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The relationship between top management turnover with earnings management and default risk and earnings forecast error in the Tehran Stock Exchange

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A B S T R A C T

In this paper, we present a study to measure the relationship between top management turnover with earnings management and default risk and earnings forecast error in the Tehran Stock Exchange. The proposed study selects necessary information from 117 firms from the exchange over the period 2005-2010 and, using ordinary least squares technique as well as Pearson correlation ratios, examine three hypotheses of this paper. The results of the survey indicate that there are some meaningful relationships between change in top management with earning management, default risk and earning forecast error.

1. Introduction

During the past two decades, there have been various studies on relationship between earning management and top management changes (Degeorge et al., 1995; Firt et al., 1995; Degeorge et al., 1999). Call et al. (2009) studied whether analysts' earnings forecasts were more accurate when they also issued cash flow forecasts. They reported that (i) analysts' earnings forecasts issued together with cash flow forecasts were more accurate than those not accompanied by cash flow forecasts. In addition, they stated that analysts' earnings forecasts could reflect a better understanding of the implications of current earnings for future earnings when they were accompanied by cash flow forecasts. According to Agarwal and Taffler (2008), many developed corporate bankruptcy prediction techniques use a contingent claims valuation approach. They reported that the two approaches capture various aspects of bankruptcy risk, and while there was little difference in their predictive ability in the UK, the z-score approach could somewhat lead to greater bank profitability in conditions of differential decision error costs and competitive pricing regime.

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Burgstahler and Dichev (1997) provided some evidence that firms manage reported earnings to prevent earnings decreases and losses. They found some evidence that two components of earnings, cash flow from operations and changes in working capital, could be implemented to reach increases in earnings. Dechow et al. (2003) investigated whether boosting of discretionary accruals to report a small profit could describe this "kink" and investigated and discussed a number of alternative explanations for the kink.

Brockman and Turtle (2003) proposed a model for firm security valuation based on path-dependent, barrier option models instead of the commonly implemented path-independent approach. They argued that path dependency was an intrinsic and fundamental characteristic of corporate securities because equity could be knocked out whenever a legally binding barrier is breached. Brookman and Thistle (2009) investigated CEOs' risk of termination, its determinants and its impact on firm value based on survival analysis and reported that the risk of termination could increase for about thirteen years before decreasing slightly with CEO tenure; 82% of CEOs had tenure of less than thirteen years. Bergstresser and Philippon (2006) provided some evidence that the implementation of discretionary accruals to manipulate reported earnings was more pronounced at firms where the CEO's potential total compensation was more closely tied to the value of stock and option holdings.

Hillegeist et al. (2004) made an assessment on whether two accounting-based measures, Altman's (1968) Z-Score and Ohlson's (1980) O-Score, effectively summarize publicly-available information about the probability of bankruptcy. They reported that researchers could use BSM-Prob instead of Z-Score and O-Score in their studies and reach the SAS code to calculate BSM-Prob. Gong (2011) examined the relationship between CEO compensation and shareholder value added over CEO tenure. The research design studied two fundamental attributes of CEO compensation and shareholder value added. They reported that CEOs receiving higher nominal or realized pay generating more shareholder value. Jog and McConomy (2003) investigated the effect of one such mechanism, namely voluntary disclosure of management earnings forecasts by issuers of IPOs, as a means of reducing asymmetric data as well as ex ante uncertainty. They reported that firms whose forecasts turn out to be optimistic were penalized compared with other forecasters and non-forecasters. Ting (2011) stated that corporates with higher default risk could more likely change their top management in the next financial reporting period and firms default less than other companies.

In this paper, we present a study to measure the impact of top management change on some financial figures. The proposed study of this paper first explains details of models in section 2, the results are given in section 3 and concluding remarks are given at the end.

2. The proposed study

We first present how to calculate each variables associated with the proposed study of this paper. To calculate default risk, we using the following

$$\begin{aligned} Risk_{i,t-1} &= x_0 + x_1 CEOchange_{it} + x_2 CEOchange_{it-1} + x_3 Debt_{it} + x_4 ROA_{it} \\ &+ x_5 LnAsset_{it} + x_6 Same - Dir_{it} + x_7 Direct_{it} + x_8 y_{it}^{01} + x_9 y_{it}^{02} + x_{10} y_{it}^{03} + x_{11} y_{it}^{04} + x_{12} y_{it}^{05} + \varepsilon_{it}, \end{aligned} \tag{1}$$

