

Audit Quality And Earnings Management: Evidence From Shanghai Stock Market In China

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ABSTRACT

The prior studies report that the global big4 audit firms (Big4) generally provide higher quality audit services compared to the local audit firms, but inconsistent result on audit quality of the Big4 audit firms was observed in the Chinese stock market. We believe that it may be not appropriate to distinguish high or low audit quality as separating the Big4 and non-Big4 because the market share of the Big4 and non-Big4 on Shanghai stock market is considerably lower than that of other countries. Therefore, we use the measure of Chinese big10 audit firms (Big10) as higher audit quality and examine the association with the level of earnings management using the sample of Shanghai Stock Market listed companies in China. From the empirical tests, we find that the Big10 provide better audit service to prevent their clients' earnings management than non-Big10 audit firms. The finding of this study demonstrates the Big10 provide differentiated audit service from non-Big10 audit firms on Shanghai stock market in China.

Keywords: Audit Quality; Earnings Management; Big Audit Firms; Shanghai Stock Market

INTRODUCTION

Most audit studies suppose that the auditor size would be a relevant proxy of audit quality and they use a binominal variable of whether the company is audited by the international big4 audit firms (Big4) or not to investigate the influence of audit quality. By using the proxy of audit quality, many U.S. studies report that the Big4; PWC, KPMG, E&Y, and Deloitte, provide better quality of audit service than non-Big4 (Becker, DeFond, Jiambalvo & Subramanyam, 1998; Campa, 2013; Choi, Kim, Kim & Zang, 2010; DeAngelo, 1981; Francis & Yu, 2009; Palmrose, 1989; Teoh & Wong, 1993). However, Chinese studies using the binominal variable of the Big4 provide mixed results in terms of audit quality (Feng & Zhou, 2007; Guo, 2011; Wang & Chen, 2006; Wang & Han, 2009; Wang & Yung, 2011; Wu, Zhang & Zhou, 2007; Zhang, Tian, Lv & Wang, 2014). Specifically, the prior studies did not present a consistent result of the Big4 providing better quality audit service than non-Big4 on Shanghai stock market in China.

We consider that this is because the market shares between the Big4 and local audit firms in China stock market was different from other countries. In the global stock market, the Big4 mainly occupies the audit service market of large companies representing each country, while local accounting firms in each country are in charge of auditing small and medium-sized companies. However, in China, the government tried to steadily develop its local audit service firms. In response, the market share of the Big4 on Shanghai stock market is considerably lower than that of other countries. Thus, in this study, we suppose that it may be not appropriate to distinguish high or low audit quality as separating the Big4 and non-Big4 on Shanghai stock market in China.

The Chinese government categorizes the size of audit firms by the ranks reported from the Chinese Institute of Certified Public Accountants (CICPA). The CICPA has selected the top 100 accounting firms every year since 2003, with the top 10 accounting firms classified as big-sized audit firms, medium-sized audit firms from 11th to 200th, and the rest being small-sized audit firms. In this situation, rather than the existing distinction between the Big4 and non-Big4, the distinction between the Chinese big10 audit firms (Big10) and non-Big10 audit firms is a better measure for

audit quality in Shanghai stock market. Therefore, we predict that the earnings quality of firms audited by the Big10 is higher than non-Big10.

In order to examine that the Big10 provides audit service of higher quality than non-Big10 in terms of their clients' level of earnings management, we collect 5,897 listed firm observations from 2009 to 2016 fiscal years in Shanghai stock market. From the empirical test, we find that there is a significantly negative association between the Big10 and the level of earnings management. This result indicates that the Big10 prevents their clients' earnings management activity more effectively than non-Big10 audit firms. It can be interpreted that in countries with government support for local audit firms, the influence of the Big4 is not significant.

This study contributes to the literature in the following ways. First, to our knowledge, there is no empirical evidence provided from prior studies about the audit quality of the Big10 to compare with non-Big10. We believe that our empirical evidence may shed a light on the understanding of the Big10 in Chinese stock market. Second, this study can provide insight into the unique market situation strongly influenced from the government and stress the importance of the auditor size in Shanghai stock market.

