



The Relationship between Predictive Earnings Management and Opportunistic Earnings Management with Bonus and Stock Return in Iran

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ABSTRACT

The present study aims to investigate the relationship between earnings management and a bonus of CEOs. Because earnings management does not have only opportunistic effects, but signaling effects, this study focuses on information disclosure quality to examine earnings management incentives. If firms are classified into two groups of firms with predictive and opportunistic earnings management, it can be assumed that incentives and managers' operation in these two groups differ.

The research's target population consists of listed companies on the Tehran Stock Exchange, among which 91 companies selected over a period from 2009 to 2016. The panel data technique has been applied to estimate the research model.

The study's findings show that CEO's reward has an insignificant positive relationship with predictive earnings management and an insignificant negative relationship with opportunistic earnings management. It shows that firms are bereft of appropriate plans for the CEO's rewards. Furthermore, the relationship between predictive earnings management, opportunistic earnings management, and the stock return has been investigated. The achieved findings indicate that stock return is influenced by disclosure quality. In other words, the stock return has a positive relationship with predictive earnings management and a negative relationship with opportunistic earnings management.

Keywords: predictive earnings management; opportunistic earnings management; accruals quality; disclosure quality; rewards paid to the board of directors; stock return

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1. Introduction

Practitioners believe that some earnings management level exists in many, if not most, publicly traded companies (Graham et al., 2005). A rather large empirical accounting literature documents various ways and settings in which earnings management occurs. Recent evidence in this literature focused on various forms of earnings management (e.g., Zhao et al., 2012) as well as on more complex relationships such as ones between earnings management and debt/diversification (Rodriguez and Hemmen, 2010), compensation (Ibrahim and Lloyd, 2011), accounting standards (Fornaro and Huang, 2012), and regulations (Holder et al., 2013).

Earnings management can bring about positive or negative results for investors since it can make the information environment more vague or clear; which result may occur depends upon structural elements such as firm growth (Robin and Wu, 2012) or financial elements such as ownership structure (Ali et al., 2007). Most studies that examined earnings management have executed opportunistic earnings management. Examples of such settings include Earnings management and annual report readability (Kin et al., 2017), The Role of Earnings Management via Real Activities versus Accruals in SEO Valuation (Kothari et al., 2016), financing (e.g., Cohen and Zarowin, 2010), warranty information (Cohen et al., 2011), firms exempt from Section 404b of Sarbanes Oxley (Holder et al., 2013), and discontinued operations (Barua et al., 2010).

First, researchers of this field, such as Holthausen (1990), indicated that earnings management could have positive and negative results, while few studies assessed its positive dimensions. Prior studies suggest that managers use their reporting discretion to signal private information. However, because managers are often assumed to use their discretion to mislead investors, discretionary accruals might be regarded as opportunistic. But some scholars such as Louis and Robinson (2005) found that at the split announcement, the market construes the pre-split abnormal accrual as a signal of managerial optimism rather than managerial opportunism. Cho et al. (2010) proved that managers could use their accounting discretion to show the firm's real status. Robin and Wu (2012) also state that managers have incentives to signal private information to investors to help them make better decisions; therefore, earnings management has an opportunistic effect and has signaling influence (Guay, 2008). Managers' information reflects the firm's status on the one hand (Subramanyam, 1996) while on the other hand, they may try to apply opportunistic management to add luster to the firm due to various incentives such as firm survival, reward, and other elements (Balsam et al., 2002). The current study focuses on both the opportunistic and predictive dimensions of earnings management. In order to distinguish these two dimensions, disclosure quality has been applied. Firms with appropriate disclosure quality will enjoy predictive earnings management, while those who lack appropriate disclosure quality will have opportunistic earnings management.

Earnings management affect the capital market. In other words, the capital market can be misled by earnings management (Watts and Zimmerman, 1986); therefore, seeking earnings management incentives and its implementation requirements are of considerable importance. Many incentives have been recognized and introduced for earnings management such as capital market pressures, individual reputation concerns, tax savings, bonus compensation, distribution of reported earnings, good image of firm performance, stock price increase, and policy costs decrease (Libby and Seybert, 2009). Another incentive that affects earnings management is a payable reward to the CEO.

