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The Relationship Between Board Composition with Real Earnings Management

Aboutorab Ghasemi[1] and Mohammadreza Shoorvarzy[2]

[1]*Department of Accounting, Faculty of Humanities, Neyshabur Branch, Islamic Azad University, Neyshabur, Iran*

[2]*Corresponding author, Department of Accounting, Faculty of Humanities, Neyshabur Branch, Islamic Azad University, Neyshabur, Iran.*

ABSTRACT

Board composition is a control tool in company and determines the power of board. Thus, board composition is an important factor in explanation of the capability of members to perform duties. Under different situations, there are different economic motivations like receiving reward for managers dealing with earnings management as the value of company and wealth of managers and owners are relevant to the reported earnings. The present study evaluates this issue whether earnings management based on real activities can be affected by board composition or not. The main purpose of this study is evaluation of the board composition and earnings management based on real activities of companies listed on Tehran Stock Exchange (TSE). To evaluate this purpose, the financial data of 162 companies listed on TSE during 2009-2014 are evaluated. The required data is extracted from Rahavard Novin 3 software and is summarized, classified and computed using Excel software. Also, the data is analyzed using Eviews 9 software. Based on statistical methods at confidence interval 0.95, the hypotheses are tested. In the present study, the relationship between board composition and real earnings management is evaluated via manipulation of real activities. Manipulation of real activities is manipulation of cash flow, production and discretionary expense. In this study, cash flow manipulation, production and discretionary expense are defined as abnormal cash flow, abnormal production and abnormal discretionary expense. The results of hypotheses test show that there was an inverse relationship between board composition and abnormal production and direct relationship with abnormal discretionary expense. There is no significant relationship between board composition and abnormal cash flow and real earnings management (comprehensive criterion).

Keywords: Board composition, Real earnings management, Abnormal cash flow of operating activities, Abnormal production costs, abnormal discretionary expense.

1. INTRODUCTION

The majority of researchers have found that earnings management is performed with the motivation of misleading financial statement users or deviation of results dependent upon accounting earnings (Aghayi and Chalaki, 2009). Both types of earnings management increase information asymmetry among managers and unmanaged economic performance of a company is hidden and reliability and financial reporting reliability are reduced (Krishnan & McDermott, 2012). According to empirical studies, the managers of companies enter management of real activities to manipulate reported earnings. It is important to know how the mechanisms of governance affect managerial motivations and real earnings management opportunities. Some studies evaluate the effect of corporate governance on real earnings management and various evidences are presented in this regard. Osma (2008) indicate that in England, independent board has restricted manipulation in R&D expenditures effectively. Visvanathan (2008) in US showed that most of key governance variables except board independence had no special role in restriction of real earnings management. Zhao et. al., (2012) found that periodical board reduced managerial pressure to resort to real earnings management. To test the relationship between corporate governance and real earnings management, our analysis is focused on important corporate mechanism of board. The board is expected to supervise the managerial opportunism in financial reporting and they can avoid involvement of managers in real earnings management activities. The boards of company use performance deviation for financial decisions of managing director (Farrell & Whidbee, 2003). Adut et. al., (2011) showed that corporate governance properties with prediction of analysts in sustainable responding are associated to income expectations and service committees (wage and benefits) give reward to the managers. This study attempts to show whether there is a relationship between strong board governance and real earnings management criteria via manipulation of real activities (abnormal cash flow, abnormal production and abnormal discretionary expense) or not. Based on the study purpose, the following hypotheses are raised:

H1: There is a significant relationship between board composition and cash abnormal flow of operating activities (as a criterion of real earnings management).

H2: There is a significant relationship between board composition and abnormal production costs (as a criterion of real earnings management).

H3: There is a significant relationship between board composition and abnormal discretionary expense (as a criterion of real earnings management).

H4: There is a significant relationship between board composition and real earnings management (comprehensive criterion).

