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**The relationship between the volatility of other comprehensive income and audit fees:**

**Evidence from China**

In Partial Fulfillment of the Requirements  
for the Bachelor of Science in Accounting

by

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## I. INTRODUCTION

This study aims to examine the relationship between the volatility of other comprehensive income (OCI) and audit fees in China. It is motivated by the trend that the regulations as well as official descriptions in the field of OCI has become more and more detailed and the difficulty this measurement adds to audit. This part will first introduce the regulations according to OCI and audit fees, then briefly summarize previous researches and the knowledge gap in this field. Finally, it will state the objective and the importance of this study.

In recent decades, the concept of OCI has been introduced worldwide. In October 1992, the Accounting Standard Board (ASB) published Financial Reporting Standard 3, which required list companies to make Statements of Total Recognized Gains and Losses as supplements to profit and loss accounts. In September 2007, International Accounting Standard (IAS) 1 stated that OCI should be reported in the Statement of Comprehensive Income rather than Statement of Changes in Equity. Then in 2017, Financial Accounting Standards Board (FASB) in U.S. announced to combine Accounting Standard Codification Topic 225, Income Statement and Accounting Standard Codification Topic 220, Comprehensive Income into new Topic 220, Reporting Comprehensive Income, showing the increasing significance of components in comprehensive income (Chen 2018).

Same as the world trend, China also pays more and more attention regarding OCI. Since 2006, requirements on financial statements have begun moving close to IFRS. In 2009, Enterprise Accounting Standards Interpretation No.3 published by Chinese Ministry of Finance pointed out the contents relevant to OCI. Then in 2014, the same department issued Accounting Standards for Business Enterprises No.30 – Presentation of Financial Statements. The document divides OCI into two categories. They are the OCI components that cannot be reclassified into profits and losses in the next accounting period, and the OCI components that can be reclassified into profits and losses if certain criteria are met (Ding 2019). The history shows that the descriptions and regulations in the field of OCI have become more detailed in recent ten years in China.

Since the requirements in reporting OCI are becoming specified and comprehensive, this can heavily increase auditors' workload in this field. The reasons are as follows. First, OCI itself is significant and needs auditors' attention. The higher volatility of OCI makes investors better interpret risks and incomes of companies (Shi et al. 2017). Positive relationship has been found between the volatility of OCI and cost of debt as well as probability of collateral requirement, and negative relationship has been found between the volatility of OCI and the use of debt (Bao et al. 2018). Second, the volatility of OCI increases the inherent risks of firms. Some components of the OCI come from fair-valued assets, whose value highly relies on subject judgements (Huang 2016). However, studies show that managers prefer less transparent forms when presenting their financial performance (Hunton 2006). This can give auditors huge challenges to figure out whether the assets are truly fair valued. In addition, volatility in comprehensive income is connected to market risks companies face, such as interest rate risk and exchange rate risk. Auditors need to factor these as well (Touron 2016). Therefore, a number of evidences show that the volatility of OCI has great influences on auditing, and auditors must regard this volatility as a serious issue for them.

Previous studies have shown that there are potential relationships between the volatility of company's OCI and its audit fees. Lee and Park (2013) find that the investors' valuation effects are stronger for subjective-valued OCI components, which shows how investors react to the volatility of OCI. In 2014, Ettredge et al. stated that there is a positive relationship between audit fees and proportion of fair-valued assets in total assets regarding to financial companies. In 2016,

the positive relationship between volatility of OCI and audit fees is found by Huang et al., by using the data of U.S. company between 2002 to 2006. In 2018, Chen, who applied the data of companies listed in China, pointed that when everything else being equal, the existence of OCI does increase the audit fees, but he does not find the relationship between the size of OCI and the amount of audit fees. However, in 2019, Ding, who also studied Chinese companies, finds the positive relationship between OCI and audit pricing. He claimed that this is because auditors need more compensation for the increasing audit risks.

Although Chen (2018) and Ding (2019) have examined the relationship between the OCI and audit fees, they only focus on the existence and amount of OCI instead of the volatility of it. Moreover, Huang et al. (2016) have demonstrated the positive relationship between the volatility of OCI and audit fees based on the data of S&P 500 companies. These show a knowledge gap for this study to investigate. Therefore, based on these previous researches, this study aims to investigate the volatility of other comprehensive income and audit fees in China.

The significance of this study is summarized as follows. First, since the uncertainty of the global economy has become more and more volatile, the volatility of OCI tends to increase year by year (Chen 2018). This research can examine how auditors react to this trend and price their service, which can enrich the theories of pricing model of auditing. Second, Huang et al. (2015) have examined the positive relationships between the volatility of OCI and audit fees by using data of S&P 500 companies. As mentioned above, China has been adopting the international accounting standards step by step, and states more and more specific and detailed description and regulations regarding to OCI (Chen 2018). Therefore, this study will examine whether the results in western countries can also be true in China, or whether there will be differences. This can also show how the relevant regulations are conducted in China.

