Aggregate Quasi Rents and Auditor Independence: Evidence from Audit Firm Mergers in China

K. Hung Chan
Department of Accountancy
Lingnan University, Hong Kong

and

Donghui Wu*
School of Accounting and Finance
The Hong Kong Polytechnic University

Current Version: March 2009

* Corresponding author.

Address: School of Accounting and Finance, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong SAR, China.

E-mail: afdwu@polyu.edu.hk; Tel: (852) 2766-7068; Fax: (852) 2330-9845.

We thank the two anonymous reviewers, Dan Simunic (the Associate Editor), Clive Lennox (the discussant), Shimin Chen, Michael Firth, Jere Francis, In-Mu Haw, Phyllis Mo, Katherine Schipper, Nancy Su, James Xie, and Danqing Young, as well as the participants of the 2008 American Accounting Association Annual Meeting in Anaheim, the 2009 *Contemporary Accounting Research*/*Journal of Contemporary Accounting and Economics* Special Joint Symposium, and a workshop at The Chinese University of Hong Kong, for their helpful comments. The financial support of The Hong Kong Polytechnic University (research grant no. A-PA6K) is gratefully acknowledged.

Aggregate Quasi Rents and Auditor Independence: Evidence from Audit Firm Mergers in China

ABSTRACT

Using a sample of audit firm mergers in China's audit market, this paper provides evidence on the way in which auditor independence can be improved following audit firm mergers as a result of a change in the aggregate quasi rents that are exposed to risk (i.e., the quasi rents at stake). This setting allows us to examine the relationship between auditor independence and the aggregate quasi rents at stake directly after controlling for the confounding effects of auditor competence, audit firm brand name, and the self-selection problem that may exist in previous studies. We hypothesize that auditors become more independent in the post-merger period only if the mergers increase the aggregate quasi rents at stake. Proxying audit quality by the frequency of modified audit opinions (MAOs) and using a "difference-in-differences" research design, we conduct separate tests for two types of mergers under the institutional arrangements in China: one with an increase in the aggregate quasi rents at stake and the other with little change in these rents. Consistent with our hypothesis, we observe an improvement in auditor independence, but only for mergers that increase auditors' aggregate quasi rents at stake. Moreover, the post-merger increase in the propensity for MAOs in this type of merger is positively associated with the magnitude of the change in the aggregate quasi rents at stake. Our empirical findings support the theory that auditor independence is a positive function of the aggregate quasi rents at stake.

Keywords: Audit quality; Auditor independence; Quasi rents; Audit firm mergers.

JEL Descriptors: G34, L10, M42

Aggregate Quasi Rents and Auditor Independence: Evidence from Audit Firm Mergers in China

1. Introduction

In an influential study, DeAngelo (1981) shows that auditors' commitment to independence is positively related to audit firm size. She argues that large audit firms have more aggregate quasi rents, which are defined as audit fees in excess of audit costs, to serve as collateral against opportunistic behavior on the part of auditors. Because the auditors in large audit firms have more to lose if they fail to report breaches in clients' accounting reports, they are more motivated to provide higher quality audit services. Consistent with this argument, researchers have found that audit firm size is positively correlated with audit quality. For example, Big N audits help to constrain firms' earnings management (Becker, DeFond, Jiambalvo, and Subramanyam 1998; Francis, Maydew, and Sparks 1999). The Big N firms are also more conservative in issuing clean audit reports to their clients (Francis and Krishnan 1999). Accounting information provided by the clients of Big N is perceived by the stock market to be more useful (Teoh and Wong 1993). Employing Big N auditors also helps firms to lower the cost of capital (Pittman and Fortin 2004).

However, the empirical evidence on the relationship between audit firm size and auditor independence is confounded by a number of factors. First, as Watts and Zimmerman (1986) point out, audit quality is a joint product of an auditor's competence (i.e., the ability of an auditor to discover a breach) and independence (i.e., the auditor's propensity to report any discovered breach). Dopuch and Simunic (1980a, b) suggest that the auditors in large audit firms are more competent than those in small firms. Large audit firms are better able to recruit graduates from leading universities, hire reputable specialists from the labor market, and offer specialized training to their staff. Peer reviews are also more prevalent and rigorous in these firms. Therefore, audit firm size affects not only auditor independence, but also auditor competence, which makes clear inferences on the relationship between audit firm size and independence difficult.[1]

The second confounding factor is the brand name effect. The brand name investment model (Klein and Leffler 1981) predicts that auditors are motivated to maintain audit quality to protect their brand name once it has been established. Researchers generally compare audit quality in Big

N and non-Big N firms, and use Big N membership to proxy for audit firm size. As the Big N are all brand-name producers, the difference in audit quality between Big N and non-Big N firms could be driven by the former's incentives to protect their brand names rather than the pursuit for independence *per se*, even if we assume that the level of competence is the same between Big N and non-Big N auditors.

Finally, the match between clients and auditors is not random. On the demand side, clients select the audit firms that best meet their need to lower costs (Johnson and Lys 1990). On the supply side, audit firms select their clients strategically to reduce audit risk (Shu 2000; Johnstone and Bedard 2004). The non-randomness of auditor choice suggests that the observed audit quality difference between Big N and non-Big N firms could be caused by such self-selection.[2] Although such techniques as the Heckman (1979) two-stage procedure have been applied to correct this selectivity problem, Francis (2004, p. 354) cautions that "endogeneity and selection cannot be entirely ruled out as an alternative explanation and more work is needed on this important topic." This is echoed by Francis and Lennox (2008), who underscore the pitfalls associated with the application of the Heckman procedure in the accounting and auditing literature.

Using data on audit firm mergers in China, we investigate the empirical relationship between audit firms' aggregate quasi rents at stake and auditor independence in a setting that allows us to mitigate the aforementioned problems. As will be discussed in more detail, the prior research on auditor expertise suggests that mergers are not likely to affect auditor competence immediately. However, they do have an immediate and significant impact on audit firm size and auditors' aggregate quasi rents. Therefore, the changes in audit quality that occur *immediately* after mergers take place can be attributed mainly to changes in auditors' independence rather than competence. Moreover, we investigate the differences in independence between the pre- and immediate post-merger periods of the auditors in the same audit firms, rather than the cross-sectional difference between Big N and non-Big N firms. Such a design is less subject to the brand name effect or the self-selection problem. These are the important merits of using our approach to investigate the relationship between audit firm size and audit quality. By testing an important auditing theory from a new perspective, this paper complements prior cross-sectional studies and contributes to the relevant literature.

Unlike in the U.S. or other developed countries in which the vast majority of public companies are audited by Big N firms, China's audit market was dominated by small domestic audit firms during our sample period. As predicted by the theory that merger waves often result from shocks to an industry's environment (Harford 2005), the economic and regulatory changes in China's audit market induced a large number of audit firm mergers in a short period of time, thus enabling us to investigate the impact of mergers on audit quality in a similar environment for an important economy. China's institutional setting also allows us to split our sample into two merger groups. In one group, mergers occur between two (or more) CPA firms that are licensed to audit listed companies (referred to as *multi-license mergers*); in the other, a CPA firm with such a license merges with non-licensed firms (referred to as *single-license mergers*).[3] Because publicly traded companies make a greater public impact than do private firms, the audits of these companies are subject to greater public scrutiny. Any opportunistic behavior that occurs when auditing listed clientele is thus more likely to be detected, and the consequences, such as the suspension or revocation of the license to practice and the resultant loss of clients, will be more costly. Therefore, quasi rents from listed clientele are more effective in curbing auditor malfeasance. As non-licensed firms have no listed clients, we predict that multi-license mergers will lead to a larger increase in the quasi rents at stake than will single-license mergers and thus make any opportunistic behavior on the part of auditors more costly. Given that the pre-merger firm size of the two groups is similar and that their sample periods overlap to a large extent, any differences between the two groups in post-merger audit quality changes will manifest the way in which the quasi rents at stake affect auditor independence. By applying this "difference-in-differences" method in a natural experiment setting, our design isolates the effect of the quasi rents at stake from other changes during the test period.[4]

We proxy auditor independence by audit opinions and examine the change in auditors' propensity to issue modified audit opinions (MAOs) around the time of the audit firm mergers. We find that auditors issue more MAOs after multi-license mergers. In sharp contrast, there is no significant change in MAOs after single-license mergers, in which we expect little change in the quasi rents at stake despite the post-merger growth in non-listed clientele. Our findings are robust to the use of matched non-merging control firms, the potential endogeneity issue caused by audit

firms' choice of merger type, and other alternative explanations. Finally, we also find that the increase in MAOs is positively correlated with the change in the size of listed clientele that results from multi-license mergers. Taken together, the evidence indicates that an increase in audit firm size does not necessarily lead to an improvement in auditor independence. What matters is the size of public clientele, where the quasi rents are more likely to serve as collateral against auditor malfeasance. This finding supports DeAngelo's (1981) theory that auditor independence is positively related to the aggregate quasi rents at stake.

This study also contributes to the literature in other respects. To a large extent, Chinese audit firm mergers have been induced by government policies that attempt to enhance the ability of domestic auditors to compete with large international audit firms following China's entry into the World Trade Organization (WTO). Moreover, in emerging markets, conventional corporate governance mechanisms are typically weak, and auditors play a crucial role in mitigating agency problems (Fan and Wong 2005; Choi and Wong 2007). The findings of this study thus have policy implications for regulators in China and other emerging economies with regard to administrating the auditing profession and improving the corporate governance of public companies by fostering auditor independence. Over the past decade, international accounting firms have increased their presence in China's audit market. The way in which audit mergers have influenced the quality of domestic auditors and China's audit market structure is thus also highly relevant to the marketing strategies of these international firms.

The next section presents the institutional background to the study. In the third section, we develop the hypotheses tested in the study. Section 4 describes the sample data, and the main empirical tests are reported in the fifth section. The sixth section examines whether our results are open to alternative explanations, and the seventh analyzes the variation in post-merger improvements in audit quality. The final section concludes the paper.

2. Institutional background

The economic reforms that have taken place in China since 1979 have brought about structural changes in the national economy. The entry of foreign investment enterprises and the restructuring of state-owned enterprises (SOEs) as joint stock companies have created demand for

independent audits. In 1980, the first Chinese CPA firm was established in Shanghai, and thousands of new firms were subsequently established nationwide (Tang 2000). In the early 1990s, the Shanghai and Shenzhen stock exchanges opened. To perform audit services for the companies listed on these exchanges, CPA firms must obtain a license from the China Securities Regulatory Commission (CSRC) and the Ministry of Finance (MOF).

Although the accounting profession in China has undergone rapid growth, most domestic CPA firms remain small in scale. According to the CSRC (2001), there were 106 CPA firms licensed to audit listed companies at the end of 1999 (before most of the mergers took place). Each of these firms had fewer than 10 listed clients on average. Furthermore, the market share of the 20 largest CPA firms was only 49.6% (60.4%) in terms of the number of listed clients (listed clients' total assets).[5] At the turn of the millennium, the profession was concerned about whether domestic firms would be able to compete with large international accounting firms when the latter were allowed to operate directly in China after the country's accession to the WTO.[6] As indicated by Yunwei Tang, a senior partner in a leading CPA firm in China, many practitioners at that time believed that an important way of enhancing competitiveness was to increase their firm size through mergers (*China Securities News* 2000).