where $CEOchange_{it}$ is the change in management, $Debt_{it}$ is the debt ratio, $LnAsset_{it}$ is the natural logarithm of total assets, $Direct_{it}$ is the natural logarithm of total assets, and all y variables are dummy variables, which receive one when we collect the information of the same year and zero, otherwise. In addition, we use the following to calculate *DD,*

$$DD = \frac{\ln(\frac{V_A}{X_t}) + (\mu - 0.5\sigma_A^2)t}{\sigma_A \sqrt{A}}, \tag{2}$$

where V_A represents total assets, X_t denotes book value of total debts, t is due time of debts, which is normally considered as one year, σ_A is the standard deviation of total assets and finally μ is the relative growth rate of total assets. In addition, DP, is calculated as follows,

$$Dp = 1 - e^{-z-score} / (1 + e^{-z-score}), \tag{3}$$

where z-score is the Altman bankruptcy ratio, which is calculated as follows,

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.999X_5, \tag{4}$$

where X_1 is equal to working capita divided by total assets, X_2 is equal to accumulated profit divided by total assets, X_3 is equal to earning before tax and interest divided by total assets, X_4 is equal to market value divided by total assets and finally X_5 is equal to total sales by total assets. In order to study the relationship between change in management and earning management we use the following regression model,

$$\begin{aligned} DA_{i,t-1} = {} & x_0 + x_1 CEOchange_{it} + x_2 CEOchange_{it-1} + x_3 Debt_{it} + x_4 ROA_{it} \\ & + x_5 LnAsset_{it} + x_6 Same - Dir_{it} + x_7 Direct_{it} + x_8 y_{it}^{01} + x_9 y_{it}^{02} + x_{10} y_{it}^{03} + x_{11} y_{it}^{04} + x_{12} y_{it}^{05} + \varepsilon_{it}, \end{aligned} \tag{5}$$

In our study, total accruals (TA) is estimated based on change in current assets ($\Delta CA_{i,t}$), change in total current liabilities ($\Delta CL_{i,t}$), change in cash ($\Delta CASH_{i,t}$), current portion of long-term debt ($\Delta STD_{i,t}$) and depreciation cost ($DEP_{i,t}$) and $A_{i,t-1}$ is total assets of firms i in year $t-1$ as follows,

$$TA_{i,t-1} = (\Delta CA_{i,t} - \Delta CL_{i,t} - \Delta Cash_{i,t} + \Delta STD_{i,t} - Dep_{i,t}) / A_{i,t-1}. \tag{6}$$

Once we calculate $TA_{i,t-1}$ we need to calculate α_1, α_2 and α_3 are calculated as follows,

$$TA_{i,t-1} = \alpha_0 + \alpha_1 (A_{i,t-1}^{-1}) + \alpha_2 (\Delta REV_{i,t}) + \alpha_3 (PPE_{i,t}) + \varepsilon_{i,t}. \tag{7}$$

where $\Delta REV_{i,t}$ is the change in revenue from year $t-1$ to year t, PPE_{it} is the growth value of equipment. Therefore, we have,

$$NDA_{i,t}^2 = \alpha_0 + \alpha_1 (A_{i,t-1}^{-1}) + \alpha_2 (\Delta REV_{i,t}) + \alpha_3 (PPE_{i,t}) + \varepsilon_{i,t}, \tag{8}$$

where NDA represents non-discretionary accruals and finally discretionary accrual is calculated as follows,

$$DA_{i,t}^2 = TA_{i,t} - NDA_{i,t}^2. \tag{9}$$

In order to study the relationship between change in management and earnings forecast error (FE) we use the following regression model,

$$\begin{aligned} FE_{i,t-1} = {} & x_0 + x_1 CEOchange_{it} + x_2 CEOchange_{it-1} + x_3 Debt_{it} + x_4 ROA_{it} \\ & + x_5 LnAsset_{it} + x_6 Same - Dir_{it} + x_7 Direct_{it} + x_8 y_{it}^{01} + x_9 y_{it}^{02} + x_{10} y_{it}^{03} + x_{11} y_{it}^{04} + x_{12} y_{it}^{05} + \varepsilon_{it}. \end{aligned} \tag{10}$$

Note that FE is calculated as follows,

$$FE = \frac{\left| YEPS_{t-1} - FORE_{t-1} \right|}{P_{t-1}}$$

where $YEPS_{t-1}$, $RORE_{t-1}$ and P_{t-1} are actual income, predicted income and last stock price, respectively. In order to do regression analysis, we need to know the data are normally distributed using Kolmogorov-Smirnov test and Table 1 shows details of our survey.

