

Local accounting firms' pricing responses to entry of the Big Four accounting firms into China

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Abstract

Purpose – The historical development and size of China's audit market provides an opportunity to investigate important questions regarding the functioning of the market for audit services that are difficult, if not impossible, to test in other globally established markets. The purpose of this paper is to examine the effect of the market entry of the Big Four accounting firms into China on the audit fees charged by its local accounting firms.

Design/methodology/approach – In this paper the authors rely primarily on the incumbent pricing literature (Simon, 2005; Geroski, 1995) to assist them in developing the specific hypotheses and empirical tests. This paper is an empirical study, which examines whether local incumbent accounting firms cut prices in response to the Big Four's entry by using data from annual reports and audit reports for China's listed companies from the 1994 to 2008 period.

Findings – This study shows that local incumbent firms cut prices post-entry. This study also finds that it was local large-sized accounting firms as well as accounting firms located in regions with highly developed and competitive markets that cut prices in response to the Big Four's entry.

Practical implications – This study has important implications for the Big Four accounting firms as it provides useful information about pricing strategies that would likely be used by local accounting firms in a new market. Local accounting firms in emerging markets can also gain useful insights about the pricing strategies adopted by the Big Four accounting firms when they enter a market.

Originality/value – Audit market research has little to offer on how local accounting firms respond in their pricing to the entry of Big Four accounting firms into their market, mainly because in western countries such as Canada, England, and the USA, the Big Four accounting firms are the oldest firms operating in those markets. This paper is the first study that examines the effect of the market entry of the Big Four accounting firms into China.

Keywords China, Institutional environment, Audit market, Market entry, Audit pricing, Big Four accounting firms

Paper type Research paper

1. Introduction

This study examines the effect of the market entry of the large multinational accounting firms on the audit fees charged by local accounting firms in China. The entry of new firms has important effects on incumbent firms and clients. New entrants increase competition, reducing the market share and profits of incumbent firms. It is obvious, therefore, that incumbents have strong incentives to deter entry and/or protect their market share, while



entry can be beneficial to their clients as new firms introduce new products and processes forcing incumbents to become more efficient and innovative (Geroski, 1995). In the event of entry, incumbents have to decide on the most effective response in the face of increased competition (Simon, 2005). There are various ways that firms might respond, but we specifically focus on audit fees and investigate how the local accounting firms use pricing as a tool to respond to the increasing presence of the Big Four accounting firms in the Chinese audit market.

Existing research in the audit literature has little to offer on the pricing responses of incumbents to the entry of large multinational accounting firms in any market, mainly because in the western countries such as Canada, England, and the USA, the Big Four are the oldest firms in those markets. China, however, is a unique market to study because, before 2000, the presence of the large multinational accounting firms in China was negligible and the market for audit services, therefore, was very local and competitive. With the relaxation of government prohibitions, the market shares of the large multinational accounting firms began to increase substantially. This growth in the market share of Big Four accounting firms provides evidence consistent with the notion that transitional economies promote regulatory policies that are meant to increase the credibility of the accounting profession in that locale (Chan *et al.*, 2007).

This paper tests the predictions of the entry pricing literature in the Chinese audit market by studying the pricing responses of local accounting firms to the market entry of the large multinational accounting firms in light of Simon's (2005) insights. It shows that local incumbent firms cut prices post-entry. This study also finds that it was the large-sized local audit firms and the accounting firms located in regions with highly developed and competitive markets that cut prices in response to the Big Four's entry.

The remainder of this paper is organized as follows. Section 2 introduces the background about the entry of the Big Four into the Chinese auditing market and reviews existing literature. Section 3 develops three hypotheses. Section 4 designs models for empirical testing. Section 5 presents the results. Finally, a discussion and conclusion are presented in Section 6.

2. Background

2.1 *The Chinese accounting profession and the entry of the Big Four into the Chinese market*

Before 1980, China operated a central-planned economy where enterprises were either state-owned or collectively owned. Accounting firms or profession did not exist at that time. By the early 1980s, after the Chinese government implemented economic reforms in connection with its open-door policy, the need for independent accounting and auditing began to grow. In 1981, the first accounting firm was established in Shanghai. However, right from the beginning, China's accounting firms only served those business entities with some form of foreign affiliation. By the mid-1980s, the financing of state-owned enterprises (SOEs) through issuing shares to domestic individual investors led to a huge demand for independently audited information. In response, the Chinese Institute of Certified Public Accountants (CICPA) was established by the Ministry of Finance in 1987 (see the Appendix for an overview of the development of the accounting profession in China) to regulate the accounting profession.

In the early 1990s, demand for high-quality auditing continued to grow dramatically due to the rapid growth of foreign investment enterprises and the issuance of shares to foreign investors. As a result, foreign accounting firms were permitted to establish joint ventures with local practitioners to perform auditing services. By the end of

the 1990s, there were three types of accounting firms in China: government-sponsored, university-sponsored, and joint ventures with overseas accounting firms. The first two types of accounting firms generally had very close links with the local government. However, in order to implement market mechanisms and improve competition, the Ministry of Finance required these firms to disaffiliate from their sponsors at the beginning of 2000. Since then, all accounting firms have been run independently as partnerships or as limited firms (Chen *et al.*, 2007; Wang and Iqbal, 2009).

The Big Four began entering China in the early 1980s. In January 1981, Coopers & Lybrand became the first to open an office in China. The others soon followed. Initially, the Big Four were only permitted to open representative offices. Through these offices, the Big Four served mainly foreign clients as they were not permitted to audit domestic clients. It was not until the 1990s that the Big Four finally received permission to audit local Chinese clients but only if they established joint ventures with local accounting firms. In July 1992, three joint ventures, KPMG Hua Zhen, Arthur Anderson Hua Qiang, and Ernst & Young Hua Ming were established. In December of that same year, the joint ventures of Pricewaterhouse Da Hua and Deloitte Touche Hu Jiang were established. In March 1993, the joint venture of Coopers & Lybrand Zhongxin was established (Hao, 1999). Table I shows the Big Four's market entry and their later development in China.