The country's CPA firm merger wave was also activated by the advances in its economic reforms. Guided by the philosophy of "crossing the river by touching the stones," the Chinese government first targeted small- and medium-sized SOEs for restructuring as corporations (Sun and Tong 2003). As the government gained experience, increasing numbers of large SOEs were opened up for reform in the late 1990s. It then began to pay close attention to whether the supply of quality audit services provided by domestic audit firms was sufficient to meet the increased demand resulting from the SOE reforms (*China Finance and Economics Newspaper* 2000). To induce CPA firms to increase in size, the government issued several regulations. According to a regulation issued in 1997, a CPA firm is eligible to apply for a license to audit listed companies if it employs more than eight individual CPAs who have passed additional professional examinations and obtained a qualification from the CSRC to sign audit reports for listed companies. In June 2000, the CSRC and the MOF issued a new regulation that increased the number from eight to 20. The regulators also set a new threshold: CPA firms must have annual

revenue of more than 8 million RMB (*Ren Min Bi*, the Chinese currency) to audit listed companies. As this exceeded the revenue of many CPA firms in 1999, and the number of qualified CPAs in the country was limited, the most efficient way for a small firm to retain its license to audit listed companies was to merge with another CPA firm.[7] In July 2000, the MOF promulgated the *Provisional Regulations on CPA Firms' Performing Audit Services in the Banking Industry*, which stipulate that a CPA firm is not eligible to perform audit services for selected banks if it employs fewer than 60 CPAs or its revenue in the previous year was less than 15 million RMB. Thus, maintaining market share in the banking industry also provided an incentive for many CPA firms to merge.

In summary, it can be seen that there are both market-based incentives and regulatory reasons for Chinese CPA firms to increase their firm size via mergers. The first such merger occurred in 1999, when Zhong Rui merged with Hua Xia, and between 1999 and 2006, there were 68 merger cases that involved CPA firms licensed to audit listed companies. Largely because of these mergers, the number of licensed CPA firms decreased from 106 in 1999 to 72 in 2006.

3. Hypotheses development

3.1 The impact of a merger on a CPA firm's willingness to compromise independence

To provide structure for our hypothesis, we present a simple model of the impact of a merger on auditor independence. This model follows Chung and Kallapur's (2003, pp. 934-935) framework, which elaborates on DeAngelo's original analysis. The value of audit firm *A* can be expressed as

$$V^A = QR_c + QR_o^A, \tag{1}$$

where QR_c denotes the present value of the future quasi rents specific to client *c*, and QR_o^A denotes the present value of the future quasi rents from all of firm *A*'s other clients. To retain client *c* and earn QR_c, *A* could compromise independence, as *c* could deny QR_c to *A* by switching to another audit firm if *A* insists on reporting a discovered breach. Denote the probability that *c* will fire *A* as P_{fire}. When *A* chooses to remain independent, V^A becomes

$$(1 - P_{fire})QR_c + QR_o^A. \tag{2}$$

If A chooses to compromise its independence for c, then it risks QR_o^A, as the value of its audit service is based on its reputation and it could lose clients if any malfeasance became known. Denote the probability of a compromise by A being detected by outsiders as P_{detect}^A and the fraction of the other quasi rents lost upon such detection as α^A. When A decides to retain c by compromising independence, V^A becomes

$$QR_c + (1 - P_{detect}^A \alpha^A) QR_o^A . \tag{3}$$

To maximize its wealth, A will compromise independence when (3) is larger than (2) (Chung and Kallapur 2003). This condition can be simplified to

$$P_{fire} QR_c > P_{detect}^A \alpha^A QR_o^A . \tag{4}$$

In other words, A will compromise independence to retain c when the expected loss of quasi rents from c is larger than that from all other clients. *Ceteris paribus*, an audit firm's incentive to compromise independence for a specific client hinges on the magnitude of QR_o^A. With more aggregate quasi rents serving as collateral, large audit firms have more to lose if their opportunistic behavior becomes known.

Now assume that two audit firms, A and B, merge to form a new firm, AB.[8] We use the superscripts B and AB to denote the parameters for B and AB, respectively. When AB chooses to acquiesce to client c, the value of AB, V^{AB}, becomes

$$QR_c + (1 - P_{detect}^A \alpha^A) QR_o^A + (1 - P_{detect}^B \alpha^B) QR_o^B . \tag{5}$$

If AB chooses to maintain its independence, then V^{AB} is

$$(1 - P_{fire}) QR_c + QR_o^A + QR_o^B . \tag{6}$$

Thus, the condition for AB to retain c by compromising independence becomes

$$P_{fire} QR_c > (P_{detect}^A \alpha^A QR_o^A + P_{detect}^B \alpha^B QR_o^B) . \tag{7}$$

As $P_{detect}^B \alpha^B QR_o^B$ is strictly positive, the threshold for the merged firm, AB, to compromise independence is higher than that for firm A. By aggregating the quasi rents of the two firms, a merger essentially makes it costlier for auditors to compromise independence. We therefore predict that a post-merger audit firm is less likely to compromise independence to retain a specific client.

Although Chinese auditors' level of exposure to litigation risk is less than that of their U.S. counterparts, there are regulatory bodies in place to oversee audit firms. In emerging capital markets, in which the costs of verifying the circumstances of specific cases and interpreting statutes are high, regulatory enforcement can be a more efficient way of fostering the independence of intermediaries than judicial enforcement (Glaeser, Johnson, and Shleifer 2001; La Porta, Lopez-de-Silanes, Shleifer, and Vishny 2000). Indeed, the sanctions imposed by China's regulators, such as the CSRC and the MOF, for audit failure can be harsh. These sanctions include public reprimands, warnings, fines, the suspension or revocation of licenses to practice, and even imprisonment. From 1993 to 2003, the number of sanctions imposed by the CSRC on CPA firms and individual CPAs were 29 and 71, respectively (CSRC 2003), which suggests that regulators do take action to detect opportunistic behavior and that auditors should be concerned about P_{detect}.

The suspension or revocation of a CPA firm's license could result in closure and thus the loss of all quasi rents. In 1998, the CSRC revoked the licenses of SiChuan and ShuDu for their audit failures in Orient Boiler and Chengdu HongGuang, respectively. These two CPA firms lost *all* of their listed clients permanently. The potential penalties imposed on audit firms may also result in their dismissal by clients. For example, in 2000, the CSRC started an investigation of Hubei LiHua, a CPA firm, because some of its clients had been found to violate securities laws. Others of the firm's clients quickly dismissed it, as they considered it to be professionally and politically unwise to retain it (*Securities Times* 2001). These cases suggest that α, the fraction of other quasi rents lost upon detection, can be quite large. In extreme cases, in which a firm's license to practice is revoked, α is 100%. Thus, although different from the market-based mechanisms in the U.S. that were theorized by DeAngelo (1981), regulatory scrutiny in the Chinese audit market has a similar effect: the compromise of independence, if detected, can be very costly to auditors.

3.2 The impact of a merger on quasi rents

In the foregoing analysis, we assume that a merger *per se* does not change the quasi rents. However, it could affect the present value of quasi rents through its impact on audit costs. The evidence from the merger literature suggests that the future operating costs of merged firms are likely to be lower, as increased firm size is usually accompanied by the improved production

efficiency that arises from greater realization of economies of scale and the elimination of overlapping facilities (Healy, Palepu, and Ruback 1992; Houston, James, and Ryngaert 2001; Fee and Thomas 2004). Consistent with this argument, Ivancevich and Zardkoohi (2000) report that the 1989 mergers in the U.S. (which created Ernst & Young and Deloitte & Touche) led to a decrease in costs for the merged audit firms relative to their rivals. As the economy-of-scale effect of a merger reduces the common costs (i.e., those arising from the overall operation of the firm, such as office and support staff costs) of the merged firms, compromising independence for a particular client, *c*, becomes even costlier as auditors now have to forgo the benefits of these reduced common costs.

Mergers can also affect audit pricing. Sullivan (2002) shows that the way in which mergers affect audit pricing depends on the market structure, and the empirical evidence in the literature is mixed (e.g., Ivancevich and Zardkoohi 2000; Firth and Lau 2004). As an empirical matter, we find no significant change in audit fees immediately after mergers using Simunic's (1980) audit pricing framework.[9] We therefore anticipate that mergers will increase auditors' expected quasi rents, mainly through the reduction of common costs, and make any compromise in independence to retain a client more costly.[10]

3.3 Merger types and their impact on the quasi rents at stake

Not all audit firms in China have a license to audit listed companies. As previously discussed, there are two types of merger in our sample: *multi-license mergers*, in which at least two constituent CPA firms have licenses to audit listed companies, and *single-license mergers*, in which one licensed CPA firm merges with non-licensed ones. Recall that mergers motivate auditors to improve their independence because the threshold for compromising that independence increases from $P^A_{detect}\alpha^A QR^A_o$ to $(P^A_{detect}\alpha^A QR^A_o + P^B_{detect}\alpha^B QR^B_o)$ post-merger. However, in single-license mergers, if *A* is a licensed firm and *B* is a non-licensed firm, then the net impact of a merger between them would be different from that of multi-license mergers.

Although P_{detect} takes a positive value because of regulatory oversight, in China, regulatory penalties are primarily restricted to audit failures in listed companies, which are more visible to the public. Regulatory enforcement also focuses on listed company audits and licensed CPA firms because of the greater public interest involved. Each year, the CSRC makes a spot check of listed

companies' annual financial statements, whereas non-listed companies are subject to no such systematic checks. The Chinese Institute of Certified Public Accountants (CICPA) and the CSRC also examine the audit quality of licensed audit firms in their annual reviews of licenses, even for CPA firms with only one listed client. This suggests that P^B_{detect} is smaller in single-license mergers, as *B* is a non-licensed firm.

Licensed firms also differ from their non-licensed counterparts in α, the fraction of the other quasi rents lost upon detection. The clients of non-licensed CPA firms are all non-public firms, which are less concerned than their listed counterparts about auditor reputation, as they are not really visible to the public. These firms also have less demand for quality auditing. With a higher ownership concentration than public companies, private firms are more able to inform shareholders of firm performance effectively through channels other than financial statements (Klassen 1997). They are also more likely to resolve the information asymmetry problem through private communications with banks, creditors or other parties, which is more efficient given the costs associated with public financial reporting (Ball and Shivakumar 2005, 2008). In addition, because of auditor switching costs, non-listed clients may not dismiss auditors even if their opportunistic behavior has been detected by outsiders. This suggests that the economic consequences of detected audit failures, α^B, would be lower in single-license mergers.

Given that both P^B_{detect} and α^B are likely to be smaller if *B* is a non-licensed firm, the magnitude of $P^B_{detect}\alpha^B QR^B_o$, or the increase in the post-merger aggregate quasi rents at stake, should be lower in single-license mergers than that in multi-license mergers. We therefore test the effect of mergers on auditor independence for these two types of mergers separately. We expect that the increased quasi rents at stake after mergers will motivate the auditors in the multi-license group to be more independent. The first null hypothesis of this study is thus stated as follows.

