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Relationship between total accruals and earnings smoothness in Chinese market

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by

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Abstract

This paper studies on the relationship between the total accruals and the earnings smoothness in Chinese market. The total accruals and earnings smoothness both are important parts of earnings management and can be thought as proxies of earnings quality. Although there is a lack of empirical evidence, I develop the hypothesis there is a negative relationship between them. In this paper, I concentrate on the Chinese firms from 1998 to 2017. Relying on the regression method, I get the result meeting my hypothesis that the total accruals have a significant and negative relationship with the earnings smoothness in Chinese firms. The contribution of my study is to provide an empirical evidence for the negative relationship between total accruals and earnings smoothness which supports that the accruals can be used to manage smooth earnings in Chinese market.

Key words : Earnings smoothness, Accruals, Earnings management.

JEL Classification: M00 C20

I. Introduction

The purpose of my study is to find out the relationship between total accruals and earnings smoothness in listed Chinese firms from 1998 to 2017. The total accruals is a complex term that it can be normal or abnormal, while “the amount of accruals could be discretionary and non-discretionary” (Dechow et al. 2010). In my study, I only concentrate on the amount of the total accruals which are equal to the amount of net income deducted by the cash flow from operational activities according to Habib et al.(2011)’s paper and do not distinguish that it is discretionary or non-discretionary. And the earnings smoothness is a concept whether the earnings stream between the one firm’s two reports in coterminous periods is stable or not. And because Mcinnis(2010) has build up a model to measure the earnings smoothness, I can use certain number to show the earnings smoothness, which makes it easier to study the relationship between total accruals and earnings smoothness.

In prior literature, there are not so many studies certainly on total accruals and earnings smoothness. Because each of them is one part of the earnings management that many studies contain them but do not only study on them. Although Dechow (1994) claims that the accruals can be used to smooth the stream of earnings, this is still not the topic of his paper. At the same time, according to the prior studies, the accruals have direct relationship with the earnings management that the normal accruals can reflect the earnings adjustment and abnormal accruals can be the production of earnings management. Also the earnings smoothness is an important part of earnings management to be adjusted by the managers. And Dechow et al(2010) claim that both the accruals and earnings smoothness are important

proxies of earnings quality. Although there is not enough evidence to support that the earnings smoothness has a direct relationship with earnings quality. So accruals and earnings smoothness are related to each other but there is not enough evidence to show how the relationship between them is in prior study. To find out that, I want to do an empirical test to study on the further relationship between the total accruals and the earnings smoothness in my study using the models formed by the models used by Habib et al.(2011) and Lapointe-Antunes et al. (2006) in prior study.

My study concentrates on the Chinese firms in the past 20 years (from 1998 to 2017) while most of the prior study concentrates on firms in other countries like America, the U.K. And in China, it is something special that the accounting principle may be different with others and in 2013, which covered in my sample, the Chinese accounting principle has been changed. So the result of my study may not be common but special for Chinese firms in the past 20 years.

I do not find much literature on an empirical test on the direct relationship between these two objections certainly. So there is a lack of empirical evidence for the Chinese market in prior study. But as I mentioned above, in prior study there are many evidences to show that the accruals have a correlation to earnings smoothness. And it also shows that earnings smoothness could be influenced by the net income the cash flow from operational activities and so does total accruals, and the relationship between total accruals and earnings smoothness seems to be negative. In my study, I use the regression model formed by the two models of Habib et al.(2011) and Lapointe-Antunes et al. (2006). I use different ranges of year which is 2, 3 or 4 years to calculate the earnings smoothness measurement. And get the similar results that there is a significant relationship between total accruals and earnings smoothness because all the

P-value of the independent variable, earnings smoothness measurement, is less than 0.05. The effect of earnings smoothness measurement on the total accruals is positive and small compared with other control variables like changes in sales, property, plant and equipment. And because the earnings smoothness measurement has a negative relationship with the earnings smoothness as Mcinnis(2010) claims. So the relationship between the earnings smoothness and total accruals is significant and negative. By analyzing this relationship, I can make the similar conclusion with Dechow(1994) that the total accruals can be used to smooth the earnings, and this idea also work well in Chinese market.