When China joined WTO in 2001, the Chinese government removed or promised to remove entry barriers for many products and services. As a result, the Big Four were merged with domestic firms and were permitted to audit any client; they developed rapidly. Table II illustrates the growth of market shares by the Big Four in China between 2000 and 2008. It shows that in 2002, the number of Chinese listed firms audited by the Big Four was 108, a number that is almost triple that of 2001; the Big Four's market shares measured as the percentage of audit fees charged by the Big Four over total audit fees charged by all accounting firms were 27 percent, almost double that of 2001. Table III documents the average audit fees charged by the Big Four and local accounting firms between 2000 and 2008. It shows that the audit fees charged by the Big Four were much higher than the fees charged by the local accounting firms.

2.2 Entry pricing literature

Several empirical papers, across various industries, have studied incumbents' pricing responses to market entry and reported conflicting results (Thomas, 1999; Joskow *et al.*, 1994; Windle and Dresner, 1999; Frank and Salkever, 1997). Given the lack of consistent findings, Yamawacki (2002) posits that incumbents' pricing responses to entry are firm-specific, depending on the incumbents' ability to respond, which in turn depends on their relative resource positions. Simon (2005) offers a more general explanation for why some firms may respond to entry more aggressively than others: incumbents vary in their incentives to respond. Several factors influence the incumbents' response, such as the incumbents' age, the incumbents' scope of services, and the market structure. This is consistent with Yamawacki's (2002) argument that responses may be firm-specific depending on the individual incumbent's resource position. Further, it suggests there is potential for complicated interactions between firm-specific factors and market structure.

2.3 Incumbent pricing expectations in an audit setting

Research suggests that, while the basic concepts remain the same across industries, professional services firms have characteristics – government-regulation, public interest focus, professional association-based self-regulation – that may set them apart from their manufacturing counterparts (Crittenden *et al.*, 2003). Murdock and McGrail (1994)

Big Four/Five accounting firms	Entry and development in China
Pricewaterhouse Coopers	In 1992, PW established a joint venture, Pricewaterhouse Da Hua in Shanghai In 1993, the joint venture, Coopers & Lybrand Zhong Xin was established in Beijing In December 1996, PW took over Zhang Chen Accounting firms in Beijing and established a venture firm In November 1997, Coopers took over Yang Cheng Accounting firm in Guangzhou and established a venture firm 2002, PwC firms in Hong Kong and China were merged and then combined with the Hong Kong and China practices
KPMG	In 1992, KPMG became the first international accounting firm to be granted a joint venture licence as KPMG Hua Zhen in Beijing Until 2008, KPMG China has 12 offices (including KPMG Advisory (China) Limited) in Beijing, Shenyang, Qingdao, Shanghai, Nanjing, Chengdu, Hangzhou, Guangzhou, Fuzhou, Shenzhen, Hong Kong SAR, and Macau SAR, with more than 8,500 professionals
Ernst & Young	In 1981, Ernst & Young established a representative office in Beijing In 1992, Ernst & Young established a venture firm, Ernst & Young Hua Ming, in Beijing In 2001, Ernst & Young merged with Shanghai-Based Da Hua Accounting Firm In 2006, Ernst & Young assisted Industrial and Commercial Bank of China with the then biggest IPO in history In 2007, Ernst & Young opened 10th office in China, in the city of Chengdu In 2008, Ernst & Young opened offices in Hangzhou, Qingdao, Tianjin, and Xiamen
Deloitte Touche	In 1917, Deloitte opened an office in Shanghai, becoming the first foreign accounting organization to establish a presence in Shanghai In 1992, a joint venture, Deloitte Touche Hu Jiang was established In 2005, Deloitte China undertook two mergers with leading local China CPA firms – Beijing Pan-China and Shenzhen Pan-China By 2008, Deloitte Touche had more than 8,000 people in 11 offices in China including Beijing, Dalian, Guangzhou, Hangzhou, Hong Kong, Macau, Nanjing, Shanghai, Shenzhen, Suzhou, and Tianjin
Arthur Anderson	In December 1982, a representative office was opened in Beijing In July 1992, Arthur Anderson merged with Beijing Hua Qiang accounting firm and established a venture firm, Arthur Anderson Hua Qiang In 1998 and 1999, Anderson took over Shanghai Jingwei United, Guangzhou Huacheng, and Shenzhen Zhongshen accounting firms In 2002, Arthur Anderson was dissolved

Table I.
Entry of the large
multinational
accounting firms and
their development
in China

Sources: www.pwccn.com; www.ey.com; www.deloitte.com; www.kpmg.com.cn

go so far as to suggest that accountants “avoid overtly using price as part of an overall marketing program” (p. 17). However, DeAngelo (1981) argues that prices are used by accounting firms to gain new clients and that rational auditors charge lower audit fees in the first few years of the auditor-client relationship as they know that they will likely be able to earn excess profits in the later years, a strategy known as “lowballing.” The longer the association of the auditor with the client, the more knowledgeable the auditor is about the operations of the client and its industry. Such knowledge is very helpful as it allows the auditor to improve audit efficiency and effectiveness. When bidding on a new engagement, rational auditors are aware that they have an opportunity to earn excess profits in the later years of their relationship. Therefore,

Table II.
Market shares of the
Big Four in China

Year	No. of Chinese listed firms audited by the Big Four	Market shares (% of audit fees charged) by the Big Four
2000	21	14
2001	37	16
2002	108	27
2003	101	23
2004	90	26
2005	91	29
2006	80	36
2007	84	58
2008	57	61

Source: China Stock Market Audit Report

Table III.
Average audit fees
charged by the big
four and local
accounting firms in
China (China Yuan)

Year	Average audit fees charged by the Big Four	Average audit fees charged by local accounting firms
2000	432,740	1,291,021
2001	490,835	1,719,677
2002	455,665	1,645,291
2003	465,871	1,940,515
2004	476,071	2,322,649
2005	458,562	2,340,109
2006	480,006	2,592,123
2007	519,029	3,123,350
2008	616,204	8,117,480

Source: China Stock Market Audit Report

auditors tend to reduce the fee bid in the early years to attract the clients. Ettredge and Greenberg (1990) found that the initial fees charged by the new auditors were about 25 percent lower than the last fees charged by their predecessors.

