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A Study of the Relationship between Audit Fees and Board Compensation in TSE-Listed Firms

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ABSTRACT: The purpose of this research is to examine the relationship between audit fees and board compensation while controlling for book-to-market ratio and cumulative stock returns. The sample consists of 288 firm-year observations in Tehran Stock Exchange. Regression analysis and synthetic data were used for data analysis. By controlling book-to-market ratio and cumulative stock returns, the results indicated a significant positive relationship between audit fee and board compensation. Further, using univariate regression analysis, a significant positive relationship was observed between cumulative stock returns and board compensation.
Keywords: Audit Fee, Board Compensation, Tehran Stock Exchange

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INTRODUCTION

The main reason for auditing is the conflict of interest between a principal and an agent. The principal leaves management to the agent and compensate them for it. Since the interests of the principal (shareholders) and the agent (managers) are not always in the same line and since the agent may only work toward their own interests instead of maximizing shareholders' wealth. In fact, auditing became prominent after separation of ownership and management to overcome agency problems and costs (Watts and Zimmerman, 1986).

Using audit services, shareholders (owners) not only control agency problems and costs, but also control the management and the board of directors. The fee paid to auditors depends on a number of factors, including size, profitability and complexity of the company and the reputation of the audit firm (Mehrani and Jamshidi Avanaki, 2010). For bigger and more complex companies, there is greater need to monitor the management through control mechanisms such as auditing. As a result, many costs must be paid to both the auditors and the managers.

During the past two decades, new accounting research has been conducted on the determinants of firms' compensation policies and the factors related to auditor selection and audit fees. The relationship between board compensation and audit fees is also one of the new topics in the accounting literature and there is not much empirical evidence on this issue. Engel et al. (2010) were among the first researchers to study this issue by examining the relationship between audit committee compensation and audit fees.

The study of Engel et al. (2010) was the first step that provided useful information for future researchers. They used audit fees as a measure of the complexity of financial reporting and argued that the more the complexity of financial reporting, the more would be the shareholders' demand for monitoring and compensation and cash retainers paid to audit committees. Their research was on a large sample of US firms in the period 2000-2004. Based on the empirical results, the came to the conclusion that firms with higher audit fees (more demand for financial monitoring by financiers and auditors) have to pay higher compensation to the internal audit committee.

However, only one research has been carried by Wysocki (2010) on the relationship between CEO compensation and audit fees. By collecting data from a large sample of US firms and by controlling such factors as firm size, return on assets, market-to-book value, and stock returns, he proposed a model and argued that CEO compensation and audit fees are significantly correlated. He concluded that there a strong economic correlation exists between CEO compensation and audit fees.

The purpose of the present research is to examine the relationship between audit fees and board compensation in firms listed in Tehran Stock Exchange (TSE). Since this issue has received little attention in Iran and there is not much data available, a research on this topic seems necessary. Therefore, the importance of this study is to add to the literature on accounting and financial information. It provides useful information for various decision makers such as shareholders, investors, creditors, and the stock exchange. First, the theoretical background and a review of the literature are provided and then the methodology including the hypotheses, population, sample, and variables are elaborated. Finally, the findings are presented and conclusions are made accordingly.

There is little theoretical background on the relationship between audit fees and firms'

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compensation policies and this is a novel issue. It can be argued that the research of Wysocki (2010) is the only study that has specifically examined this topic. Based on certain evidence, Wysocki claimed that there is a strong correlation between these two variables. For instance, he argued that the mean firm-year observations for the studied sample equal $5.52 million. In this sample, by moving from the first to second quartile of audit fees, the regression coefficient for audit fees (with all other factors held constant) leads to 525 thousand dollars increase in the average CEO compensation. Moreover, he points out that a firm's audit fee depends of its size. In other words, larger, more complex firms pay more compensation to their managers and CEOs, since these firms need have greater need for controlling the management through certain mechanisms such as auditing. In fact, the larger the firm, the more complex will be the reporting process; thus, there will be greater need for control mechanism. Since larger firms have more powerful managers and CEOs, they require more audit services and there are higher fees paid to the board of directors and auditors (Wysocki, 2010).

Murphy (1986) showed that pay and performance of top executives are strongly and positively related. He argued that even without a direct link between pay and performance, executives' incomes are tied to their companies' performance through stock options, long-term performance plans, and, most important, stock ownership. He also showed that compensation proposals like short- and long-term incentive plans and golden parachutes actually benefit rather than harm shareholders.

Larcker and Richardson (2004) examined the relation between the fees paid to auditors for audit and non-audit services, and the choice of accrual measures for a large sample of firms. They found evidence of a negative relation between the level of fees (both audit and non-audit) paid to auditors and accruals.

