

# Providing a model for identifying the risk aversion components of shareholders

Mohammadreza Samiee, Norouz Noorolahzadeh\*, Fatemeh Saraf

*Department of Accounting, South Tehran Branch, Islamic Azad University, Tehran, Iran*

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## Abstract

One of the most important goals of every country is to achieve economic growth. One of the main factors in achieving this goal is an investment. People usually have to make decisions for investment, the issue that is raised here is the existence of risk in these decisions. One of the important factors for making a successful decision in such conditions is people's attitude toward risk, many factors influence people's attitude toward this issue. Nowadays, these factors are studied in behavioral economics. Suppose these factors lead to the increase of risk-averse people in society. In that case, this has many consequences for society, including the reduction of investment and as a result, economic growth. The main goal of this research is to provide a model to identify the risk aversion components of shareholders. This research is a description of the survey type from the point of view of the application goal and the point of view of the method. The statistical community of the research is the country of Iran. The participants in the research include managers, shareholders, and investors with related scientific backgrounds and experience in the stock market. Therefore, in this research, managers, shareholders, and investors active in the stock market have been selected as participants. In this research, the purposeful sampling method and theoretical sampling strategy with maximum variety have been used. In this research, the researcher reached the theoretical saturation by interviewing 9 people, and to be sure, the interviews continued until 11 people. Data analysis was done using MAXQDA OLS and pls software. The results of the research have identified the risk aversion components of shareholders.

Keywords: risk, risk aversion, systematic risk, unsystematic, the subjective preference of shareholders  
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## 1 Introduction

Most economic decisions are made in the presence of risk. Decisions to buy insurance, save, invest, and consume are all choices that involve some degree of risk. Risk exists at any time and place and is an inevitable phenomenon and it is not possible to decide on a risk-free environment. The decision theory, which provides a framework for the analysis of normative and descriptive decision-making in the presence of risk, assumes that people's willingness to take risks affects their choices [2]. As a result, the understanding of society's attitude towards risk is directly related to the prediction of economic behavior. People's preferences towards risk are the determining factors in modeling their behavior. For example, we can refer to investment decisions (stocks, housing, etc.) or decisions related to education.

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\*Corresponding author

Email addresses: [samiee\\_mr@yahoo.com](mailto:samiee_mr@yahoo.com) (Mohammadreza Samiee), [n\\_noorolahzadeh@azad.ac.ir](mailto:n_noorolahzadeh@azad.ac.ir) (Norouz Noorolahzadeh), [f\\_sarrafa@azad.ac.ir](mailto:f_sarrafa@azad.ac.ir) (Fatemeh Saraf)

Job search is also a risky activity. A job seeker decides at a certain time whether to accept or reject a job offer. Under a set of assumptions, it can be shown that the higher the risk aversion, the shorter the time of the job search process by people, and therefore they spend less time in unemployment. More risk aversion leads to lower reservation wages. Empirical evidence in this regard can be found in [6], which shows that risk aversion has a negative relationship with people's reservation wages; Therefore, estimating the risk aversion index has an important implication for the labor market. The index of risk preferences also plays a role in determining the price of assets. The attitude and average risk aversion of investors explain an important part of asset price changes. Also, the level of risk aversion is a suitable surrogate variable to model the general attitude of people in society toward the prospects of the economy. If this index is increasing over time, it means that investors and entrepreneurs, to accept an investment project with similar characteristics over time, demand higher returns and risk rewards, and if the market has the ability and possibility to provide such returns for this. If people do not have it, they may engage in non-productive activities which lead to a decrease in employment and economic growth in the future.

Investment as a financial decision always has two components of risk and expected return, and the exchange of these two offers various combinations of investment. On the one hand, investors seek to maximize their income from investment, and on the other hand, they face the conditions of uncertainty ruling the financial markets, which is the last factor that allows us to obtain investment income; Therefore, all investment decisions are made based on the relationship between risk and expected return. Investors in the capital market have different levels of risk aversion based on their risk tolerance. The degree of risk aversion of investors is one of the factors affecting their expected rate of return.

In other words, even if people have a higher level of risk aversion, the tendency to invest in assets with low risk and guaranteed returns increases and as a result, the level of participation in the capital market decreases; Therefore, the degree of risk aversion is a significant factor for participation in the capital market. Also, the expected rate of return can indirectly affect the level of involvement in the market and the volume of transactions through the value of companies.

Capital markets provide this opportunity for investors to invest their surplus financial resources in one or more assets and earn profit in this way. Even now, there are various capital markets in the world, and stock exchanges are one of their most important. Today, there is a lot of evidence that shows that the price volatility of financial assets spreads to other assets and markets. The scope of these contagions is increasing with the expansion of communication systems and the dependence of financial markets on each other.

The conducted studies show the factors that are effective in the decisions of investing in stocks, such as the level of risk aversion of the investor and the level of expectation of the future profits of the investment. Considering that there has not been a lot of research in the country to examine the relationship between stock market expectations and investors' risk aversion, and considering the importance of investing in stocks and the ability to increase productivity.

The level of risk aversion of investors is influenced by many personal, cultural, social, and geographical factors, one of these factors is their level of knowledge and financial experience. Based on the studies done in America and Australia, people with higher education levels and higher levels of financial literacy are more inclined to accept risk [8].

Risk aversion is a term in economics and financial science, which means the preference to accept less risk. The individual and internal tendency of humans (investors and traders) in times of uncertainty are to avoid unnecessary risk. This type of risk is individual and internal because different investors have different definitions of unnecessary risk. An investor who seeks higher returns accepts more necessary risks, but an investor who seeks lower returns chooses his investment strategy recklessly and without much precision; Therefore, a rational investor who is also risk averse, if he has two investments with the same return and different risk to choose from, he will choose the investment with lower risk. Risk aversion means not wanting a profitable but high-risk transaction and preferring a transaction with less profit but greater security. From the point of view of common psychology, a person's risk aversion depends on many internal and external factors, but all these factors return to a person's sense of security. According to modern portfolio theory, the degree of risk aversion is calculated based on a higher return for higher risk. The required additional return is calculated based on the standard deviation of the investment return, or in other words, it is the square root of the variance. The degree of risk aversion in the market is considered in two ways: either by simply evaluating the risk placed on risky assets or by pricing risk-free assets. In general, the greater the demand for safe and risk-free assets, the greater the gap between the return rates of risky and risk-free assets. As a result, the price of risk-free assets increases. Those who are risk-averse tend to choose assets that have a small standard deviation. A low standard deviation means that the price of the relevant asset experiences little fluctuations and there is little possibility of a failure or a sharp price drop. But riskier investors with a high standard deviation do not have a problem because this

can mean the possibility of receiving more returns for them.