PRIOR LITERATURES AND HYPOTHESES DEVELOPMENT

Prior studies reported that managers perform earnings management primarily for the purpose of enhancing their interests instead of stockholders' wealth (Dechow, Sloan & Sweeney, 1995; Rhee, Sloan & Sweeney, 2012; Rhee, Yoo & Cha, 2016). However, in the case of Chinese companies, they also have a more unique purpose in carrying out earnings management under socialist conditions (Liu & Lu, 2007; Zho, Choi & Yeom, 2013; Xu & Rhee, 2018). China is a socialist country and very distinct from capitalist countries. Chinese government can intervene more actively in its stock market than other capitalist government (Xu & Rhee, 2018). In this situation, Chinese companies are under high-level supervision from the Chinese government and need to maintain good relations with the government in order to run their business well. Zho et al. (2013) explain that Chinese listed companies are temporarily suspended in the event of a three-year consecutive loss in accordance with the China Securities Act. Thus, a company that has incurred a loss has an incentive to manage its earnings to maintain its listing qualification under the control of Chinese government. Liu and Lu (2007) also find that Chinese listed companies manage their earnings in order to avoiding delisting from the control of Chinese government.

In audit literature, various measures are used to estimate audit quality, of which the most important proxies are auditor size, audit fee, and audit hours (Campa, 2013; Francis & Yu, 2009; Palmrose, 1986; Rhee et al., 2012). In terms of auditor size, prior U.S. studies generally explain that the Big4 provide a better-quality audit service (Caramanis & Lennox, 2008; Francis & Krishnan, 1999; Piao & Kang, 2017). Francis and Krishnan (1999) argue that big auditors provide high quality audit services because they apply more conservative auditing standards to protect their reputation value. Therefore, the Big4 spend more audit hours and charge higher audit fees to clients because of the better-quality audit service (Piao & Kang, 2017). For this reason, the method of measuring audit quality by separating Big4 and non-Big4 is generally used in the audit studies,

Many U.S. audit studies report the consistent results that there is a significantly negative association between Big4 and their clients' level of earnings management. This means that the level of earnings management is reduced under the supervision of the Big4. Teoh and Wong (1993) analyze the difference from audit quality of big auditors and non-big auditors using earnings response coefficient, and they find that the earnings response coefficient from big auditors is significantly higher than non-big auditors. Becker et al. (1998) explain that there is a difference in audit quality between big6 audit firms and non-big6 audit firms. They present the results that discretionary accruals are observed relatively low in companies audited by big6 auditors.

However, Chinese studies about the effect of the Big4 on their clients' earnings management reported mixed result. Wang and Chen (2006) find that discretionary accruals of the firms audited by Big4 auditors are lower than by non-Big4 auditors. This result supports the argument that Big4 auditors provide the better quality of audit service. On the other hands, Wu et al. (2007) report that there is no difference about discretionary accruals of the firms audited by big-size audit firms and by small-size audit firms. They find that mid-size audit firms provide the significantly higher quality audit service than big or small-size audit firms. Feng and Zhou (2007), Wang and Han (2009), and Guo (2011)

investigate the effect of audit quality on firm's earnings management using the proxy of discretionary accruals. However, they do not find the evidence that the Big4 is superior to mid or small-size audit firms in terms of audit quality.

Audit firms in China must obtain permission from the Chinese government every year to carry out audit work, and the government selects separate audit firms that can take charge of audit work of listed companies every year. The Chinese government uses the ranking of the top 100 audit firms disclosed by the CICPA to categorize the size of audit firms. The CICPA has selected the top 100 accounting firms every year since 2003, with the top 10 accounting firms classified as big audit firms, medium-sized firms from 11th to 200th, and the rest being small-sized firms. Table 1 presents the Big10 in 2016, and the size of audit firms was ranked by their business income instead of number of CPAs. Although big4 is included in Big10, it can be seen that the number of CPAs at local firms is relatively larger than that of Big4.

Table 1. The Rank of Audit Firms in 2016

Rank	Audit Firms	Business Income	N. of CPAs
1	PricewaterhouseCoopers Zhong Tian	411,733.06	1,056
2	Ruihua	403,014.91	2,514
3	Deloitte Touche Tohmatsu Huaong	332,477.32	852
4	BDO China Shu Lun Pan	350,168.60	1,939
5	Ernst & Young Hua Ming	296,071.83	999
6	KPMG Huazhen	253,335.25	741
7	Pan-China	192,841.32	1,453
8	ShineWing	156,075.17	1,289
9	Baker Tilly China	152,274.80	943
10	Da Hua	157,545.52	1,114

(Unit: 10,000 Yuan, Person)

Note: Released by CICPA on January 12th, 2017. The ranking is based on business income instead of the size of CPAs.