My study provides an empirical evidence for Chinese market of the negative relationship between total accruals and earnings smoothness and can support what Dechow(1994) claim in his paper that the accruals can be used to smooth earnings. At the same time, the results can also help Chinese firms' managers when they try to do earnings management on total accruals and earnings smoothness. They can consider about this relationship and use the total accruals to smooth the stream of earnings when they try to adjust the total accruals and earnings smoothness. Also, in some way, the significant results in my study also provide an evidence, for that the relationship between earnings smoothness and earnings quality is more direct to meet the problems that "there is no enough evidence to support that the earnings smoothness has direct relationship with earnings quality" mentioned in study of Dechow et al(2010).

The following section 2 provides the review of prior literature, which talks about more prior study about the accruals and earnings smoothness. And from there I get the idea that the total accruals have correlation with the earnings smoothness, the relationship between total

accruals and earnings smoothness seems to be negative and develop my own hypothesis for this study. Also, the models I used in my study are gotten from the prior literature in this section.

The section 3 provides the study design and methodology of my study, which shows the method to study. This section contains all the models used in my study and the explanation of these models and the variables in these models to show how I find out the relationship by using the models.

The section 4 provides the empiric of my study, which talks about the data sample selection, while the descriptions of all the statistics and the table of matrix correlation are contained to show the correlation between independent variables and other variables separately. Also, the empirical test result is showed in this part and after analyzing the results that the relationship between total accruals and earnings smoothness is significant and negative which supports the idea of Dechow(1994) that the accruals can be used to smooth the earnings.

The final part is the conclusion which provides an overview of what I have done in this paper. In this part, the limitation of my work has been talked about. Also, according to my work and the limitation, I give some suggestions on how to do the further study on this topic in this section.

II. Literature review

The “accruals” is not a simple concept. The accruals are like an extra space for the

managers to do earnings management while it is not easy to be forecast and not stable like the operating income. “ The normal accruals are meant to capture adjustments that reflect fundamental performance, while the abnormal accruals are meant to capture distortions induced by application of the accounting rules or earnings management” (Dechow et al. 2010). The accruals contains two different categories of accruals, the discretionary the non-discretionary accruals which are hard to be distinguished with each other by direct observation on the firms’ financial reports. Lapointe-Antunes et al. (2006) claim that it is hard to recognize these two kinds of accruals by direct observation on the financial reports. But in my study, I do not discuss the two different kinds of accruals separately and I concentrate on the total accruals.

There are many models to determine the quality of the accruals in prior paper. But in my study, I only focus on the amount of accruals so I do not use these models. And Habib et al.(2011) apply a model to determine the amount of the discretionary part of accruals, while Lapointe-Antunes et al. (2006) build up another model to calculate the amount of the non-discretionary accruals. I use a new model formed by theses two models to determine the total amount of the total accruals in my study. For these prior two models, both of them contain the change in sales which can present the firm’s performance in some way and the property, plant and equipment. And Habib et al.(2011) includes the return on total asset in his model because the return on total asset can be a control variable when considering the firm’s performance while Lapointe-Antunes et al. (2006) add cash flow from the operational activities in the last year because the Dechow(1994) argues a correlation between the cash

flow from the operational activities and accruals. So in my models, I use these control variables.

There is an existing kind of earnings management using the accruals called accrual-based earnings management as Cothen and Zarowin (2010) mentioned in the prior paper. And the earnings management based on the accruals is also an important part of the adjustment of the earnings like the real activities. And the abnormal accruals are the part which can be influenced under earnings management. So the total accruals is an important part of the earnings management.

Dechow et al. (2010) and Biedleman (1973) define the term “earnings smoothness” in their study, which is considered as a outcome of earnings management under the accruals system. It means that the firms’ managers make the earnings stream more stable between coterminous fiscal periods’ reports. There are many papers about the earnings smoothness and other financial terms to determine the definition and measurement of earnings smoothness. Francis et al. (2004) show that there is a negative relationship between the earnings smoothness and the cost of firms’ equity that smoother earnings appears with higher cost of capital, while the earnings smoothness can be showed with the relationship between standard deviation of the net income and cash flow from operational activities (Mcinnis, 2010). Although Barnea et al. (1975) argue that smoother earnings help decision-maker predict the future earnings of firms while Dechow et al. (2010) describe the earnings smoothness as one of earnings quality proxies in the properties of earnings category. They still say the earnings smoothness is relevant with the earnings quality when the company is accruals system without choice that they choose the accruals system without ideas about

