Real Earnings Management Through Sales Manipulation and Firm Performance: Evidence from China

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Abstract
The purpose of this study is to reveal the relationship between real earnings management through sales manipulation and firm performance in Chinese A-listed companies. We analyze abnormal operating cash flows to identify real earnings management through sales manipulation. Fixed-effect panel data from 1998 to 2016 are used for the 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 because of the Chinese Securities Regulatory Commission's (CSRC) threshold regulation. This study reveals the relationship between REM and ROA and ROE in Chinese A-listed firms, and creates a good reference for future studies. China is the largest developing country, and its stock market attracts investors from around the world.
Keywords: real earnings management, sales manipulation, financial performance, Chinese A-listed companies.

I. INTRODUCTION
In recent decades, with the development of the global economy, increasing numbers of companies have been established worldwide. To be competitive, these companies continually seek to improve their performance. Various studies examine the factors that influence a company's performance and in particular profitability, such as firm size, firm age, board committee structure, corporate social responsibility, corporate innovation capability. Of these factors, earnings management is one that might influence firm performance. Earnings management is defined as the purposive intervention in earnings reports for external audiences (Schipper, 1989) and is generally classified into two types: accrual earnings management (AEM) and real earnings management (REM). This study focuses on REM, specifically sales manipulation, and its association with firms' financial performance. Earnings management has undeniable positive significance. Earnings management within a reasonable range can reduce business risk. As there is information asymmetry between managers and other stakeholders, such as owners, suppliers and creditors, managers hold the real internal information of firms; therefore, earnings management can be a tool for managers to pass internal information to other stakeholders (Holthausen and Leftwich, 1983). Earnings management within a reasonable range can guarantee less interference in daily operating activities. When firms encounter

unexpected events, earnings management gives managers a buffer to protect their own interests and those of the firm and other stakeholders. However, when earnings management exceeds a reasonable range, accounting information loses its fairness, reliability and comparability, thus misleading investors and affecting the optimal allocation of securities market resources.

Earnings information is of great significance for investors, creditors and other stakeholders in evaluating the future cash flow of enterprises, based on Dechow's (2002) finding that earnings better predict future cash flow than current cash flow. Earnings management strips earnings information of its basic reliability and seriously damages the quality of accounting information. In addition, earnings management negatively affects the long-term interests of the firm. Earnings management undermines investors' perception of the quality of earnings and thus leads to a decline in market value. McNichols and Stubben (2008) take companies investigated by the Securities and Exchange Commission (SEC) or sued by investors from 1978 to 2002 due to improper accounting practices as their sample and find that these companies were overinvested during the earnings management period, and that the overinvestment then disappeared after the earnings manipulation was discovered. Therefore, they conclude that earnings management not only affects external stakeholders but also influences firms' internal decisions. Hand (1989) shows that investors can identify companies using LIFO (last in, first out) during a period of increasing prices and that they are not sensitive to a decline in reported earnings. However, other scholars hold a different view. They do not think that the market can identify the earnings management behavior of firms. Beneish (1997) selects companies that violated GAAP as a study sample and concludes that such companies had significantly abnormal returns in the two years after the violation, demonstrating that investors did not fully discover the earnings management behavior.

There are numerous studies on the topic of earnings management, most of which focus on AEM. This study focuses on REM for two reasons. First, previous studies mostly concentrate on AEM; REM did not capture researchers' attention until Roychowdhury (2006), although Schipper (1989) first suggested that the manipulation of real activities should be incorporated into the research framework of earnings management. Second, although there are fewer studies on REM than on AEM, managers actually prefer REM to AEM. The higher the degree of REM, the longer the time lag before an auditing report. As REM is inherently concealed, flexible and not easily identified, firms engage in REM more than in AEM. Because of strengthened accounting standards, the regulatory environment and improved auditing, the scope for earnings management by accruals manipulation has decreased.REM is mainly conducted through operating and financing activities. There are five main methods of REM: sales manipulation, expense manipulation, production control, asset sales and stock repurchase. This study focuses on sales manipulation, which is the boosting of sales to meet goals (Roychowdhury, 2004). Examples of REM include offering lower interest rates and cutting prices to accelerate current year sales (Gunny, 2010).