In most prior studies about audit quality, the high and low audit quality was measured as audited by the Big4 and non-Big4 audit firms (Becker et al., 1998; Campa, 2013; Choi et al., 2010; DeAngelo, 1981; Francis & Yu, 2009; Palmrose, 1989; Teoh & Wong, 1993). But in China case, the size and market share of certain local audit firms are as high as the Big4 (Piao & Kang, 2017). Therefore, it is deemed more appropriate to use the binominal variable of Big10 and non-Big10 as measures to distinguish between high and low audit quality in Shanghai stock market. If the Big10 provides audit services of higher quality than non-Big10, the level of the earnings management for the clients of the Big10 would be significantly lower than the non-Big10. To investigate the association between the audit quality from the Big10 and their clients' level of earnings management, we set the following hypothesis.

Hypothesis: There is a significantly negative association between the Big10 and their clients' level of earnings management.

RESEARCH DESIGN

Measures Of Earnings Management

In this study, we measure the level of earnings management for listed companies in Shanghai stock market using the modified Jones model below, commonly used in the study of earnings management (Dechow et al., 1995). In the model, $TA_{i,t}/A_{i,t-1}$ from equation (1) is the total accruals and NDA from equation (2) is the estimated non-discretionary accruals. The difference between $TA_{i,t}/A_{i,t-1}$ and NDA from equation (3) is the estimated discretionary accruals (DA). The DA implies the level of managers' discretionary decision making in accounting process. In accounting study, absolute value of DA is commonly used as a proxy of the level of earnings management (Dechow et al., 1995; Kim, Yu & Kim, 2011; Jang & Park, 2015; Piao & Kang, 2017; Rhee et al., 2012). Therefore, we use the dependent variable of ABSDA as a proxy for level of earnings quality.

$$TA_{i,t}/A_{i,t-1} = \beta_1(1/A_{i,t-1}) + \beta_2(\Delta REV_{i,t}/A_{i,t-1}) + \beta_3PPE_{i,t}/A_{i,t-1} + \varepsilon \quad (1)$$

$$NDA_{i,t} = \beta_1(1/A_{i,t-1}) + \beta_2(\Delta REV_{i,t} - \Delta REC_{i,t})/A_{i,t-1} + \beta_3PPE_{i,t}/A_{i,t-1} \quad (2)$$

$$DA_{i,t} = TA_{i,t}/A_{i,t} - NDA_{i,t} \quad (3)$$

where,

- $TA_{i,t}/A_{i,t-1}$ = total accruals scaled by lagged total assets;
- $A_{i,t-1}$ = total assets at t-1;
- $NDA_{i,t}$ = estimated non-discretionary accruals;
- $\Delta REV_{i,t}/A_{i,t-1}$ = revenues in year t less revenues in year t-1 scaled by lagged total assets;
- $PPE_{i,t}/A_{i,t-1}$ = property, plant, and equipment in year t scaled by lagged total assets;
- $\Delta REC_{i,t}/A_{i,t-1}$ = receivable in year t less receivables in year t-1 scaled by lagged total assets

Research Model

To test our hypothesis, we construct an indicator variable (BIG10) that equals to 1 if the audit firm is the Big10, 0 otherwise. We set up the model by using the natural logarithmic value of audit fee which is the measure of the level of audit fee of audit firms and adding control variables which can affect management earnings based on prior studies (Jang & Park, 2015; Piao & Kang, 2017; Chun & Rhee, 2015) as follow. Table 2 provides the explanation of variables.

$$ABSDA = \alpha_0 + \alpha_1BIG10 + \alpha_2FEE + \alpha_3SIZE + \alpha_4LEV + \alpha_5ROA + \alpha_6GROW + \alpha_7LOSS + \alpha_8CF + YearDummy = IndustryDummy + \varepsilon$$

Table 2. The Explanation of Variables

Variables	Explanation
ABSDA	Absolute value of DA, Level of earnings quality measured by the Jones model (1995).
BIG10	An indicator variable that equals one when the audit firm is a Big10 and zero otherwise.
FEE	The natural logarithm of audit fees.
SIZE	The natural logarithm of total asset.
LEV	Total liabilities scaled by total assets.
ROA	Return on assets.
GROW	Growth rate.
LOSS	An indicator variable that equals one when the company make a profit and zero otherwise.
CF	Net cash flow from operating activities.
Year Dummy	Year dummy variables.
Industry Dummy	Industry dummy variables.