earnings management. So it is hard to say earnings smoothness have direct relationship with the accruals and earnings quality now. In my study, I apply the model used by Mcinnis (2010) in his study to determine the earnings smoothness because his model have the can get a certain number for the measurement of earnings smoothness. Due to papers of Ronen and Sadan (1975) and Biedleman (1973), earnings smoothness is clarified as a specific accounting choice between accounting periods. Managers may make the earnings of some years lower to let the earnings stream smoother. So the earnings smoothness can be treated as a production of a downward and negative earnings management while most earnings management makes the earnings of the firms as large as possible. The earnings smoothness also play an important role in earnings management.

There are not many studies directly on the relationship between earnings smoothness and accruals. But in study done by Dechow et al. (2010) and Francis et al. (2004), they conclude the accruals and earnings smoothness are both important attributes to show level of earnings quality. So it is easier to learn the earnings quality first to study on the relationship between earnings smoothness and accruals. In prior study done by Dechow et al. (2010) and Ball and Shivakumar (2005), they define the “earnings quality” and say that earnings quality depends on the validity of the information about the company’s operating statement which plays an important role when all parties contracting with the companies make decisions. While Francis et al. (2008) and Kim et al. (2012) claim that the level of earnings quality would be influenced by the firm’s disclosure policy and whether the firm is with corporate social responsibility or not. Dechow et al. (2010) say actually the earnings quality showed by the earnings quality proxies. These different kinds of earnings quality proxies can be divided into

3 types: the properties of earnings, decision-makers' responses to earnings, external indicators of earnings misstatements (Dechow et al. 2010). And the earnings smoothness and the total accruals are both contained in the properties of earnings so they seem to have correlation with each other.

As I mentioned above, the Mcinnis (2010)'s model shows the earnings smoothness could be influenced by the net income and the cash flow from operational activities. While Habib et al.(2011) use the model that the total accruals are equal to the amount of net income deducted by the cash flow from operational activities. This model used in my study to get the amount of the total accruals. The model used to determine the total accruals also shows The bigger cash flow from operational activities with changeless net income would lead to a smaller amount of the total accruals. Dechow(1994) claims in his paper that the accruals can influence the smoothness of the cash flow from operational activities and be used to smooth the earnings' stream and Jayaraman(2008) agrees with this in his study. According to these evidences, I can predict that the relationship between the total accruals and earnings smoothness seems to be negative which can lead to a similar idea from the paper of Dechow(1994) that the stream of earnings can be smoothed by the accruals.

Hypothesis:

The total accruals have negative relationship with earnings smoothness.

III.Methodology

My study is to find out the relationship between the total accruals and the earnings smoothness. In my study, I will use the regression model to do the empirical test. To do this, I learn the two models that Habib et al.(2011) and Lapointe-Antunes et al. (2006) use in their paper to determine the two kinds of accruals respectively. And I combine these two models in my study to get a model (1) containing the total accruals. Lapointe-Antunes et al. (2006) use the firm's industry as one of the variables in his model when they think about the influence of the firm's industry. And because I do study on earnings smoothness instead of firms' industry and Dechow(1994) provides the idea that the accruals can be used to smooth the stream of earnings, it is reasonable to include the measurement of earnings smoothness in the model(1). I add the measurement of earnings smoothness as the dependent variables in my model (1). And except the earnings smoothness' measurement, all other variables are control variables and they are same as the control variables used in models of Habib et al.(2011) and Lapointe-Antunes et al. (2006). In these prior two models, both of them contain the change in sales which can present the firm's performance in some way and the property, plant and equipment as the common variables. And the model used by Habib et al.(2011) includes the return on total asset because the return on total asset is an important attribute when thinking about the firm's performance. And Lapointe-Antunes et al. (2006) add the cash flow from the operational activities in the last year into the model because as I mentioned above, the prior study of Dechow(1994) argues a correlation between the cash flow from the operational activities and accruals. In my study, except the earnings smoothness' measurement, all other variables, the change in sales, the property, plant and equipment, return on total asset, cash