Also, the present study is regarding the evaluation of the relationship between board composition and real earnings management in TSE companies. The study time is 6 years from the beginning of 2009 to the end of 2014 based on the reports from TSE.

2. THEORETICAL BASICS

Based on the study topic, the concepts and definitions are as follows: Board composition: A group of human capitals using capabilities to create collective value added for the company and stakeholders in a team called board. The composition of this team is analyzed from various aspects as board size (the people in composition), board independence (no previous relationship and with executive activities in different sectors), board gender composition (the ratio of female members to male board), multi-member nature of

board members (membership of a member in other board teams), average composition age (average age of board members) and activities of members (average board tenure) (Van Der Walt and Ingley, 2003). Real earnings management (real activities manipulation): Manipulation of real activities is occurred when the managers perform the activities changing the schedule or structure of an operation, investment or financial trading to influence the product (output) of accounting system (Gunny, 2010). Real activities manipulation is deviation from normal operating methods and is performed to fulfill profit (Roychowdhury, 2006). Also, Roychowdhury (2006) defines real earnings management as: Deviation of normal operating activities by managers to mislead some of the stakeholders to fulfill the financial reporting goals in normal trend of operation. Abnormal cash flow of operating activities: It is cash flow of operating activities minus normal operating cash flow (Dechow et. al., 1998). Abnormal production costs: It is the difference between their real value and estimated normal levels (predicted). In other words, residual of regression model indicates abnormal production costs and indicates real earnings management (Dechow et. al., 1998).

Abnormal discretionary expense: abnormal discretionary expense is the differences between their real value and estimated normal level (predicted). In other words, residual of regression model indicates abnormal discretionary expense and indicates real earnings management (Dechow et. al., 1998).

3. REVIEW OF LITERATURE

Sun et. al., (2014) evaluated the relationship between independence and features of audit committee with real earnings management in US companies. They applied three indices of abnormal operating cash flow, abnormal discretionary expense and production excess to measure real earnings management. The results of study of Sun et. al. showed that high number of audit committee members was associated with low operating cash flow and discretionary expense. The results of study showed that non-executive members in audit committee were with the increase of production costs. The results of study of Sun et. al., showed that non-executive members employment in audit committee disturbed effective supervision on company. Kim (2013) et. al., evaluated the relationship between board composition and real earnings management in four factors: Selling and purchase manipulation, excess production, unnatural reduction of R&D costs and abnormal reduction of other discretionary expense by panel data of US stock companies. The results of study showed that board index was associated positively and anti-ownership regulations had negative association with real earnings management for abnormal sale and abnormal reduction of R&D and other discretionary expense. Regarding excess production costs, the results are weak. Generally, the results show that after the control of other factors, the companies with better design of board governance have high level of real earnings management and the companies with ownership (with strong anti-ownership regulations) are better protected and have low level of real earnings management. Also, our findings showed that if a company is encountered with strict board supervision, the real earnings management level is higher and protection of ownership reduces managerial motivations for real earnings management. Fakhari et. al., (2015) in a study "evaluation of the effect of audit committee properties on earnings management via real items" evaluated the effect of audit committee features on earnings management via real items. To do this, the data of 12 companies listed on TSE in 2013 are analyzed by cross section. The results of study showed that there was a significant relationship between audit committee features and earnings management via real items. Noravesh et. al., (2014) evaluated the effect of financial leverage and abnormal operating cash flow on revenue management of manufacturing companies listed on TSE". The results of empirical test showed

an inverse and significant relationship between short-term financial leverage with abnormal operating cash flow and non-manufacturing non-discretionary costs and the lack of significant relationship between financial leverage and abnormal production costs. Also, in sub-hypotheses 4-6, there was a negative relationship between long-term financial leverage and abnormal operating cash flow and abnormal costs but there was no significant relationship between independent variable and non-manufacturing costs.

Study Population and Sample

The study population is all companies listed on TSE during 2009-2014 with the following conditions (Table 1).