Moreover, this study contributes to the current literatures in several ways. First, this is the first study to investigate the relationship between the audit fees and the volatility of OCI in China. The model this study applies controls many factors which may affect the audit fees (e.g., size and profitability of the company). As what will be discussed later, the data fit the model very well and the results are authentic. Thus, Chinese government agencies and Chinese Institute of Certified Public Accountants (CICPA) can use this study as references to adjust the relevant regulations and training systems. In addition, this study also investigates whether the interaction term of the volatility of OCI and Big 4 firms and the interaction term between the volatility of OCI and experienced auditors can impact the audit fees. This contributes to the audit pricing theory regarding to how different firms and auditors price their services.

The remainder paper is organized as follows. In the next section, relevant previous literatures are organized and summarized, and then three hypotheses are developed based on them. In section 3, sample data applied to this study will be presented, and then the empirical models will be explained. In section 4, the results of this study will be reported. Finally, in section 5 and 6, the interpretation of the results will be discussed, and the conclusion will be made.

## **II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT**

Using the data from S&P 500 firms in the SEC's EDGAR system from years 2002 to 2006, Huang et al. (2016) found that there is a positive relationship between the volatility of OCI and audit fees. They found the overall model and the explanatory power are significant and pointed that auditors recognize and price the volatility, or the risk factors of OCI. My study will apply the

same model but use the data from more recent years in China, in order to examine that whether auditors of Chinese list companies also price their services according to the volatility of OCI.

Moreover, applying the data from A-share listed companies in Shanghai and Shenzhen from 2011 to 2017, Ding (2019) found that when everything else remains unchanged, the relationship between audit fees and OCI is significantly positive. He explained this as the compensation for increasing audit risks. However, Chen (2018) agreed with Ding that the existence of OCI increases audit fees, but he did not find the relationship between the size of OCI and the amount of audit fees. He also applied the data from A-share listed companies in Shanghai and Shenzhen, but his data is from year 2010 to year 2016. In my study, the volatility of OCI rather than the size of OCI will be used as independent variables. Therefore, in those previous studies, the potential workload of auditors, which represented by the size of OCI, is focused, while in my study, the risks of the movement of fair values, which is represented by the volatility of OCI, is focused.

Several concepts need to be defined and explained in this study. They are the OCI and audit fees, the OCI volatilities and audit fees, Big 4 companies and OCI, as well as the auditors' experience and OCI. The hypotheses are then built based on the explanation of these concepts.

### **OCI and Audit Fees**

The formula of audit risk is  $\text{Audit Risk} = \text{Inherent Risk} * \text{Control Risk} * \text{Detection Risk}$ . According to AS No.8 (PCAOB 2010), the inherent risk is “the susceptibility of an assertion to a misstatement, due to error or fraud, that could be material, individually or in combination with other misstatements, before consideration of any related controls”. The detection risk is “the risk that the procedures performed by the auditor will not detect a misstatement that exists and that could be material.” The audit risk is “the risk that the auditor expresses an inappropriate audit opinion when the financial statements are materially misstated”.

In 2014, Ettredge et al. found the positive relationship between the audit fees and the proportion of fair-valued assets to total assets in financial institutions. This suggests that the increase amount of fair-valued assets can increase the inherent risk of the company, since the volatility of fair-market value decides it can be easier to misstate than historical value. Therefore, in order to remain the same audit risk, auditors need to decrease the detection risk, which needs heavier workloads. Thus, they have the potential to increase the audit fees. Also, according to Kim et al. (2012), when adopting a more complex accounting regulations, auditors will increase their compensations. As mentioned before, China is developing the regulations in the area of OCI. Therefore, according to these concepts, I predict that when pricing their services in China, auditors take OCI into considerations.

### **OCI Volatility and Audit Fees**

Auditors may take the volatility of OCI into consideration when pricing their services. In 2016, Huang et al. found that there is a positive relationship between the volatility of OCI and audit fees. This may indicate that the volatility of OCI, which includes fair-valued assets, increases the inherent risk of the company. This increased inherent risk is related to the increased audit fees, which may be caused by the heavier workload. Moreover, because fair-valued OCI components are subject to managerial estimation. The company may face litigation risks because of the false estimation. Since studies show that the litigation risk is positively related to the audit fees (Heninger 2001; Abbott et al. 2006), the volatility of OCI can also positively influence audit fees in this way.

However, auditors may not truly price the volatility of OCI in auditing. Although Huang et al. (2016) examined the positive relationship between the volatility of OCI and audit fees, they cannot decide the causality relationship between them. Moreover, some OCI components may be reversed in the future, which may not affect the company's profits and losses (Huang et al. 2016). In addition, Chen (2018) did not find the positive relationship between the size of OCI and the amount of audit fees in China, which may indicate that the changes in OCI do not have relationship with audit fees in China.

### **Big 4 Companies and OCI**

Big 4 companies are the largest accounting firms in the world, consisting of Deloitte Touche Tohmatsu Limited, PricewaterhouseCoopers, Ernst & Young Global Limited, and KPMG. With the relatively mature auditing system, Big 4 companies are more likely to pay attention to the inherent risks in OCI. In 2013, Lee and Park discovered that Big 4 auditors can reflect more information in the OCIs of their clients. Moreover, Chen (2018) and Ding (2019) stated that Big 4 companies charge higher prices for the same services than non-Big 4 companies. This also indicates that Big 4 companies conduct higher qualities of work and pay more attention to OCI and the volatility of it.