Risk-averse traders miss out on trades with the right position because they are conservative, and because they are afraid of failure, they cannot invest a lot of capital in the trade, and worst of all, they cannot control their emotions because of fear. Loss of their transactions, sometimes they suffer big losses. These people should deal with these problems based on a specific and regular strategy.

Researchers have examined venture capital from the perspective of its investors and have also focused on how the added values of venture capital are different from classical investments. These researchers have identified many strategic advantages that it is innovative and they consider that companies can invest based on new technology. In addition, the researchers found that the ability of companies to use venture capital is sometimes limited. Potentially one of the most profitable ventures may avoid venture capital for fear that the parent companies may learn of the founders' knowledge. In addition, researchers have found that firms may accept risky investments to access scarce resources for faster growth if they are confident that they can protect themselves from their parent firms.

Such an understanding requires a focus on the structures and objectives of venture capital to understand how potential benefits can offset the risk of misappropriation. Investments are made in the traditional theory of the establishment of companies. After the perception of risk at the mentioned level, it is time to evaluate and then accept or reject the risk, which means that different people evaluate a specific risk situation in different ways. A risk assessment by people can be real or mental. While the real risk assessment has a lot of compatibility with statistical results and mathematical risk equations, mental assessment usually has distortion. Therefore, the mental assessment of risk may be more or less than its real assessment.

Identifying the factors influencing people's risk aversion behavior has various applications. For example, selecting people for different organizational levels requires identifying their risk aversion level, because people at different organizational levels need different risk tolerance. For example, if a person is in the position of human resources management because he deals with people and people have dynamic behavior, he should have less risk aversion ability, while if a person is in the position of engineering management of a hospital, he should be less risk-averse. Therefore, it is necessary to identify the factors affecting risk aversion. According to the issues raised in this research, the aim is to answer the following question:

- What are the factors influencing the risk aversion of shareholders in the stock market?
- What are the factors influencing the risk aversion of shareholders in the stock market?
- What will be the model for identifying the risk aversion components of shareholders?
- What will be the role of systematic risk measurement criteria on the model for identifying risk aversion components?
- What will be the role of non-systematic risk measurement criteria on the model for identifying risk aversion components?
- What will the investor's expectations be about the risk aversion of the shareholders in the stock market?
- What is how each aspect of the subjective desirability function of the behavioral investor affects the risk aversion of the shareholders in the stock market?

## 2 Theoretical foundations

**Cultural factors:** Cultural factors can play an important role in the progress or decline of societies. For example, providing the background for increasing individual creativity can lead to the progress of societies through the advancement of science and technology [7].

**Geographical factors:** Geographical factors affecting the level of risk aversion of individuals can be divided into two groups: natural and political factors. From the influential natural factors, we can refer to natural geography, and from political factors to the influence of natural geography on people's behavior. By examining the climatic conditions of different countries and comparing them, it is observed that the geographical and physical location of some countries has positive effects and determinants on the development of the countries in different ways. Just as the morals and behavior of each person represent the physical and mental condition of that person, the moral characteristics of a nation also represent the level of cultural development and intellectual evolution of that nation. Various studies show

that geographical conditions such as weather affect the degree of softness or hardness of people's behavior and morals. For example, it is said that Iranians are rather hot-tempered, isolated, self-centered, and inflexible due to living in relatively dry areas or high mountains without vegetation cover. These factors have an impact on the risk tolerance of individuals and production units [7].

### 2.1 Risk aversion and risk calculation

According to Modern Portfolio Theory (MPT), the degree of risk aversion is calculated based on a higher return for higher risk. The required additional return is calculated based on the standard deviation of the return on investment (ROI), or in other words, it is the square root of the variance. The degree of risk aversion in the market is considered in two ways: either by simply evaluating the risk done for risky assets or by pricing risk-free assets. In general, the greater the demand for safe and risk-free assets, the greater the gap between the return rates of risky and risk-free assets. As a result, the price of risk-free assets increases.

### 2.2 Risk aversion and financial performance

If financial markets were perfect, all information about every type of security traded in the primary and secondary markets, including the creditworthiness of the issuer of the security, would be continuously and freely available to investors. In addition, all information related to investors interested in buying securities, as well as investors who intend to sell securities, was made freely available. In addition, if it is possible to divide all the securities for sale into smaller components according to the investor's opinion and eliminate transaction costs, there will be no need for financial intermediaries. But since markets are incomplete and buyers and sellers of securities do not have full access to information and are not always able to divide securities according to their desired size, financial institutions will play an effective role in solving this problem. Investment funds are one of the financial institutions that have played a significant role in the capital market in recent years. They transform the investment of non-professionals from direct to indirect and provide many benefits to the capital market and investors. On the other hand, they make it possible to cover the tastes of investors through the formation of various portfolios with various combinations of securities. According to their possibilities and abilities, investment funds try to make an investment in the market more attractive and provide more choices with less risk and higher returns for investors. A mutual investment fund is one of the financial instruments that Uses expert and experienced people helps to reduce the investment risk of savers. In other words, mutual investment funds are institutions that collect and invest investors' funds and provide the possibility of professional management and diversification of the investment portfolio, thereby reducing risk. One of the important criteria in the evaluation of the performance of a fund is the decision-making process of its investment manager. In other words, it should be noted that it is difficult for business managers to make decisions. Because they must evaluate all options and accept the risk that they may face different results in the future. Many sequential decisions in the real world, such as portfolio selection, budgeting, and financing new projects, have been associated with risk.

### 2.3 Mood and risk aversion of investors

In behavioral finance, we discard the two main and limiting assumptions of the traditional paradigm (expected utility maximization and complete rationality). In general, it can be said that classical finance considers people as rational, logical, and self-interested and does not pay attention to other human aspects, while behavioral finance states that by considering people's emotions and their effects on people's decisions, it is possible to create models that better explain their behavior. Behavior helps us to understand the existing conditions better by formulating behavioral models and acting better in solving bottlenecks caused by behavioral patterns. Decourt et al. [4], researchers in the field of behavioral finance, believe that the most unknown financial concept is risk and the issue related to understanding risk in behavioral finance is one of the most important issues. Because the process of judging how people collect information includes evaluating the results, which also affects the final financial decisions. The traditional approach to risk only includes objective (quantitative) aspects, but the behavioral finance school uses extensive analysis that risk is based on a set of objective and subjective factors, in other words, quantitative and qualitative results affect how individuals make financial decisions. Also, the behavioral finance perspective along with the objective components of risk (cognitive factors, emotional results) and the behavior of individual people is the main characteristic of describing, estimating, and recognizing risk. Nowadays, the role of human behavior in the field of behavioral finance as a variable affecting other financial variables is studied with more emphasis than in the past [5].

