The Relationship between the Managers’ Rewards and Leverageratio and Commercial Risk in Companies Accepted in Tehran Stock Exchange (TSE)

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ABSTRACT
The primary purpose of the current study was examining the relationship between the managers’ rewards and leverageratio and commercial risk in companies accepted in Tehran Stock Exchange from 2008-2013. In order to gather the theoretical underpinnings of the research, library method was used and in order to gather the statistical data, financial invoices and its accompanying notes were utilized. In order to analyze the data, panel data method and SPSS were employed. The results of the data analysis indicated that the first hypothesis was confirmed and at %95 level of significance, there was a significant relationship between leverageratio and the managers’ rewards. The negative value of correlation coefficient demonstrated that there was an inverse relationship between leverageratio and the managers’ rewards. Moreover, the second hypothesis was confirmed, and at %95 level of significance, there was a significant relationship between commercial risk and the managers’ rewards. The negative value of the correlation coefficient revealed an inverse relationship between commercial risk and the managers’ rewards in companies.

KEYWORDS
Reward, Management reward, Leverageratio, Risk, Commercial risk.

INTRODUCTION
Using financial tools in order to create motivation and pay rewards to the managers can be traced back to European companies. In these companies, paying rewards has been based on the incomes since early 20th century. Afterwards, American companies along with European ones designed motivational and reward projects based on income. Nowadays, using financial tools for creating motivation in the companies is very common and %97 of normal stocks companies conducts these projects [10]. In Iran, after preparing the financial invoices, the board of directors offers their assumed rewards to the stakeholders. Then, they moderate and confirm the suggested rewards taking their own opinion and the managers’ performance. In commercial law, after determining the responsibilities and duties of the board of directors, the reward and punishment of the board of directors are determined. Regarding reward, in a part of statement 134 of commercial law, it is mentioned that “if it is predicted in the articles, the general assembly can enact to allocate a particular proportion of net profit as a reward to the board of directors’. This is more elaborated in statement 241. The commercial law suggests using financial tools as rewards and elaborates that paying rewards to the managers is only possible after stakeholders’ enactment. In law, in addition to reward, a set of punishments are also considered for the board of managers e.g. statements 142, 143, and 258 of commercial law [5].

REVIEW OF THE LITERATURE
Chen (2012) examined the relationship between change in the percentage of managers’ ownership and change in the company’s value in 477 Taiwanese companies within 2000-2008. He used Q tobin index for measuring the company’s value and found out that an increase or decrease in the managers’ ownership would make no significant impact on changes in Q tobin. Hence, no significant relationship was found between these two variables[2].

Chen and Joseph Yu (2012) analyzed the relationship between the managers’ ownership and company performance in 98 Taiwanese companies within 2001-2009. They used ROA index for evaluating the company performance and concluded that increasing the managers’ ownership would improve the company performance.

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Hence, they found a positive significant relationship between these two variables[1].

Guillet et al. (2012) studied the managers’ rewards in service industries. They examined the influence of accounting-based performance criteria and market-based performance criteria on the managers’ rewards in companies. They found that determining the managers’ rewards relied not only on the company performance criteria but also on the criteria related to the managers’ characteristics[6].

Hajiha and ChenariPook (2014) investigated the influence of increasing the stakeholders’ wealth over the period of being the senior manager of the company (an innovative approach to evaluate the effectiveness of rewards of the senior managers). They concluded that there was no significant relationship between the senior managers’ rewards and stakeholders’ added value (total changes in the market value and the cash profit paid), (unusual accumulated stocks productivity)[7].

Jahanshad et al. (2013) examined the relationship between the free cash streams and the ration of Q tobin and the managers’ reward plans. They found a direct significant relationship between these variables. However, they observed no significant relationship between the percentage of the board of directors’ ownership and the two criteria, free cash stream and ration of Qtobin[8].

Namazi and Sayarani (2004) conducted an experimental study regarding the important constructs in determining the contracts, indices and parameters of the executive managers’ rewards in Iranian companies through using representative theory. They drew this conclusion that increasing the amount of time of the contracts as well as their stability would increase the company’s value and thereby, stakeholders’ wealth[10].

**THE RESEARCH HYPOTHESES**

1. There is a significant relationship between the leverageratio and the managers’ rewards.
2. There is a significant relationship between the commercial risk and the managers’ rewards.