Table 1
The results of Kolmogorov-Smirnov test

Figures	DA	FE	RISK
Number of observations	504	585	585
Mean	2.9049	-48288.8467	.9743
Standard deviation	.33199	166904.25324	.03661
Absolute of changes	.032	.337	.241
Maximum positive change	.032	.336	.241
Maximum negative change	-.029	-.337	-.189
Z	.710	8.153	5.832
Sig.	.695	.000	.000

As we can observe from Table 1, there are two variables maintain Sig. value of 0.000, which are less than 0.05 and we can conclude that they are not normally distributed. Therefore, we take natural logarithm and repeat the tests summarized in Table 2.

Table 2
The results of Kolmogorov-Smirnov test

Figures	DA	LNFE	LNRISK
Number of observations	504	585	585
Mean	2.9049	18.2145	-.0538
Standard deviation	.33199	3.99148	.08412
Absolute of changes	.032	.061	.261
Maximum positive change	.032	.061	.261
Maximum negative change	-.029	-.048	-.207
Z	.710	1.472	6.322
Sig.	.695	.062	.568

The results of Table 2 clearly indicate that the data are normally distributed and we can use ordinary least square techniques.

3. The results

In this section, we present details of our findings on testing three hypotheses of this survey.

3.1. The results of the first hypothesis: The relationship between change management and default risk

To examine the first hypothesis of this survey we use Pearson correlation ratio between change management and default risk as follows,

$$\begin{cases} H_0: & \rho = 0 \\ H_1: & \rho \neq 0 \end{cases}$$

The result of Pearson correlation test is equal to 0.778, which means there is a relationship between these two variables

Table 3
The results of regression analysis on Eq. (1)

Model	Pearson correlation	Determinant coefficient	Adjusted determinant	Standard error	Durbin Watson
1	.778[a]	.605	.580	.03347	1.699

[a]Level of Significance = 5%

Table 4 shows details of ANOVA test for regression analysis on Eq. (1). As we can observe from the results of Table 4, F-value is statistically significant and we can confirm the results of our regression analysis.

Table 4
The results of ANOVA test

Model		Sum of Square	Df	Mean square	F value	Sig.
1	Regression	.300	11	.027	24.332	.000[a]
	Residual	.196	175	.001		
	Total	.496	186			

[a]Level of Significance = 5%

Table 5
The results of regression analysis

	Non-standard coefficients		Standar	t-student	Sig,	Collinearity	
	B	Coefficient	Beta			Varianc	Factor
(Constant)	.093	.038		2.449	.015		
CEOCHANGEit	2.909	.120	.041	24.340	.000	.840	1.190
CEOCHANGEit1	7.523	.312	.028	24.111	.000	.973	1.028
DEBT	-.109	.017	-.415	-6.494	.000	.552	1.812
ROA	.229	.035	.417	6.595	.000	.564	1.772
LNASSET	-.003	.001	-.119	-2.408	.017	.928	1.078
SAMEDIR	-.945	.112	-.009	-8.418	.000	.878	1.138
DIRECT	-.990	.111	-.002	-8.901	.000	.878	1.128
Y1	2.511	.199	.011	12.601	.000	.863	1.159
Y2	-.005	.008	-.039	-.639	.524	.608	1.644
Y3	-.003	.008	-.020	-.323	.747	.598	1.672
Y4	.004	.008	.028	.454	.650	.602	1.661
Y5	-.002	.008	-.012	-.196	.845	.584	1.713

As we can observe from the results of Table 5, there is a meaningful and positive relationship between change management and risk default. Therefore, the first hypothesis of this survey has been confirmed.

3.2. The results of the second hypothesis: The relationship between change management and earning management

To examine the first hypothesis of this survey we use Pearson correlation ratio between change management and earning management as follows,

$$\begin{cases} H_0: & \rho = 0 \\ H_1: & \rho \neq 0 \end{cases}$$

The result of Pearson correlation ratio between these two variables is equal to 0.863, which means there is a positive and meaningful relationship between these two variables. Table 6 shows details of our findings on basic statistics on the regression model.

Table 6
The results of some basic statistics

Model	Pearson correlation	Determinant coefficient	Adjusted determinant	Standard error	Durbin Watson
1	.863[a]	.694	.508	.93213	1.914

[a]Level of Significance = 5%

The result of Durbin-Watson indicates that there is no auto-correlation among different residuals. Table 7 shows the results of ANOVA test.

