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Real earnings management through sales manipulation and firms' performance

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by

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ABSTRACT

The purpose of this study is to reveal the relationship between real earnings management through sales manipulation and firms' performance of Chinese A-listed companies. I analyze the abnormal level of operating cash flow to indicate real earnings management through sales manipulation. A fixed-effect panel data for firms from 1998 to 2016 is used for regressions. The results indicate that ROA has a significant negative relationship with real earnings management through sales manipulation. However, ROE does not have a significant relationship with sales manipulation due to the threshold regulation set by CSRC.

Keywords: real earnings management, sales manipulation, financial performance, Chinese A-listed companies.

JEL Classification: G3, M1, M4

I. INTRODUCTION

In the past few decades, with the development of the global economy, more and more companies have been established all around the world. In order to become competitive in the market, these companies are always trying to find ways to improve their performance. In the meanwhile, various researches have been conducted to study the factors that can influence a company's performance. Multiple factors that can influence a company's profitability have been found, which include firm size, firm age, board committee structure, corporate social responsibility and corporate innovation capability, etc. Among all of these factors, earning management is one of them that might influence firm performance. Earnings management is defined as the purposive intervention of the earnings reports to external audience (Schipper, 1989); it's generally classified into two types: accrual earnings management (AEM) and real earnings management (REM). My research focuses on real earnings management, specifically sales manipulation, and its association with firms' financial performance. On the one hand, earnings management has its undeniable positive significance. Earnings management within a reasonable range can reduce the business risk of enterprises. Since there is information asymmetry between managers and other stakeholders, such as owners, suppliers and creditors, that is, managers hold the real internal information of firms, earnings management can also be regarded as a tool for managers to pass internal information to other stakeholders (Holthausen and Leftwich, 1983). A reasonable range of earnings management can guarantee the daily operating activities be less interference. When firms encounter unexpected events, earnings management also gives managers a buffer space to protect their own interests and those of the firm as well as those of other stakeholders. On the other hand, when earnings management exceeds a reasonable range, accounting information will lose its fairness, reliability and comparability, thus misleading investors and affecting the function of optimal allocation of securities market resources. Earnings information is of great significance for investors,

creditors and other stakeholders to evaluate the future cash flow of enterprises, since Dechow (2002) discloses that earnings can better predict future cash flow than the current cash flow. Earnings management makes earnings information lose its basic reliability and seriously destroys the quality of accounting information. In addition, earnings management will also have a negative impact on the long-term interests of the firm. Earnings management will undermine investors' perception of the quality of earnings and thus lead to a decline in market value. McNichols and Stubben (2008) takes companies investigated by the SEC and sued by investors from 1978 to 2002 due to improper accounting practices as samples and finds that these companies were overinvesting during the earnings management period, and then the behavior of overinvesting disappeared after the discovery of earnings manipulation. Therefore, they came to the conclusion that earnings management not only affects external stakeholders, but also can influence the internal decisions of firms. The research of Hand (1989) shows that investors can identify the companies using LIFO during the period of price rise and they are not sensitive to the decline of reported earnings. However, other scholars hold a different point of view. They do not think that the market can identify the earnings management behavior of firms. Beneish (1997) selects companies that violated GAAP as samples for the study and concludes that those companies that did not comply with GAAP received significantly abnormal returns in the two years after the violation, which fully demonstrates that investors did not fully discover the earnings management behavior of these companies.

There had been numerous amount of studies on the topic of earnings management, most of which focus on accrual earnings management. I focus my study on the form of REM because of two reasons. First, previous studies mostly concentrate on AEM; REM didn't catch researchers' attention until Roychowdhury (2006). Schipper (1989) first suggests that the manipulation of real activities should be incorporated into the research framework of earnings management. Second, although researches on REM are fewer than researches on AEM,

managers actually prefer REM to AEM. The higher the degree of REM, the longer the time lag of auditing report. Because REM has its own concealment and flexibility and it is not easy to be identified, firms begin to do REM rather than AEM. Due to the impact of accounting standards, the regulatory environment and the improvement of the auditing level of firms, the scope for earnings management by manipulating accruals has decreased. REM is mainly controlled in operating activities and financing activities. There are five main methods of REM: sales manipulation, expense manipulation, production control, asset sales and stock repurchase. Sales manipulation is the form of REM which my study focus on, it refers to boosting sales to meet certain goals (Roychowdhury, 2004), examples include offering lower level of interest rate and cutting the price to accelerate the sales of the current year (Gunny, 2010).

