



温州肯恩大学  
WENZHOU-KEAN UNIVERSITY

**The effect of board size and frequency of board meetings on earnings  
management**

In Partial Fulfillment of the Requirements  
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by

TIAN Yue

1025833

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# **The Effect of Board Size and Frequency of Board Meetings on Earnings Management**

## **ABSTRACT**

This study investigates the effect of board size, frequency of board meetings on the earnings management when firm report the pattern of increasing-earnings for consecutive 3 years. The study result shows that the bigger board size can curb the earnings management behavior, and frequency of board meetings is positively related to earnings management. Board size and frequency of board meetings serve as the proxies of corporate governance. Modified Jones Model is employed to calculate the residuals that represent earnings management. The results hold after considering the effect of control variables, including return on assets, leverage ratio, free cash flow and firm size. Also, the study expects that board size and frequency of board meetings can serve as the first, simple and inexpensive tools to spot earnings management.

**Keywords:** Corporate Governance, Earnings Management, Modified Jones Model, Discretionary Accruals

**JEL Classification:** G34, M41

## I. INTRODUCTION

The main purpose of this study is to explore the relationship between board size, frequency of board meetings and earnings management for the firms with the pattern of reported increasing earnings for consecutive 3 years, specifically range from 2012 to 2016.

In the context of China, since 1978, the economy has increased dramatically due to the reform and opening, which can also be called economic reform (Lin, 2004). At 2010, China has grown to be the second-largest economy after the United States. The real per capita GDP has increased at the rate that more than 8% annually (Zhu, 2012). From 2012 to 2018, the growth rate for China's GDP remains relatively stable compared to past several decades, approximately 6.5%. As China's development of economy, the real GDP growth has slowed. In spite of that, investors are attracted by Chinese market.

Given the facts mentioned above, accounting matters in the business activities. The purpose of accounting is to provide useful and accurate information to stakeholders for their decision-making. The accuracy and usefulness matter because it will affect the quality of decision-making. Due to the difference between the culture of countries, government policies and regulations, the accounting principles varies in different countries. For example, the United States adopts generally accepted accounting principles (GAAP). International Financial Reporting Standards (IFRS) was adopted for Chinese listed firms for the preparations for their financial statements since January 1, 2007. And International Financial Reporting Standards (IFRS) has been revised for some details in order to match the context of China. However, the existing accounting principles still leave much space for earnings manipulation, it is still far from ideal (Lai, 2009). Managers will not always behave in the way that maximize shareholder's welfare or benefits. Therefore, agency problems exist when there is a conflict between managers and shareholders, which may exert influence on the reliability and accuracy of accounting information (Zogning, 2017). Because managers have more useful information

than others, earnings management may serve as the financial technique to help managers to alter the reported earnings in order to maximize their own interest or meet or beat financial analysts' forecast (Stringer, Didham, & Theivananthampillai, 2011; Othman & Zeghal, 2006; Beneish 2001). Prior research has found that accrual-based earnings management is an effective way to manipulate earnings (Marquardt and Wiedman 2005; McVay 2006). Jones Model was presented at the year of 1991. Dechow, Sloan and Sweeney (1995) present Modified Jones Model to measure the level of earnings management by means of evaluate total discretionary accruals (Peasnell, Pope & Young, 1999). Therefore, researchers have extensively used Modified Jones Model to calculate the abnormal earnings and then to proxy or measure earnings management.

Corporate governance serves as the mechanisms that will affect the manager's decisions, good corporate governance may reduce the opportunistic earnings management behavior, it will reduce the agency problems (Gompers, Ishii and Metrick, 2003). Corporate governance matters in the process of legislating regulations and supervising. In particular, board of directors is considered as the most key point in making sure that managers will not manipulate earnings, which will guarantee them to behave in the way that maximize the benefits of shareholders, the interest and welfare of shareholders. Therefore, in this paper, board size and frequency of meetings which are the board characteristics serve as the proxies of corporate governance, Modified Jones Model is used to calculate abnormal earnings, standing for earnings management.

The relationship between corporate governance and earnings management are extensively investigated by prior research. The differences are that they choose different proxies of corporate governance, such as board size, frequency of board meetings, CEO duality, independence of board of directors and so on. Most researchers claim the negative relationship between corporate governance and earnings management, which indicates that good corporate

governance can reduce earnings management behavior. Board size and frequency of meetings act as the proxies of corporate governance can reduce earnings management (Bajra and Cadez ,2017; Daghani, Zouhayer & Mbarek, 2016; Obigbemi et al.,201). While other researches argue the positive relationship or no significant relationship between corporate governance and earnings management (Andres-Alonso, Cruz and Remoro-Merino, 2006).