Table 7
The results of ANOVA test

	Model	Sum of Square	Df	Mean square	F value	Sig.
1	Regression	1.070	12	.915	9.567	.000[a]
	Residual	14.352	150	.096		
	Total	15.422	162			

The results of Table 8 indicate that there is a meaningful and linear relationship between independent variable and dependent variable.

Table 8
The results of regression analysis

	Non-standard coefficients		Standard coefficient	t-student	Sig,	Collinearity Statistics	
	B	Coefficient	Beta				B
(Constant)	2.370	.381		6.227	.000		
$CEOCHANGE_{it}$	.806	.053	.130	15.099	.001	.837	1.195
$CEOCHANGE_{it-1}$	.686	.124	.109	5.514	.002	.956	1.046
DEBT	.968	.165	.002	5.849	.002	.594	1.684
ROA	.316	.036	.088	8.718	.001	.603	1.659
LNASSET	.881	.054	.114	16.441	.000	.911	1.097
SAMEDIR	.942	.124	.020	7.579	.003	.446	2.240
DIRECT	.764	.122	.012	6.261	.001	.469	2.133
Y1	3.305	.647	.022	5.108	.002	.852	1.174
Y2	.097	.081	.124	1.200	.232	.585	1.710
Y3	-.041	.080	-.055	-.515	.608	.543	1.841
Y4	.038	.081	.049	.467	.641	.574	1.741
Y5	.073	.081	.098	.910	.364	.535	1.868

The results of Table 8 show a meaningful and positive relationship between earning management and change in management. Therefore, the second hypothesis of this survey is confirmed.

3.3. The results of the third hypothesis: The relationship between change management and earnings forecast error

To examine the first hypothesis of this survey we use Pearson correlation ratio between change management and earnings forecast error is as follows,

$$\begin{cases} H_0: & \rho = 0 \\ H_1: & \rho \neq 0 \end{cases}$$

The result of Pearson correlation ratio between these two variables is equal to 0.882, which means there is a positive and meaningful relationship between these two variables. Table 9 shows details of our findings on basic statistics on the regression model.

Table 9
The results of basic statistics for the third hypothesis

Model	Pearson correlation	Determinant coefficient	Adjusted determinant	Standard error	Durbin Watson
1	.882[a]	.777	.761	2.24823	1.579

[a]Level of Significance = 5%

In addition, Table 10 shows details of our findings on ANOVA test

Table 10
The results of ANOVA test

Model	Sum of Square	Df	Mean square	F value	Sig.
Regression	2959.999	12	246.667	48.801	.000[a]
Residual	849.161	168	5.055		
Total	3809.160	180			

[a]Level of Significance = 5%

One more time the results of ANOVA test indicate that there is a linear relationship between independent variable and dependent variable.

Table 11
The results of regression analysis

	Non-standard coefficients B	Standard coefficient		t-student	Sig,	Collinearity Statistics		
		Coefficient	Beta	**Beta**			B	Coefficient
1	(Constant)	40.779	2.660		15.332	.000		
	CEOCHANGEit	3.642	.370	.069	9.847	.000	.832	1.201
	CEOCHANGEit1	1.010	.089	.042	11.322	.000	.961	1.040
	DEBT	12.314	1.150	.057	10.711	.000	.538	1.858
	ROA	20.791	2.373	.429	8.763	.001	.554	1.805
	LNASSET	2.011	.096	.794	20.930	.000	.922	1.085
	SAMEDIR	9.734	1.621	.024	6.005	.002	.463	2.161
	DIRECT	2.131	.151	.045	14.118	.000	.486	2.058
	Y1	3.737	.392	.018	9.544	.001	.861	1.162
	Y2	.869	.541	.075	1.606	.110	.611	1.637
	Y3	1.101	.543	.097	2.026	.044	.582	1.719
	Y4	.545	.538	.048	1.013	.313	.594	1.684
	Y5	.633	.553	.055	1.146	.254	.574	1.742

Finally, the results of our regression model confirms the existence of positive and meaningful relationship between change management and earning forecasted error leading us to conclude that the third hypothesis is confirmed.

4. Conclusion

In this paper, we have presented an empirical study to measure the effects of change in top management on earning management, earning forecasted error and risk default. The proposed study of this paper gathered the necessary data from Tehran Stock Exchange and using two measures of Pearson correlation as well as ordinary least square techniques, we have examined three hypotheses of the survey. The results have confirmed that there were positive and meaningful relationships between top management change and three mentioned factors.

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