The Chinese stock markets in Shanghai and Shenzhen were established in the 1990s, after the Chinese reform and opening up. As most listed firms have a short history of listing, they are eager to raise capital and thus engage in earnings management.

Chinese listed companies in the transition stage have long faced a serious imbalance of equity structure and weak supervision by independent boards of directors. Earnings management has both positive and negative effects; however, in China, because of earnings management abuses by listed companies, the negative exceeds the positive (Chen *et al.*, 2008). Earnings management has become an important cause of distorted accounting information in China. Two categories of shares are traded in Chinese stock markets: A shares and B shares. A shares are common stock issued by Chinese companies for domestic investors to purchase and trade in RMB. B shares are issued by Chinese domestic firms for foreign investors to purchase and trade in USD. Based on market capitalization, the Chinese stock market is dominated by A shares (Su and Fleisher, 1998). A-listed firms have more incentive to manage their earnings for financing purposes because the government has not authorized them to issue bonds (Haw*et al.*, 2005). Thus, our study focuses on A-listed firms.

Currently, there are few studies on the direct relationship between the life cycle of enterprises and earnings management in China, but many studies on the relationship between enterprises' life cycle and earnings, profitability, accrual models, financial strategy, and financial management goals (Yu and Wu, 2012). Regulators regulate firms based on accounting numbers (Liu and Lu, 2007).As the Chinese Securities Regulatory Commission (CSRC)has tough rules for issuing and delisting, Chinese listed firms have more incentive to engage in earnings management, and even local governments are involved (Chen *et al.*, 2008). In 2007, China introduced the new Law of the PRC on Enterprise Income Tax that uniformly levies a 25% income tax on domestic and foreign companies; it was formally implemented in 2008. Studies reveal that some companies that expected the income tax rate increase implemented active REM to enlarge their profits in 2007. Noronha *et al.* (2008) show that publicly owned companies are more likely to engage in earnings management for compensation, whereas Ren (2004) argues that state-owned firms have less motivation to manage earnings to meet expectations. Currently, in the financial reports of listed companies in China, provisions for asset impairment to be taken have increased from four to eight items, which theoretically enhances the correlation of assets to their market value, improving their authenticity. However, provisions for asset impairment require the professional judgment of accountants; therefore, they are highly subjective and are used as a tool for earnings management by some listed companies. Chinese listed firms benefit from investors' lack of sophistication (Haw*et al.*, 2005).Given the essential role of the securities market in the market economy and its relationship with the people's economic life becoming closer, its development is receiving increasing attention, and better quality accounting information is being required. Thus, earnings management has increasingly become a promising focus of academic research.

We investigate the association between REM through sales manipulation and firms' financial performance, specifically, return on assets (ROA) and return on equity (ROE). The results reveal that after controlling for firm size, financial strength, growth, industry and year effects, ROA has a significant negative relationship with REM through sales manipulation. Next, we find ROE does not have a significant relationship with REM, which is unexpected. Referring to the threshold of ROE set by the CSRC, this result is explainable. Yu*et al.* (2006) reveals that Chinese listed firms engage in earnings management to meet ROE thresholds. Thus, ROE is not significantly associated with REM because it is controlled through other measures.

This study contributes to the literature on earnings management through sales manipulation in Chinese listed firms. It reveals the relationship between REM and ROA and ROE in Chinese A-listed firms, and creates a good reference for future studies. China is the largest developing country, and its stock market attracts investors from around the world. Research on the Chinese stock market has value for investors. In addition, the results suggest that the ROE threshold affects firms' earnings management activities more than expected. The government might need to reconsider the merits and demerits of the threshold. Managers should also be more judicious about sales manipulation considering its negative relationship with ROA.

