Allowance for Doubtful Accounts and Earning Management: An Empirical Study of Chinese Listed Companies

Christos N. Christodoulou-Volos[1]

Abstract

This empirical study aims to reveal that companies conduct earnings management by the fuzzy zone of allowance policy. It investigates the interrelationship between the allowance for doubtful accounts and earning management with the use of three hypotheses. The data used are from Chinese listed companies for the period 2008-2017. The Chinese accounting standards have experienced two major changes and because of that, this study is divided into two parts. After the modification of 2014, the allowance for doubtful accounts and the reversal faced a huge difference comparing with previous rules. The findings prove that before 2014, Chinese listed companies manipulated the earnings with the help of allowance for doubtful accounts. However, afterwards the possibility of earning management deteriorates, showing the effectiveness of the fair value accounting standard improvement. Furthermore, return on equity shows less significant relationship with allowance for doubtful accounts. Although a previous study considers debt contracts enhances the negative relationship with allowance for doubtful accounts, the findings show instead a positive one. This simply means that high leverage ratio creates higher allowance for doubtful accounts.

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[1] Department of Economics and Business, Neapolis University Pafos.

1. Introduction

After the financial crisis of 2008, global accounting institutions began to researching on the improvement of the rationality and comparability of accounting information. Meanwhile, assets impairment as a significant accounting information has become more and more important with the expansion of the assets. There is uncertainty about the expected future recoverable amount of accounts receivable, and in the disclosure of relevant information, the most core link is the provision for bad debt, write-off and turn back. Earnings management was originally put forward as an inevitable and acceptable situation, but managers went beyond the limits of the acceptable extend and blurred the boundary of accounting standards, from managing earnings to manipulating earnings, and even accounting fraud and financial fraud. Earning management has become a normal method which is conducted to modify companies' profits resulting in lower quality of financial reports.

In recent years, many enterprises begin to use allowance for doubtful accounts to carry on the earnings management, causing accounting information quality to decline. Therefore, studying accounting policy of allowance for doubtful accounts is helpful to establish accounting rules conducive to the healthy development of companies, reduce the distortion of accounting information, and improve the quality of accounting information. It is also helpful for investors to obtain accurate accounting information, so that investors can correctly judge the quality of companies, and investment decision-making ability of investors will be improved accordingly.

The International Accounting Standards Board (IASB) requires companies to make test of the impairment of accounts receivable, for the single item of receivables with significant amount, the test shall be conducted separately. If there is objective evidence that the impairment is issued, the impairment loss shall be recognized and the provision for bad debts shall be made according to the difference between the present value of its future cash flow and its book value. For the single significant receivables without impairment after separate side test, they can be divided into groups according to similar credit risk characteristics, and then the impairment loss can be calculated and withdrawn according to a certain percentage of the amounts of these groups. Besides that, standards allow reversal of allowance for doubtful accounts if signals of impairments are disappeared. These rules, on one hand, provide flexibility to companies which can reverse allowance when is needed. On the other, although allowance for bad debts is aging, there is still a part that needs to be tested separately, which often accounts for a larger proportion of accounts receivable.

For years, the Chinese government is pursuing the balance between the international accounting standards rules and Chinese specific characteristics. In 2007, the Chinese government published the new accounting standards. The new standard abolishes the provisions that the impairment provision of long-term assets can be reversed which has been accrued during the previous period. It clearly stipulates

that once the impairment of long-term assets is determined, it shall not be reversed in the subsequent accounting period. This rule restrains the bad phenomenon of enterprises using asset impairment reserve to carry out earnings management, and more embodies the principle of prudence.

In 2014, the Chinese government issued a number of revised versions of the standards, in order to meet the needs of the rapidly growing economy and further standardize accounting measurement methods. These new standards are basically in line with the international financial reporting standards (Peaple, 2018). In the modification of 2014, the Chinese government detailed introduced the concept of fair value which had been used in many accounting standards before. Receivables as a kind of financial assets should be followed the rule of fair value standard. In this newly modified standard, the measurement of fair value is clearly regulated with the concept of orderly trading. The value of assets depends on the fair value of assets at that time point. Fair and voluntary market transaction value is preferred for the fair value, followed by the present value estimation of future cash flows. Since there is usually no active market for accounts receivable, its value can only be based on estimating the present value of future cash flows. Therefore, clear regulation in the fair value accounting standard will help accountants predict the rational value of account receivables.

This study investigates the relationship between policy of allowance for doubtful accounts of companies and earning management inclination, as a mean of earnings management to meet these benchmarks. It only focuses on allowance for doubtful assets from account receivables, which is a kind of short-term asset.

The remainder of the paper is organized as follows. Section 2 reviews the relevant literature and develops the hypotheses. Section 3 describes the research methods and the selection of the sample. Section 4 presents the analysis of results and Section 5 concludes the study.