Deumes and Schelleman (2007) examined board compensation and audit fees in IPO-setting. This research provided a review of the literature on corporate audit fees and their relation to different aspects of corporate governance, especially board compensation. The results suggested that only firm size was a good predictor of audit fees and incorporating board compensation to the model of the research had no significant effect on the fees and did not increase the predictive power of the model.

Desender et al. (2009) studied the relationship between board characteristics and audit fees and investigated the influence of the ownership structure and the board of directors on the demand for external audit services. They showed that ownership structure has a significant influence on the demand for audit. They also indicated that board independence is positively associated with audit fees.

Wysocki (2010) investigated the links between corporate compensation and auditor compensation. His empirical evidence suggested economically large co-variation in CEO compensation and audit fees. He also called for future research to examine the links between firms' corporate compensation and auditor compensation policies.

Chen et al. (2010) studied the effect of audit quality on earnings management and cost of equity capital in for two groups of Chinese firms: state-owned enterprises (SOEs) and non-state-owned enterprises (NSOEs). The results showed that audit quality is negatively associated with earnings management and cost of equity capital.

Alali (2011) examined the relationship between discretionary accruals and audit fees. She found that there is a positive and significant association between discretionary accruals and audit fees. She also showed that operating profit and operating cash flows increase with audit fees.

Kim et al. (2011) examined the impact of CEO equity incentives on audit pricing. They found that CEO stock options are positively related to audit fees after controlling for abnormal accruals and other determinants of audit fees. They also found that the positive relation between current CEO stock option grants and audit fees is mitigated for clients that have more effective corporate governance.

Jayaraman and Milbourn (2012) examined the effect of auditor expertise on managerial equity-based compensation. They showed that these two variables are positively associated.

Namazi and Sayrani (2004) carried out an empirical study of important constructs in CEO compensation in Iranian firms. Using agency theory, they examined two important issues: (1) the relationship between CEO compensation and accounting profit, earnings growth, and market value-added growth, and (2) important constructs in CEO compensation.

Rajabi and Mohammadi Khashui (2008) investigated the relationship between agency costs and independent audit pricing in 2005. The results showed that agency costs do not significantly affect the demand for audit services and only the share of the first major shareholder was negatively associated with audit fees.

Alavi Tabari et (2011) examined the relationship between corporate governance and fees paid to independent auditors in a sample of 210 firms. They used ordinary least squares regression for data analysis. The results showed that the percentage of public and quasi-public ownership and the type of auditor are associated with audit fees.

In the present research, we empirically examine the relationship between board compensation and audit fees in the firms listed in Tehran Stock Exchange (TSE).

Hypotheses: Based on the review of the literature provided in the previous section, the main hypothesis of the present research can be developed as follows:

• There is a significant relationship between audit fees and board compensation.

Moreover, two factors are evaluated along with audit fees and they are discussed and examined as sub-hypotheses:

• **SH1:** There is a significant relationship between market-to-book ratio and board compensation.

• **SH2:** There is a significant relationship between cumulative stock returns and board compensation.

MATERIALS AND METHODS

Population and Sample: The population of the present research consists of all the firms listed in Tehran Stock Exchange (TSE). No sampling is used in this study; instead, firms that meet the following conditions are examined:

Firms' financial year must end at the end of Iranian calendar;

Firms must not have no changes in the financial year;

During the studied period (2005-2010), the share of these firms must have been traded at least once every three once;

Firms must have data available on the selected variables.

Variables: Dependent variable: Board Compensation which is directly extracted from the financial statements of the firms.

Independent variable: Audit Fees which are also extracted from the firms' financial statements

Control variables: Book-to-Market Ratio (BM) and Cumulative Stock Returns (CSR)

BM= (Book Value of a Firm)/ (Market Value of a Firm)

CSR=Cumulative returns of ordinary stocks over the last two years

Procedure: This quasi-experimental study examines the relationship between audit fees and board compensation in the firms listed in TSE. Since the data naturally exist or have been extracted without manipulation of the researcher, and since the focus is on past events, the present research is also ex post facto. The quantitative data have been collected from the financial statements of TSE-listed firms as well as the software provided by TSE.

Multivariate regression and synthetic data are used for data analysis. Due to using synthetic data, before running the main regression model, one of the fixed, common, or random effects models is selected using Chow test and Hausman test and then the main regression model is accordingly estimated. Calculations and data extraction are done in Excel and data analysis and hypothesis testing are done in EViews. Finally, the research hypotheses are tested through regression analysis, F-statistic, and coefficient of determination (R^2) at 95% confidence interval.

