

## **Auditor Competition, Auditor Market Share, and Audit Pricing – Evidence From a Developing Country**

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### **ABSTRACT**

This paper examines the determinants of audit fees in the Chinese B share market with a focus on the growing market power of local audit firms. The study finds a relatively decreased fee premium earned by Big 4 audit firms as compared to the findings from prior research. More importantly, it is found that the two largest local audit firms earn fee premiums than other local firms after they bypass Big 4 audit firms and become the top five players in the audit market. However, the audit fees charged by these two local audit firms are still lower than the fee level of Big 4 audit firms. Overall, the findings suggest that the structural change in the Chinese audit market impact pricing strategy for both Big 4 audit firms and local audit firms. In addition to gaining market share through mergers and acquisitions, local audit firms need to focus more on improving audit quality for long term growth. The results have important implications for audit firms as well as for the Chinese standard setters.

Key words: Audit fee, industry specialization, auditor dominance, emerging market

## 1. INTRODUCTION

Auditor choice and determinants of audit fee have been widely researched topics in the past two decades. Much of the research in this area was done in the established audit market, i.e., the developed countries. The association between audit quality through industry specialization and audit fee premium was generally supported in the established market where Big 4 accounting firms have a dominant market share (Hogan and Jeter 1999; Mayhew and Wilkins 2003; Cahan, Godfrey, Hamilton, & Jeter 2008).

As the audit market in matured economies becomes saturated, Big 4 accounting firms and some second tier audit firms have shifted their market focus to developing countries to seek more growing opportunities. For example in China, all the Big 4 firms have partnered with local CPA firms to establish their offices as far as twenty years ago. The revenue generated from international market accounts for a significant portion of their total revenue for all Big 4 firms. Given the increasingly important role of the developing economies in the global accounting world, it is important to examine the dynamics of auditor competition and market share development in these countries/regions. This paper examines the market share change of both Big 4 accounting firms and local CPA firms in the Chinese audit market, and the extent to which the market share affects audit fees in the most recent years.

Based on a standard audit fee model, the study finds a relatively decreased fee premium earned by Big 4 audit firms as compared to the findings from prior research. More importantly, the study finds that the two largest local audit firms earn fee premiums than other local firms after they bypass Big 4 audit firms and become the top five players in the audit market. However, the audit fees charged by these two local audit firms are still lower than the fee level of Big 4 audit firms. Overall, the findings suggest that the structural changes in the Chinese audit market have impacted pricing strategy of both Big 4 audit firms and local audit firms.

This study contributes to the literature in at least two aspects. First, to the authors' knowledge, this is the first study that examines pricing strategy of Big 4 audit firms after their dominant market status has been threatened by local audit firms in a developing economy like China. The results will also shed light on the operating strategy of local audit firms in terms of gaining market momentum in a very competitive market. Second, the findings of this study have implications for Chinese regulatory bodies in their efforts to support the growth of Chinese international accounting firms through mergers and acquisitions. Drawing on the results of GAO (2003) regarding consolidation and competition among public accounting firms, Chinese auditors will benefit more by building quality reputations and providing multi-layer services after the reorganization.

The remainder of the paper is structured as follows. The next section offers background information about the audit market in China and reviews prior literature followed by research hypotheses. Section three explains sample selection and data collection. Empirical results and analysis are provided in Section four. The final section presents conclusions of the study.

## 2. LITERATURE AND HYPOTHESES

Since 1990s, the efforts by Chinese government to reform the economic environment brought about dramatic changes in the Chinese accounting and audit market. With growing competition among international and local auditors, the Chinese audit market has been going through a structural change. In this environment, a growing number of academic research on

Chinese audit market also focused on audit pricing and auditor choice. The uniqueness of Chinese audit market where Big 4 accounting firms have less dominance compared to developed countries has provided a good research setting (Hao 1999; Wallace 2000; Simunic and Wu 2009; Wang, O, & Iqbal 2009) to investigate the relationship between audit fee premium and market share, competition, etc. Recent study by Chen, Su, & Wu (2007) found that Big 4 firms earn a fee premium in Chinese B share market, but not in A share market<sup>1</sup>. They attribute this result to different level of competition in two markets. Wang, O, & Iqbal (2009) however report a fee premium for Big 4 firms in both A-share and B-share markets. Different results in A-share market by these two studies may reflect the dynamic nature of Chinese audit market.

