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INVESTIGATING THE RELATIONSHIP BETWEEN REWARD, FINANCIAL LEVERAGE, AND RISK-TAKING

Abdolhossein TALEBI NAJAFABADI¹, Hamze HESARI², Narjes KAMALI KERMANI³, Toktam JAVIDI^{4*}

¹ Assistant Professor, Accounting, Faculty of Humanities, University of Bojnord, Bojnord, Iran,

² Instructor, Accounting, Kosar University of Bojnord, Bojnord, Iran,

³ Instructor, Accounting, Faculty of Humanities, University of Bojnord, Bojnord, Iran,

⁴ MA, Accounting Department, Financial expert of North Khorasan Telecommunication Company.

*** Corresponding Author**

ABSTRACT

Selecting an appropriate investment position in order to maximize the benefits is one of the most important decisions of people in each community. The natural desire of people is finding an investable unit with high returns and low risk. The performance of leadership components determines the major part of company's risk and return. This research was conducted to investigate the relationship between reward, financial leverage, and risk taking in listed companies in Tehran Stock Exchange. The research sample included 675 companies during the period of 2012-2016. Financial data were analyzed using panel data and using generalized least squares regression. The results of testing the research hypotheses showed that reward increases risk taking. In other words, by increasing voluntary motivations such as reward, the value of risk taking can be increased. Moreover, evidence suggests that financial leverage has a moderating effect on the positive relationship between voluntary motivations in current reward and management risk-taking.

Keywords: Managers' Reward, Capital Structure and Risk Taking.

INTRODUCTION

The maximization of the benefits leads the people towards the most investible units with superior economic positions. Investable units with higher returns and lower risks are always preferred. Accordingly, enterprises are trying to absorb more resources by improving their profitability and risk management. Unlike return, the risk is subjective and non-quantitative concept and numerous factors are involved in determining its extent and type. Each investment involves uncertainties, which makes the return on investment at risk in the future. The risk of a financial asset is due to the probability that the return on the asset would be less than expected return (Sharp, 1985: 24). One of the important factors make people act differently in almost similar conditions is their different attitude towards risk. In general, people are divided into three groups based on their attitude towards risk: risk aversion, risk neutrality, and risky (Nikbakht and Taheri, 2014: 127).

The investment of companies in different areas has always been considered as one of the important ways of developing companies and preventing recession. Investment is one of the most important issues in each community and investors face with several investment positions when investing. Given their spirits, needs and risk taking level, they select a position, which has more return compared to market return (Parsaeian and Ghaffari, 2012: 79). In fact, investment-

related decisions can be one of the most important decisions of managers. Investing in capital assets, as one of the most important aspects of such decisions, relates to the allocation of capital to investments whose interests would be realized in future. As future benefits cannot be determined with confidence, investments will be associated with risk necessarily. Thus, their expected value and risk should be evaluated, since these two factors affect the stock value of company in the market. Thus, the investment decisions determine the total assets of the company, combination of such assets, and the combination of business risk from the capital providers' point of view.

In addition, company risk priorities are vital for company decision making and they play important role in growth, performance and survival of the company (Shapira, 1995). In issues related to financial and investment theories, risk is defined as "the level of difference between the actual return on an investment and its expected returns" (Fallah Shams Lialestani et al., 2010: 27). In order to compensate the management creativities and initiatives in finding and applying new and better working procedures and practices, the organization often gives reward for the management (Bradshaw and Richardson, 2006). Rewardes are often given due to tasks performed at a level higher than normal work standards. Reward plans based on accounting earnings beside other factors, such as job security, job level, and company size, are directly and indirectly related to high profitability of company. It is assumed that managers are seeking to increase welfare by increasing the profitability. As profitability decreases, the desire of companies to profit arrangement would increase (Gabaix, 2008). In addition, the main goal of the company's management is to maximize the value of the stock market, that is, the wealth of shareholders in stock companies. In this regard, the financial management tasks of companies are divided into three groups, including investment decisions, financing, and dividend.

Financing decisions determining the company's financial structure are highly important, since such decisions lead to the companies' achievement or non-achievement to the optimal structure of the capital. The optimal capital structure minimizes the cost of financing or cost of capital and, consequently, increases the stock value of company. Thus, given the importance of achieving optimal financial structure, it is necessary to determine how companies can achieve this goal (Yazdani, 1997: 17). The company's financial leverage ratio is considered by many financial analysts and its actual importance has been recognized for a long time. While there are consistent views in this regard, many believe that if the ratio of the financial leverage is very high, the company will be exposed to very high financial risk (Hendrickson, 1992).