HYPOTHESIS 1: *There is no improvement in auditor independence after multi-license mergers*.

Although we expect that P^B_{detect} and α^B will be small in single-license mergers, and thus that this type of merger will have little impact on auditor independence, the exact values of these parameters are not readily observable. We therefore treat the effects of single-license mergers on auditor independence as an empirical question and test the following hypothesis.

HYPOTHESIS 2: *There is no improvement in auditor independence after single-license mergers*.

3.4 Mergers and competence

Although mergers may also affect auditor competence, such an effect should be small *immediately* after a merger because specific knowledge about a particular client is difficult to transfer (Fama and Jensen 1983). The results of audit judgment research show that the number of years of experience helps to explain auditor performance (Frederick and Libby 1986). Bonner and Lewis (1990) further find that the client-related knowledge acquired from client- or industry-specific experience provides the best explanation for auditor expertise. Moreover, auditors may not share that specific knowledge straightforwardly through general instruction. Bonner and Walker (1994) demonstrate that instruction without experience (through practice and feedback) does not produce knowledge in trainee auditors. The laboratory evidence is corroborated by archival research. Ferguson, Francis, and Stokes (2003) report that the fee premium for industry expertise in Australia is specific to accounting firm offices that are city-level industry leaders. This premium is not enjoyed by other offices located in cities in which they are not industry leaders. This finding indicates that it is not easy to distribute expertise across offices even within the same audit firm.

In our research design, we define the post-merger period as the first year in which auditors issue audit reports in the name of the merged audit firms. These post-merger audit reports are in effect issued only several months after the mergers take place. Given the difficulty of transferring client-specific knowledge to other auditors immediately and the importance of such knowledge for auditor competence, we expect that any change in auditors' competence *immediately* following a merger to be minimal. Indeed, it could even be argued that mergers may cause a number of temporary disruption and coordination problems that actually reduce auditor competence in the merger year. We conduct several tests in Section 6.3 to investigate whether post-merger changes in competence, if any, can explain our findings.

4. Research method and sample data

Because the loss of quasi rents as a result of regulatory sanctions can be significant in China, auditors need to issue MAOs when appropriate to avoid such sanctions. Several studies (DeFond,

Wong, and Li 2000; Chen, Chen, and Su 2001; Chan, Lin, and Mo 2006; Wang, Wong, and Xia 2008) also suggest that MAOs have reasonable power to capture variations in audit quality in different research settings in China. Following these studies, we test the aforementioned hypotheses by examining post-merger changes in auditors' propensity to issue MAOs. Operationally, we compare audit reports for the first fiscal year, which are influenced by the audit firm mergers (year 0), with those for the most recent three years prior to year 0 (years -3 to -1). We define year 0 as the first year in which auditors issue audit reports in the name of the merged audit firms. In anticipation of the mergers, auditors may have incentives to exert more independence in year -1, which would work against our tests. In other words, if this is the case, then our findings will be conservative. Observations after year 0 are not included to ensure that any improvement in auditors' competence, which should emerge in a longer horizon, does not confound our results with regard to any improvement in independence.

We collect data for audit firm mergers that took place between 1999 and 2006 from the CICPA and several leading financial newspapers. The identity of the CPA firms and the existence of licenses to audit listed companies are checked against *Who Audits China's Securities Market*, which is published by the CSRC. Client firm financial statement and stock market data are from the *China Stock Market & Accounting Research* database (CSMAR).

We identify 68 mergers among CPA firms with a license to audit listed companies. To ensure that we have pure pre-merger data, we delete four cases that took place after the firms had consummated other earlier mergers. We also delete five cases in which the CPA firms did not audit listed companies before the mergers. The remaining 59 cases include 21 multi-license mergers (MULTI hereafter) and 38 single-license mergers (SINGLE hereafter). Panel A of Table 1 shows the distribution of these two types of mergers by time. It is clear that year 0 for a substantial number of observations is 2000. The clustering of mergers in calendar time is consistent with Harford's (2005) theory that merger activities are firms' rational response to a new environment.

[Insert Table 1 here]

In Panel B, we report the mean number of firms involved in each type of merger (MULTI or SINGLE) and the type of CPA firm (licensed or not). Because of our definition of merger types,

there are more licensed CPA firms than non-licensed ones in the MULTI group. However, the last column of Panel B suggests that there is no significant difference in the total number of CPA firms involved in the two types of merger.

To further examine the characteristics of the merging CPA firms, we show the mean value of several variables that measure the size of the listed clientele in Panel C: the number of listed clients, the total assets of the listed clients audited, and the number of CPAs that issue auditor reports to listed clients. The pre- and post-merger data are assembled according to the CPA firms' listed clients in the most recent year before the mergers and at the end of the merger year, respectively. When the pre-merger data for the MULTI group are compared with those for the SINGLE group, we find no significant differences between them in any of the measures, which suggests that audit firms in the former would be comparable to those in the latter in terms of listed clientele had they not merged. However, the post-merger data indicate that the MULTI group grows substantially in all measures and becomes significantly larger than the SINGLE group in terms of listed clientele.

The foregoing analysis is based on listed clients. However, the SINGLE group acquires only non-licensed firms, which do not have any listed clients. It is thus inappropriate to infer that mergers do not change firm size in the SINGLE group. A more appropriate measure would be the change in revenue from both listed and non-listed clients around the mergers. The CICPA occasionally publishes the revenue rankings of Chinese CPA firms. From its website, we are able to collect the total 1999 and 2002 revenue (earned from both listed and non-listed clients) for 17 MULTI and 25 SINGLE mergers that took place in 2000.[11] Panel D presents the mean annual revenue (in millions of RMB) for these firms. From 1999 (one year before the mergers) to 2002 (two years after the mergers), the total revenue of both groups grew considerably. Moreover, there is no significant difference between the two groups before and after the mergers in terms of total revenue. By taking on more non-listed clients, the CPA firms in the SINGLE group keep pace with those in the MULTI group in terms of growth, although the mergers affect the former's listed clientele only marginally.[12]

In sum, merger type (MULTI versus SINGLE) affects the characteristics of constituent CPA firms' listed clientele differently. Given that the two groups are comparable in terms of this

clientele before the mergers and in terms of overall firm size (annual total revenue) before and after the mergers, the increase in firm size for the MULTI group is primarily caused by obtaining a larger set of listed clientele, whereas that for the SINGLE group mainly results from taking on more non-listed clients. Therefore, the different changes in auditor behavior after the mergers between the two groups of audit firms are very likely due to the different impacts of the mergers on listed clientele, which is more subject to regulatory scrutiny.

Our initial sample includes 2,879 client firm-years audited by the merged CPA firms (in both the MULTI and SINGLE groups) between year -3 and 0. Because our focus is on whether auditor independence improves after mergers, we require that: (1) client firms have at least one pre-merger observation and that (2) they are audited by the same CPA firm in the pre- and post-merger years. Due to these criteria, we delete: (1) 89 observations for client firms that are first listed in year 0 and thus do not have pre-merger data and (2) 442 observations for client firms that changed auditors in any year between year -3 and 0. The final sample therefore includes 1,047 and 1,301 client firm-years for the MULTI and SINGLE groups, respectively.

In our main analysis (Section 5), we compare the change in the likelihood of MAO issuance from the pre-merger period to the merger year between the MULTI and SINGLE groups. As these two samples are drawn from roughly the same time period, and were quite comparable in terms of listed clientele before the mergers, such a "difference-in-differences" approach helps to mitigate concerns that any changes in audit quality are caused by economic or regulatory changes during the sample period or by the competence effect of mergers. If the mergers improve auditor independence by increasing auditors' quasi rents at stake, then we expect to observe more significant change in audit quality in the MULTI group than in the SINGLE group. In Section 6.1, we also match the merger audit firms with non-merger controls by both firm size and time and examine whether the post-merger change in MAOs relative to the control firms differs between the MULTI and SINGLE groups. Such a match analysis explicitly controls for the possible effects of the clustering of merger event time. In addition, in Section 6.2, we match the MULTI and SINGLE audit firms by their propensity to choose different types of mergers (MULTI versus SINGLE) and examine the difference in the post-merger change in MAOs. This analysis addresses the potential endogeneity problem caused by audit firms' choice of merger type.

5. Analysis of auditors' reporting decisions

Analogous to U.S. or international generally accepted auditing standards (GAAS), China's Independent Auditing Standards specify four types of audit opinions: unqualified, qualified, disclaimer, and adverse. They also stipulate that explanatory notes can be used with unqualified opinions when deemed necessary. Although the CICPA interprets unqualified opinions with explanatory notes in a manner similar to the "emphasis of matter" in U.S. GAAS, this type of audit report is often issued in place of a qualified opinion in China.[13] Consistent with previous studies (DeFond et al. 2000; Chen et al. 2001; Chan et al. 2006; Wang et al. 2008), we classify auditors' reports into two categories: (1) clean reports and (2) MAOs, including unqualified opinions with explanatory notes and qualified, disclaimed, and adverse opinions. We present the relative frequency of these MAOs among the population of Chinese listed firms from 1993 to 2006 in Figure 1 (there were no MAOs in China before 1993). Consistent with DeFond et al. (2000), there was a significant increase in MAOs in 1995, when the CICPA promulgated the first batch of independent auditing standards. The relative frequency of MAOs reached its peak in 1999, decreased in the following years, and stabilized in recent years. Note that 2000 is event year 0 for most of the merger cases in our sample and that the relative frequency of MAOs in this year for the entire population is lower than that in the preceding years. This may work against finding evidence for an MAO increase in year 0 for our merger sample.

[Insert Figure 1 here]

5.1 Univariate analysis

Table 2 reports the χ^2 tests for whether MAO frequency is independent of CPA firm mergers. In the pre-merger period, the proportion of MAOs is similar for the MULTI (Panel A) and SINGLE (Panel B) groups. For the MULTI sample, this proportion in the post-merger period is greater than that before the mergers, and the difference is significant at the 0.01 level in the χ^2 test. We thus reject our first hypothesis (H1), which states that there is no post-merger increase in MAOs among the MULTI sample. Although there is also an increase in the proportion of MAOs in the post-merger period among the SINGLE sample, we cannot reject our second hypothesis (H2), which states that there is no post-merger change in audit opinions, because the χ^2 statistic in Panel

B is not significant.

[Insert Table 2 here]

5.2 Multivariate analysis

To test our hypotheses in a multivariate setting, we estimate the following Logit model.

$$MAO = \alpha + \beta POST + \sum \gamma_i Control_i + \varepsilon, \quad (8)$$

where *MAO* is coded one if the client firm receives an MAO in a given year, and zero otherwise. *POST* is a dummy variable that takes a value of one to indicate that the client firm observations are in year 0, and zero for other years. Therefore, the coefficient on *POST* represents a change in the probability of MAOs in the post-merger period. Following prior studies of audit reporting in the U.S. (e.g., Dopuch, Holthausen, and Leftwich 1987; Bell and Tabor 1991) and China (DeFond et al. 2000; Chen et al. 2001), we control for a set of variables, $\sum \gamma_i Control_i$, that may affect MAO probability.

