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# The Empirical Study of Earnings Management Based on Chinese Listed Companies

**ZHANG Yang**

## **Abstract**

Earnings management that is used to manipulate book earnings to an expected level has been one of the controversial topics in the accounting field. It occurs two ways: one is accrued earnings management and the other is real earnings management. Many studies show that these two methods have a reciprocal relationship based on the costs of using them. The accrued earnings management method is preferred when the accounting standards are flexible and the real earnings management is preferred when the legal systems are good. This paper verifies its findings by drawing a link to the new accounting standard announced by China on January 1<sup>st</sup>, 2007. It uses the Jones Model and Margin ROE in empirical analysis and selects Chinese listed manufacturing companies as samples.

**Key words:** Accrued earnings management, Real earnings management, New accounting standard, Jones Model, Margin ROE

## **1. Introduction**

### **1.1 Definition and ways**

Earnings management has been one of the hottest issues in the accounting field so far. It refers to the fact that management manipulates book earnings to an expected level through accounting means or actual behaviors for personal interests. (Schipper, 1989).

According to the definition, there are two ways of earnings management: one is accrued earnings management and the other is real earnings management. Generally, accrued earnings management is used in booking adjustments due to flexible accounting standards. It has low costs and is easy to manipulate. Real earnings management involves real trades and businesses, which requires the coordination with other departments. So it has higher costs and is more difficult to manipulate. (Cohen and Zarowin, 2008b).

### **1.2 Background**

Since these two methods have different costs, it is easy to draw a conclusion that they have a reciprocal relationship, meaning if the cost of applying accrued earnings management is higher than the one of real earnings management then companies will definitely choose the real earnings management..

Then a significant issue arose whose effects impact the application of these two methods. The issue affected the costs of using them. Some researchers found that accounting standards and legal systems play an important role. For example, accrued earnings management is preferred when the accounting standards are relatively flexible (Wang et al.2006). On the other hand, real earnings management is preferred when the legal systems are considered effective (Leuz et al, 2003).

### **1.3 Objective**

On January 1<sup>st</sup>, 2007, China published a new accounting standard, with the intention of converging Chinese GAAP with International Financial Reporting Standards (IFRS). As IFRS is a principle-oriented standard with fewer specific rules and cases, it suggests that the accounting standards have become much more flexible since 2007. If the studies and findings mentioned above are correct, then a conclusion could be made that the accrued earnings should increase and simultaneously the real earnings decrease since 2007.

Thus, I use the data of China listed companies from 2003 to 2009 and conduct the empirical analysis to see whether the studies conducted previously are still valid. If so, then investors and regulators should pay more attention to accrued earnings management rather than real earnings management, which will save time, money, and effort. Also, some effective measures should be taken to deal with the increasing accrual earnings management.

### **1.4 Innovation**

As the topic is relatively new, it lacks empirical analysis. This paper seeks to provide some empirical study based on Chinese listed companies by applying both econometric and accounting knowledge.

## 2. Literature Review

- (1) The study of earnings management has a long history. The early ones include Fabozzi (1978), Bernstein and Siegel (1979). Later researchers used the cash flow to discuss earnings management. For example, in Lore.K.S and G.L.Willinger.A (1996), a cash predicting model involved short-term accrual items, historical cash flow and earnings to analyze earnings management.
- (2) In China, Sun Zheng and Wang Yuetang (1999), Chen Xiaoyue , Xiaoxing and Guo Xiaoyan (2000) have found that Chinese listed companies have high motives to manage earnings for the allotments of shares. They further found that companies prefer to use accrual earnings managements when the ROE is between 5%-6%, which is called margin ROE. This paper uses the definition developed in the paper by Zheng and Wang.to conduct its study.
- (3) Most studies focus on the accrued earnings management. Such as, Healy (1985), DeAngelo (1986), Jones (1991), Dechow et al. (1995), Kotharie et al. (2005). In Jones model, it predicted discretionary accruals by calculating the changes in operating revenue, fixed assets, total assets and the difference between net profits with operating cash flows. The Jones model will also be utilized in this study.
- (4) Early studies on real earnings management are Dechow and Sloan (1991), Zarowin et al (2005), Seybert (2009) . They primarily focus on the reduction of research and development expenses. Roychowdhury (2006) established a real earnings management model considering the operating cash flows, products costs, and selling and administrative expenses.
- (5) Recent studies discuss the relationship between accrued earnings management and real earnings management. For example, Zang (2007) found that companies make use of them alternately to manipulate earnings. Cohen et al. (2008a) found that the accrued earnings management has decreased and simultaneously the real earnings management gone up after Sarbanes Oxley Act, which indicated that good legal systems have a positive effect on reducing accrued earnings but at the expense of aggravating real earnings management.