Chinese stock market in Shanghai and Shenzhen are established in the 1990s, after the Chinese reform and opening up. Since most of the listed firms have a short history of listing, they are eager to raise capital and thus involved in earnings management. Chinese listed companies in the transition stage have long been faced a with serious imbalance of equity structure and weak supervision of the independent board of directors. Earnings management has positive and negative effects, however, in China, due to the abuse of earnings management by listed companies, its negative effects exceed its positive effects (Chen *et al.*, 2008). Earnings management has become one of the important reasons for the distortion of accounting information in China. Two categories of shares are traded in the Chinese stock market: A shares and B shares. A shares is a common stock issued by companies in China for domestic organizations, institutions or individuals to subscribe for and trade in RMB; B share is issued by Chinese domestic firms for foreign investors to subscribe for and trade in dollar. Chinese stock market is dominated by A shares from the aspect of market capitalization (Su and Fleisher, 1998). A-listed firms have more incentive to manage earnings for financing since preference for issuing bonds is not given to them by the government (Haw *et al.*, 2005). Thus, my study

is focused on A-listed firms other than B-listed. At present, there are few studies on the direct relationship between the life cycle of enterprises and earnings management in China, but there are more studies on the relationship between the life cycle of enterprises and earnings, profitability, accrual model, financial strategy, and financial management goals (Yu and Wu, 2012). Regulators tend to regulate firms based on accounting numbers (Liu and Lu, 2007). As Chinese Securities Regulatory Commission (CSRC) set tough rules for issuing and delisting, Chinese listed firms have more incentive to do earnings management, even local government are involved (Chen *et al.*, 2008). In 2007, China introduced the new Law of the PRC on Enterprise Income Tax, which uniformly levied 25% income tax on domestic and foreign-invested companies, and formally implemented it in 2008. Studies reveal that some companies that expected the income tax rate to rise implemented the real active earnings management to enlarge the profits of the year in 2007. Noronha *et al.* (2008) reveals public ownership companies are more likely to do earnings management for compensation, while Ren (2004) argues that state-owned firms have less motivation to management earnings for meeting the expectations. At present, in the financial reports of listed companies in China, the provisions for assets impairment which need to be taken have increased from 4 items to 8 items, which theoretically enhances the correlation of assets and it is conducive to improving the authenticity of assets. However, because the provision for assets impairment requires highly professional judgment of accountants and it is highly subjective, it has been used as a tool of earnings management by some listed companies. Chinese listed firms would be highly benefited since the information users are unsophisticated (Haw *et al.*, 2005). With the role of the securities market in the construction of market economy becoming more and more important, and its relationship with the people's economic life becoming closer, people pay more and more attention to the development of China's stock market, and they have higher and higher

requirements on the quality of accounting information, the issue of earnings management has increasingly become a promising academic research.

I investigate the association between REM through sales manipulation and firms' financial performance, specifically, ROA and ROE. The results reveal that after controlling for firm size, financial strength, growth, industry and year effect, ROA has a significant negative relationship with REM through sales manipulation. Next, I find ROE doesn't have a significant relationship with REM, which is unexpected. Referring to the threshold of ROE set by Chinese Securities Regulatory Commission, the result is explainable. Yu *et al.* (2006) reveals Chinese listed firms do earnings management to meet ROE thresholds. Thus, ROE is not significantly associated with REM since it is controlled by other measures.

My study makes a contribution to the literature on earnings management through sales manipulation in China. This research is important because it reveals the relationship between REM and ROA, ROE in Chinese A-listed firms, and it set up a good reference for future studies. China is the largest developing country, and its stock market attract various investors all around the world. Researches on Chinese stock market have meanings to the investors. In addition, the result suggests the ROE threshold has impact on firms' earnings management activities beyond expectation. The government might need to reconsider the merits and demerits of setting such a threshold. From the managers' point of view, they should be more discreet in doing sales manipulation considering its negative relationship with ROA.

In the following section of this paper, I will discuss, first, the definition and two types of earnings management including accrual earnings management and real earnings management. Second, the hypothesis development based on the effects of sales manipulation, the methods used to estimate the level of REM and the relationship between REM through sales manipulation and ROA, ROE. Third, the results and discussion, and finally the conclusion.