Table 1
The statistical population conditions of all listed companies

Explanation	*Number of companies*
The total number of active companies in stock market to 20 March 2010	521
Manufacturing companies listed in TSE before 2009	417
The companies their data is not available	(63)
Total residual companies	354
Study sample of companies in study population (selected)	162

Based on the barriers, 162 companies are selected as study sample. The entire 162 companies are investigated and companies listed on TSE are selected by screening as follows:

1. The full data of studied companies are available.
2. The companies have no fiscal year change and trade pause is not more than 6 months.
3. The type of activity of company is manufacturing and it is not investment or financial brokerage.
4. The end of fiscal year of studied companies leads to the end of Esfand.
5. The companies are listed in TSE before 2009.

4. STUDY METHODOLOGY

This study describes what exists and evaluates the impact of board composition on real earnings management of companies and it is descriptive-correlation design. As historical data is used in hypotheses test, it is classified in semi-empirical research group. This study applies multiple linear regression technique and pooled data. Pooled data technique combines time series and cross section data. Combination of time series and cross section data is due to the increase of number of observations, increasing degree of freedom, reduction of variance non-homogeneity and reduction of co-linearity among the variables. In this study, for data collection of theoretical basics and review of literature, library study method is used and required data is collected by referring to books, papers and theses. To collect financial data, the data of TSE is used. The required data is extracted from the financial reports of companies, TSE site and Rahavard Novin data basis. For data analysis, descriptive and inferential statistics are used. Descriptive statistics consists of computation of mean, standard deviation and variance. For hypothesis test, based on normality of distribution, Pearson correlation coefficient and multiple regression test are used. To perform statistical tests and achieving Table, Eviews, EXCEL software is used.

5. STUDY FINDINGS

F Limer Test to Select Pooled Method

In single equation estimations, to take the decision, F Limer statistic is used. In this test, hypothesis rejection of support is regarding the special effects of companies and selection of classic method or panel data method. If F limer's test probability is smaller than 5%, panel data, otherwise pooled data is used. To evaluate the relationship between the effect of board composition with abnormal operating cash flow, abnormal production costs and abnormal discretionary costs and real earnings management, first to fourth hypotheses are formulated. To test these hypotheses, multiple regression analysis is used. To select which pooled or panel data are suitable for hypothesis test and model estimation, F limer test with the following rule is used:

$$\begin{cases} H_0: \alpha_1 = \alpha_2 = \& = \alpha \text{ pooled data method} \\ H_1: \text{At least one of the intercepts is differnet from the others, panel data} \end{cases}$$

Table 2 shows the results of F Limer's test. As probability is less than 5%, H0 is rejected, it means that panel model is selected in comparison to pooled model.

Table 2
The results of F Limer's test to select pooling or panel method

Models	*Null hypothesis (H_0)*	*F statistic*	*p-value*	*Result*
First	Special effects of company are not significant (pooling method is used).	4.003	0.0000	H0 is rejected (panel data is used)
Second	Special effects of company are not significant (pooling method is used).	5.497	0.0000	H0 is rejected (panel data is used)
Third	Special effects of company are not significant (pooling method is used).	9.511	0.0000	H0 is rejected (panel data is used)
Fourth	Special effects of company are not significant (pooling method is used).	2.143	0.0000	H0 is rejected (panel data is used)

As shown in Table 2, at confidence interval 95%, H0 is rejected. Thus, panel data is used. Thus, between fixed and random effects is selected and Hausman test is used.