First, we include six financial statement variables, *CURRENT* (current assets divided by current liabilities), *ARINV* (receivables and inventory divided by total assets), *LEV* (total liabilities divided by total assets), *TURN* (total sales divided by total assets), *ROA* (earnings divided by total assets), and *LOSS* (a dummy variable that indicates that the firm has reported a loss). In general, higher levels of *CURRENT*, *TURN*, and *ROA* indicate a lower degree of audit risk. Thus, the coefficients on these variables are expected to be negative. As higher levels of *ARINV* and *LEV* and the incurrence of *LOSS* are associated with a higher degree of audit risk, their coefficients should be positive. *AGE* is the number of years a company has been listed and is expected to have a positive coefficient because Chinese firms are more susceptible to financial distress after they have exhausted the capital raised in IPOs, and younger firms are less likely to receive MAOs (DeFond et al. 2000; Chen et al. 2001). According to China's *Company Law*, firms will be delisted if they incur losses for three consecutive years. As Chinese firms that manage earnings to keep them slightly above zero to avoid delisting are more likely to receive MAOs (Chen et al. 2001), we use a dummy variable, *EM*, to control for this effect. It is equal to one if the client firm reported return on equity (ROE) of between 0% and 1%, and zero otherwise.[14]

In addition to these variables, we include two stock market variables that can influence

auditors' decisions. Market-adjusted stock returns for the fiscal year, *RET*, is used to control for news that is incorporated into stock returns, but not yet recognized in earnings. The coefficient on *RET* is expected to be negative. *STDR* is the standard deviation of residuals from the market model.[15] This variable should capture risks that are not reflected in the financial statement variables (Ali, Hwang, and Trombley 2003). Because risky firms are more likely to receive MAOs, we expect *STDR* to have a positive coefficient. Finally, we include the natural logarithm of clients' total assets, *Ln*(*TAST*), in the regression. Its coefficient is expected to be negative, as large clients are usually less risky for auditors because of their more stable operations and better internal control systems.

We transform all of the continuous variables into cross-sectional percentile ranks. More specifically, for each variable, we rank all firms in the CSMAR by year and scale the percentile ranks (from 0 to 99) by 99. Thus, the scaled ranks range from 0 to 1, with 0.50 indicating that the observation is at the population median. This procedure is more efficient than alternative procedures, such as log transformations and sample trimming, for avoiding skewness and outlier problems (Lennox 2005). Table 3 reports the mean of the raw values and scaled percentile ranks for these variables by group (MULTI or SINGLE) and period (pre- or post-merger). A univariate *t*-test is performed to examine the difference between the two periods.[16] For the raw values, a longer listing time and the larger size of the post-merger client observations reflect the sequential nature of the data (the pre-merger data predate the post-merger data) and the growth of client firms over time. We also observe that the post-merger observations have significantly lower current ratios and *ROA*, higher leverage, and more volatile stock returns. This holds true for both groups. However, for the percentile ranks, we find no significant differences in the MULTI group between the pre- and post-merger data, except for the *AGE* variable. As the rank variables are based on the population of listed companies, the difference in raw values between the two periods is mainly due to a general change that occurs across the board for all listed firms in China, rather than financial deterioration that is specific to the sample clients. In any event, these variables are included in the regressions to control for their possible impact on audit opinions.[17]

[Insert Table 3 here]

Equation (8) is estimated for the MULTI and SINGLE groups separately, and the results are

presented in Table 4. As we use panel data, the regression standard errors could be biased if the residuals are correlated time-serially or cross-sectionally. In the spirit of Petersen (2009), we report the *Z*-statistics based on robust standard errors clustered by client firms. The coefficients on most of the control variables have the predicted signs; those that have unexpected signs are not significant. Most importantly, for the MULTI group, the coefficient on *POST* is significantly positive ($p < 0.01$), which suggests that, *ceteris paribus*, the auditors in this group are more likely to modify their audit opinions after mergers. To evaluate the economic significance of this, we set all of the variables except for *POST* at the sample mean and change *POST* from zero to one. Such a change increases the probability of issuing MAOs by 5.2% (from 8.5% to 13.7%).

[Insert Table 4 here]

In contrast, the coefficient on *POST* is not significant in the SINGLE group. When all of the variables except for *POST* are set at the mean values for this sample, a shift from the pre- to the post-merger period changes auditors' probability of issuing MAOs by only 0.9% (from 8.9% to 9.8%). Thus, we can reject H1, but not H2. Finally, we examine whether the coefficients on *POST* are statistically different between the MULTI and SINGLE samples. The χ^2 statistic reported in the bottom row of Table 4 suggests that this difference is significant at the 10% level. Overall, the evidence supports our argument that the effects of mergers on audit quality improvements are stronger in the multi-license group.

5.3 Sensitivity tests

We perform several sensitivity tests to check the robustness of our findings. First, to be sure that individual merger cases do not drive the results, we re-estimate equation (8), dropping each merger case one at a time. As there are 21 (38) cases in the MULTI (SINGLE) sample, equation (8) is re-estimated 21 (38) times. For the MULTI sample, the coefficient on *POST* is always significantly positive at the 0.05 or better level (results not tabulated). In contrast, this coefficient is never significant at any conventional level for the SINGLE sample. Therefore, the main findings of this study are not unique to individual cases.

Second, the dichotomous *MAO* variable does not differentiate between various types of MAOs. As different types of these opinions may reflect auditors' judgments about the accuracy of clients' financial statements, we also re-define the dependent variable as an ordered-level variable,

which is coded from 0 to 4 for clean, unqualified but with explanatory notes opinions, and qualified, disclaimed, and adverse opinions, respectively. The ordered Logit regressions yield results that are qualitatively the same as those reported. It could be argued that unqualified audit reports with explanatory notes are not MAOs. However, the exclusion of this type of audit report from the sample fails to affect our conclusion.

Third, in our sample selection, we required that clients be audited by the same CPA firm in both the pre- and post-merger years to ensure that the pre- and post-merger comparison is based on the same client portfolios. However, this requirement may introduce selection bias if the mergers affect the audit firms' selection of clients or the clients' selection of auditors. We therefore construct an alternative sample without such a requirement: all clients firms that were audited by the merging CPA firms from year -3 to 0. The Logit regression results based on this alternative sample are qualitatively the same: the *POST* variable is significantly positive (Z = 2.602) for the MULTI sample and remains insignificantly different from zero (Z = 0.613) for the SINGLE sample.

6. Further analyses

6.1 The clustering of mergers in calendar time

Our design is to compare the audit reporting decisions of the merging CPA firms between the pre- and post-merger periods. If there is no systematic time-series change in P_{fire}, P_{detect}, α, and the other factors that affect auditor decision making, then the change in audit quality can be attributed to the mergers. Because of the clustering of merger years in calendar time (see Panel A, Table 1), the effects of these factors may not be randomized, and the changes we observe for our test sample may be an artifact of a more general change that occurs across the board for all firms. However, note that the sample period for the MULTI and SINGLE groups overlaps to a large extent. The significant difference in results between these two groups is thus not likely to be due to such systematic changes over the time period we examine. Nevertheless, we adopt a matching approach to allow for more precise control over the potential confounding effects of time period.

Specifically, we match the CPA firms in our experimental merger sample with CPA firms that did not undergo mergers during our sample period by year and firm size. We require that the

absolute difference in total client assets between the experimental and control firms at the end of year -1 does not exceed 20%. Using these criteria, we successfully match 20 pairs of CPA firms for the MULTI group; firms for which we cannot find a match are dropped from this analysis. The difference in total client assets audited between the experimental and control firms at the end of year -1 is not significant (t = -0.89). Therefore, the difference in the change in MAO propensity in year 0 between the experimental and control firms can be attributed to the mergers. Similar to the sample selection criteria described in Section 4, we select 748 client firm-years audited by the control CPA firms from year -3 to 0. These observations are pooled with 680 client firm-years for the experimental merger sample, and the following Logit model is estimated.

$$MAO = \alpha_0 + \alpha_1 EXP + \beta_0 POST + \beta_1 EXP \times POST + \sum \gamma_i Control_i + \varepsilon, \quad (9)$$

where *EXP* is equal to one if the observation is audited by an experimental CPA firm, and zero otherwise, and the other variables are defined as before. In this model, the coefficient on *EXP* measures the pre-merger difference between the experimental and control firms in their propensity to issue MAOs. The coefficient on *POST* estimates the general change in this propensity across the two groups of firms during the post-merger period. The post-merger change in the issuance of MAOs that is specific to the experimental CPA firms is captured by the interaction term *EXP*×*POST*.

Column (1) of Table 5 reports the results of equation (9) for the MULTI group. The insignificant coefficient on *EXP* suggests that the auditors in the experimental CPA firms are similar to their peers in the control sample in the issuance of MAOs before the mergers. The coefficient on *POST* is actually negative, although not significant at conventional levels, which indicates a general decline in MAOs across both the control and experimental samples during the period contemporaneous with the merger years and is consistent with the temporal pattern of MAOs for the population of Chinese listed firms shown in Figure 1. The coefficient on *EXP*×*POST* is significantly positive ($p < 0.01$), which suggests that, other things being equal, the auditors in our experimental sample were more likely to issue MAOs in the merger year (i.e., year 0) than were their counterparts in the non-merger control firms. Additionally, the sum of *POST* and *EXP*×*POST* is positive and significant at the 0.01 level, which indicates that the post-merger propensity for MAOs in the MULTI sample is greater than that before the mergers. Therefore, our

findings are not time period-specific.

[Insert Table 5 here]

Using the same method, we create a control sample of 27 non-merger CPA firms for the SINGLE group. The difference in total client assets audited at the end of year -1 between the two is not significant (t = -1.24). The estimates of equation (9) for the SINGLE group and the control sample are reported in Column (2) of Table 5. The auditors in the SINGLE group are no different from their matched peers in issuing MAOs before or after the mergers, as neither the *EXP* nor *EXP*×*POST* variable is significantly different from zero. Moreover, *POST* + *EXP*×*POST* is not significantly different from zero. We thus find no evidence to suggest any post-merger change in the propensity to issue MAOs among the SINGLE group auditors. Finally, we also compare the coefficients on *EXP*×*POST* between the MULTI and SINGLE samples. The χ^2 statistic indicates that this difference is significant at the 5% level.

In the foregoing analysis, we use the total client assets audited by the audit firms as our matching criterion. The results are not sensitive to the use of the number of listed clients as an alternative audit firm-size measure. We also perform analyses by partitioning the merger cases into two sub-samples: those in 2000 and those in the other years. The untabulated results indicate that, for the MULTI-type mergers, the *POST* variable in regression model (8) is significantly positive in both sub-samples. For the SINGLE-type mergers, it is significant in neither. Collectively, the results do not indicate that the increase in the propensity to issue MAOs is due to any systematic factors that affected all auditors in 2000. Recall that the absolute difference in the size of listed clientele between the merging CPA firms and their matched controls cannot exceed 20%. This reduces the sample size (e.g., n is reduced from 1,047 in Table 4 to 680 in Table 5 for the MULTI sample), and therefore, in the subsequent analyses, we retain the original sample, which should be more representative of the population.

