA	2003	1504 of investors	1- investigate the investors' needs 2- investigate the effect of macro factors on decision making 3- investigate the effect of firm-level factors on decision making of stockholders	1- declination in investors' risk taking 2- less confidence to balance sheet data	1- investigate the trend of change in stockholders decision making 2- greater effect of psychological factors on stockholders decision making

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NO	Research title	Researcher/ Researchers	Year	Market/ Markets	Research variables	Research findings	Strengths and weaknesses of the research
5	Investigate and analyze the political risk and its effects on stockholders' decision making	Hill	1997	1450 of southeast Asian countries	1-political economics expectations 2-political leading 3-government programs	1- unpredictability of political factors and its great effect on decision making 2-difference among political factors effect in different countries	1- definition of political indices that affect decision making 2- compare the effect of economic systems on investors' decision making
6	Mutual fund attributes and investor behavior	Bollen Cohen	2005	US mutual funds database	1-Net asset value per share 2- total net assets of mutual fund	1- annual flows in socially responsible funds are less sensitive to lagged negative returns than flows in conventional funds, but more sensitive to lagged positive returns	-----
7	The influence of investors psychology on disposition effect	Sun Chun	2006	290 of investors	1- psychological factors	(1) Overconfidence, mental accounting and self-control positively influence the disposition effect (2) Self-control negatively influences the disposition effect.	-----

2- Method and Material

In this research, correlation method has been used. Correlation studies are categorized into two categories of correlation and regression analyzes. According to the main objective of this research, that is to determine the effective factors on stockholders financial decision making, LISREL¹ have been used.

The statistical universe of this research is Tehran Stock Exchange's investors with at least two times stocks trading record in the year 2007. In order to measure variables and gathering information, researcher's questionnaire was used. This questionnaire included 38 demographic (Gender, Education, Occupation, Investing volume in stock exchange and investing horizon) and special questions. In the special questions section, ranking index (very high=6, high=5, average=4, low=3, very low=2 and nothing=0) were applied. Tables (4), (5), (6) and (7) show political factor, psychological factor, internal factor and expected return factor items, respectively.

In order to design the primary questionnaire, 35 stock buyers were questioned as the primary sample. In this stage, reliability of the questionnaire was estimated 82% using Alpha-Kronbach method. In the second stage, in order to gather information from investors, the questionnaire was distributed and collected in one week and at different hours. Ultimately, the final sample, that was selected based on simple sampling, included 135 investors' In this stage, two questions with higher standard deviation were deleted in order to improve the reliability to 84%. Therefore, special questions decreased to 38 questions. It should mention that according to the result of Bartlett's test of Sphericity (aprox. Chi-square = 27197.921, Sig. = 0.000) and test statistic of KMO is equal to 0.939, therefore; we can trust the sampling adequacy.

In this research, four main hypotheses have been used in order to investigate the financial behavior of investors:

- 1- Economic factors affect stockholders decision makings.
- 2- Political factors affect stockholders decision makings.
- 3- Psychological factors affect stockholders decision makings.
- 4- Internal factors affect stockholders decision makings.

1- Linear Structural Relationships

3- Results

According to given data, 10 percent of repliers had less than 3 stocks in their portfolios, 20 percent had 3 to 5 stocks in their portfolios, 30 percent had 5 to 9 stocks in their portfolios and 40 percent had more than 10 stocks in their portfolios. But based on rate of return, 20, 60 and 40 percent of repliers had an annual return of less than or equal to 30 percent, 30 to 50 percent and more than 50 percent, respectively. But based on investing horizon, 20% of repliers informed their investing period less than 2 months, 40% informed it between 2 to 6 months, 25% informed it between 6 to 15 months and 15% informed it more than 15 months. Also, stocks trading volume was shown in table (2).

Table 2: buying and selling volume in 2007

No	buy		sell	
	volume	percent	volume	percent
1	Less than 3	10	Less than 2	15
2	3 to 14	20	Between 2 and 9	35
3	14 to 23	35	Between 9 and 25	25
4	23 to 35	20	Over 25	25
5	Over 35	15		-

On the whole, it can be concluded that 60% of repliers had 5 to 17 stocks and had 30 to 50 percent stocks expected return. In addition, 50 percent of them trade stocks between 10 to 23 times. Thus, repliers have enough knowledge to make financial decisions.

