

Audit Firm Size Effects in China's Emerging Audit Market

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ABSTRACT

Using a panel data of both audit firms and listed firms in China from 2001 to 2003, we examine the continuous relationship between audit firm size and audit quality in China's relatively competitive auditing market for publicly listed firms. We find that larger audit firms are more likely to issue modified opinions than smaller firms. We also find that larger firms tend to command significantly higher audit fees. Both evidences suggest the existence of not only a positive but a continuous relationship between audit firm size and audit quality. This relationship indicates that audit firms of varying size are not homogeneous in quality even in a relatively competitive market. The continuous relationship further suggests that such a size effect does not require a particular size threshold to operate.

JEL classification: G3; M4

Key words: Audit firm Size, Audit Quality, Emerging Market, China's Audit Market

1. Introduction

The relationship between audit firm size and audit quality has been a much studied issue. The general hypothesis on the relationship is that audit services offered by larger audit firms tend to be of higher quality than those offered by smaller firms. Two theoretical reasons have been offered to explain for the positive relationship between audit firm size and audit quality. DeAngelo [1981] argues that large audit firms have more to lose from an alleged failure to detect and report a material misstatement of earnings owing to the existence of client-specific quasi-rents. Dye [1993], on the other hand, argues that large firms have more wealth at risk from litigation because of their “deeper pockets.”

Following these theoretical arguments, two lines of empirical studies have been devoted to the examination of audit firm size effects. The first line of research examines how audit firm size is related to various proxies of audit quality. Early studies such as those of St. Pierre and Anderson [1984] and Palmrose [1988] offer evidence that larger audit firms tend to have a lower incidence of litigation. Teoh and Wong [1993] indirectly measure audit quality using earnings response coefficients and find that the stock market shows more dramatic responses to reports audited by Big 8 audit firms. While Krishnan [2003] finds that Big 6 audit firms report less discretionary accruals than non-Big 6 firms, DeFond, Wong and Li [2000], Citron and Taffler [1992] and Ireland [2003] support the positive size effects by providing evidence that larger audit firms tend to issue more modified opinions. Overall, there exists a large body of empirical studies supporting the existence of a positive relationship between audit firm size and audit quality.¹

The second line of research examines the relationship between audit firm size and audit fee. The basic idea is that larger firms should command higher fees if their services are of higher quality. Such a positive size effect is well documented by empirical studies (for example, Palmrose [1986]; Francis and Simon [1987]; Francis and Stokes [1986]; Francis [1984]; Chan, Ezzamel and Gwilliam [1993]; Anderson and Zéghal [1994]; Rubin [1988]).² According to Moizer [1997], fee premium for Big 8 firms vary between 16% and 37%,

¹ Conflicting evidence is provided by Copley [1991] and Petroni and Beasley [1996]. These authors do not find a significant relationship between audit firm size and audit quality.

² Simmunic [1980] fails to find that larger audit firms command higher fees. Francis and Stokes [1986] and Palmrose [1986] on the other hand, find that large firms command higher fees for smaller clients but not for large clients. Rubin [1988] finds that large firms command much higher fees for large clients but not for small clients.

depending on the country and time period.

Based on the theoretical arguments and empirical evidence on the relationship between the audit firm size and audit quality, many studies use directly audit firm size as a surrogate for audit quality (Krishnan [2003]; Clarkson and Simunic [1994]). Such a direct application may be problematic for three reasons. First, most studies of the relationship between audit firm size and audit quality focus on audit markets that are dominated by a few large auditors, such as the Big 8/6/5. The common method of defining audit firm size is to dichotomize Big 8/6/5 firms as large and non-Big 8/6/5 firms as small. However, the relationship between audit firm size and audit quality in more competitive markets remains unclear because of such a focus on the oligopolistic market structure (Krishnan and Schauer [2000]; Niemi [2004]). Second, higher fees for large firms' services in an oligopolistic market may represent the large audit firms' economic rents derived from their market power. Observing that a positive relationship exists between audit firm size and audit fee in such a market does not necessarily imply that the services offered by large firms are of higher quality (Simmunic [1980]; Gist and Michaels [1995]). Third, the positive relationship between audit firm size and audit quality underlines an assumption that there exists an effective demand for high-quality audits. DeFond, Wong and Li [2000], however, indicate that such a demand may not exist in some markets. They found that when China's regulators tried to increase audit firm independence, domestic firms listed in China took flight from high-quality to low-quality auditors as indicated by a drastic decline in market shares of large auditors. In the absence of demand for high-quality audits, audit firms have more to gain rather than lose from an alleged failure to detect and report a material misstatement of earnings and only less-independent firms will survive and become large firms in the long run. Then, the relationship between audit firm size and audit quality will be negatively correlated, and firm size will be a proxy for low- rather than high-quality audits.

This study examines the relationship between audit firm size and audit quality in China's emerging audit market of publicly listed firms. Our study is motivated by two factors. First, China's auditing market, due to its emerging nature, is more competitive than similar markets in other countries. While, in the United States, Big 4 audited 78% of the firms listed in the country and captured 99% of the sales revenue (U.S. General Accounting Office, GAO 03-864, 2003), the largest 10 audit firms in China audited only 30% of the country's listed firms and captured less than 40% of the revenue (see Table 1). The relative competitiveness of China's audit market renders it a useful institutional setting for investigating audit firm size effects in a

competitive market structure.

Second, the audit market of China's publicly listed firms is an evolving emerging market characterized by rapid institutional changes. While DeFond, Wong and Li [2000] show that the market was characterized by the lack of both the demand for and the supply of high-quality audits in mid-1990s, the government and regulators have introduced numerous institutional changes since late 1990s, which affected both the supply of and the demand for high-quality audits. The relationship between audit firm size and audit quality in this market, therefore, remains unclear. Our study provides some recent evidence about this emerging market.

We examine audit firm size effects in China's emerging audit market from 2001 to 2003. Unlike the substantial body of research that uses the dichotomy approach, we measure audit firm size using various continuous measures and examine the linear relationships between audit firm size and audit quality. Specifically, we examine whether audit firm size is related positively to the percentage of modified audit opinions as well as to audit fees. For the size effects on audit opinion, we show that larger audit firms are more likely to issue modified opinions than smaller firms, suggesting that larger firms are less willing to acquiesce to client pressure to allow substandard reporting and are therefore relatively more independent. For the size effects on audit fees, we show that larger audit firms tend to charge significantly higher fees. The higher audit fees for larger firms are likely to be the result of higher audit quality rather than the result of economic rents created by monopolistic market power because large audit firms are unlikely to enjoy substantial monopolistic power in a relative competitive market. Overall, our evidence suggests the existence of a not only positive but also linear relationship between audit firm size and audit quality in China's audit market. Furthermore, our results suggest that the "flight from audit quality" as suggested by DeFond, Wong and Li [2000] has ceased or even reversed itself since the early 2000s.

In addition to providing recent evidence about China's emerging audit market, our findings contribute to the literature that examines the relationship between audit firm size and audit quality in relative competitive audit markets. Deis and Giroux [1992], for example, examine the audit quality provided by small, independent audit firms in Texas on audits of independent school districts and report a positive relationship between the number of these independent school district clients and audit firm quality. Employing the same data set, Deis and Giroux [1996] report that the number of audit firm offices is positively associated with

audit fees, and they interpret this finding as evidence of larger firms' higher-quality services³. Krishnan and Schauer [2000], on the other hand, show a positive association between audit firm size and audit quality for a sample of not-for-profit entities⁴. These studies, however, focus on audit markets of public and not-for-profit clients. The potential for generalizing their findings to the audit markets of publicly listed firms is limited because auditing is likely to perform a different role for publicly listed firms, given the high demand for reducing asymmetric information in the financial market. Our study provides a useful addition to this line of literature by offering a case study on the audit market of publicly listed firms.