Due to the limitation of each research, it is reasonable that prior researchers cannot come into agreement. In the study, it is argued board size is negatively related to opportunistic earnings management behaviors. Besides, there is a negative relationship between frequency of meetings and earnings management behavior. Using the all the available sample firms listed in Chinese Stock Exchange during the period of 2012 to 2016, to be specific, the firms listed in Shanghai Stock Exchange and Shenzhen Stock Exchange.

All the data used to calculate variables and enter the model are obtained from China Stock Market Accounting Research (CSMAR). The Ordinary Linear Squares (OLS) Regression is applied to measure the relationship between the relationship between board size and earnings management and the relationship between frequency of board meetings and earnings management. The result supports one of the hypotheses, reject the other one. The empirical results show that in the context of China, the negative relationship exists between board size and earnings management, indicating that bigger board size can curb opportunistic earnings management behavior. Besides, there exists a positive relationship between frequency of meetings and earnings management, indicating more frequent the board meetings hold, the more earnings management. Moreover, the study expects that board size and frequency of meetings can be the fundamental determinants of the monitoring effect of board of directors, and they can act as the first, simple and inexpensive tools to spot earnings management.

The study helps in understanding how board size and frequency of meetings affect earnings management for firms with the firms that report a pattern of increasing earnings for consecutive

3 years. In several dimensions, the study contributes to the literatures. First, the existing empirical results mainly show the relationship of board size and earnings management, frequency of meetings and earnings management in developed economies, such as firms in the United States and firms in the United Kingdom. This study looks at the firms listed in China Stock Exchange. Chinese listed companies are not extensively investigated. Second, sample firms are those that report consecutive earnings increasing for 3 years, rare research choose the sample with such characteristic of board of directors as proxy for corporate governance for 3 consecutive earnings, and the data are obtained from the recent years. Third, as the board size and frequency of meetings are the two of the characteristics of board of directors, proxying corporate governance. Therefore, this paper contributes to the literatures that explore the relationship between corporate governance and earnings management by using multiple proxies. Fourth, the Modified Jones Model is employed to measure earnings management, which can contribute to the evaluation of effectiveness of Modified Jones Model.

## **II. LITERATURE REVIEW AND HYPOTHESIS**

Larcker et al. (2007) defines that when there is a separation between ownership and management, corporate governance will influence the decision making, good corporate governance will restrict the managers behave in the way that maximize manager's interest. Corporate governance matters to almost every aspect of firms, it is systematic regulations to guarantee the behavior of the decision makers in a firm (Armstrong et al., 2010). Good corporate governance can ensure the better use of corporate resources and avert the resource abuse. Corporate governance is an essential factor in guaranteeing the welfare of shareholders, making sure that managers will behave in the way that is beneficial for shareholders (Andreou et al., 2016). Corporate governance monitors the relationship between management and shareholders, ensuring the interests of shareholders and maximize the firm's value. Armstrong and Zimmerman (2010) indicate that the efficiency of corporate governance mechanism should

be evaluated and monitored, because the role of monitor that corporate governance acts in the aspect of restricting earnings management. In the mechanisms of corporate governance, board of directors are considered to be the important item (Degeorge et al., 1999). Fama and Jensen (1983) indicates that the Board of Directors will result in key effect in monitoring management. Corporate governance is essential part in control and reduce the opportunistic earnings management behavior. As the crucial part of listed firms, board of directors comprises a group of people for monitoring, supervise the management board of the firm, which guarantee the welfare and interest of shareholders and creditors. The characteristics of board of directors can proxy corporate governance, such as board size, CEO duality which means whether the CEO or the managers and the chairman of the board of directors are the same person, percentage of executive members and non-executive members in board of directors which indicate the independency of board of directors, frequency of meetings and so on (Bajra and Cadez, 2017; Jamaludin, Sanusi and Kamaluddin, 2015). Ni and Purda (2012) also concludes that some characteristics of Board of Directors such as board size and the percentage of executive and non-executive members can influence the effect of monitoring for opportunistic earnings management. Specifically, the board size represents the number of members on the board, which includes both executive and non-executive board members (Bajra and Cadez, 2017; Larcker et al. 2007). Besides, frequency of meetings is considered to affect the quality of earnings (Kankanamage, 2015). Adam (2003) and Garcia Lara et al. (2009) also suggest that the frequency of board meetings can measure the quality board of directors. Thus, board size and frequency of meetings are very important characteristics of board of directors, which can proxy corporate governance.