The proposed model for the relationship between audit fees and board compensation with book-to-market ratio and cumulative stock returns as control variables is as follows:

$$Comp=\alpha+\beta_1 Fee+\beta_2 BM+\beta_3 CSR+\varepsilon$$

Where Comp is board compensation, Fee is audit fees, BM is book-to-market ratio, and CSR is cumulative stock returns.

RESULTS

The descriptive statistics (mean, median, minimum, maximum, and standard deviation) of the variables are presented in Table 1. As shown in this table, Board Compensation has the highest and book-to-market ratio has the lowest standard deviation. This suggests that Board Compensation has the highest dispersion. Moreover, the highest mean and median also belong to Board Compensation. Test of normality before performing the regression analysis, Kolmogorov-Smirnov test was applied to test the normality of the data. If p-value is less than 0.05, the data is normally distributed, and vice versa. The results of this test are provided in Table 2.

The below table shows that the p-value of all the variables is greater than the 5% which suggests that only the data related the data is not normally distributed. Therefore, Johnson transformation was applied in Minitab 16 to transform the data so that it would follow a normal distribution. Table 3 provides the results of Kolmogorov-Smirnov test after transformation of the non-normal data. Regarding Comp, the data could not be transformed via Minitab. In addition, due to the presence of zero values in this dataset (lack of compensation in a year), the logarithm method cannot be applied. Therefore, for this dataset only the statistical rule of normality of data with more than 30 observations was applied.

Stationary of the variables: Before testing the hypotheses with regression model and synthetic data, unit root test must be applied for all the variables to examine whether or not they are stationary. If the variables are non-stationary, estimation of econometric models with these variables creates spurious regression. The results of unit root test are presented in Table 4.

Testing the main hypothesis: The results of Chow and Hausman tests for selecting the most appropriate model are provided in Table 5. It must be noted that the normalized data are used for hypothesis testing. Considering the above table, random effects model is used for testing the main hypothesis. The results are provided in Table 6.

If there is no relationship between the dependent variable and independent and control variables in a multivariate regression equation, all the coefficients of independent and control variables must be zero. Therefore, the significance of the regression equation must be examined using F-statistic. As can be seen in Table 6, the value of F-statistic is 57.29 and its significance level is 0.0000. This indicates that the null hypothesis (i.e. all coefficient are zero) is rejected and the estimated regression model is significant. Coefficient of determination (R2) is 0.525, indicating that 52.5% of the variance in the dependent variable can be explained by the independent and the control variables. In addition, the value of Durbin-Watson statistic suggested autocorrelation in the data. Therefore, the lagged independent variable (the previous-year value of the dependent variable) was used in the model. The new Durbin-Watson statistic was between 1.5 and 2.5; thus, the problem of autocorrelation was resolved. As shown in the above table, the significance of the independent variable is 0.0060. Therefore, the main hypothesis is accepted; that is, there is a significant relationship between audit fees and board compensation. The coefficient is positive, suggesting the positive relationship between these two variables. As for the control variables, the coefficient of CSR is also positive and significant. Therefore, CSR is significantly and positively associated with board compensation. In fact, a part of board compensation is determined by the stock performance of the firm.

Testing the sub-hypotheses: The sub-hypotheses discussed earlier were also tested using the univariate regression model and the results are provided below.

Table 1. Descriptive statistics of the research variables

Variable	Observations	Mean	Median	SD	Min.	Max.
Comp	288	485.7039	380.0000	3850.00	0.00	567.21735
Fee	288	404.8788	286.0000	3688.00	83.00	443.04565
BM	288	0.6993	0.5685	0.48383	-0.45	2.60
CSR	288	0.4159	0.0897	1.34134	1.44	15.71

Table 2 . The results of Kolmogorov-Smirnov test

Variable		Comp	Fee	BM	CSR
N		288	288	288	288
Normal Parameters	Mean	485.7039	0.6993	0.4159	12.5512
	SD	567.21735	0.48383	1.34134	1.14806
Most Extreme Differences	Absolute	0.196	0.121	0.183	0.053
	Positive	0.136	0.121	0.183	0.053
	Negative	-0.196	-0.095	-0.135	-0.049
Kolmogorov-Smirnov Z		2.801	3.904	1.058	3.108
Asymp. Sig. (2-tailed)		0	0	0	0

Table 3. The results of K-S test after Johnson transformation

Variable		Fee	BM	CSR
N		260	288	288
Normal Parameters	Mean	0.0132	-0.0269	0.0015
	SD	1.00994	1.02714	1.008
Most Extreme Differences	Absolute	0.030	0.037	0.027
	Positive	0.030	0.023	0.025
	Negative	-0.026	-0.037	-0.027
Kolmogorov-Smirnov Z		0.481	0.629	0.453
Asymp. Sig. (2-tailed)		0.975	0.824	0.987