The remainder of this paper proceeds as follows. In Section II, we discuss the definition and two types of earnings management: AEM and REM. Then, we develop our hypothesis based on the effects of sales manipulation. In Section III, we discuss the methods used to estimate REM and its relationship through sales manipulation with ROA and ROE. In Section IV, we report and discuss the results, and finally in Section V, we present our conclusions.

II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Many studies provide evidence of managers engaging in earnings management to meet earnings goals. Specific incentives for managing earnings include tax considerations, external financing, debt covenants, the regulatory process and capital markets. (Noronha *et al.*, 2008).Watts and Zimmerman (1986) find that managers engage in earnings management when the costs of doing so are less than the benefits. Ducharme *et al.* (2003) disclose that managers manage earnings to overestimate reported earnings ahead of initial and seasonal public offerings to increase financing. As defined by Healy and Wahlen (1999) and Li (2019), earnings management is a method managers use to deceive stakeholders about a company's true financial performance through business actions that differ from normal operations. Such alterations can be made by modifying transactions, such as ending inventory and accounts payable. Previous studies identify numerous cases of earnings management. Bruns and Merchant (1990) reveal that managers do not treat earnings management as a punishable behavior. Perspectives on earnings management vary; Holthausen and Leftwich (1983) suppose that managers manage earnings to present their expectations for future cash flows. The opportunistic perspective views earnings management as a technique to mislead investors (Noronha *et al.*, 2008).

Previous studies on earnings management assume that managers manage earnings to meet accounting targets, such as analyst forecasts, expecting the target data to be unaffected by the earnings management (Schipper, 1989), although this behavior may reduce firm value. Because earnings management is difficult to detect, studies generally use audits by securities regulators as a surrogate for earnings management. Dechow *et al.* (1996) discloses that when earnings management resulting in overestimated earnings were made public, the stock prices of the companies fell by an average of 9%. In addition, Feroz *et al.* (1991) reveal that the stock prices of companies accused by the U.S. SEC of overvaluation of inventory or accounts receivable fell by an average of 13% on the day they were accused. Ren (2012) discloses that earnings management affects the investment efficiency of enterprises, and the greater the earnings management, the less the investment efficiency of the enterprise in the future.

Chinese firms reportedly manage earnings to avoid political costs (Noronha *et al.*, 2008). "Political costs" refers to firms facing strict control and monitoring by the government based on accounting data. If financial results exceed certain limits, firms are subject to severe political restrictions that affect their production and operations. To avoid such political costs, managers tend to reduce firms' reported income. In China, corporate law strictly stipulates that enterprises must show a net profit for three consecutive years before applying for listing. To achieve this, firms use earnings management. In addition, financial statements after such earnings management help firms obtain higher stock pricing. According to Lento and Yeung (2017), Chinese companies are required to average 6% ROE over a three-year period; this regulation gives Chinese managers the incentive to manage earnings. Earnings management has economic consequences because firms choose different accounting policies to produce different accounting results. That affects benefit distribution and investment decision-making behavior, thus affecting the allocation efficiency of social resources (Wang, 2005). For example, most bonus plans for managers are based on profitability. In the case of debt covenants between creditors and companies, financial ratios are usually specified so that the company's profitability is directly related to the likelihood of default. Therefore, firm stakeholders attach great importance to the formulation and selection of accounting policies.

Markarian and Santalo (2014) study the effect of product market competition on earnings management and find that the extent of the effect is related to the visibility of firms' real activities. The more visible a firm's activities, the less earnings management it engages in. However, when there is less visibility, a competitive market encourages earnings management, and fierce market competition positively affects earnings management. Jansen *et al.* (2012) divide earnings management into two forms: upward earnings management and downward earnings management. Managers engage in upward earnings management when operating margins rise and asset turnover drops, and they engage in downward earnings management when operating margins drop and asset turnover rises. Jaggi and Lee (2002) examine the earnings management behavior of companies in debt default or debt restructuring during 1989-1996.They find that when a company faces temporary financial difficulties but is basically still in good condition, management engages in upward earnings management. When a company faces serious financial difficulties that could lead to debt restructuring, downward earnings management, which is better for negotiations with creditors, indicates that they plan to restructure their debt.