Financial leverage as one of the most important leverage concepts has a specific status in the management of capital structure (Sinaei & Neisi, 2003). The financial leverage reflects a company's desire to finance through debt creation, borrowing, against increasing capital. Leverage ratios have always been the tools to determine the likelihood of a company's failure and inability to fulfill the obligations related to its debts and liabilities, and its uncontrolled increase will exacerbate the risk of a financial crisis and bankruptcy of the company. Thus, most of financial managers emphasize on the leverage role of debt in the composition of capital structure (Nourvash and Dianati Deilami, 2004). As stated above, financing and investment decisions in companies are one of the management decisions, which both of them are adopted with prospective approach and associated always with risk (Richardson et al., 2006). In financing decisions, the company uses its current point of view in order to be able to fulfill its obligations against financial resources in the future, so increasing the current return of companies at larger



extent (Ortiz-Molina, 2007). The use of internal and external financial resources has different effects on productivity, accounting returns, and investment efficiency given the fluctuations of reward payment to managers (Gerardi et al., 2010). In general, Kim et al. (2016) state that there is a positive relationship between motivational stimuli of reward and managerial risk-taking and company leverage has moderating effect on the positive relationship between voluntary motivations in the current reward and managerial risk taking. Thus, given what was stated, this research aims to find an answer for the main question: Does financial leverage play moderating role in the relationship between managers' reward and company risk taking?

REVIEW OF LITERATURE

Karimi et al (2010) conducted a research entitled "evaluating the effect of financial leverage and growth opportunity on investment decisions". For this purpose, 104 companies listed in Tehran Stock Exchange during the period 2001-2009 were examined. The research results revealed a negative and significant relationship between financial leverage and investment decisions and no significant relationship was found between growth opportunities and investment decisions.

Nourvash and Yazdani (2010) examined the effect of financial leverage on investment on a sample of 98 companies during 2001-2006. The results revealed a negative and significant relationship between leverage and investment.

Afshari et al (2012) conducted a research to examine the effect of financial leverage on investment decisions in listed companies in Tehran Stock Exchange. The research results revealed no linear relationship between financial leverage and investment of companies in any state.

Ahmadpour and Rasaein (2012) examined the relationship between economic value added as one of the most important performance evaluation criteria and reward of board of directors. The results of testing the hypotheses revealed no significant relationship between the economic value added as a criterion for evaluating the performance of companies and the reward of board of directors in Tehran Stock Exchange.

Rezapour (2013) examined the relationship between financial leverage and growth opportunity in investment decisions in chemical and pharmaceutical companies listed in Tehran Stock Exchange. The results of their research revealed a positive and significant relationship between growth opportunity and investment decisions. Moreover, no significant relationship was found between financial leverage and investment decisions.

In a study entitled "examining the relationship between social responsibility and risk of listed companies in Tehran Stock Exchange".

Shojaei (2015) examined the listed companies in Tehran Stock Exchange between 2007 and 2013. The result of the research showed a significant relationship between the variables of risk and social responsibility. In a study entitled "Interaction of asset return fluctuations and securities return on managers' reward based on the growth rate of cash assets".

Pourzamani and Tarazian (2016) investigated the simultaneous effect of stock return and changes in assets return on payment of board reward based on the growth rate of cash assets. The results showed no significant relationship between changes in asset return and stock return and reward based on the growth rate of cash assets of listed companies in Tehran Stock



Exchange. In a study entitled "Investigating the effect of massive behavior on the risk taking of managers of investment companies in Tehran Stock Exchange".

Dustyar et al. (2017) investigated the effect of massive behavior of managers of investment companies on their risk taking. The results showed a reverse relationship between the risk taking and the massive behavior of managers of investment companies.

In a research entitled "agency problems and financing through debt: structural effects of leadership".

Fosberg examined the relationship between agency problems and financing through debt. Results of the research showed a positive correlation between the independence of the board of directors and capital structure, but this relationship was statistically weak. Moreover, the results of the research revealed a significant and positive relationship between ownership concentration and debt to equity ratio.