Healy and Wahlen (1998) argue that earnings management is to alter financial reporting to mislead the investors' decision making. Managers tend to use multiple techniques to maximize their own interest, meet or beat financial analysts' forecast. For example, shift the earnings or

expense for current period to the next accounting period (Chung, Firth and Kim,2002; DeGeorge et al. 1999). Some researchers argue that it is a reasonable behavior to guarantee the well-managed business (Mulford & Comiskey, 2002). While Bello (2011) considers earnings management as an unethical behavior. Rafik (2002) also comes to this conclusion, which indicate the unreasonableness of earnings management behavior. Tangjitprom (2013) concludes that earnings management is detrimental to the firm's value, therefore, causing damage to shareholder's interest and welfare. Basically speaking, there are two kinds of earnings management, the first one is real activities earnings management, which means manipulating financial data of transaction, mostly involve manipulations for cash transaction. Second is accrual-based earnings management, such as shift some accrual earnings or expense to next accounting period. For example, the change of depreciation method, delay the revenue recognition, manipulate the Research & Development (R&D) expense (Peasnell, Pope and Young, 2000; Roy- Chowdhury, 2006). Prior researches have suggested the analysis based on earnings management mainly focus on the discretionary accruals due to the gray spaces that accounting principles leave to managers. Besides, earnings management also include the upward and downward earnings management, the incentives for the upward earnings management and downward earnings management is different. The purpose of upward earnings management focus on maximizing managers' own interest, meeting or beating financial analysts' forecast and attract more investors. However, the incentive to do downward earnings management is to reduce the depress stock price for insiders' purchase of stock and reduce political cost (Phillips and Pincus, 2003). For the purpose of measuring the degree of earnings management. Jones (1991) has presented the model to calculate the abnormal earnings. Jones Model (1991) ignore the impact of the earnings management on operating income, which will affect the accuracy of the result. The modified Jones model was adopted by Dechow, Sloan and Sweeney (1995), which is considered to be the effective model to assess the extent of

earnings management. It is extensively used in the current empirical analysis (Richardson, 2000). Prior studies employed Modified Jones Model to obtain the residuals which represent the abnormal earnings for earnings management (Bajra & Cadez, 2017). Many researchers have evaluated the effectiveness of Modified Jones Model. It is shown that Modified Jones Model is effective in most developed economies. Chen (2010) believe that Modified Jones Model is considered to be the best accrual-based models to detect earnings management compared with other models. Modified Jones Model are more powerful when detecting revenue and bad debt manipulation (Peasnell, Pope & Young, 1999). However, it is not suitable in some context such as Korea, Bangladesh. While it is believed that Modified Jones Model is effective to measure discretionary accruals in the context of China Stock Exchange (Chen, 2010).

Effective mechanisms should be established to detect or deter earnings management (Lin et al. 2011; Chang, Dasgupta and Hikiry, 2009). Corporate governance is the key for the mechanism, prior researches has laid emphasis on corporate governance in the process of reducing opportunistic earnings management behavior (Engel, Hayes and Wang., 2010; Doyle, Ge and McVay, 2007). It is recommended to further explore the relationship between corporate governance and earnings management in order to guarantee the reduction of earnings management behavior and making sure the welfare and interests of shareholders and creditors (Bao & Lewellyn, 2017; Braswell & Daniels, 2017). Prior researchers have shown the relationship between the different characteristics of corporate governance and opportunistic earnings management behavior. Corporate governance comprises multiple aspects of firms, including board of directors, management level, audit committee. Some papers report that good corporate governance quality curb the opportunistic earnings management. The practices of earnings management may be reduced due to the improvements of the degree of corporate governance. The difference is that they choose different proxies of corporate governance and

focus on different countries. Young (2015) argues good corporate governance can reduce the agency problems that by the means of paralleling the interest of managers and shareholders, which means that shareholders and managers may have common goals. Bajra and Cadez (2017) find that firms with good quality of internal audit function and board quality will have a direct effect on reducing the earnings management behavior, Bao and Lewellyn (2017) holds the similar results. Mansor et al. (2013) reports that corporate governance mechanisms will curb earnings management activities in the context of Malaysian market. Also in US, corporate governance proxied by audit committee and board of directors can overcome the earnings management practices (Chtourou, 2001). Independent boards as the proxy of corporate governance intends to curb the earnings management behavior more effectively (Gonzales and Garcia-Meca, 2013; Klein, 2002). The different characteristics of board of directors can serve as the proxy of corporate governance, such as board size, CEO duality which means whether the CEO or managers of the firms and chairman of board of directors are the same person, percentage of executive members and non-executive members in the board of directors which can reflect the independence of board of directors. In prior research, Brochet and Gao (2004) find that less entrenched managers exhibit less earnings smoothing. Di Meo et al. (2017) come to this conclusion again. When CEO and the chairman in the board is the same person, less earnings management will be incurred. The prior empirical results show that the higher percentage of non-executive members in board or the more independent the board of directors are the lesser earnings management the firms can engage in, which reveals that the percentage of non-executive members in board is negatively related to earnings management, while the executive-members in board is positively related to earnings management (Cole, Daniel and Naveen, 2008). As for the board size, serving as the proxy of corporate governance, prior researchers have found negative relationship between board size and earnings management, they claim that bigger board size can curb the earnings management behaviors. The differences