Aminirad et al. [1] in research entitled, risk aversion and business cycles in Iran's economy stated that people's preferences towards risk are one of the most important economic variables and have a significant influence on financial

decisions. Investment decisions, consumption, savings, purchase of insurance, and future contracts are among the decisions in which risk preferences play a key role. Considering the importance of risk preferences in the decision-making process, it is necessary to calculate an index that can somehow show the state of risk tendency in the entire economy. For this purpose, the GARCH model was used in the average with variable parameters over time. The results of the estimation of risk aversion in Iran's economy showed that this parameter was not constant in Iran's economy and fluctuated between 0.81 and 7.6 during the investigated period. Also, the results of the research showed that risk aversion in the boom period is much lower than in the recession and has a counter-cyclical behavior.

Zare et al. [10] in research entitled, risk aversion and value at risk in the portfolio of macro assets: an approach from the physics of the economy stated since the gold asset has a large global economy supports an inherent value and the dollar currency market. Therefore, to strengthen the support of the Iranian stock exchange market, it is necessary to improve the economic infrastructure, improve the conditions of companies' presence in the stock market, support the governments from competitive conditions and not directly interfere in the stock market. In addition, considering the complex nature of the stock market and the lack of sufficient familiarity among the general public, the need to inform and increase the awareness of people in society seems necessary for a long-term presence in the stock market.

Dahmene et al. [3], in research titled, Nonlinear impact of risk aversion, monetary shocks, and sentiment changes on index returns for a set of developed countries used a smooth transition model, where these main drivers of stock returns are separate as a threshold variable. are considered The results show that the return of the index decreases with the reduction of investors' risk after a positive shock to the volatility index in most markets. A restrictive monetary policy hurts index returns in the low regime for some countries, and such an effect in the high regime is greater for more liquid markets. When investors show too much pessimism or optimism, the market turns from bearish (bearish) to bullish (bullish) according to the heterogeneous reactions of market participants and the amount of compensation caused by other trading risks. Evaluation of predictive performance provides convincing evidence for the superiority of the model with monetary shocks as a transition variable over competing models.

Zhou and Zhen [11] in research titled, risk aversion, informed noise trading, and long-term information stated that after the final trade, a large amount of private information could not be disclosed and market liquidity declines over time. Furthermore, suppose the noise demand with a positive correlation concentrates early. In that case, information is revealed faster, while if the noise demand with a negative correlation concentrates later, more information remains hidden after the final trade. The inefficiency caused by negative noise demand can be resolved if the organization's internal stakeholders have competitive power or are risk-averse.

### 3 Research methodology

This research is a type of research in a mixed method (qualitative and quantitative) to discover, describe, explain and explain the subject of the research, which is firstly done by the method of documents and libraries to review and critically study the available and accessible scientific literature through articles, articles, etc., published books and scientific databases, he has researched the subject for statistics of influencing factors. Then, the qualitative (Delphi) method was used to finalize and localize the influencing factors of the risk aversion components of the shareholders. Of course, this method continued with the opinion of experts as long as the opinion was satisfied.

After finalizing the factors and confirming their validity and reliability, he started to identify the relationships between the variables and how they affect the risk aversion of the stakeholders, using the survey method in the target community and then the structural equation method. Through this method, the acceptability of theoretical models can be tested in a certain statistical community by using correlational and non-experimental data. Other techniques used in this research are multivariate regression analysis and factor analysis.

#### 3.1 Thematic area of research

The scope of this research; examines the "presentation of the identification model of the risk aversion components of shareholders".

#### 3.2 The spatial territory of research

The scope of this research is investment companies and investment funds.

#### 3.3 Time domain of research

The period of this research is 1400.

### 3.4 Operational definition of research variables

The variables of the research will be measured based on the questionnaire. A questionnaire means a set of qualitative and pre-determined questions based on specific options in which the respondents enter their answers.

### 3.5 Statistical Society

The statistical population of this research in the Delphi phase was experienced financial professors and managers of investment companies, managers of investment funds, and managers of capital supply. The selection of experts in the Delphi method will be done in a snowball way.

However, in the phenomenological research, according to the depth of the conducted interviews, scientific texts confirm that the number of samples is less than 15 people. In this research, interviews were conducted with all participants at their workplaces or by phone. Of course, this stage faced many limitations due to the busyness of these people.

Purposeful sampling process

Development of selection criteria

Selection of people based on established criteria.

Conducting interviews simultaneously with interview analysis

Continue the interviews until theoretical saturation is reached

Theoretical saturation

To select a sample, criteria were developed to select interviewees, and people were selected who, in addition to criteria number one and two, had at least one other criterion. The participants in the research included managers, shareholders, and investors with related scientific backgrounds and They have a history of activity in the stock market. The mentioned experts have relevant education in the field of investment and have articles and books in this field. Since in the strategy of the data theory of the foundation, context and context are of significant importance, therefore, in this research, managers, shareholders, and investors active in the field of the stock market have been selected as participants. In this research, the purposeful sampling method and theoretical sampling strategy with maximum variety have been used. In the non-homogeneous purposeful sampling method depending on the criteria, the participants are selected according to the knowledge and awareness of the researcher and the main questions of the research from among the people who have sufficient knowledge of the desired phenomenon or are rich in information in a particular case.

### 3.6 Data analysis method

For quantitative analysis and to test the assumptions related to the components of the model and to test the entire research model, the demographic information of the experts present in this study is presented in the first part. In the qualitative section, the data obtained from the interview has been analyzed using the foundation's qualitative data analysis method. In the following, the resulting paradigm model has been validated using the partial least squares technique and SMART PLS software.

The current research was conducted to provide a model for identifying the risk aversion components of shareholders. In this chapter, the results of data analysis are presented in qualitative and quantitative sections. In the first part, the demographic information of the experts present in this study is presented. In the qualitative section, the data obtained from the interview has been analyzed using the foundation's qualitative data analysis method. In the following, the resulting paradigm model has been validated using the partial least squares technique and SMART PLS software.