Huasman Test to Select between Fixed and Random Effects Method

To select one of fixed and random effects, Hausman test is used. In Hausman test, if H0 is not rejected, random effects is used instead of fixed effects and is selected as an efficient model, otherwise fixed effect is efficient. In Hausman test, H0, H1 hypotheses are defined as follows:

$$\begin{cases} H_0: \text{There is no correlation between individual effects and explanatory variables} \\ \Leftrightarrow \text{random effects model} \\ H_1: \text{There is a correlation between individual effects and explanatory variables} \\ \Leftrightarrow \text{fixed effect model} \end{cases}$$

If the calculated *p*-value is higher than 5% error level, H0 is not rejected and random effects method is used and if this hypothesis is rejected, fixed effects method is used. As shown in Table 3, as Hausman test

value of all models except the third model is lower than 5%, the panel regression model of fixed effects is preferred compared to panel regression method with random effects. In the third model of study, random effects method is applied.

Table 3
The results of Hausman test to select between fixed and random effects

Model	*(H_0)*	*Statistics χ^2*	*p-value*	*Result*
First	Random effects method is better.	25.709	0.000	H_0 is rejected (fixed effects method is better).
Second	Random effects method is better.	197.378	0.000	H_0 is rejected (fixed effects method is better).
Third	Random effects method is better.	9.975	0.13	H_0 is supported (random effects method is better).
Fourth	Random effects method is better.	18.589	0.004	H_0 is rejected (fixed effects method is better).

Regression Fit of Dependent Variable of First Hypothesis (Abnormal Operating Cash Flows)

As it was shown, cash flow of operating activities is defined as linear function of sale and its changes. Abnormal operating cash flow is the difference between their real values and estimated normal levels (predicted) by the following model. In other words, the residual of model indicates abnormal operating cash flow and indicates real earnings management.

$$\frac{CFO_t}{A_{t-1}} = \beta_0 \frac{1}{A_{t-1}} + \beta_1 \frac{S_t}{A_{t-1}} + \beta_2 \frac{\Delta s_t}{A_{t-1}} + \varepsilon_t$$

As shown in Table 4, significance value of F statistics of chow test is smaller than 0.05 and it shows using fixed effects test against common effects. Also, significance value of chi-square statistics of Hausman test is smaller than 0.05 and it shows using fixed effects against random effects. F statistics and significance level of this statistics indicate that H0 regarding the insignificance of total model (zero coefficients) is rejected and the estimated regression model is significant. In the estimated model, coefficient of determination is 0.52, it means that 52% of changes of dependent variable are explained by independent and control variables. In addition, Durbin-Watson statistics is 2.22.

Table 4
Dependent variable of non-operating cash flow (Ab_CFO)

Variable	*Sign*	*Coefficients*	*SD*	*T statistics*	*Significance level*
Constant	C	0.1485	0.0180	8.2556	0.0000
One divided by total assets of the beginning of period	$1/A_{t-1}$	–4664.37	3702.56	–1.2598	0.2081
Net sale divided by total assets of one period	St/A_{t-1}	0.0299	0.0153	1.9535	0.0511
The changes of net sale divided by total assets of the beginning of period	$\Delta St/A_{t-1}$	–0.0015	0.0164	–0.0919	0.9268
Coefficient of determination				0.525	
Adjusted coefficient of determination				0.429	

Variable	*Sign*	*Coefficients*	*SD*	*T statistics*	*Significance level*
F statistics				5.443	
Significance level of F (Prob) statistics				0.000	
Durbin-Watson				2.226	
F limer's test (chow)			0.0000	5.378	
Hausman test			0.0225	9.583	

Regression Fit of Dependent Variable of Second Hypothesis (Non-operating Production Costs)

Production costs are defined as the sum of cost of sold goods and the change in inventory in a year. In this study, sold goods cost is a linear function of sale on that period. Abnormal production costs are the difference between their real values and estimated normal level (predicted) by the following model. In other words, the model residual indicates the abnormal production costs and indicates real earnings management.

$$\frac{\text{Prod}_t}{A_{t-1}} = \beta_0 \frac{1}{A_{t-1}} + \beta_1 \frac{S_t}{A_{t-1}} + \beta_2 \frac{\Delta s_t}{A_{t-1}} + \beta_3 \frac{\Delta s_{t-1}}{A_{t-1}} + \varepsilon_t$$