This study informs this debate by identifying a rational alignment between earnings management and CEO compensation. Although This study concerning compensation practices is derived using US data and is primarily applicable in the US setting, findings in studies such as Bryan et al. (2006) and Fernandes et al. (2013) suggest

generalizability of results certain non-US settings.

The relationship between earnings management and incentives can be assessed and comprehended from the viewpoint of corporate governance. If the current value of overpayments is positive, more rewards will be presented as the incentive. Such an issue is correct when earnings received from overpayments are more than direct costs—each overpayment dollar in specific conditions. For instance, when information or monitoring environment is of high quality, the final earning may be more than one dollar. But on other occasions, when weak information or monitoring environment avoids external observations, the final earning may be less than one dollar. Thus, the overpayment may or may not enhance value and validity (Davit et al., 2013).

The relationship between stock return and opportunistic and predictive earnings management has also been assessed in the present study. Ball and Brown (1968) state that when accounting earning is announced, the commercial unit's stock price is influenced. It shows that account earning include information content, and because accruals affect earning calculation, accruals quality will provoke a market reaction. The market reaction can be reflected in the stock return. Dargenidou et al. (2011) indicate that accruals and disclosure have the same effect on the expected return on current stock return. Francis et al. (2008) state that earning quality and information disclosure are complementary. Mouselli et al. (2012) found a positive association between accruals quality and disclosure quality, suggesting that firms with higher disclosure quality engage less in earnings management and have higher accruals quality. Asset pricing tests show that an accruals quality factor and a disclosure quality factor explain the time-series variation in similar portfolios' excess returns. This suggests that they contain similar information and confirms the substitutive nature of accruals quality and disclosure quality factors.

Other sections of this study are set in the following manner. The second section includes the theoretical background and hypotheses. The third section is consisting of research methodology, target population, and research sample. The fourth and fifth sections, respectively, include research models and findings. The final section contains the results and conclusion.

2. Theoretical issues

Financial reporting, as a way of transferring information, significantly affects decision-makers' viewpoints. Financial statements mainly aim to supply investors and creditors with sufficient information about their financial and operative status. This aim is only met when reporting is of high quality (Aboody and Hughes, 2005). Annual statements assessment shows that accounting information quality varies. Different information is derived from the type of firms' management, philosophy, and preference for investing intentions (Singhvi, 1968), thus in theoretical accounting literature, there are two following earnings management viewpoints: predictive and opportunistic.

According to Watts and Zimmerman (1986), managers can use earnings management to deliver some useful and superior information that they know about firm performance to shareholders and debt holders. If this is the case, earnings management may not be harmful to the stockholders and the public, since it decreases information asymmetry. Predictive earnings management intends to enhance the information content of earnings when signaling private information. Those who support this viewpoint believe that managers could use their accounting discretion to reflect the firm's real status and profitability.

Based on opportunistic earnings management, managers misuse the existing information asymmetry between themselves and other beneficiaries to maximize their advantages and decrease financial statements' anticipatory capability. Therefore,

managers get advantage of their information to mislead investors and gain more earnings (Burgstahler and Dichev, 1997).

It is expected that corporate governance and earnings management are related. If managers play a significant role in earnings management, corporate governance may have some consequences, limiting managers' abilities, encouraging managers to increase transparency, and permitting managers to increase ambiguity or present their incentives for increasing ambiguity (Davit et al., 2013).

There is no single definition for corporate governance. According to Larcker et al. (2007), corporate governance refers to the set of mechanisms that influence managers' decisions when there is a separation of ownership and control. Some of these monitoring mechanisms are the board of directors, their different committees, payment contracts, uncontrolled policies, internal and external auditing, liabilities contracts, banking institutions, institutional shareholders, and clients. On the basis of agency theory, all these mechanisms can be applied to relate shareholders' and managers' benefits. The combination of these mechanisms varies in different firms.

Accounting information plays an important role in corporate governance and rewarding contracts since payable rewards based on accounting information is more than rewards based on prices. In rewards that are based on accounting information, incentives are mostly derived from management attempts rather than market changes, which are not related to management attempts (Sloan, 1993; Murphy, 2001).