### 3.7 Demographic characteristics

#### 3.7.1 Demographic characteristics of experts

The participants in the research include managers, shareholders, and investors with related scientific backgrounds and experience in the stock market. The mentioned experts have relevant education in the field of investment and have articles and books in this field. Since in the strategy of the data theory of the foundation, context and context are of significant importance, therefore, in this research, managers, shareholders, and investors active in the field of the stock market have been selected as participants. In this research, the purposeful sampling method and theoretical sampling strategy with maximum variety have been used. In the non-homogeneous purposeful sampling method depending on



the criteria, the participants are selected according to the knowledge and awareness of the researcher and the main questions of the research from among the people who have sufficient knowledge of the desired phenomenon or are rich in information in a particular case.

Also, the determining criterion for the number of participants was reaching theoretical saturation in each category and achieving a complete understanding of the phenomenon under study. Therefore, the number of participants could not be calculated from the beginning of the research. In this research, the researcher reached the theoretical saturation by interviewing 9 people, and to be sure, the interviews continued until 11 people.

Table 1: Demographic characteristics of experts

	<b>Demographic characteristics</b>	<b>Frequency</b>	<b>Percentage</b>
Gender	Male	7	63%
	Female	4	37%
Age	Less than 35 years	2	18%
	35 to 45 years	5	45%
	45 years and more	4	37%
Education	Masters	3	27%
	Ph.D.	8	73%
Work Experience	10 to 20 years	7	63%
	Over 20 years old	4	37%
	Total	1	100%

### 3.7.2 Demographic characteristics of the quantitative part

Table 2: Demographic characteristics of fund members and investment and capital supply companies

	<b>Demographic characteristics</b>	<b>Frequency</b>	<b>Percentage</b>
Gender	Male	76	76%
	Female	23	23%
Age	30 to 40 years	24	24%
	40 to 50 years	61	51%
	50 years and more	14	14%
Education	Bachelor	13	13%
	Masters	58	59%
Work Experience	Ph.D.	28	28%
	Less than 5 years	24	24%
	5 to 10 years	22	22%
	10 to 20 years	31	31%
	More than 20 years	22	22%
		99	100%

## 4 Data coding in ground theory

### 4.1 Open coding

This step includes categorizing different codes in the form of potential themes and sorting all coded data summaries in the form of identified themes. The researcher begins the analysis of his codes and considers how different codes can be combined to create an overall theme. At this stage, by screening, removing duplicate codes, and integrating synonymous codes, the indicators extracted from the interview texts are categorized. In the following, by presenting the tables of the categories of the interviewees, we will present the identification model of the risk aversion components of the shareholders using the foundation data method. It should be noted that to preserve the information of the participants in the current research interview, each of the interviewees is displayed with a MIX code. The letter M stands for the interview, the letter I stands for the interview number, and the letter X stands for the primary code number extracted from the interview text.

### 4.2 Axial coding

Axial coding is the second stage of analysis in foundational data theorizing. The purpose of this stage is to establish the relationship between the categories produced in the open coding stage. At this stage, by screening, removing duplicate codes, and integrating synonymous codes, the indicators extracted from the interview texts are

categorized. The relationship of other classes with the central class can be realized in six dimensions, which are causal conditions, central phenomenon, strategies and actions, intervening conditions, contextual conditions, and consequences [9]. Therefore, from all the indicators obtained from the open coding stage, categories have been determined in this stage.

Table 3: Dimensions, main and sub-components of the research

Dimensions	Main category	Subcategory
Background conditions	Law and regulation risk	The type of monetary and financial policies of the government
		Lack of tax and protection laws
		Lower interest rates
		Lack of supervision by competent organizations
		Weakness in clarifying rules and regulations in the stock market
		Making a comparison between the stock exchanges of different cities
Causal conditions	Behavioral risk	Tending to mass behavior
		Weakness of specialized knowledge in investment decision making
		Behavioral justifications
	Liquidity risk	Increase shareholder wealth
		Lack of financing sources
		Existence of large financial contracts
A central phenomenon	Personal and personal risk	Cash flow forecast for future periods
		Reports of poor liquidity management
		Arrears and claims
		Risk related to human errors (innovation, software, and process)
		Risks of technical events and errors
		Management mistakes
Strategies and actions	Government support for the capital market	Defects and deficiencies in the field of internal control
		Defects in information and transaction processing
		Age and gender of shareholders
		Material and spiritual intelligence of shareholders
		The level of education and income of shareholders
		The positive or negative attitude of shareholders
Intervening conditions	Competitive risk	Investor's memory and his risk-taking
		Creating trust in shareholders
		Management and bank supervisor
		Improving the capital market
		Strengthening investment infrastructure
		Audit environment
Consequences	Reducing the economic health of society	Social environment
		Legal environment
		Economic environment
	Financial performance of the company	Financial reporting environment
		Political environment
		Misleading shareholders
Weakness in establishing risk management	Weakness in establishing risk management	Distortion in financial reporting
		Lack of information transparency
		Loss of confidence in the capital market
		Management quality and internal controls
		Separation of responsibilities and duties
		Transparent management reporting
		Evaluation of company performance
		Weakness in dealing with fraud in transactions and distortion of reports
		Lack of using security tools to reduce risk
		Weakness in identifying legal, credit, liquidity and operational risks
		Lack of ability to create added value for the company

### 4.3 Categories of contextual conditions

Based on the results of the secondary coding of the research, indicators of the type of monetary and financial policies of the government, lack of tax and protection laws, reduction of interest rates, lack of supervision by competent organizations, weakness in clarifying the rules and regulations in the field of the stock market as background categories in presenting the identification model of the risk aversion components of the shareholders were selected.