Duru et al (2005) examined the relationship between the reward of the board of directors and the economic income and the effect of investment opportunities on the relationship between reward of the board of directors and the economic income. The results of the research showed that the relationship between the reward of the board of directors and the economic income is stronger than the relationship between board of directors and accounting profit. The recent finding confirms the theory of "adjusted accounting profit". Adjustments such as capital cost reflecting economic events occurred due to managerial decisions are more compatible with the shareholders' goals. In addition, the results of this research suggest that economic income should not be considered solely as a factor for payment of reward to the board of directors.

Griffith and Najand (2006) examined the relationship between the reward of the board of directors and performance assessment criteria such as stock returns, market value added, and Q Tobin for the period of 1995-2005. The results showed that the company's performance and size had no effect on the reward paid to the company's managers.

Firth et al. (2008) conducted a study entitled "leverage and less investment." For this purpose, 1203 companies listed in the Shanghai Stock Exchange in China during the period 1991-2001 were examined. Their results revealed a positive and significant relationship between leverage and investment and their results showed that the growth opportunity has a positive and significant relationship with investment. After analyzing capital structure, the ratio of long-term debts to total assets with return on sales, return on assets and margin of gross profit as company performance criteria.

Lie and Zhao (2009) concluded that there was a positive and significant relationship between capital structure and company performance. In other words, as the company's capital structure is more desired, the company's performance will improve.

Li et al. (2010) examined the relationship between debt financing through debt and corporate investment behavior. The results revealed a significant and negative relationship between financial leverage and investment in high-growth companies and low -growth companies. However, this relationship is positive in medium-sized companies. In a research entitled "conservative accounting and management risk-taking".

Kravet (2014) showed that conservative accounting managers take action with low risk. These results are consistent with conservative companies, which avoid risky investments due to potential capacities for large losses followed by debt contracts. Reducing conservative risk can



explain a part of the demand of debtors for conservative accounting. In a research entitled "Does risk taking motivation forces executive managers to invest?".

Croci and Petmezas (2015) stated that executive managers with a risk-taking motivation show higher tendency to accept investment.

METHODOLOGY

Research methods in the social sciences have undergone fundamental changes over the past three decades. These changes were due to the gradual evolution of the social sciences in Europe and the movement of behavioral sciences in the United States. This process followed growing effort at universities to apply scientific logic and quantitative methods. As a result, the application of these techniques has been fully developed in various social sciences. As the results of this research are expected to be considered by decision makers of financial managers, investors and other stakeholders, this research is applied in terms of objective and as it examines the relationship between several variables, the research is descriptive-correlational in terms of nature and method.

STATISTICAL POPULATION AND SAMPLING METHOD

The research population included all listed companies in the Tehran Stock Exchange, which had the following characteristics: 1. Companies must be present on the stock exchange from 2012 to 2016; 2. The considered companies should not be among the banks and financial intermediation, leasing and other investment companies; 3. Lack of incomplete data. The time realm of this research is from the beginning of 2012 to the end of 2016. According to the above limitations, 135 companies were selected as sample.



RESEARCH HYPOTHESES AND MODELS

1. There is a significant relationship between the board of directors' reward and the risk taking in the listed companies in Tehran Stock Exchange.
2. Financial leverage has a moderating role on the relationship between board of directors' reward and risk taking in listed companies in the Tehran Stock Exchange.

RESEARCH MODEL

In this research, the following models are used to test the hypotheses of the model.

$$\text{RetStd}_{it} = \beta_0 + \beta_1 \text{Reward}_{it} + \beta_2 \text{Reward}_{it} * \text{Lev}_{it} + \beta_3 \text{Lev}_{it} + \beta_4 \log(\text{Sales})_{it} + \beta_5 \text{MTB}_{it} + \beta_6 \text{CAPEX}_{it} + \beta_7 \text{R\&D}_{it} + \varepsilon_{it}$$

Where:

Dependent variable:

Company risk taking (standard deviation of stock return): Company risk taking is the uncertainty associated with the expected outcomes and expected cash flows resulting from new investments (Wright et al., 1996). In other words, the risk is the difference between the actual

returns and expected returns. In general, Kim et al. (2016) used a 5-year standard deviation of company returns to calculate company risk. It is calculated as follows:

$$\text{RetStd}_{it} = \sqrt{\sum_{i=1}^n (X_i - \bar{X})^2 / N}$$

Independent variable:

Board of directors' reward: This variable is extracted based on the studied conducted by Pourzamani and Tarazian (2016) using the ratio of reward to the members of the board of directors (this figure is extracted directly from the financial statements of the listed companies in Tehran Stock Exchange). To standardize the statistical calculations, its logarithm is considered.