II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Numerous researches have provided evidence about managers engaging in earnings management to meet earnings goals, assuming it is feasible. The specific incentives to manage earnings including tax consideration, external financing, debt covenant, the regulatory process and capital markets. (Noronha *et al.*, 2008). Watts and Zimmerman (1986) predicts managers tend to do earnings management when the cost of managing earnings is lower than the benefit. Ducharme *et al.* (2003) discloses that managers manage earnings to overestimate reported earnings ahead of initial public offerings and seasonal public offerings to get more financing. Defined by Healy and Wahlen (1999) and Li (2019), earnings management is a method used by managers to deceive stakeholders about the company's true financial performance through business actions that differ from normal operations. The alteration of performance can be made by modifying transactions, including ending inventory and accounts payable, etc. Prior literatures have stated various cases of earnings management. Bruns and Merchant (1990) reveal managers do not treat doing earnings management as punishable behaviors. Perspective on earnings management varies, Holthausen and Leftwich (1983) hold the idea that managers manage earnings to present their own expectations on future cash flow. The opportunistic perception view earnings management as a technique to mislead investors (Noronha *et al.*, 2008). Previous literature on earnings management assume managers manage earnings to meet an accounting target such as analyst forecast while expecting the target data will not be affected by doing earnings management (Schipper, 1989), although this kind of behavior may reduce firm value. Since earnings management is difficult to detect, studies have generally used companies audited by the securities regulatory department as a surrogate for earnings management. Dechow *et al.* (1996) discloses that when the earnings management of overestimating earnings was made public, the stock price of the sample companies fell by an average of 9%. Feroz *et al.* (1991) also reveals that the stock price of companies accused by

the U.S. securities regulatory commission (SEC) of overvaluation of stock or accounts receivable fell by an average of 13% on the day they were accused. Ren (2012) discloses that earnings management does affect the investment efficiency of enterprises, and the higher the degree of earnings management, the lower the investment efficiency of enterprises in the future. Chinese firms are reported to manage earnings to avoid political costs (Noronha *et al.*, 2008). Political costs refer to that some firms are faced with strict control and monitoring by the government which is positively related to accounting data. Once the financial results are higher or lower than a certain limit, firms will receive severe political restrictions, which will affect firms' production and operation. To avoid the political costs, managers tend to reduce the reported income. In China, the corporate law strictly stipulates that enterprises must make net profits continuously in the past three years before applying for listing. In order to achieve the purpose, firms will adopt earnings management to obtain the listing qualification. At the same time, the financial statements after earnings management also help firms to obtain higher stock pricing. According to Lento and Yeung (2017), Chinese companies are required to keep the average Return on Equity over 6 percent during a three-year period; this regulation gives Chinese managers the incentive to manage earnings. The reason why earnings management has economic consequences is that firms choose different accounting policies to produce different accounting information, which leads to different benefit distribution results and investment decision-making behaviors, thus affecting the allocation efficiency and results of social resources (Wang, 2005). In the case of bonus plans for managers, for example, the most common plan is based on profitability. In the case of debt covenants between creditors and the company, financial ratios are usually specified so that the company's profitability is directly related to the likelihood of default. Therefore, the stakeholders of firms attach great importance to the formulation and selection of accounting policies. Markarian and Santalo (2014) studies the effect of product market competition on earnings management, and finds that the extent of

this effect is related to the visibility of the real activities of firms. The higher the visibility, the smaller the degree of earnings management; However, when the degree of visibility is lower, earnings management will be encouraged in a competitive market, and the fierce competition in the market will have a positive impact on earnings management. Jansen *et al.* (2012) divides earnings management into two forms: upward earnings management and downward earnings management, indicating managers do upward earnings management when operating margin rises and assets turnover drops and they do downward earnings management when operating margin drops and assets turnover rises. Jaggi and Lee (2002) the earnings management behaviors of the companies engaged in debt default or debt restructuring in 1989-1996, finds that if the company is facing temporary financial difficulties but basically the company is still in a good situation, the management will do upward earnings management, and when the company is facing serious financial difficulties which even leads to debt restructuring, the company will do downward earnings management to indicate that they are going to restructure their debt, which is good for them to negotiate with creditors.