are that they base on the different context. For example, in Jordan (Abbad et al, 2016), in Sri Lanka (Amer and Abdelkarim, 2010), in France (Daghsni, Zouhayer and Mbarek, 2016), in Nigerian (Obigbemi, Odianonsen and Ojeka, 2016), in the United States (Klein, 2002; Agrawal and Chadha, 2005), in the United Kingdom (Pope, Peasnell and Young, 1998), for cross-listed firms in the United States (Bajra and Cadez, 2017), both in developed and developing countries (Garcia-Meca and Sanchez, 2009). Laksmana, Tietz and Young (2012) points out the reason why bigger board size results in reduction of earnings management is that the bigger board size which means the larger number of board members would involve more expertise in different level, such as in financial and managerial level. It can guarantee the efficient utilization of information to provide the effective monitoring effect of board of directors. Bigger board size also means the higher level of disclosure of information, can better obtain the utilization's efficiency and effectiveness (Barako, Hancock and Izan, 2006). In the context of China, the bigger board size can reduce earnings management behavior of management based on the market in Hong Kong (Chin, Firth and Kim, 2006). For frequency of meetings, Vafeas (1999) claims that the more frequent board meetings hold, the better the board can fulfill the duties that behave in the way that maximize shareholder's interest. It also can solve the problems efficiently and effectively. Ebrahim (2004) also concludes that the frequency of board meetings is negatively related to earnings management behavior. Ronen & Yaari also indicates the more frequent board meetings can ensure the monitoring effect of corporate governance to opportunistic earnings management behavior of managers (Ronen & Yaari, 2008)

While some papers hold the opposite conclusion, Laux and Caskey (2016) conclude that a stronger reporting oversight leads to greater earnings management. Wimelda and Chandra (2018) shows that corporate governance is not significantly related to earnings management practices. By using the different proxies of corporate governance, such as audit committee size,

the proportion of independent commissioners, institutional ownership and managerial ownership. In some prior researches. There is no relationship between CEO duality and the level of earnings management (Chouaibi, Harres and Brahim , 2016). Jensen (1993) points out the smaller board size can work better than the bigger board size in the aspect of controlling earnings management. Ching, Firth and Rui (2006) also points out the positive relationship between board size and earnings management. Kao and Chen (2004) also imply the positive relationship between board size and earnings management due to the inefficient monitoring resulted in the large amount of board members. Some researchers conclude that there exists the optimal numbers of board members, so the relationship between board size and corporate governance is mixed, poor communication and coordination between board members incurred by bigger board size may give rise to the failure of reducing earnings management (Andres-Alonso, Cruz and Remoro-Merino,2006). As for frequency of board meetings, some researchers indicate that there is a positive relationship between frequency of board meetings and earnings management behavior (Obigbemi et al., 2016). However, Rauf et al.(2012) concludes that frequency of board meetings is insignificantly related to opportunistic earnings management. Besides, Gulzar and Wong (2011) also indicate the insignificant relationship between board size and earnings management in the context of China.

Although prior research cannot get in agreement with the relationship between board size and earnings management and the relationship between frequency of board meetings and earnings management, since each research has its own limitation, for example, the different control variables, the different time period, the different social context, the different industry, and the different proxies of earnings management and corporate governance, or they choose the different characteristics of board of directors. Given that, this study expects the negative relationship between board size and earnings management and the negative relationship between frequency of board meetings and earnings management.

**H1:** the bigger board size is expected to curb the earnings management behavior for the firms with increasing-earnings in China.

**H2:** the more frequent board meetings is expected to reduce the earnings management behavior for the firms with increasing-earnings in China.

### III. RESEARCH DESIGN

Based on Bajra and Cadez (2017), The following Ordinary Least Squares (OLS) regression model will be used to test the hypotheses:

$$EM_{i,t} = \beta_0 + \beta_1 BSIZE_{i,t} + \beta_2 BFRE_{i,t} + \beta_3 ROA_{i,t} + \beta_4 LEV_{i,t} + \beta_5 FCF_{i,t} + \beta_6 FSZ_{i,t} \quad (1)$$

Where *i* indicates the firm and *t* indicates the year. Consistent with the prior researches,  $BSIZE_{i,t}$  is the proxy for corporate governance, which is the independent variable, standing for the number of board members which include both non-executive members and executive members of firm *i* at the end of year *t*.  $BFRE_{i,t}$  is the other independent variable used to proxy corporate governance, representing the frequency of board meetings of firm *i* at the end of year *t*.  $EM_{i,t}$  proxies earnings management, which is the dependent variable, representing the abnormal earnings of firm *i* at the end of year *t*.