flow from the operational activities in the last year, contained as the control variables which are all the same as the variables used in the models of Habib et al.(2011) and Lapointe-Antunes et al. (2006). Also, in this model, I do not drop the firm's industry directly that I use the fixed effect of the industry and the year as the dummy variables contained in the regression model while Habib et al.(2011) and Lapointe-Antunes et al. (2006) consider about the fixed effect of the industry when doing these models

$$TACC_t = a_1 Smooth_t + a_2 CFO_{t-1} + a_3 PPE_t + a_4 \Delta SALES_t + a_5 ROA_t \quad (1)$$

$$TACC_t = NI_t - CFO_t \quad (2)$$

Where the t represents the specific period t the variables are in. $TACC$ is the total accruals and it measures by the model (2) which is equal to net income deducted by the cash flow from operational activities. $Smooth$ is the measurement of earnings smoothness gotten from the model (3). And the $\Delta SALES$ is the differences between sales in a certain period t and the last period $t-1$, when the amount of sales in a certain period t is smaller than the last period $t-1$, the $\Delta SALES$ becomes negative. The CFO stands for the cash flow from the firm's operational activities while The PPE stands for the total amount of the plant, property and equipment in the balance sheets. The ROA is the return on asset, which is equal to net income divided by the average total assets while the average total assets are determined by the amount of total assets in period t and total assets in period $t-1$.

To determine the earnings smoothness, I use the same model as Mcinnis (2010) uses in his paper.

$$Smooth_t = \sigma NI_{tn} / \sigma CFO_{tn} \quad (3)$$

Earnings smoothness measurement is equal to the standard deviation of net income divided

by the standard deviation of cash flow from operational activities. σNI_m is the standard deviation of net income from period $t-n$ to t , while σCFO_m is the standard deviation of cash flow from operational activities from period $t-n$ to t . In Mcinnis (2010)'s paper, the n is equal to 9 which means the standard deviation in his model is covering 10 years. But for my study, the 10 years may be too long for the data sample in my study. By using this model, I can get the certain number of measurement of the earnings smoothness. And In my study, the certain number of earnings smoothness and accruals is necessary because I want to find out the relationship between the earnings smoothness and total accruals using the regression model. And this earnings smoothness' measurement has the negative relationship with the earnings smoothness as Mcinnis(2010) says. The lower earnings smoothness' measurement would show that the firms' earnings are smoother, this relationship is important in the final step of my study to get the result that my study is finally concentrating on the total accruals' relationship with the earnings smoothness but not only with the measurement of earnings smoothness.

IV. Empiric

Sample

All the data and statistics used in my study are obtained from the November of 2019 and the prior versions of the “ China Stock Market Accounting Research”, which is the CSMAR, database. This CSMAR database contains the financial information on over 900,000 Chinese

firms between 1990 and 2017.

I get the financial statement contained the basic accounting attributes and basic statement contained the industry code of the listed Chinese firms from the CSMAR database to get the data. In my study, I choose use the annual statistics, so I only keep the statistics with the date 12/31 in year from 1990 to 2017. Among all the variables I select, I drop the statistics which do not exist at the same time in the same firms so all of the statistics will have the same number of observations and there would not be any lack of statistics of variables. And because the firms' income statements on CSMAR are only starting from 1998, I can only get cash flow from operational activities starting from 1998, the final data samples are from 1998 to 2017. And I drop all the 0 in net income, total assets, sales and cash flow from operational activities. And because all the 0 and lack of statistics in these variables appear at the beginning of the firm's total reports that lack of them would not influence the continuity of data. For the plant, property and equipment, I think the 0 could be rational so I keep it.

Also there is another problem existing that for many firms, there are two types of financial reports in CSMAR database. If I keep both types of the financial reports, there would be an issue that the same variable may have two different statistics for the same firms in the same year which may lead to errors while doing empirical tests. So I choose to keep the consolidated type of firms' financial reports which is more common and drop another one to solve this problem.