Traditionally, accounting researches focus on two categories of earnings management: real earnings management (REM) and accruals earnings management (AEM) (Healy and Whalen, 1999; Schipper, 1989). Accruals earnings management refers to manage earnings by manipulation of accruals without direct cash flow outcomes (Roychowdhury, 2006). Dechow and Skinner (2000) argue that AEM is the behavior of enterprise managers to distort or cover up the real operating performance through the selection of accounting standards policies. It is done through the decision of the accounting method used instead of changing business activities; on the contrary, real earnings management refers to enhancing current earnings by the alteration of business activities (Gunny, 2010). Roychowdhury (2006) define real earnings management as a deviation from normal operating activities, with the manager's motivation of at least mislead some stakeholders, to make them believe that the process of normal operation

has realized certain goals of financial reporting. Shleifer *et al.* (1997) indicates the basic motivation for managers to manipulate earnings through accruals includes avoid dismissal and improving reputation. Among all the AEM activities, changing the depreciation methods is the most common way (Lyu *et al.*, 2014). Hashemi and Rabiee (2011) discloses that REM occurs before AEM. Compared with REM, AEM can be done after the end of a fiscal year (Gunny, 2010). Firms also write off huge assets to manage earnings. This situation usually occurs when the organizational structure of the firm changes. Firms write off huge assets and set future expenses in the current period. In this way, the earnings of each future period may rise, and future profits are guaranteed. If the company's net income is lower than the lower limit of the bonus specified by the bonus plan, managers will also write off huge assets in order to increase profits in the future to obtain high bonuses. According to China Accounting Standards for Business Enterprises (1992), a company should estimate whether its assets are impaired on the balance sheet date, and make corresponding provision for the impairment of assets. Since the amount of assets impairment provision needs to be determined according to subjective judgment and estimation, it leaves a lot of room for the company to implement earnings management. REM can be adopted in different types, it has an effect on both accruals and cash flows (Roychowdhury, 2004). Based on Fazeli and Rasouli (2011), corporates would reduce prices intentionally to promote sales for a while and raise annual earnings through inventory overproduction. Pharmaceutical companies are proved to involve in manipulating capital expenditures in order to meet earnings goals (Legoria, 2000). CEOs are found to raise short-term incomes by reducing research and development (R&D) expenses (Bushee, 1998). Bens *et al.* (2002) expose that managers repurchase stock to avoid the dilution of EPS by reducing expense on R&D. Hribar *et al.* (2006) also reveal firms consider stock repurchase as a good method of EPS management. Firms also decrease discretionary expense to increase margins and reduce reported COGS by overproduction (Roychowdhury, 2004), due to the

existence of fixed costs, when firms expand the production scale, the average cost of products will decline, which can improve the sales profit of products in a short term. Graham *et al.* (2005) reveals firms reduce capital investment intentionally to meet an accounting target. Fudenberg and Tirole (1995) discloses firms adjusting delivery schedules to smooth incomes. Both regulators and auditors cannot prevent firms from engaging in REM (Enomoto *et al.*, 2015).

REM were examined to influence on firm's performance more than AEM (Cohen and Zarowin, 2010). However, according to a survey conducted by Graham *et al.* (2005), 80 percent of managers tend to use REM instead of AEM. While AEM is more visible than REM, it is more difficult to detect REM than AEM (Kothari *et al.*, 2012). Ibrahim *et al.* (2011) points out that companies prefer REM to AEM because the latter is more likely to be sued. Managers engage in AEM to achieve private gains, which are the deprivation of the interests of external investors (such as minority shareholders and creditors), whose behavior, once discovered, is likely to be severely punished, such as dismissal. Zhao *et al.* (2012) also point out managers tend to management earnings for their private benefits. Therefore, the implementation of AEM may not only bring benefits to the managers, balancing cost and benefit of doing AEM become the important goal orientation of the managers' decision. In addition, corporates may not have enough flexibility for accruals management (Gunny, 2010). These factors are proved to be the reasons for choosing REM rather than AEM. With the promulgation of China's new accounting standards after 2007 and the continuous improvement of relevant legal systems, the implementation of AEM has become more difficult and the adjustment space has been reduced. Chinese firms are more likely to use REM to manage earnings in the IPO process. Thus, my study would mainly focus on the effect of REM on company's performance in China. Roychowdhury (2006) reveals that real earnings management might have a negative impact on firm value. For example, offering aggressive discounts on price to boost sales in the short term may result in customers' requirement of future discounts as well, bringing on the reduction of

future sales margin. At present, there are relatively few studies on the economic consequences of REM, and the research conclusions are both positive and negative. However, it is generally believed that REM is more about sacrificing the future business performance of the enterprise for the immediate benefits, that is, the real activity earnings management will damage the long-term performance of the company (Yu and Wu, 2012).