Other control variables that is suggested in prior research that will affect the earnings management behavior are included.  $ROA_{i,t}$  is the return on assets of firm *i* at the end of year *t* ( $ROA = \text{net income} / \text{average total assets}$ ).  $LEV_{i,t}$  is the leverage ratio of firm *i* at the end of year *t* ( $\text{Leverage ratio} = \text{average total assets} / \text{average total equities}$ ).  $FCF_{i,t}$  is the free cash flow of firm *i* at the end of year *t* ( $\text{free cash flow} = (\text{cash flow from operations} - \text{cash flow from investment}) / \text{average total assets}$ ).  $FSZ_{i,t}$  is the firm size of firm *i* at the end of year *t*, obtained by natural log of total assets. Return on assets will reflect the profitability of firms, indicate the long-term liquidity, measuring the firm's ability to generate earnings from the total assets. Leverage ratio indicates the long-term stability, which is solvency ability, measuring the firm's

ability to pay for debt and it can provide the safety margin to creditors. Free cash flow can evaluate the cash flow that is available to shareholders and creditors. The size effect brought by firm size is an essential and fundamental firm characteristics (Shen and Chih, 2007; Bajra and Cadez ,2017; Daghsni, Zouhayer & Mbarek, 2016; Hermiyetti & Manik, 2016; Obigbemi et al.,2016; Dang, Li and Yang, 2018). As for the effect of year and industry, they are also controlled in this model. Since the economic development and social context is different in different years, and the board size, level of earnings management, average return on assets, average leverage ratio, average free cash flow and average firm size varies for different industries.

The following Modified Jones Model presented by Dechow et al. (1995) is used to obtain the  $EM_{i,t}$  in the main model.

$$\frac{TACC_{it}}{TA_{it-1}} = \left(\frac{1}{TA_{it-1}}\right) + \left(\frac{\Delta REV_{it} - \Delta REC_{it}}{TA_{it-1}}\right) + \left(\frac{PPE_{it}}{TA_{it-1}}\right) + EM_{i,t} \quad (2)$$

Where i indicates the firm and t indicates the year.  $EM_{i,t}$  refers to degree of earnings management of firm i for the year t, it represents the residuals (abnormal earnings) of Modified Jones model.  $TACC_{it}$  is the total discretionary accruals;  $TA_{it-1}$  is the total assets of firm i at the beginning of year t;  $\Delta REV_{it}$  is the difference in revenues between the ending and beginning of year t of firm i;  $\Delta REC_{it}$  is the difference of accounts receivable between the ending and beginning of year t of firm i;  $PPE_{it}$  is the fixed assets between the ending and beginning of year t of firm i.

The component of total discretionary accrual for earnings is calculated by the following model:

$$TACC_{it} = NI_{i,t} - OCF_{i,t} \quad (3)$$

Where i indicates the firm and t indicates the year.  $TACC_{it}$  represents the total discretionary accruals of firm i for the year t.  $NI_{i,t}$  stands for net income of firm i for the year t.  $OCF_{i,t}$  is cash flows from operation of firm i for the year t.

#### IV. EMPIRICAL RESULTS

The samples in this study comprises all the available firms with pattern of reported increasing earnings for 3 consecutive years, the time period is from 2012 to 2016. The sample firms are listed in China Stock Exchange (Shanghai Stock Exchange and Shenzhen Stock Exchange). All the data used to calculate the variables and enter to each model are obtained from China Stock Market Accounting Research (CSMAR).

All the data was process by Microsoft Excel software to filter out the firms with the reported increasing earnings for 3 consecutive earnings that is range from 2012 to 2016. Eventually there are 2373 firms obtained, and they will enter the main Ordinary Linear Square (OLS) Regression model.

STATA software is used to run the Ordinary Linear Square (OLS) Regression models, no missing values are generated during the process of generating results, which indicates that data value exists for every observation. Modified Jones Model is used to calculate the EM. When construct the Modified Jones Model, the top 1% of the variable and bottom 1% of the variables that enter the model is winsorized, which can minimize the influence of the outlier in the sample data. The negative residuals calculated by Modified Jones Model are dropped before they enter the main model. Only the positive residuals are used in the main model, because positive abnormal earnings represent the upward earnings management which is done by managers to maximize their own interest, meet or beat financial analysts' forecast. While downward earnings management is considered to reduce stock price for insiders' purchasing of stock or reduce the political cost (Badertscher, Phillips and Pincus, 2009).