Since the early 2000s, the aggregate market share by Big 4 firms has been on the decrease. One of the factors behind this trend is Chinese government's efforts to foster Chinese international auditors and to support the growth of local auditors (Wang, O, & Chu 2012). In particular, Chinese local firms have been very active on mergers and restructuring, becoming larger in size and obtaining more market shares. For example, Ruihua Certified Public Accountants is a newly formed local firm in 2013 that has combined three large local CPAs. Based on the total revenue, it has surpassed Ernst & Young and KPMG, and became the third largest accounting firm immediately following PWC and Deloitte. The rapid rising of local audit firms poses a considerable threat to the big 4 auditors in their market shares and operating strategies in general.

More turbulence and changes in the market share and competition in Chinese audit market are forthcoming since the Chinese government placed a tougher barrier to entry for Big 4 firms in 2012. With most of Big 4 firms' joint-venture contracts expired recently or expiring in the near future, Chinese government requires them to form a special partnership in which more than sixty percent of partners would need to hold a Chinese CPA designation which is considered harder to gain compared to U.S. CPA. (Reuters 2012). The minimum required number of local partners is expected to grow to eighty percent by 2017 (WSJ Online 2012).

When this policy set by Chinese government is enforced, the audit market in China will experience a big change in market share, competition, and pricing strategy and it will provide an interesting setting for research. Based on these new market dynamics, this study proposes two hypotheses regarding the pricing strategy of Big 4 auditors and local audit firms.

Hypothesis 1: Big 4 firms earn less fee premiums than the level shown in prior studies due to higher competition level from Chinese local auditors.

Hypothesis 2: The two Chinese local audit firms that became top 5 accounting firms earn fee premium than other local auditors due to their increased market share.

### **3. SAMPLE AND RESEARCH DESIGN**

#### **3.1 Sample and Model**

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<sup>1</sup> Currently, two types of shares are listed in the Chinese stock market: A and B shares. A share offerings are only to domestic investors and transacted in Chinese currency (RMB). B share offerings are primarily to foreign investors and transacted in U.S. dollars (Shanghai) or Hong Kong dollars (Shenzhen). Approximately 20% of A share firms are also authorized to issue B shares. Since its inception in 1991, the B share market has attracted a considerable number of foreign investors. By the end of the 2012, there were 110 issuers of B shares.

The initial sample includes 108 Chinese companies that were listed in the B share market in the years of 2010 and 2011. Audit fee and financial data are hand collected from each company's annual report published by the Shanghai and Shenzhen Stock Exchanges. After removing firms with missing data (e.g., primarily on audit fee and auditor tenure), the final sample includes 199 firm year observations. The industry breakdown of the sample is reported in Table 1(Appendix). The top six industries in the sample are electronics and other electrical equipment (13%), real estate (12%), industrial and commercial machinery (11%), transportation (11%), wholesale and retail (8%), and transportation equipment (7%). The remaining 19 industries contain 38 % of the sample firms.

Using a standard audit fee model (Craswell and Francis 1999; Mayhew and Wilkins 2003; Chen et al. 2007, Cahan et al. 2008), the study examines the determinants of audit pricing after controlling for the effects of client size, audit complexity, and auditor-client risk sharing. To test the research hypotheses on differential audit pricing, experimental variables for Big 4 audit firms and local audit firms are added to the audit fee model. An OLS regression model was estimated as follows:

$$\text{AUDFEE} = b_0 + b_1 \text{ASSETS} + b_2 \text{INVREC} + b_3 \text{SUB} + b_4 \text{LOSS} + b_5 \text{DEBT} + b_6 \text{OPINION} + b_7 \text{TENURE} + b_8 \text{STATELEGAL} + b_9 \text{FOREIGN} + b_{10} \text{BIG4 (or LOCAL)} + e$$

where:

AUDFEE = natural log of total audit fee.

ASSETS = natural log of total assets.

INVREC = (accounts receivables + inventory)/total assets.

SUB = square root of number of consolidated subsidiaries.

LOSS = indicator variable (1 if loss reported in current year, 0 otherwise).

DEBT = total liabilities / total assets

OPINION = indicator variable (1 if modified opinion, 0 otherwise).

TENURE = natural log of auditors' tenure in years.