Several methods have been used to detect earnings management. McNichols and Wilson (1988) provides a practical discussion of these approaches. Jones (1991) and sets an approach to the detection of earnings management assuming that it is easy to determine the Non-Discretionary Accruals; it is widely used in numerous studies. Later, taking into account the influence of sales policies and credit conditions, firm performance, current net cash flow from operating activities and the past operating conditions of the firm, as well as the expected future level and the corresponding profits of intangible assets, the scholars successively propose The Modified Jones model, The Performance Matching Model and other models. Dechow *et al.* (1995) indicates that discretionary accruals estimated from Jones Models have a positive association with return on assets (ROA), while McNichols (2000) reveals these discretionary accruals from Jones Models have a positive association with long-term earnings growth. Pustynnick *et al.* (2017) considers the method to detect earnings management provided by Dechow and Dechev (2002) to be perfect.

Sales manipulation is used as a proxy of REM in my study. Gunny (2010) defines sales manipulation as managers' behavior to promote sales during the current period with the purpose of improving reported annual earnings. Roychowdhury (2006) discovers that managers use sales manipulation to avoid reporting the real state of corporates' business situations; corporates can accelerate earnings for the time being either by providing more permissive credits or by offering discounts on price. He also provides empirical measures to proxy sales manipulation.

Based on Cooper *et al.* (2008), there is a negative correlation between total asset growth and corporates' abnormal returns. Zang (2007) confirms that REM deviates from the normal production and operation practices of enterprises, which may affect the long-term competitive advantage of enterprises. Bushee (1998) indicates a negative relationship between institutional ownership and REM. Bens *et al.* (2002) find managing earnings resulting in EPS dilution. Gill *et al.* (2013) provide evidence that the stronger of earnings management, the more its adverse impact on firm's return on assets. Lenard and Alam (2009) reveal that companies engaged in earnings management has lower liquidity than average, while Person (2011) indicates that firms with lower liquidity are more likely to management earnings. Cohen and Zarowin (2010) discovers that companies' long term value might be reduced due to REM, and the negative impact of REM on firms' post seasoned equity offerings is more severe than AEM. A long line of literatures also indicates a relationship between earnings management and firm's performance (Gill *et al.*, 2013). Hence, the hypothesis of my study is formulated:

H. Firms' performance will be negatively affected if they were engaged in earnings management through sales manipulation.

III. METHODOLOGY

Correlational research design is applied in this study. The first step is to detect REM through sales manipulation and the next step is to explore the relationship between REM through sales manipulation and firm's performance.

Relationship between REM Through Sales Manipulation and Firm's Performance

Based on previous studies, I use Return on Equity (ROE) and Return on Assets (ROA) as indicators of firm's performance. Return on Equity (ROE) indicator is frequently used to assess

company's performance (Austin *et al.*, 2000). Givoly and Hayn (2000) use the ratio of operating cash flow to assets as the indicator of firms' performance. Other researches take Return on Assets as indicator as well (Gunny, 2010). Tabassum *et al.* (2015) illustrates there is a strong adverse impact on firms' ROE, ROA, PE and EPS ratio of firms doing REM through sales manipulation. Following the models used by Tabassum *et al.* (2015) and based on the hypothesis, the models are:

$$ROA_t = \alpha_0 + \alpha_1 REM_t + \alpha_2 LOGASSETS_t + \alpha_3 ZSCORE_t + \alpha_4 BTM_t + \alpha_5 ID + \alpha_6 Year + \varepsilon_{it} \quad (A)$$

$$ROE_t = \alpha_0 + \alpha_1 REM_t + \alpha_2 LOGASSETS_t + \alpha_3 ZSCORE_t + \alpha_4 BTM_t + \alpha_5 ID + \alpha_6 Year + \varepsilon_{it} \quad (B)$$

