The effect of main changes of the percentage of ownership of institutional shareholders on the fluctuations of firm managers' rewards

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ABSTRACT

Objective: The major goal of the present research is to investigate about the main changes in ownership percentage of institutional shareholders on the risk of firms' rewards in firms enlisted in Tehran Stock Exchange. **Methodology:** The statistical population for the present study is composed of firms enlisted in Tehran Stock Exchange during the years between 2008 and 2014 and the sample volume has been 118 firms regarding the screening method utilized. **Results:** In this research the changes in the percentage of ownership of institutional shareholders and main changes in the percentage of ownership of institutional shareholders were considered as the independent variables to study their effects on firm managers' rewards. On the other hand, the present study is post-incidental (quasi-experimental) type. This means that it was carried out based on analyzing previous and historical data (firms' financial statements). Also this research is based on panel data analysis. **Conclusion:** In this research using panel data with random effects, the results of analyzing the data in firms by using multiple variable regression in assurance level of %95, it has been shown that the percentage of institutional shareholders' ownership and major changes in the percentage of institutional shareholders' ownership have had a reverse and direct effect on managers' reward risk, respectively.

1. Introduction

During some recent years institutional ownership has shown a great development in bonds market in Europe and the United States (Nasrollahi and Arefmanesh, 2010). The presence of large shareholders in capital market creates the question in the mind that: is ownership structure effective in presenting financial information with high quality that results in making the market more efficient and help the users of financial statements make better decisions and thus a better allocation of capital to the industries with higher value added is achieved? On the other hand, in order to compensate for the innovations and novelties of management in finding and utilizing newer and better efficient approaches and methods, mostly the organizations reward management. The allocation of reward is often carried out due to the responsibilities done in a level higher than the usual working standards. The reward designs based on accounting earning figures along with other factors such as job security, job design, and firm size that have a direct relationship with management's welfare is related with high profitability of the firm directly or indirectly (Nesbitt, 1994; Navissi and Naiker, 2006).

The researcher in present study is going to investigate about the effect of main changes in the percentage of ownership of institutional shareholders on the fluctuations in firm managers' rewards.

1.1 Statement of the research problem

To control managers' agency in firms and make sure about their responsibility performance and their responsiveness in big corporate firms and to support

the rights of shareholders, some strategies should be used. One of these strategies is the mechanism of paying rewards to managers based on performance. In order to reduce and resolve agency controversies, the problem is to arrange an optimal contract that can supply the required incentives in shareholders and managers to interact with each other. Such a contract is called optimal incentive contract. In this case, the required data to devise such a contract should be supplied. This contract can have two main characteristics as follows: 1- it supplies the required data in lack of assurance condition. 2- it would create an appropriate basis for participation in the risk between shareholders and managers. The basis of contracts and reward design criteria are based on one of the items below:

1) Accounting earning
2) Economic criteria of performance assessment such as market value added growth, economic value added, quality increase, and production quantity increase
3) A combination of items 1 & 2.

By setting an optimal incentive contract, it is expected that firm performance and following that firm's market value would rise and this is resulted from managers' efforts.

Reward management concentrates on how to devise programs by the organization in order to make sure that the effective behaviors and performances of staffs in realizing organization's goals would be appreciated (Armstrong, 2002). Reward management reform represents the fact that pensions and benefits conferred to the staffs can be managed.

Regarding what was pointed above, the main issue in the present research is to investigate about the main changes in the percentage of ownership of institutional shareholders on the fluctuation of rewards of managers in firms enlisted in Tehran Stock Exchange.

1.2 Research literature

1.2.1 Foreign studies

Aghion (2012), studied about the relationship between managers' reward designs and economic criteria of assessing performance by using pooled data method. Based on the findings, one of the effective strategies that results in a reduction of benefits' controversies among managers and shareholders and the improvement of performance of managers is the creation of incentives in managers by using designs based on reward. The research findings showed that there has been a meaningful relationship between the rewards paid to the managers and economic criteria of assessing performance.