The following figure shows the output of MAXQDA software:



Table 4: Categories of background conditions

Dimensions	Main category	Subcategory
Background conditions	Law and regulation risk	The type of monetary and financial policies of the government
		Lack of tax and protection laws
		Lower interest rates
		Lack of supervision by competent organizations
		Weakness in clarifying rules and regulations in the stock market

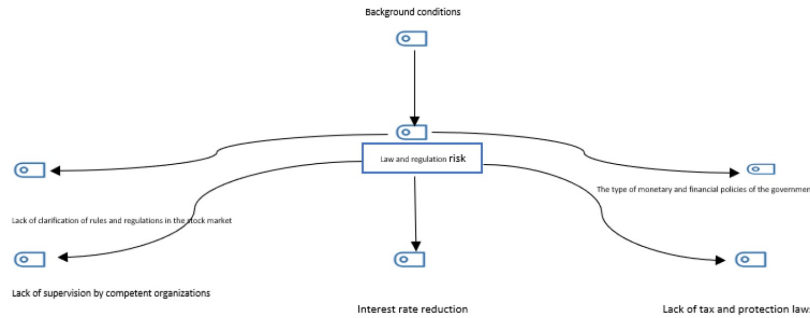


Figure 1: Output of MAXQDA software

#### 4.4 Categories of causal conditions

Based on the results of the secondary coding of the research, the indicators of the comparison between the stock exchange of different cities, tending to mass behavior, the weakness of specialized knowledge in investment decision-making, behavioral justifications, the increase of shareholders’ wealth, the lack of financing sources, the presence of large financial contracts, liquidity forecast for Future courses, reports on the weakness of liquidity management, arrears and claims, risk related to human errors (innovation, software, and process), risk related to technical events and errors, management mistakes, deficiencies and deficiencies in the field of internal control, defects in information and processing Transactions were selected as categories of causal conditions in presenting the identification model of shareholders’ risk aversion components.

Table 5: Categories of causal conditions

Dimensions	Main category	Subcategory
Causal conditions	Behavioral risk	Making a comparison between the stock exchanges of different cities
		Tending to mass behavior
		Weakness of specialized knowledge in investment decision making
		Behavioral justifications
		Increase shareholder wealth
	Liquidity risk	Lack of financing sources
		Existence of large financial contracts
		Cash flow forecast for future periods
		Reports of poor liquidity management
		Arrears and claims
	operational risk	Risk related to human errors (innovation, software, and process)
		Risks of technical events and errors
		Management mistakes
		Defects and deficiencies in the field of internal control
		Defects in information and transaction processing

The following figure shows the output of MAXQDA software:

#### 4.5 Categories of the central phenomenon

Based on the results of the secondary coding of the research, the age and gender indicators of the shareholders, the material and spiritual intelligence of the shareholders, the level of education and income of the shareholders, the positive or negative attitude of the shareholders, the memory of the investor and his risk tolerance were selected as the central phenomenon category in presenting the identification model of the risk aversion components of the shareholders.

The following figure shows the output of MAXQDA software:

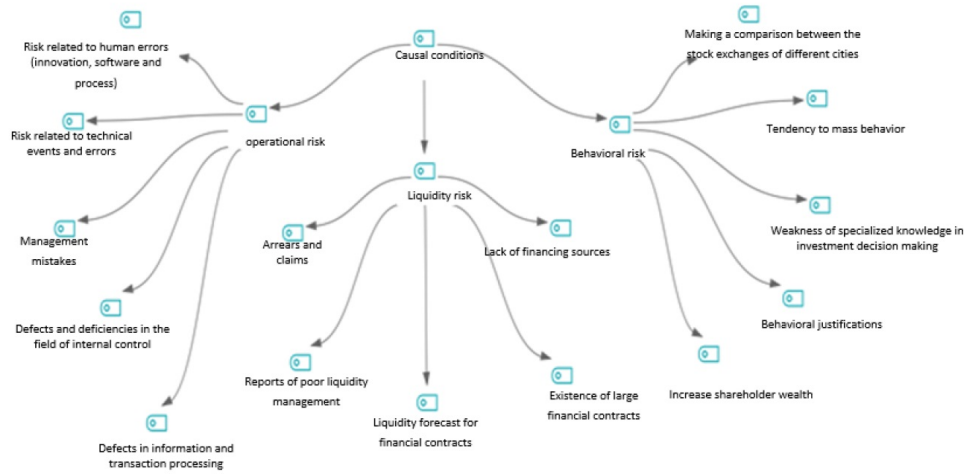


Figure 2: Output of MAXQDA software

Table 6: Categories of the central phenomenon

Dimensions	Main category	Subcategory
A central phenomenon	Personal and personal risk	Age and gender of shareholders
		Material and spiritual intelligence of shareholders
		The level of education and income of shareholders
		The positive or negative attitude of shareholders
		Investor's memory and his risk-taking

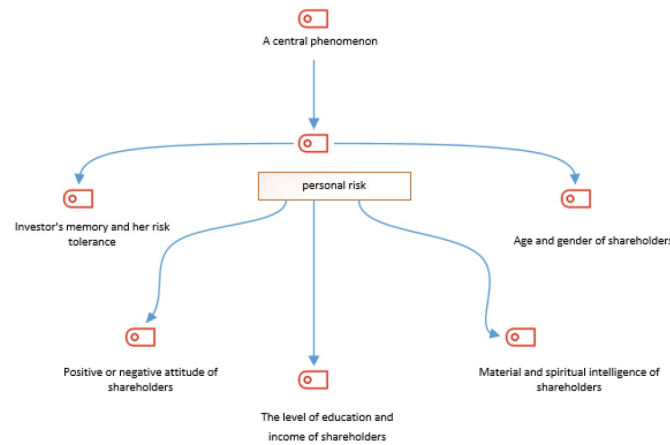


Figure 3: Output of MAXQDA software

#### 4.6 Categories of strategies and actions

Table 7: Categories of strategies and measures

Dimensions	Main category	Subcategory
Strategies and actions	Government support for the capital market	Creating trust in shareholders
		Management and bank supervisor
		Improving the capital market
		Strengthening investment infrastructure

The following figure shows the output of MAXQDA software:

#### 4.7 Categories of intervening conditions

Based on the results of the secondary coding of the research, indicators of audit environment, social environment, legal environment, economic environment, financial reporting environment, and political environment were selected

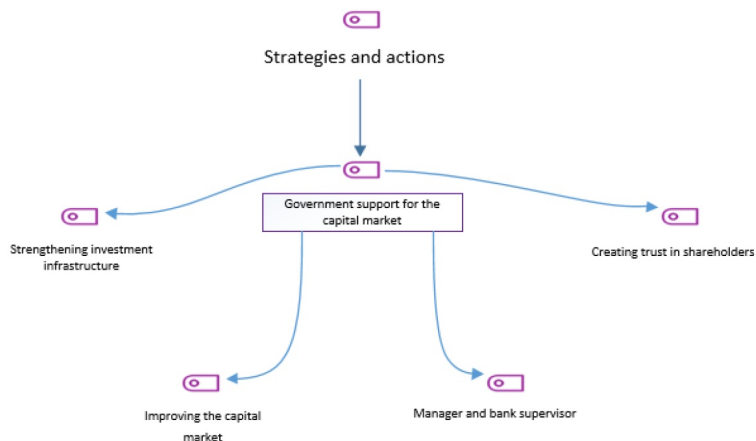


Figure 4: Output of MAXQDA software

as the category of intervening conditions in presenting the identification model of the risk aversion components of shareholders.