However, there are also some researches claim that Big 4 firms do not perform better services than other auditing companies. Choi and Wong (2002) stated that when the legal environment becomes more and more strict, the premiums for Big 4 companies will gradually disappear. This condition is true for China, where the legal requirements are gradually improved. Therefore, the non-Big 4 firms tend to conduct the same quality level of services as Big 4 firms. Moreover, Yang (2013) found that the audit premiums for Big 4 companies become higher because of the auditing difficulty added by fair-value measurements, but he pointed that this does not enhance the audit qualities. Since many of the OCI components are measured by their fair values, Big 4 companies may not pay more attentions to OCI because their auditing qualities may not be better than that of other audit companies.

### **Auditor Tenure Year and OCI**

Several previous studies show auditors' experiences have relationship with the association between OCI and audit fees. Huang et al. (2016) discovered that auditors with longer tenures tend to price their services higher because of the higher volatility of OCI. This indicates that the experienced auditors are more likely to pay substantial attention to the OCI's inherent risks. However, Ding (2019) demonstrated that the experiences of auditors tend to weaken the relationship between the OCI and audit fees. He explained that this is because auditors with more experiences tend to perform services more efficiently and effectively. Therefore, it decreased the fees in the procedures and weakens the tendency of the higher prices to the higher OCI amounts.

### **Hypothesis**

Although in 2018, Chen does not find the relationship between the size of OCI and the amount of audit fees in China, he does not examine the volatility of OCI and audit fees directly. Moreover, in 2016, Huang et al., examined the positive relationship between the volatility of OCI and audit fees by using the data of S&P 500 firms, and according to what mentioned above, the descriptions and regulations of OCI in China are coming close to the international standards (Chen, 2018). Thus, the results of the regulation are very likely to be similar to those famous foreign companies. In addition, in 2019, Ding's study shows that there is a positive relationship between

OCI and audit fees in China, when everything else stays unchanged. Therefore, the paper proposes the hypothesis H1:

H1: When other variables stay unchanged, the volatility of other comprehensive income is positively correlated with audit fees.

Also, based on the relationship between the Big 4 companies and OCI as well as auditors' experiences and OCI discussed above, this paper will also investigate these relationships and propose the hypothesis H2 and H3:

H2: When other variables stay unchanged, in the companies audited by Big 4 accounting firms, the volatility of other comprehensive income is positively correlated with audit fees.

H3: When other variables stay unchanged and the firms are audited by auditors with tenure year longer than the median level, the volatility of other comprehensive income is positively correlated with audit fees.

### III. DATA AND METHODOLOGY

#### Sample and Data

The sample selection process is shown in Table 1. This paper first includes all A-share listed companies in Shanghai and Shenzhen, and excludes all ST and \*ST companies, which were in abnormal trading status. Then, following the process of Huang et al. (2016), financial companies and companies missing relevant data are deleted. Also, the company that restated its financial statements during the sample year is deleted. Thus, the financial restatement factor is excluded from this study. Finally, the sample data are winsorized at 1st and 99th percentiles. Therefore, the data of continuous variables valued below the 1st percentile or above the 99th percentile are deleted to exclude the abnormal values.

Moreover, all data are from reliable resources. The data of audit tenure, valued by how long the auditor has become certified public accountant, are from the official website of Chinese Institute of Certified Public Accountants (CICPA). The data of the business segment number and the reporting foreign segment are from cninfo.com, the information disclosure website certified by China Securities Regulatory Commission. Furthermore, the industry dummy variables are added based on the industry categories in the official website of Shanghai Stock Exchange and Shenzhen Stock Exchange, and all the other data are from Wind Economic Database.

#### Empirical Model

To determine the price, the audit fee model consists of the company size, diversification and complexity, financial conditions, industry category, and other special factors (Francis and Wang 2005). Based on the research of Huang et al. (2016), the study applies the following regression model (1) to examine the relationship between the volatilities of OCI and audit fees:

$$LNAF = \alpha + \beta_1 LNTA + \beta_2 RECINV + \beta_3 SQSEG + \beta_4 FORN + \beta_5 LIQ + \beta_6 DA + \beta_7 ROA + \beta_8 BIG4 + \beta_9 GC + \beta_{10} LOSS + \beta_{11} MW + \beta_{12} AUDTEN + \beta_{13} absOCI\_TA + \beta_{14} SDNI\_TA + \beta_{15} SDOCI\_TA + \beta_{16-19} YEAR\_D + INDUSTRY\_D + \varepsilon \quad (1)$$

**TABLE 1**

<b>Sample Year</b>	<b>Sample Selection</b>					
	<b>Total</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
A-share Listed Companies in Shanghai and Shenzhen	18585	3717	3717	3717	3717	3717
ST and *ST Companies	-696	-140	-139	-139	-139	-139
Financial Companies	-48	-10	-8	-10	-10	-10
Less: Data Missing						
Missing OCI DATA	-8246	-1986	-1825	-1607	-1467	-1361
Missing Audit Fees Data	-1348	-365	-359	-305	-178	-141
Missing Business Segment Data	-234	-40	-40	-45	-55	-54
Missing Values in Any Year Between 2014-2018	-2843	-142	-312	-577	-834	-978
Missing Values in Any Year Between 2009-2013	-2790	-558	-558	-558	-558	-558
Missing Audit Tenure Data*	-740	-148	-148	-148	-148	-148
Companies Restating Financial Statements	-5	-1	-1	-1	-1	-1
Winsorization at 1st and 99th percentile*	-855	-171	-171	-171	-171	-171
<b>Total</b>	<b>780</b>	<b>156</b>	<b>156</b>	<b>156</b>	<b>156</b>	<b>156</b>