Stouraitis and Wu (2004) investigated firms' reward designs and showed that managers' rewards are derived from assets related to stock ownership and the authority to purchase stocks because the rewards of stocks has been posed as one of the main elements of benefits of CEO from 1990 and they showed that managers' rewards may be used as an incentive for earning management.

Aghion et al. (2012) carried out a research entitled: "an experimental analysis of the effect of big changes in institutional ownership on management reward risk", and used a panel of corporate firms with great changes in institutional assets. The research concluded that management reward risk has been meaningfully higher in a firm with a higher level of total institutional assets except 5 superior assets.

1.2.2 Local researches

Moradzadeh Fard et al. (2009), studied about the relationship between board reward and institutional ownership and earning management that were measured through discretionary accruals among firms enlisted in Tehran Stock Exchange during the time period between 2005 and 2009. Results of their research showed that there has been a negative relationship between stock's institutional ownership and earning management. In other words, by increasing the percentage of the institutional ownership, the flexibility of the firms would be reduced for accruals' management.

Sajjadi et al. (2012), carried out a research about the relationship between managers' reward designs and economic criteria of performance assessment in firms enlisted in Tehran Stock Exchange. Results of their research indicated that there has been a meaningful relationship between managers' rewards and the criteria of economic value added, market value added, and adjusted economic value added. Also the results showed that there has been a meaningful relationship between managerial ownership and market value added.

Namazi (2006) investigated about the effect of ownership structure on the performance of firms enlisted in Tehran Stock Exchange. Research findings showed that there has been a meaningful and negative relationship between institutional ownership and firm performance and there has been a meaningful and positive relationship between corporate ownership and firm performance. Managerial ownership affected performance meaningfully and negatively. Also regarding external ownership there were not any data observed that the ownership of external investors could affect the firms within the statistical sample. In private ownership, it would be better to allocate large ownership to the corporate investors. On the whole, there has been a meaningful relationship between firms' ownership structure and their performance.

2. Materials and methods

2.1 Research method

In the present research we have tried to investigate about the effect of main changes in the percentage of institutional shareholders' ownership on the fluctuation of firm managers' rewards. Regarding that the type of relationship tested in this research is of correlation type, we have used a multiple regression analysis method to identify the effectiveness amount of the independent variables on the dependent variables. The research method has been correlation type regarding nature and content and it is applied regarding goals.

The research has been carried out using analogy-inductance reasoning frameworks. It means that in theoretical foundations and research literature we have used library studies, other websites, and research papers in an analogy framework and collected data to approve or reject the hypotheses in the form of

inductance.

2.2 Questions and research hypotheses

The present research is made up of two questions and two hypotheses as follows:

1- Does the percentage of institutional shareholders affect the fluctuations in firm managers' rewards?
2- Do the main changes in the percentage of institutional shareholders affect the fluctuations in firm managers' rewards?

First hypothesis: the percentage of institutional shareholders affects the fluctuations in firm managers' rewards

Second hypothesis: the main changes in the percentage of institutional shareholders affect the fluctuations in firm managers' rewards.

2.3 Population and statistic sample

The statistical population includes all firms enlisted in Tehran Stock Exchange. The sampling method utilized was systematic deletion considering the following constrains:

1- The data needed to calculate operational variables of the research should be accessible.
2- At least the firms should have been accepted in Stock Exchange from the year 2009 and should have been active in Stock Exchange up to the end of the research period.
3- The end of fiscal year should be 21st. of March each year (29th Esfand in Iranian calendar).
4- Firms should not be from among financial intermediaries, investing companies, banks, insurance, and leasing.
5- Firms should not have more than 3 months of stops in their exchanges.

2.4 Methods and data collection tools

In the first stage, the required data were extracted based on the theoretical foundations, literature review, and papers related to the research title by using library study, international and local resources such as articles in different journals were used, specialized journals, student dissertations, and internet databases were utilized, too. Next, the data required for statistical test and research hypotheses were collected. The sources to collect data were audited financial statements, reports by boards to the assemblies, and Tadbirpardaz and rahaward-e-Novin database software and also CDs published by Tehran Stock Exchange. Finally, data analysis and statistical testing were carried out through the use of SPSS and Eviews software.