Model to Measure REM Through Sales Manipulation

Sales manipulation can lead to abnormal lower operating cash flow since it is done by offering discounts or more permissive credit terms. Thus, sales manipulation can be identified by measuring abnormal level of operating cash flow. To measure normal level of CFO, I use the following model proposed by Dechow *et al.* (1998).

$$\frac{CFO_{i,t}}{A_{i,t-1}} = \alpha_0 + \alpha_1 \left[\frac{1}{A_{i,t-1}} \right] + \alpha_2 \left[\frac{S_{i,t}}{A_{i,t-1}} \right] + \alpha_3 \left[\frac{\Delta S_{i,t}}{A_{i,t-1}} \right] + \varepsilon_{i,t} \quad (1)$$

CFO = Operating Cash Flow

$S_{i,t}$ = Sales during time t

$\Delta S_{i,t}$ = Sales during time t - Sales during time $t-1$

$A_{i,t-1}$ = Total assets at time $t-1$.

Using this model, I get the predicted CFO. The level of abnormal CFO can be attained by taking the residuals. Followed by Tabassum *et al.* (2015) and for convenience, residuals are

multiplied by -1 and named variable REM. Abnormal lower level of CFO is measured by variable REM. Higher value of REM represents higher value of REM through sales manipulation.

Description of Variables

There are several control variables to be considered in case of interference to the relationship: firm size, financial strength, growth, industry dummy and year dummy.

Denoted by LOGASSETS, firm size is defined as natural log of total assets in this study. Most of the researchers would take firm size as a control variable. According to Lee (2009), the absolute size of a firm is a key determinant of firm's profitability. In most of the researches on strategic management, firm size plays an essential role (Wang *et al*, 2007). Gunny (2005) and Tabassum *et al.* (2015) use natural logarithm of total assets to control firm size.

$$\text{LOGASSETS} = \text{natural logarithm of total assets}$$

Financial strength is proved to have a relationship with firms' performance. Jensen (1986) and Ghosh *et al.* (2000) argues that financial strength has a positive impact on firms' performance. Jermias (2007) also indicates that financial strength affect firms' performance. Followed by Tabassum *et al.* (2015), financial leverage is measured and defined by ZSCORE. ZSCORE is established on the financial data of the current year only. ZSCORE is defined as $3.3(\text{net income}/\text{total assets}) + 1.0(\text{sales}/\text{total assets}) + 1.4(\text{retained earnings}/\text{total assets}) + 1.2(\text{working capital}/\text{total assets}) + 0.6(\text{market value of equity}/\text{total liabilities})$.

$$\begin{aligned} \text{ZSCORE} = & 3.3 \times (\text{net income}/\text{total assets}) + 1.0 \times (\text{sales}/\text{total assets}) + 1.4 \times \\ & (\text{retained earnings}/\text{total assets}) + 1.2(\text{working capital}/\text{total assets}) \\ & + 0.6 \times (\text{market value of equity}/\text{total liabilities}). \end{aligned}$$

Growth is defined by book to market ratio and denoted by BTM. A long line of researches use growth as a control variable (Tabassum *et al.*, 2015). Chen *et al.* (2010) uses market to book ratio as a proxy of growth. Gschwandtner (2005) proposes that growth is associated with profit persistence. Previous researches indicate market to book ratio has a positive impact on firm's performance (Leggett *et al.*, 2010).

$$BTM = \frac{\text{Book value of equity}}{\text{Market value of equity}}$$

In this model, industry dummy and year dummy is used to control industry effect and year effect, respectively. According to Brown (1968), the removal of the dummy variables may cause the decrease of the coefficients of determination. Krishnan and Parsons (2007) includes industry dummy variables to control for industry-specific factors. Cho (1998) also includes industry dummy variables to control for industry effect. Industry dummy is denoted by ID and year dummy is denoted by Year.

IV. EMPIRICAL RESULT

In this study, two steps are involved: identifying REM through sales manipulation and exploration of the relationship between REM through sales manipulation and performance. The sample consists of all A-share firms from CSMAR covering the years from 1998 to 2016 excluding financial firms, resulting in 2839 firms in total.