STATELEGAL = percentage of state legal shares for the listed companies

FOREIGN = percentage of foreign shares for the listed companies

BIG4 = indicator variable (1 if Big 4 audit firms, 0 otherwise)

LOCAL = indicator variable (1 if two largest Chinese local audit firms, 0 otherwise)

With respect to the control variables, *ASSETS* is a proxy for client size, *INVREC* is a proxy for audit risk, and *SUB* is a proxy for audit complexity. Positive relationships between audit fee and client size, audit risk, and audit complexity are expected since higher values of these variables increase the workload and riskiness of the audit work. *LOSS* is a proxy for firm profitability as audit firms would require higher fees if the company suffered loss. The association between audit fee and *OPINION* is inconclusive in the developed audit market (Craswell and Francis 1999; DeFond, Francis, & Wong, 2000). In the Chinese setting, a negative coefficient on *OPINION* is predicted because Chen et al. (2007) found Chinese listed companies receiving modified opinions tend to be smaller, poor financial performers, and unable to pay higher fees.

The expected sign of *TENURE* is unclear because prior literature recognizes two opposing effects on audit fees from auditor tenure. On one hand, auditors with longer tenure tend to extract higher fees (i.e., future quasi-rents) from clients to recover losses incurred due to low-

balling. On the other hand, longer tenure enhances auditors' understanding of the clients, enabling auditors to design efficient audit procedures and enjoy cost savings. Finally, a positive relationship between audit fee and state legal (foreign) shares is predicted since these two groups of investors desire high quality financial reporting from the companies they invest.

### 3.2 Descriptive Statistics

Table 2 (Appendix) presents descriptive statistics for the sample firms that have complete information (199 firm years). In the B share audit market, the mean and median total assets (*ASSETS*) are RMB 12,336 and 3,958 thousand, respectively. The mean and median total audit fee (*AUDFEE*) charged by the audit firms are RMB 1,238 and 850 thousand, respectively. These numbers are larger than the company size and audit fee level reported in Wang et al. (2009) for the Chinese B share market.<sup>2</sup> These findings indicate Chinese B share companies have more than doubled their size over the past five years. Regarding the share ownership, the percentages of state legal shares and foreign shares are 24 and 32, respectively. In addition, the data show that accounts receivables and inventory (*INVREC*) are about 24 percent of total assets and that sample firms have, on average, 17 consolidated subsidiaries (*SUB*). As indicated by *LOSS*, about 13 percent of the firms experienced financial loss. During the sample period, eight percent of the companies received modified opinions (*OPINION*), and the tenure period for engaged auditors (*TENURE*) is roughly 7.6 years. Finally, about 24 percent of the companies hired Big 4 audit firms and 26 percent of the companies chose local large auditors.

Table 3 (Appendix) presents the Pearson's correlation matrices. The data reveals that the audit fee is positively related to total assets, inventory and accounts receivable level, number of subsidiaries, auditors' tenure, and Big 4 audit firms. Further discussion of these relationships is deferred to the multivariate results section.

## 4. EMPIRICAL RESULTS AND ANALYSES

### 4.1 Audit Fee for Big 4 Audit Firms

Table 4 (Appendix) presents the multivariate results for the association between audit fee and Big 4 audit firms. The F-statistics are significant at  $p < 0.00$ , implying that the independent variables explain a significant portion of the variance in audit fee. The adjusted  $R^2$  for the model is 0.75, indicating the model explains a significant portion of the variation in audit fees for the sample years. To examine potential multicollinearity in the regression model, all the explanatory variables were regressed on *AUDFEE*. The results indicate that the variance inflation factor (VIF) is below 1.93 and tolerance levels are above 0.52 for all the explanatory variables. This result suggests that multicollinearity between the explanatory variables is not likely to pose a serious problem in the interpretation of the regression results.

Among the control variables, the coefficient of *ASSETS* is positive and significant, which is consistent with the findings on the positive firm size - audit fee relation documented in earlier studies (DeFond et al. 2000; Mayhew and Wilkins 2003). The coefficient for *SUB* is also

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<sup>2</sup> Wang et al. (2009) report the mean and median total company assets of RMB 5,021 and RMB 2,605 thousand in the B share market. The mean and median total audit fee charged by audit firms in the B share market are RMB 703 and RMB 550 thousand, respectively.

positive and significant, suggesting that audit firms charge higher fees for clients with large number of subsidiaries. The coefficient for *DEBT* is positive and significant indicating that audit firms raise their prices to clients with higher audit risk indicated by the higher level of debt in the audit period. Contrary to the prediction, the coefficient for the *STATELEGAL* is significantly negative, suggesting companies with higher percentage of state legal shares pay lower rather than higher fees to their auditors. Further investigation (not tabulated) reveals that losing firms are smaller and borrow more. The study fails to find any conclusive evidence on the percentage of inventory and receivables (*INVREC*), auditor opinion (*OPINION*), and auditor tenure (*TENURE*).