2. Previous Research and Hypotheses Development

2.1 Previous Research

Researchers have been analyzing and studying the problems of enterprise impairment and earnings management for a long time, and the relevant literature is abundant. Their investigation verifies that enterprises realize earnings management by selecting allowance and reversal of accounts. Their behaviors have impact on various aspects such as companies' financial indicators. Earning management has evolved as the process in which the managers make judgments and accounting choices when preparing financial reports and modify transaction items to change financial reports in order to mislead other accounting information users to understand the business performance based on accounting information.

Ma (1988) investigates whether US commercial banks utilize loan loss provisions to smooth earnings. He finds that bank managers tend to raise (lower) loan loss provisions in periods of high (low) operating income to achieve income smoothing. McNicholson and Wilson (1988) investigate the allowance for uncollectible

accounts in non-financial firms as a function of three economic determinants, which explain the non-discretionary portion of the variation in bad debt expense and conclude that companies with extreme ROA tend to record income-increasing bad debt expense. They document that the discretionary portion of bad debt expense is greater for firms that experience an extreme decrease or increase in earnings. Their results suggest that firms record income-decreasing discretionary bad debt expense to manage extreme earnings

Jackson and Liu (2010) examine the interrelation between conservatism and earnings management by analyzing the allowance for uncollectible accounts and bad debt expense. They find that the allowance for bad debts has grown more conservative over time. They also find that firms manage bad debt expense downward to meet or beat analysts' earnings forecasts and that conservative allowance accentuates the extent to which firms manage bad debt expense. Baker, Rue and Volkan (2000) examined 634 companies with asset impairment as samples. The results show that the stock returns of the sample companies with asset impairment are lower than those of other companies in the same industry in the control group. The average level of profit margin in the same industry is significantly higher than that of companies with asset impairment. This fact proves that these companies do postpone asset impairment. They also conclude that before the sampled companies announce the asset impairment, the companies' asset value had declined in the trading market, indicating that these companies do not timely provision for the asset impairment, but have a tendency to defer.

Kirschenheiter and N. D. Mmelumad (2002) studied a model of financial reporting where investors infer the precision of reported earnings. Reporting a larger earnings surprise reduces the inferred earnings precision, dampening the impact on firm value of reporting higher earnings, and providing a natural demand for smoother earnings. They concluded that if there is good news in favor of listed companies, senior managers will often choose the method of asset impairment for the purpose of smoothing profits. If bad news appears, senior managers prefer to a better future growth by taking impairment to reduce current profits. Riedl (2004) demonstrates the motivation and consequences of enterprise asset impairment activities. The results show that compared with old accounting standards about impairment, newly impairment of assets is more closely related to the company's "great purge", but less related to economic factors. Reversal of impairments are not capable of reflecting economic performance of companies with lower quality of financial information.

Afterman (2011) analyzes health care entities to study allowance for doubtful accounts and provisions for bad bets. He selected organizations that did not record asset impairment during the same period as the control group. By analyzing P/E ratio, ROE, cash flow per share, return on share and other financial indicators, he concluded that when leaders change, enterprises are inclined to make huge impairment provision in order to build a solid foundation for the future improving business performance. As a result, the changes of financial indicators in the sample group are significantly smoother than those in the control group, because sample groups are rarely seen at the highest and lowest levels. Companies do have the

motivation to utilize asset impairment for a targeted profit. The author also finds that before impairment announced, companies' stock price has a relatively large earning, but once impairment issued, stock price begins to decline.

Anon (2014) takes the Chinese company "Datang International Power Generation Company Ld" as example to study the assets impairment, write-off and retirement. After the modification of accounting standards, in 2014, the company recognized the impairments of assets including bad debt provisions based on the accounting standard. Riley and Pasewark (2009) use the Tobin model to analyze two important factors that interfere with companies' allowance for impairment of assets: value destruction and earnings manipulation. They concluded that earnings manipulation factor is the secondary motivation of decisions for impairment, and value destruction factor is the main reason. After removing the interference of this factor, when the asset impairment was withdrawn in previous years and the main leaders change, the enterprises usually provide more asset impairment in financial report, while the impact of big cleaning and profit smoothing motivation on the enterprise's asset impairment provision is not significant. By using sensitivity analysis to analyze earnings manipulation factors, they also concluded that earnings manipulation factors have a great impact on manipulating goodwill, asset restructuring expenses, but have little impact on fixed assets, inventory and other assets impairment.