**METHOD**

The method of the research is correlation in terms of nature and content because it going to find significant relationship between variables, in terms of purpose of the research it is applied research and in terms of the fact that actual data and statistical methods are used to reject or not to reject the hypotheses is placed in the field of positive theory.

Also in terms of the way of doing the research is within the framework of inductive deductive reasoning.

**DATA COLLECTION TOOL**

In each study, providing factual information regarding the research goals is essential. This research used the library method for studying theoretical fundamentals and investigating the literature facilitated by Persian and Latin books and scholarly articles and theses. Since the information about the variables of the research contains many accounting items contained in the audited financial statements and attached notes of companies, information needed is manually extracted from financial statements and attached notes available in the sites of Development and Islamic Studies affiliated with the Securities and Exchange, Codal, Nasheran comprehensive information systems, financial information processing of Iran, CDs of the Securities and Exchange Organization.

**TECHNIQUES FOR DATA ANALYSIS**

Data analysis is done in two parts of descriptive and inferential statistics. In descriptive statistics part the central indices of indicators mean and median, standard deviation and distribution index will be used. And in inferential statistics part multivariate regression using panel data is used. The main motivation in combining cross-sectional data and time-series is providing more efficient inferences and predictions. There are two ways to analyze the panel data. Thus the data of different companies should either be considered homogeneous in different seasons in which case the data will be pooled, or the data can be panel-used. The F Liner test is used to determine the method of using panel data. If the result of F-test show that the coefficients of cross-sectional effect and the time effect are not significant then we can combined the data and estimate parameters using classical regression. Otherwise the data should be considered as panel. Hausman test is used to determine the type of panel data model (fixed effects model or random effects model). So that if there is no correlation between the error term and independent variable, the random effects model is appropriate and if there is a correlation between those two, the fixed effects model seems appropriate. To determine the significance of regression model and the parameters obtained from the regression model estimating respectively the F and t statistics were used. For data analysis and mining results the Excel and Eviews8 software are used.

**DEFINITION OF VARIABLES UNDER THE STUDY AND THEIR OPERATIONAL DEFINITION**

**Dependent variable:**

Managers’ rewards: based on article 134 of commercial law enacted in 1968, if it is predicted in the statute, the general assembly can allocate a particular proportion of net profit as the reward for the board of directors based on article 241; provided that the reward considered for the managers should not exceed %5 and %10 of the profit paid to the stakeholders that year in public stocks and private stocks companies, respectively [11].

**Independent variables:**

1. leverageratio
2. Commercial risk

**Control variables:**

**Firm’s growth index:** It is the ratio of market value to book value of equity [4].

**Firm’s size:** it is equal to the normal logarithm of book value of total assets [12].
**Profitability index:** The ratio of earnings before interest reduction, tax and depreciation to the book value of total assets [9].

**THE RESEARCH MODELS**

The following model was used in the current study for the first hypothesis:

\[ \text{PLC}_{it} = \beta_0 + \beta_1 \text{Debt/TA}_{it} + \beta_2 \log \text{TA}_{it} + \beta_3 \text{MB}_{it} + \beta_4 \text{PROFIT}_{it} + \varepsilon_{it} \]

PLC: Managers' rewards
Debt/TA: Leverage ratio
LogTA: Firm's size
PROFIT: Profitability index

The following model was used for testing the second hypothesis:

\[ \text{PLC}_{it} = \beta_0 + \beta_1 \text{RstdDev}\Delta \text{OI}_{it} + \beta_2 \log \text{TA}_{it} + \beta_3 \text{MB}_{it} + \beta_4 \text{PROFIT}_{it} + \varepsilon_{it} \]

RstdDev\DeltaOI: Commercial risk

**STATISTICAL POPULATION**

When we expect satisfactory results from a sampling we should be aware of set of activities and processes used to sampling. The first step is to determine the research goals. To understand and clarify these goals we should define the population from which we are going to choose samples. In this study, for samples being an appropriate representative of the target population, the Criteria-Filtering Technique is used. For this purpose, the following criteria will be considered, and if a company met all the criteria is selected as one of the best companies. Process of sampling is depicted in table 1.

2. The Company's fiscal year should be ended on Esfand of each year.
3. The Company's fiscal years have not changed during the studied period.
4. The studied companies shouldn't be investment companies, holding, financial intermediation and insurance.
5. The information and data should be available.
6. The companies should have been trading continuously in the Tehran Stock Exchange and trading halt shouldn't be happened about the mentioned stock for more than three months.