Traditionally, accounting studies focus on two categories of earnings management: REM and AEM (Healy and Whalen, 1999; Schipper, 1989). AEM is the manipulation of earnings through accruals without direct cash flow outcomes (Roychowdhury, 2006).Dechow and Skinner (2000) argue that enterprise managers use AEM to distort or cover up real operating performance through the selection of accounting standards and policies. Thus, AEM is achieved through the choice of accounting method rather than through altering business activities. In contrast, REM refers to enhancing current earnings through the alteration of business activities (Gunny, 2010).Roychowdhury (2006) defines REM as a deviation from normal operating activities with the motivation to mislead at least some stakeholders to believe that normal operations have achieved certain financial goals.

Shleifer *et al.* (1997) indicate that the basic motivations for managers to manipulate earnings through accruals include avoiding dismissal and improving their reputation. Among AEM activities, changing depreciation methods is the most common (Lyu *et al.*, 2014). Hashemi and Rabiee (2011) disclose that REM occurs before AEM. Compared with REM, AEM can only be done after the end of a fiscal year (Gunny, 2010). Firms also write off assets to manage earnings. This usually occurs when the organizational structure of a firm changes. Firms write off assets and move future expenses to the current period. In this way, future earnings rise, and future profits are guaranteed. If a company's net income is below the lower limit specified by its bonus plan, managers write off assets to increase profits and obtain their 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 provisions for the impairment of assets. Because determining the degree of asset impairment and the provisions required are subjective estimations, there is plenty of room for a company to implement earnings management. REM can be adopted in different ways, affecting both accruals and cash flows (Roychowdhury, 2004). Based on Fazeli and Rasouli (2011), companies reduce prices intentionally to promote sales for a period and raise annual earnings through overproduction. Pharmaceutical companies manipulate capital expenditure to meet earnings goals (Legoria, 2000).CEOs raise short-term income by reducing research and development (R&D) expenses (Bushee, 1998). Bens *et al.* (2002) show that managers repurchase stock to avoid the dilution of EPS caused by reduced R&D expense. Hribar *et al.* (2006) also show that firms consider stock repurchasing to be a good method of EPS management. Firms also decrease discretionary expenses to increase margins and reduce reported COGS through overproduction (Roychowdhury, 2004). Because of fixed costs, when firms expand their production scale, the average product cost declines, improving sales profit in the short term. Graham *et al.* (2005) reveal that firms reduce capital investment intentionally to meet accounting targets. Fudenberg and Tirole (1995) disclose that firms adjust delivery schedules to smooth income. Neither regulators nor auditors prevent firms from engaging in REM (Enomoto *et al.*, 2015).

REM influences a firm's performance more than AEM (Cohen and Zarowin, 2010). However, according to a survey by Graham *et al.* (2005), 80%of managers use REM instead of AEM. AEM is more visible than REM, and it is more difficult to detect REM than AEM (Kothari *et al.*, 2012). Ibraham *et al.* (2011) point out that companies prefer REM to AEM because the latter is more likely to result in a lawsuit. Managers engage in AEM to achieve private gain, which harms the interests of external investors (such as minority shareholders and creditors), and once such behavior is discovered, it is likely to be severely punished, possibly including dismissal. Zhao *et al.* (2012) also point out that managers tend to engage in earnings management for private benefits. Therefore, AEM may not only benefit managers but balancing its costs and benefits becomes an important factor in managers' decisions. In addition, companies may not have enough flexibility for accruals management (Gunny, 2010). Therefore, managers choose REM rather than AEM.