Along with the “lowballing” phenomena, there is also evidence that the large multinational accounting firms command price premiums (Francis and Simon, 1987; Palmrose, 1986). This premium has been primarily explained with two different arguments. First, DeAngelo argued that clients use the size of the accounting firm as a quality surrogate and therefore large accounting firms such as the Big Four are perceived to supply higher levels of audit quality as compared to the smaller firms. She argues that audit quality is difficult to evaluate because of the inherent nature of auditing. Thus, rational consumers devise alternative arrangements to find out the quality of audit services provided by different accounting firms and therefore they use auditor size as a surrogate for audit quality (DeAngelo, 1981).

A second argument is based on the brand name model of Klein and Leffler (1981). It proposes that the Big Four accounting firms develop and maintain brand name reputations for quality in order to secure and protect quasi-rents arising from the brand name (Johnson and Lys, 1990). In other words, investment in brand-name development comes first and this in turn leads to a quality-assuring price that is higher than the minimum-quality price. This is consistent with prior research (e.g. Pearson and Trompeter, 1994) that presents evidence that the expertise of large multinational accounting firms allows them to charge a quality-differentiated fee premium.

If the Big Four accounting firms adopt a “lowballing” strategy, the local accounting firms are more likely to lower their fees to meet the challenge the Big Four pose. However, when there are client-specific start-up costs associated with the audit market, incumbent auditors have certain cost advantages over the potential competitors for a certain client. They are already well acquainted with the operations and accounting practices of the client and have qualified staff that has developed a working relationship with the management of the client firm, that is “incumbent auditors earn client specific quasi rents” (DeAngelo, 1981, p. 184). This suggests that the termination of the audit relationship would impose costs on both the auditor and the client. In the event of termination, the incumbent auditors would lose the “wealth equivalent of the client-specific quasi-rent stream” (p. 188) and the clients would have to bear the transactions costs of seeking services of new auditors and the start-up costs of training the new auditors to get them familiarized with the operations of the organization (DeAngelo, 1981). Further, there is a value placed by the clients on the higher quality of service and brand reputation of the Big Four accounting firms; say, the premium value.

On the other hand, if the Big Four accounting firms charge a higher premium right from the outset due to their perceived higher quality of services and brand reputation, it would not make sense for the incumbent accounting firms to reduce their fees as their existing fees are expected to be lower than the audit fees charged by the Big Four accounting firms. This course of action of the incumbent accounting firms would depend on the premium value. If the premium value is more than the sum of the fee difference between the Big Four accounting firm and the incumbent accounting firm and the transaction costs of switching auditors, the client would switch from the local accounting firm to the Big Four accounting firm. In such a scenario, the incumbent accounting firm could be expected to reduce its audit fees to retain the client as long as it is still making economic profits. This in turn would depend on the profit margins of the incumbent accounting firms. Given the absence of foreign competition in the local audit services market before the entry of the Big Four accounting firms, the margins of the incumbent accounting firms could be expected to be high enough to withstand a reduction in audit fees in an attempt to deter entry.

3. Hypotheses development

Given the nature of the Chinese market for audit services it is unclear whether incumbent firms would respond to the Big Four’s entry by lowering their prices in order to retain clients, or choose to cede certain clients to the multinational auditors and continue to charge “normal” prices under the assumption that following their normal fee structure would still permit the average local or regional firm to undercut the higher fees charged by the large multinationals. In the extreme, if the multinationals fees are sufficiently high, local firms may even be able to raise their fees, and remain comfortably below those charged by the larger firms. Thus, the optimal response of the local practitioners is, a priori, uncertain.

Neither is the optimal strategy for the entering multinationals obvious. Given that, at least initially, the multinationals’ audit presence in China was permitted only through an association with local firms, it is not clear whether the large firms would be able to command the traditional premium associated with a multinational auditor. Rather, it may be the case that when entering the Chinese market, the multinationals would find their fees dictated not by their international reputation, but by the local reputation of the affiliated Chinese firm. Moreover, faced with a need to achieve economies of scale to justify investment in brand development across China, it might be optimal for the multinationals to pursue an aggressive fee-cutting strategy in order to capture market share.

3.1 Hypothesis 1: relative pricing by local accounting firms

If the large multinational audit firms select a market penetration strategy and engage in low-balling, local firms might be forced to reduce prices (or engage in non-price competition) to retain their clients and market share. However as noted above, the optimal strategy for the large firms is not obvious. At a superficial level, if the large international accounting firms adopt a premium pricing strategy, local accounting firms would be more likely to maintain their audit fees as their fees would already be at a discount compared to the higher fees to be charged by the new entrants. However on closer inspection, this logic may be flawed. If, as predicted by Klein and Leffler, 1981, the market perceives differential audit quality, it may be that local firms will be required to cut their fees to retain their market share even though they may already be charging a lower fee. The reasoning behind this outcome is based on perceptions of audit quality. For example, while a local firm may be charging 20 percent less than the large multinational, clients place such a high value on the perceived enhanced audit quality that they are willing to pay that premium. In this case the local incumbent may need to reduce its fees by an additional 10 percent to compensate for the perceived difference in audit quality.