**Tab. 1. Statistical sampling process**

<table>
<thead>
<tr>
<th>Limitation</th>
<th>Number of firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistical population</td>
<td>478</td>
</tr>
<tr>
<td>The unavailability or unmeasurability of data</td>
<td>(224)</td>
</tr>
<tr>
<td>Interruption of more than three months in trading</td>
<td>(24)</td>
</tr>
<tr>
<td>Fiscal year ends in other than Esfand 29</td>
<td>(43)</td>
</tr>
<tr>
<td>The difference between the nature of the operations</td>
<td>(49)</td>
</tr>
<tr>
<td>Sample</td>
<td>138</td>
</tr>
</tbody>
</table>

For example, the mean value for leverage ratio is 0.632232 indicating that most data are concentrated around this point. The median is another measure of central tendency which indicates the population status. As table 1 displays, the median of leverageation is 0.643114 indicating that half of the data are less than this value and half of the data are more than this value. The standard deviation is one of the most important variance parameters and a criterion for the extent of variance. The value of this parameter is 0.176541 for leverageation.

Tab. 2. Descriptive statistics for the variables

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Number of observations</th>
<th>Mean</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLC</td>
<td>732</td>
<td>0.0052</td>
<td>0.0035</td>
<td>0.0719</td>
<td>0.00</td>
<td>0.006650</td>
</tr>
<tr>
<td>Debt</td>
<td>732</td>
<td>0.6322</td>
<td>0.6431</td>
<td>1.3067</td>
<td>0.23</td>
<td>0.176541</td>
</tr>
<tr>
<td>Bas</td>
<td>732</td>
<td>0.1666</td>
<td>0.1552</td>
<td>1.2908</td>
<td>-</td>
<td>0.279807</td>
</tr>
<tr>
<td>Log TA</td>
<td>732</td>
<td>13.427</td>
<td>13.247</td>
<td>17.787</td>
<td>11.0</td>
<td>1.301194</td>
</tr>
<tr>
<td>MB</td>
<td>732</td>
<td>1.7307</td>
<td>1.4627</td>
<td>6.7444</td>
<td>-</td>
<td>1.276684</td>
</tr>
<tr>
<td>Prof</td>
<td>732</td>
<td>0.2443</td>
<td>0.1716</td>
<td>7.4005</td>
<td>0.12</td>
<td>0.449972</td>
</tr>
</tbody>
</table>

**Tab. 3. Correlation coefficients for the research variables**

<table>
<thead>
<tr>
<th>Row</th>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PLC</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The degree of dependence of two variables is defined as correlation. Generally, correlation coefficients change between -1 and 1 and the relationship between two variables could be positive or negative. Correlation coefficient is a symmetrical relationship; the closer correlation coefficient to one the higher the dependency of the two variables. This dependency does not mean causal relationship and correlation coefficient doesn’t mention that which one is cause and which one is effect. We investigate the primary relationship between variables using correlation test and according to the results we can say that there is a relationship between variables and these relationships can be studied in more detail. For example, the results of the correlation coefficients show that there is a significant positive relationship between managers' remuneration and returns on asset.

For instance, the results of correlation coefficient indicate that there is a negative significant relationship between the managers' rewards and leverageratio. Moreover, there is a positive significant relationship between the managers’ rewards and the properties productivity.
Examining the Variables’ Persistency

As mentioned in Chapter 3, it is necessary examine the variables’ persistency before estimating the models. A variable is persistent when its mean, variance, and autocorrelation coefficients remain constant over time.

Generally, if time source of a variable changes and mean, variance and covariance do not change. In this case, the variable is persistent and otherwise the variable would be non-persistent. Assumptions related to variables’ persistency are as follows:

- $H_0$: Variable is non-persistent
- $H_1$: Variable is persistent

Variables’ persistency can be examined in three cases of “at the level”, “on the first difference” and “the second difference”. The variables that the possibility resulted of their tests are “at the level” of less than 5% the null hypothesis is rejected about them and they are persistent, and if this number is more than 5% the variables are non-persistent. Persistency test results were inserted in table 4.

According to the Levin-Lin-Chu test, since the p-value was less than 5%, all independent, dependent and control variables were stationary during the study.