Finger (2010) analyzes allowance for doubtful accounts and impairment tendency of targeted companies. The results show that, 63% of sample companies choose the fourth quarter to recognize asset impairment allowance and disclose in the report, which is closely related to the annual report audit requirements; 8.2% of total assets of these sample companies is the median of asset impairment; in the previous three years before impairment executed, the median of the industry about ROE is larger than that of companies who take allowance for doubtful accounts; these impaired companies' P/E ratio and growth rates of assets decline; non-impairment companies' return on assets are better than those companies who measure allowance for doubtful accounts,; and those companies with leaders changing are more inclined to recognize allowance for doubtful accounts. Hyun-Ah Lee and Won-Wook Choi (2016) investigate how non-financial firms in Korea manage the allowance for uncollectible accounts to meet important earnings benchmarks. By analyzing non-financial firms listed in the Korea Stock Exchange from 2000 to 2012, they find that firms tend to manage bad debt expense downward to avoid losses, sustain prior years' earnings or meet analysts' forecasts. They also find that understatement of bad debt expense to meet past year's earnings or analysts' forecasts is greater for firms with high tax costs. This result indicates that firms using an allowance in excess of the tax deductible limit to meet earnings benchmarks can achieve their goals without incurring additional tax costs.

Banker, Basu and Byzalov (2017) study allowance for doubtful accounts when examining whether enterprises have earnings management behavior. The results show that if an enterprise has unusually high or low profits, it will generally adjust its profits by reversing bad debts. This phenomenon shows that the enterprise's

managers do have the motivation to choose allowance for doubtful accounts to carry out the earnings management of liquidation and profit smoothing. Latifah and Siti (2018) choose listed companies to study the related between accrual account and earning management during the year of 2001-2019. The results show that many companies only recognized impairment for asset in the fourth quarter, and the total amount of asset impairment is significantly related with operating income, respectively.

2.2   Development of Hypotheses

Generally, market participants assess firm performance based on threshold benchmark such as zero earnings, prior years' earnings and analysts' forecast (Degeorge *et al.*, 1999). Reporting losses, a decrease in earnings compared to the prior year or missing analysts' forecasts is interpreted as evidence of problems related to firm performance and may even hurt stock valuation.

The allowance of uncollectible accounts should be recognized based on objective assessment when collectability for credit sales is uncertain. In practice, managers estimate the allowance for uncollectible accounts by applying a methodology based on the historical bad debt ratio and assessing the collectability of specific receivables. However, the process of computing the historical bad debt ratio or assessing the collectability of receivables involves managerial discretion, thereby enabling managers to utilize the allowance for uncollectible accounts to manage earnings. Specifically, the underestimation of the allowance inflates earnings, as its income statement counterpart, bad debt expense, is adjusted downward; the overestimation of the allowance for uncollectible accounts dampens earnings, as its income statement counterpart, bad debt expense, is adjusted upward.

In 2014, Chinese government modified the accounting standards, especially; it introduces largely the concept of fair value in the recognition and measurement of assets. The allowance for double accounts is inevitably affected by new rules. Because of the modification, the findings should be divided into two parts. Therefore, we hypothesize that after modification, the situation of allowance for doubtful accounts would face huge differences (*H1*). We believe the information quality will improve after 2014; managers have less space to conduct earning management.

Managers are strongly stimulated by their desire to avoid losses, sustain prior years' earnings and meet analysts' forecasts, because the investor evaluates managers' ability by relevant information, including financial information, to gain the confidence of the investor. In order to make the published information beneficial to their own interests, managers have the motivation to choose accounting policies. Accounting policy of bad debts facilitates this tendency, that is, managers have the possibility of using allowance for doubtful accounts to smooth profits. When managers try to smooth profits from one year to the next, firms will take more provisions for bad debts. But when the firm appears to decrease its profit, it will increase its expenses by recognizing new allowance for doubtful accounts. Taken

together, we hypothesize that firms are inclined to use the policy of bad debt provision for earnings management (*H2*) and that there is a negative correlation between allowance for doubtful accounts and its surplus (*H3*). However, with the modification of accounting standards, we believe the information quality will improve after 2014; managers have less space to conduct earning management.
In summary, the three hypotheses are

> *H1: The allowance for doubtful accounts is affected by new rules*
> *H2: Firms are inclined to use the policy of bad debt provision for earnings management*
> *H3: There is a negative correlation between allowance for doubtful accounts and its surplus*

3. Research Method and Sample Selection

Accounts receivable, as an asset of the enterprise, represents the creditor's rights of the enterprise and reflects the future cash inflow of the enterprise. There is some arbitrariness in the provision of bad debt as the allowance. For the personal purpose of managers, in order to meet the regulatory requirements, and obtain investor attention, bad allowance for doubtful accounts often become a means to adjust corporate profits. This is bound to affect the quality of information disclosure of listed companies, to the detriment of the interests of information users.