The remainder of this paper is structured as follows. We provide some background on China's market and develop our hypotheses in section 2. Data and research methods are discussed in section 3. In section 4, empirical results and robustness checks are presented. Section 5 concludes.

2. Institutional Background and Hypotheses Development

The positive size effects of audit firms demand two pre-conditions. First, they necessitate the existence of demand for high-quality audits. As we have discussed, the absence of demand for high-quality audits will lead to a negative rather than positive relationship between audit firm size and audit quality. Second, they require that audit firms have the incentive and capacity to differentiate themselves by choosing different level of audit quality. This section first provides an overview of the competitive conditions of China's audit market and discusses how the major institutional changes that occurred in the late 1990s and early 2000s have promoted the emergence of these two pre-conditions. Then, we develop hypotheses on (1) how audit firm size is related to audit quality as reflected in audit opinions and (2) how audit firm size is related to audit quality as reflected in audit fees

2.1 Competitiveness of China's Market for Audit Services

Before the economic reform and opening of the economy in the late 1970s, there was no need for independent accounting and auditing as China was a central planning economy. China's first audit firm was

³ Deis and Giroux [1992] constructed a quality score which is a weighted average of a collection of possible audit quality deficiencies discovered in a Quality Control Review.

⁴ Quality is defined as a sum of eight indicator variables including proper disclosure about investment, fixed assets, depreciation, donations, functional expenses and report format of audit report and balance sheets, etc. This variable represents the extent of compliance of GAAP in eight areas.

established in Shanghai in January 1981, and then the international Big 8 were allowed to establish representative offices whose activities were limited to local liaison and non-attest related services. In the early 1980s, the government allowed China's audit firms to serve only business entities with a foreign affiliation. Independent auditing was not needed for most state-owned enterprises (SOEs) at that time because these enterprises were still financed through government budgets and policy-directed bank loans. Furthermore, reform of SOEs was confined mainly to the decentralization of decision-making authority to managers, with incorporatization and privatization yet to occur. As a result, there was no demand for investor- and creditor-oriented auditing information.

The emergence of direct financing for SOEs in the form of share issuance to domestic individual investors in the mid-1980s, however, led to an emerging demand for independent auditing information. Partially in response to such a need, the Chinese Institute of Certified Public Accountants (CICPA) was established in 1989. During 1990 and 1991, the Shanghai and Shenzhen stock markets were established, and this created a demand from investors for accounting and auditing information related to listed firms. In 1992, along with the issuance of publicly traded shares to foreign investors and the rapid growth of foreign-invested enterprises in the economy, foreign accounting firms were given permission to establish joint-venture accounting firms with local practitioners to perform the audit attest function locally. Beginning in the mid-1990s, China accelerated reforms in the financial sector, in which market forces started to play an increasingly important role in the allocation of funds. Ownership reforms of SOEs, for example, the formation of joint-ventures, the conversion of SOEs into shareholding firms, mergers and acquisitions, liquidations, and so on were also introduced gradually. The financial liberalization and SOE ownership reforms created a substantial increase in the demand for public accounting and audit services. By the end of 2003, there were nearly 5,000 accounting/auditing firms and 131,000 CPAs across the country.⁵

China's publicly listed firms are the most sought-after clients of China's audit firms. This market is, however, not opened to all audit firms. The Ministry of Finance (MOF) and China Securities Regulatory Commission (CSRC) require that listed firms be audited by specially designated audit firms.⁶ By the end of

⁵CICPA news release on October 26, 2004

⁶According to a regulation released by MOF on June 10, 2000, a qualified audit firm has to be established for at least three years, with capital of no less than RMB 2 million for a limited liability firm and RMB 1 million for partnerships. The firm also needs to employ at least 20 CPAs who are qualified to audit public firms and at least 40

2003, only 72 audit firms were qualified to audit publicly listed firms⁷

Despite the artificial barriers created by government regulations, the audit market for China's listed firms is still much more competitive than similar markets in other countries. As shown in Panel A of Table 1, the markets for publicly listed firms of the United States, the United Kingdom, Canada, Hong Kong, Netherlands, and Japan were dominated by the Big 8/5/4. In these countries, the big firms audited more than 80% of listed firms and captured more than 97% of sales revenue. In comparison, the top 10 (4) audit firms in China audited only 30% (14%) of the listed firms and captured about 40% (27%) of the sales revenue during the period 2001–2003 (See Panel B of Table 1). The Herfindahl indexes also show that China's audit market for listed firms is competitive rather than oligopolistic.⁸ In terms of client number, the market has approximately 50 audit firms of equal size, whereas in terms of sales revenue, this number is about 35.

Insert table 1 about here

In terms of client number, there was a slight increase in the concentration of audit firms during the period 2001–2003, with top 10 (4) concentration ratio increases from 23.8% (7.4%) in 2001 to 29.2% (14.6%) in 2003. Quite a different picture, however, emerges when we look at the concentration of sales revenue. During the same period, the top 10 (4) concentration ratio for audit fee revenue shows a decrease from 45.8% (27.8%) in 2001 to 38.1% (22.3%) in 2003. The Herfindahl indexes also indicate that the number of equally-sized firms in terms of sales revenue increased from 29 to 38. Given the relatively stable market share in terms of the number of clients, the declining concentration of audit fee revenue is likely to be caused by competition among large audit firms that have driven down audit fees.⁹

Big 4 audit firms have to form joint ventures with domestic audit firms when they offer audit services in China. Panel C of Table 1 presents the joint-venture audit firms' market share. The joint-venture audit firms

CPAs under age 60. Furthermore, it must show a sales record of at least RMB 8 million in the previous year and no violation of law in the previous three years.

⁷MOF No. 56 regulations, 2000.

⁸The Herfindahl index provides the sum of the squares of individual firms' market shares expressed as decimal fraction. So calculated, the index could take on values ranging from 0 to 1. It gives a single-firm monopoly an index value of 1, and an industry of five equally-sized firms gets an index of 0.2. The reciprocal of the Herfindahl index has been used as a number-of-firm equivalent, indicating approximately the number of equally-sized firms in an industry.

⁹ McLennan and Park [2003] theoretically model a "two-tier equilibrium" with the co-existence of "reputable" and "disreputable" auditors. They show that the fee premium charged by reputable auditors will eventually decrease as the fraction of honest auditors increases.

as a group audit less than 10% of the listed firms, while their market share in term of audit fee revenue is about 20%. Much as we do for domestic audit firms, for joint-venture firms we observe an increase in the concentration of the number of clients but a decrease in the concentration of audit fee revenue during the period 2001–2003.

2.2. Emerging Demand for High-quality Audits

DeFond, Wong and Li [2000] offers evidence that China's audit market in the mid-1990s was characterized by a lack of demand for audit quality from controlling shareholders and managers. Nevertheless, in the late 1990s China's stock market underwent a series of institutional changes that have gradually fostered a potential demand for audit quality.

2.2.1. Reducing State Ownership

Unlike stock markets in developed economies, China's stock market was created by the government as a vehicle for raising funds for SOEs. Consistent with this objective, non-SOEs were not allowed to raise funds from the stock market, and nearly all listed firms are spin-offs of large SOE groups chosen by local governments to be listed by the Shanghai and Shenzhen Stock Exchanges. To maintain dominant state ownership in the listed firms, only one-third of the firms' equity capital was sold to private investors during the initial public offerings (IPOs). The remaining two-thirds of the equity were held either by state asset management agencies or SOEs in the forms of non-tradable state and legal person shares. As a result, the listed firms' controlling shareholders are mainly state-owned entities, including local governments and parent SOE groups. While many studies have documented how controlling shareholders have used listed firms to tunnel resources to serve the interests of local governments and parent SOEs and thus to generate detrimental effects on the listed firms' performance (Sun and Tong [2003]; Chang and Wong [2004]), DeFond, Wong and Li [2000] argue that state ownership of China's listed firms was also the most significant impediment to the demand for high-quality auditing in the mid-1990s.