Stationary means that the mean and variance of the variables over time and the covariance of the variables between different years have been fixed. As it can be seen in table (4) all research variables are persistent.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Levin-Lin-Chu Statistics</th>
<th>possibility</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLC</td>
<td>-38.5474</td>
<td>0.0000</td>
<td>Persistent</td>
</tr>
<tr>
<td>Debt</td>
<td>-8.5573</td>
<td>0.0000</td>
<td>Persistent</td>
</tr>
<tr>
<td>Brisk</td>
<td>-33.7505</td>
<td>0.0000</td>
<td>Persistent</td>
</tr>
<tr>
<td>LogTA</td>
<td>-11.5284</td>
<td>0.0000</td>
<td>Persistent</td>
</tr>
<tr>
<td>MB</td>
<td>-34.2344</td>
<td>0.0000</td>
<td>Persistent</td>
</tr>
<tr>
<td>Profit</td>
<td>-58.3501</td>
<td>0.0000</td>
<td>Persistent</td>
</tr>
</tbody>
</table>

Limer F-test and Hausman Test

With the data in this research is panel data. But before estimating models it is necessary to determine the estimation method (panel or pooling). For this purpose, Limer F-test is used. For observations that their test possibilities are more than 5%, or in other words their test statistics are less than table’s statistic, the pooling approach is used and for testing observations that their test possibilities are less than 5%, the panel approach will be used. Panel method itself can be performed using two models of “random effects” and “fixed effects”.

Hausman test is used to determine which model is better to be utilized. Observations that their test possibilities are less than 5% use fixed effects model and observations that their test possibilities are more than 5% use random effects model to estimate the model. As it is shown in table (4), the probability of F-Limer for all models is less than 5%. Hence, to estimate both models, panel method was used.

Regarding the fact that the probability of Hausman test for all models is less than 5%, to estimate both models, fixed effect model was used.

<table>
<thead>
<tr>
<th>Research Model</th>
<th>Test Statistic</th>
<th>possibility</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fixed effects</td>
<td>Hausman</td>
<td>61.8589</td>
</tr>
<tr>
<td>2</td>
<td>Fixed effects</td>
<td>Hausman</td>
<td>57.3999</td>
</tr>
</tbody>
</table>

Estimating the Models and Analysis of Results

After examining the variable’s persistency and determining the model estimation method now it is the model’s turn to be estimated according to the results of Limer F-test and Hausman test. When the number of companies is higher than the sections of the time period and the panel method has been used to estimate, heteroscedasticity problem may occur. In this research, to determine the difference of variances Breusch–Pagan-Godfrey test is used and to detect the presence of autocorrelation between variables Durbin-Watson statistics is used. If the presence of heteroscedasticity is confirmed the EGLS test will be used to determine the relationship between variables. And for solving the problem of autocorrelation the first-degree autocorrelation elimination is used. It should be noted that in this model the existence of heteroscedasticity is approved and EGLS test is used to detect the relationship between variables. And problem of autocorrelation was not confirmed based on the carried out test. Finally, to detect the relationship between variables Eviews8 software is used.
THE RESULTS OF RESEARCH HYPOTHESES TESTING

First hypothesis:

There is a significant relationship between leverage ratio and managers’ rewards.

In order to test this hypothesis, the results of estimations from the first model in table 5 are used. The probability value (or significance level) F equals to 0. Since it is less than 0.05, the null hypothesis is rejected at %95 level of significance, i.e. the model is significant. The value of Durbin-Watson is 2.02 indicating lack of correlation. The results of coefficient determination shows that almost %85 of changes in dependent variable is explained by independent and control variables. In general, the results demonstrate that the variance coefficient of leverage ratio is -0.005147 indicating the negative influence of leverage ratio on the managers’ rewards which is significant taking the t value of variance coefficient of leverage ratio. Taking into account the above results, the first hypothesis is confirmed, i.e. there is a negative significant relationship between leverage ratio and managers’ rewards. It means that increasing the leverage ratio would result in a decrease in the managers’ rewards.