3. Discussion and results

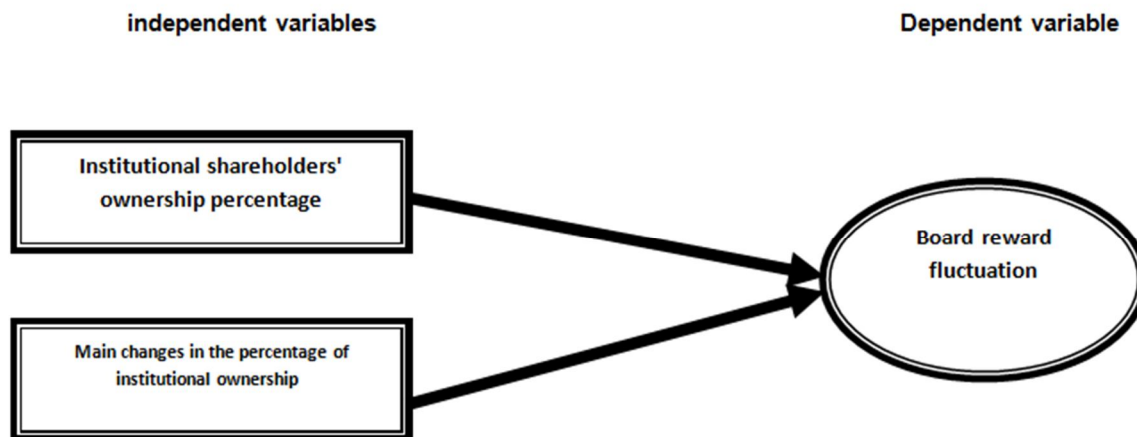The conceptual research model is as follows:

Figure 1. Conceptual research model

*Model source: Piaralal et al. (2014)

3.1 The statistical research model

3.1.1 First hypothesis:

$$FIU\_COM \text{ it} = \alpha + \beta1 \text{ INSOWN it} + \beta\text{۲ NI it} + \beta\text{۳EQ it} + \beta\text{٤ ROA it} + \beta\text{۵ Size it} + \beta\text{٦ Lev it} + \varepsilon \text{ it} \tag{1}$$

3.1.2 Second hypothesis:

$$FIU\_COM \text{ it} = \alpha + \beta1 \text{ ΔINSOWN it} + \beta\text{۲ NI it} + \beta\text{۳EQ it} + \beta\text{٤ ROA it} + \beta\text{۵ Size it} + \beta\text{٦ Lev it} + \varepsilon \text{ it} \tag{2}$$

3.1.2.1 Dependent variable

FIU_COM: the fluctuation of rewards of board in firm i during period t that can be calculated through standard deviation of the rewards of board through

3 previous periods as follows:

$$\sqrt{\frac{(COM_{i,t} - \overline{COM})^2}{n-1}}$$ (3)

Where,

N=3, COM is the average board rewards of firm i during 3 previous years. Board rewards can be extracted from data in accumulated income statement.

3.1.2.2 Independent variable

INSOWN$_{it}$: the percentage of institutional shareholders' ownership in firm i during period t that is equal to the percentage of shares held by governmental and public firms by using total stock capital (Noravesh and Ebrahimi-e-kordlar, 2005).

ΔINSOWN$_{it}$: the main changes in the percentage of institutional shareholders' ownership in firm i during period t compared to the previous period:

(4)

$$\frac{\textbf{INSOWN it-1} - \textbf{INSOWN it}}{\textbf{INSOWN it-1}}$$

INSOWN$_{it}$: the percentage of institutional shareholders' ownership in firm i during period t

INSOWN$_{it}$: the percentage of institutional shareholders' ownership in firm i during period t-1

If the ratio above is higher than %20, it would be considered as the main changes in the percentage of institutional shareholders' ownership.

3.1.2.3 Control variables

NI$_{it}$: net income of firm

EQ$_{it}$: the variable of earning quality that can be calculated through the division of cash resulted from operating activities on firm's net earnings in the year t (Noravesh and Ebrahimi-e-kordlar, 2005).