Table 1 presents the frequency of firms in different industries. In terms of the requirement of Modified Jones Model, all the sample firms are divided into six categories. According to the data given in the table, financial industry, public utilities industry, real estate industry, comprehensive industry, industrial complex and commercial industry involves 60,

505, 157, 69, 1452 and 150 firms respectively. There are 2373 firms in observations totally. Industrial complex accounts for the most percentage with 61.19%. Comprehensive industry accounts for the minimum share, occupying 2.91%. As for other industries, financial industry, public utilities industry, real estate industry, commercial industry accounts for 2.53%, 21.28%, 6.62%, 5.48% respectively.

Table 1: Tabulation of industry

industry	Freq.	Percent	Cum.
1	60	2.53	2.53
2	505	21.28	23.81
3	157	6.62	30.43
4	69	2.91	33.33
5	1452	61.19	94.52
6	130	5.48	100.00
Total	2373	100.00	

Note: 1- financial industry; 2-public utilities industry; 3-real estate industry, 4 comprehensive industry; 5-industrial complex; 6-commercial industry

Table 2 shows the descriptive statistics of variables in main Ordinary Linear Square (OLS) regression model, displaying the mean value, standard deviation, minimum value and maximum value of each variable. The dependent variable is EM. EM which denotes earnings management is calculated by Jones Modified Model (1995), representing the abnormal earnings. BSIZE is the independent variable, serving as the proxies of corporate governance, standing for board size. BFRE is the other independent variable used to proxy corporate governance, standing for frequency of board meetings. According to the data given in the table 2 below, totally there are 2373 observations. The mean value of board size (BSIZE) is 8.714, which indicates the average number of board members for both executive and non-executive members is approximately 9. Standard deviation of board size (BSIZE) is 1.759. The minimum amount is 4, maximum value is 20. The statistics of board size (BSIZE) is roughly consistent with Bajra and Cadez (2017), to be specific, the number of the board members for both executive and non-executive ranges from 4 to 22. Besides, for the other proxy of corporate

governance, the mean value of frequency of meetings (BFRE) is 10.642. Standard deviation is 4.484. The maximum value and the minimum value are 0 and 48 respectively. As for earnings management (EM), the mean value is 0.068, standard deviation is 0.07, minimum value is 0, and maximum value is 0.495. As for other control variables, including return on assets (ROA), leverage ratio (LEV), free cash flow (FCF) and firm size (FSZ), the mean value are 0.067, 2.103, 0.091 and 22.312 respectively; standard deviation are 0.047, 1.766, 0.13 and 1.4 respectively. Minimum values are -0.123, 0.357, -1.088 and 15.729 for return on assets (ROA), leverage ratio (LEV), free cash flow (FCF) and firm size (FSZ) respectively. Maximum values are 0.92, 18.994, 0.688 and 30.656 for return on assets (ROA), leverage ratio (LEV), free cash flow (FCF) and firm size (FSZ) respectively.

Table 2 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
EM	2373	.068	.07	0	.495
BSIZE	2373	8.714	1.759	4	20
BFRE	2373	10.642	4.484	0	48
ROA	2373	.067	.047	-.123	.92
LEV	2373	2.103	1.766	.357	18.994
FCF	2373	.091	.13	-1.088	.688
FSZ	2373	22.312	1.4	15.729	30.656

Note: EM: earnings management; BSIZE: board size; BFRE: frequency of board meetings; ROA: return on assets; LEV: leverage ratio; FCF: free cash flow; FSZ: firm size

Table 3 presents correlations between the independent variable—board size (BSIZE), frequency of meetings (BRFE) and dependent variable—earnings management (EM) in the main Ordinary Linear Square (OLS) regression model. Based on standard criteria, all the correlation value is less than 0.7, therefore, there is no serious multicollinearity problems incurred among the independent variables or the control variables, which means that the independent variable (BSIZE) in the regression model is not predicted by other control variables (including return on assets (ROA), leverage ratio (LEV), free cash flow (FCF) and firm size (FSZ)). According to the table, on the one hand, earnings management (EM) is negatively related to board size (BSIZE) with the coefficient of -0.0096, which indicates the

bigger board size, the lesser earnings management, and this conclusion is similar to prior researches (Ni and Purda ,2012; Bajra and Cadez ,2017), indicating that bigger board size can curb earnings management behavior. On the other hand, there exists a positive relationship between frequency of board meetings (BFRE) and earnings management (EM) with the coefficient of 0.140, indicating the more frequent of board meetings, the less earnings management behavior. As for other control variable, return on assets (ROA) is positively related to earnings management (the coefficient is 0.110), when return on assets (ROA) increases, earnings management behavior will increase; when leverage ratio (LEV) increases, earnings management behavior increases (the coefficient is 0.017), the relationship between leverage ratio(LEV) and earnings management (EM) is positive; there exists a negative relationship between free cash flow (FCF) and earnings management (EM) practices (the coefficient is -0.473), the higher free cash flow (FCF), the lesser opportunistic earnings management behavior (EM); when firm size (FSZ) increases, earnings management behavior (EM) will be decreased (the coefficient is -0.07), the relationship between firm size (FSZ) and earnings management (EM) is negative.