As shown in Table 5, significance value of F statistics of chow test is smaller than 0.05 and this shows the use of fixed effect test against the common effects. Also, significance value of chi-square of Hausman test is smaller than 0.05 and it shows the use of fixed effects against random effects method. F statistics and significance level show that H0 regarding insignificance of the entire model (zero coefficient) is rejected and the estimated regression model is significant. In the estimated model, coefficient of determination is 0.98, it means that 98% of changes of dependent variable are explained by independent and control variables. In addition, Durbin-Watson statistics is 2.20.

Table 5
Dependent variable of non-operating production costs (Ab_Prod)

Variable	*Sign*	*Coefficients*	*SD*	*T statistics*	*Significance level*
Constant	C	–0.2124	0.0170	–12.4789	0.0000
One divided by total assets of the beginning of period	$1/A_{t-1}$	8557.46	3510.18	2.4379	0.0150
Net sale divided by total assets of the beginning of period	St/A_{t-1}	0.9887	0.0156	63.2081	0.0000
The changes of net sale divided by total assets of the beginning of period	$\Delta St/A_{t-1}$	–0.0960	0.0167	–5.7520	0.0000
Changes of net sale of previous year divided by total assets of beginning of period	$\Delta St-1/A_{t-}$	–0.0633	0.0164	–3.8602	0.0001
Coefficient of determination				0.984	
Adjusted coefficient of determination				0.981	
F statistics				304.463	
Significance level of F (Prob) statistics				0.000	
Durbin-Watson				2.206	
F limer's test (chow)			0.0000	6.883	
Hausman test			0.0001	24.112	

Regression Fit of Dependent Variable of Third Hypothesis (Abnormal Discretionary Expense)

As shown in Table 6, significance value of F statistics of chow test is smaller than 0.05 and this shows the use of fixed effect test against the common effects. Also, significance value of chi-square of Hausman test is smaller than 0.05 and it shows the use of fixed effects against random effects method. F statistics and significance level show that H0 regarding insignificance of the entire model (zero coefficient) is rejected and the estimated regression model is significant. In the estimated model, coefficient of determination is 0.74, it means that 74% of changes of dependent variable are explained by independent and control variables. In addition, Durbin-Watson statistics is 1.62 that was calculated according the following equation.

$$\frac{\text{DisExp}_t}{A_{t-1}} = \beta_0 \frac{1}{A_{t-1}} + \beta_1 \frac{S_{t-1}}{A_{t-1}} + \varepsilon_t$$

Table 6
Dependent variable of abnormal discretionary expense (Ab_Dexp)

Variable	*Sign*	*Coefficients*	*SD*	*T statistics*	*Significance level*
Constant	C	0.0279	0.0031	9.1042	0.0000
One divided by total assets of beginning of period	$1/A_{t-1}$	–846.88	673.74	–1.2570	0.2091
Net sale of previous year divided by total assets of beginning of period	$St\text{-}1/A_{t-1}$	0.0356	0.0027	13.3572	0.0000
Coefficient of determination				0.743	
Adjusted coefficient of determination				0.691	
F statistics				14.316	
Significance level of F (Prob) statistics				0.000	
Durbin-Watson				1.629	
F limer's test (chow)			0.0000	9.721	
Hausman test			0.0000	25.857	

Dependent Variable of Fourth Hypothesis (Comprehensive Real Earnings Management)

Comprehensive criterion of real earnings management is achieved of three cases (abnormal operating cash flow, abnormal production expenses and abnormal discretionary expenses):

$$\text{REM}_{\text{All}} = \text{Ab}_{\text{CFO}} + \text{Ab}_{\text{Prod}} + \text{Ab}_{\text{Deap}}$$

The Results of First Hypothesis

After performing F Limer and Hausman tests and selection of fixed effects model to estimate model, the results of estimation of model are shown in Table 7. As *p*-value of board composition is 0.76, first hypothesis of study is rejected at the level 5% and board composition has no significant effect on abnormal operating cash flow. In this model, control variables of market value to book value, firm size and financial leverage have significant effect on abnormal operating cash flow as the significance level of their tests is lower than 0.05.