As for the audit fee premium for Big 4 audit firms, the coefficient on *BIG4* is 0.60, which is statistically significant at  $p < 0.00$ . This indicates that the Big 4 audit firms earn a fee premium relative to Chinese auditors as a group after controlling for other variables. Because the test model is linear in logarithms, the antilog of *BIG4*'s coefficient minus 1 represents the percentage effect of market share increase of a specialized auditor on audit fees. The 0.60 coefficient for *BIG4* translates into 82 percent average fee premium for the Big 4 audit firms in the Chinese B share market. This average premium suggests that Big 4 audit firms supply services and/or value to their clients that audit firms in the local market cannot provide.

However, the magnitude of the fee premium earned by Big 4 audit firms appears to have dropped over the past four years. Wang et al. (2009) reported audit fee premium earned by Big 4 firms in the B share market is about 103 percent, therefore, there is a roughly 20 percent decrease in the fee premium for Big 4 firms. Hypothesis 1 is supported, and it suggests the declining audit fee of Big 4 audit firms is caused partially by the challenging competition from local firms.

#### **4.2. Audit Fee for Local Audit Firms**

The regression results of the audit fee model for Chinese local audit firms are reported in the second column of Table 4 (Appendix). All control variables have similar directions as the fee model for the Big 4 firms. The coefficient for the control variable *LOCAL* that represents the two largest local audit firms is significantly positive. This result suggests these two firms charge higher prices for their service than other local audit firms. The magnitude of the audit fee premium is 23 percent, which is lower than the premium earned by the Big 4 audit firms. Therefore, hypothesis 2 is also supported, indicating that dominant Chinese local audit firms focus more on quality service for higher pricing after they expanded their market share significantly.

To further examine the fee difference between Big 4 audit firms and the dominant local firms, a regression model was estimated for the companies audited by Big 4 audit firms and the two largest local firms only. Using the local firms as control sample, the third column in Table 4 (Appendix) indicates Big 4 audit firms still earn significantly higher audit fee than the two dominant local auditors, the fee premium difference is roughly 64 percent.

#### **4.3. Sensitivity Analysis**

Sensitivity analyses were performed to test the robustness of the results. First, to examine whether the findings in the Chinese audit market are driven by clients size, sample firms were partitioned to large and small companies based on total assets and the regression analysis was repeated (the median assets is RMB 3.95 millions). The results show that the coefficients for Big

4 and large local auditors are still positive and significant at the conventional level ( $p < 0.00$ ), but the magnitude of the fee premiums they earn from small clients are about 11 percent less than what they earn from large clients. This result is consistent with the main findings that large companies usually pay higher fee to their audit firms due to large audit scope and more complexity involved in completing the audit.

Additionally, it is quite possible that the findings are driven by industry effect. Specifically, the top two industries in the sample, electronics and real estate that comprise 25 percent of the sample firms, could have affected the regression results. To control for industry influence, two industry indicator variables (*SIC36* and *SIC65*) were included in the regression model one variable at a time. *SIC36* (*SIC65*) has a value of 1 if a firm is in the electronics (real estate) industry, 0 otherwise. The results (not reported) show that, the findings of fee premium for Big 4 and large local auditors remain the same as in the main results. Companies in the electronics industry do not pay extra higher or lower fees than other listed companies, but real estate industry in general get some fee discount from both groups of auditors.

## 5. CONCLUSIONS

This study investigates the audit market in China's transitional economy using data from annual reports prepared by publicly traded companies in the B share market. The study examines variables that explain audit fees for Chinese local audit firms with a focus on fee premiums earned by Big 4 audit firms and dominant local firms. The results support the expectations that the recent mergers and acquisitions of large local audit firms not only help them gain significant market shares, but also grant them the power to earn fee premium compared to other local firms. Big 4 audit firms, however, have seen their dominant market positions threatened by the aggressive competition from local auditors, causing them charging lower audit fees than the past years. The results of this study will enhance understanding of the audit markets in a growing economy, and help Chinese standard setters in their efforts to nurture a robust and efficient audit market.