3.1 Research Sample

China is a rapid development country whose inclination on earning management could represent emerging countries' preference. Thus, Chinese companies are chosen as samples. The sample consists of companies listed on the Chinese Stock Exchange during the period between 2008 and 2017, which published their financial information. Because different industries enjoy various accounting policies, we analyze targeted data with different industries. In addition, it does the following disposal for listed manufacturing companies to eliminate the samples with incomplete data. First, the abnormal value is removed. The abnormal value refers to the data that are too different from the mean value in indicators such as income index and bad debt allowance ratio. Second, companies that have been listed for less than a year are excluded, because the newly listed companies have some special characteristics and are not generally persuasive. Samples created with the available data yield 14,886 for inclusion in the analysis.
Nowadays, the Chinese government is encouraging companies to follow the rules of IFRS by introducing the ideas of IASB in the Chinese accounting standards (CAS), to boost its economy by declining the cost of accounting information. Especially, CAS of account receivables is the same with the international accounting standards. In addition, the reason why the listed manufacturing companies are chosen is that the bad debt provision policies of listed companies vary greatly among industries and are not comparable. On the other hand, the

sample size of the Chinese listed companies in the manufacturing industry is sufficient with complete data and show strong representativeness. Moreover, there are no significant differences in their governance structure. The data from the manufacture industry will make the results more convincing.

3.2   Research Method

In order to test *H1*, we conduct descriptive statistics year by year, so as to draw a conclusion. To test *H2* and *H3*, we develop a regression model that uses allowance for doubtful accounts as a dependent variable, following the method of McNicholson and Wilson (1988), Frank and Rego (2006), and Jackson and Liu (2010). They suggest an effective approach in which single specific items instead of aggregate discretionary accruals are examined. It allows more precise detection of earnings management and decreases measurement error by allowing researchers to select variables closely related to the adjusted item and effectively eliminating non-discretionary portions. Though the single-accrual approach has the disadvantage that earnings management can be detected only if a specific item is adjusted, it provides a more profound understanding of earnings management behavior and can be helpful in establishing a related accounting policy. Thus, the single-accrual approach is adopted in this study, and incentives for earnings management and management behavior are investigated with a focus on the allowance for doubtful accounts. The specific accrual model that is utilized to test the behaviors of listed companies using bad debt provision to manipulate earnings is

$$P = a_0 + a_1 BgBL_t + a_2 Write\_off_t + a_3 Write\_off_{t+1} + \mathrm{Re}\, sprovt \tag{1}$$

Where   P = addition of bad debts during period T; $BgBL_t$ = bad debt provision at the beginning; $Write\_off_t$ = the amount of bad debt provision to be rolled back at the period of T; $Write\_off_{t+1}$ = the amount of bad debt provision to be rolled back at the period of T+1; Resprovt = the amount of error term which is used to test the existence of earning management.

In this model, $Prov_t$ of the current period is taken as the dependent variable, and BgBL, $Write\_off_t$ and $Write\_off_{t+1}$ are taken as independent variables, thus forming a linear function. Among them, the bad debt provision brought back in the future period is taken as the substitution variable of the expected bad debt. The model uses the error term 'Resprov$_t$' to express the existence of earnings management. If the sample company does not have any earnings management phenomenon, in this case the error term is zero; if the error term is detected, it proves that the sample company has more or less earnings management behavior. The degree of earnings management is reflected by the value of 'Resprov$_t$'.

For H2.3, the regression design is

$$P = a_0 + a_1 ROE + a_2 Log(TA) + a_3 Lev + a_4 CFO + e \qquad (2)$$

where   P = allowance for doubtful accounts; ROE = return of equity; Log(TA) = Log value of total assets; Lev = gearing ratio (Debt divided by total assets); CFO = cash flow from operations divided by sales.

4. Empirical Results

4.1   Hypothesis 1

Tables 1, 2, 3, and 4 present descriptive statistics for the variables used to analyze the management of bad debt expense.

Table 1: Increased allowance (mil)

	N	Min	Max	Sum	Average	SD
2009	2,196.00	-18.88	596.61	27,242.22	12.41	45.48
2010	2,532.00	-30.40	1,104.65	28,867.80	11.40	45.71
2011	2,798.00	-43.09	1,353.95	33,009.56	11.80	55.08
2012	2,862.00	-95.97	1,305.62	41,835.32	14.62	56.89
2013	3,028.00	-345.51	1,271.09	54,523.38	18.01	74.57
2014	524.00	-13.22	758.33	12,850.06	24.52	77.75
2015	392.00	-37.64	1,820.37	23,586.56	60.17	216.60
2016	310.00	-2.39	3,207.91	30,877.36	99.60	388.09
2017	244.00	-0.58	2,520.78	24,367.72	99.87	316.86

Table 1 shows that the number of samples abruptly decreased after 2014, because the Chinese government modified its accounting standards in that year. The year of 2014 has become the watershed. After 2014, the number of targeted companies gradually decreased year by year and the average of increased/decreased allowance for doubtful accounts was around 20 million. The average volume of recognized allowance in the year increased from 24.53 million in 2014 to 99.87 million in 2017. What is more, the standard deviation of each year has changed a lot after 2014. Especially, the divergence has been becoming larger and larger. The smallest standard deviation happened in 2009, as 45.48, but in 2017, this number has increased to 316.86. This simply means that Chinese listed companies have enjoyed more differences in allowance for doubtful accounts.