The intangible nature of accounting and auditing work results in some level of product differentiation in the audit market (Parasuraman *et al.*, 1985; Schoenberger, 1989). That is, the Big Four can provide a different level of “audit risk,” “assurance level,” or “insurance” as compared to a non-Big Four accounting firm. However, firms in differentiated markets may also respond with more than one competitive weapon (Gatignon and Hanssens, 1987). The existing marketing literature argues that incumbents in differentiated markets almost always reduce prices post-entry (Hauser and Shugan, 1983; Kumar and Sudarshan, 1988; Gruca *et al.*, 1992). In other words, when facing competition or increased competition, incumbents compete by using different approaches such as lowering prices (price competition), which is one of the most popular method (Wallace, 1984; Garsombke and Armitage, 1993; Gerakos and Syverson, 2014). In light of the discussion above, we offer the first hypothesis:

H1. Local accounting firms significantly reduced their audit fees post-entry by the Big Four.

3.2 Hypothesis 2: effect of the market and institutional environment on pricing responses of local accounting firms

Since 1978, China’s economic and fiscal reform as well as its adoption of an open door policy has resulted in a wide variety of market and institutional quality across the country (Wang *et al.*, 2008). While certain areas such as the Economic Zones and eastern provinces have highly developed markets, less government involvement, less business restrictions, and greater market competition, other areas such as the middle and western areas have less developed markets and lower legal and institutional quality. It is often argued that more government involvement, restriction, or protection leads to a less developed market and competition and vice versa. Hence we predict that in those regions that have more local government involvement in business and lower market and legal institutional quality, audit firms reduce prices less and vice versa.

That is:

H2. In response to entry, accounting firms reduce audit fees less (more) in regions with less (more) market development and less (more) legal and institutional quality.

To measure the development of regional institutions, we use the marketization index developed by Fan *et al.* (2009) and sponsored by the National Economic Research Institute

(NERI) and China Reform Foundation (CRF). The index is widely accepted to appraise regional markets and institutions along five dimensions; namely, the role of government, economic structure, free-inter-regional trade, development of factor market, and legal framework.

3.3 Hypothesis 3: effect of market structure on pricing responses of local accounting firms

Market structure may also influence incumbents' incentives to respond to entry. Prior research has shown that the threat posed by entry is greater in concentrated markets (Hannan, 1979). In competitive markets, entry should have little effect on incumbents as competition has already forced prices downward toward marginal costs, while in more concentrated markets, entry threatens to erode rents by making it more difficult to maintain tacit collusion. Therefore, incumbents in highly concentrated markets have a greater incentive to cut prices to both drive out entrants and to defer further entry (Hannan, 1979; Kessides, 1990). Hannan (1979) finds that incumbents in concentrated markets make deeper price cuts in response to the entry of new competitors.

Market competition induces clients and accounting firms to align themselves to achieve efficient utilization of specialized resources; therefore, accounting firms that normally audit small, unregulated clients may be unable to offer their services at competitive prices to large and geographically dispersed clients because they lack the economies of scale and expertise available to firms already serving in that market segment (Hunt and Lulseged, 2007; Johnson and Lys, 1990). Conversely, firms that typically audit large, geographically dispersed clients may be unwilling to allocate productive resources to small localized corporations at competitive prices. Auditors of a comparable size and clientele mix can thus be expected to have similar cost structures (Johnson and Lys, 1990). It follows that the market for larger auditees is likely to be highly concentrated and therefore characterized by less intense competition and greater margins due to the small number of firms. Conversely, the market for smaller auditees is likely to be more competitive due to the large number of firms operating in the market. It is reasonable to expect that large multinational accounting firms will target large local companies in the market as a way of penetrating the market. It then follows that the large local accounting firms are more likely to be threatened by the entry of the new entrants and therefore are more likely to reduce prices, whereas small- and medium-sized local firms are less likely to reduce prices as existing competition has already forced prices downward in the market.

On the other hand, small- and medium-sized local accounting firms may cut prices more deeply than the large-sized local accounting firms. This may occur, when, in the face of increased competition, firms of all sizes reassess their strategies and while only a limited number of firms (such as large regional firms and multinationals) can reasonably audit the largest clients, there are thousands of firms that can audit those clients being serviced by the small and medium accounting firms. Thus, it may be that clients of these firms enjoy a relatively larger reduction in fees because of the vast number of potential auditors competing for their business.

Another explanation for the more aggressive pricing responses of small- and medium-sized accounting firms, as opposed to the large-sized accounting firms, may be explained by Smith *et al.* (1992), who suggest that firms with more complex organizational structures are less likely to respond to competitive attacks and entry. They argue that in structurally complex firms, decision makers receive information more slowly and are more likely to receive misinformation; this weakens the ability of

these firms to respond to entry. The lack of aggressive pricing responses by large-sized accounting firms may be explained by these factors. Finally, while some argue that incumbents in concentrated markets cut prices more in response to entry, it has also been argued that higher concentration may reflect entry barriers or incumbent capabilities which make it difficult for new firms to enter the market. In this case, entry barriers would grant incumbents a competitive advantage over new entrants, reducing the need for incumbents to respond aggressively to entry (Simon, 2005).

Hence, it is an empirical question whether the local small- and medium-sized accounting firms exhibit similar or different pricing strategies from large-sized local accounting firms. Our third hypothesis is as follows:

H3. Small- and medium-sized local accounting firms reduce audit fees more or less than large-sized local accounting firms in response to entry by the Big Four.

4. Model specification and data collection

Financial data for our study has been collected from the China Stock Market Financial Statement Database. The database covers all corporations listed on the Chinese stock exchanges, including their financial statements, since 1990. Auditing data, such as auditing fees and audit firms, has been collected from the China Stock Market Audit Report. The report provides information including audit date, type of audit opinion, auditor, audit firm, audit report, and audit fee for all listed firms since 1994. The firms selected for our study meet two conditions: first, the financial statements and auditing reports are available in any year between 1994 and 2008; and second, they have been audited only by local accounting firms. There are 8,289 firm-year observations.