Cash resulted from operating activities of firm i during period t / net income of firm i during period t

ROA$_{it}$: the ratio of return on assets is calculated by using the following formula:

net income of firm i during period t/ book value of firm i assets during period t

Size$_{it}$: to reduce savings resulted from the index we have used cash reservoirs in interest. Thus, regarding the status of capital market and the effect of inflation on firms in our country, we have used the index of natural logarithm of book value of total assets that can represent the status of the firm better. The bigger amount of this index shows that the intended company is bigger.

$$LN(FirmSize_{i,t}) = FirmSize_{i,t}$$ (5)

Where,

Firm size$_{i,t}$ = the book value of total assets of firm i at the end of year t.

Lev$_{it}$: leverage that can be calculated through the division of total debts to total assets.

Book value of firm i debts in period t / Book value of firm i assets in period t

3.2 Data analysis

3.2.1 Descriptive statistics

The descriptive statistics of the research variables including mean, median, standard deviation, maximum, and minimum have been represented in the table below:

Table 1. The descriptive statistics of research variables

Variables		Average	Middle	Standard deviation	Minimum	Maximum
FIU_COM	Bonus swing Board of Directors	0.0267	0.0142	0.2194	-1.8900	5.4617
INSOWN	The percentage of institutional ownership	0.6911	0.6949	0.0984	0.5094	0.8597
ΔINSOWN	Major changes percent institutional ownership	0.1224	0.0793	0.1347	-	0.6611
NI	Net profit	302.661	61.458	1.152.059	4.555.158	15.760.512
EQ	Earnings quality	0.9393	0.9239	12.6815	-0.6080	1.2552
ROA	Return on assets	0.1255	0.1046	0.1264	-0.2398	0.6313
SIZE	size of the company	27.3562	27.2259	1.3642	23.8467	32.2701
LEV	Financial Leverage	0.6071	0.6193	0.1800	0.0964	1.1949

The amount of mean for the variable of board reward risk equals 0.0267 and it shows that most data focus around this point. The median of the variable of

board reward risk equals 0.0142 and it shows that half of the data were less and half were higher than this amount.

3.2.2 Research variables' consistency test
Before estimating the model it is necessary to investigate about the consistency of variables. A variable is consistent if the mean, variance, and self-correlation coefficients are fixed during pass of time. In the present research we have used ADF test to recognize consistency. The results of consistency are represented in table 2 below:

Table 2. Results of research variables' consistency test

Variables	sig	Stata
FIU_COM	0.0024	1953.59
INSOWN	0.0019	5879.75
ΔINSOWN	0.0047	1213.30
NI	0.002	163.80
EQ	0.006	584.25
ROA	0.002	169.76
SIZE	0.002	496.78
LEV	0.005	791.28

As it can be observed in all variables the meaningfulness level in unitary root tests has been smaller than 0.05 and this shows that the variables are consistent.

3.3 Regression presuppositions

3.3.1 Normality test
To study the normality of the distribution of the dependent variable we have use Jarque-Bera statistics. Regarding the table below and Jarque-Bera statistics, since the meaningfulness level is higher than 0.05, the hypothesis H_0 is approved and it can be stated with an assurance level of %95 that the variable above has had a normal distribution in the regression model.

Table 3. Jarque-Bera statistic

Variable		Jarkko statistics	sig	Result
FIU_COM	Reward Board Risk	1.533	0.112	A normal distribution

3.3.2 Error independence test
Durbin-Watson test can show the serial correlation between the residuals (errors) of the regression based on null hypothesis test. Durbin-Watson statistic along with critical amounts in the error level of %5 can be seen in table 4. Regarding that the amount of Durbin-Watson statistic calculated for the regression model in the present research has been higher than the critical amount in the error level of 0.05, the lack of serial correlation of the residuals in the regression in a meaningfulness level of 0.05 is approved.