\*All years' data are deleted if one year's data are deleted

Moreover, this paper examines H2 by modifying model (1) to model (2) to examine the relationship between the volatilities of OCI and audit fees in the firms audited by Big 4 companies.

$$LNAF = \alpha + \beta_1 LNTA + \beta_2 RECINV + \beta_3 SQSEG + \beta_4 FORN + \beta_5 LIQ + \beta_6 DA + \beta_7 ROA + \beta_8 BIG4 + \beta_9 GC + \beta_{10} LOSS + \beta_{11} MW + \beta_{12} AUDTEN + \beta_{13} absOCI\_TA + \beta_{14} SDNI\_TA + \beta_{15} SDOCI\_TA + \beta_{16} SDOCI\_TA * BIG4 + \beta_{17-20} YEAR\_D + INDUSTRY\_D + \varepsilon \quad (2)$$

Finally, this paper examines H3 by modifying model (1) to model (3) to examine the relationship between the volatilities of OCI and audit fees in the companies audited by auditors with tenure year longer than the median level.

$$LNAF = \alpha + \beta_1 LNTA + \beta_2 RECINV + \beta_3 SQSEG + \beta_4 FORN + \beta_5 LIQ + \beta_6 DA + \beta_7 ROA + \beta_8 BIG4 + \beta_9 GC + \beta_{10} LOSS + \beta_{11} MW + \beta_{12} AUDTEN + \beta_{13} absOCI\_TA + \beta_{14} SDNI\_TA + \beta_{15} SDOCI\_TA + \beta_{16} SDOCI\_TA * AUDTEN\_D + \beta_{17-20} YEAR\_D + INDUSTRY\_D + \varepsilon \quad (3)$$

The dependent variable is LNAF, defined as the natural logarithm of audit fees. The independent variables are:

absOCI\_TA = absolute value of OCI divided by total assets;

SDNI\_TA = volatility of NI, measured by the rolling standard deviation of net income divided by average total assets over the last five years; and

SDOCI\_TA = volatility of OCI, measured by the rolling standard deviation of other comprehensive income divided by average total assets over the last five years.

The control variables are defined as follows:

LNTA = natural logarithm of total assets;  
RECINV = percentage of total assets in receivables and inventories;  
SQSEG = square root of the number of business segments reported in the database;  
FORN = 1 if foreign segments are reported, and 0 otherwise;  
LIQ = current ratio;  
DA = debt-to-assets ratio;  
ROA = return on assets;  
BIG4 = 1 if Big 4 auditors, and 0 otherwise;  
GC = 1 if audit report is modified for going concern, and 0 otherwise;  
LOSS = 1 if firms report a net loss, and 0 otherwise;  
MW = 1 if auditors report a material weakness in internal controls, and 0 otherwise;  
AUDTEN = tenure of the incumbent auditor;  
AUDTEN\_D = 1 if the auditor tenure of the firm is greater than the median tenure of the entire sample, and 0 otherwise;  
YEAR\_D = year dummy variables; and  
INDUSTRY\_D = industry dummy variables\*.

### **Descriptive Statistics and Correlation Relationships**

The paper describes the data as follows. Panels A, B, and C in Table 2 show the descriptive statistics all the variables in the study. The mean volatilities of net income (SDNI\_TA) and other comprehensive income (SDOCI\_TA) are 0.04 and 0.005, respectively. Moreover, most firms are in good financial conditions. The mean values of current ratio, debt-to-asset ratio, and return on assets ratio are 2.18, 0.42, and 0.06, respectively, and only about 7% of companies reported losses during the sample period. In addition, some values are consistent with previous studies (Huang et al. 2016). The proportion of receivables and inventories in total assets is about 27% and the mean values of business segment number is 1.75. Besides, about 70% of companies reported foreign segments. However, different from the large companies in the U.S., such as S&P 500 firms, only 8.7% of sample companies in this study are audited by Big 4 companies. It shows that the market shares of Big 4s in China are relatively small.

Furthermore, the Pearson Correlation Matrix is shown in Panel D, E, and F in Table 3. The absolute value of OCI (absOCI\_TA) is positively correlated with audit fees (LNAF). However, the volatility of OCI (SDOCI\_TA) is negatively correlated with audit fees. Moreover, the volatility of OCI (SDOCI\_TA) has a positive and significant correlation with firm size (LNTA), and it has a negative and significant correlation with reporting foreign segment (FORN) and whether the auditing company is big 4 (BIG4). The results in this matrix may be different from that in the regression model in the next section because they lack control variables.