Moderating variable:

Financial leverage: The moderating variable of this research is the financial leverage. The financial leverage refers to the extent to which a company has financed through a loan or borrowing (Abde Tabrizi and Moshirzadeh Moaydi, 2005: 37). In other words, the financial leverage reflects the amount of fixed financial costs, such as fixed interest of loans in the company (Abde Tabrizi and Hanifi, 2007: 24). In this research, based on the research conducted by Zhong Park (2011), the leverage ratio is calculated by dividing the total debt into total assets as follows, in the equation above:

Lev : financial leverage

TA (A): Total assets

Control variables:

Log (sales): sale logarithm of company as criterion of company size

MTB: the ratio of market value to book value

CAMPEX: the ratio of capital expenditures to total assets of company

R&D: the ratio of research and development expenditures to total assets of the company

DATA ANALYSIS

After collecting the required data, Office 2016 software is used to calculate and prepare the variables and panel data are used to test the hypotheses. To determine the type of panel data, the F Limmer and Hausman tests are used. Additionally, to test the total significance of the fitted regression model, Fisher's (F) statistic is used at 95% confidence level. Student's test (t) is also used to test the significance of each of the independent variables. The Durbin-Watson test will also be used to test the lack of correlation between model errors. Eviews software is also used to analyze the above tests, the correlation between variables and multivariate linear regression and other tests.

Descriptive statistic

As seen in Table (1), descriptive statistics include the mean, the median, the minimum, the maximum, the standard deviation, the skewness and the kurtosis, which they are considered as highly used descriptive statistics. Kurtosis and skewness is the index for symmetry of the data and represent their position relative to the normal distribution.

Table 1: Descriptive statistics of model variables

| variables | Board of Directors reward | Risk taking | Financial leverage | Sales logarithm | Market value to book value | Capital expenditures | Research and development expenditures |
|-----------|---------------------------|-------------|--------------------|-----------------|----------------------------|----------------------|---------------------------------------|
| mean | 2/50176 | 0/050858 | 0/58422 | 6/089605 | 2/548436 | 0/030766 | 0/00152 |
| Median | 3/0792 | 0/04700 | 0/5849 | 6/0134 | 2578/2 | 0/0087 | 0/0004 |
| SD | 1/30072 | 0/026851 | 0/20362 | 0/657165 | 1/809445 | 0/092833 | 0/00379 |
| Skewness | -1/2164 | 3/23228 | 0/58671 | 0/577587 | 0/728023 | 2/359116 | 9/13145 |
| Kurtosis | 2/86718 | 22/1088 | 5/74965 | 3/757659 | 14/41178 | 20/48899 | 135/277 |
| min | 4771/4 | 0/2518 | 7958/1 | 4114/8 | 16/8297 | 0/7467 | 0/0665 |
| max | 0/000 | 0/0082 | 0/0902 | 3957/4 | -8/1998 | -0/6185 | 0/000 |

Given what was stated and based on Table (1), it can be seen that among the variables, the logarithms of sales with the value of 6.089605 have the highest mean and the research and development expenditures with the value of 1.809445 have the lowest mean. Moreover, the ratio of market value to book value with a value of 1.809445 has larger SD, indicating that the logarithm of sales of most companies is far from the mean, and research and development expenditures variable with value of 0.00379 has less than standard deviation. The most important index of skewness is the skewness coefficient. If the skewness coefficient is negative, the distribution is skewed toward right, and if the coefficient of skewness is positive, the distribution is skewed toward left. If the distribution is symmetric, the skewness coefficient will be equal to zero.

It is clear that as the coefficient of skewness is greater, the difference of population in terms of symmetry with symmetric distribution is greater. With regard to kurtosis, one of the appropriate parameters is to use a comparison of the distribution of population with normal distribution. The greatest skewness was related to the variable of research and development expenditures with the value of 9.13145 and the lowest skewness was related to the board of directors' reward variable with the value of -1.2164, and the highest value of kurtosis was related to the research and development expenditures with the value of 135.227 and the lowest value of kurtosis was related to the board of directors' reward with 2.86718.

F Limmer and Hausman test

Given the data used in this mixed research (year-company) and as data are both pool and panel data, F Limmer test is used to select one of the panel or pool data in estimating the model. Hausman test is also used to select one of the random effect model or a fixed effect model. A summary of the results of the F Limmer test and the Hausman test is presented in Table (2).