Table (3) shows variables of economic factors. Based on this table, 17.6% and 6.9% of repliers informed very high and no interest rate, respectively. In addition, 22.55%, 35.87% and 14.1% of repliers estimated the effect of economic factors very high, high and average, respectively.

Table 3: frequency percentage of economic factors

Economic factors	Very high (percent)	High (percent)	Moderate (percent)	Low (percent)	Very low (percent)	Non (percent)	Missing (percent)
Interest rate	17.6	13.7	20.6	31.3	8.4	6.9	1.5
financial investment substitution	23.4	61.8	13.7	1.5	0.1	0.8	1.5
Physical investment substitution	20.6	28.2	3.1	5.3	25.2	16	1.5
Inflation rate	20.6	38.9	17.6	6.1	0.8	0.8	1.5

Political factors included 12 variables such as political news, internal political events and internal governors' comments. According to table (4), repliers estimated the effect of political factors such as internal governors' comments (44.3%), statements and boycotts (41.2%), cabinet changes (38.2%) and external governors' comments (38.2%) very high.

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Table 4: average percentage of political factors

Political factors	Very high (percent)	High (percent)	Moderate (percent)	Low (percent)	Very low (percent)	Non (percent)	Missing (percent)
Internal political news	34.4	32.1	13	3.8	13.5	1.7	1.5
Internal political events	36.6	28.2	17.7	10.3	5.7	–	1.5
Internal governors' suggestions	44.3	32.7	6.1	1.5	7.8	6.1	1.5
Foreign political news	32.1	35.9	3.8	9.9	8.8	8	1.5
Foreign governors' suggestions	38.2	44.3	0.8	10.7	4.5	–	1.5
International pressures	26,7	54,2	7,7	9,9	–	–	1.5
Elections,etc	25.2	46.6	6.9	3.8	7.6	8.4	1.5
University students struggles,etc	27.5	48.9	3.1	1.5	8.4	9.1	1.5
Cabinet changes	38.2	38.2	3.8	6.9	11.4	–	1.5
Environmental changes	16.8	57.3	6.1	13.7	4.6	–	1.5
Political relations	2.3	53.4	20.6	5.3	6.2	10.7	1.5
Contracts and boycotts	41.2	40.5	1.5	10.7	4.6	–	1.5

On the other hand, 2.3% and 53.4% of repliers estimated political relations of Iran as very high and high, respectively.

Consequently, in average, 30.3% of repliers estimated the effect of political factors as very high and 42.7%, 7.59%, 7.33% and 6.9% of repliers estimated it as high, average, low, very low and nothing, respectively.

Psychological factors can affect financial behavior of investors. According to table (5), 49.6% and 26% of repliers estimated the effect of stock exchange authorities' comments and released news as very high, respectively. In contrast, 24.4% of repliers informed that comments of stock

exchange consultants have very high effect on stocks trading, but only 15.3% of repliers estimated the effect of consulting services on stocks trading as very high. According to the results, in average, 22.5%, 31.2%, 9.3%, 6.53%, 14.73% and 14.24% of repliers estimated the effect of psychological factors on stocks trading as very high, high, average, low, very low and nothing, respectively.

Table 5: average percentage of psychological factors

Psychological factors	Very high (percent)	High (percent)	Moderate (percent)	Low (percent)	Very low (percent)	Non (percent)	Missing (percent)
Released news	26	29	15.1	12.5	15.6	0.3	1.5
Stock exchange authorities' suggestions	49.6	16	5.3	0.9	16.8	9.9	1.5
Interview with firms' managers	9.4	39.1	13.3	10.2	16.2	10.3	1.5
Affiliates Recommendations	22.9	27.5	10.7	6.9	13.7	16.8	1.5
Associations' informal news	15.3	46.6	5.3	9.2	11.5	10.6	1.5
News of internet sites	19.8	26	12.2	7.6	7.6	25.3	1.5
Stock brokers suggestions	24.4	29.8	5.3	2.3	21.4	15.3	1.5
Consultancy services	15.3	35.1	6.1	3.1	18.3	20.6	1.5
Consultancy firms	19.8	32.1	9.9	6.1	11.5	19.1	1.5

Internal factors also can affect financial decision making of investors. In this research, 9 internal factors such as applying and acquainting with financial proportions and efficiency of these proportions were used. Based on table (6), 49.6% of repliers estimated legal investors' decision makings, 47.3% of repliers estimated the relationship between balance sheet items and stocks' expected return, 45.8% of repliers estimated liquidity strength and

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41.2% of repliers estimated the percentage of balance sheet items on investors' financial decision making as very high.