The relationship between incentives and earnings management is objective and intrinsic. Various researches show that earnings management and payments to the CEO are probably related to each other. Core et al. (1999) state that rewards paid to the CEO and board structure are associated. For instance, if the CEO is also the board's director, payment to CEO will increase due to this dichotomy. Moreover, accounting discretion has a relation with the variables of corporate governance. For example, dichotomy enhances discretions (Brown et al., 2008). Furthermore, there is a significant difference between board structure mechanisms and payments to the CEO (Linck et al., 2008).

Considering the abovementioned issues, there is a relationship between payments to CEO and predictive and opportunistic earnings management. For instance, firms that are governed by predictive earnings management consider payments to CEO as an incentive. Core et al. (2003) stated the effect of firm observation on payments to the CEO.

Previous studies show that fundamental analysis can be applied to improve investment performance. Financial statements information helps users to implement investment strategies. Thus, accounting-based information such as the ratio of liability to profitability can be utilized when choosing the stock whose book value is more than the market value (Piotroski, 2000). Another research which emphasizes accounting information for investment manager indicates that market users can get the advantage of results derived from financial statements analyses (Mohanram, 2005). How salespeople benefit from financial statements analyses is another study (Dechow et al., 2001). Therefore, financial reports mainly aim to present suitable information to the users of financial statements to predict future performance and stock return. The relationship between stock return and accruals quality has been assessed in many studies such as Francis et al. (2005), who proved the importance of accruals quality as a criterion of earnings quality and showed that cash could be more suitable earning.

Myers et al. (2003) showed that high levels of accruals, especially discretionary accruals, have low earnings quality. Chan et al. (2006) found that stock return of firms whose earnings quality decreases due to accruals increase will decrease during the next reporting period since investors understand the low level of earnings quality and deflate the prices. Dudin (2017) shows a negative relationship between disclosure quality and

earnings management. Findings of Dargenidou et al. (2011), Francis et al. (2008), Mouselli et al. (2012) show that accruals and disclosure have the same effect on expected earnings on stock return. Moreover, other studies in the stock exchange field demonstrate that disclosure quality can significantly affect stock return (Lundholm and Myers, 2002; Gelb and Zarowin, 2002; Hussainey et al., 2003; Ettredge et al., 2005; and Schleicher, 2007). Thus, it can be expected that if information disclosure is of high quality and earnings management is predictive, a high level of stock return will be gotten. If information disclosure is of low quality due to opportunistic earnings management, a low stock return level will be gotten. Regarding the mentioned issues, research hypotheses can be written in the following manner:

Hypothesis 1: Firms with predictive earnings management give CEOs more payments in proportion to firms with opportunistic earnings management.

Hypothesis 2: Firms with predictive earnings management gain more future returns than firms with opportunistic earnings management.

3. Research methodology

Table 1 shows a sum of the frequency of the research target population.

Table 1. The frequency of Companies

Description	Firm-year	Firm
All listed companies on the exchange	2100	300
	Ir (553)	(79)
	F: (154)	(22)
	F: (28)	(4)
	U (420)	(60)
	F: (308)	(44)
Target population volume	637	91

This study's target population consists of all listed companies on the Tehran Stock Exchange over a period from 2009 to 2016. Selected companies should not be among banks of financial institutions (investing companies, financial intermediations, holding, or leasing). They should be active during the research period without any change in their fiscal year or financial loss. Their financial and management information should be accessible. Considering these criteria, the census sampling method has been applied in the current study.

According to their final score, all listed companies on the Tehran Stock Exchange have been classified into two groups of predictive and opportunistic earnings management. Due to the importance of disclosure quality, Tehran Stock Exchange decided to present the score and ranks of all listed companies regarding their information disclosure quality, so that companies will be aware of their status and encouraged to improve it. Tehran Stock Exchange has two criteria of timeliness and reliability for ranking disclosure quality. Based on the timeliness criterion, the time of sending information and its delay is calculated. The reliability criterion is based on changes in sending predictive information and the difference between predicted amounts and actual audited performance.