Sample Selection

The empirical tests are based on 5,897 Chinese listed firm-year observations on the A-share market of the Shanghai stock market from 2009 to 2016. Our samples satisfy the following selection criteria: (1) Non-financial companies; (2) Financial information are available; (3) Auditor and audit fee information are provided. We collect the financial data from China Stock Market & Accounting Research database. We sort Big10 using the reports published by CICPA. We present the sample distribution by fiscal year in Table 3 and the sample distribution by Industry group in Table 4.

Table 3. Sample Distribution by Year

Year	Number of Observations	Percentage (%)
2009	460	7.80
2010	703	11.92
2011	782	13.26
2012	795	13.48
2013	804	13.63
2014	817	13.85
2015	770	13.06
2016	766	13.00
Total	5,897	100.00

Table 4. Sample Distribution by Industry

Industry	N. of obs.	Percentage (%)
Agriculture, Forestry, Animal Husbandry and Fishery	89	1.51
Mining	221	3.75
Manufacturing	3,169	53.74
Electricity and Gas	365	6.20
Construction	219	3.71
Transportation and storage industry	367	6.22
Information transmission, Computer Services	220	3.73
Wholesale and Retail	551	9.34
Accommodation and Catering	22	0.37
Real Estate	446	7.56
Leasing	57	0.97
Scientific Research and Geological Prospecting	24	0.41
Water Conservancy and Environment	38	0.64
Health and Society Welfare industry	12	0.20
Culture and Entertainment industry	97	1.65
Total	5,897	100.00

EMPRICIAL RESULTS

Descriptive Statistics

Table 5 provides descriptive statistics. The mean and standard deviation of ABSDA are 0.057 and 0.059 respectively. The average of BIG10 is 0.530 and this indicates that the Big10 account for about 53% of audit market share in Shanghai stock market. The distribution of the control variables is generally consistent with prior Chinese empirical studies.

Table 5. Descriptive statistics of the main variables

Variables	Minimum	Mean	Maximum	Std. Dev.	N. of Obs.
ABSDA	0.001	0.057	0.341	0.059	5,897
BIG10	0.000	0.530	1.000	0.499	5,897
FEE	12.429	13.729	16.475	0.763	5,897
SIZE	19.370	22.474	26.382	1.374	5,897
LEV	0.096	0.525	1.033	0.203	5,897
ROA	-0.199	0.032	0.185	0.053	5,897
GROW	-0.744	0.166	3.924	0.561	5,897
LOSS	0.000	0.900	1.000	0.299	5,897
CF	-0.194	0.042	0.245	0.075	5,897

Univariate Analysis

Table 6 presents the Pearson correlations among the earnings management (ABSDA), the Big10, and other control variables. In this table, ABSDA is significantly and negatively correlated with BIG10. This implies that the level of earnings management is lower at the firms audited by the Big10 than at the firms audited by non-Big10 audit firms. This result of univariate analysis supports our hypothesis. However, the implication of the univariate results may be limited because the various factors are uncontrolled. Therefore, we run the multivariate regression to examine the association between earnings management and audit quality coupled with control variables next part.

Table 6. Univariate correlations between variables

	BIG10	FEE	SIZE	LEV	ROA	GROW	LOSS	CF
ABSDA	-0.083**	-0.0151**	-0.183**	0.114**	-0.140**	0.100**	-0.161**	-0.262**
BIG10	-	0.297**	0.227**	0.024	0.024	-0.022	0.013	0.007
FEE	-	-	0.769**	0.172**	0.068**	0.030*	0.086**	0.077**
SIZE	-	-	-	0.279**	0.090**	0.055**	0.147**	0.064**
LEV	-	-	-	-	-0.401**	0.048**	-0.206**	-0.182**
ROA	-	-	-	-	-	0.159**	0.640**	0.333**
GROW	-	-	-	-	-	-	0.137**	0.020
LOSS	-	-	-	-	-	-	-	0.170**

Note: **, * indicate, respectively, the significance level at the 1% and 5% level (2-tailed).