6.2 Possible selection bias caused by audit firms' merger decisions

Our investigation of the difference in audit quality before and after the mergers for the same set of clients avoids the selection bias caused by clients' auditor choice (e.g., the choice between Big N and non-Big N auditors in other studies). However, it could be that the audit firms that choose MULTI-type mergers are inherently different from those in the SINGLE group, which could lead

to different merger effects on audit quality. Although the descriptive statistics given in Table 1 reveal no systematic differences in major characteristics between the two audit groups, we adopt the matched propensity approach suggested by Francis and Lennox (2008) to further address this issue. Specifically, we first estimate a Logit model to predict the propensity for audit firms to choose MULTI-type mergers. For each MULTI-type firm, we identify a SINGLE-type firm with the closest predicted probability as a match. Finally, we examine whether the MULTI firms are different from their matched SINGLE counterparts in the post-merger change in the propensity to issue MAOs. By aligning the distribution of observed characteristics within the matched MULTI and SINGLE samples, we can correct for the possible selectivity.[18]

To predict the merger type chosen by an audit firm, we estimate the following Logit model using the pre-merger audit firms as the unit of analysis.

$$MULTI = \alpha + \beta_1 Legal + \beta_2 Beijing + \beta_3 Shanghai + \beta_4 \sum Ln(TAST) + \beta_5 F\_Score + \beta_6 Sanction + \upsilon, \quad (10)$$

where *MULTI* equals one if the merger type is a multi-license one, and zero otherwise. We include the following independent variables, all measured at the beginning of the merger year, to predict the type of merger chosen by the audit firms. *Legal*, *Beijing*, and *Shanghai* are the three region-specific variables. *Legal* is Fan and Wang's (2004) legal environment index for the region in which the merging audit firm locates, with a higher index indicating a better legal environment. As listed clients and the CPA firms that serve them are more likely to cluster in a legally mature environment, audit firms are more likely to consummate MULTI-type mergers in regions with a higher *Legal* index. Two dummy variables, *Beijing* and *Shanghai*, for the audit firms located in these two cities are included to examine whether audit firms located in China's two most special metropolitan areas differ from the others in their merger decisions. We then include several audit firm characteristics variables, as follows. $\sum Ln(TAST)$ is the sum of logged clients' total assets. Large and mature firms may have their own practice philosophy and thus may not find compatible licensed firms with which to merge. *F_Score* is the mean value of clients' first factor scores from the factor analysis of the variables that may affect audit reports (i.e., the variables in Table 3), with a higher score representing a worse financial position. We predict that firms with risky client portfolios are less likely to merge with other licensed firms because the resultant high

degree of audit risk could jeopardize the careers of the other partners. *Sanction* is a dummy variable that indicates whether an audit firm was sanctioned by the CSRC in years -1 to +1 (where 0 is the merger year). We collect the sanction data from the CSRC website. Sanctions in year +1 are considered because it may take more than one year for the CSRC to finish an investigation, and sanctions announced in year +1 may already be expected in the merger year. Due to the poor reputation of a sanctioned firm, it may be more difficult for it to find another licensed firm with which to merge.

Panel A of Table 6 presents the prediction model results, which reveal that, overall, audit firms that operate in a better legal environment are more likely to choose a MULTI-type merger. The coefficient on *Beijing* is significantly negative at the 5% level, and that on *Shanghai* is not significant.[19] The coefficient signs of the audit firm characteristics variables are all consistent with our conjecture and significant at the 10% or better level.[20]

[Insert Table 6 here]

Following Francis and Lennox (2008), we sort the sample audit firms by the estimated probabilities obtained from the prediction model and implement the following rules to match the MULTI audit firms with their SINGLE counterparts: (1) if only one of the two firms adjacent to a MULTI audit firm is a SINGLE audit firm, then it is chosen as a match; (2) if both adjacent firms belong to the SINGLE group, then we choose the one with the closest estimated probability; and (3) if there is no SINGLE audit firm adjacent to a MULTI audit firm, then it is dropped. We are able to identify 28 pairs of audit firms. With the paired difference in estimated probability between the two groups being lower than 0.01%, the probability distribution of the MULTI audit firms is close enough to their SINGLE matches to mitigate any selectivity.

Panel B of Table 6 presents the regression results for these matched audit firms. After correcting for selection bias, the conclusion is qualitatively the same as before: the coefficient on the *POST* variable is still significantly positive for the MUTLI group, but remains insignificant for the SINGLE group, and the difference between the two groups in the *POST* coefficient is significant at the 5% level in the χ^2 test. Therefore, it does not appear that the possible selection bias caused by audit firms' choice of merger type affects our results.

6.3 Alternative explanations

In the previous section, we show that the auditors in the MULTI group are more likely to issue MAOs after the mergers, whereas those in the SINGLE group are not. Given the different impacts of the two types of merger on CPA firms' listed clients, and thus on the quasi rents at stake, the evidence lends support to the theory that auditor independence is positively related to these rents. According to the auditor expertise literature, mergers should have no or few *immediate* effects on auditor competence. Moreover, if competence does change immediately, then both the SINGLE and MULTI groups should show post-merger improvement in audit quality. Note that the licensed CPA firms in the SINGLE group merge with non-licensed firms. If the expertise of non-licensed CPAs tends to differ from, and thus complement, that of licensed CPAs, then the auditors in the SINGLE mergers should be even more likely to improve their competence. However, we find no such evidence. We further analyze the competence issue in the following manner.

Some cases in the MULTI group involve Big N member firms in China. If Big N auditors are more competent due to better training, then those in non-Big N firms should become more competent after a merger with a Big N firm. To verify whether mergers with Big N firms drive the results for the MULTI sample, we exclude two cases that involve these firms (AA and DTT) from the sample. Column (1) of Table 7 reports the results without these cases, from which it can be seen that they remain qualitatively the same as those reported before.

[Insert Table 7 here]

As we argue that the improvement in audit quality in year 0 is primarily due to post-merger changes in independence rather than changes in competence, it is interesting to examine whether different pre-merger audit firms jointly audit the same clients after the mergers. Intuitively, joint audits allow auditors to share their expertise and thus improve the overall competence of the merged firms. In China, audit reports for listed companies need to be signed by at least two individual CPAs. The audit reports of any joint audits in year 0 should be signed by CPAs from different pre-merger audit firms. We examine the audit reports and find 21 such joint audit cases out of 293 observations in year 0 in the MULTI sample. Column (2) of Table 7 reports the results based on excluding from the sample pre- and post-merger observations that belonged to client firms that were jointly audited by different pre-merger audit firms in year 0. The tenor of our

results remains unchanged. Therefore, the potential improvement in competence immediately after the mergers fails to explain the post-merger improvement in audit quality.

Another possibility that may confound the significant post-merger audit quality improvement in the MULTI group is that independence may improve through channels other than the size of the quasi rents at stake. Chan et al. (2006) and Wang et al. (2008) find that Chinese auditor locality affects reporting decisions. Due to the political influence of local governments, auditors issue more favorable reports for client firms located in the same region (province or equivalent in China) than they do for non-local clients. Mergers between CPA firms may change the relative locality of clients. For example, a Beijing firm merges with a Shanghai firm and audits clients that were previously audited by the Shanghai firm. In such a case, the merged firm may be more independent, as the Shanghai government is less able to intervene in audits carried out by Beijing auditors. It is thus possible that the post-merger independence improvement results from a change in locality rather than from the quasi rents at stake. To alleviate this concern, we split the sample into two sub-samples: one for mergers within the same region and the other for mergers across regions. The results for these two sub-samples for the MULTI group are reported in Columns (3) and (4), respectively, of Table 7. The *POST* variable takes a significantly positive coefficient in both sub-samples. Hence, the possible impact of a locality change does not fully explain our findings.[21]

Because an audit firm has more listed clients after a MULTI merger, the difference between the SINGLE and MULTI groups could be due to greater regulatory focus on licensed audit firms with more listed clients; that is, P_{detect} may increase after an audit firm consummates a MULTI mergers. Our point is that listed clients, whether audited by large or small licensed firms, are subject to greater scrutiny by regulators than are non-listed clients. As previously mentioned, such regulatory scrutiny includes the CSRC's examination of listed companies' financial reports, the annual review of CPA firms' licenses to audit listed companies (even for firms with only one listed client), and other forms of regulatory inspection. Thus, there is a systematic difference between listed and non-listed clientele in P_{detect}. We are not aware of any particular regulation that focuses on large or small licensed audit firms in China. Thus, to shed light on the relationship between regulatory scrutiny and audit firm size, if any, we conduct the following analysis.

From the announcements made by the CSRC on its website, we identify 88 client firm-years in which licensed auditors were sanctioned by the regulators for problematic audits between 1996 and 2004.[22] For each year, we sort the audit firms into three size groups by the number of listed clients. The relative percentage of sanctioned cases to the total number of audits performed is 2.00% in the small licensed firm group and only 0.82% in the large licensed firm group. This difference is significant at the 1% level ($\chi^2 = 10.14$). Thus, we find no evidence that regulators focus particular attention on large licensed audit firms. As the *ex post* audit quality of small licensed firms is lower than the average, *ex ante*, the regulators may focus more attention on these firms if they discern this fact and thus rationally allocate their time and effort.

We also investigate another possible alternative explanation for our results, i.e., the disaffiliation of Chinese audit firms from their government sponsors. The majority of CPA firms in China were initially established and sponsored by government bodies or institutions. Because a government-auditor association may impair auditor independence, a program to disaffiliate CPA firms performing audit services for listed companies from their sponsors commenced at the end of 1996 and finished at the end of 1998. As some of our pre-merger observations are in the affiliation period, it could be argued that the significant post-merger change in audit quality is due to less independent audits during this period. However, note that the sample periods for the MULTI and SINGLE groups overlap to a large extent, and thus the impact of disaffiliation, if any, should be similar on the two groups. Moreover, in untabulated analysis, we exclude the pre-1998 observations from our sample to ensure that both the pre- and post-merger observations are in the post-disaffiliation period, but our findings remain unchanged.

7. Magnitude of merger impact and post-merger audit quality improvement[23]

The foregoing analysis suggests that MULTI-type mergers have a more significant impact on post-merger audit quality than do the SINGLE type. This finding supports DeAngelo's (1981) theory, as the former leads to a larger increase in the quasi rents at stake than does the latter. In this section, we investigate whether the change in audit quality after the MULTI mergers varies with the magnitude of those mergers' impact on audit firms' quasi rents at stake. Such evidence would lend further support to the quasi rent theory. The following two hypothetical cases

illustrate how the impact of mergers may differ across firms.

Case I: The size of pre-merger firm A (in terms of total assets of listed clientele) is 5 billions, and that of pre-merger firm B is 15. The post-merger firm, AB, has a size of 20.