Descriptive statistics

Table 1 presents all the descriptions of the original statistics that I get from the financial

statements in CSMAR database after the adjustment I mention above. The ni is stand for the annual net income while ocf is the annual cash flow from operational activities. The mean of ocf and ni is equal to 571,000,000 and 336,000,000 while the minimum of them are both negative. But the absolute value of the minimum are both less than the maximum which makes it hard to get the conclusion that most sample firms get profit in operational activities according to the positive mean but the positive mean of net income still shows that all the sample firms have profitable operations on average during these years. The sales that has a mean of 6,660,000,000 also proves this. And the ppe is the plant, property and equipment of the firms, ta is the annual total assets. 2,690,000,000 and 9,490,000,000 is the mean of them. The total assets and property, plant and equipment both do not have negative minimum, which is normal, because plant, property and equipment and total assets could not be negative normally. The N is the number of the statistics which presents the size of the variables. Because I clean and adjust the statistics before, all the number of the statistics in different variables are the same. The standard deviation of these variables are all large numbers that even larger than the means of the variables, which can show the diversity of the firms' operations. And the means on all the five variables are all positive. It shows that the sample firms get profit on average in these years.

Descriptive statistics

Table 1	Obs	Mean	Std.Dev.	Min	Max
ppe	29395	2.69e+09	1.81e+10	0	7.33e+11
ta	29395	9.49e+09	5.31e+10	51133.68	2.41e+12
sales	29395	6.66e+09	5.64e+10	-3.01e+07	2.88e+12
ni	29395	3.36e+08	2.70e+09	-1.71e+10	1.51e+11
ocf	29395	5.71e+08	6.21e+09	-2.47e+10	3.57e+11

The ni is stand for the annual net income, ocf is the annual cash flow from operational activities, ppe is the plant, property and equipment of the firms, ta is the annual total assets.

After doing these works, I do the calculation by using these original data described in table 1 to get the statistics of new variables which are needed to be used in the following models (1)(2)(3) I use.

When I use model (3) to get the earnings smoothness measurement.

$$Smooth_t = \sigma NI_{tm} / \sigma CFO_{tm} \quad (3)$$

I use different n from one to three. Because the n which is bigger than three, it means the standard deviation is for at least five years, which is such a long time while the sample is only covering data for about 20 years. And the other variables except the return on average total assets, the total accruals, the cash flow from operational activities in the last year, the property, plant and equipment, the annual change in sales are all scaled by the average total assets as Habib et al.(2011) do in their paper, while the average total assets is determined by the total assets in period t and $t-1$.

These additional variables are described in Table 2. The $tacc$ is the total accruals scaled by the average total assets, the negative mean of -0.015 shows that most firms may lose money in financial and investment activities so that the total accruals are negative sometimes. And the sm is the measurement of earnings smoothness, the mean is 1.818. The $ppe1$ is the property, plant and equipment scaled by the average total assets, it has a mean of 0.264 to show that the average weighted of property, plant and equipment in total assets is around 26 percent. It is a normal number compared with the maximum of the property, plant and equipment scaled by the average total assets, which is 0.995. The cfo is the cash flow from operational activities in the last year scaled by the average total assets, which has a positive

mean of 0.03. It is a little compared with other variables like casles' mean. The casles is the annual change in sales scaled by average the total assets, although the minimum of this variable has a larger absolute value than the maximum, the mean of change in sales scaled by average the total assets is 0.078 which is still positive. It shows that most of the sample firms have a continuous growth in sales. The roa is return on average total assets, it has a mean of 0.032. And all of the variables have the same number of observations except the earnings smoothness's measurement because the report of first year of every firms could not have the standard deviation of net income and cash flow from operational activities that the there is a lack of measurement of earnings smoothness. Except the first year, some beginning years can not get the standard deviation of the $n+1$ years, and these statistics would be dropped before doing the regression.

Descriptive Statistics

Table 2	Obs	Mean	Std.Dev.	Min	Max
tacc	29395	-.015	.276	-16.113	20.77
sm	26532	1.818	17.751	0	1437.864
ppe1	29395	.264	.183	0	.995
cfo	29395	.03	1.545	-257.216	46.507
csales	29395	.078	.305	-10.88	8.704
roa	29395	.032	.266	-16.116	20.787

The tacc is the total accruals scaled by the average total assets in t and t-1 year, sm is the measurement of earnings smoothness, the ppe1 is the property, plant and equipment scaled by the average total assets in t and t-1 year; the cfo is the cash flow from operational activities in last year scaled by the average total assets in t and t-1 year; the casles is the annual change in sales scaled by the average total assets in t and t-1 year; the roa is return on average total assets

Table 3 shows the relationship of dependent variable, which is the total accruals, with the independent variables, which is the earnings smoothness' measurement, and the control variables used in this study. And the variables are same with the variables in Table 2. Table 3

indicates total accruals have a positive relationship with earnings smoothness' measurement, return on assets and changes in sales. This positive relationship of total accruals with the earnings smoothness' measurement can lead to a similar conclusion with my hypothesis because the earnings smoothness measurement has a negative relationship with the earnings smoothness. But it still needs an empirical test by using the regression model to make the result certain and accurate. And the total accruals have a negative correlation with other control variables, the property, plant and equipment and the cash flow from operational activities in this table.