Consequently, 36.89%, 9.93%, 7.49%, 6.59% and 3.9% of repliers estimated the effect of internal factors on investors' financial decision makings as very high, average, low, very low and nothing, respectively.

Table 6: average percentage of internal factors

Internal factors	Very high (percent)	High (percent)	Moderate (percent)	Low (percent)	Very low (percent)	Non (percent)	Missing (percent)
Applying financial proportions	19.1	46.6	6.1	11.5	5.3	9.9	1.5
Knowing financial proportions	22.1	42.7	17.6	0.8	6.9	8.4	1.5
Financial proportions' efficiency	33.6	31.3	16	13	4.6	–	1.5
Balance sheet items	41.2	22.9	15.3	3.1	7.6	8.4	1.5
Trust to balance sheet data	31.3	49.9	2.3	10.7	4.3	–	1.5
Relationship between balance sheet data and stock profit returns	47.3	13.7	19.1	9.2	9.2	–	1.5
Trading volume	42	35.9	3.8	6.9	5.3	4.6	1.5
Legal investors' decision making	49.6	25.2	6.9	1.5	11.5	3.8	1.5
Cashing power	45.8	35.1	2.3	10.7	4.6	–	1.5

In addition, as shown in table (7), expected return factors have considerable effect on investors' financial decision making.

Table 7: average percentage of expected return

Expected return variable	Very high (percent)	High (percent)	Moderate (percent)	Low (percent)	Very low (percent)	Non (percent)	Missing (percent)
Risk and return	38.2	27.5	6.1	11.5	6.9	8.3	1.5
Earning Yield	44.3	26	13	10.7	4.5	–	1.5
Stock price trend	38.9	29	13.7	11.5	5.4	–	1.5

According to table (7), 38.2% of repliers stated that they have enough information about risk and return. In contrast, 8.3% of repliers stated that they don't have any information about risk and return. Furthermore, 44%, 39% of repliers stated that they have a lot of information about stocks return and stocks price trend, respectively. But, 5.4% of repliers stated that they don't have any information about stocks return and their trends. Consequently, in average, 40.5%, 27.5%, 11%, 11%, 5.6% and 2.77% of repliers stated that they have very high, high, average, low, very low and no expectations from their stocks returns, respectively.

Table (8) shows a correlation among political, economic, psychological, internal and financial decision making (buying and selling stocks) factors. Based on this table, economic, political, psychological and internal factors have a significant relationship with financial decision making of investors. For example, the greatest relationship exists between political and financial decision making factors ($r=0.736$) and the lowest relationship exists between economic and stocks buying factors ($r=0.452$). Strong correlation among research variables indicate that path analysis method can be used to investigate direct and indirect effects of these four factors on financial decision making. Diagram (1) shows the path analysis results based on LISREL software outputs.

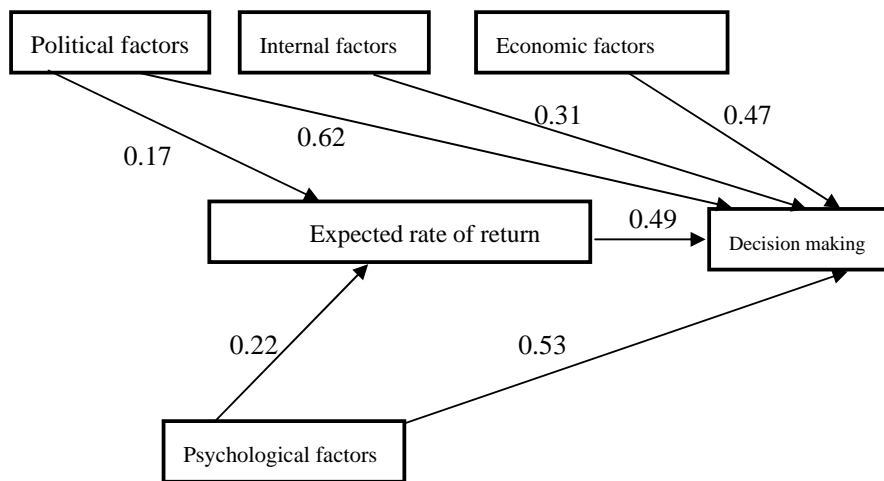
According to table (8), political factors such as governors' comments and internal and external changes had the greatest effect on financial decision making of investors with 62% of direct effect and 17% of indirect effect.