Case II: The size of pre-merger firms A^* and B^* is 10 each. The post-merger firm, A^*B^*, has a size of 20.

Although all firms experience an increase in audit firm size after mergers, the impacts are quite different: in Case I, the increase in audit firm size is 15 and 5, respectively, for firms A and B, whereas that increase is 10 for both A^* and B^* in Case II. Accordingly, the strength of the post-merger change in audit quality is the greatest for A, followed by A^*/B^* and B. To capture the strength of a merger, we thus define the relative size of the audit firm in the merger as

$$RELSIZE_i = \frac{\sum_{i=1}^{n} Size_{i,-1}}{Size_{i,-1}}, \tag{11}$$

where $Size_{i,-1}$ represents the total assets of the listed clientele audited by audit firm i at the end of year -1, and $\sum_{i=1}^{n} Size_{i,-1}$ is the sum of the *Size* variable for n audit firms participating in the merger.[24] As a larger value for $RELSIZE_i$ means a relatively larger change in post-merger audit firm size for audit firm i, we predict a *positive* relationship between the post-merger change in audit quality and $RELSIZE_i$. An interaction term, *POST*×*RELSIZE*, is added to the regression model to test this prediction.

We use the continuous form of *RELSIZE*, as well as its tercile ranks (from 0 to 2 and then divided by 2), which is less subject to the outlier problem and the linearity assumption. The results are reported in Panel A of Table 8, in which Columns (1) and (2) are based on the continuous and rank specifications, respectively. In both columns, *POST*×*RELSIZE* is significantly positive. Therefore, the post-merger increase in MAOs is positively related to *RELSIZE*, i.e., the smaller an audit firm is before a merger, the larger its post-merger improvement in audit quality will be. We also run the main regression model separately for sub-samples formed by the tercile ranks of *RELSIZE* (results not tabulated). The coefficients on the *POST* dummy for the bottom-, middle-, and top-tercile sub-samples are 0.068, 0.323, and

0.839, respectively, which means that the post-merger change in MAOs increases monotonically from the bottom- to the top-tercile *RELSIZE* sub-samples.

To determine the economic significance, we set all of the variables at the sample mean and *POST* at 1, and then change the value of *RELSIZE*. For the continuous specification, when *RELSIZE* is at the sample mean value, the post-merger probability of a firm issuing MAOs is 13.5%, and this probability increases to 18.8% if we increase the value of *RELSIZE* by one standard deviation. Similarly, for the rank specification, moving from the bottom- to the middle- and then to the top-tercile of *RELSIZE* (i.e., the variable is changed from 0 to 0.5 and then to 1) is associated with an increase in this probability from 8.4% to 12.1% and then to 17.1%. Therefore, the *RELSIZE* variable does cause an economically significant variation in the post-merger MAO probability change.

[Insert Table 8 here]

An alternative explanation for this finding is that a post-merger change in the propensity for MAO issuance primarily results from uncertainty over the clientele taken on by the dominant audit firm. For instance, in the aforementioned Case I, firm B dominates the merger, and the increase in the issuance of MAOs could be its response to the uncertainty associated with the clients that were originally audited by firm A. This explanation, however, is less likely to hold for a scenario such as that of Case II, where the merging firms were similar in size before the merger. To explore this issue further, we identify a group of mergers in which the difference in pre-merger audit firm size between the mergees is below 20%. This group consists of 23.3% of the pre-merger audit firms in the MULTI sample. We use a dummy variable, *EQUAL*, to indicate this group. The foregoing explanation predicts that there will be a smaller change in MAOs after a merger for such cases, if the 20% difference in pre-merger firm size does not allow one firm to dominate the other in the merger.

In Panel B of Table 8, we report the regression results for two specifications. In the first specification, *POST*×*EQUAL* is added to the main model. The coefficient on this interaction term is actually positive, but not significant. Thus, the increase in MAOs among mergers with participants of a similar size is not significantly different from that of other mergers. In the second specification, both *POST*×*EQUAL* and *POST*×*RELSIZE* are included in the regression.

POST×EQUAL is still insignificant, whereas the coefficient on *POST×RELSIZE* remains significantly positive. This evidence indicates that, after considering the impact of the magnitude of mergers, whether or not the pre-merger size of the merging firms is similar provides no incremental explanatory power for the post-merger change in MAOs. Therefore, the post-merger increase in MAOs is not caused primarily by the uncertainty brought about by the mergers.

Taken together, the results in Table 8 suggest that, for the MULTI group, the post-merger change in the likelihood of issuing MAOs depends on the magnitude of the change in firm size that is due to the mergers and that such a change is not due to the uncertainty that is associated with the clients newly acquired by the dominant mergees. This finding provides additional support for DeAngelo's (1980) theory.

8. Summary and conclusion

Studies of audit quality typically compare the cross-sectional differences between Big N and non-Big N firms and find that the audit quality of the former is superior to that of the latter. However, DeAngelo's (1981) proposition that large auditors are more independent due to more aggregate quasi rents serving as collateral against malfeasance is subject to alternative explanations, including the difference in auditor competence between large and small auditors, the incentives for Big N firms to protect their brand names, and a potential self-selection problem in the data. By examining the difference in audit quality between pre- and post-merger audit firms in China, we are able to better control these confounding effects.

We hypothesize that auditors are more independent subsequent to mergers *only* when these mergers increase the quasi rents at stake. As SINGLE mergers (in which a licensed CPA firm merges with a non-licensed firm) have little impact on auditors' aggregate quasi rents at stake, we argue that the improvement in independence should be more evident in MULTI mergers (which involve at least two CPA firms licensed to audit listed companies). Consistent with this argument, we find that audit firms involved in MULTI mergers are more likely to issue MAOs to their clients after the mergers. In addition, this increased propensity to issue MAOs is significantly related to the change in audit firm size after the mergers. In contrast, there is no evidence to suggest any significant change in the issuance of MAOs among audit firms involved in SINGLE

mergers. Given that the two groups of CPA firms are comparable prior to the mergers and similar in size (in terms of total annual revenues) after mergers, the different effects of mergers on audit quality support the theory that auditor independence is a positive function of the aggregate quasi rents at stake.

DeFond and Francis (2005) suggest the analysis of audit reporting behavior at the level of the individual partners who could be the ultimate decision makers in issuing audit reports to clients. In our merger setting, the increase in the firm-wide aggregate quasi rents at stake leads to higher-quality audits. This finding does not contradict the idea that partner-level decisions may be more pertinent to audit reporting analysis. Partners own the audit firms, and their level of compensation depends on firm performance. If the firms have more quasi rents at stake, then their partners will have more to lose in the event of an audit failure. Therefore, a change in the aggregate rents of a firm also changes the payoff function of the partners.

Although the wave of CPA firm mergers in China was at least partly orchestrated by the government, more than half of them (i.e., the SINGLE group) resulted in no apparent improvement in audit quality. One policy implication of this finding is that simply increasing audit firm size *per se* (e.g., increasing the number of auditors or audit firm revenues, as the new regulations stipulate) fails to enhance auditor independence. Rather, the level of independence, and thus audit quality, is determined by auditor trade-offs between the costs and benefits of opportunistic behavior. Although this study finds a significant change in auditor independence following multi-license-type mergers, this does not necessarily imply that overall post-merger audit quality in China has reached a socially optimal level of investor protection. The experience of mature markets suggests that, in addition to public regulatory enforcement, other mechanisms, such as private litigation against auditors and improved disclosures on audit services, are helpful in ensuring a well-functioning audit market. These mechanisms, however, are not yet very effective in China's audit market. To further foster auditor independence in the country, it would be useful for Chinese regulators to consider these additional mechanisms as well as the other social costs involved.

Endnotes

[1] A number of researchers have raised this issue (cf. Deis and Giroux 1992, 464; Jeter and Shaw 1995, 314).

[2] For example, contrary to the theory that risky firms select high-quality auditors to maximize firm value when they go public (Datar, Feltham, and Hughes 1991), Feltham, Hughes, and Simunic (1991) report that the U.S. IPO clients of the Big N are less risky than those of the non-Big N. They conjecture that this may be due to self-selection, as the Big N firms in the U.S. tend to avoid risky clients and the potential litigation losses. This conjecture is confirmed by Clarkson and Simunic (1994) using data from Canada, where auditor litigation costs are lower and the self-selection problem is less serious.

[3] There are also mergers in which all of the mergees are non-licensed CPA firms. We do not analyze this type of merger because the clients of these firms are not listed and thus the data are not publicly available.

[4] The "difference-in-differences" approach has been applied in other settings in which the researchers examine regulatory changes over time and control for the time effect (see Hanlon, Maydew, and Shevlin 2008; Altamuro and Beatty 2008; among others).

[5] As early as 1988, the Big 8 already audited 96.6% and 84.5% of the firms listed on the NYSE and AMEX, respectively (Wootton, Tonge, and Wolk 1994). At the end of 1999, the market share of Big N member firms in China was only about 3.6% (11.9%) in terms of the number of listed clients (listed clients' total assets). This figure had grown to 6.93% (41.39%) by the end of 2006.

[6] In the 1990s, international accounting firms had only indirect involvement in China's audit market. For example, they could form joint ventures with domestic CPA firms. Since 1999, they have also been able to invest in domestic firms. China grants Sino-foreign joint ventures, including those that involve international accounting firms, a period of up to five years of income tax exemptions and reductions.

[7] The supply of qualified CPAs in China is not likely to increase significantly in the short term, as the pass rate for professional examinations for licenses to audit listed companies is quite low. In 2001, 11,307 CPAs took the examination, and only 150 passed.

[8] This analysis can be extended to mergers that involve more than two audit firms without loss of generality. Although we analyze only a situation in which client c is audited by A before the merger, the result is also applicable to a client that was originally audited by B.

[9] In fact, after mergers, the audit fees increased slightly (but not statistically significantly). The empirical results with regard to audit fee changes are available from the authors upon request. The CICPA and the Pricing Bureau set a minimum limit on audit fees, which is based on a percentage of a client's total assets (e.g., see Beijing Pricing Bureau 2001). This minimum price regulation is intended to ensure that auditors do not price below cost, which could affect audit quality. This regulation may also explain why there is no significant change in audit fees after mergers in China.

[10] Mergers can also affect quasi rents in that clients may switch audit firms after a merger if that merger results in a competitor being served by the same audit firm and thus the possible leakage of proprietary information to it. However, a GAO survey suggests that 92% of large U.S. public companies choose audit firms that also audit their competitors (Krishnan 2005). Similarly, for our sample firms, the market share per audit firm measured by total client assets audited remains basically unchanged immediately after the mergers.

[11] Ideally, the comparison should be between 1999 and 2000. However, to the best of our knowledge, no data are publicly available for 2000 and 2001.

[12] Analysis based on median values and Wilcoxon rank sum tests for Panels B, C, and D in Table 1 shows a pattern similar to that based on mean values.

[13] Chen, Su, and Zhao (2000) report that the related monetary amounts in some cases of unqualified opinions with explanatory notes can be larger than the adjustment amounts in qualified audit reports. The CSRC also treats unqualified opinions with explanatory notes the same as qualified opinions in disclosure requirements.