## 3. Research Method and Data Analysis

### 3.1 Data source

In order to study whether there have been a change in accrued earnings management since the adoption of the new accounting standards on January 1, 2007 I studied 240 China listed companies by using the annual reports from January 1, 2003 to January 1, 2010. All data are obtained from CSMAR and the analytical software utilized is E-view 7.0.

### 3.2 Sample selection

- (1) I choose manufacturing companies as my study sample because it is a traditional and typical industry in China and its performance is relatively stable. Also, the amount of observation data is sufficiently large;
- (2) The outstanding stocks in China are A, B and H. As the study is based on Chinese new accounting standards, B and H stocks have been rejected. Although, there is Shanghai Stock Exchange and Shenzhen Stock Exchange, little differences are between them, for both of them are managed by China Securities Regulatory Commission;
- (3) Companies that listed after January 2003 and/or delisted before January 1<sup>st</sup>, 2010

were rejected.

- (4) Companies that have negative net assets were rejected as negative net assets are meaningless when using return on equity (ROE);
- (5) Companies whose ROE is more than 30% were rejected in order to eliminate the impact of abnormal values;
- (6) Companies whose materials or information are missing or not fully disclosed were rejected.

Through the process above, a sample of 240 A-stock manufacturing companies both in Shenzhen and Shanghai Stock Exchange were selected.

### 3.3 Making Regression

#### 3.3.1 Jones Model

As mentioned before, Jones model is a very classical model in studying accrual earnings management.

- (1)  $TA_t / A_{t-1} = a_1 * (1 / A_{t-1}) + a_2 * (\Delta REV_t / A_{t-1}) + a_3 * (PPE_t / A_{t-1}) + \epsilon_t$
- (2)  $NDA_t = a_1 * (1 / A_{t-1}) + a_2 * (\Delta REV_t / A_{t-1}) + a_3 * (PPE_t / A_{t-1})$
- (3)  $DA_t = TA_t / A_{t-1} - NDA_t$

$$TA_t = NT_t - CFO_t$$

$NT_t$  is the net profit in year  $t$ ;  $CFO_t$  is the operating cash flow in year  $t$ ;

$A_{t-1}$  is the total asset value at the end of year  $t-1$ ;

$\Delta REV_t$  is the difference of operating revenue in year  $t$  and year  $t-1$

$PPE_t$  is the fixed assets at the end of year  $t$

$NDA_t$  is the non-discretionary accruals

$DA_t$  is the discretionary accruals

#### 3.3.2 Results of Jones Model

Reviewing from table 1, we get P value (Prob. 0.0127, 0.0417, 0.0000), these data are appropriate.

### 3.4 Empirical results

As mentioned before the most typically manipulated earnings have margin ROE values between 5% and 6%. Thus, dummy variables must be used to show ROE. If the accrued earnings management exists, there should be a relationship between discretionary accruals and ROE.

$$DA_{i,t} = \alpha + \beta ROE_{it} + \epsilon_{it}$$

This paper links the equation above with the new accounting standards and adopted since January 1 2007, as the dividing point to see whether the accrual earnings management increase after 2007.