At last, the scores are summed, and the final score is regarded as a disclosure quality basis. Thus predictive and opportunistic earnings management can be distinguished in this way. The first, discretionary accruals are estimated through residuals from the adjusted jones model. Then it is required to examine the relationship between discretionary accruals and cash flows (Dechow and Dichev, 2002). In this model, if the relationship between discretionary accruals and the next cash flows is significant, earnings management will exist. If the total annual score is less than 50, earnings

management is opportunistic, and if the total annual score is more than 50, earnings management is predictive. Variable OEM shows firms with opportunistic earnings management, and firms with predictive earnings management are indicated by PEM.

The present study is an applied correlational one whose data has been collected through financial statements, the Rahavard Novin database, and seo.ir. Collected data has been analyzed by Excel software and analyzed through the application of Panel regression models and R Software. The panel data technique has been used to estimate research models.

4. Research model

Discretionary accruals are estimated through residuals from the adjusted jones model

$$1) \frac{TA}{ASSETS_{t-1}} = \beta_0 + \beta_1 \left(\frac{1}{ASSETS_{t-1}} \right) + \beta_2 \left(\frac{\Delta Rev}{ASSETS_{t-1}} \right) + \beta_3 \left(\frac{PPE_{i,t}}{ASSETS_{t-1}} \right) + \beta_4 ROA + \varepsilon$$

TA_{it}: Total accruals

ASSETS_{it}: Total assets

ΔREV: Variance of revenues

PPE_{it}: Gross property machinerics equipment

ROA_{it}: Return on assets

ε_{it}: Residual error

Accruals in model 1 are calculated as follows:

$$2) TA_{it} = NI_{it} - CFO_{it}$$

NI_{it}: Net income

CFO_{it}: Operative cash flow

According to Dechow and Dichev (2002), it is required to examine the relationship between discretionary accruals and cash flows and control variables. Thus, the regression model can be written as follows:

$$3) DACC = \beta_0 + \beta_1 CFO_{t-1} + \beta_2 CFO_t + \beta_3 CFO_{t+1} + \beta_4 REV_{i,t} + \beta_5 PPE_{i,t} + \varepsilon_i$$

DACC_{it}: Discretionary accruals which equal to the amount of residual of adjusted jones model

CFO_{t-1}: Cash from operations (last year)

CFO_t: Cash from operations (current year)

CFO_{t+1}: Cash from operations (next year)

REV_{it}: Revenues

PPE_{it}: Gross property machinery equipment

ε_{it}: Residual error

Mention must be made through that in this model. All variables are homogenized through the book value average of assets.

In this model, if β₃ is significant, earnings management will have existed.

The first hypothesis has been tested through the Panel regression equation to determine the relationship between rewards paid to the board of directors and predictive and opportunistic earnings management. The regression model can be written as follows:

$$4) BONUS_{i,t} = \alpha + \beta_1 OEM_{i,t} + \beta_2 PEM_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 FCF_{i,t} + \beta_5 LEV_{i,t} + \beta_6 STDRETURN_{i,t} + \beta_7 ROA_{i,t} + \beta_8 SIZE * OEM + \beta_9 SIZE * PEM + \beta_{10} FCF * OEM + \beta_{11} FCF * PEM + \beta_{12} LEV * OEM + \beta_{13} LEV * PEM + \beta_{14} STDRET * OEM + \beta_{15} STDRET * PEM + \beta_{16} ROA * OEM + \beta_{17} ROA * PEM + \varepsilon_{i,t}$$

Where,

BONUS_{it}: Natural logarithm of CEOs' bonus

OEM_{it}: If the total annual score of information disclosure is less than 50, OEM equals 1. Otherwise, it equals zero.

PEM_{it}: If the total annual score of information disclosure is more than 50, PEM equals 1. Otherwise, it equals zero.

SIZE_{it}: Natural logarithm of stock market value

FCF_{it} : The 3-year average of (operating cash flows minus stock dividends divided by total assets), if the ratio of book value to market value is more than one, it equals one; otherwise, it equals zero.

LEV_{it} : Financial leverage (ratio of total liabilities to the daily value of shareholders' equity)

$STDRETURN_{it}$: Standard deviation of return on the stock during the years t-2, t-1, and t

In this model, if OEM's coefficient is negative and significant, while PEM's coefficient is positive and significant, the first hypothesis is confirmed.