Table 4. Error independence test

Regression model	Critical values (level 5% error)		Durbin Watson
	Du	D1	
Model 1	1.997	1.455	2.116
Model 2	1.955	1.511	1.993

3.3.3 Studying the normality of error distribution
To investigate about the normality of error distribution we have used Jarque-Bera statistics. Regarding the table above and Jarque-Bera statistics, since the meaningfulness level is higher than 0.05, the hypothesis H_0 is approved and it can be stated with an assurance level of %95 that the error distribution has had a normal distribution in the regression model.

Table 5. Jarque-Bera statistics

Model	Jock statistics	sig	result is a significant level
Model 1	1.446	0.199	A normal distribution
Model 2	1.255	0.215	A normal distribution

3.3.4 Variance incongruence

Variance incongruence means that in the estimation of the regression model the amounts of error sentences have had unequal variances. To estimate variance incongruence in this research we have used White test. Results of this test have been represented in table 6:

Table 6. Results of variance incongruence

Research regression model	White statistic	P-value	Test result
Model 1	1.663	0.112	The absence of anisotropy
Model 2	1.418	0.157	The absence of anisotropy

Results show that F statistics of the regression model were not meaningful in error level of 0.05. Thus, the null hypothesis claiming the lack of presence of variance incongruence among the data in an error level of 0.05 is approved. Therefore, we can use OLS regression model.

3.3.5 Co-linearity test between independent variables

As it can be observed in table 7, the correlation coefficient between variables is less than 0.5 and it shows that in such a condition co-linearity can be ignored.

Table 7. Co-linearity results

LEV	INSOWN	ΔINSOWN	NI	EQ	ROA	SIZE	LEV
INSOWN	1	0.41107	-0.46798	-0.38474	0.241805	0.434825	0.061699
ΔINSOWN		1	-0.46798	0.343965	-0.26938	0.128889	0.044875
NI			1	0.343965	-0.36965	0.075451	0.314198
EQ				1	-0.36965	0.233376	-0.41774
ROA					1	0.233376	-0.17533
SIZE						1	-0.17533
LEV							1

After making sure of the approval of the regression presuppositions, we tested the research hypotheses. Below we will describe the statistic tests carried out.

3.4 Model estimation method by using F-Limer test and Hausman test

3.4.1 F-Limer test for research model
To choose from among panel and pooled data models, we have used F-Limer test. The summary of F-Limer test results are represented in table 8 below:

Table 8. Results of F-Limer test

Hypothesis H_0	F limer	Sig	Result
Model 1	15.112	0.003	H_0 Is rejected
Model 2	22.775	0.001	H_0 Is rejected

As the results show, the probability of F-Limer test for the research model has been less than %5. Thus, the hypothesis H_0, (pooled data) is rejected. In other words, there exist individual and group effects and we should use panel data method to estimate the model.

3.4.2 Hausman test (the selection between fixed and random effects)
The summary of Hausman test for research models has been represented in table 9 below:

Table 9. Results of Hausman test

Hypothesis H_0	stati	Sig	Result
Model 1	2.4471	0.2991	H_0 Be accepted
Model 2	2.1391	0.2521	H_0 Be accepted

As the results show, regarding the research models, the probability of Hausman test to identify whether to use fixed effects or random effects has been more than %5. Therefore, the hypothesis H_1 (fixed effects model) is rejected. Regarding the results of Chaw & Hausman test, the most appropriate method to estimate the parameters and hypotheses test was random effects model.

3.5 Results of regression model adjustment

3.5.1 First regression model
$$RISK\_COM\ it = \alpha + \beta_1\ INSOWN\ it + \beta_2\ NI\ it + \beta_3 EQ\ it + \beta_4\ ROA\ it + \beta_5\ Size\ it + \beta_6\ Lev\ it + \varepsilon\ it \qquad (6)$$
After testing the presuppositions of the regression and making sure about their application, the results of the above regression adjustment were presented in table 10. The amount of F statistic (8.553) also shows that the total regression model has been meaningful. As it can be seen in lower part of table 10, the identification coefficient and adjusted identification coefficient of the model above were %41.7 and %36.6, respectively. Therefore, it can be concluded that in the regression equation above, only about %36.6 of changes in investment amount in fixed assets of firms under investigation could be identified through independent and control variables.