Table 4. The results of Levin–Lin–Chu test

Variable	Proxy	Test Statistic	Sig.
Board Compensation	Comp	-70.7526	0.0001
Audit Fee	Fee	-24.7678	0
Audit Fee (transformed)	New Fee	-148.822	0
Book-to-Market Ratio	BM	-11.7158	0
Book-to-Market Ratio (transformed)	New BM	-13.5471	0
Cumulative Stock Returns	CSR	-8.09680	0
Cumulative Stock Returns (transformed)	New CSR	-10.9431	

Table 5. The results of Chow and Hausman tests

Test	Test Statistics	Sig.	Model
Chow Test	3.065035	0.0105	Random Effects
Hausman Test	2.449443	0.4845	

Table 6. Estimation of the main hypothesis

Variable	Coefficient	Standard Error	t-statistic	Sig.
Fee	89.30242	32.16409	2.776463	0.0060
BM	11.18706	28.66293	0.390297	0.6967
CSR	108.6043	30.16419	3.600438	0.0004
Constant	363.7795	78.17955	3.374022	0.0009
Lagged Dependent Variable	0.653351	0.058219	11.22225	0
F-statistic: 57.29377			Significance Level: 0	
R2: 0.525		Adjusted R2: 0.516	Durbin-Watson Statistic: 1.717	

Table 7. The results of Chow and Hausman tests for the sub-hypotheses

Hypothesis	Test	Test Statistic	Sig.	Model
SH1	Chow Test	5.9600	0.0000	Random Effects
	Hausman Test	2.772333	0.0959	
SH2	Chow Test	4.847002	0.0003	Random Effects
	Hausman Test	1.689128	0.1937	

Table 8 . Estimation of the first sub-hypothesis

Variable	Coefficient	Standard Error	t-statistic	Sig.
BM	-10.27419	25.66639	-0.400297	0.6893
Constant	251.8777	36.37800	6.923902	0
F-statistic: 95.127			Significance Level: 0.0000	
R2: 0.4516	Adjusted R2: 0.4469		Durbin-Watson Statistic: 1.766	

Table 9. Estimation of the second sub-hypothesis

Variable	Coefficient	Standard Error	t-statistic	Sig.
CSR	81.87610	26.20022	3.125016	0.0020
Constant	260.8700	35.38782	7.350972	0
F-statistic: 103.097			Significance Level: 0	
R2: 0.472	Adjusted R2: 0.467	Durbin-Watson Statistic: 1.678		

As can be seen in Table 8, the p-value related to BM is greater than 5%. Therefore, the first sub-hypothesis is rejected; i.e. there is no significant relationship between book-to-market ratio and board compensation. Moreover, according to Table 9, p-value related to cumulative stock returns is less than 5%. Thus, the second sub-hypothesis is accepted. In other words, there is a significant positive relationship between cumulative stock returns and board compensation. The value of R2 is 0.472, meaning that 47.2% of the variance can be explained by the variables incorporated in the model. Significance of F-statistic also suggests the overall significance of the regression model. In the initial estimation the value of Durbin-Watson statistic was low and suggested autocorrelation in the model. Therefore, we entered the lagged dependent variable (the previous-year value of the dependent variable) in the model, resulting in a new Durbin-Watson value of 1.678. Thus, the problem of autocorrelation was resolved.

DISUSSION

The main hypothesis of the research addressed the relationship between audit fees and board compensation in TSE-listed firms. Considering the results of the regression model, it can be concluded

that there is a significant relationship between audit fees and board compensation. The positive coefficient suggested a positive relationship between these two variables. It can be argued that managers have many incentives to manage earnings, including compensation, and prefer higher reported earnings; meanwhile, earnings management can increase the risk of auditor litigation (Heninger, 2001; Palmrose and Scholz, 2004). Increased auditor litigation can increase audit fees. In firms with higher risks, auditors need to make more effort to carefully examine the financial information of these firms. On the other hand, these firms usually have more outstanding managers who have higher salary and benefits. The results of Wysocki (2010) also suggested a strong relationship between board compensation and audit fees.

Also the present research examined the relationship between book-to-market ratio, cumulative stock returns, and board compensation. The results showed that there is a significant positive relationship between cumulative stock returns and board compensation. This is because one of the most important factors in board compensation is the performance of managers and stock returns are a major part of this performance. However, no significant relationship was observed between book-to-market ratio and board compensation.

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