Table 2: F Limmer test and Hausman test

| model | F Limmer test | | |
|--------------|-----------------|-------------|----------------|
| | Statistic value | probability | result |
| 1 | 10.8565 | 0.000 | Panel data |
| Hausman test | | | |
| 1 | 17.7767 | 0.0130 | Effects method |

Source: researcher findings

The probability of model statistic is less than 0.05. Therefore, the panel data method and fixed effects are accepted.

Multicollinearity test



In this study, VIF test was used to examine the relationship between independent variables. If the VIF statistic for variables is less than 10, there will be Multicollinearity problem for explanatory variables. Table 3 summarizes the results of this test.

Table 3: The results of the Multicollinearity test (VIF) of the research model

| Variable name | Statistic VIF | VIF | Result |
|---------------------------------------|---------------|--------|---------------------------|
| Board of directors reward | 1/35 | 0/7430 | Lack of Multicollinearity |
| Financial leverage | 1/31 | 0/7656 | Lack of Multicollinearity |
| Logarithm of sales | 1/25 | 0/7986 | Lack of Multicollinearity |
| Research and development expenditures | 1/07 | 0/9313 | Lack of Multicollinearity |
| Ratio of market value to book value | 1/05 | 0/9564 | Lack of Multicollinearity |
| Capital expenditures | 1/02 | 0/9837 | Lack of Multicollinearity |

Based on the results in Table (3), it was found that the VIF statistic for all research variables in the research model is less than 10, so there is no Multicollinearity problem among the variables.

TESTING THE RESEARCH HYPOTHESES

In this section, research hypotheses are tested. Given the nature of the data, research hypotheses were tested at the level of the panel data. Before fitting the regression model and testing the research hypotheses, the classical assumptions of the model were tested and, based on the presumptions of the model, the research hypotheses were tested. In the regression model, the researcher decided on the rejection or non-rejection of the null hypothesis.

The first and second hypotheses

Based on Table (4), in order to test the significance of the whole model, The F statistic was used and to test the significance of regression coefficients, t statistic was used. Moreover, the coefficient of determination R² was used to examine the relationship between criterion and predictor variables. Based on the regression model of the first hypothesis, if the probability of statistic t for the Reward_{it} variable and the probability of statistic t for the Reward_{it} * Lev_{it} variable is less than the error level of 0.05, the first and second hypotheses are confirmed.

Table 4: Results of data analysis for testing the first and second hypotheses

| Variables | Coefficients | Standard error | T statistic | significance |
|-----------------------------------------------------------------|--------------|----------------|-------------|--------------|
| intercept | -0/056199 | 0/023915 | -2/349965 | 0/0191 |
| Board of directors reward | 0/001635 | 0/000559 | 9263/2 | 0/0046 |
| Interaction of financial leverage and board of directors reward | -0/002849 | 0/001194 | -2/3868 | 0/0173 |
| Financial leverage | 0/010081 | 0/002749 | 3/667874 | 0/0003 |
| Logarithm of sales | 0/016087 | 0/003454 | 4/656909 | 000/0 |
| The ratio of market value to book value | 0/001628 | 0/000541 | 3/007231 | 0/0028 |
| Capital expenditures | 0/005467 | 0/003963 | 1/379627 | 0/1683 |
| Research and development expenditures | 0/051305 | 0/065752 | 0/780276 | 0/4356 |

| | | | |
|------------------------------|---------|---------------------------------------|--------|
| Coefficient of determination | 0/7573 | Adjusted coefficient of determination | 0/6961 |
| F statistic | 9504/84 | F -statistics significance | 0/0000 |

The value of the coefficient of determination is 0.7573, which indicates 75.73% of the variations in the dependent variable of the company's risk taking is explained by the predictive and control variable. Based on the above table, the coefficient of the variable of board of directors' reward is 0.0016135, which is positive and the probability of statistic t for the board of directors' reward is 0.0046, which this probability is less than the 0.05 error level.

Thus, null hypothesis is rejected. As a result, there is a significant and positive relationship between the board of directors' reward and the risk taking of the company. As a result, the first hypothesis of research is accepted at 95% confidence level. Moreover, according to the table above, the coefficient of the variable of interaction of financial leverage and board of directors' reward is -0.002849, which is negative and the probability of the t statistic for the interaction of the financial leverage and the board of directors' reward is 0.073.