As to reversal of bad debts provisions (table 2), they show similar trends with increased/decreased allowance.

Table 2: Reversal of bad debts (mil)

	N	Min	Max	Sum	Average	SD
2009	2,196.00	-3.04	366.77	13,091.06	5.96	22.03
2010	2,532.00	-5.13	676.43	15,536.64	6.14	29.88
2011	2,798.00	-1.02	2,288.30	22,747.88	8.13	72.43
2012	2,862.00	-20.65	1,055.05	20,216.62	7.06	43.61
2013	3,028.00	-4.55	1,568.24	25,378.72	8.38	57.41
2014	524.00	-3.02	1,074.01	7,924.96	15.12	78.86
2015	392.00	-0.25	1,591.14	7,585.36	19.35	120.79
2016	310.00	-0.06	1,253.10	9,190.12	29.65	118.26
2017	244.00	0.00	1,479.13	13,050.76	53.49	192.19

After 2014, the number of companies which conducts reversal has been declining with the number of companies recognizing allowance for doubtful accounts. Especially, the average of reversal amount abruptly increased after 2014. In 2017, the average reversal of targeted companies increased to 53.49 million from 5.96 million in 2009. This means that, perhaps, in 2016 and 2017, the targeted companies had motivation and conditions to operate earning management for smoothing profits. Concerning to standard deviation of reversal, which is the indication to show the divergent extent of companies' reversal amount, has exceeded 100 and climbed year by year.

Bad debts at the end of period show the accumulated amount of bad debts (table 3). It shows similar trends with previous figures. The average amount of bad debts abnormally increased in the year of 2014. It can be seen in table 3 that in 2014, the average of bad debts increased 50.78%. However, in 2014, this amount only increased by 14.23%. Regularly, the companies are not allowed to change their accounting policy for allowance for doubtful accounts. Thus, bad debts should be in the same proportion of account receivables resulting in a similar increased rate. However, bad debts abnormally increased a lot after 2014. In 2017, the increased rate decreased to 38.46% from 57.21% in 2016. That is perhaps because the reversal in 2017 climbed a lot in table 2, which is counteractive to bad debts at the end.

Table 3: Bad debts at the end of period

	N	Min	Max	Sum	Average	Rate of Average Change	SD
2009	2,196.00	0.00	2,557.30	137,463.66	62.60		171.62
2010	2,532.00	0.00	2,758.48	153,164.58	60.49	-3.37%	180.04
2011	2,798.00	0.00	3,677.70	167,300.56	59.79	-1.16%	190.10
2012	2,862.00	0.00	4,342.46	187,233.06	65.42	9.42%	211.13
2013	3,028.00	0.00	5,175.56	226,294.50	74.73	14.23%	240.63
2014	524.00	0.00	4,523.49	59,045.92	112.68	50.78%	419.81
2015	392.00	0.03	5,802.19	72,438.16	184.79	64.00%	591.57
2016	310.00	0.00	7,786.89	90,057.72	290.51	57.21%	887.99
2017	244.00	0.00	9,175.35	98,144.58	402.23	38.46%	1,145.34

To further analyze the reasons of bad debts' change, we discuss the changes of total assets of targeted companies. Table 4 shows that total assets have increased after 2014 as well. The standard deviation also climbed just like the trend of bad debts. The last column of the table compares the proportion of bad debts and total assets. In 2014 to 2017, although the proportion of bad debts in total assets has increased, the extent was acceptable. In 2013, the proportion was 1.09%, while the number increased to 1.23%. It may mean that because of the modified accounting standards, bad debts policy is changing with the changing trend of the total assets.

Table 4: Total assets

	Average	SD	Bad debts/Total assets
2009	4442.84	11908.22	1.41%
2010	5034.48	13619.55	1.20%
2011	5602.86	16122.84	1.07%
2012	6088.49	16586.20	1.07%
2013	6851.05	18653.61	1.09%
2014	9176.15	22684.18	1.23%
2015	13768.07	29790.94	1.34%
2016	22510.26	46275.53	1.29%
2017	31826.78	60313.16	1.26%

In sum, the modification of the accounting standards has a significant impact on allowance for doubtful assets. The amount of increased/decreased allowance, reversal, final accumulated bad debts and total assets have changed a lot after 2014 in which Chinese government modifies the rules of accounting. In fact, this modification is an advanced step of Chinese accounting standards to international accounting standards. The *H1* which hypothesizes that the modification of standards would affect the final results of allowance for doubtful debts is illustrated to be true.