Table 8: Categories of intervening conditions

Dimensions	Main category	Subcategory
Intervening conditions	Competitive risk	Audit environment
		Social environment
		Legal environment
		Economic environment
		Financial reporting environment
		Political environment

The following figure shows the output of MAXQDA software:

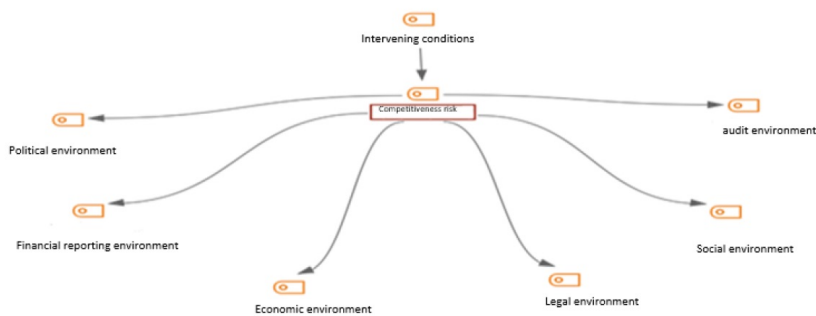


Figure 5: Output of MAXQDA software

### 4.8 Categories of consequences

Based on the results of the secondary coding of the research, indicators of misleading shareholders, distortion in financial reporting, lack of information transparency, loss of confidence in the capital market, quality of management and internal controls, separation of responsibilities and duties, transparent management reporting, evaluation of company performance, weakness in dealing with fraud in Transactions and distortion of reports, lack of use of security tools to reduce risk, weakness in identifying legal, credit, liquidity and operational risks, lack of ability to create added value for the company were selected as consequences categories in the presentation of the identification model of the risk aversion components of shareholders.

The following figure shows the output of MAXQDA software:

Table 9: categories of consequences

Dimensions	Main category	Subcategory
Consequences	Reducing the economic health of society	Misleading shareholders
		Distortion in financial reporting
		Lack of information transparency
	Financial performance of the company	Loss of confidence in the capital market
		Management quality and internal controls
		Separation of responsibilities and duties
		Transparent management reporting
	Weakness in establishing risk management	Evaluation of company performance
		Weakness in dealing with fraud in transactions and distortion of reports
		Lack of using security tools to reduce risk
		Lack of ability to create added value for the company

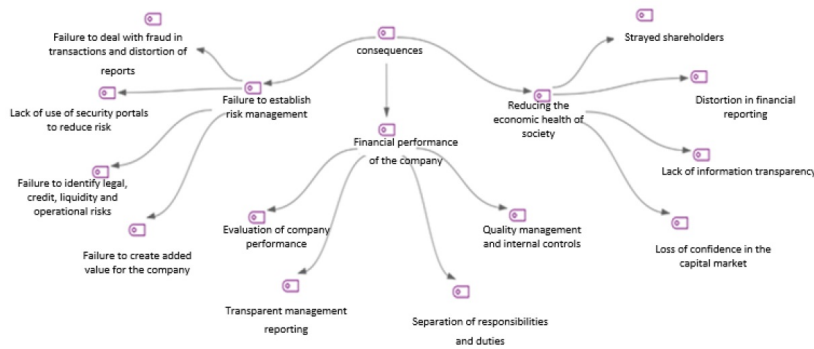


Figure 6: Output of MAXQDA software

4.9 Selective coding

Data integration is very important in fundamental theorizing. In the research process, after collecting data, analyzing and interpreting them, it is time to present the model, conclusion, and summary of the research. In the first step, by examining the obtained data, they can be classified into 6 main categories. According to the opinion of professors and experts, 47 indicators from all the indicators obtained from the qualitative data analysis of Interview Foundation have been used to present the identification model of the risk aversion components of the shareholders.

The figure below shows the research paradigm model.



Figure 7: Paradigm model of identification of risk aversion components of shareholders

4.10 Validation of the model with the partial least squares method

The partial least squares technique has been used to validate the model. The results of running the model in the standard estimation mode show the direction and intensity of the relationship between the variables. The output of Smart PLS software for standard estimation is presented in Figure 8.

To check the significance of the relationships of the variables of the model, the bootstrap method has been used, which gives the t statistic. At the 5% error level, if the value of the bootstrapping statistic is greater than 1.96, the observed correlations are significant. The t statistic and bootstrapping value to measure the significance of relationships are also shown in Figure 9.