[14] Using data from 1995 to 1997, Chen et al. (2001) report that a familiar reason for MAOs is firms' earnings management to meet the profitability requirement specified by the CSRC in 1996 for rights offerings. We include a dummy variable defined in a way that reflects the rule for rights offerings, but it is not significant. This is probably because the rights offerings rule subsequently enacted in 1999 has lowered such earnings management incentives for Chinese firms (Haw, Qi, Wu, and Wu 2005).

[15] We estimate the market model by regressing individual stock returns on market returns, using weekly stock return data during the fiscal year.

[16] The results are similar for the median values and Wilcoxon tests.

[17] Note that we analyze both the MULTI and SINGLE samples, and the time period for the two overlaps to a large extent. If there is a problem in omitting certain time-varying variables that correlate with audit opinions, then this problem should be manifest in both groups. However, as we will see, there is no significant change in post-merger audit opinions among the SINGLE group. In the next section, we also match the merger audit firms with non-merger controls by audit firm size and time to examine whether the post-merger change in audit reporting is specific to merger firms. The results from this matched design are even less likely to be affected by the correlated-but-omitted variable problem. Moreover, the differences in these control variables between the merger and matched control samples are not significant in either the pre- or post-merger periods, except that the clients of the SINGLE group have higher leverage than their controls in both periods. This creates no problems, as we are interested in the change in MAO issuance from the pre- to the post-merger period, and leverage has been consistently controlled for in the regressions.

[18] Compared with the traditional Heckman (1979) method, the matched propensity method has the following merits: (1) it relaxes the "exclusion restrictions" requirement (i.e., some of the independent variables in the first-stage choice model should be truly exogenous and excluded from the second-stage analysis), which is often

overlooked by researchers; (2) it is not subject to the multicollinearity problem due to the inclusion of an inverse Mills ratio in the second-stage analysis; and (3) the empirical results are not sensitive to the model specifications in the first or second stage and are thus more robust (Francis and Lennox 2008).

[19] Beijing is unique in that all of the main accounting regulatory agencies (the CSRC, MOF, and CICPA) are located there. It is very attractive for a non-licensed CPA firm outside of Beijing to merge with a licensed Beijing CPA firm to gain connections with regulatory agencies. Therefore, licensed audit firms located in Beijing need not find a licensed one to merge with to meet the new regulatory requirement. This lowers the likelihood of MULTI mergers in this city.

[20] In model (10), we also consider other variables that proxy for regional development, such as government intervention, credit market development, and overall marketization. These variables are not significant. We also consider alternative audit firm size measures, such as the number of listed clients and various market share variables (i.e., size variables deflated by the total market size). However, the results based on these alternative measures are similar to those reported.

[21] In the SINGLE sample, there is only one case that involves a Big N firm (EY). Excluding it fails to change the insignificant result for the *POST* variable. We are unable to identify joint audits for this type of merger by different pre-merger audit firms in year 0, as the identities of auditors from non-licensed CPA firms are not publicly available for the pre-merger years. We also partition the SINGLE group into two sub-samples by the locality of the merging audit firms. In neither sub-sample do we find more frequent MAOs after the mergers.

[22] These are the client firm-years in which sanctions occurred for audit failures. Because problematic accounting in one client may persist for several fiscal years, one sanction may correspond to multiple fiscal years for one client. There were no sanction cases against problematic audits for the fiscal years after 2004.

[23] We thank the anonymous reviewers for suggesting this analysis.

[24] Hence, in Case I, $RELSIZE_i$ is 400% and 133.3% for A and B, respectively, and equal to 200% for both A^* and B^* in Case II. The empirical results are not sensitive to the use of the number of listed clients as an alternative size measure.

References

Ali, A., L.S. Hwang, and M. Trombley. 2003. Arbitrage risk and the book-to-market anomaly. *Journal of Financial Economics* 69 (2): 285-323.

Altamuro, J. and A. Beatty. 2008. How does internal control regulation affect financial reporting? Paper presented at the *Journal of Accounting and Economics* 2008 Conference.

Ball, R. and L. Shivakumar. 2005. Earnings quality in UK private firms: Comparative loss recognition timeliness. *Journal of Accounting and Economics* 39 (1): 83-128.

Ball, R. and L. Shivakumar. 2008. Earnings quality at initial public offerings. *Journal of Accounting and Economics* 45 (2-3): 324-349.

Becker, C., M. DeFond, J. Jiambalvo, and K.R. Subramanyam. 1998. The effect of audit quality on earnings management. *Contemporary Accounting Research* 15 (1): 1-24.

Beijing Pricing Bureau. 2001. Notice for amendment of service fees charged by CPA firms, Notice [2001] No. 335 (in Chinese).

Bell, T. and R. Tabor. 1991. Empirical analysis of audit uncertainty qualifications. *Journal of Accounting Research* 29 (2): 350-370.

Bonner, S. and B. Lewis. 1990. Determinants of auditor expertise. *Journal of Accounting Research* 28 (Supplement): 1-20.

Bonner, S. and P. Walker. 1994. The effects of instruction and experience on the acquisition of auditor knowledge. *The Accounting Review* 69 (1): 157-178.

Chan, K.H., K. Lin, and P. Mo. 2006. A political-economic analysis of auditor reporting and auditor switches. *Review of Accounting Studies* 11 (1): 21-48.

Chen, C., S. Chen, and X. Su. 2001. Profitability regulation, earnings management, and modified audit opinions: Evidence from China. *Auditing: A Journal of Practice and Theory* 20 (2): 9-30.

Chen, C., X. Su, and R. Zhao. 2000. An emerging market's reaction to initial modified audit opinions: Evidence from the Shanghai Stock Exchange. *Contemporary Accounting Research* 17 (3): 429-455.

China Finance and Economics Newspaper. 2000. China government is encouraging audit firms to increase their sizes (in Chinese). April 6.

China Securities News. 2000. The international symposium of "World Trade Organization and the development of capital market in China" is held in Shanghai (in Chinese). August 9.

CSRC (China Securities Regulatory Commission) 2001 and 2003. *Who Audits China's Securities Market: An Analysis of Audit Market*. Beijing: China Finance and Economy Press.

Choi, J.H. and T.J. Wong. 2007. Auditors' governance functions and legal environments: An international investigation. *Contemporary Accounting Research* 24 (1): 13-46.

Chung, H. and S. Kallapur. 2003. Client importance, nonaudit services, and abnormal accruals.

The Accounting Review 78 (4): 931-955.

Clarkson, P. and D. Simunic. 1994. The association between audit quality, retained ownership, and firm-specific risk in U.S. vs. Canadian IPO markets. *Journal of Accounting and Economics* 17 (1-2): 207-228.

Datar, S., G. Feltham, and J. Hughes. 1991. The role of audits and audit quality in valuing new issues. *Journal of Accounting and Economics* 14 (1): 3-49.

DeAngelo, L. 1981. Auditor size and audit quality. *Journal of Accounting and Economics* 3 (3): 183-199.

DeFond, M. and J. Francis. 2005. Audit research after Sarbanes-Oxley. *Auditing: A Journal of Practice and Theory* 24 (Supplement): 5-30.

DeFond, M., T.J. Wong, and S. Li. 2000. The impact of improved auditor independence on audit market concentration in China. *Journal of Accounting and Economics* 28 (3): 269-305.

Deis, D. and G. Giroux. 1992. Determinants of audit quality in the public sector. *The Accounting Review* 67 (3): 462-479.

Dopuch, N. and D. Simunic. 1980a. The nature of competition in the auditing profession: A descriptive and normative view. *Regulation and the Accounting Profession*, edited by Buckley J. and Weston, F. Belmont, CA: Lifetime Learning Publication.

Dopuch, N. and D. Simunic. 1980b. Competition in auditing: An assessment. Manuscript, University of Illinois at Urbana-Champaign.

Dopuch, N., R. Holthausen, and R. Leftwich. 1987. Predicting audit qualifications with financial and market variables. *The Accounting Review* 62 (3): 431-454.

Fama, E. and M. Jensen. 1983. Agency problems and residual claims, *Journal of Law and Economics* 26 (2): 327-349.

Fan, G. and X. Wang. 2004. *NERI Index of Marketization of China's Provinces*. Beijing: Economic Science Press.

Fan, J. and T.J. Wong. 2005. Do external auditors perform a corporate governance role in emerging markets? Evidence from East Asia. *Journal of Accounting Research* 43 (1): 35-72.

Fee, E. and S. Thomas. 2004. Sources of gains in horizontal mergers: Evidence from customer, supplier, and rival firms. *Journal of Financial Economics* 74 (3): 423-460.

Feltham, G., J. Hughes, and D. Simunic. 1991. Empirical assessment of the impact of auditor quality on the valuation of new issues. *Journal of Accounting and Economics* 14 (4): 375-399.

Ferguson, A., J. Francis, and D. Stokes. 2003. The effects of firm-wide and office-level industry expertise on audit pricing. *The Accounting Review* 78 (2): 429-448.

Firth, M. and T. Lau. 2004. Audit pricing following mergers of accounting practices: Evidence from Hong Kong. *Accounting and Business Research* 34 (3): 201-213.

Francis, J. 2004. What do we know about audit quality? *British Accounting Review* 36 (4):

345-368.

Francis, J. and C. Lennox. 2008. Selection models in accounting research. Working paper, University of Missouri at Columbia and the Hong Kong University of Science & Technology.

Francis, J. and J. Krishnan. 1999. Accounting accruals and auditor reporting conservatism. *Contemporary Accounting Research* 16 (1): 135-165.

Francis, J., E. Maydew, and H. Sparks. 1999. The role of Big 6 auditors in the credible reporting of accruals. *Auditing: A Journal of Practice and Theory* 19 (2): 17-34.

Frederick, D. and R. Libby. 1986. Expertise and auditors' judgments on conjunctive events. *Journal of Accounting Research* 24 (2): 270-290.

Glaeser, E., S. Johnson, and A. Shleifer. 2001. Coase versus the Coasians. *Quarterly Journal of Economics* 116 (3): 853-899.

Hanlon, M., E. Maydew, and T. Shevlin. 2008. An unintended consequence of book-tax conformity: A loss of earnings informativeness. *Journal of Accounting and Economics* 46 (2-3): 294-311.

Harford, J. 2005. What drives merger waves? *Journal of Financial Economics* 77 (3): 529-560.

Haw, I., D. Qi, D. Wu, and W. Wu. 2005. Market consequences of earnings management in response to security regulations in China. *Contemporary Accounting Research* 22 (1): 95-140.

Healy, P., K. Palepu, and R. Ruback. 1992. Does corporate performance improve after mergers? *Journal of Financial Economics* 31 (2): 135-175.

Heckman, J. 1979. Sample selection bias as a specification error. *Econometrica* 47 (1): 153-161.

Houston, J., C. James, and M. Ryngaert. 2001. Where do merger gains come from? Bank mergers from the perspective of insiders and outsiders. *Journal of Financial Economics* 60 (2-3): 285-331.