To test *H1*, we design the following model:

$$AUD_{it} = \alpha_0 + \alpha_1 ENT_{it} + \alpha_2 SIZ_{it} + \alpha_3 CUR_{it} + \alpha_4 R\&D_{it} + \alpha_5 LEV_{it} + \alpha_6 ROA_{it} + \alpha_7 CPI_t + \alpha_8 SOE_{it} + \varepsilon_{it} \quad (1)$$

To test *H2*, we design the following model:

$$AUD_{it} = \delta_0 + \delta_1 ENT_{it} + \delta_2 MAR_i + \delta_3 ENT_{it} \times MAR_i + \delta_4 SIZ_{it} + \delta_5 CUR_{it} + \delta_6 R\&D_{it} + \delta_7 LEV_{it} + \delta_8 ROA_{it} + \delta_9 CPI_t + \delta_{10} SOE_{it} + \varepsilon_{it} \quad (2)$$

To test *H3*, we design the following model:

$$AUD_{it} = \beta_0 + \beta_1 ENT_{it} + \beta_2 S\&M_{it} + \beta_3 ENT_{it} \times S\&M_{it} + \beta_4 SIZ_{it} + \beta_5 CUR_{it} + \beta_6 R\&D_{it} + \beta_7 LEV_{it} + \beta_8 ROA_{it} + \beta_9 CPI_t + \beta_{10} SOE_{it} + \varepsilon_{it} \quad (3)$$

where, *AUD*, the natural logarithm of audit fees charged by local accounting firms; *ENT*, indicator variable (1 = 2002-2005); *SIZ*, the natural logarithm of total assets; *CUR*, current assets divided by total assets; *R&D*, R&D expenditures divided by total assets; *ROA*, net income divided by total assets; *LEV*, long-term debt divided by total assets; *CPI*, consumer price index; *SOE*, indicator variable, equal to 1 if the firm is a central SOE or a subsidiary of the central SOE, and 0 otherwise; *MAR*, marketization index in year 2002[1]; and *S&M*, indicator variable (1 = small- and medium-sized local accounting firm).

Geroski (1995) suggests that it would take four or five years for large multinational accounting firms to reach a competitive par with incumbent accounting firms. Thus we present the results for the model by measuring incumbent pricing responses for the

four years immediately following the dramatic increase in the Big Four's presence in China. Consequently, *ENT* is an indicator variable that captures the incumbent auditor's pricing responses during the first four-year period after the entry of the Big Four. Should incumbent firms reduce their prices in response to new entrants, this variable is expected to be negatively related to *AUD (HI)*.

We rely on the existing literature on audit fees to specify the control variables (Francis, 1984; Gist, 1992; Raman and Wilson, 1992; Hill *et al.*, 1994; Deis and Giroux, 1996; Bell *et al.*, 2001; Fields *et al.*, 2004, to name a few). They are, firm size (*SIZE*), measured as the log of total assets; current asset (*CUR*), measured as the ratio of current assets to total assets; return on asset (*ROA*), measured as profit over total assets; leverage (*LEV*), measured as long-term debt over total assets; *R&D*, measured as the R&D expenditures over total assets; and *CPI* to control for inflation rate. Central state owned enterprise (*SOE*), an indicator variable, equal to 1 if the firm is a central SOE or a subsidiary of a central SOE[2]. We also control for industry effects.

To test *H2*, we add *MAR* and an interaction variable of $MAR \times ENT$. *MAR* is used to measure the institutional environment where the auditing firms operate. To measure the quality of regional institutions, we adopt the marketization index for China's provinces, collected from the China NERI. The NERI index project has been developed by Fan *et al.* (2009) and sponsored by the NERI and the CRF. The index is constructed based on weighting the following information: first, the role of government (the size of the government in the regional economy); second, the economic structure (mainly the growth of the non-state sector and the reform of the SOEs); third, the inter-regional trade barriers such as price controls; fourth, the development of the factor market such as factor mobility; and fifth, the legal framework. The index and all its components are measured on a scale from 0 to 10. Table IV reports the detailed distributions of the marketization index across China's 31 provincial-level regions (27 provinces and four province-level municipalities) in 2002. The lowest index is 0.63 for Tibet, and the highest index is 8.63 for Guangdong. *H2* predicts that the coefficient on $MAR \times ENT$ is negative.

Regions	2002	Regions	2002
Anhui	4.95	Jiangsu	7.4
Beijing	6.92	Jiangxi	4.63
Chongqing	5.71	Liaoning	6.06
Fujian	7.63	Ningxia	3.24
Gansu	3.05	Qinghai	2.45
Guangdong	8.63	Shaanxi	3.9
Guangxi	4.75	Shandong	6.23
Guizhou	3.04	Shanxi	3.93
Hainan	5.09	Shanghai	8.34
Hebei	5.29	Sichuan	5.35
Henan	4.3	Tianjin	6.73
Heilongjiang	4.09	Xinjiang	3.41
Hubei	4.65	Tibet	0.63
Hunan	4.41	Yunnan	3.8
Inner-Mongolia	4.0	Zhejiang	8.37
Jilin	4.58		

Source: Fan *et al.* (2009)

Table IV.
Marketization index
of China's provincial-
level regions

To test *H3*, we add *S&M* and an interaction variable $ENT \times S\&M$. *S&M* is an indicator variable representing small- and medium-sized domestic firms, equal to 1 for firms other than the top 50 domestic firms[3]. If small- and medium-sized local accounting firms reduce/increase audit fees more than large-sized local accounting firms in response to entry, we expect the interaction variable to be negative/positive.

60

5. Testing results

5.1 Primary results

Table V provides descriptive statistics of major variables including mean, median, maximum, minimum, and standard deviation values. For example, the mean value of audit fees is 5.628; the median value is 5.602; the minimum value is 4.477; and the maximum value is 6.775. The mean value of small and medium-sized firms is 0.417, suggesting that around 42 percent of local firms are small- and medium-sized.