Nevertheless, an off-exchange market for non-tradable state-owned shares has developed rapidly since 1997. In this market, state shareholders sell their controlling stakes in listed firms to private investors. From 1996 to the end of 2002, about 200 to 250 listed firms changed from state-controlled to privately controlled listed firms (Green [2004]). Since the late 1990s, the off-exchange transfer of control rights has been

implemented, and more and more non-SOEs have been given permission to be listed directly on the two stock exchanges. By the end of 2002, 71 privately controlled firms had already been listed on the two exchanges through IPOs (Song, Zhang and Zhang [2004]). The emergence of private shareholders is likely to alleviate the adverse incentive effect on the demand for high-quality auditing created by state ownership of listed firms.

2.2.2 Improvements in Corporate Governance

Unlike state shareholders, domestic individual shareholders are likely to prefer credible financial information and, therefore, to provide the basis for a demand for high-quality audits. Nevertheless, in the mid-1990s, China's listed firms lacked the necessary corporate governance mechanisms, such as independent directors and audit committees, to protect the interests of minority investors. As a result, controlling shareholders and managers were able to ignore minority investors' demand for high-quality audits DeFond, Wong and Li [2000].

Following a number of high-profile financial scandals in the early 2000s, CSRC introduced a series of rules and regulations aimed at improving listed firms' corporate governance. One important measure was the introduction of an independent director system. In August 2001, CSRC promulgated the Guidelines for introducing Independent Directors to the Board of Directors of Listed Firms (hereafter referred to as the Guidelines), which explicitly stipulates that all domestic listed firms must have at least two independent directors on or before June 30, 2002, and that on or before June 30, 2003 at least one-third of the board members must be independent directors.¹⁰ Independent directors, who are selected by the boards, are required to pay particular attention to the protection of the interests of minority investors. In particular, the independent directors are responsible for the appointment of accounting and audit firms. In addition, the Guidelines also recommended the establishment of audit committees within the listed enterprises' boards.¹¹

The reform measures introduced by CRSC have significantly changed China's listed firms' board

¹⁰According to the Guidelines, the independent director should hold no positions in the company other than the position of director and should maintain no relationships with the listed company and its major shareholders that might prevent him or her from making objective judgments independently. English translations of the Code and the Guidelines are available on the CSRC's Web site.

¹¹ The main duties of the audit committee include (1) to recommend the engagement or replacement of the company's external audit firms; (2) to review the internal audit system and its execution; (3) to oversee the interaction between the company's internal and external audit institutions, (4) to inspect the company's financial information and its disclosure, and (5) to monitor the company's internal control system.

structure. As shown in Table 2, the number of firms that have appointed at least one independent director increased gradually from 27.6% in 2001 to 99.6% in 2003. The average percentage of independent directors on boards increased from 5.7% in 2001 to 32.4% in 2003, only slightly lower than the proportion required by the Guidelines. According to a survey conducted by the Shanghai Stock Exchange, as of the end of 2003, 34% of the listed firms had established audit committees (Shanghai Stock Exchange Research Center [2004]).

Insert table 2 here

2.2.3. Demand for Audit Firms as a Signaling Device in IPO market

When China created the stock market as a fund-raising vehicle for SOEs, the government imposed a number of regulations to control the amount of capital that could be raised from the stock market. The most important regulation was a quota system that the government adopted to control the amount of share issuance through IPOs.¹² The government also controlled the prices of IPOs at a P/E ratio of about 13 to 15. Because of the quota system that restricted the supply of shares and the administrative price controls that limited prices, there was a huge demand for the underpriced new issues, and, consequently, nearly all the IPOs were able to offer huge positive initial returns. As a result there was little demand for share issuers to use high-quality audit firms as a signaling device in the IPO market (DeFond, Wong and Li [2000]).

Insert Table 3 here

The government, however, abolished administrative price controls on issue prices in July 1999. Issuers and underwriters were allowed to set an initial offering price range subject to CSRC approval. Also, the quota system on IPOs was abolished in April 2001, when it was replaced by a registration and approval system under which any firm can be listed after obtaining CSRC approval. Although the approval procedure still endows the government with some control over the IPO process, these two institutional changes have increased the supply and the prices of new issues and have therefore reduced IPO windfalls. Table 3 shows the extents of IPO underpricing (defined as first-day closing price minus the IPO price, divided by the IPO price) for the period

¹² Under the quota system, the central government was to determine on a nationwide level the total number of shares to be issued each year. CSRC then distributed the quotas to all provinces.

1993–2003. During the 1993-2000 period, the average IPO first day return is 279%. This percentage decreased substantially after the price controls and the quota system was abolished, falling from 157% in 2001 to 72% in 2003. The decreasing returns in the IPO market created a potential opportunity for high-quality audit firms to serve as a signaling device to attract investment funds

2.3. Supply of High-Quality Audits

China's audit market for publicly listed firms has several institutional features that impeded the supply of high-quality audits in the mid-1990s (DeFond, Wong and Li [2000]; Yang, Tang, Kilgore and Hong [2001]; Lin and Chen [2004]). Along with the profound institutional changes that fostered demand for high-quality audits, institutional changes also occurred in the late 1990s and the early 2000s that promote the supply of high-quality audits.

2.3.1 Disaffiliation with Government Agencies

Before 1997 almost all audit firms in China were established or sponsored by the departments in charge of public finance, taxation, or state-asset management agencies. The close financial and personnel links between the firms and sponsoring government agencies created several obstacles that impeded the supply of high-quality audits. First, the sponsorship agreement means that the government owned both audit firms and listed firms, which inevitably resulted in government interference in business decisions and compromises in audit firm independence. As a result, audit firms have only limited latitude to choose the quality of the services that they wanted to offer (DeFond, Wong and Li [2000]; Yang, Tang, Kilgore and Hong [2001]; Lin and Chen [2004]). Second, government ownership of both audit firms and clients was conducive to protectionism; that is, a government department could require business entities under its control to be audited by audit firms also under its control (Yang, Tang, Kilgore and Hong [2001]). Protectionism in turn impeded the formation of the incentive structure leading to audit firm size effects because the market share or performance of an audit firm was determined by government rather than by its quality of services.

In response to criticism of the audit firm-government association, a program to disaffiliate audit firms from their sponsoring bodies began in 1997. Under this program, an audit firm could gain full recognition from CICPA only if it disaffiliated itself from its sponsors in terms of both personal and economic interest. The

disaffiliation process was completed at the end of 1999, at which point 107 disaffiliated audit firms were certified by CICPA as qualified to audit publicly listed firms.¹³ After cutting ties with the parent government bodies, the disaffiliated firms organized as private professional firms in the form of either a partnership or a limited liability firm. They enjoy greater business decision-making autonomy and therefore greater latitude to choose quality of their services. The possibility of increasing of market share created incentives for the firms to provide high-quality audits. Consistent with this expectation, Yang, Tang, Kilgore and Hong [2001] offer evidence that the disaffiliation program was followed by a sudden and dramatic increase in the number and percentage of non-standard audit opinions offered to the listed firms' financial reports, and these authors attribute the change to the independence-enhancing effect of the disaffiliation program.,

2.3.2 Increasing Litigation Risk

U.S. auditors incur high litigation costs in case of audit failures. Litigation risk was, however, nonexistent for China's auditors before 1996, when the Supreme People's Court established the liability of auditors to the interested parties who had relied upon untruthful or misleading audit reports.¹⁴ Nevertheless, punishment for disclosing false information before 1999 was confined to fines and administrative penalties imposed by CSRC. The first legal litigation with one of China's listed firms relating to fraudulent accounting occurred in December 1999, when a local court undertook a criminal proceeding against the Hongguang Industry Co., Ltd. Although the firm was judged guilty, local courts refused to accept lawsuits brought against the firm by investors, thereby still protecting the listed firms from civil liabilities.