Matrix of correlations

Table 3	(1)	(2)	(3)	(4)	(5)	(6)
(1) tacc	1.000					
(2) sm	0.394	1.000				
(3) ppe	-0.125	-0.011	1.000			
(4) cfo	-0.008	-0.007	0.018	1.000		
(5) csales	0.042	-0.017	-0.041	0.003	1.000	
(6) roa	0.938	0.401	-0.051	0.003	0.072	1.000

The tacc is the total accruals scaled by the average total assets in t and t-1 year, sm is the measurement of earnings smoothness, the ppe1 is the property, plant and equipment scaled by the average total assets in t and t-1 year, the cfo is the cash flow from operational activities in last year scaled by the average total assets in t and t-1 year, the csales is the annual change in sales scaled by the average total assets in t and t-1 year, the roa is return on average total assets

Also, in this study I use the fixed effect of the year and the fixed effect of the industry as dummy variables to improve this model. And the dummy variable of the year is determined according to the fiscal year of the statistics in the financial statement while the dummy variable of the industry is determined by the industry code which is gotten from the basic statement of firms from the CSMAR database, too.

Results

Table 4 shows the results gotten by estimating the regression model (1) which is

$$TACC_t = a_1 Smooth_t + a_2 CFO_{t-1} + a_3 PPE_t + a_4 \Delta SALES_t + a_5 ROA_t + E$$

I use the fixed effect of year and industry as dummy variables to improve this model. And some of the original dummy variables have been omitted in regression. And because the earnings smoothness measurement is equal to the standard deviation of net income in $n+1$ divided by the standard deviation of operational activities' cash flow in $n+1$ years. To make the earnings smoothness' measurement more accurate, I drop the statistics in years which can not get enough years to come up with the standard deviation of both net income and cash flow from operational activities in $n+1$ years. So for different n I use, which is the 1, 2 and 3, the number of observations is different with each others, and because when the n is bigger, I would need to drop more statistics, the number of the observations decrease while the n is increasing.

All of the variables have significant relationship with the total accruals (the P-value is less than 0.001) except the cash flow from operational activities in last year. The a_2 on operating the plant, property and equipment is -0.106 ($n=1$), -0.107 ($n=2$), -0.108 ($n=3$), which shows the effect of the plant, property and equipment on the total accruals is negative. The a_3 is equal to -0.026 ($n=1,2$), -0.027 ($n=3$) which presents a negative relationship between changes in sales on total accruals. The a_4 on cash flow from operational activities is shown with a big P- value, so the relationship is not significant. The a_5 on ROA in year t are equal to 0.970

($n=1$), 0.964 ($n=2$), 0.953 ($n=3$) and which presents that the ROA may have a positive relationship with total accruals and the effect is large and significant. This result of relationship between total accruals with ROA and cash flow from operational activities is also meeting how I measure total accruals mentioned before in my methodology part, which is “the total accruals are measured by the net income minus the cash flow from the operational activities”. Also, the dummy variables which are the fixed effect of year and industry are contained in this result while they are not showed in the table, and some of them are omitted, and some of them have the significant while others do not have significant relationship with the total accruals. And the adjusted R-square of three regressions are all big enough to show the models are good in correlation.

My hypothesis expected a negative relationship between the earnings smoothness and the total accruals. And because the measurement of earnings smoothness has a negative relationship with the earnings smoothness, the lower variables present smoother earnings, as I mention in the methodology. The expected result of my hypothesis is to be a positive relationship between the total accruals and the earnings smoothness’ measurement. And the results provide an a_1 on measurement of earnings smoothness, which is equal to around 0.000 ($n=1,2$) and 0.001 ($n=3$). The effect of independent variable, earnings smoothness is small compared with the control variables and the value of a_1 presents a significant (P-value<0.01, when $n=2,3$.P-value<0.05, when $n=1$) and positive relationship between measurement of earnings smoothness and total accruals. And this result totally meets the expected result of my hypothesis So I can get the result that the total accruals have a significant and negative relationship with earnings smoothness, which totally meet my hypothesis. And this result can

also lead to a similar conclusion with what Dechow(1994) claim in his paper that the accruals can be used to smooth the stream of earnings because as my result shows, lower accruals represent the smoother earnings.