4.2   **Hypothesis 2**

Regression analysis is employed to examine *H2*. Tables 5 and 6 indicate that nearly all variables in each year are statistically significant at the 5% or less, based on two-tailed tests. $BgBL_t$ (Bad debts at the beginning of the year) is significant in all years except 2016. Similarly, $Write\_off_t$ (reversal in this year) is significant in all years except 2013 and marginally in 2017. $Write\_off_{t+1}$ (reversal in the next period) is statistically significant in all years. Thus, variables of $BgBL_t$, $Write\_off_t$, and $Write\_off_{t+1}$ have the significant impact on the final result of the recognized allowance in this period. Although, in some years, the variable of $Write\_off_t$ is not significant not even at the 10% level. However, there are other variables encouraging the degree of fitting to the formula with the result of bad debt provision for the current period.

Table 5: Findings of Each Variable

	2009		2010		2011		2012		2013	
	B	p-value	B	p-value	B	p-value	B	p-value	B	p-value
Resprovt	2.507	0.002	0.766	0.294	-1.377	0.061	3.992	0.000	4.641	0.000
$BgBL_t$	0.066	0.000	0.169	0.000	0.283	0.000	0.141	0.000	0.200	0.000
$Write\_off_t$	0.419	0.000	0.354	0.000	-0.208	0.000	0.411	0.000	-0.019	0.360
$Write\_off_{t+1}$	0.514	0.000	-0.095	0.000	-0.095	0.000	-0.042	0.024	0.314	0.000

Table 6: Findings of Each Variable

	2014		2015		2016		2017	
	B	p-value	B	p-value	B	p-value	B	p-value
Resprovt	3.365	0.006	7.988	0.068	7.478	0.437	1.703	0.782
$BgBL_t$	0.212	0.000	0.401	0.000	-0.002	0.936	0.240	0.000
$Write\_off_t$	0.170	0.000	0.312	0.008	0.738	0.000	-0.093	0.105
$Write\_off_{t+1}$	-0.230	0.000	-0.291	0.032	1.714	0.000	0.474	0.000

To find out whether the changes of degree of fitting year by year, we need check R, the degree of fitting to the assumption. Based on table 7, we find that R of regression is better after 2014 comparing with that during the year from 2009 to 2013. The smallest R happened in 2013 which equal to 0.619, while the largest R appeared in 2017 as 0.959. The larger R means the result is more identical with the formula and less possible of earning management. What is more, we see that in years 2009, 2012, and 2013, the variable of resprovt (the amount of error term, which is used to test the existence of earning management) shows its significance to the regression equation. Error term exists in those years, which means that the samples have more inclined to conduct earning management. In the years of 2016 and 2017, the error term's significance indication is 0.782 meaning that it is not important at the 10% level, that is, the listed companies are less likely to use the impairment reserve of account receivables for profit management. Therefore, it can be concluded that with

the implementation of modified accounting standards, the quality of accounting information has improved.

Table 7: Results of Regression

Year	Regression (R）	Resprovt (B)	Resprovt (Sig)
2009	0.636[a]	2.507	0.002
2010	0.655[a]	0.766	0.294
2011	0.743[a]	-1.377	0.061
2012	0.624[a]	3.992	0.000
2013	0.619[a]	4.641	0.000
2014	0.941[a]	3.365	0.006
2015	0.926[a]	7.988	0.068
2016	0.911[a]	7.478	0.437
2017	0.959[a]	1.703	0.782
[a] indicates significance levels at the 1%, based on two-tailed tests			

In sum, from 2009 to 2017, all results show the model and data match well and are effective. Companies are unlikely to make use of impairment provisions of doubtful accounts for earnings management. Furthermore, with the implementation of modified accounting standards, the inclination of companies conducting earning managers by allowance for doubtful accounts is less and less.

4.3   Hypothesis 3

Based on the previous analysis, after 2014 companies' allowance for doubtful accounts witness changes because of accounting standards modification. Therefore, data are divided into two parts. In the first part, we choose listed companies for the period from 2009 to 2013 and in the second part, from 2014 to 2017.

4.3.1   Descriptive Statistics

Table 8 presents descriptive statistics for the variables employed to analyze the management of allowance for doubtful accounts. For the period 2009-2013, there are 6707 samples for analysis from the Chinese listed companies in manufacturing industry, and for the period 2014-2017, only 831 samples are available for research.

Table 8: Description Statistics

Variable	2009-2013			2014-2017		
	Average (million)	SD	N	Average (million)	SD	N
P	13.8270	57.59484	6707	72.5158	294.87813	831
ROE	.0992	.20608	6707	.1025	.21228	831
Lev	.4419	.65415	6707	.4550	.19326	831
Assets	9.3365	.53065	6707	9.6351	.74024	831

Based on this table, the average amount of allowance for doubtful accounts has increased, on average, from 13.83 million to 72.52 from the 2009-2013 period to the 2014-2017 one, an increase of 425 percent. However, ROE, leverage ratio and assets have not enjoyed huge expansion. Perhaps, this is because they are the relative indexes, which are more inclined to flat comparing with the absolute indexes.