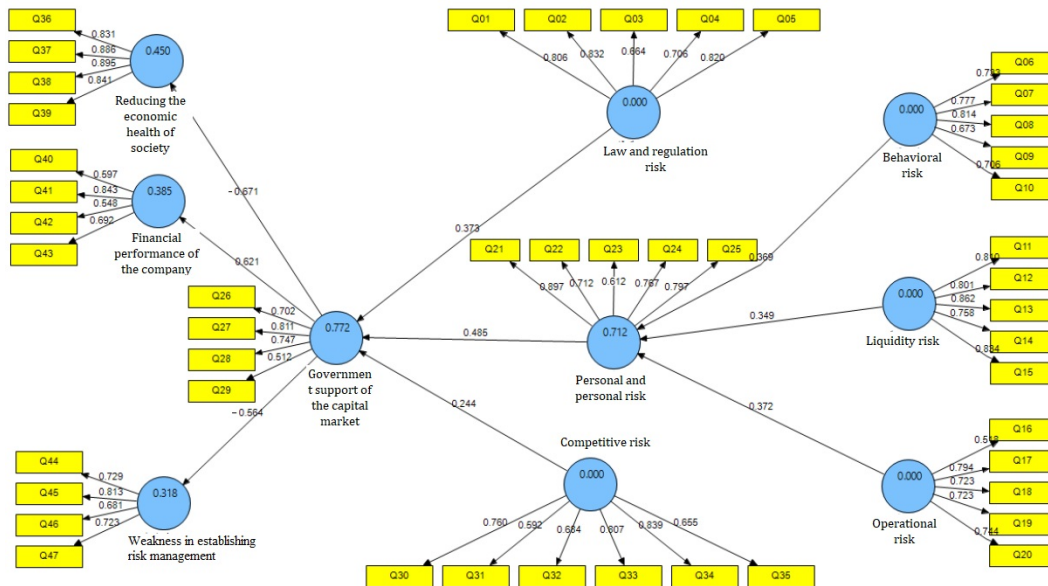


Figure 8: Model validation output with partial least squares method

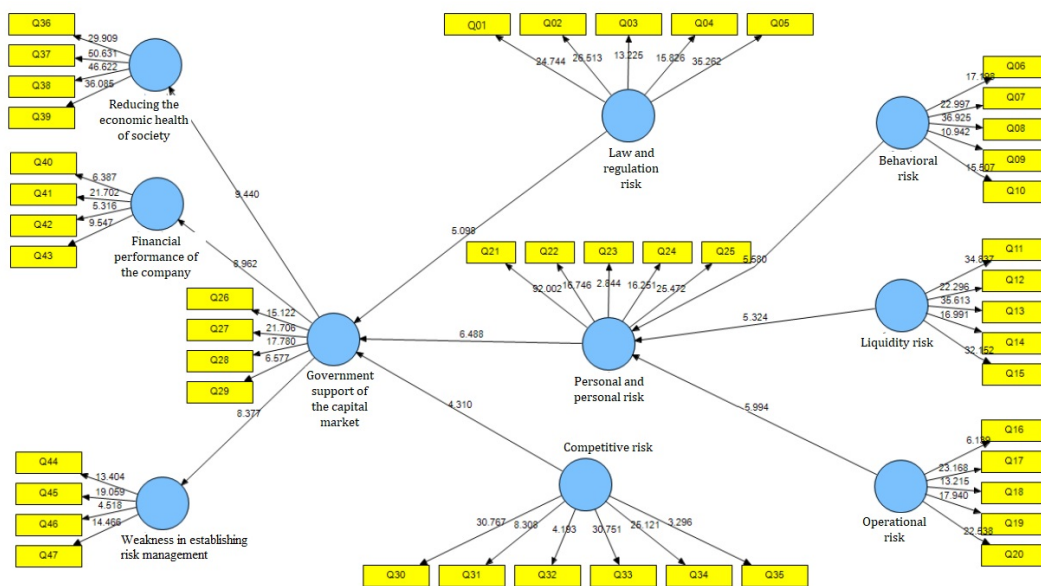


Figure 9: Significance of variable relationships with partial least squares method (bootstrapping)

#### 4.11 External model (measurement model)

External model or measurement model is equivalent to confirmatory factor analysis in Lisrel or Emos software. This part of the model shows that the items intended to measure each of the main factors have sufficient validity.

The values of observed factor loadings are greater than 0.5 and the t statistic is greater than 1.96. Therefore, the external model (measurement) is approved.

Table 10: Results of the external model (measurement model)

Main category	Statements	Operational burden	Statistic T
Law and regulation risk	The type of monetary and financial policies of the government (Q01)	0.806	24.744
	Lack of tax and protection laws (Q02)	0.832	26.513
	Interest rate reduction (Q03)	0.664	13.225
	Lack of supervision by competent organizations (Q04)	0.706	15.826
	Weakness in clarifying rules and regulations in the stock market (Q05)	0.820	35.262
Behavioral risk	Making a comparison between the stock exchanges of different cities (Q06)	0.733	17.198
	Having a tendency to collectivistic behaviors (Q07)	0.777	22.997
	Weakness of specialized knowledge in investment decision-making (Q08)	0.814	36.925
	Behavioral justifications (Q09)	0.673	10.942
	Increase in shareholder wealth (Q10)	0.706	15.507
Liquidity risk	Lack of funding sources (Q11)	0.810	34.837
	Existence of large financial contracts (Q12)	0.801	22.296
	Liquidity forecast for future periods (Q13)	0.862	35.613
	Reports on the weakness of liquidity management (Q14)	0.758	16.991
	Arrears and claims (Q15)	0.834	32.152
Operational risk	Risk related to human errors (Q16)	0.518	6.139
	Risk related to technical events and errors (Q17)	0.794	23.168
	Management mistakes (Q18)	0.723	13.215
	Defects and deficiencies in the field of internal control (Q19)	0.723	17.94
	Defects in information and transaction processing (Q20)	0.744	22.538
Personal and personal risk	Age and gender of shareholders (Q21)	0.897	92.002
	Material and spiritual intelligence of shareholders (Q22)	0.712	16.746
	Level of education and income of shareholders (Q23)	0.612	2.844
	Positive or negative attitude of shareholders (Q24)	0.767	16.251
	Investor's memory and his risk tolerance (Q25)	0.797	25.472
Government support for the capital market	Creating trust in shareholders (Q26)	0.702	15.122
	Management and bank supervisor (Q27)	0.811	21.706
	Capital market improvement (Q28)	0.747	17.78
	Strengthening investment infrastructure (Q29)	0.512	6.577
Competitive risk	Audit environment (Q30)	0.760	30.767
	Social environment (Q31)	0.592	8.308
	Legal environment (Q32)	0.684	4.193
	Economic environment (Q33)	0.807	30.751
	Financial reporting environment (Q34)	0.839	25.121
Reducing the economic health of society	Political environment (Q35)	0.655	3.296
	Misleading shareholders (Q36)	0.831	29.909
	Misstatement in financial reporting (Q37)	0.886	50.631
	lack of information transparency (Q38)	0.895	46.622
	Loss of confidence in the capital market (Q39)	0.841	36.085
Financial performance of the company	Quality management and internal controls (Q40)	0.597	6.387
	Separation of responsibilities and duties (Q41)	0.806	21.702
	Transparent management reporting (Q42)	0.832	5.316
	Company performance evaluation (Q43)	0.664	9.547
Weakness in establishing risk management	Weakness in dealing with fraud in transactions and distortion of reports (Q44)	0.706	13.404
	Lack of use of security tools to reduce risk (Q45)	0.820	19.059
	Weakness in identifying legal, credit, liquidity and operational risks (Q46)	0.733	4.518
	Lack of ability to create added value for the company (Q47)	0.777	14.466

#### 4.12 Internal model (structural part)

The relationships between the main structures of the research have been investigated in the structural section. Based on the observed path coefficient and the value of the t statistic (bootstrapping), the relationships of the variables can be interpreted as follows:

The effect coefficient of behavioral risk on individual and personality risk has been obtained as 0.369. Also, the value of the t statistic is 5.580. Therefore, it can be claimed with 95% certainty: Behavioral risk has a positive and significant effect on individual and personality risk.