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**APPENDIX**

Table 1  
Industry Representation of the Sample Companies

Industry Description	2 Digit SIC	Number of Companies	% of the Sample
Electronics and Other Electrical Equipment	36	13	13.00
Real Estate	65	12	12.00
Industrial and Commercial Machinery	35	11	11.00
Transportation	40	11	11.00
Wholesale and Retails	50	8	8.00
Transportation Equipment	37	7	7.00
Chemicals and Allied Products	28	6	6.00
Utilities	49	4	4.00
Other industries		28	28.00
<b>Total</b>		<b>100</b>	<b>100.00</b>

Table 2  
Descriptive Statistics

Variables	Full Sample (199)		
	Mean	Median	Standard Deviation
Audfee (000)	1,238.00	850.00	1481.00
Assets (000)	12,336	3,958	41003.00
Invrec	0.240	0.210	0.21
Sub	3.680	5.000	2.24
Tenure	7.980	5.600	5.60
Loss	0.120	0.320	0.32
Opinion	0.050	0.220	0.22
Debt	0.560	0.210	0.22
Statelegal	0.220	0.210	0.21
Foreign	0.310	0.120	0.12
Local	0.52	0.50	0.5
Big4	0.48	0.50	0.5

Table 3  
Pearson Correlation Coefficients

Variables*	Audfee	Assets	Invrec	Sub	Tenure	Loss	Opinion	Debt	Statelegal	Foreign	Local	Big4
Audfee (000)	1	0.78*	0.21*	0.58*	0.31*	0.12	-0.13	0.06**	-0.12	-0.31*	0.50*	0.50*
Assets (000)		1	0.38*	0.35*	0.22**	-0.04	-0.09	0.03	0.003	-0.46*	-0.32*	0.32*
Invrec			1	0.37*	-0.16	-0.15	0.11	0.16*	0.014	-0.20***	-0.07	0.07
Sub				1	0.30*	-0.22*	-0.2***	0.16*	-0.23**	-0.12	-0.16	0.16
Tenure					1	-0.18***	-0.24***	-0.04	0.07	-0.03	-0.03	0.03
Loss						1	-0.35*	-0.38*	0	0.07	0.08	-0.08
Opinion							1	0.28*	-0.16	0.04	0.03	-0.03
Debt								1	0.0004	0.09*	-0.05***	-0.03
Statelegal									1	-0.08	-0.17	0.17
Foreign										1	0.05	-0.05
Local											1	-1
Big4												1

\*, \*\*, \*\*\* indicate significance at the 0.01, 0.05, and 0.10 level, respectively.

**Table 4**  
**Regression Results**

	Expected signs	Big 4 Firms	Local Firms	Big 4 and Local Firms
F-statistics		28.05	14.63	23.76
Sample size		190	144.00	87
Adjusted R <sup>2</sup>		0.75	0.64	0.82
Independent variables				
Intercept	?	11.01 28.14*	10.87 25.2*	11.65 22.02*
Assets	+	0.14 5.81*	0.03 4.75*	0.09 2.9*
Invrec	+	0.14 0.84	0.31 1.88***	-0.51 -2.02**
Sub	+	0.12 6.45*	0.08 4.1*	0.16 3.1*
Tenure	?	0.04 0.98	-0.03 -0.83	0.09 4.39*
Loss	-	-0.03 -0.30	-0.53 -0.40	-0.09 -0.4
Opinion	+	-0.14 -1.03	-0.03 -0.26	-0.10 -0.56
Debt	+	0.46 3.21*	0.15 0.99	1.04 5.12*
Statelegal	-	-0.48 -3.67	-0.35 -2.77*	-0.56 -3.11*
Foreign	+	-0.37 -1.42	0.26 0.98	-0.01 -3.38*
Big4	+	0.60 8.22*		0.50 5.57*
Local	+		0.21 3.53*	

\*, \*\*, \*\*\* indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

AUDFEE = natural log of total audit fee.

ASSETS = natural log of total assets.

INVREC = (accounts receivables + inventory)/total assets.

SUB = square root of number of consolidated subsidiaries.

LOSS = indicator variable (1 if loss reported in current year, 0 otherwise).

DEBT = total liabilities / total assets

OPINION = indicator variable (1 if modified opinion, 0 otherwise).

TENURE = natural log of auditors' tenure in years.

STATELEGAL = percentage of state legal shares for the listed companies

FOREIGN = percentage of foreign shares for the listed companies

BIG4 = indicator variable (1 if Big 4 audit firms, 0 otherwise)

LOCAL = indicator variable (1 if two largest Chinese local audit firms, 0 otherwise)