The most important development of the introduction of litigation risk in China was the issuance of a judicial interpretation by the Supreme People's Court in January 2002 which stipulated the kinds of fraudulent accounting cases that a court could handle and formally introduced civil threats for false information disclosure in China. In January 2003, the Supreme People's Court further issued another judicial interpretation that clarified ways to define losses suffered by shareholders and ways to calculate related civil compensation. The interpretation also states that investors can launch collective civil suits in which a number of plaintiffs can gather to sue a listed firm through a few representatives. Since the promulgation of the judicial interpretations,

¹³ Economic Daily, July 28, 1998, Beijing China.

¹⁴ This ruling was made by the Supreme People's Court of China in its Judicial Interpretation No.56 (1996) as a reply to the People's High Court of Sichun Province concerning the case.

an increasing number of disgruntled small investors in China have taken listed firms to court. In 2002, various local courts in China accepted about 900 such cases. Although most of the lawsuits brought against firms remained in the courts and did not enter the handling procedure, the provision of such a legal framework puts the wealth and reputation of not only listed enterprises but also audit firms at risk. When a listed firm is sued for false information disclosure, the audit firm involved will also be investigated and fined by CSRC.

2.4. Hypotheses on the Relationship between Audit Firm Size and Audit Quality

Based on the above analysis of institutional developments, we expect that there exists an emerging demand for and supply of high-quality audits in China's audit market for publicly listed firms and thus the pre-conditions for the existence of a positive relationship between audit firm size and audit quality. We further expect that the incentive effects associated with audit firm size as suggested by DeAngelo [1981] and Dye [1993] also operate in the relatively competitive market. That is, we predict that the audit services offered by larger audit firms tend to be of higher quality than those offered by smaller firms. To test our conjecture, we develop two working hypotheses. For the first one, we use audit opinion as a proxy of audit quality and expect that larger audit firms are more likely to issue a modified rather than a clean opinion. Our hypothesis is as follows:

H1: *Ceteris paribus, the larger the size of the audit firm, the more likely the auditee is to receive a modified opinion.*

For the second working hypothesis, we use audit fee to capture audit quality and expect that larger audit firms are able to charge higher fees. Our hypothesis is as follows:

H2: *Ceteris paribus, the auditing fee paid to larger audit firms is higher than the fee paid to smaller firms.*

3. Sample and Research Design

3.1 Sample

We base our study on all firms listed on the Shanghai and Shenzhen Stock Exchanges from 2001 to 2003. We exclude 24 firms that are listed only by the B-share market. For each listed firm, we obtain data on audit firms from a data set provided by the Shanghai Wind Information Co., Ltd. (WIND). This database

provides the fee paid to the audit firm, audit firm's name, and the corresponding audit firm's opinion for most listed firms. As these three data series are actually included in the listed firms' annual reports, we double-checked our data against the annual reports. Out of the 1,136 (1,200, 1,263) firms listed at the end of 2001 (2002, 2003), 1,016 (1,158, 1,222) have complete information about the auditor's name, the audit fee, and the corresponding auditor's opinion. After dropping missing values, we have a total of 3,396 firm-year observations.

We obtained the listed firms' financial data from the CSMAR database, which is jointly collected and maintained by the Centre for China Financial Research (CCFR) at the University of Hong Kong and Shenzhen GTA Information Tech. When we constructed our accounting data variables, we excluded firms from the finance industry (52 firm-year observations) because financial firms have a different accounting reporting system. We also dropped observations of firms in their first listing year because audit fees are more complicated due to the IPO issues. After deleting these observations, our final sample consists of 3,044 observations, representing 89% of the listed firms.

3.2 Audit Firm Size and Audit Opinion Model

To test H1, we estimate the following Probit regression model:

$$\begin{aligned} \text{Prob}(\text{Opinion}_{it}) = & \beta_0 + \beta_1 \text{AuditSize}_{it} + \beta_3 \text{ClientSize}_{it} + \beta_4 \text{Zscore}_{it} + \beta_5 \text{Accrual}_{it} \\ & + \beta_6 \text{Joint}_{it} + \beta_7 \text{FeeShare}_{it} + \beta_8 \text{Beta}_{it} + \beta_9 \text{Variance}_{it} + \beta_{10} \text{Return}_{it} + \beta_{11} \text{Loss}_{it} \\ & + \beta_{12} \text{AuditChange}_{it} + \gamma_1 \text{Fixed Effects}_{it} + \varepsilon_{it} \end{aligned}$$

The dependent variable, Opinion_{it} equals 1 if firm i receives a clean opinion in year t . The variable equals 0 if the firm receives a dirty opinion. Audit opinions specified by the Chinese auditing standards (Standard No. 7: Audit Reports) are very similar to those specified by U.S. regulations. While both China and the United States require an explanatory paragraph when a modified opinion is issued, China's audit standards further stipulate that the explanatory paragraph can also be used for unqualified opinions when auditors deem this necessary. Thus, five opinion types have been created in China: unqualified, unqualified with explanatory notes, qualified, disclaimer, and adverse. In practice, however, an unqualified opinion with explanatory notes is often regarded by accountants as qualified or quasi-qualified in China despite the existence of certain differences between an unqualified opinion with notes and a qualified opinion (Chen, Chen and Su [2001]).

Consistent with previous studies conducted in China, we treat unqualified opinion as clean and the other four categories as dirty.

Audit Size denotes the size of an audit firm. We measure firm size along the following four dimensions: (1) the total amount of audit fee revenue that an audit firm obtained from auditing listed firms in a given year (*Revenue*); (2) the total book value of assets of all listed firms audited by an audit firm in a given year (*Client Asset*); (3) the total value of sales of all listed firms audited by an audit firm in a given year (*Client Sales*); and (4) the total market capitalization of all listed firms audited by an audit firm in a given year (*Client Equity*). A logarithm transformation is performed for all variables.

In addition to the audit firm size effect, the issue of a qualified opinion by an audit firm depends on a host of other factors. We introduce a set of control variables to eliminate possible confounding effects. We first control for listed firms' size to capture the importance of a particular client to an auditor. Larger clients are more likely to receive clean opinions because they represent a more important source of income for an audit firm (Gul, Lee and Lynn [1992]; Krishnan, Krishnan and Stephens [1996]). We measure the size of a firm by its total sales volume (*Client Size*). We also follow DeAngelo [1981] to include the ratio of the audit fee paid by a listed firm to the total amount of revenue that an audit firm obtained from auditing listed firms in a given year as an additional proxy (*Fee Share*).