Table VI presents the correlation matrix of major variables. The largest absolute value of the correlation is 0.551, between *AUD* and *SIZ*.

Table VII reports the results of model 1. It shows that the coefficient on *ENT* is negative and statistically significant at the 0.01 level, providing support for *H1* and suggesting that incumbent accounting firms significantly cut prices in years 2002-2005, as the Big Four dramatically increased their presence in China. The coefficient value on

	Mean	Median	SD	Min.	Max.
<i>SIZ</i>	9.149	9.124	0.423	5.348	11.378
<i>CUR</i>	0.529	0.538	0.205	0	1
<i>R&D</i>	0.001	0	0.008	0	0.338
<i>LEV</i>	0.055	0.017	0.111	0	6.317
<i>ROA</i>	-0.165	0.031	24.425	-2,186	758.7
<i>MAR</i>	7.065	6.92	1.489	3.04	10 ^a
<i>S&M</i>	0.417	0	0.493	0	1
<i>AUD</i>	5.628	5.602	0.215	4.477	6.775

Notes: *SIZ*, the natural logarithm of total assets; *CUR*, current assets divided by total assets; *R&D*, R&D expenditures divided by total assets; *ROA*, net income divided by total assets; *LEV*, long-term debt divided by total assets; *MAR*, marketization index in year 2002; *S&M*, indicator variable (1 = small- and medium-sized local accounting firm); *AUD*, the natural logarithm of audit fees. ^a*MAR* is set to be equal to 10 if the auditing firm is located in Hong Kong

Table V.
Descriptive statistics
of variables

	<i>AUD</i>	<i>SIZ</i>	<i>CUR</i>	<i>R&D</i>	<i>LEV</i>	<i>ROA</i>	<i>MAR</i>
<i>AUD</i>	1						
<i>SIZ</i>	0.551	1					
<i>CUR</i>	-0.007	-0.093	1				
<i>R&D</i>	0.046	0.033	0.001	1			
<i>LEV</i>	0.046	0.153	-0.199	-0.009	1		
<i>ROA</i>	0.003	0.069	-0.013	0.001	0.003	1	
<i>MAR</i>	0.144	0.096	0.074	0.034	-0.04	-0.003	1

Notes: *AUD*, the natural logarithm of audit fees; *SIZ*, the natural logarithm of total assets; *CUR*, current assets divided by total assets; *R&D*, R&D expenditures divided by total assets; *ROA*, net income divided by total assets; *LEV*, long-term debt divided by total assets; *MAR*, marketization index in year 2002

Table VI.
Variable
correlation matrix

Parameter	Predicted sign	Est value	t-Student	p-Value
Intecept		2.813	29.5***	0.00
<i>ENT</i>	-	-0.014	-3.489***	0.00
<i>SIZ</i>	+	0.286	60.03***	0.00
<i>CUR</i>	+	0.04	3.799***	0.00
<i>R&D</i>	+	0.53	2.01**	0.044
<i>LEV</i>	?	-0.057	-3.095***	0.002
<i>ROA</i>	-	-0.0003	-4.035***	0.00
<i>CPI</i>	+	0.204	2.395**	0.017
<i>SOE</i>	?	-0.024	-3.691***	0.00
R^2 (adj)	0.32			
F-value	274.9			
Observations	8,289			

Notes: *AUD*, the natural logarithm of audit fees; *ENT*, indicator variable (1 = 2002-2005); the natural logarithm of total assets; *CUR*, current assets divided by total assets; *R&D*, R&D expenditures divided by total assets; *ROA*, net income divided by total assets; *LEV*, long-term debt divided by total assets; *CPI*, consumer price index; *SOE*, indicator variable, equal to 1 if the firm is a central state-owned enterprise (SOE) or a subsidiary of the central SOE, and 0 otherwise. *, **, ***Significant at 0.1, 0.05 and 0.01 levels based on two-tail *t*-test, respectively

Table VII.
Incumbent pricing –
audit fee estimation

ENT is -0.015, which suggests that local Chinese accounting firms, on average, cut prices by around 1.5 percent post-entry by the Big Four.

As indicated in Table VII, several control variables are significant and consistent with the findings in prior studies. It is shown that audit fees are positively associated with client size and the complexity of transactions (Francis, 1984; Raman and Wilson, 1992; Hill *et al.*, 1994; Deis and Giroux, 1996; Fields *et al.*, 2004, etc.). For example, Table VII shows that the variables of *SIZ*, *CUR*, *R&D*, and *CPI* are all positive and statistically significant, suggesting that: first, large clients are charged high audit fees; second, clients with more complicated transactions such as more current assets and more investments in R&D are charged higher audit fees; and third, audit fees increase with the inflation rate.

Table VII also shows that the variable of *ROA* is negative and statistically significant, suggesting that more profitable clients are charged lower audit fees, which is consistent with Simunic (1980), Maher *et al.* (1986), Turpen (1990), and others. However, Table VII also shows that *LEV* is negative and statistically significant, suggesting that clients with higher leverage ratios are charged lower audit fees. This finding is not consistent with some of the prior studies that argue that higher leverage ratios indicate higher risk clients and therefore lead to higher audit fees[4] (Gist, 1992; Bell *et al.*, 2001, etc.). Finally, Table VII shows that *SOE* is negative and statistically significant, suggesting that state-owned clients are charged lower audit fees.

Table VIII reports the results of model 2. It shows that the coefficient on $MAR \times ENT$ is negative and statistically significant at the 0.1 level, providing support for *H2* and suggesting that auditing fees are reduced in regions with more developed markets and institutions following the entry of the Big Four. In other words, accounting firms located in more competitive regions reduce audit fees more in response to the Big Four's entry. In addition, the coefficient on *MAR* is positive and statistically significant at the 0.01 level, suggesting that accounting firms located in regions with more developed markets and institutions always charge higher audit fees compared to accounting firms located in other regions.