Table 7
The summary of statistical results of first hypothesis test

Variable	*Sign*	*Coefficients*	*SD*	*T statistics*	*Significance level*
Constant	C	0.4894	0.1648	2.9700	0.0031
Board composition	BOARD	–0.0181	0.0608	–0.2978	0.7659
Audit quality	AUDIT	0.0076	0.0242	0.3135	0.7540
Accounting flexibility	NOA	–0.0023	0.0029	–0.7766	0.4376
Market value to book value	MB	0.0067	0.0023	2.8717	0.0042
Firm size	SIZE	–0.0659	0.0266	–2.4790	0.0134
Financial leverage	LEV	–0.1638	0.0390	–4.1979	0.0000
Coefficient of determination				0.544	
Adjusted coefficient of determination				0.450	
F statistics				5.753	
Significance level of F (Prob) statistics				0.000	
Durbin-Watson				2.202	
F limer's test (chow)			0.0000	4.003	
Hausman test			0.0003	25.709	

The final model of regression based on first hypothesis is as follows:

$$ab_{CFO} = 0.489 - 0.018\ Board_{i,t} + 0.0076\ Audit_{i,t} - 0.0023\ NOA_{i,t} + 0.0067\ MB_{i,t} - 0.0659\ Size_{i,t} - 0.1638\ lev_{i,t} + \varepsilon$$

The Results of Second Hypothesis

After performing F Limer and Hausman tests and selection of fixed effects model to estimate model, the results of estimation of model are shown in Table (4-10). As *p*-value of board composition is 0.04, second hypothesis of study is rejected at the level 5% and board composition has no significant effect on abnormal production expenses. In this model, control variables of accounting flexibility, firm size and financial leverage have significant effect on abnormal production expenses as significance level of tests is lower than 0.05.

Table 8
The summary of statistical results of second hypothesis

Variable	*Sign*	*Coefficients*	*SD*	*T statistics*	*Significance level*
Constant	C	–0.6375	0.1898	–3.3580	0.0008
Board composition	BOARD	–0.1193	0.0581	–2.0542	0.0403
Audit quality	AUDIT	–0.0352	0.0236	–1.4940	0.1356
Accounting flexibility	NOA	0.0051	0.0023	2.1997	0.0281
Market value to book value	MB	–0.0001	0.0003	–0.5289	0.5970
Firm size	SIZE	0.0874	0.0312	2.8042	0.0052
Financial leverage	LEV	0.2772	0.0471	5.8884	0.0000
Coefficient of determination				0.619	

Variable	*Sign*	*Coefficients*	*SD*	*T statistics*	*Significance level*
Adjusted coefficient of determination				0.539	
F statistics				7.808	
Significance level of F (Prob) statistics				0.000	
Durbin-Watson				2.270	
F limer's test (chow)			0.0000	5.498	
Hausman test			0.0000	197.379	

The final model of regression based on second hypothesis is as follows:

$$prod = -0.6375 - 0.1193\ Board_{i,t} - 0.0352\ Audit_{i,t} + 0.0051\ NOA_{i,t} - 0.0001\ MB_{i,t} + 0.0874\ Size_{i,t} + 0.2772\ lev_{i,t} + \varepsilon$$

The Results of Third Hypothesis

After performing F Limer and Hausman tests and selection of random effects model to estimate model, the results of estimation of model are shown in Table 9. As *p*-value of board composition is 0.002, third hypothesis of study is supported at the level 5% and board composition has a significant effect on abnormal discretionary expenses. In this model, control variables of market value to book value and firm size have significant effect on abnormal discretionary expenses as significance level of tests is lower than 0.05.