The issue of more qualified reports by relatively large audit firms may not indicate that the large firms are relatively more independent if the accounting reports they audited are in fact more problematic and thus more deserved for a qualified reports. We therefore need to introduce control variables to capture variations in the quality of the accounting reports. Based on the assumption that firms with weak financial conditions tend to have higher incentives to manipulate earnings, our first set of control variables includes two proxies of financial distress. The first proxy is the Z-score (*Zscore*), defined after Altman [1968]¹⁵. The second proxy is a dummy variable indicating financial loss in the previous year (*Loss*). In line with the expectation that a listed firm with high risk and poor stock price performance has higher incentives to manipulate earnings, we introduce three market-based measures as used by Dopuch, Holthausen and Leftwich [1987]. First, we use the Beta coefficient of the CAPM model to capture the systematic risk of a listed firm (*Beta*). Second, the variance

The variable of financial distress (*Zscore*) has also been used to capture the possibility of bankruptcy. The lower the *Zscore*, the more likely it is that a firm will go bankrupt and, therefore, the greater the perceived risk of audit failure. Consequently, auditors are more likely to issue modified opinions to protect their reputation.

of the residuals from the CAPM model is used to capture the idiosyncratic risk of a firm (*Variance*). Finally, we use market-adjusted one-year return to capture the effect of stock market performance (*Return*). The coefficients of *Beta* and *Variance* are expected to be negative and the coefficient of *Return* is predicted to be positive. In addition, we include the absolute value of total accrual (*Accrual*), measured as the absolute value of net income minus cash flow from operation then scaled by total asset at the end of the previous year, as a control variable because it is usually treated as a signal of earning managements. Finally, we also control for the effects of audit firm turnover (*Audit Change*). We expect audit firm turnover to be related to the quality of accounting reports because a listed firm is more likely to change audit firms to avoid undesirable opinions.

Joint-venture audit firms are expected to be stricter to protect their reputation and, thus, they are more likely to issue dirty opinions (DeFond, Wong and Li [2000]). We therefore control for existence of joint-venture audit firms (*Joint*). Last but not least, industry and year dummies are also included to capture industry-specific and year-specific effects.¹⁶

3.3 Audit Firm Size and Audit Fee Model

To test the hypothesized relationship between audit fee and audit firm size (H2), we use the following regression model:

$$\begin{aligned} \log(Fee_{it}) = & \beta_0 + \beta_1 Audit\ size_{it} + \beta_2 Client\ Size_{it} + \beta_3 Zscore_{it} + \beta_4 Accrual_{it} + \beta_5 Joint_{it} \\ & + \beta_6 Opinion_{it} + \beta_7 Beta_{it} + \beta_8 Variance_{it} + \beta_9 Return_{it} + \beta_{10} Audit\ Change_{it} \\ & + \beta_{11} Loss_{it-1} + \beta_{12} Inventory_{it} + \gamma_1 Fixed\ Effects + \varepsilon_{it} \end{aligned}$$

Here $\log(Fee_{it})$ is the nature logarithm of the fee paid by listed firm i for the audit service in year t . Much as we do for the model of the relationship between audit firm size and audit opinion, we use four different measures for audit firm size. Our hypothesis about audit fees suggests that the coefficient of *Audit Size* is positive ($\beta_1 > 0$).

The audit fee charged by an audit firm is likely to be affected by a host of factors, in addition to the size effect of the audit firms. We control for the size of listed firms (*Client Size*) because it directly affects auditors' workloads (Craswell, Francis and Taylor [1995]; Francis and Simon [1987]). We again use the natural logarithm of a listed firm's sales as a proxy for firm size and expect the coefficient of this variable to be

¹⁶ Our industrial classification is from Shenyin & Wanguo Securities Co., Ltd., one of the largest investment banks in China.

positive. The complexity of an audit task is another important factor in determining the audit fee because increased complexity tends to increase the labor and time required for accomplishment of the task. Existing literature use the number of segments or subsidiaries (Simon [1985]; Simmunic [1980]), the proportion of foreign operation (Simmunic [1980]; Turpen [1990]), and the proportion of inventories and accounts receivable (Francis and Stokes [1986]; Larker and Richardson [2004]) as measures of audit complexity. As data on the number of segments and subsidiaries for Chinese listed firms are unavailable, we use the log of inventory plus accounts receivable (*Inventory*) to measure audit complexity. Furthermore, as a dirty opinion report usually costs an audit firm more in terms of time and labor, we use the dummy variable (*Opinion*) as an additional control for complexity.¹⁷

Much as we do in the model of the relationship between audit firm size and audit opinion and also following studies such as Whisenant, Sankarguruswamy and Raghunandan [2003], Stice [1991], Lys and Watts [1994], Krishnan and Krishnan [1997], we include those variables to capture the financial health and stock market performance of the listed enterprises. These variables include *Zscore*, *Loss*, *Beta*, *Volatility*, *Return*). Finally, we also control for the size of accrual (*Accrual*), the effects of audit firm turnover (*Audit Change*), joint-venture audit firms (*Joint*) as well as industry-specific or year-specific differences.

4. Empirical Results

4.1 Descriptive Statistics

Table 4 presents the definitions and the summary statistics of the variables used in this study. The first four variables are our measures of audit size. The total amount of revenue generated by the audit market for China's listed firms (*Revenue*) ranges from RMB 0.17 million to RMB 78 million (USD 20,000 to USD 9.4 million). The average sizes of audit firms measured in term of client asset, equity and sales are RMB 5.4, 6.1 and 3.1 billion respectively. Correlation analysis (not reported) shows that our four size measures are highly correlated. The correlation between those measures ranges from 0.74 to 0.98. The highest correlation is between client asset and client equity, and the lowest correlation is between revenue and client sales.

In our sample, 6.9% of the listed firms are audited by joint-venture audit firms. Of the audit opinions issued from 2001 to 2003, 89% are clean, a ratio which is substantially lower than the 93% reported by

¹⁷ Francis and Stokes [1986] argue that dirty opinions are associated with increased audit risk.

DeFond, Wong and Li [2000]. On average, a particular listed firm contributed to 6.4% of the total revenue that an audit firm obtained from the stock market.

(Insert table 4 here)

Table 6 reports the distribution of the different opinion categories in different years. There were 340 dirty opinions issued during the period 2001–2003; most were unqualified opinions with explanatory notes, which accounted for 6.8% of our total sample. Strictly dirty opinions including qualified and disclaimer constituted only 4.4% of our total sample. Our sample includes no adverse opinion. Taken together, 11.2% of the audit reports issued during our observation period are dirty reports. Table 5 shows that the percentage of dirty opinions decreased from 14.5% in 2001 to 7.5% in 2003. The decrease in the percentage of dirty opinions cannot be treated as evidence for declining audit quality because the ratio depends not only on audit quality but also on the quality of accounting information. In fact, the decrease is due to the drop in the number of unqualified opinions with explanatory notes rather than to a drop in the number of qualified or disclaimer opinions; the number of qualified opinions actually increased from 11 in 2001 to 21 in 2003. Qualified and disclaimer opinions are the most negative opinions; they place the recipient in the highly undesirable position of being delisted. Thus, an increase in these opinion categories indicates that audit firms are unlikely to have lowered their standards in issuing audit opinions.

(Insert table 5 here)

4.2 Regression Results

4.2.1 Audit Firm Size and Audit Opinions

Table 7 reports the probit regression estimates of audit opinion on audit size and other controlling variables. Large clients, as proxied by the logarithm of their sales, are less likely to receive dirty opinions. This is consistent with the results documented by the large body of empirical studies such as DeFond, Wong and Li [2000] and Craswell, Stokes and Laughton [2002]. The coefficient for *FeeShare* is, however, significantly negative. This suggests that audit firms are more likely to issue dirty opinions to clients who contribute a larger proportion of the audit firm's revenue. Our finding is inconsistent with our expectation about the relative importance of clients but consistent with the estimated results obtained by Reynolds and Francis [2001]. One

possible explanation for this negative relationship is that audit firms tend to charge a higher fee for dirty opinions because such opinions require more evidence and thus more time and effort on the auditors' parts. This conjecture is in fact supported by our audit fee regression results, which are discussed in the next section and which show that a higher fee is charged for dirty opinions.