With the promulgation of China's new accounting standards after 2007 and the continuous improvement of the legal system, AEM has become more difficult and there is less room for such adjustments. Chinese firms are more likely to use REM in

the IPO process. Thus, this study focuses on the effect of REM on the performance of companies listed in China. Roychowdhury (2006) reveals that REM might have a negative effect on firm value. For example, aggressive price discounts to boost sales in the short term may result in customers requiring future discounts, reducing future sales margins. Currently, there are relatively few studies on the economic consequences of REM, and their conclusions are both positive and negative. However, it is generally believed that REM sacrifices future business performance for immediate benefits, that is, REM damages the long-term performance of a company (Yu and Wu, 2012).

Several methods have been used to detect earnings management. McNichols and Wilson (1988) provide a practical discussion of these approaches. Jones (1991) establishes an approach for the detection of earnings management based on the assumption that it is easy to determine non-discretionary accruals, and this method is widely used. Considering the influence of sales policies and credit conditions, firm performance, current net cash flow from operating activities and firms' past operating conditions, as well as the expected future level and corresponding profits of intangible assets, later 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 ROA, and McNichols (2000) reveals such discretionary accruals have a positive association with long-term earnings growth. Pustylnick *et al.* (2017) consider the method for detecting earnings management by Dechow and Dechev (2002) to be perfect.

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

According to Cooper *et al.* (2008), there is a negative correlation between total asset growth and abnormal returns. Zang (2007) confirms that REM deviates from the normal production and operation practices of enterprises, which may affect their long-term competitive advantage. Bushee (1998) indicates a negative relationship between institutional ownership and REM. Bens *et al.* (2002) find that managing earnings results in EPS dilution. Gill *et al.* (2013) provide evidence that the greater the earnings management, the greater its adverse effect on ROA. Lenard and Alam (2009) reveal that companies engaged in earnings management have less liquidity than average, and Person (2011) indicates that firms with less liquidity are more likely to manage earnings. Cohen and Zarowin (2010) discover that a company's long-term value might be reduced because of REM, and the negative effect of REM on firms' seasoned equity offerings is more severe than with AEM. A long line of the literature also indicates a relationship between earnings management and firm performance (Gill *et al.*, 2013). Hence, the hypothesis of our study is formulated as follows:

H. Firm performance is negatively affected by 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 performance.

Relationship between REM through Sales Manipulation and Firm Performance

Based on previous studies, we use ROE and ROA as indicators of firm performance. ROE is frequently used to assess a company's performance (Austin *et al.*, 2000). Givoly and Hayn (2000) use the ratio of operating cash flow to assets as an indicator of firms' performance. Other studies also use ROA as an indicator (Gunny, 2010). Tabassum *et al.* (2015) illustrate a strong adverse effect on the ROE, ROA, PE and EPS ratios of firms engaging in REM through sales manipulation. Following the models used by Tabassum *et al.* (2015) and based on our hypothesis, we use the following models:

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

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

Model to Measure REM through Sales Manipulation

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

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

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, we get normal CFO. Abnormal CFO is attained by taking the residuals. Following Tabassum *et al.*(2015)and for convenience, residuals are multiplied by -1 and labeled as *REM*. Abnormally low CFO is measured by *REM*. Higher values of *REM* represent greater REM through sales manipulation.

Variable Descriptions

Several control variables are considered that may interfere in the relationship we are investigating: firm size, financial strength, growth and industry and year dummies. Denoted by *LOGASSETS*, firm size is defined as the natural log of total assets. Most researchers use firm size as a control variable. According to Lee (2009), the absolute

size of a firm is a key determinant of its profitability. In most studies on strategic management, firm size plays an essential role (Wang *et al.*, 2007). Gunny (2005) and Tabassum *et al.* (2015) use the natural logarithm of total assets to control for firm size.