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\*Industry dummy variables are added based on the industry category on the official website of Shanghai Security Exchange and Shenzhen Security Exchange. The detailed variable categories are as follows: farming, forestry, animal husbandry & fishery (1001-1200); mining (1201-1400); manufacturing (1401-1600); electricity, heat, gas and water production and supply (1601-1800); construction (1801-2000); wholesale & retail (2001-2200); transportation, storage and post (2201-2400); lodging and catering (2401-2600); information transmission, software and it services (2601-2800); real estate (3001-3200); leasing and business services (3201-3400); scientific research and technical servicer (3401-3600); water conservancy, environment and public facilities management (3601-3800); resident services (3801-4000); education (4001-4200); health and social work (4201-4400); culture, sports and entertainment (4401-4600); and conglomerates (>4600). financial companies (2800-3000) are excluded from this study.

**TABLE 2**  
**Descriptive Statistics (n=780)**

**Panel A: Variables**

	<u>SDNI_TA</u>	<u>SDOCI_TA</u>	<u>absOCI_TA</u>	<u>LNAF</u>	<u>LNTA</u>	<u>RECINV</u>
Mean	0.040	0.005	0.003	14.123	22.450	0.270
Std. Deviation	0.034	0.009	0.008	0.786	1.200	0.150
25th Percentile	0.017	0.001	0.000	13.528	21.640	0.162
50th Percentile	0.030	0.002	0.000	13.995	22.243	0.255
75th Percentile	0.054	0.006	0.002	14.516	23.208	0.365

**Panel B: Variables (continued)**

	<u>SQEG</u>	<u>FORN</u>	<u>LIQ</u>	<u>DA</u>	<u>ROA</u>	<u>BIG4</u>
Mean	1.752	0.699	2.184	0.424	0.060	0.087
Std. Deviation	0.605	0.459	1.668	0.184	0.058	0.282
25th Percentile	1.414	0.000	1.198	0.275	0.032	0.000
50th Percentile	1.732	1.000	1.645	0.425	0.056	0.000
75th Percentile	2.236	1.000	2.552	0.575	0.086	0.000

**Panel C: Variables (continued)**

	<u>GC</u>	<u>LOSS</u>	<u>MW</u>	<u>AUDTEN</u>	<u>AUDTEN_D</u>
Mean	0.003	0.072	0.004	13.350	0.526
Std. Deviation	0.051	0.258	0.062	3.589	0.500
25th Percentile	0.000	0.000	0.000	11.000	0.000
50th Percentile	0.000	0.000	0.000	13.500	1.000
75th Percentile	0.000	0.000	0.000	15.500	1.000

**TABLE 3****Panel D: Pearson Correlation Matrix (n=780)**

	<u>LNAF</u>	<u>absOCI_TA</u>	<u>SDNI_TA</u>	<u>SDOCI_TA</u>	<u>LNTA</u>	<u>RECINV</u>
LNAF	1.000					
absOCI_TA	0.027	1.000				
SDNI_TA	0.029	0.007	1.000			
SDOCI_TA	-0.137*	-0.032	0.003	1.000		
LNTA	-0.082*	0.029	0.030	0.090*	1.000	
RECINV	0.020	-0.054	-0.049	0.001	-0.066	1.000
SQSEG	0.309*	-0.013	-0.076*	-0.036	-0.001	0.026
FORN	-0.042	0.003	0.049	-0.063	-0.037	-0.009
LIQ	0.024	-0.032	0.038	-0.027	-0.385*	-0.062
DA	-0.047	-0.014	-0.021	0.041	0.547*	0.277*
ROA	0.023	0.016	-0.039	-0.014	0.019	-0.047
BIG4	0.378*	0.035	0.046	-0.097*	-0.042	-0.003
GC	-0.042	0.009	0.044	-0.005	0.086*	0.021
LOSS	-0.027	-0.064	-0.004	-0.010	-0.064	0.012
MW	-0.008	-0.016	0.049	-0.017	0.057	-0.069
AUDTEN	-0.034	0.016	-0.037	0.046	0.041	-0.007
AUDTEN_D	-0.022	0.022	-0.023	0.019	0.024	0.027

**Panel E: Pearson Correlation Matrix (n=775), continued from Panel D**

	<u>SQSEG</u>	<u>FORN</u>	<u>LIQ</u>	<u>DA</u>	<u>ROA</u>	<u>BIG4</u>
SQSEG	1.000					
FORN	-0.054	1.000				
LIQ	-0.062	0.019	1.000			
DA	0.034	0.008	-0.695*	1.000		
ROA	0.015	-0.014	0.168*	-0.230*	1.000	
BIG4	-0.046	-0.074*	0.021	-0.015	0.045	1.000
GC	-0.015	0.033	-0.041	0.087*	-0.016	-0.016
LOSS	-0.018	0.020	0.029	0.053	-0.588*	-0.069
MW	-0.049	-0.004	-0.017	0.017	-0.089*	-0.020
AUDTEN	0.085*	-0.010	0.014	-0.001	-0.013	-0.105*
AUDTEN_D	0.087*	-0.019	-0.015	0.027	0.001	-0.071*

**Panel F: Pearson Correlation Matrix (n=775), continued from Panel E**

	<u>GC</u>	<u>LOSS</u>	<u>MW</u>	<u>AUDTEN</u>	<u>AUDTEN_D</u>
GC	1.000				
LOSS	-0.014	1.000			
MW	-0.003	0.143*	1.000		
AUDTEN	0.006	0.068	0.026	1.000	
AUDTEN_D	0.048	0.055	0.059	0.790*	1.000

\*Significant at the 5 percent level.