Multivariate Analysis

To carry out multivariate analysis, we need to verify that our empirical model is appropriate. Table 7 is the result of the Durbin-Watson statistic (DW) test for autocorrelation in the residuals from our empirical model. The DW provides a value between 0 and 4, and the value of 2 indicates that there is no autocorrelation deleted in the model. If the value is between 0 to less than 2, it may have positive autocorrelation while if the value is between more than 2 to 4, it may have negative autocorrelation. In table 7, the DW test result gives a value of 1.994 which is very close to 2. Therefore, our empirical model follows a normal distribution and has a strong explanatory power as a whole.

Table 7. Durbin-Watson Test Result

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
0.366	0.134	0.133	0.054552	1.994

Table 8 is the result of ANOVA test. The F-value of 114.181 indicates that our empirical model is appropriate to perform multivariate analysis.

Table 8. F-test Result

Model	Sum of Squares	Degree of Freedom	Mean Square	F	Sig.
Regression	2.718	8	0.340	114.181	0.000
Residual	17.522	5,888	0.003		
Total	20.241	5,896			

Table 9 presents the result of multivariate regression for testing hypothesis. This study examines the association between Big10 and clients' level of earnings management. The first column in table 9 shows that big audit firms (BIG10) is negatively associated with clients' level of earnings management at one percent or less of significance level (t-stat = -3.17). This negative association suggests that the level of earnings management is significantly reduced in the case of the Big10, indicating that the Big10 provides a higher audit service than non-Big10. We check the variance inflation factor (VIF) to examine whether multicollinearity problems have occurred. Since our maximum VIF is 2.704, which is smaller than the benchmark 10, it can be interpreted that there will be few multicollinearity problems in our empirical test.

Table 9. Multivariate Test Result

Independent variables	Dependent variable: ABSDA	
	Coefficient	Adjusted t-value
BIG10	-0.040**	-3.17
FEE	0.010	0.51
SIZE	-0.194**	-9.72
LEV	0.120**	8.38
ROA	0.066**	3.72
GROWTH	0.116**	9.34
LOSS	-0.127**	-7.98
CF	-0.231**	-17.84
Year Dummy	Included	
Industry Dummy	Included	
Adjusted R2	0.133	
Max VIF	2.704	
Number of Observations	5,897	

Note: ** indicate, respectively, the significance level at the 1% and 5% level (2-tailed).

CONCLUSION

This study examines the association between the Big10 and their clients' level of earnings management in Chinese stock market. The audit service market in China provides a very unique research setting due to the socialist market situation. Mostly, the Big4 occupy the audit service market for major companies around the world, while each country's local accounting firm is primarily responsible for auditing small-sized or medium-sized companies. However, in China, the government tried to steadily develop its local audit firms. In response, the market share of the Big4 on Shanghai stock market is considerably lower than that of other countries. Thus, it may be not appropriate to distinguish high or low audit quality as separating the Big4 and non-Big4 audit firms on Shanghai stock market in China.

The Chinese government categorizes with the top 10 accounting firms classified as big-sized audit firms, mid-sized audit firms from 11th to 200th, and the rest being small-sized audit firms. In this situation, the distinction between the Big10 and non-Big10 is a better measure for audit quality in China rather than the existing distinction between the Big4 and non-Big4. Therefore, in this study we suggest that the earnings quality of firms audited by the Big10 is better than of firms audited by non-Big10 audit firms.

From the empirical test, we find that there is a significantly negative association between the Big10 and their client's level of earnings management. This result indicates that the Big10 reduce the level of earnings management activity more effectively than non-Big10. This study, however, may have limitation under following caveats. First, there may

be other missing factors which bias our result. We eliminated several companies that provided incomplete data during the sample selection process, which could have some impact on the results of the study. Second, we cannot rule out the possibility that our result largely depend on measurement criteria or time period due to the nature of the empirical analysis. Therefore, it is challenging to say that our results can be generalized into a broader set of firms or time periods.

Despite the limitation, this study contributes to the literature in the following ways. First, to our knowledge, there is no empirical evidence provided from prior studies about the audit quality of the Big10 to compare with non-Big10 audit firms. We believe that our empirical evidence may shed a light on the understanding of the Big10 on Shanghai stock market in China. Second, this study can provide insight into the unique market situation strongly influenced from the government and stress the importance of the auditor size on Shanghai stock market in China.

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NOTES