Reviewing Table 2, P value (Prob. 0.0000, 0.9242) and Table 3, P value (0.0000, 0.1981). As both P values are above 10%, I cannot reject the null hypothesis, which means there are no substantial changes in accrued earnings management after 2007. The results are surprising because it goes against the studies mentioned above.

## 4. Conclusions and Improvements

The results show that flexible accounting standards do not increase the accrued earnings management in China. This may be due to the fact that the new accounting standards are compulsory to use in China.

From a comparative perspective, the P value in table 3 is smaller than the one in table 2. There are some tiny increases in accrued earnings management after the launch of new accounting standards. However, the change is not statistically significant.

Besides the accrued earnings managements, there are real earnings managements, and I could further study the change by using the real earnings management. This further study would involve the manipulation of operating cash flow, product costs, and selling and administrative expenses.

The result is somewhat unsatisfactory as I merely conduct the OLS. Since it is a panel data study, further operations are needed.

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## Appendix 2: Original E-views Output

**Table 1 Detecting the Jones Model**

Dependent Variable: TAA  
 Method: Panel Least Squares  
 Date: 12/10/11 Time: 09:12  
 Sample: 2004 2009  
 Periods included: 6  
 Cross-sections included: 273  
 Total panel (unbalanced) observations: 1637

Variable	Coefficient	Std. Error	t-Statistic	Prob.
A	-7931644.	3177534.	-2.496163	0.0127
REV	0.013133	0.006445	2.037822	0.0417
PPE	-0.044889	0.006951	-6.457874	0.0000
R-squared	0.010129	Mean dependent var		-0.020939
Adjusted R-squared	0.008918	S.D. dependent var		0.097127
S.E. of regression	0.096693	Akaike info criterion		-1.832723
Sum squared resid	15.27710	Schwarz criterion		-1.822826
Log likelihood	1503.084	Hannan-Quinn criter.		-1.829052
Durbin-Watson stat	1.824755			

**Table 2 Relationship between discretionary accruals and ROE before the introduction of new accounting standards**

Dependent Variable: DAT  
 Method: Panel Least Squares  
 Date: 12/10/11 Time: 09:18  
 Sample: 2004 2006  
 Periods included: 3

Cross-sections included: 273  
Total panel (balanced) observations: 819

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.173498	0.011826	-14.67041	0.0000
ROE	0.004699	0.049368	0.095179	0.9242
R-squared	0.000011	Mean dependent var	-0.173228	
Adjusted R-squared	-0.001213	S.D. dependent var	0.328395	
S.E. of regression	0.328594	Akaike info criterion	0.614452	
Sum squared resid	88.21485	Schwarz criterion	0.625949	
Log likelihood	-249.6182	Hannan-Quinn criter.	0.618864	
F-statistic	0.009059	Durbin-Watson stat	1.967389	
Prob(F-statistic)	0.924196			

**Table 3 Relationship between discretionary accruals and ROE after the introduction of new accounting standards**

Dependent Variable: DAT  
Method: Panel Least Squares  
Date: 12/10/11 Time: 09:30  
Sample: 2007 2009  
Periods included: 3  
Cross-sections included: 273  
Total panel (unbalanced) observations: 818

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.128679	0.018189	-7.074757	0.0000
ROE	0.090352	0.070144	-1.288083	0.1981
R-squared	0.002029	Mean dependent var	-0.134754	
Adjusted R-squared	0.000806	S.D. dependent var	0.502614	
S.E. of regression	0.502411	Akaike info criterion	1.463646	
Sum squared resid	205.9723	Schwarz criterion	1.475155	
Log likelihood	-596.6313	Hannan-Quinn criter.	1.468063	
F-statistic	1.659159	Durbin-Watson stat	1.497547	
Prob(F-statistic)	0.198082			