Table 10. Results of regression adjustment

Variable	---	coefficient	t	Sig
c	B^0	0.255	1.442	0.792
INSOWN	B^1	-0.961	-3.091	0.006
NI	B^2	-0.734	-2.052	0.048
EQ	B^3	-0.132	-3.838	0.009
ROA	B^4	-0.191	-2.897	0.024
SIZE	B^5	-0.118	-2.458	0.041
LEV	B^6	0.101	1.387	0.204
R	0.417	**F**		8.553
R Adjusted	0.366	**(P-Value)**		0.004
		D-W		2.005

Based on table 10-4, the meaningfulness (Sig.) of the variable of the percentage of institutional shareholders' ownership (0.006) has been less than the meaningfulness level intended in the present study (%5). Also the absolute amount of t statistic (3.091) related to these variables has been greater than t statistic gained from the table or the degree of freedom. Thus, the hypothesis H_0 is rejected in assurance level of %95 and the hypothesis H_1 claiming that the percentage of institutional shareholders' ownership affects firm managers' reward risk is approved.

3.5.2 Second regression model

$$RISK\_COM_{it} = \alpha + \beta_1 \Delta INSOWN_{it} + \beta_2 NI_{it} + \beta_3 EQ_{it} + \beta_4 ROA_{it} + \beta_5 Size_{it} + \beta_6 Lev_{it} + \varepsilon_{it} \qquad (7)$$

After testing the presuppositions of the regression and making sure about their application, the results of the above regression adjustment were presented in table 11. The amount of F statistic (10.711) also shows that the total regression model has been meaningful. As it can be seen in lower part of table 11, the identification coefficient and adjusted identification coefficient of the model above were %47.2 and %42.3, respectively. Therefore, it can be concluded that in the regression equation above, only about %42.3 of changes in investment amount in fixed assets of firms under investigation could be identified through independent and control variables. In this table the positive (negative) numbers in the column of the coefficient represent the amount of direct (reverse) effects of each of the variables on the changes in firm managers' reward risk.

Table 11. Results of regression adjustment

Variable	---	coefficient	T	Sig
C	B^0	0.442	2.773	0.022
ΔINSOWN	B^1	0.511	2.347	0.043
NI	B^2	-0.113	-1.161	0.422
EQ	B^3	-0.293	-2.037	0.049
ROA	B^4	-0.739	-3.873	0.004
SIZE	B^5	-0.302	-3.987	0.0037
LEV	B^6	0.511	2.347	0.043
R	0.472	**F**		10.711
R Adjusted	0.423	**(P-Value)**		0.001
		D-W		2.005

Based on table 11, the meaningfulness (Sig.) of the variable of the main changes of the percentage of institutional shareholders' ownership (0.043) has been less than the meaningfulness level intended in the present study (%5). Also the absolute amount of t statistic (2.347) related to these variables has been greater than t statistic gained from the table or the degree of freedom. Thus, the hypothesis H_0 is rejected in an assurance level of %95 and the hypothesis H_1 claiming that the main changes of the percentage of institutional shareholders' ownership affects firm managers' reward risk is approved.

4. Conclusion

The first hypothesis was approved claiming that the percentage of institutional shareholders affects the fluctuations in firm managers' rewards. Due to the sign of the coefficient of the percentage of institutional shareholders' ownership (-0.961), it can be concluded that for each unit of increase in the percentage of institutional shareholders' ownership, the firm managers' reward risk has increased 0.961 unit. These results accord to some extent with research results of Ali Shah et al. (2009), Sajjadi et al. (2012), and Moradzadeh Fard et al. (2009).

The second hypothesis was approved claiming that the main changes on the percentage of institutional shareholders affects the fluctuations in firm managers' rewards. Due to the sign of the coefficient of the main changes on the percentage of institutional shareholders' ownership (0.511), it can be concluded that for each unit of increase in the main changes on the percentage of institutional shareholders' ownership, the firm managers' reward risk has increased 0.561 unit. These results accord to some extent with research results of Ali Shah et al. (2009), Sajjadi et al. (2012), and Moradzadeh Fard et al. (2009).

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