**TABLE 4****Regression Analysis: Audit Fees and Volatility of OCI**

2014-2018 Variables	Coefficient	Standard Error	t	p-value	[95% Confidence Interval]		VIF
Intercept	13.211	0.256	51.67	<0.001	12.709	13.713	
SDNI_TA	-0.610	0.417	-1.46	0.144	-1.429	0.208	1.02
SDOCI_TA	1.999	1.355	1.48	0.141	-0.662	4.660	1.03
absOCI_TA	1.269	1.155	1.10	0.272	-1.000	3.537	1.01
LNTA	0.000	0.010	-0.03	0.973	-0.021	0.020	1.64
RECINV	-0.001	0.063	-0.02	0.986	-0.125	0.123	1.23
SQSEG	0.059	0.036	1.65	0.100	-0.011	0.130	1.03
FORN	0.025	0.048	0.52	0.602	-0.069	0.118	1.02
LIQ	0.012	0.007	1.62	0.105	-0.003	0.027	2.06
DA	0.067	0.083	0.80	0.421	-0.097	0.231	2.99
ROA	0.110	0.195	0.56	0.572	-0.273	0.493	1.69
BIG4	0.259*	0.085	3.04	0.002	0.092	0.427	1.04
GC	0.024	0.170	0.14	0.886	-0.310	0.359	1.01
LOSS	-0.001	0.042	-0.02	0.988	-0.083	0.082	1.61
MW	0.224	0.141	1.59	0.113	-0.053	0.501	1.04
AUDTEN	-0.008*	0.003	-2.51	0.012	-0.015	-0.002	1.03
YEAR_D				Controlled			
INDUSTRY_D				Controlled			
Adjusted R <sup>2</sup>	92.70%						
F-stat.	58.16						
p-value	<0.0001						
n	780						

\*Significant at the 5 percent level.

**IV. EMPIRICAL RESULTS**

Table 4 shows the results of the regression analysis of model (1). In general, the model is significant ( $p < 0.0001$ ) and has a strong explanation power (adjusted  $R^2 = 92.7\%$ ). This is consistent with former studies (Huang et al. 2016). Audit fees are positively related with the volatilities of OCI (2.00,  $p=0.141$ ), and are negatively related with the volatilities of NI (-0.61,  $p=0.144$ ). However, neither of them is significant. Therefore, Hypothesis 1 cannot be approved. In other words, the positive relationship between the volatility of OCI and audit fees cannot be demonstrated. In addition, audit fees have a significant positive relationship with the audit firms (BIG4) (0.26,  $P=0.002$ ). The other relationships are either too weak or insignificant.

**TABLE 5**  
**Regression Analysis: Audit Fees and SDOCI\_TA\*BIG4**

2014-2018 Variables	Coefficient	Standard Error	t	p-value	[95% Confidence Interval]		VIF
Intercept	13.213	0.256	51.63	<0.001	12.710	13.715	
SDNI_TA	-0.613	0.417	-1.47	0.143	-1.432	0.207	1.03
SDOCI_TA	1.965	1.359	1.45	0.149	-0.703	4.633	1.04
BIG4	0.249**	0.089	2.81	0.005	0.075	0.423	1.79
SDOCI_TA*BIG4	8.884	21.387	0.42	0.678	-33.117	50.885	1.78
absOCI_TA	1.226	1.160	1.06	0.291	-1.052	3.505	1.04
LNTA	-0.001	0.010	-0.05	0.957	-0.021	0.020	1.64
RECINV	-0.002	0.063	-0.03	0.975	-0.126	0.122	1.23
SQSEG	0.059	0.036	1.64	0.102	-0.012	0.130	1.03
FORN	0.026	0.048	0.54	0.589	-0.068	0.119	1.02
LIQ	0.012	0.007	1.62	0.106	-0.003	0.027	2.06
DA	0.070	0.084	0.84	0.403	-0.094	0.234	3.00
ROA	0.119	0.196	0.61	0.545	-0.267	0.505	1.69
GC	0.024	0.171	0.14	0.886	-0.311	0.359	1.01
LOSS	0.000	0.042	0.01	0.993	-0.083	0.083	1.61
MW	0.226	0.141	1.6	0.110	-0.052	0.503	1.04
AUDTEN	-0.008	0.003	-2.49	0.013	-0.015	-0.002	1.03
YEAR_D			Controlled				
INDUSTRY_D			Controlled				
Adjusted R <sup>2</sup>	92.69%						
F-stat.	57.75						
p-value	<0.0001						
n	780						

\*\*Significant at the 5 percent level.