Parameter	Predicted sign	Est value	t-Student	p-Value
INTECEPT		2.832	29.7***	0.00
ENT	?	0.019	1.006	0.315
MAR	+	0.014	7.234***	0.00
MAR × ENT	-	-0.005	-1.713*	0.087
SIZ	+	0.282	58.97***	0.00
CUR	+	0.034	3.253***	0.001
R&D	+	0.495	1.888*	0.059
LEV	?	-0.049	-2.675***	0.007
ROA	-	-0.0003	-3.967***	0.00
CPI	+	0.131	1.537	0.124
ROE	?	-0.022	-3.509***	0.00
R ² (adj)	0.32			
F-value	247.7			
Observations	8,289			

Table VIII. Incumbent pricing – audit fee estimation based on market and institutional environment

Notes: AUD, the natural logarithm of audit fees; ENT, indicator variable (1 = 2002-2005); MAR, marketization index in year 2002; SIZ, the natural logarithm of total assets; CUR, current assets divided by total assets; R&D, R&D expenditures divided by total assets; ROA, net income divided by total assets; LEV, long-term debt divided by total assets; CPI, consumer price index; SOE, indicator variable, equal to 1 if the firm is a central state-owned enterprise (SOE) or a subsidiary of the central SOE, and 0 otherwise. *, **, *** Significant at 0.1, 0.05 and 0.01 levels based on two-tail t-test, respectively

The coefficient on MAR is positive and significant, suggesting that in regions with highly developed market and institutions, audit fees charged by accounting firms are higher than those charged in less-developed regions. This could be due to the fact that highly developed regions have higher living standards or consumer prices.

Table IX presents the results of model 3. It shows that the coefficient on ENT × S&M is not significant, suggesting that audit fees charged by small- and medium-sized domestic firms do not change after the entry of the Big Four. The coefficient on S&M is negative and statistically significant at the 0.01 level, suggesting that, small- and medium-sized local accounting firms always charge lower audit fees compared to large local firms. The coefficient on ENT is also negative and statistically significant at the 0.01 level, suggesting that it is mainly the large local accounting firms that cut audit fees in response to the entry of the Big Four.

5.2 Sensitivity tests

In the 1990s, many local accounting firms were sponsored by government or universities and they generally had close links with local governments; however, they were required to be separated from their sponsors and operate independently as partnerships or limited firms at the beginning of 2000. To mitigate any effect that this association with government might have had on our study, we delete observations for the years 1994-1999. The results, not presented in this paper, do not change qualitatively.

We also delete two outliers with extremely high and low ROA. The results, not presented in this paper, do not change qualitatively.

5.3 Supplementary test

In 2006, China adopted new accounting standards – China Accounting Standards (CAS), which have substantively converged with IFRS. Effective as of January 1, 2007, all listed firms in China are required to comply with the CAS. The adoption of the CAS

Parameter	Predicted sign	Est value	t-Student	p-Value
INTECEPT		2.843	29.96***	0.00
ENT	?	-0.016	-3.069***	0.002
S&M	?	-0.043	-7.745***	0.00
ENT×S&M	?	-0.001	-0.112	0.911
SIZ	+	0.285	60.34***	0.00
CUR	+	0.039	3.698***	0.00
R&D	+	0.52	1.989**	0.047
LEV	?	-0.048	-2.657***	0.008
ROA	-	-0.0003	-4.15***	0.00
CPI	+	0.198	2.341**	0.02
ROE	?	-0.02	-3.062***	0.002
R ² (adj)	0.33			
F-value	251.3			
Observations	8,289			

Notes: *AUD*, the natural logarithm of audit fees; *ENT*, indicator variable (1 = 2002-2005); *SIZ*, the natural logarithm of total assets; *CUR*, current assets divided by total assets; *R&D*, R&D expenditures divided by total assets; *ROA*, net income divided by total assets; *LEV*, long-term debt divided by total assets; *CPI*, consumer price index; *S&M*, indicator variable (1 = small and medium sized local accounting firm); *SOE*, indicator variable, equal to 1 if the firm is a central state-owned enterprise (SOE) or a subsidiary of the central SOE, and 0 otherwise. *, **, ***Significant at 0.1, 0.05 and 0.01 levels based on two-tail *t*-test, respectively

Table IX.
Incumbent pricing –
audit fee estimation
based on size of local
accounting firms

could be a challenge to the local accounting firms but provides an opportunity to the Big Four. In this study, we attempt to investigate the pricing response of local accounting firms to the adoption of the CAS in 2007. The regression model is designed as follows:

$$AUD_{it} = \eta_0 + \eta_1 Y2007 + \eta_2 SIZ_{it} + \eta_3 CUR_{it} + \eta_4 R\&D_{it} + \eta_5 LEV_{it} + \eta_6 ROA_{it} + \eta_7 CPI_{it} + \eta_8 SOE_{it} + \varepsilon_{it} \quad (4)$$

where *Y2007*, indicator variable (1 = 2007).

Table X presents the results. It shows that the coefficient on *Y2007* is, however, not statistically significant, suggesting that incumbent accounting firms did not change prices in 2007, when China adopted the CAS.

6. Discussion and conclusions

This study examines whether local accounting firms cut prices in response to the Big Four's market entry into China. Using data from annual financial reports and audit reports from Chinese listed companies between the years 1994 and 2008, this study shows that local incumbent firms did cut prices after the Big Four's entry. Further results show that large-sized local audit firms cut prices in response to entry and that the accounting firms located in regions with highly developed market and competition also cut prices, in response to entry.

The results of this study indicate that entry had a significant effect on incumbents' pricing in the Chinese audit market. One industry-specific explanation for the effect on pricing may be that entry into the Chinese market was previously rare because of the many barriers preventing such entry. When incumbent accounting firms were faced with serious competition, they were motivated to cut prices to protect their market share and salvage some monopolistic profits.