Our results show that the coefficients for *Zscore* are significantly positive, while the coefficients for the variable of *Loss* are significantly negative, indicating that financially distressed and loss-making firms are more likely to receive dirty opinions. On the other hand, the coefficient of *Accrual* is negative and significant for all the models, indicating that firms that are more likely to engage in earnings management are more likely to receive dirty opinions.

The coefficients for the variables *Variance* and *Beta* are both negative, although only the coefficients of *Variance* are statistically significant. The coefficient for the variable *Stock Return* is positive, showing that firms with better market performance are more likely to receive clean opinions. We expected that joint-venture audit firms would be more likely to issue dirty opinions. However, after controlling for audit firm size effects and other firm-specific factors, the coefficients of *Joint* are significantly positive in all our models, indicating that these audit firms are more likely to issue clean opinions. We argue that this relationship may be caused by self-selection effects in which only high-quality listed firms have an incentive to hire joint-venture audit firms, given that such firms are more advanced in their techniques and more independent. Moreover, joint-venture audit firms may also tend to choose high-quality listed firms to audit to minimize risks and to protect their reputation.

(Insert table 6 here)

The most important explanatory variables are our four measures of audit firm size.. Results from Table 6 indicate that all the coefficients for audit firm size variables are negative and statistically significant at the 1% level, indicating that large audit firms tend to issue more dirty opinions. Our results are consistent with earlier studies that use categories variables to capture audit firm size (for example, DeFond, Wong and Li [2000], Citron and Taffler [1992] and Ireland [2003]). Our finding, however, suggests that audit firms do not need to reach a particular size threshold in order to become more independent in issuing opinion. Based on our

estimates, doubling the size of an audit firm of any size will increase the probability of issuing a dirty opinion by 3 %.

4.2.2 Audit Firm Size and Audit Fee

Table 8 presents the regression results on the relationship between audit firm size and audit fee. Consistent with our prediction, audit fee is positively correlated with listed firms' size (*Client Size*) in all the models with various audit firm size measures. On the other hand, the coefficients for the variable *Inventory* is positively correlated with audit fee, while the variable *Opinion* is negatively related with audit fee, indicating that audit fee increases with work complexity. As for auditee risk, our models find that higher-risk firms not only are more likely to receive dirty opinions but also must pay higher audit fees. The coefficient of *Zscore* is significantly negative, indicating that audit firms charge financially distressed firms more. The coefficients for the variable *Joint* are positive and statistically significant in all our models, indicating that joint-venture audit firms with internationally recognized big names are able to charge higher fees.

(Insert table 7 here)

As for the relationship between audit firm size and audit fee, the coefficients for all our four measures of audit firm size are positive and significant at the 1% level. This indicates that the audit services offered by different-sized audit firms are not perceived as homogeneous in this emerging market. Fees for the services of larger audit firms are more likely to reflect their higher quality because the large audit firms are unlikely to enjoy substantial monopolistic power in China's competitive market. Our estimation indicates that the elasticity of audit fee relative to audit firm size is 0.17, which suggest that doubling the size of an audit firm will increase the audit fee by 17%..

4.3. Robustness Checks

This section reports our robustness checks on our results. First, our four measures of audit firm size include auditors' activities relating only to listed firms. Audit firms, however, also offer services to non-listed firms. Confounding effects may be generated if complexity of services performed for listed and non-listed

firms are not positively correlated and if perception of audit firm size is not restricted to the audit firms' market share relating only to listed firms. In 2003, CICPA published data on the total fees (including audit fees from both listed and non-listed firms) received by China's top 100 audit firms in 2002 and on the total number of CPAs employed by all audit firms at the end of 2002. These data allow us to construct two additional measures of audit firm size. We estimated our models with those two measures for both year 2002 observations and pooled three-year observations and obtained consistent results.¹⁸

Joint-venture audit firms may be distinctly different from domestic audit firms because of their internationally recognized big names. To ensure that our results are not completely driven by the effects of joint-venture audit firms, we dropped them from our sample and re-estimated our models. We found consistent results from our reduced sample consisting of only domestic audit firms.

We have controlled for the financial health of listed enterprises in our models. In order to further to examine whether our results are specific only to financially distressed or financially health listed enterprises, we separate our sample into financially distressed group and financially non-distressed group¹⁹. Consistent results are obtained from these two samples.

Finally, we tested whether our results are sensitive to our measure of client size. We replaced the measure of log of sales with the measure of log of asset. We ran all the models, including the other robustness check models, and found that our results did not change.

5. Conclusions

Using a panel data of audit firms and listed firms in China from 2001 to 2003, we examine whether large audit firms offer higher-quality audit services than small audit firms in China. Our main findings are as follows: first, larger audit firms tend to issue more modified opinions than smaller audit firms. Second, larger audit firms tend to command higher fees. Both findings suggest that audit firms in China's emerging market are not homogeneous and the larger audit firms tend to be of higher quality.

This paper contributes to the literature on the relationship between audit firm size and audit quality

¹⁸ Those results are available upon request.

¹⁹ Following Reynolds and Francis [2001], we define financially distressed firms as firms that report either negative earnings or operating cash flows during the corresponding year.

in the following important ways. The existing research on this issue is based primarily on samples from the United States and other developed countries in which the Big 8/6/4 have already dominated the audit markets. Evidence on the size effects in relatively competitive market is scarce. As China's audit market is young and has not yet been dominated by few audit firms, it offers us with a valuable opportunity to conduct tests on the audit firm size effects in a relatively competitive market. Our results indicate that the widely documented size effects still prevail in China's relatively competitive emerging audit market. Furthermore, the continuous relationships that we document suggest that the size effect does not require a particular size threshold to operate in this market.

In addition to contributing to the literature on audit firm size effects, our findings also shed light on the nature of China's emerging audit market. On the one hand, our results indicate the existence of demand for high-quality audits in this market and the process of "flight from quality" documented by DeFond, Wong and Li [2000] has been stopped or reversed. This in turn suggests that there exist some listed firms for which the benefits of using high-quality audits as a signal for attracting external finance exceeds the gains from expropriating outside investors through fraudulent accounting. On the other hand, our results suggest that larger audit firms in China are of higher quality. This implies that increasing concentration in the audit market may be a positive development in emerging markets, although there are concerns about over-concentration of audit services with the Big 4 in more developed markets such as the United States.²⁰

²⁰ See *Economist* Nov. 20, 2004, "The Future of Auditing, pp. 69–71.