Table 1 demonstrates year-wise percentage of REM through sales manipulation of Chinese A-share firms. Since the variable REM is measured by abnormal lower level of CFO multiplied by -1, REM with a positive value means the firm is engaged in sales manipulation. Each year, there are approximately 50% of the firms involve in sales manipulation. The result is

reasonable since Yu *et al.* (2006) also indicates that Chinese firms severely engaged in earnings management.

TABLE 1
Percentage of Sample Involved in Real Earnings Management through Sales Manipulation

Year	Real Earnings Manipulation through Sales Manipulation (in %)
1998	50
1999	49
2000	49
2001	51
2002	50
2003	51
2004	49
2005	50
2006	48
2007	46
2008	45
2009	53
2010	53
2011	49
2012	49
2013	51
2014	50
2015	50
2016	52

Table 2 shows the descriptive statistics of variables in this study. Total observation of REM, ROA, ROE is 30101. Three control variables have missing values since the data from CSMAR is incomplete, resulting in 29206 observation of BTM, 27738 observations of ZSCORE and 30098 observations of LOGASSETS.

REM is measured by residual of Model (1) multiplied by -1. Mean value of REM is $-2.43e-10$, standard deviation is 0.240. The minimum value of REM is -19.539 and Max value of REM is 11.398. P25, p50 and p75 of REM is -0.047, $2.3e-04$ and 0.046, respectively. Since REM represents abnormal lower level of operating cash flow multiplied by -1, the higher value of REM, the higher of REM through sales manipulation.

ROA is measured by net income divided by the mean of firm's last year and this year's total assets. Mean value of ROA is 0.034; standard deviation is 0.576. Minimum and maximum value of ROA is -64.819 and 64.755. P25, p50 and p75 of ROA is 0.011,0.035 and 0.067, respectively.

ROE is measured by net income divided by the mean of firm's last year and this year's total shareholders' equity. Minimum and maximum value of ROE is -32.579 and 1389.551, respectively. Mean value of ROE is 0.115, which is higher than the 6% threshold I mention above, and standard deviation is 8.159. P25, p50 and p75 of ROE is 0.024, 0.070 and 0.121, respectively.

For three control variables, mean value of BTM, ZSCORE and LOGASSETS is 0.632, 3.353, 21.630, respectively. The standard deviation of BTM, ZSCORE and LOGASSETS is 0.241,146.891 and 1.316, which suggest that ZSCORE has a high level of dispersion.

TABLE 2
Descriptive Statistics

	Obs	Mean	S. D	Min	Max	p25	p50	p75
REM	30101	-2.43e-10	0.240	-19.539	11.398	-0.047	2.3e-04	0.046
ROA	30101	0.034	0.576	-64.819	64.755	0.011	0.035	0.067
ROE	30101	0.115	8.159	-32.579	1389.551	0.024	0.070	0.121
BTM	29262	0.632	0.241	-6.8e-04	6.546	0.451	0.647	0.825
ZSCORE	27738	3.353	146.891	-17274.540	11458.49	1.289	2.276	4.082
LOGASSETS	30098	21.630	1.316	10.842	28.511	20.773	21.498	22.333

Table 3 and 4 show correlations among all the variables. The result indicates that ROA is strongly and negatively correlated to REM, it's negatively correlated to BTM but the relationship is not significant at 0.05 level, and it's positively correlated to ZSCORE and LOGASSETS, significant at 0.05 level. However, ROE is only significantly correlated to BTM,

this might be explained by the threshold regulation, which is discussed in the results of model (A) and (B).

TABLE 3
Correlation Matrix Model I

	ROA	REM	BTM	ZSCORE	LOGASSETS
ROA	1.0000				
REM	-0.0157*	1.0000			
BTM	-0.0014	0.0500*	1.0000		
ZSCORE	0.6400*	-0.0025	-0.0055	1.0000	
LOGASSETS	0.0280*	0.0133*	0.4089*	0.0368*	1.0000

Notes: *Correlation is significant at the 0.05 level

TABLE 4
Correlation Matrix Model II

	ROE	REM	BTM	ZSCORE	LOGASSETS
ROE	1.0000				
REM	-0.0009	1.0000			
BTM	-0.0006*	0.0500*	1.0000		
ZSCORE	0.0032	-0.0025	-0.0055	1.0000	
LOGASSETS	-0.0031	0.0133*	0.4089*	0.0368*	1.0000

Notes: *Correlation is significant at the 0.05 level

TABLE 5.
Results of the Variance Inflation Test

Variable	VIF	1/VIF
REM	1.20	0.835
BTM	1.20	0.836
ZSCORE	1.00	0.998
LOGASSETS	1.00	0.998
Mean VIF	1.10	

Table 5 indicates the results of the Variance Inflation Test, the VIF of REM, BTM, ZSCORE and LOGASSETS is 1.20, 1.20, 1.00, 1.00, respectively. The mean VIF is 1.10, all the variables have VIF much lower than the benchmark 5.00, approving that there is no problem of multicollinearity. Thus, the regression models are conducted.