The effect coefficient of liquidity risk on personal and personal risk has been obtained as 0.349. Also, the value of the t statistic is 324.5. Therefore, it can be claimed with 95% certainty: liquidity risk has a positive and significant effect on individual and personal risk.



The effect coefficient of operational risk on personal and personal risk has been obtained as 0.372. Also, the value of the t statistic is 5.994. Therefore, it can be claimed with 95% certainty: operational risk has a positive and significant effect on personal and personal risk.

The coefficient of influence of individual and personality risk on the government’s support of the capital market has been obtained as 0.485. Also, the value of the t statistic is 6.488. Therefore, with 95% confidence, we can claim that personal risk has a positive and significant effect on the government’s support for the capital market.

The effect coefficient of the risk of law and regulations on the government’s support of the capital market has been obtained as 0.373. Also, the value of the t statistic is 5.098. Therefore, we can claim with 95% confidence: the risk of law and regulations has a positive and significant effect on the government’s support of the capital market.

The impact coefficient of competitiveness risk on the government’s support of the capital market has been obtained as 0.244. Also, the value of the t statistic is 4.310. Therefore, it can be claimed with 95% certainty: competitiveness risk has a positive and significant effect on the government’s support of the capital market.

The effect coefficient of the government’s support from the capital market on reducing the economic health of the society has been obtained as -0.671. Also, the value of the t statistic is 9.440. Therefore, it can be claimed with 95% confidence: the government’s support of the capital market has a negative and significant effect on reducing the economic health of society.

The effect coefficient of the government’s support from the capital market on the company’s financial performance has been obtained as 0.621. Also, the value of the t statistic is 8.962. Therefore, it can be claimed with 95% certainty: the government’s support of the capital market has a positive and significant effect on the company’s financial performance.

The effect coefficient of the government’s support from the capital market on the weakness in the establishment of risk management has been obtained as -0.564. Also, the value of the t statistic is 8.377. Therefore, it can be claimed with 95% certainty: the government’s support of the capital market has a negative and significant effect on the weakness in the establishment of risk management.

The summary table of the results of the structural part of the model (relationships of model variables)

Table 11: The results of the structural part of the model

Relation	Impact factor	Statistic T	Result
Behavioral risk → individual and personality risk	0.369	580.5	confirmation
Liquidity risk → individual and personality risk	0.349	324.5	confirmation
Operational risk → individual and personality risk	0.372	994.5	confirmation
Individual and personality risk → government support of the capital market	0.485	488.6	confirmation
Law and regulation risk → government support of the capital market	0.373	098.5	confirmation
Competitiveness risk → government support of the capital market	0.244	310.4	confirmation
Government support of the capital market → reducing the economic health of the society	-0.671	440.9	confirmation
Government support of the capital market → financial performance of the company	0.621	962.8	confirmation
Government support of the capital market → Weakness in the establishment of risk management	-0.564	377.8	confirmation

### 4.13 Predictive power of the model

Table 12: Model prediction power table

Main structures	The coefficient of determination	$Q^2$
Government support of the capital market	0.772	0.352
Personal and personal risk	0.712	0.332
Weakness in establishing risk management	0.318	0.119
Financial performance of the company	0.385	0.053
Reducing the economic health of society	0.450	0.331

Based on the results of the table, the determination coefficient of the endogenous structures of the research model is favorable. The coefficient of determination of mobile learning has been reported as 0.536, which is an acceptable value. This shows that the variables of the model have been able to explain 54% of the changes in mobile learning. The index ( $Q^2$ ) is also obtained in all positive cases, so the model has a good predictive capability.

Table 13: Effect size of the research constructs

Relation	Impact factor
Behavioral risk → individual and personality risk	0.158
Liquidity risk → individual and personality risk	0.139
Operational risk → individual and personality risk	0.161
Individual and personality risk → government support of the capital market	0.308
Law and regulation risk → government support of the capital market	0.162
Competitiveness risk → government support of the capital market	0.063
Government support of the capital market → reducing the economic health of the society	0.519
Government support of the capital market → financial performance of the company	0.508
Government support of the capital market → Weakness in the establishment of risk management	0.466

The effect size of "Government support of the capital market on the financial performance of the company" and "Government support of the capital market on the financial performance of the company" have been estimated to be strong. In other cases, the effect size is moderate. The effect size of none of the variables is weak (less than 0.02).

## 5 Conclusions and suggestions

According to the results of the research, these proposals have been considered regarding institutions, tax affairs organizations, stock exchanges, etc.:

- Creating legal capacity for the official activity of risk-taking companies and investment funds in the country.
- Creation of legal capacity to facilitate the transfer of ownership of shares of start-up companies in the commercial law and easy completion of the merger process and possession legally.
- Creating legal capacity to determine the amount and method of supporting risk-taking investors, for example, the amount of exemption or tax exemptions (tax on profit, value-added, personal capital, etc.), tax credits, granting subsidies to activists in this field, along with creating a working group in the tax affairs organization to plan and organize the state of this industry.
- Accepting the loss caused by the failure of investing in start-up companies under the risk-taking investment entity as a cost Taxable.
- Granting innovative use such as commercial use for easy establishment of this industry in the country.
- Training of manpower and elites of this industry by implementing venture investment associated with the support of the government.
- Instead of direct investment, the government should create consolidated funds with the private-public partnership system because the private sector brings money by itself, it tries not to burn its money through rational behavior, it also conducts accurate and expert evaluation, the risk is lower, it also prevents the creation of government investment and its knowledge is institutionalized in the country, then the government It exits completely.
- Monitoring technological activities as well as risk-taking investment institutions in the world with the support of the government and the implementation of the association.
- Industry specialization and providing its results to venture capital companies.
- Creation of activity standards, licenses, professional qualification review of managers of risk-taking non-stock investment institutions country by the government and monitoring the activities of the current institutions.
- Setting up risk-taking investment guarantee funds with the support of the government.
- Creating risk-taking investment trends in the financial field or setting up the technology finance field.
- Clarification of salaries of managers and specialists of risk-taking investment institutions by the Securities and Exchange Organization.
- Establishment of risk-taking (bold) investment companies in the Securities and Exchange Organization.
- If the way to monitor other risk-taking non-stock investment institutions is not specified, it is suggested that the stock exchange organization covers other unlicensed domestic and foreign institutions to organize their activities in the country.

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