Table 8: the correlation between research factors and purchase decision making variable

Factors	Correlation coefficient	Purchase variable	Selling variable	Decision making variable (buying and selling stocks)
Economic	Pearson	0.452	0.556	0.623
	Sig (2-tailed)	0.000	0.000	0.000
	N	131	131	131
Political	Pearson	0.62	0.712	0.736
	Sig (2-tailed)	0.000	0.000	0.000
	N	131	131	131
Psychological	Pearson	0.688	0.642	0.703
	Sig (2-tailed)	0.000	0.000	0.000
	N	131	131	131
Internal	Pearson	0.481	0.581	0.731
	Sig (2-tailed)	0.000	0.000	0.000
	N	131	131	131

As shown in diagram (1), psychological, economic and internal factors have 53%, 47% and 32% effect on investors' decision making in Tehran stock exchange, respectively.

Diagram 1: Path analysis of effective factors on stockholders financial decision making



In order to determine that whether the above path analysis is statistically suitable, RMSEA¹ should be analyzed. RMSEA will measure the error of the statistical universe and it is a function of sample, degree of freedom and model's estimation. In this research, RMSEA is 0.0113 that is less than 0.5 and it shows that the accuracy of the model is high.

Based on the path analysis results, expected return have 49% direct effect on financial decision making of investors and it derives from political and psychological factors. On the other hand, expected return plays as an intermediary variable. Political and psychological factors have 17% and 22% of direct effect on expected return, respectively.

In addition to direct effect, political and psychological factors have indirect effect on stockholders decision making, too. Direct effect of internal and psychological factors derives from the multiplication of these factors direct effect on expected return and stockholders financial decision making. Thus, indirect effect of political factors on financial decision making equals to 17% (0.34×0.49) and indirect effect of psychological factors on final dependent variable equals to 11% (0.22×0.49). Consequently, total effect of political and psychological factors (direct effect+ indirect effect) on financial decision making of investors in Tehran stock exchange equals to 79% and 64%, respectively.

Table (9): Direct, indirect and total effect of effective factors on financial decision making

NO	Variable	Type of effect		
		Direct	Indirect	Total
1	Political factors (Governors statements, environmental changes)	0.62	0.17	0.79
2	Psychological factors (released news in public media, Affiliates' recommendations...)	0.53	0.11	0.64
3	Economic factors (interest rate, inflation rate, investment replacements...)	0.47	-	0.47
4	Internal factors (trading volume, balance sheet items, financial ratio, stock return, trading volume...)	0.31	-	0.31
5	Expected rate of return	0.49	-	0.49

1-Root Mean Square Error Approximation

4- Discussion and Conclusion

Political, psychological, economic, expected return and also internal factors (as an intermediary) affect the dependent variable including decision making in stocks buying and selling. These effects are as follow:

1- The path coefficient of political factors is equal to 0.62 that is due to factors such as internal and external governors' comments and internal and external political changes. These factors have the strongest direct effect on financial decision making of investors (see table (4)).

2- Psychological factors as the second variable have a path coefficient equal to 0.53 that is due to factors such as released news in public media, gossips, brokers' comments, Affiliates' recommendations, stock exchange authorities' comments, interview with firms' managers and informal board of director's reporting. These factors also have a direct effect on financial decision making of investors (see table (5)).

3- Economic factors such as interest rate, inflation rate and investment substitutions with the path coefficient equal to 0.47 is the third variable that has a direct effect on financial decision making of investors. It means that if the economic conditions of the country are suitable, investors will buy more stocks and vice versa (see table (3)).

4- Internal factors also are another variable that have the least effect on the financial decision making of investors and have a path coefficient equals to 0.31. In other words, internal factors such as balance sheet items and extracted financial ratios have the least effect on financial decision making of investors (see table (6)).

5- Another variable that affects the financial decision making of investors is the expected return. The path coefficient of this variable is equal to 0.49 and it depends on factors such as risk and return data and stock price trends (see table (7)).

Consequently, according to above discussions, it can be concluded that due to lack of information objectivity and enough financial experts, most of decisions in Tehran stock exchange are made based on political and psychological factors. Thus, it is governors and stock exchange authorities' responsibility to prepare necessary prerequisites for optimal decision making of investors.

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