Table 3 Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) EM	1.000						
(2) BSIZE	-0.096	1.000					
(3) BFRE	0.140	-0.007	1.000				
(4) ROA	0.110	-0.080	-0.189	1.000			
(5) LEV	0.017	0.336	0.163	-0.262	1.000		
(6) FCF	-0.473	-0.033	-0.060	0.197	-0.234	1.000	
(7) FSZ	-0.070	0.366	0.207	-0.223	0.623	-0.055	1.000

Note: EM: earnings management; BSIZE: board size; BFRE: frequency of board meetings; ROA: return on assets; LEV: leverage ratio; FCF: free cash flow; FSZ: firm size

Table 4 presents the robust regression results of the main Ordinary Linear Square (OLS) regression model, robust regression is applied due to the less influence by the outlier of data in

samples. It shows that board size (BSIZE) is negatively related to earnings management (EM) (the coefficient is -4.807), the negative relationship between board size (BSIZE) and earnings management (EM) is statistically significant (P-value is 0.004), which means bigger board size can curb earnings management. Thus, supporting the hypothesis 1, it is consistent with prior researches (Ni and Purda, 2012; Bajra and Cadez, 2017; Daghsni, Zouhayer and Mbarek, 2016), there exists a negative relationship between board size and earnings management companies with bigger board size can curb the earnings management behavior. While this negative relationship between board size and earnings management is opposite Rauf et al. (2012)'s work, which claim board size is positively related to earnings management. The different social context may be the main reason, Rauf et al.'s work focuses on the firms in Malaysia, but this study focuses on the firms listed Chines Stock Exchange. Besides, the result is inconsistent with the research conducted by Kao and Chen (2004), which argues the positive relationship between board size and earnings management. There are some reasons may account for the different empirical results. This study drops the negative abnormal earnings to measure earnings management, while Kao and Chen measure earnings management by the using the absolute value of abnormal earnings. Furthermore, Kao and Chen focus only on the Taiwan listed firms.

However, frequency of board meetings (BFRE) is positively related to earnings management (the coefficient is 7.456), and the positive relationship is statistically significant (the P-value is 0.002). It shows the more frequent board meetings, the more opportunistic earnings management behavior will be done. Thus, it rejects the hypothesis 2. This result is consistent with the empirical results conducted by Obigbemi et al. (2016), which also concludes the positive relationship between frequency of board meetings and earnings management. While it is inconsistent with Hussaini (2018), which argues that the impact of frequency of board meetings to earnings management is negative and statistically significant.

However, Hussaini only use only 9 companies of food and beverage industries in Nigeria, which may result the different empirical results.

As for the effect of control variables on the main model are as follows. First, when return on assets (ROA) increases, earnings management increases, however, the positive relationship between return on assets (ROA) and earnings management (EM) is statistically insignificant (the coefficient is 10.231; P-value is 0.285); Second, the leverage ratio (LEV) is negatively related to earnings management, the negative relationship between leverage ratio (LEV) and earnings management (EM) is statistically significant (the coefficient is -4.807; P-value is -0.004); Third, lower free cash flow (FCF) will lead to higher earnings management (EM), the negative relationship between free cash flow (FCF) and earnings management(EM) is statistically significant (the coefficient is -0.276; P-value is -0.276); Fourth, firm size (FSZ) is negatively related to earnings management behavior, and the negative relationship between firm size(FSZ) and earnings management (EM) is statistically significant (the coefficient is -1.441; P-value is -0.002).

Besides, the result show that approximately 31% of the total samples that enter the model in this study (totally 2373 observations) can be explained by the hypothesis, which is that the relationship between board size and earnings management is negative, bigger board size can reduce opportunistic earnings management behavior. (R-square is 0.316; adjusted R-square is 0.311).

Table 4 Robustness Regression Result

VARIABLES	(1) EM
BSIZE	-0.003*** (-4.105)
BFRE	0.002*** (7.456)
ROA	0.310*** (5.662)
LEV	-0.003** (-2.250)
FCF	-0.277*** (-16.368)
FSZ	-0.003** (-2.215)
Constant	0.152*** (5.742)
Observations	2,373
R-squared	0.316
Year FE	YES
Industry FE	YES
Adjusted R-squared	0.311

Note: \*\*\*/\*\*\* indicate significance at the 10% / 5% / 1%.

EM: earnings management; BSIZE: board size; BFRE: frequency of board meetings; ROA: return on assets; LEV: leverage ratio; FCF: free cash flow; FSZ: firm size

When using only one independent variable to measure corporate governance, the empirical results remain similar.