In order to find the relationship between future returns, predictive and opportunistic earnings management, the Panel regression equation is utilized.

$$5) RETURN_{i,t} = \alpha + \beta_1 OEM_{i,t} + \beta_2 PEM_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 BM_{i,t} + \beta_5 STDRETURN_{i,t} + \beta_6 ROA_{i,t} + \beta_7 CFO_{i,t} + \beta_8 STDCFO_{i,t} + \beta_9 LEV_{i,t} + \beta_{10} FCF_{i,t} + \varepsilon_{i,t}$$

$RETURN_{it}$: Return on stock

OEM_{it} : If total annual score of information disclosure is less than 50, OEM equals 1, otherwise it equals zero.

PEM_{it} : If the total annual score of information disclosure is more than 50, PEM equals 1. Otherwise, it equals zero.

BM_{it} : Ratio of book value to stock market value

$STDCFO_{it}$: Standard deviation of operative cash during the years t-2, t-1, and t

In this model, if OEM's coefficient is negative and significant, while PEM's coefficient is positive and significant, the second hypothesis is confirmed.

5. Data analysis

5.1. Descriptive statistics

Before examining research hypotheses, research variables are described based on descriptive statistics techniques. Table 2 presents information about firms with predictive and opportunistic earnings management. Findings show that in the firms with predictive earnings management, the average of ECOs' rewards is more than opportunistic earnings management. Furthermore, the size of firms with predictive earnings management is more than opportunistic earnings management. Thus, it can be assumed that firms with predictive earnings management are bigger and, subsequently, more powerful and influential. The average of liabilities leverage for firms with predictive earnings management is 1.11, while for firms with opportunistic earnings management is 2.05. As it can be observed, liabilities leverage in the firms with predictive earnings management is less than the firms with opportunistic earnings management. The former avert risks. This table's results indicate that the average return on assets for firms with predictive earnings management is more than the firms with opportunistic earnings management. Moreover, stock return in the firms with predictive earnings management equals 37.48, while in the firms with opportunistic earnings management equals 35.64. It proves more amount of stock return in the firms with predictive earnings management.

Table 2- Descriptive statistics of variables

	OEM Firms					PEM Firms				
	Mean	Median	Standard deviation	Minimum	Maximum	Mean	Median	Standard deviation	Minimum	Maximum
Bonus	3.34	4.12	3.33	0	8.22	5.02	6.47	3.07	0	9.42

Size	12.60	12.30	1.30	10.21	17.49	13.05	13.09	1.325	9.94	17.51
Lev	2.05	1.66	1.716	0.09	10.41	1.11	0.851	1.01	0.02	8.66
Std Ret	62.89	37.47	69.82	9.22	450.79	45.40	33.48	55.28	1.90	467.30
ROA	0.07	0.06	0.05	0.005	0.23	0.10	0.09	0.05	0.006	0.33
Return	35.64	17.40	60.72	-63.90	243.64	37.48	25.94	67.91	-40.11	734.14
BM	0.97	0.85	0.58	0.16	3.18	0.69	0.59	0.40	0.15	2.39
CFO	0.10	0.09	0.14	-0.20	0.70	0.16	0.15	0.12	-0.33	0.59
Std CFO	0.09	0.08	0.06	0.03	0.31	0.10	0.09	0.05	0.02	0.45

5.2. Hypotheses testing

The panel data technique has been applied to estimate research models. Table 3 shows the results of choosing the adjusted Jones model. Since P-value in the Chow test is less than 0.05, the fixed effects model is selected. Furthermore, the Hausman test should be utilized to choose between the fixed effects model and the random-effects model. P-value in the Hausman test is less than 0.05. Thus the fixed effects model is selected.

Table 3- Goodness of fit for Panel data models

Test	p-value	Result
F-Limer Test	<0.001	Fixed Effects
Hausman Test	<0.001	Fixed Effects

Serial autocorrelation should be assessed in the final model by applying the Breusch-Pagan Godfrey test to choose between a fixed-effects model and the generalized linear model. Table 4 presents the results. Because the p-value in the Breusch-Pagan Godfrey test is less than 0.05, serial auto-correlation exists among error statements. As a result, the generalized linear model is applied.

Table4- Assumptions of the classical linear regression model

Test	p-value	Result
Breusch-Godfrey Test	<0.001	Generalized linear model

Table 5 indicates the output of the generalized linear model.