<table>
<thead>
<tr>
<th>Variable</th>
<th>The coefficient estimate</th>
<th>SE</th>
<th>T statistics</th>
<th>Possibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.015362</td>
<td>0.001838</td>
<td>8.357801</td>
<td>0.000000</td>
</tr>
<tr>
<td>Debt</td>
<td>-0.005147</td>
<td>0.000667</td>
<td>-7.712937</td>
<td>0.000000</td>
</tr>
<tr>
<td>LogTA</td>
<td>-0.000491</td>
<td>0.000112</td>
<td>-4.391277</td>
<td>0.000000</td>
</tr>
<tr>
<td>MB</td>
<td>0.0000743</td>
<td>0.000043</td>
<td>1.707883</td>
<td>0.088200</td>
</tr>
<tr>
<td>Profit</td>
<td>-0.001094</td>
<td>0.000454</td>
<td>-2.411466</td>
<td>0.016200</td>
</tr>
</tbody>
</table>

Determinant coefficient: 0.877
Adjusted determinant coefficient: 0.850
Durbin-Watson: 2.02
F statistics: 32.1656
Possibility (F statistics): 0.0000

Second hypothesis:

There is a significant relationship between commercial risk and the managers’ rewards.

In order to test this hypothesis, the results of estimations for the second model in table 6 are used. The probability value (or significance level) F equals to 0. Since it is less than 0.05, the null hypothesis is rejected at %95 level of significance, i.e. the model is significant. The value of Durbin-Watson is 2.006 indicating lack of correlation. The results of coefficient determination shows that almost %87 of changes in dependent variable is explained by independent and control variables. In general, the results demonstrate that the variance coefficient of commercial risks -0.000769 indicating the negative influence of commercial risk on the managers’ rewards which is significant taking the t value of variance coefficient of commercial risk. Taking into account the above results, the second hypothesis is confirmed, i.e. there is a negative significant relationship between commercial risk and the managers’ rewards. It means that increasing the commercial risk would result in a decrease in the managers’ rewards.

<table>
<thead>
<tr>
<th>Variable</th>
<th>The coefficient estimate</th>
<th>SE</th>
<th>T statistics</th>
<th>Possibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>c</td>
<td>0.009233</td>
<td>0.001210</td>
<td>7.629228</td>
<td>0.000000</td>
</tr>
<tr>
<td>Debt</td>
<td>-0.000769</td>
<td>0.0000502</td>
<td>-15.33653</td>
<td>0.000000</td>
</tr>
<tr>
<td>LogTA</td>
<td>-0.000273</td>
<td>0.0000877</td>
<td>-3.114221</td>
<td>0.001900</td>
</tr>
<tr>
<td>MB</td>
<td>-0.0000281</td>
<td>0.0000205</td>
<td>-1.374098</td>
<td>0.170000</td>
</tr>
<tr>
<td>Profit</td>
<td>0.00000572</td>
<td>0.0000175</td>
<td>0.326135</td>
<td>0.744400</td>
</tr>
</tbody>
</table>

Determinant coefficient: 0.894
Adjusted determinant coefficient: 0.871
Durbin-Watson: 2.006
F statistics: 38.2099
Possibility (F statistics): 0.0000

DISCUSSION AND CONCLUSIONS

The purpose of the study was examining the relationship between leverage ratio and the managers’ rewards in the companies accepted in Tehran Stock Exchange. The theoretical underpinnings of the study were extracted from the library method and statistical data derived from the financial invoices of the companies accepted in Tehran Stock Exchange. In order to analyze the data, panel data method was used. The results of analysis in table 5 for the coefficient determination of the model demonstrated that independent and control variables would account for almost %85 of changes in dependent variable. With regard to the significance of the coefficients, since the probability of t value for the variance coefficient of leverage ratio was less than 0.05, it was confirmed that there was a significant relationship between leverage ratio and the managers’ rewards at %95 level of significance. Hence, the first hypothesis was confirmed and at %95 level of significance.

The negative value for the coefficient of this variable (-0.005147) demonstrated an inverse relationship between

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leverageratio and the managers’ rewards. The results for the first hypothesis were in accord with those of Chen and Jermiz (2014).

The results of analysis in table 6 for the coefficient determination of the model demonstrated that independent and control variables would account for almost 87% of changes in dependent variable. With regard to the significance of the coefficients, since the probability of t value for the variance coefficient of commercial risk was less than 0.05, it was confirmed that there was a significant relationship between commercial risk and the managers’ rewards at 95 level of significance. Hence, the second hypothesis was confirmed and at 95 level of significance. The negative value for the coefficient of this variable (-0.000769) demonstrated an inverse relationship between commercial risk and the managers’ rewards. The results for the second hypothesis were in accord with those of Chen and Jermiz (2014).

REFERENCES