TABLE 6
Results of Model (A) & (B)

VARIABLES	(1) ROA	(2) ROE
REM	-0.042*** (-3.700)	-0.091 (-1.610)
LOGASSETS	0.031*** (2.896)	0.011 (0.345)
ZSCORE	0.002* (1.731)	0.000 (0.873)
BTM	-0.093*** (-4.165)	-0.465** (-2.463)
Constant	-0.518** (-2.548)	0.056 (0.090)
Observations	27,738	27,738
R-squared	0.418	0.002
Year FE	YES	YES
Industry FE	YES	YES
Adj. R-sq	0.417	0.000196

Table 6 shows results of model (A) and (B), the former investigates the relationship between REM through sales manipulation and ROA; the latter investigates the relationship between REM through sales manipulation and ROE, both are controlled by three variables: BTM, ZSCORE and LOGASSETS. Total observations are both 27738; year effect and industry effect are also controlled. The result of model (A) shows the coefficient of REM on ROA is -0.042 and significant at 0.01 level ($p=0.000$), which means REM through sales manipulation has an extremely strong negative association with firms' ROA and 1 unit deduction in operating cash flow would result in 0.042-unit deduction in ROA. R square and adjusted r square of model (A) is 0.418 and 0.417, which are both high. The result of model (B) shows the

coefficient of REM on ROE is -0.091 and p value is 0.705, meanings the relationship between REM and ROE is not significant.

Given the Chinese regulations on ROE, the result is reasonable. Chinese listed firms are required to exceed certain ROE to have the rights of issuing additional shares, before 1999 the threshold was 10% and after 1999 the threshold became 6%; firms are proved to do earnings management pervasively to meet this threshold (Yu *et al.*, 2006). Chen *et al.* (2008) illustrates that local government would assist or sometimes even control listed firms doing earnings management to meet the threshold. The local government generally adopts the following methods: directly providing financial subsidies to the listed companies; granting tax rebates or tax reductions to the listed companies; making use of commercial banks to reduce the interest of the listed companies. Since this study only explores the relationship between REM through sales manipulation and ROE, it's explainable that the relationship is not significant because firms are much likely to do other types of earnings management to make sure ROE meet the threshold. Failure of meeting the threshold may result in delisting. Lyu *et al.* (2014) points out managers tend to use multiple strategies simultaneously. Haw *et al.* (2005) reveals that Chinese firms would sell profitable short-term securities in order to meet the ROE threshold. ROE will not be strongly affect by sales manipulation because it is controlled by other methods.

V. CONCLUSIONS

In this paper, I investigate the relationship between real earnings management through sales manipulation and firms' financial performance. I use the model developed by Roychowdhury (2006) to estimate the abnormal level of operating cash flows and to proxy REM. The result reveals that half of the Chinses A-listed firms are involved in REM through sales manipulation. The study uses ROA and ROE as indicators of firms' financial performance. Findings shows that REM through sales manipulation has significant negative

association with ROA but no significant association with ROE. Given China's regulation on ROE threshold, the result indicates that these firms are doing other types of earnings management to meet the threshold. This study is important because it use all the available data of Chinese A-listed firms covering the period of 1998-2016 and reveals the relationship between REM through sales manipulation and ROA, ROE, which previous studies on Chinese public firms didn't do. The findings on the relationship between sales manipulation and ROE is unexpected but valuable, suggesting the managers are taking measures to control ROE.

The study is limited by only using abnormal lower level of operating cash flow to measure sales manipulation, without taking other types of real earnings management into consideration. In addition, there are only two indicators of firms' performance in this study; adding more indicators of firm's performance might improve the result. Furthermore, future studies should try to investigate the earnings management activities that managers do to improve the ROE.

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