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TABLE 1

Competitive Audit Market for China's Listed Firms

Panel A, Audit Concentration Developed Economies						
Countries	Observation Period	Concentration Measure(s)		Concentration Ratio		
United States*	2003	Big 4 Client Sales		99%		
United Kingdom.*	2002	Big 4 Client Number		100%		
Netherlands*	2002	Big 4 Client Number		≥90%		
Italy*	2001	Big 5 Client Number		≥80%		
Japan*	2002	Big 4 Client Number		≥80%		
Canada **	1994	Big 8 Concentration Ratio		0.9875		
Landon**		of Client Sales		0.9837		
Hong Kong**				0.9734		
Singapore**				0.9929		
Panel B, Audit Concentration in China's Market for Auditing Publicly Listed Firms						
	Top 4 Concentration Ratio		Top 10 Concentration Ratio		1/Herfindahl Index	
	Percentage of Clients	Percentage of Revenue	Percentage of Clients	Percentage of Revenue	Percentage of Clients	Percentage of Revenue
2001	7.4%	27.8%	23.8%	45.6%	49.8	29.2
2002	13.1%	23.2%	29.3%	39.7%	50.5	35.5
2003	14.6%	22.3%	29.2%	38.1%	49.5	38.2
Panel C, Market Shares of Big 4 Joint Audit Firms in Terms of Client Number and Revenue from the Stock Market						
Year	Items	No. of Clients		Total Revenue (10,000)		
2001	Big 4	74		18100		
	Total Market	971		69600		
2002	Big 4/ Total Market	7.6%		26.0%		
	Big 4	108		12100		
	Total Market	1,100		59,400		
2003	Big 4/Total Market	9.8%		20.4%		
	Big 4	111		11,700		
	Total Market	1,164		63,300		
	Big 4/ Total Market	9.5%		18.5%		

Panel A of this table shows the concentration ratios of the audit market for publicly listed firms in some developed economies. * indicates that data are obtained from GAO 03-864 (U.S. General Accounting Office). **indicates that the data come from Narasimhan and Chung [1998]. Panel B presents the concentration ratios and the Herfindahl Index of China's audit market for publicly listed firms. Panel C reports the market shares of Big 4 joint venture audit firms in China..

TABLE 2*Independent Board of Directors*

Year	Sample Size	Number of Firms with at Least One Independent Director	% of Firms with at Least One Independent Director	Proportion of Independent Directors within Boards
2001	1,131	338	29.9%	6.3%
2002	1,197	1,170	97.7%	23.9%
2003	1,246	1,241	99.6%	32.5%
Total	3,574	2,749	76.9%	21.3%

TABLE 3

This table summarizes the means of first day return of IPO stocks of China's listed firms in different years. First day return is defined as the first day closing price divided by the IPO price, then minus one.

Year	No. of IPOs	Mean First Day Return
1993-2000	870	279%
2001	79	157%
2002	69	131%
2003	67	72%

TABLE 4

Variable Descriptions

Panel A: Descriptive Statistics

<i>Variable</i>	<i>SMPL Size</i>	<i>Mean</i>	<i>Std. Err</i>	<i>Min</i>	<i>Median</i>	<i>Max</i>
<i>Revenue</i>	3044	1.3e+07	1.1e+07	1.7e+05	9.2e+06	7.8e+07
<i>Client Asset</i>	3044	5.4e+10	5.6e+10	6.8e+08	3.8e+10	4.6e+11
<i>Client Equity</i>	3044	6.1e+10	6.0e+10	7.2e+08	4.6e+10	4.3e+11
<i>Client Sales</i>	3044	3.1e+10	3.4e+10	1.5e+08	2.2e+10	4.0e+11
<i>Opinion</i>	3044	0.888	0.315	0	1	1
<i>Audit fee(10,000)</i>	3044	56	89	1.2	40	4100
<i>Fee share</i>	3044	0.064	0.077	0.001	0.044	1
<i>Inventory</i>	3044	19.684	1.112	12.181	19.704	23.416
<i>Accrual</i>	3044	0.076	0.117	0	0.048	1.743
<i>Loss</i>	3044	0.134	0.341	0	0	1
<i>Zscore</i>	3044	3.764	6.852	-42.252	2.375	169.977
<i>Client Size</i>	3044	10.955	1.312	3.579	10.986	15.604
<i>Beta</i>	3044	0.993	0.253	-0.046	1.025	1.752
<i>Variance</i>	3044	0.243	0.231	0.003	0.198	8.617
<i>Return</i>	3044	0.001	0.257	-0.782	-0.042	1.65
<i>Audit Change</i>	3044	0.142	0.349	0	0	1
<i>Joint</i>	3044	0.069	0.253	0	0	1

Panel B: Variable Definitions

<i>Variable</i>	<i>Definition</i>
<i>Revenue</i>	Total amount of revenue that an audit firm obtained from auditing listed firms in a given year. We use log transformation in the regression analysis
<i>Client Asset</i>	The total book value of assets of all listed firms audited by an audit firm in a given year. We use log transformation in the regression analysis
<i>Client Equity</i>	<i>Client Equity</i> is the total market capitalization of all listed firms audited by an auditor in a given year, nature log transformed in the regression analysis
<i>Client Sales</i>	<i>Client Sales</i> is the total values of sales of all listed firms audited by an audit firm in a given year, nature log transformed in the regression analysis
<i>Opinion</i>	an indicator variable, equals 1 if an opinion is an unqualified clean opinion and 0 if the opinion is qualified, unqualified but with explanatory notes, disclaimer, or adverse
<i>Audit fee(10,000)</i>	audit fee paid to the audit firm by a client in the corresponding year
<i>Fee share</i>	audit fee paid by a client divided by the corresponding auditor's total revenue from the stock market
<i>Inventory</i>	Sum of accounts receivable and inventory, then take nature logarithm
<i>Accrual</i>	Absolute value of total accrual, scaled by total asset at the beginning of the year
<i>Loss</i>	Indicator variable which equals one if the listed reported negative net profit in the previous fiscal year, and zero otherwise.
<i>Zscore</i>	Proxy for financial healthiness as defined by Altman [1968]
<i>Client Size</i>	Nature logarithm of sales of a listed firm
<i>Beta</i>	The Beta coefficient of the CAPM model
<i>Variance</i>	Residual variance of the CAPM model, scaled by multiplying 1000
<i>Return</i>	Stock return adjusted by market return for the corresponding fiscal year
<i>Audit Change</i>	Indicator variable, equals 1 if there is audit firm turnover and 0 otherwise;
<i>Joint</i>	Indicator variable, equals 1 if the audit firm is a joint venture with a Big 4 firm

TABLE 5*Distribution of Auditor's Opinion*

<i>Opinion</i>	2001	2002	2003	Total
<i>Unqualified</i>	785	905	1,014	2,704
<i>Unqualified but with Explanatory Notes</i>	83	80	42	205
<i>Qualified</i>	11	14	21	46
<i>Disclaimer</i>	39	31	19	89
<i>Adverse</i>	0	0	0	0
<i>Sum of Dirty Opinions</i>	133	125	82	340
<i>Ratio of Dirty Opinions</i>	14.5%	12.1%	7.5%	11.2%
<i>Total</i>	918	1,030	1,096	3,044

TABLE 6

Probit regression of auditor's opinion

$$\text{Model: } \text{Pr ob}(\text{Opinion}_{it}) = \beta_0 + \beta_1 \text{AuditSize}_{it} + \beta_3 \text{ClientSize}_{it} + \beta_4 \text{Zscore}_{it} + \beta_5 \text{Accrual}_{it} \\ + \beta_6 \text{Joint}_{it} + \beta_7 \text{FeeShare}_{it} + \beta_8 \text{Beta}_{it} + \beta_9 \text{Variance}_{it} + \beta_{10} \text{Return}_{it} + \beta_{11} \text{Loss}_{it-1} \\ + \beta_{12} \text{AuditChange}_{it} + \gamma_1 \text{Fixed Effects}_{it} + \varepsilon_{it}$$

Where for listed firm i , $\text{Opinion}_{it}=1$ when it received an unqualified clean opinion in year t and 0 if the opinion is qualified, unqualified but with explanatory notes, disclaimer, or adverse; Revenue_{it} =the total amount of revenue that its audit firm obtained from auditing listed firms in year t , then take nature logarithm; Client Sales_{it} (Client Asset_{it} , $\text{Client Equity}_{it}$) = the total values of sales (*asset, equity*) of all listed firms audited by its audit firm in year t , then take nature logarithm; Audit Fee_{it} = the audit fee it paid to its audit firm in year t ; $\text{Fee share}_{it} = \text{Audit Fee}_{it}/\text{Revenue}_{it}$; Inventory_{it} =the sum of accounts receivable and inventory, then take nature logarithm; Accrual_{it} =the absolute value of total accrual; Zscore_{it} is a proxy for financial healthiness calculated after Altman [1968]; Client Size_{it} =the nature logarithm of sales in year t ; Beta_{it} and variance_{it} are the Beta coefficient and residual variance of the CAPM model, respectively; the Variance is then scaled by multiplying 1000; Return_{it} is stock return adjusted by market return over the fiscal year; Audit Change is an indicator variable, which equals 1 if there is audit firm turnover and 0 otherwise; Loss indicates that it reports a negative net profit in year $t-1$; Joint is another indicator variable. It equals 1 if the audit firm is a joint venture with a Big 4 firm. We also controlled for year and industry specifics effects but did not report them to save space.