Parameter	Predicted sign	Est value	t-Student	p-Value
INTECEPT		2.74	27.5***	0.00
Y2007	-	0.002	0.331	0.741
SIZ	+	0.286	59.95***	0.00
CUR	+	0.041	3.829***	0.00
R&D	+	0.588	2.221**	0.026
LEV	?	-0.057	-3.104***	0.002
ROA	-	-0.0003	-4.067***	0.00
CPI	+	0.266	2.973***	0.003
SOE	?	-0.023	-3.64***	0.00
R ² (adj)	0.32			
F-value	273.6			
Observations	8,289			

Notes: *AUD*, the natural logarithm of audit fees; *Y2007*, indicator variable (1 = 2007); *SIZ*, the natural logarithm of total assets; *CUR*, current assets divided by total assets; *R&D*, R&D expenditures divided by total assets; *ROA*, net income divided by total assets; *LEV*, long-term debt divided by total assets; *CPI*, consumer price index; *SOE*, indicator variable, equal to 1 if the firm is a central state-owned enterprise (SOE) or a subsidiary of the central SOE, and 0 otherwise. *, **, ***Significant at 0.1, 0.05 and 0.01 levels based on two-tail *t*-test, respectively

Table X.
Supplementary test

This study has important implications for the Big Four accounting firms as it provides useful information about pricing strategies that could be used by local accounting firms in a new market. Local accounting firms in emerging markets could also gain useful insights about the pricing strategies the Big Four accounting firms adopt when they enter a market. Existing results indicate that the Big Four maintain the premiums they charge in established markets. Further, this paper finds that incumbent accounting firms reduce their prices to combat the effect of the Big Four's entry. It also sheds light on the effect that the Big Four's entry has had on the price structure of audit services provided to publicly held corporations.

In particular, a result of the Big Four's entry into China, local accounting firms are facing intensified competition. How to sustain, even increase, their competitive advantage and market share in response has become a more critical issue that managers of local firms have had to deal with carefully and strategically. Pricing is a key factor of a firm's marketing strategy. Our results provide local managers with knowledge on how the Big Four's entry can affect auditing fees. This information could serve as a pricing guide. It should be noted that the right pricing is essential as high pricing could lead to a loss of competitive advantage while low pricing could make doing business more risky and costly. The Chinese auditing market is still under development. Our findings of geographically differential reactions could help local managers with market repositioning. For instance, in more developed and competitive areas or areas where the Big Four are concentrated, local firms could compete by offering superior services and therefore charge premiums; alternatively, they could focus on less developed and competitive areas to reduce risks and costs.

Our results reveal price reactions of local firms to the market entry of the Big Four, and reveal insights into the Big Four's business and pricing strategies. Managers of the Big Four have to understand the various reactions from local accounting firms to their market entry and adjust their business scopes and marketing strategies accordingly. The Big Four compete not only with each other in China's market but also with local accounting firms. In fact, pricing of both the Big Four and local firms jointly determines

how accounting firms compete and where they compete. Managers of the Big Four should consider the pricing of local firms when determining or adjusting their own prices. In the case of offering similar services, significantly higher prices will definitely lead to a reduced competitive advantage.

There are, of course, limitations in this paper which need to be addressed. One concern is that local accounting firms may respond to entry with non-price strategies that are not accounted for in this study. For instance, incumbent firms may increase their advertising expenditures, or upgrade the quality of their services, or provide more services at the same price. These non-price responses may however, lead to increased costs which in turn, lead to price increases (or reductions in margin). As a result, these non-price responses may actually cause a spurious, positive relationship between entry and price (Simon, 2005), which may create a bias against finding a negative relationship between entry and price, thereby strengthening the results found in this paper.

Notes

1. Marketization index in 2003-2005 is similar to 2002.
2. The central SOE list is provided by the State-owned Assets Supervision and Administration Commission of the State Council (SASAC), China.
3. Top 100 accounting firms based on annual revenue can be found at <http://baike.esnai.com>, a website established and managed by the Shanghai National Accounting Institute.
4. For Chinese listed firms, higher leverage ratios may not indicate a higher risk due to the protection they receive from local governments; very few listed firms go bankrupt.

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Appendix. Development of the accounting profession in China

January 1981: The first independent accounting firm was organized in Shanghai.

1986: The professional accountants' standard (draft) was released and enacted.

November 1988: The Chinese Institute of Certified Public Accountants (CICPA) was established.

December 1990: The Shanghai Stock Exchange opened for trading.

December 1991: The Shenzhen Stock Exchange opened for trading. The first national professional accountant exam was held.

July 1992: Sino-foreign co-operative accounting firms (Arthur Anderson, Earnest Young, etc.) were established by permission of the Ministry of Finance.

October 1993: *The Law of the Certified Public Accountants* was adopted and promulgated by the Eighth National People's Congress.

1994: A certified accounting program was set up in various universities.

1996: CICPA issued exposure drafts on specific auditing standards.

October 1996: CICPA joined the Confederation of Asia-Pacific Accountants (CAPA) and became a member of the CAPA board in April 1997

May 1997: CICPA joined the International Federation of Accountants.

April 2000: The State Council approved consolidation of CICPA with the Chinese Institute of Asset Evaluation and the Chinese Institute of Taxation Consulting.

2005: Total revenue of the Chinese accounting profession exceeded RMB 18 billion.

May 2006: CICPA attracted more than 5,600 group members (accounting firms) and over 140,000 individual members, among whom about 69,700 are practicing members and over 70,000 are non-practicing members.

Currently, CICPA is a member of the IFAC Board and CAPA Executive Committee, and has developed cooperation and communication with more than 50 professional accounting bodies in other jurisdictions.

Source: "Overview – an introduction of CICPA," CICPA webpage, www.cicpa.org.cn

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