Linear regression

Table 4	n=1		n=2		n=3	
tacc1	Coef. And significant	T-value	Coef. And significant	T-value	Coef. And significant	T-value
Sm(a ₁)	0.000**	2.542	0.000***	2.640	0.001***	3.419
ppe1(a ₂)	-0.106***	-31.009	-0.107***	-29.373	-0.108***	-28.604
csales(a ₃)	-0.026***	-5.257	-0.026***	-5.002	-0.027***	-4.703
cfo1(a ₄)	-0.002	-0.950	-0.001	-0.917	-0.001	-0.876
roa(a ₅)	0.970***	89.674	0.964***	87.004	0.953***	59.212
Constant	-0.005	(-1.176)	0.003	(0.372)	0.011	(1.228)
Observations	26,526		23,794		21,118	
R-squared	0.889		0.896		0.906	
Year FE	Yes		Yes		Yes	
Industry	Yes		Yes		Yes	
Adj.R-sq	0.888		0.896		0.906	

The tacc is the total accruals scaled by the average total assets in t and t-1 year; sm is the measurement of earnings smoothness, the ppe1 is the property, plant and equipment scaled by the average total assets in t and t-1 year; the cfo is the cash flow from operational activities in last year scaled by the average total assets in t and t-1 year; the casles is the annual change in sales scaled by the average total assets in t and t-1 year; the roa is return on average total assets

Robust t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

V. Conclusion

My study is on the relationship between total accruals and earnings smoothness in Chinese market. First, I review the prior papers to get the certain definition of these two terms to find

that there is a correlation between them because both of the total accruals and earnings smoothness are the parts of earnings management and the proxies of earnings quality while the measurements of these two have some common parts. Although there is a lack of empirical evidence for Chinese market, I develop a hypothesis that the total accruals have negative relationship with earnings smoothness according to the prior study done by Dechow(1994) that claims the accruals can smooth both cash flow from operational activities and the stream of earnings. And I develop a model formed by the models used in prior papers by Habib et al.(2011) and Lapointe-Antunes et al. (2006) and get the measurement of the total accruals and earnings smoothness from the prior literature. Then I determine the data sample and adjust the data which is gotten from CSMAR database to prepare the statistics using in my regression models. I do the description of the statistics in all the variables and make a table of correlation between independent variables with other variables and I get a correlation which supports my hypothesis that earnings smoothness' measurement seems to have a negative correlation with the earnings smoothness. After this, I do the empirical test using three different earnings smoothness calculated by three different ranges of time which lead to 3 results. And the empirical results totally support my hypothesis that the total accruals have significant and negative relationship with earnings smoothness (In the three regressions, all P-value of independent variable<0.05). So I use this result as the evidence to the negative relationship between total accruals and earnings smoothness that the total accruals can be used to smooth the earnings which is similar with idea of Dechow(1994). By doing this study, my paper can provide an empirical evidence for the total accruals' relationship with the earnings smoothness in Chinese market. This empirical evidence could also be the

contribution of my study.

My study have some limitations. As I mentioned in the introduction and literature review section, the total accruals is a complex concept, and in my study I do not distinguish the accruals whether they are normal or abnormal. This is a limitation of my study. Because there are still some differences between the normal and abnormal accruals. Also in prior study, the measurement of earnings smoothness in model (2) covers 10 years which the n in this calculation is equal to 9. But in my study I use different n from 1 to 3. Because the n which is bigger than 3, it means the standard deviation is for at least five years, which is too long that the sample is only covering data for about 20 years. The different value of n may influence result, although I use three different value n to decrease the effect. Also, the Chinese accounting principle has been adjusted in 2013, and my data sample is from 1998 to 2017 which cover this period. The statistics I get from the database may not change naturally because of this. The result may also be influenced.