Table 5- Estimation of coefficients in the generalized linear model

$\frac{TA}{Assets_{t-1}} = \beta_0 + \beta_1 \left(\frac{1}{Assets_{t-1}}\right) + \beta_2 \left(\frac{\Delta Rev}{Assets_{t-1}}\right) + \beta_3 \left(\frac{PPE_{i,t}}{Assets_{t-1}}\right) + \beta_4 ROA + \epsilon$				
Variables	Estimate	Std. Error	t value	p-value
Intercept	-0.0387	0.0188	-2.1096	0.0348*
$\left(\frac{1}{Assets_{t-1}}\right)$	-0.0007	0.0022	-0.3268	0.7438
$\frac{\Delta Rev}{Assets_{t-1}}$	-0.0461	0.0263	-1.7512	0.0799*
$\frac{PPE_{i,t}}{Assets_{t-1}}$	-0.0917	0.0274	-3.3375	<0.001***
ROA	0.5416	0.0658	8.2256	<0.001***

Log-Likelihood: 247.869

*Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level

Residual in the generalized linear model showing discretionary accruals is considered a dependent variable in Dechow and Dichev's (2002) model. Table 6 shows the results of choosing Dechow and Dichev's (2002) model. Since P-value in the Chow test is less than 0.05, the fixed effects model is selected. Furthermore, the Hausman test

should be utilized to choose between the fixed effects model and the random-effects model. P-value in the Hausman test is less than 0.05. Thus the fixed effects model is selected.

Table 6- Goodness of fit for Panel data models

Test	p-value	Result
F-Limer Test	<0.001	Fixed Effects
Hausman Test	<0.001	Fixed Effects

Serial autocorrelation should be assessed in the final model by applying the Breusch-Pagan Godfrey test to choose between the fixed effects model and the generalized linear model. Table 7 presents the results. Since the p-value in the Breusch-Pagan Godfrey test is less than 0.05, serial auto-correlation exists among error statements. As a result, the generalized linear model is applied.

Table7- Assumptions of the classical linear regression model

Test	p-value	Result
Breusch-Godfrey Test	<0.001	Generalized linear model

Table 8 indicates the output of the generalized linear model.

Table 8- Estimation of coefficients in the generalized linear model

$$DACC_{it} = \beta_0 + \beta_1 CFO_{t-1} + \beta_2 CFO_t + \beta_3 CFO_{t+1} + \beta_4 REV_{it} + \beta_5 PPE_{it} + \epsilon$$

Variables	Estimate	Std. Error	t value	p value
Intercept	-0.1027	0.0113	-9.0315	<0.001***
CFO _{t-1}	0.0392	0.0216	1.8146	0.0695*
CFO _t	-1.0088	0.0022	-44.2678	<0.001***
CFO _{t+1}	0.1053	0.0156	6.7083	<0.001***
REV _{it}	0.0410	0.0093	4.3705	<0.001***
PPE _{it}	0.0801	0.0160	4.9811	<0.001***

Log-Likelihood: 595.983

- *Significant at the 10% level.
- ** Significant at the 5% level.
- *** Significant at the 1% level

Since β_3 is significant in Table 8, earnings management will exist. According to their final score, all listed companies on the Tehran Stock Exchange have been classified into two groups of predictive and opportunistic earnings management. If the total annual score is less than 50, earnings management is opportunistic, and if the total annual score is more than 50, earnings management is predictive. Variable OEM shows firms with opportunistic earnings management, and firms with predictive earnings management are indicated by PEM.

5.2.1. First hypothesis testing

The most appropriate model has been used to test the first hypothesis. Table 9 indicates the achieved results of choosing the best model. Because the p-value in the Chaw test is less than 0.05, the fixed effects model is chosen. Hausman test should also be implemented to choose between a fixed-effects model and the random-effects model. P-value in the Hausman test is more than 0.05. Thus random effects model is selected. Breusch-Pagan Lagrange test is also implemented to be able to choose the best model between the random-effects model and the integrated model. P-value in the Breusch-Pagan test for time and place is less than 0.05; therefore, the time- and place-integrated model cannot be applied, and the random-effects model is chosen.