4.3.2   Regression Analysis

Tables 9 and 10 report the results of the regression model of equation (3) for the two periods under investigation, to test *H3*. Table 9 shows that the first stage, all explanatory variables are significant to the allowance for doubtful accounts. The coefficient of ROE (-10.575) is negative and significant (t-statistic = −3.263, p-value = 0.001), implying that firms manage allowance for doubtful accounts downward to avoid losses. It is normal that when the company records allowance for doubtful accounts, the expenses should be recognized in the income statement. Therefore, there is a negative correction relationship. The correlation analysis (Table 11) also proves the *H3*. The coefficient of Lev (3.622) is positive and significant (t-statistic = 3.551, p-value = 0.001), indicating that firms manage allowance for doubtful accounts to sustain prior years' earnings. Similarly, the coefficient of assets is also positive and significant (t-statistic = 27.436, p-value = 0.020), which means that firms manage bad debt expense to meet assets. These results provide support for *H3*.

Table 9: Variables (2009-2013)

	B	Std. Error	Beta	t	p-value
(Constant)	-308.467	11.763		-26.223***	.000
ROE	-10.575	3.241	-.038	-3.263***	.001
Lev	3.622	1.020	.041	3.551***	.000
Assets	34.461	1.256	.318	27.436***	.000
*** indicate significance levels at the 1%, based on two-tailed tests					

The positive coefficient of leverage means when higher leverage ratio creates a larger allowance for doubtful accounts. The result shows that the debt hypothesis, which is provided by previous literature, is not correct. McNichols (2000) concluded that companies with more debts are more likely to transfer future earnings by declining allowance into the current accounting process in order to avoid default. In fact, the findings of this study show that more debts accompany more allowance which happens in the current period rather than transfer to future accounting period. Perhaps the reasons are the following. First, more debts encourage managers to be more cautious to the accounting policies; therefore, more provisions and allowance are recognized. Secondly, companies' debts are paid in the future, so in order to refinancing when the debts are matured in the future, the companies need to increase the future profits by the addition to current expenses from allowance for doubtful accounts. In sum, either way, the conclusion of debt contract in previous literature is wrong. Total asset shows a positive relationship with allowance for doubtful accounts. A previous study concludes that the larger companies are more inclined to increase allowance for political policies such as tax deduction. Our finding illustrates this hypothesis. The coefficient of assets is 34.461 which is the largest among all independent variables and the most significant (p-value = 27.436). Since allowance is the reverse of account receivables, when the assets are expanding, the allowance should be increasing as well with the constant accounting policy.

However, the results of the analysis for the period 2014 - 2017 are very different from those of the period 2009 - 2013. Table 11 indicates that the coefficient of ROE is still negative but statistically insignificant (t-statistic = −3.263, p-value = 0.342).

Table 10: Variables (2014-2017)

	B	**Std. Error**	**Beta**	**t**	**p-value**
(Constant)	-1358.795	128.582		-10.568	.000
ROE	-43.209	45.436	-.031	-.951	.342
Lev	112.448	56.086	.074	2.005	.045
Assets	143.702	14.291	.361	10.055	.000

It also illustrates that modified accounting standards help restrain earning management. Even if the companies enjoy a higher or lower ROE, the allowance is not affected because of accounting policy of bad debts staying the same. However, based on the correlation analysis in table 13, it still shows the negative relationship between ROE and allowance with the significance of 0.01. However, its impact is too weak comparing with leverage ratio and total assets. The coefficient of leverage ratio, it still enjoys a positive relationship with the allowance at 95% confidence level. Its coefficient is 112.448 which have become larger. It means a slight change of leverage ratio will cause a huge alter of allowance. Assets show the same tendency with leverage ratio. It is the most important as well among all variables.

Its coefficient is 143.702.

In addition, by employing R-Square analysis (table 11), it can be seen that both periods illustrate the relationship between the dependent variable and the independent variables, but in the first one (2009-2013), R^2 statistic equals to 0.107, while in the second (2014-2017) it is 0.164, an increase of 53.3 percent.

Table 11: Results of Regression Analysis

Year	R	R Square	Adjusted R Square	Standard Error of the Estimate
2009-2013	.327[a]	.107	.106	54.44971
2014-2017	.405[a]	.164	.161	270.07251

This means that the variability of allowance for doubtful accounts is better explained by the regression model in equation 3, in the second period. This result is also verified by the adjusted R-squared which increases by 52 percent between the two periods. In conclusion, for the period from 2009 to 2013, we find that all variables including ROE, leverage ratio, and assets have impact on allowance for doubtful accounts. Although the leverage ratio' coefficient does not conform the prediction by previous literature, other variables have followed the acclaimed estimation.