	(1)	(2)	(3)	(4)
	<i>Opinion</i>	<i>Opinion</i>	<i>Opinion</i>	<i>Opinion</i>
<i>Zscore</i>	0.0173*** (2.819)	0.0173*** (2.821)	0.0170*** (2.783)	0.0172*** (2.813)
<i>Accrual</i>	-2.1113*** (6.142)	-2.0995*** (6.137)	-2.1128*** (6.175)	-2.1133*** (6.173)
<i>Fee share</i>	-2.0207*** (3.674)	-1.4914*** (3.024)	-1.5096*** (2.958)	-1.5758*** (3.055)
<i>Client Size</i>	0.1886*** (6.038)	0.1915*** (6.037)	0.1825*** (5.843)	0.1826*** (5.854)
<i>Joint</i>	0.5875*** (3.070)	0.4823** (2.558)	0.5173*** (2.659)	0.5282*** (2.717)
<i>Audit Change</i>	-0.2770*** (2.978)	-0.2790*** (3.014)	-0.2730*** (2.953)	-0.2770*** (2.994)
<i>Loss</i>	-0.7438*** (7.834)	-0.7387*** (7.819)	-0.7368*** (7.803)	-0.7387*** (7.818)
<i>Beta</i>	-0.2691* (1.742)	-0.2529 (1.643)	-0.2483 (1.614)	-0.2506 (1.629)
<i>Variance</i>	-0.3448*** (3.012)	-0.3587*** (3.196)	-0.3635*** (3.212)	-0.3514*** (3.115)
<i>Return</i>	0.7099*** (4.017)	0.7265*** (4.127)	0.7150*** (4.071)	0.7212*** (4.100)
<i>Revenue</i>	-0.3072*** (4.629)			
<i>Client Sales</i>		-0.1777*** (3.454)		
<i>Client Asset</i>			-0.1980*** (3.196)	
<i>Client Equity</i>				-0.2128*** (3.327)
<i>Constant</i>	5.7073*** (4.818)	3.3311*** (3.682)	3.8028*** (3.576)	4.0357*** (3.692)
<i>Observations</i>	3044	3044	3044	3044
<i>Pseudo R2</i>	0.239	0.234	0.233	0.234

*, **, and *** indicate statistical significance at 10%, 5%, and 1%, respectively. Standard errors are reported in parentheses.

TABLE 7
Regression of audit fees

$$\text{Model: } \log(\text{Fee}_{it}) = \beta_0 + \beta_1 \text{Audit size}_{it} + \beta_2 \text{Client Size}_{it} + \beta_3 \text{Zscore}_{it} + \beta_4 \text{Accrual}_{it} + \beta_5 \text{Joint}_{it} \\ + \beta_6 \text{Opinion}_{it} + \beta_7 \text{Beta}_{it} + \beta_8 \text{Variance}_{it} + \beta_9 \text{Return}_{it} + \beta_{10} \text{Audit Change}_{it} \\ + \beta_{11} \text{Loss}_{it-1} + \beta_{12} \text{Inventory}_{it} + \gamma_1 \text{Fixed Effects} + \varepsilon_{it}$$

Where for listed firm i , $\text{Opinion}_{it}=1$ when it received an unqualified clean opinion in year t and 0 if the opinion is qualified, unqualified but with explanatory notes, disclaimer, or adverse; Revenue_{it} =the total amount of revenue that its audit firm obtained from auditing listed firms in year t , then take nature logarithm; Client Sales_{it} (Client Asset_{it} , $\text{Client Equity}_{it}$) = the total values of sales (*asset, equity*)of all listed firms audited by its audit firm in year t , then take nature logarithm; Audit Fee_{it} = the audit fee it paid to its audit firm in year t ; $\text{Fee share}_{it} = \text{Audit Fee}_{it}/\text{Revenue}_{it}$; Inventory_{it} =the sum of accounts receivable and inventory, then take nature logarithm; Accrual_{it} =the absolute value of total accrual; Zscore_{it} is a proxy for financial healthiness calculated after Altman [1968]; Client Size_{it} =the nature logarithm of sales in year t ; Beta_{it} and variance_{it} are the Beta coefficient and residual variance of the CAPM model, respectively; the Variance is then scaled by multiplying 1000; Return_{it} is stock return adjusted by market return over the fiscal year; Audit Change is an indicator variable, which equals 1 if there is audit firm turnover and 0 otherwise; Joint is another indicator variable. It equals 1 if the audit firm is a joint venture with a Big 4 firm. We also controlled for year and industry specifics effects but did not report them to save space.

	(1)	(2)	(3)	(4)
	<i>LnFee</i>	<i>LnFee</i>	<i>LnFee</i>	<i>LnFee</i>
<i>Client Size</i>	0.1289*** (12.140)	0.1252*** (11.441)	0.1299*** (11.990)	0.1299*** (11.997)
<i>Accrual</i>	0.0706 (0.876)	0.0744 (0.903)	0.0758 (0.923)	0.0758 (0.923)
<i>Inventory</i>	0.1228*** (10.182)	0.1266*** (10.281)	0.1225*** (9.954)	0.1231*** (10.010)
<i>Zscore</i>	-0.0030** (2.175)	-0.0025* (1.771)	-0.0025* (1.802)	-0.0026* (1.869)
<i>Joint</i>	0.4400*** (11.399)	0.5386*** (13.687)	0.4992*** (12.242)	0.4935*** (12.087)
<i>Opinion</i>	-0.0799*** (2.630)	-0.0918*** (2.963)	-0.0932*** (3.015)	-0.0923*** (2.988)
<i>Audit Change</i>	-0.0630** (2.448)	-0.0714*** (2.717)	-0.0710*** (2.707)	-0.0691*** (2.635)
<i>Loss</i>	0.0466 (1.511)	0.0374 (1.188)	0.0380 (1.210)	0.0389 (1.237)
<i>Beta</i>	-0.1058*** (2.895)	-0.1113*** (2.983)	-0.1127*** (3.026)	-0.1113*** (2.990)
<i>Variance</i>	0.1476*** (3.788)	0.1480*** (3.716)	0.1507*** (3.793)	0.1460*** (3.676)
<i>Return</i>	0.0380 (1.015)	0.0175 (0.459)	0.0193 (0.507)	0.0170 (0.447)
<i>Revenue</i>	0.1707*** (13.023)			
<i>Client Sales</i>		0.0698*** (6.184)		
<i>Client Asset</i>			0.0938*** (7.106)	
<i>Client Equity</i>				0.0987*** (7.351)
<i>Constant</i>	6.6096*** (22.904)	8.2781*** (31.857)	7.9228*** (28.483)	7.8328*** (27.760)
<i>Observations</i>	3044	3044	3044	3044
<i>R-squared</i>	0.377	0.350	0.353	0.354

*, **, and *** indicate statistical significance at 10%, 5%, and 1%, respectively. Standard errors are reported in parentheses.