To further investigate the relationship between OCI and audit fees, BIG4 is multiplied by the volatility of OCI (SDOCI\_TA) to show whether the firms audited by Big 4 companies are priced higher in audit fees because of the larger volatility of OCI. The results of it are reported in Table 5. The interaction term of the volatility of OCI and companies audited by Big 4 firms (SDOCI\_TA\*BIG4) is positively related to audit fees, but the relation is not significant. Therefore, Hypothesis 2 cannot be approved. In other words, the positive relationship between the volatility of OCI and audit fees in the companies audited by Big 4 accounting firms cannot be demonstrated.

**TABLE 6**  
**Regression Analysis: Audit Fees and SDOCI\_TA\*AUDTEN\_D**

2014-2018 Variables	Coefficient	Standard Error	t	p-value	[95% Confidence Interval]		VIF
Intercept	13.191	0.256	51.59	<0.001	12.689	13.693	
SDNI_TA	-0.556	0.418	-1.33	0.184	-1.377	0.265	1.02
SDOCI_TA	-0.122	1.677	-0.07	0.942	-3.416	3.172	1.90
AUDTEN_D	-0.038	0.024	-1.58	0.114	-0.085	0.009	1.41
SDOCI_TA *AUDTEN_D	4.227**	2.043	2.07	0.039	0.216	8.238	2.30
absOCI_TA	1.233	1.157	1.07	0.287	-1.040	3.506	1.01
LNTA	-0.004	0.010	-0.37	0.708	-0.024	0.017	1.64
RECINV	0.004	0.063	0.06	0.954	-0.121	0.128	1.23
SQSEG	0.050	0.036	1.40	0.163	-0.020	0.121	1.03
FORN	0.030	0.048	0.63	0.532	-0.064	0.124	1.02
LIQ	0.012	0.007	1.65	0.1	-0.002	0.027	2.06
DA	0.078	0.084	0.93	0.352	-0.086	0.242	2.99
ROA	0.139	0.196	0.71	0.481	-0.247	0.524	1.70
BIG4	0.276**	0.085	3.24	0.001	0.109	0.443	1.03
GC	0.033	0.171	0.19	0.848	-0.303	0.368	1.02
LOSS	<0.001	0.042	0.00	0.997	-0.083	0.083	1.61
MW	0.232	0.142	1.63	0.103	-0.047	0.511	1.04
YEAR_D				Controlled			
INDUSTRY_D				Controlled			
Adjusted R <sup>2</sup>	92.67%						
F-stat.	57.57						
p-value	<0.0001						
n	780						

\*\*Significant at the 5 percent level.

Moreover, this study further investigates whether audit fees have a positive relationship with the volatility of OCI in companies audited by experienced auditors. The auditor tenure dummy variable (AUDTEN\_D) and the interaction term (SDOCI\_TA\*AUDTEN\_D) of the volatility of OCI (SDOCI\_TA) and audit tenure dummy (AUDTEN\_D) are built in this part. Thus, only companies audited by auditor with longer tenure year (longer than the median sample level) are included in the interaction term.

The result of this part is presented in Table 6. The audit fees have a slightly negative relationship with the dummy variable of audit tenure (AUDTEN\_D), but the relationship is not significant (-0.038, p=0.114). However, the audit fees have a significant positive relationship with

the interaction term of the volatility of OCI and auditors with longer tenures (than the median level of the sample) (SDOCI\_TA\*AUDTEN\_D) (4.227,  $p=0.039$ ). Therefore, Hypothesis 3 can be approved. In other words, in the company audited by auditors with longer tenures, audit fees have a positive relationship with the volatility of OCI.

## V. DISCUSSION

As mentioned in the last part, Hypothesis 1 and 2 cannot be demonstrated, but Hypothesis 3 can be approved. In this section, these results will be interpreted. The unexpected results will be explained, and the findings in relevant researches will be compared. Moreover, the reliability and validity, the contribution, as well as the limitation of this study will be presented.

First,  $H_1$  and  $H_2$  cannot be approved in this study. This indicates that Chinese auditors do not regard the volatility of OCI seriously and price the risks inherent in the volatilities. Also, this may be true for Chinese Big 4 auditors, because the relationship between audit fees and volatility of OCI in the companies audited by Big 4s is also insignificant. However, the coefficient for BIG4 is positive and the p-value for the relationship is less than 0.05. This indicates that Big 4 firms do receive auditing premiums.

The findings of the insignificant relationships in the model (1) and (2) are similar to the findings of Chen (2018), who studied the relationship of the absolute value of OCI and audit fees. He also did not find significant relationship between these two elements and gave his explanations. Because OCI is immaterial comparing to the huge amount of net income, the expected audit litigation risks are relatively low. Therefore, the expected losses for auditors are low. Thus, Chen explained that in China, auditors tend to only apply general auditing to OCI and may not pay substantial attention to it.

Also, there are some other explanations for these unexpected results. First, as mentioned in the data collection section, only small portion of sample companies choose Big 4s as their audit firms. Major companies choose Chinese local auditing companies. This is different from the S&P 500 firms which many other papers studied (Huang et al. 2016), because 99% of S&P 500 firms are audited by Big 4s. Moreover, as mentioned in the literature review part, some studies (Choi and Wong 2002; Yang 2013) showed that the audit quality of Big 4 firms is not necessarily better than that of Chinese local audit firms. Therefore, it is possible that Chinese Big 4s do not pay more attention to the volatility of OCI than the local firms. In addition, many companies are deleted from the sample because of data missing. Only about 5% of companies in A-share listed companies have complete data in the model. This is different from the studies which has relatively complete databases. Therefore, if more data could be collected. The results of this study may show a different picture.