Table 9
The summary of results of third hypothesis

Variable	*Sign*	*Coefficients*	*SD*	*T statistics*	*Significance level*
Constant	C	0.0349	0.0199	1.7537	0.0798
Board composition	BOARD	0.0322	0.0107	3.0252	0.0026
Audit quality	AUDIT	–0.0020	0.0038	–0.5393	0.5898
Accounting flexibility	NOA	0.0005	0.0005	0.9138	0.3610
Market value to book value	MB	0.0010	0.0004	2.2180	0.0268
Firm size	SIZE	–0.0089	0.0031	–2.8756	0.0041
Financial leverage	LEV	0.0012	0.0061	0.1992	0.8422
Coefficient of determination				0.023	
Adjusted coefficient of determination				0.017	
F statistics				3.856	
Significance level of F (Prob) statistics				0.001	
Durbin-Watson				1.552	
F limer's test (chow)			0.0000	9.512	
Hausman test			0.1354	9.754	

The final model of regression based on third hypothesis is as follows:

$$ab - deap = 0.0349 + 0.0322\ Board_{i,t} - 0.002\ Audit_{i,t} + 0.0005\ NOA_{i,t} + 0.001\ MB_{i,t} - 0.0089\ Size_{i,t} + 0.0012\ lev_{i,t} + \varepsilon$$

The Results of Fourth Hypothesis

After performing F Limer and Hausman tests and selection of fixed effects model to estimate model, the results of estimation of model are shown in Table 10. As *p*-value of board composition is 0.13, fourth hypothesis of study is rejected at the level 5% and board composition has no significant effect on comprehensive earnings management. In this model, control variables of market value to book value and financial leverage have significant effect on comprehensive earnings management as significance level of tests is lower than 0.05.

Table 10
Summary of statistical results of fourth hypothesis

Variable	*Sign*	*Coefficients*	*SD*	*T statistics*	*Significance level*
Constant	C	–0.1451	0.1873	–0.7750	0.4385
Board composition	BOARD	–0.1023	0.0691	–1.4803	0.1392
Audit quality	AUDIT	–0.0252	0.0275	–0.9192	0.3583
Accounting flexibility	NOA	0.0036	0.0033	1.0661	0.2867
Market value to book value	MB	0.0093	0.0026	3.5422	0.0004
Firm size	SIZE	0.0173	0.0302	0.5727	0.5670
Financial leverage	LEV	0.1063	0.0443	2.3970	0.0168
Coefficient of determination				0.312	
Adjusted coefficient of determination				0.169	
F statistics				2.179	
Significance level of F (Prob) statistics				0.000	
Durbin-Watson				2.466	
F limer's test (chow)			0.0000	2.143	
Hausman test			0.0049	18.589	

The final model of regression based on fourth hypothesis is as follows:

$$REM_{All} = -0.1451 - 0.1023\ Board_{i,t} - 0.0252\ Audit_{i,t} + 0.0036\ NOA_{i,t} + 0.0093\ MB_{i,t} + 0.0173\ Size_{i,t} + 0.1063\ lev_{i,t} + \varepsilon$$

Generally, the summary of results of hypothesis is shown in Table (11):

Table 11
The summary of results of hypotheses test

Study hypothesis	*Significance level*	*Test result*
H1: There is a significant relationship between board composition and abnormal cash flow of operating activities (as criterion of real earnings management).	0.05<	Rejected
H2: There is a significant relationship between board composition and abnormal production expenses (as a criterion of real earnings management).	0.05>	Supported
H3: There is a significant relationship between board composition and abnormal discretionary expenses (as a criterion of real earnings management).	0.05>	Supported
H4: There is a significant relationship between board composition and real earnings management (comprehensive criterion)	0.05<	Rejected