This probability value is less than the 0.05 error level. Thus, the null hypothesis is rejected. As a result, the financial leverage has a moderating role in the relationship between the board of directors' reward and the company risk taking. As a result, the second hypothesis is accepted at 95% confidence level. According to the above table, the coefficient of control variable of logarithm of sales has a significant and positive and significant effect on the company risk taking. According to the above table, capital expenditures have a non-significant and positive impact on company risk taking. According to the above table, the research and development expenditures have a positive and non-significant effect on the company risk taking.



DISCUSSION AND CONCLUSION

The degree of risk aversion or risk taking is one of the important factors affecting people's behavior and decision making, especially in financial markets. Stone et al (1997) define risk taking as performing any activity which has at least one ambiguous or uncertain result. The environmental uncertainty the intensity of competition among the organizations and managers has caused numerous challenges for them. For effectively management of these challenges, new management approaches and special competencies are recommended. Risk identification and management is one of the new approaches used to enhance the effectiveness of organizations (Abdollahi, 2014: 4). The present research was conducted to examine the relationship between reward, financial leverage and risk taking in listed companies in Tehran Stock Exchange. Results of the first hypothesis show a positive and significant relationship between risk taking and reward of managers. From the beginning of the 20th century, when management of stock companies was separated from the rulers and their shareholders, the issue of determining the board of directors' reward was one of the main issues of shareholders' decisions at the General Assembly of Shareholders. Many of the activities of managers are qualitative and not measurable, and they are presented after doing activities in the form of quantitative results such as dividend. Board members can adopt the policy of maintaining the status quo and not make any changes, which have a vague future. Based on economic theories, individuals seek to maximize their own personal interests. Thus, managers as individuals may also divert from the goals of the company by adopting the mentioned theory. From the beginning, stakeholders used a variety of methods

to encourage and motivate managers to maximize the wealth of investors. The most common procedure is paying the reward based on a percentage of the company's specific profit, which is always criticized. One of the most common criticisms is that the company's profits include components, which many of them are controlled by management. In other words, the basis for a special benefit leads to giving reward for managers for the work that they have not done or they are punished based on uncontrollable events. It is criticized that paying rewards based on special interest gives short-term attitude for the managers. In other words, as managers' goal is maximizing their special profits, they should take some basic steps and increase their risk-taking. Although similar research has not been conducted on the relationship between managers' reward and risk taking in Iran, the findings of research conducted by Dustyar et al (2017) showed that the massive behavior of managers leads to a reduced risk taking, which its result is in contrast to result of this study. Kim et al. (2016) also showed a positive relationship between the voluntary motivations for current reward and management risk-taking, which it is consistent with this research finding.

Findings of the second hypothesis also suggest that leverage has a moderating effect in the positive relationship between voluntary motivations in current reward and management risk taking. In other words, in companies with high leverage, managers' reward will not have a positive impact on their risk taking and even will reduce its. Increased ability of creditors and lenders to control and monitor the activities of managers will lead to reduced costs of management monitoring and. As a result, managers' coercion to select appropriate and efficient projects and ultimately reduce company risk would decrease. In other words, creditors can play their monitoring role on the managers through debt to reduce over-investment problems and help managers make positive investments in low-investment positions, leading to reduced managers' risk taking. The results obtained from this hypothesis are in line with the results of the study conducted by Kim et al. (2016).

RECOMMENDATIONS

Hypothesis 1: The results of this hypothesis indicate a positive and significant correlation between managers' reward and their risk taking in listed companies in Tehran Stock Exchange. Paying reward based on profits leads to short-term management attitudes, so it is criticized. As short-term attitude makes managers ignore the future and increase risk taking in order to obtain the reward by showing desired performance in the short term, their risk taking may affect the life of the company in the long term. Thus, it is recommended for owners to pay attention to this issue and use monitoring mechanisms such as the presence of owners in the composition of the board, the formation of a strong audit committee, and so on.

Second hypothesis: results of the second hypothesis show that the company leverage plays the moderating role in the positive relationship between the voluntary motivation in the current reward and management risk-taking. As creditors can apply their monitoring role through debts, it is recommended for managers to use debt as a monitoring mechanism, especially short-term debts, since short-term debt is a mechanism, which can reduce information asymmetry and agency costs among the shareholders, creditors and managers.

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