For the further study, the researchers can recognize the normal and abnormal accruals and concentrate on the normal accruals' and abnormal accruals' relationship with earnings smoothness separately. Also, the further study can have a bigger data sample to get the earnings smoothness cover the same number of years as the original model (2) do, which is the 10 years. And they do not need to concentrate on the Chinese firms, they can using statistics about firms from other countries. And in my study, the earning smoothness has a significant relationship with accruals, which is one of the proxies of earnings quality determined by Dechow et al. (2010). So, the researchers can also concentrate on the relationship between the earnings smoothness and earnings quality, while Dechow et al.

(2010) say there is not enough evidence to claim earnings smoothness have direct relationship with earning quality.

Appendix

A-variables in Table 1

Sales	The total annual sales
ni	The annual net income
ocf	The annual operating cash flow
ppe	The annual total plant, property and equipment
ta	The annual total assets

B-variables in Table 2

csales	The annual changes in sales, equal to sales in year t minus sales in t-1/total assets
ppe1	The annual total plant, property and equipment/total assets
cfo	The annual operating cash flow of last year/total assets
tacc	The annual total accruals, equal to net income minus operating cash flow/total assets
sm	The earnings smoothness, equal to ni_sd/ocf_sd
roa	Return on total assets, equal to net income in year t divided by average total assets

Reference

- Biedleman, C. (1973) Income smoothing: The role of management. *The Accounting Review*, 48(4), 653–667.
- Dechow, P. M. (1994). Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of accounting and economics*, 18(1), 3-42.
- Dechow, P.,W. Ge,& Schrand, C.(2010) Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics*, Volume 50, Issues 2–3, December 2010, Pages 344-401.
- Francis, J.,D. Nanda,& Olsson, P.(2008) Voluntary Disclosure, Earnings Quality, and Cost of Capital. *Journal of Accounting Research*, Volume 46, Issues 1, March 2008, Pages 53-99.
- Dicheva, L.,J.Grahambc, C. Harveybc, & Rajgopala, S.(2013) Earnings quality: Evidence from the field. *Journal of Accounting and Economics*, Volume 56, Issues 2–3, Supplement 1, 15 December 2013, Pages 1-33.
- Kim,Y., Myung-S. Park, & Wier, B.(2012) Is Earnings Quality Associated with Corporate Social Responsibility?. *The Accounting Review*: May 2012, Vol. 87, No. 3, pp. 761-796.
- McInnis, J. (2010). Earnings smoothness, average returns, and implied cost of equity capital. *The Accounting Review*, 85(1), 315-341.
- Habib, A., Hossain, M., & Jiang, H. (2011). Environmental uncertainty and the market pricing of earnings smoothness. *Advances in Accounting*, 27(2), 256-265.

- Ronen, J., Sadan, S., (1975). Classificatory smoothing: alternative income models. *Journal of Accounting Research* 13, 133–149.
- Barnea, A., J. Ronen, and S. Sadan. (1975). The implementation of accounting objectives: An application to extraordinary items. *The Accounting Review* 50 (January): 58–68.
- Dechow, P., Sloan, R., Sweeney, A., (1995) . Detecting earnings management. *The Accounting Review* 70, 193–225.
- Francis, J., R. LaFond, P. M. Olsson, & K. Schipper. (2004) . Costs of equity and earnings attributes. *The Accounting Review* 79 (October): 967–1010.
- Ball, R., Shivakumar, L., 2005. Earnings quality in UK private firms: comparative loss recognition timeliness. *Journal of Accounting and Economics* 39, 83–128.
- Lapointe-Antunes, P., Cormier, D., Magnan, M., & Gay-Angers, S. (2006): On the Relationship between Voluntary Disclosure, Earnings Smoothing and the Value-Relevance of Earnings: The Case of Switzerland, *European Accounting Review*, 15:4, 465-505
- Guay, W. R., Kothari, S. P., & Watts, R. L. (1996). A market-based evaluation of discretionary accrual models. *Journal of accounting research*, 34, 83-105.
- Peasnell, K. V., Pope, P. F., & Young, S. (2005). Board monitoring and earnings management: do outside directors influence abnormal accruals?. *Journal of Business Finance & Accounting*, 32(7-8), 1311-1346.
- Jayaraman, S. (2008). Earnings volatility, cash flow volatility, and informed trading. *Journal of Accounting Research*, 46(4), 809-851.