6. CONCLUSION

The results of study based on different thought attitude show that board composition can have negative or positive outcomes for the company. The present study evaluates whether earnings management based on real activities can be affected via board features or not. Dependent variable is real earnings management (abnormal operating cash flow, abnormal production expenses and abnormal discretionary expenses) and independent variable is board composition. As shown, in all models at significance level 5%, the test statistics is less than 0.05. The suitable model of these tests is not pooled model and panel data is used. As Hausman test in all regression models to third model (random effects), the model with fixed effects is used. For regression significance, F statistics and for significance of coefficients, t-student test is used. Thus, first hypothesis states: For regression significance, F statistics and for significance of coefficients, t-student test is used. The first hypothesis is stated: There is a significant relationship between board composition and abnormal cash flow of operating activities (as a criterion of real earnings management). In the first hypothesis, dependent variable is abnormal cash flow from operating activities with independent variable of board composition with control variables. Based on F statistics (5.75) and significance level prop (0.000) with confidence interval 0.95, regression model can explain the changes of dependent variable based on independent variables and significance of regression model is supported. Based on t statistics and significance level of coefficient for board composition 0.76 is bigger than error level 0.05. Thus, H0 regarding non-significance of these coefficients is supported at error level 5%. Thus, board composition is not significant. Based on non-significance of board composition in model, it was shown that there was no significant relationship between board composition and abnormal cash flow from operating activities. In the second hypothesis " There is a significant relationship between board composition and abnormal production costs (as a criterion of real earnings management), dependent variable is abnormal production expenses with independent variable of board composition with control variables. Based on F statistics (7.80) and significance level prop (0.000) with confidence interval 0.95, regression model can explain the changes of dependent variable based on independent variables and significance of regression model is supported. Based on t statistics and significance level of coefficient for board composition 0.04 is smaller than error level 0.05. Thus, H0 regarding non-significance of these coefficients is rejected at error level 5%. Thus, board composition is significant. Based on its significance in model, it was shown that there was a negative significant relationship between board composition and abnormal production expenses. In the third hypothesis "There is a significant relationship between board composition and abnormal discretionary expenses (as a criterion of real earnings management), dependent variable is abnormal discretionary expenses with independent variable of board composition with control variables. Based on F statistics (3.85) and significance level prop (0.000) with confidence interval 0.95, regression model can explain the changes of dependent variable based on independent variables and significance of regression model is supported. Based on t statistics and significance level of coefficient for board composition 0.002 is smaller than error level 0.05. Thus, H0 regarding non-significance of these coefficients is rejected at error level 5%. Thus, board composition is significant. Based on its significance in model, it was shown that there was a positive and significant relationship between board composition and abnormal discretionary expenses. In the fourth hypothesis "There is a significant relationship between board composition and real earnings management, dependent variable is real earnings management with independent variable of board composition with control variables. Based on F statistics (2.17) and significance level prop (0.000) with confidence interval 0.95, regression model can explain the changes of dependent variable based on independent variables and

significance of regression model is supported. Based on t statistics and significance level of coefficient for board composition 0.13 is bigger than error level 0.05. Thus, H0 regarding non-significance of these coefficients is supported at error level 5%. Thus, board composition is not significant. Based on its non-significance in model, it was shown that there was no significant relationship between board composition and real earnings management. In the present study, the relationship between board composition and real earnings management is evaluated via manipulation of real activities. The results of hypotheses test showed that there was an inverse relationship between board composition and abnormal production and direct relationship with abnormal discretionary expenses. There was no significant relationship between board composition and abnormal cash flow and real earnings management. Kim (2013) evaluated the relationship between board composition and real earnings management. The results of study showed that there was a direct relationship between board composition and abnormal discretionary expenses as consistent with the findings of present study. There was a negative relationship between board features and real earnings management inconsistent with the findings of this study.

Recommendations of Study

It is proposed that in future researches, different industries are used to evaluate the significance level of board composition in different industries. It is proposed that in future studies, we evaluated the effect of owned share of board on real earnings management.

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