Breusch-Pagan Godfrey test is also utilized to examine serial autocorrelation among error statements. Because the p-value in the Breusch-Pagan Godfrey test is less than 0.05, serial auto-correlation exists among error statements. As a result, the generalized

linear model will be the final model.

Table 9- Goodness of fit for Panel data models

Test	p-value	Result
F-Limer Test	<0.001	Fixed Effects
Hausman Test	0.9601	Random Effects
LM Test(time effects)	0.2616	pooling
LM Test(individual)	<0.001	Random Effects
LM Test(two-ways effects)	<0.001	Random Effects
Breusch-Godfrey Test	<0.001	Generalized Linear Model

Table 10 shows the output of implementing the best model. This study's findings do not demonstrate any significant difference in CEO compensation between firms with predictive earnings management and opportunist earnings management. This finding is inconsistent with the findings of Davit et al. (2013) and Peng (2011). It shows the deficiency of plans concerning CEO compensation, which makes managers meet their needs through unclear and abnormal ways.

Table 10- Estimation of coefficients in the generalized linear model

$$BONUS_{it} = \alpha + \beta_1 OEM_{it} + \beta_2 PEM_{it} + \beta_3 SIZE_{it} + \beta_4 FCF_{it} + \beta_5 LEV_{it} + \beta_6 STDRETURN_{it} + \beta_7 ROA_{it} + \beta_8 SIZE * OEM + \beta_9 SIZE * PEM + \beta_{10} FCF * OEM + \beta_{11} FCF * PEM + \beta_{12} LEV * OEM + \beta_{13} LEV * PEM + \beta_{14} STDRET * OEM + \beta_{15} STDRET * PEM + \beta_{16} ROA * OEM + \beta_{17} ROA * PEM + \epsilon_{it}$$

Variables	Estimate	Std. Error	t value	p-value
<i>OEM FIRMS:</i>				
Intercept	5.5850	2.8079	1.9891	0.0466*
OEM	-5.2107	3.9330	-1.3248	0.1852
SIZE	-0.0374	0.2013	-0.1859	0.8524
FCF	4.3658	3.1867	1.3700	0.1706
LEV	-0.3392	0.2297	-1.4765	0.1398
STDRETURN	-0.0009	0.0030	-0.0243	0.9806
ROA	0.7801	3.5396	0.2204	0.8255
SIZE* OEM	0.2046	0.2846	0.8454	0.3977
FCF* OEM	-5.6314	5.2204	-1.0787	0.2807
LEV* OEM	-0.3154	0.2693	-1.711	0.24156
STDRETURN* OEM	-0.0012	0.004922	0.2509	0.8025
ROA* OEM	11.41968	6.8810	1.7393	0.0819*
<i>PEM FIRMS:</i>				
Intercept	0.3743	4.1695	0.0898	0.9284
PEM	5.2107	3.9330	1.3248	0.1852
SIZE	0.2032	0.3032	0.6702	0.5027
FCF	-1.2656	4.2318	-0.2991	0.7648
LEV	-0.0238	0.2628	-0.0906	0.9278
STDRETURN	0.0011	0.0043	0.2662	0.7900
ROA	12.7482	6.1151	2.0847	0.0371*
SIZE* PEM	0.2046	0.2846	0.8454	0.3977
FCF* PEM	-5.6314	5.2204	-1.0787	0.2807
LEV* PEM	-0.3154	0.2693	-1.711	0.24156
STDRETURN* PEM	-0.0012	0.004922	0.2509	0.8025
ROA* PEM	11.41968	6.8810	1.7393	0.0819*

Log-Likelihood: -857.343

*Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level

5.2.2. Second hypothesis testing

The most appropriate model has been used to test the second hypothesis. Because the p-value in the Chaw test is less than 0.05, the fixed effects model is chosen. Hausman test should also be implemented to be able to choose between a fixed-effects model and

the random-effects model. P-value in the Hausman test shows that the fixed effects model is better to be selected. Breusch-Pagan Godfrey test is also utilized to examine serial autocorrelation among error statements. Due to the fact that the p-value in the Breusch-Pagan Godfrey test is less than 0.05, serial auto-correlation exists among error statements. As a result, the generalized linear model will be the final model.