LOGASSETS = natural logarithm of total assets

Financial strength is proved to have a relationship with firm performance. Jensen (1986) and Ghosh *et al.* (2000) argue that financial strength has a positive effect on firm performance. Jermias (2007) also indicates that financial strength affects firm performance. Following Tabassum *et al.* (2015), financial leverage is measured and defined as *ZSCORE*. *ZSCORE* is based on the current year's financial data. *ZSCORE* is defined as 3.3(net income/total assets) + 1.0(sales/total assets) + 1.4(retained earnings/total assets) + 1.2(working capital/total assets) + 0.6(market value of equity/total liabilities).

ZSCORE = 3.3 × (net income/total assets) + 1.0 × (sales/total assets) + 1.4 × (retained earnings/total assets) + 1.2× (working capital/total assets) + 0.6 × (market value of equity/total liabilities).

Growth is defined as the book to market ratio and denoted by *BTM*. Many studies use growth as a control variable (Tabassum *et al.*, 2015). Chen *et al.* (2010) use the market to book ratio as a proxy for growth. Gschwandtner (2005) proposes that growth is associated with profit persistence. Previous studies indicate that the market to book ratio has a positive effect on firm performance (Leggett *et al.*, 2010).

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

In our model, industry and year dummies are used to control industry effects and year effects. According to Brown (1968), the removal of dummy variables may decrease the coefficients of determination. Krishnan and Parsons (2007) include industry dummy variables to control for industry-specific factors. Cho (1998) also includes industry dummy variables to control for industry effects. The industry dummy is denoted by *ID*, and the year dummy is denoted by *Year*.

IV. EMPIRICAL RESULTS

This study has two steps: identifying REM through sales manipulation and exploring the relationship between REM through sales manipulation and performance. The sample includes all A-share firms in the CSMAR database from 1998 to 2016 excluding financial firms, resulting in 2,839 firms.

Table 1 demonstrates the year-wise percentage of REM through sales manipulation by Chinese A-share firms. Because *REM* is measured as abnormally low levels of CFO multiplied by -1, positive values of *REM* mean a firm engaged in sales manipulation. Each year, approximately 50% of firms engage in sales manipulation. This result is reasonable as Yu *et al.* (2006) also find that many Chinese firms engage 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 the variables. The total number of observations of *REM*, *ROA* and *ROE* is 30,101. Three control variables have missing values because the data from CSMAR are incomplete, resulting in 29,206 observations of *BTM*, 27,738 observations of *ZSCORE* and 30,098 observations of *LOGASSETS*.

REM is measured by the residual of Model (1) multiplied by -1. The mean value of *REM* is -2.43e-10, and its standard deviation is 0.240. The minimum value of *REM* is -19.539, and its maximum value is 11.398. The p25, p50 and p75 values of *REM* are -0.047, 2.3e-04 and 0.046, respectively. Because *REM* represents abnormally low levels of operating cash flow multiplied by -1, the higher the value of *REM*, the greater the REM through sales manipulation.

ROA is measured by net income divided by the mean of last year's and this year's total assets. The mean value of *ROA* is 0.034; its standard deviation is 0.576. The minimum and maximum values of *ROA* are -64.819 and 64.755. The p25, p50 and p75 values of *ROA* are 0.011, 0.035 and 0.067, respectively.

ROE is measured by net income divided by the mean of last year's and this year's total shareholders' equity. The minimum and maximum values of *ROE* are -32.579 and 1389.551, respectively. The mean value of *ROE* is 0.115, which is higher than the 6% threshold mentioned previously, and its standard deviation is 8.159.The p25, p50 and p75 values of ROE are 0.024, 0.070 and 0.121, respectively.

For the control variables, the mean values of *BTM*, *ZSCORE* and *LOGASSETS* are 0.632, 3.353and 21.630, respectively. The standard deviations of *BTM*, *ZSCORE* and *LOGASSETS* are 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

Tables 3 and 4 show the correlations among the variables. The results indicate that *ROA* is strongly and negatively correlated with *REM*. It is also negatively correlated with *BTM*, but the relationship is not significant at the 0.05 level.*ROA* is positively correlated with *ZSCORE* and *LOGASSETS*, significant at 0.05 level. However, *ROE* is only significantly correlated with *BTM*, which might be explained by the threshold regulation, which is discussed in the results of models (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 shows the results of the variance inflation test, the variance inflation factor (VIF) of *REM, BTM, ZSCORE* and *LOGASSETS* is 1.20, 1.20, 1.00and 1.00, respectively. The mean VIF is 1.10, and all of the variables have a VIF much lower than the benchmark 5.00, proving that multicollinearity is not a problem. Thus, the regression models are conducted.