4.3.3   Correlation Analysis

Table 12 and 13 report the results of the correlation analysis for the variables included in the model, for both periods. Both tables indicate that allowance for doubtful accounts is negatively correlated with ROE, and positively with Lev and total assets.

Table 12: Correlation analysis (2008-2013)

		P	ROE	Lev	Assets
Pearson Correlation	P	1.000	-.060	.056	.321
	ROE	-.060	1.000	-.075	-.061
	Lev	.056	-.075	1.000	.039
	Assets	.321	-.061	.039	1.000
Sig.	P	.	.000	.000	.000
	ROE	.000	.	.000	.000
	Lev	.000	.000	.	.001
	Assets	.000	.000	.001	.

Table 13: Correlation analysis (2014-2017)

		P	ROE	Lev	Assets
Pearson Correlation	P	1.000	-.080	.248	.398
	ROE	-.080	1.000	-.234	-.088
	Lev	.248	-.234	1.000	.463
	Assets	.398	-.088	.463	1.000
Sig.	P	.	.010	.000	.000
	ROE	.010	.	.000	.005
	Lev	.000	.000	.	.000
	Assets	.000	.005	.000	.

The correlations are insignificant at the 1% level. Overall, the results of the correlation analysis for these variables are consistent with our expectations.

5. Conclusions and Limitations

5.1 Conclusions

This empirical study focuses on the relationship between allowance for doubtful accounts and the earning management, by examining three hypotheses. First, *H1* hypothesizes that modified accounting standards, published in 2014, will have an impact on the allowance for doubtful accounts. The results show that the Chinese accounting standards' modification changes the situation of allowance for doubtful accounts. Both the recognition and reversal of allowance increase a lot after 2014. Secondly, the *H2* hypothesizes that companies are inclined to use the policy of bad debt provision for earnings management. The results show that in some years before 2014, companies take advantages of allowance for doubtful accounts to conduct earning management. However, with the development of accounting standards, the phenomenon of earning management has improved. Thirdly, *H3* hypothesizes that there is a negative correlation between allowance for doubtful accounts and its surplus. The analysis of the relationship between some important indicators and allowance for doubtful accounts, finds that ROE and allowance were in a negative relationship before 2014. However, after 2014, there is less relevant. On the other hand, leverage ratio plays a positive impact on allowance for doubtful accounts which is not followed the hypothesis provided by previous studies. After 2014, only assets have a significant impact on allowance.

5.2 Policy Suggestions and Proposals for Further Research

The results show that modified accounting standards are conducive to restrict earning management. However, there are some suggestions for future improvement of information quality. First, it is suggested to improve the disclosure quality of allowance for doubtful assets. The purpose of accounting information disclosure is to solve the problem of information asymmetry between the users and enterprises. The quality of accounting information disclosure directly reflects the efficiency of

capital market and social resources. Because the listed company has not fully disclosed the information of impairment of assets, especially their specific accounting policies, it can use impairment for earnings management. Listed companies are often one-sided disclosure or false disclosure of allowance for doubtful accounts, if there is not a mandatory rule, so that users of accounting information cannot clearly understand the accurate information of the company's account receivables, and even lead to their wrong decisions. It is suggested that the listed company to fully disclose the reasons of allowance for doubtful accounts, but also to disclose the impact of the allowance on the important financial indicators. In addition, the standards for allowances should also require public companies to disclose the information of reversals, so that the users could fully grasp the complete information about the impairment, it can effectively restrain the listed companies use the accounts impairment to earnings management. Second, this study mainly focuses on regular receivable impairments. It is suggested to study other receivable's impairment which perhaps shows the significant relationship with the earning management. Furthermore, future studies could divide assets into two parts: long-term and short-term assets. They would depict different results about the possibility of earning management. Finally, this study finds that the implementation of modified accounting standards has improved the value relevance and reliability of allowance for doubtful accounts information. Then the next question is whether the implementation of modified accounting standards has the same impact on the quality of other accounting information.

5.3   Limitations

This study has the following limitations. First, this study only selects the data of listed manufacturing companies for regression analysis. Although the manufacturing samples are persuasive, they cannot represent all listed companies after all, and the research samples have limitations. Second, it only uses the data from 2008 to 2017, which means a relatively short sample period is taken as the research conclusion of the new accounting standards stage. The research conclusion may be influenced by some systematic factors, so it is necessary to expand the research window in the future and verify the value relevance and reliability of allowance for doubtful accounts information after the implementation of the modified accounting standards in a broader period. Third, in fact, since the new standards prohibit the provision and reversal of the impairment of long-term assets, the listed companies may use the provision and reversal of the impairment of short-term assets to engage in earnings management. Chinese accounting standards allow the reversal of short assets impairment which includes receivables and other receivable accounts.

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