Table 11- Goodness of fit for Panel data models

Test	p-value	Result
F-Limer Test	<0.001	Fixed Effects
Hausman Test	<0.001	Fixed Effects
Breusch-Godfrey Test	<0.01	Generalized Linear Model

Table 12 indicates the results of the second hypothesis testing. Stock return and opportunistic earnings have a significant negative relationship, while the stock return has a significant positive relationship with opportunistic earnings management at the error level of %5. Thus, the second hypothesis is confirmed, and it is concluded that in firms with predictive earnings management, the stock return is more than firms with opportunistic earnings management.

Control variables have acted as expected. For instance, there is a significant positive relationship between stock return and book value ratio to market value. When the ratio of book value to market value is more, stock return increases. Return on stock and standard deviation return on the stock is positively and significantly associated. Cash flow and stock return have a positive relationship, although this relation is not significant.

Table 12- Estimation of coefficients in the generalized linear model

$$RETURN_{it} = \alpha + \beta_1 OEM_{it} + \beta_2 PEM + \beta_3 OEM + \beta_4 SIZE_{it} + \beta_5 BM_{it} + \beta_6 STDRETURN_{it} + \beta_7 RO A_{it} + \beta_8 CFO_{it} + \beta_9 STDCFO_{it} + \beta_{10} LEV_{it} + \beta_{11} FCF_{it} + \epsilon_{it}$$

Variables	Estimate	Std. Error	t value	p-value
Intercept	-11.6456	41.7282	-0.2791	0.7801
OEM	-18.3376	8.2516	-2.2223	0.0262**
PEM	18.3376	8.2516	2.2223	0.0262**
SIZE	-3.5261	2.9971	-1.1765	0.2393
BM	46.9940	11.5226	4.0784	<0.001***
STDRETURN	0.4069	0.057	7.1371	<0.001***
ROA	119.5336	76.8266	1.5559	0.1197
CFO	13.4545	30.0382	0.4479	0.6542
STDCFO	261.6275	73.1244	3.5778	<0.001***
LEV	-1.6675	4.1017	-0.4066	0.6843
FCF	162.8948	67.8415	2.4011	0.0163*

Log-Likelihood: -1977.962

*Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level

6. Conclusion

The present study aimed to assess the relationship between earnings management and an essential component of corporate governance, the incentives provided through CEO compensation. Because accounting information plays a significant role in corporate governance and specifically in compensation contracts, it was alleged that firms categorized as opportunistic earnings management enjoy lower CEO compensation levels and do not consider them much as incentives. The importance of earning is increasing in studies related to earnings management. Many of these researches focus on the opportunistic dimension of earnings, but according to Guay (2008), earnings

management has an opportunistic effect and has signaling influence. The current study intended to assess two opportunistic and signaling dimensions of earnings management.

Regarding the findings of this study, this conclusion can be drawn that on the Tehran Stock Exchange, there is no significant difference between CEO compensation in firms categorized as predictive earnings management and those categorized as opportunistic earnings management. This finding is inconsistent with the findings of Davit et al. (2013) and Peng (2011). The following elements may have led such a difference between the results of this study and other studies: some industries have not determined any specific CEO compensation in the Annual General Meeting. Thus chief executive officers have to apply other unclear ways to gain rewards. Some firms do not pay due rewards to their officers and allocate the rewards for managing directors of losing companies. Not assigning total rewards to chief executive officers is an anti-incentive and amoral issue.

Furthermore, this study examined the relationship between future stock return and earnings management. Findings showed a significant relationship between predictive earnings management, opportunistic earnings management, and stock return. Because disclosure quality has been applied to distinguish firms with predictive earnings management from the firms with opportunistic earnings management, it can be stated that the findings of this study are consistent with findings of some researches accomplished by Dargenidou et al. (2012), Ettredge et al. (2005), and Schleicher (2007). Thus, disclosure quality is influential in stock return explanation. In other words, there is a significant difference between the firms whose disclosure quality is reported maximum or minimum.

6.1. Suggestions

It is suggested to assess research findings based on specific industries. Regarding the fact that the target population of the research has consisted of all listed companies on the Tehran Stock Exchange, it is suggested that production and non-production firms are separately investigated. This study has used a total score of disclosure quality. It is suggested to use timeliness and reliability scores and their relationship with rewards paid to the board of directors and stock return in future studies.

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