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

VARIABLES	(1) ROA	(2) ROE
REM	-0.042***	-0.091
	(-3.700)	(-1.610)
LOGASSETS	0.031***	0.011
	(2.896)	(0.345)
ZSCORE	0.002*	0.000
	(1.731)	(0.873)
BTM	-0.093***	-0.465**
	(-4.165)	(-2.463)
Constant	-0.518**	0.056
	(-2.548)	(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 the results of models (A) and (B).Model (A) investigates the relationship between REM through sales manipulation and ROA; model (B) investigates the relationship between REM through sales manipulation and ROE. Both models are controlled by three variables: *BTM*, *ZSCORE* and *LOGASSETS*. The total number of observations is 27,738; year and industry effects are also controlled. The results of model (A) show that the coefficient of *REM* on *ROA* is -0.042 and significant at the 0.01 level ($p = 0.000$), which means that REM through sales manipulation has an extremely strong negative association with firms' ROA and that a 1-unit reduction in operating cash flow would result in a 0.042-unit reduction in ROA.For model (A), the R^2 and adjusted R^2 are 0.418 and 0.417, respectively, which are both high. The results of model (B) show that the coefficient of *REM* on *ROE* is -0.091 and its p-value is 0.705, meaning that the relationship between REM and ROE is not significant.

Given the Chinese regulations regarding ROE, this result is reasonable. Chinese listed firms must exceed a certain ROE to have the right to issue additional shares. Before 1999, the threshold was 10%, and after 1999,it became 6%.Firms are known to pervasively use earnings management to meet this threshold (Yu *et al.*, 2006). Chen *et al.* (2008) illustrate that local governments assist or sometimes even control earnings management by local firms to meet the required threshold. Local governments generally adopt the following methods to do so: directly providing financial subsidies, granting tax rebates or tax reductions and using commercial banks to reduce the interest rate of listed companies. As this study only explores the relationship between REM through sales manipulation and ROE, it is understandable

that the relationship is not significant because firms are more likely to engage in other types of earnings management to ensure that ROE meets the required threshold. Failure to meet the threshold may result in delisting. Lyu *et al.* (2014) point out that managers tend to use multiple strategies simultaneously. Haw *et al.* (2005) reveal that Chinese firms sell profitable short-term securities to meet the ROE threshold. ROE is not strongly affected by sales manipulation because it is controlled through other methods.

V. CONCLUSIONS

In this study, we investigate the relationship between REM through sales manipulation and firms' financial performance. We use the model developed by Roychowdhury (2006) to estimate abnormal operating cash flows to proxy REM. The results reveal that half of all Chinese A-listed firms engage in REM through sales manipulation. This study uses ROA and ROE as indicators of firms' financial performance. The findings show that REM through sales manipulation has a significant negative association with ROA but no significant association with ROE. Given China's regulatory ROE threshold, the results indicate that firms use other types of earnings management to meet the threshold.

This study is important because it uses all of the available data of Chinese A-listed firms covering the 1998-2016 period and reveals the relationship between REM through sales manipulation and ROA and ROE, which previous studies on Chinese publicly listed firms have not done. The finding for the relationship between REM through sales manipulation and ROE is unexpected but valuable, as it suggests that managers are taking measures to control ROE. This study is limited in that it only uses abnormally low levels of operating cash flows to measure sales manipulation. In addition, there are only two indicators of firm performance; more indicators of firm performance might improve the results. Furthermore, future studies could investigate the earnings management activities managers use to improve firms' ROE.

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