Different from Hypothesis 1 and 2, Hypothesis 3 in this study can be approved. This indicates that the auditors having longer tenure years pay attention to the risks in the volatility of OCI and charge higher audit fees for the higher level of volatility. It is similar to the finding of Huang et al. (2016), who also found positive significant relationship between audit fees and the volatility of OCI in the firms audited by experienced auditors.

However, Ding (2019) found that although the auditors with more experiences tend to charge higher audit fees, they weaken the relationship between OCI and audit fees. This seems different from the result of this study, but his model is different from model (3). In his model, he multiplied the average experience of auditors directly with the natural logarithm of the absolute value of OCI. He evaluated whether auditors with more experiences would charge the company for higher price when facing higher absolute value of OCI. On the other hand, this study simply

excluded companies audited by auditors with shorter tenure year. It tested whether auditors with tenure year longer than the average level, no matter how long the exact tenure year is, charge the company for higher price when facing higher volatility of OCI. Thus, the seemingly different results between this study and Ding (2019)'s study can be explained.

### **Reliability and Validity**

Along with the discussion of similar researches, the reliability and validity of this study can be justified. As mentioned in the data collection section, all data in this paper are collected from reliable websites and databases. Thus, the results of this study are reliable. Moreover, this study follows the model of the famous published paper (Huang et al. 2016). The overall explanatory power of the model in this paper is very high ( $R^2 > 90\%$ ) and the values of the variance inflation factor (VIF) in this study are between one and ten. Therefore, the data fit the model very well. Also, as discussed earlier in this section, the results which are similar to this study can be found in other published papers. Thus, this study is valid and measures what it is supposed to measure.

### **Theoretical Contribution**

Moreover, this study provides the theoretical contribution to the current literatures and the contribution can be divided into two parts. They are original theory contribution and practical utility. Regarding to the original theory contribution, this study showed that the volatility of OCI in China may not really affect the level of audit fees, making the theory of audit pricing in China clearer. Furthermore, regarding to the practical utility, first, this study presented the imitation of international accounting standards may not have the same effects on the audit pricing in China. This can provide useful reference to government agencies, that the regulations related to OCI may be accepted and conducted differently by companies in China. Moreover, this study showed that shareholders and investors may not really understand the value of OCI because the auditing risks inside it are not paid much attention to. In addition, audit firms may also need to regard this study as their reference to price their service in the future, as experienced auditors tend to take the volatility of OCI seriously.

### **Limitation**

Along with the contributions, this studies also have several limitations. First, because of time limitation, this study did not investigate the relationship between the volatility of different components of OCI and audit fees. There is a possibility that auditors only pay attention to the volatility of certain factors in OCI. Moreover, because of data source limitation, this study can only grasp a small portion of A-share listed companies in China. As mentioned in the discussion section, the results of the study might be different if the sample size could be larger. In addition, although Hypothesis 3 is approved, in firms audited by experienced auditors, the causality between the audit fees and volatilities of OCI cannot be demonstrated.

## **VI. CONCLUSION**

Other comprehensive income is a special part in the income statement. Because most of its components need fair-value measurements since the new regulations (Standards for Business Enterprises No.30, 2014) are applied, sometimes managers have to make a number of subjective judgements. Thus, it adds auditing risks in the OCI and working difficulties for auditors.

Previous studies found the positive relationship between the proportion of fair-valued assets and audit fees in financial firms (Ettredge et al. 2014) and the significant positive relationship between the volatility of OCI and audit fees for non-financial S&P 500 companies (Huang et al. 2016). This study further investigates the relationship between the volatility of OCI and audit fees for nonfinancial Chinese A-share listed companies. Nevertheless, unlike in western companies, the positive relationship between these two elements cannot be approved in Chinese large companies because of the insignificant results. It is also true for the companies audited by Chinese Big 4 firms. However, this study shows that for companies audited by auditors with tenure years longer than the median level, the volatility of OCI and audit fees have significant positive relationship.

The results of the study indicate that Chinese auditors may not take the volatility of OCI seriously and price their services for higher OCI volatilities. Also, it presents that the imitation of international accounting standards may not have the same effects on the audit pricing in China. However, Chinese experienced auditors may acknowledge the inherent risks inside the volatilities of OCI and charge for it. This shows that many auditing firms do not realize or pay much attention to these risks. Therefore, based on the results of this study, government agencies in China may consider enhancing the auditing regulations in OCI and reinforce the relevant investigation, and the Chinese Institute of Certified Public Accountants (CICPA) may consider improve the training system for public accountings regrading OCI.

Moreover, as mentioned in the discussion section, the reliability and validity of this study can be justified, and several limitations are then presented. Based on those limitations and the trend of separate reporting of OCI, some questions are raised for future researches. For example, what the relationship is between the volatility of certain components of OCI and audit fees, and what the relationship is between the volatility of OCI and audit fees in the large Chinese local auditing firms. Also, case studies of how Chinese auditors perform their services regarding the OCI need further investigation.

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