Table 5 presents the robust regression results between board size (BSIZE) and earnings management (EM). According to the table below, there exists a negative relationship between board size (BSZ) and earnings management (EM) (coefficient is -4.105), the negative relationship is statistically significant (P-Value is -0.003). As for other control variables, ROA is positively and statistically related to earnings management. While there exists negative and positive relationships between leverage ratio and earnings management, free cash flow and earnings management and firms size and earnings management.

Table 5 Robustness Regression Result (board size)

VARIABLES	(1) EM
BSIZE	-0.003*** (-4.105)
ROA	0.310*** (5.662)
LEV	-0.003** (-2.250)
FCF	-0.277*** (-16.368)
FSZ	-0.003** (-2.215)
Constant	0.152*** (5.742)
Observations	2,373
R-squared	0.316
Year FE	YES
Industry FE	YES
Adjusted R-squared	0.311

Note: \*\*\*/\*\*\* indicate significance at the 10% / 5% / 1%.

EM: earnings management; BSIZE: board size; ROA: return on assets; LEV: leverage ratio; FCF: free cash flow; FSZ: firm size

Table 6 presents the robust regression results between frequency of board meetings (BFRE) and earnings management (EM). Based on the table below, frequency of board meetings (BFRE) is positively related to earnings management (EM) (the coefficient is 7.643), and the positive relationship is statistically significant (P-Value is 0.003). As for other control variables, ROA is positively and statistically related to earnings management. While there exists negative and positive relationships between leverage ratio and earnings management, free cash flow and earnings management and firms size and earnings management.

Table 6 Robustness Regression Result (Frequency of board meetings)

VARIABLES	(1) EM
BFRE	0.003*** (7.643)
ROA	0.312*** (5.749)
LEV	-0.003*** (-2.690)
FCF	-0.277*** (-16.417)
FSZ	-0.004*** (-3.512)
Constant	0.151*** (5.734)
Observations	2,373
R-squared	0.310
Year FE	YES
Industry FE	YES
Adjusted R-squared	0.306

Note: \*/\*\*/\*\* indicate significance at the 10% / 5% / 1%.

EM: earnings management; BFRE: frequency of board meetings; ROA: return on assets; LEV: leverage ratio; FCF: free cash flow; FSZ: firm size

## V. CONCLUSION

This study investigates the effect of board size, frequency of board meetings on earnings management behavior for the firms with a reported pattern of increasing earnings for 3 consecutive years, which ranges from 2012 to 2016. The study result shows that board size is negatively related to earnings management, and the negative relationship between board size and earnings management is statistically significant, which means that bigger board size can reduce opportunistic earnings management behaviors. However, there exists a positive relationship between frequency of board meetings and earnings management, the positive relationship is statistically significant. It implies that more frequent of board meetings, the more earnings opportunistic behavior done by managers. Besides, they indicate that board size and frequency of board meetings can be fundamental determinants of board of directors. Besides,

board size and frequency of board meetings can serve as the first, inexpensive and simple tools to detect earnings management.

There are some limitations of the study. First, due to the time limitation, this paper only uses two proxies of corporate governance—the characteristics of board of directors: board size and frequency of board meetings. Second, to evaluate the earnings management, this paper adopts only Modified Jones Model. Third, only four control variables which are return on assets, leverage ratio, free cash flow and firm size are considered in the main Ordinary Linear Square (OLS) regression model.

For further study, more other proxies of corporate governance can be used to measure the relationship between corporate governance and earnings management, such as other characteristics of board (such as CEO duality, the percentage of executive and non-executive members in board, board rotation and so on), audit committee (such as audit committee size), management board, regulators or policy makers and so on. More control variables can be used in the main model, such as return on equity, whether the firm is audited by Big 4 and so on. Besides, other model or technique can be employed to calculate the discretionary accruals, such as Jones Model, the Healy Model, the DeAngelo Model and the industry model. Because each model has its own limitation, the result of each model could be compared to guarantee the accuracy of the conclusion. And now researchers pay much attention to the accrual-based earning management, real activities also can be used to calculate the degree of earnings management. Moreover, the time period may be increased to guarantee the more reliable results, and emphasis should also be laid on non-listed firms. Furthermore, it can be suggested that within more social contexts, the research can be conducted to explore the relationship between corporate governance and earnings management, ranging from developed countries to developing countries.

## Appendix

Variable	Description
EM	Positive value of abnormal earnings Proxy of earnings management
BSIZE	Board size: Number of board of directors Proxy of corporate governance
BFRE	Frequency of board meetings Proxy of corporate governance
ROA	Return on asset: Calculated by net income divide total assets
LEV	Leverage: Calculated by total assets over total equity
FCF	Free cash flow: Calculated by the difference between operating cash flow and investing cash flow over total assets.
FSZ	Firm size: Calculated by the natural log of total assets

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