Ivancevich, S. and A. Zardkoohi. 2000. An exploratory analysis of the 1989 accounting firm megamergers. *Accounting Horizons* 14 (4): 389-401.

Jeter, D. and P. Shaw. 1995. Solicitation and auditor reporting decisions. *The Accounting Review* 70 (2): 293-315.

Johnson, W. and T. Lys. 1990. The market for audit services: Evidence from voluntary auditor changes. *Journal of Accounting and Economics* 12 (1-3): 281-308.

Johnstone, K. and J. Bedard. 2004. Audit firm portfolio management decisions. *Journal of Accounting Research* 42 (4): 659-690.

Klassen, K.L. 1997. The impact of inside ownership concentration on the trade-off between financial and tax reporting. *The Accounting Review* 72 (3): 455-474.

Klein, B. and K. Leffler. 1981. The role of market forces in assuring contractual performance. *Journal of Political Economy* 89 (4): 615-641.

Krishnan, G. 2005. The association between Big 6 auditor industry expertise and the asymmetric timeliness of earnings. *Journal of Accounting, Auditing, and Finance* 20 (3): 209-228.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R. Vishny. 2000. Investor protection and corporate governance. *Journal of Financial Economics* 58 (1-2): 3-27.

Lennox, C. 2005. Audit quality and executive officers' affiliations with CPA firms. *Journal of Accounting and Economics* 39 (2): 201-231.

Petersen, M. 2009. Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies* 22 (1): 435-480.

Pittman, J. and S. Fortin. 2004. Auditor choice and the cost of debt capital for newly public firms. *Journal of Accounting and Economics* 37 (1): 113-136.

Securities Times. 2001. The market is discarding auditors who had forsaken good for the sake of gold (in Chinese). April 25.

Shu, S. 2000. Auditor resignations: Clientele effects and legal liability. *Journal of Accounting and Economics* 29 (2): 173-205.

Simunic, D. 1980. The pricing of audit services: Theory and evidence. *Journal of Accounting Research* 18 (1): 161-190.

Sullivan, M. 2002. The effect of the Big Eight accounting firm mergers on the market for audit services. *Journal of Law and Economics* 45 (2): 375-399.

Sun, Q. and W. Tong. 2003. China share issue privatization: The extent of its success. *Journal of Financial Economics* 70 (2): 183-222.

Tang, Y. 2000. Bumpy road leading to internationalization: A review of accounting development in China. *Accounting Horizons* 14 (1): 93-102.

Teoh, S.H. and T.J. Wong. 1993. Perceived auditor quality and the earnings response coefficient. *The Accounting Review* 68 (2): 346-366.

Wang, Q, T.J. Wong, and L. Xia. 2008. State ownership, the institutional environment, and auditor choice: Evidence from China. *Journal of Accounting and Economics* 46 (1): 112-134.

Watts, R. and J. Zimmerman. 1986. *Positive Accounting Theory*. Englewood Cliffs: Prentice Hall.

Wootton, C., S. Tonge, and C. Wolk. 1994. Pre and post Big 8 mergers: Comparison of auditor concentration. *Accounting Horizons* 8 (3): 58-74.

TABLE 1

Descriptive statistics for CPA firm mergers in China

Panel A: *The distribution of mergers*

Type of merger	1999	2000	2001	2002	2003	2004	2005	2006	Total
MULTI	2	18	0	0	0	0	1	0	21
SINGLE	3	27	1	1	1	0	2	3	38

Panel B: *The mean number of CPA firms involved in mergers*

Type of firm	MULTI group	SINGLE group	*t*-statistics
Licensed firms	2.18	1.00	11.06***
Non-licensed firms	0.45	1.97	-3.85***
Total	2.64	3.00	-0.93

Panel C: *Characteristics of listed clientele before and after mergers*

Characteristics	MULTI group	SINGLE group	*t*-statistics
Pre-merger (per firm before merger)			
Mean number of listed clients	8.91	10.43	-0.87
Mean total assets audited (in billions of yuan)	17.36	17.77	-0.08
Mean number of auditors signing audit reports	6.84	8.15	-1.23
Post-merger (per merged firm after merger)			
Mean number of listed clients	16.41	10.43	2.53**
Mean total assets audited (in billions of yuan)	36.87	20.95	1.83*
Mean number of auditors signing audit reports	13.43	8.86	3.43***

Panel D: *Growth in total annual revenues of CPA firms*

Mean annual revenues (in millions of yuan)	MULTI group	SINGLE group	*t*-statistics
Fiscal year 1999	13.15	11.91	0.26
Fiscal year 2002	29.60	31.94	-0.59

MULTI refers to multi-license mergers in which there are at least two constituent licensed CPA firms. SINGLE refers to single-license mergers in which only one licensed CPA firm is involved. Licensed firms refer to CPA firms that have a license to audit listed companies in China.

In Panel C, the pre-merger data are computed by the CPA firms' listed clients in the most recent year before the mergers, and the unit of analysis is the pre-merger CPA firms. The post-merger data are computed by the merged CPA firms' listed clients at the end of the merger year, and the unit of analysis is the post-merger CPA firms. For the SINGLE group, the data for each observation are from only one licensed CPA firm. Clients newly acquired in the merger year are not included in the post-merger data to improve the comparability of the pre- and post-merger data on client characteristics.

In Panel D, the revenues of the CPA firms are the total annual revenues, including those earned from both listed clients and non-listed clients.

The *t*-statistics are from *t*-tests that compare the difference in mean values between the multi- and single-license sample firms.

*, **, and *** denote two-tailed significance at the 0.10, 0.05, and 0.01 level, respectively.

TABLE 2

Univariate analysis of auditors' reporting decisions

Panel A: *MULTI group*

	Pre-merger (Year -3, -2, and -1)		Post-merger (Year 0)	
Clean reports	86.34%	(651)	79.18%	(232)
MAOs	13.66%	(103)	20.82%	(61)
Column total	100.00%	(754)	100.00%	(293)
	$\chi^2 = 8.185^{***}$			

Panel B: *SINGLE group*

	Pre-merger (Year -3, -2, and -1)		Post-merger (Year 0)	
Clean reports	85.42%	(797)	82.34%	(303)
MAOs	14.58%	(136)	17.66%	(65)
Column total	100.00%	(933)	100.00%	(368)
	$\chi^2 = 1.925$			

MAOs include unqualified opinions with explanatory notes and qualified, disclaimed, and adverse opinions. Figures in parentheses are actual cell frequencies (i.e., the number of clean reports, the number of MAOs, etc.).

***Significant at the 0.01 level.

TABLE 3

Mean values for the independent variables used in the multivariate Logit analysis

Panel A: *MULTI group (n = 754 for pre-merger period; n = 293 for post-merger period)*

	Raw values			Scaled percentile ranks		
Variables	Pre-merger	Post-merger	*t*-Statistics	Pre-merger	Post-merger	*t*-Statistics
CURRENT	1.956	1.730	2.56**	0.513	0.483	1.51
ARINV	0.376	0.358	1.36	0.499	0.508	-0.45
LEV	0.443	0.476	-2.62***	0.493	0.522	-1.42
TURN	0.530	0.520	0.43	0.512	0.509	0.13
ROA	0.050	0.035	3.46***	0.517	0.510	0.36
LOSS	0.070	0.092	-1.19	-	-	-
AGE	3.292	4.877	-10.36***	0.524	0.587	-3.26***
EM	0.042	0.058	-1.07	-	-	-
RET	-0.008	0.015	-0.89	0.505	0.513	-0.38
STDR	0.046	0.048	-1.86*	0.493	0.515	-1.11
Ln(*TAST*)	20.754	21.025	-4.51***	0.539	0.548	-0.45

Panel B: *SINGLE group (n = 933 for pre-merger period; n = 368 for post-merger period)*

	Raw values			Scaled percentile ranks		
Variables	Pre-merger	Post-merger	*t*-Statistics	Pre-merger	Post-merger	*t*-Statistics
CURRENT	1.849	1.645	2.61***	0.507	0.483	1.39
ARINV	0.358	0.348	0.87	0.497	0.522	-1.43
LEV	0.464	0.499	-2.83***	0.497	0.519	-1.24
TURN	0.526	0.505	0.85	0.496	0.484	0.65
ROA	0.037	0.022	3.29***	0.520	0.480	2.29**
LOSS	0.097	0.120	-1.23	-	-	-
AGE	3.905	5.438	-8.85***	0.485	0.547	-3.63***
EM	0.047	0.063	-1.13	-	-	-
RET	-0.026	0.006	-1.74*	0.482	0.515	-1.89*
STDR	0.043	0.046	-3.82***	0.475	0.512	-2.17**
Ln(*TAST*)	20.796	20.994	-3.61***	0.507	0.505	0.11

This table presents the mean of the raw values and the scaled percentile ranks for the control variables used in the regression analysis. The continuous variables are transformed into percentile ranks, and the ranks (from 0 to 99) are scaled by 99. The ranking is based on the population in the CSMAR database by year.

CURRENT is the current ratio (current assets divided by current liabilities); *ARINV* is accounts receivable and inventory intensiveness (sum of accounts receivable and inventory divided by total assets); *LEV* is the leverage ratio (liabilities divided by total assets); *TURN* is the turnover ratio (total sales divided by total assets); *ROA* is the return on assets (earnings divided by total assets); *LOSS* is equal to 1 if the client firm has reported a loss, and 0 otherwise; *AGE* is the number of years a company has been listed; *EM* is equal to 1 if the client firm has reported ROE between 0 and 1%, and 0 otherwise; *RET* is the annual market adjusted stock returns; *STDR* is the standard deviation of residuals from the market model estimated by weekly return data during the year; and *Ln*(*TAST*) is the natural logarithm of clients' total assets.

*, **, and *** denote that the post-merger observations are significantly different from the pre-merger ones in the two-tailed *t*-tests at the 0.10, 0.05, and 0.01 level, respectively.

TABLE 4

Multivariate Logit analysis of auditors' reporting decisions

	(1)		(2)	
	MULTI group (n = 1,047)		SINGLE group (n = 1,301)	
Independent variables	Coefficients	*Z*-Statistics	Coefficients	*Z*-Statistics
Intercept	-2.148	-2.652***	-3.077	-4.198***
POST	**0.538**	**3.011*** **	**0.109**	**0.672**
CURRENT	-0.304	-0.462	0.481	0.755
ARINV	0.825	1.648*	1.031	2.024**
LEV	0.513	0.685	1.470	2.209**
TURN	-0.596	-1.288	-1.821	-4.560***
ROA	-2.281	-3.356***	-1.332	-2.261**
LOSS	0.544	1.556	1.145	3.560***
AGE	0.512	1.093	0.495	1.093
EM	0.534	1.430	0.063	0.176
RET	-0.757	-2.212***	-0.235	-0.725
STDR	1.566	3.558***	1.433	3.637***
Ln(*TAST*)	-0.019	-0.041	-0.247	-0.594
Wald χ^2	153.534***		205.839***	
Pseudo R^2	18.15%		20.42%	
χ^2 for the cross-sample difference in the *POST* coefficient: 3.164*				

The estimates are based on the Logit method. The dependent variable is *MAO*, a dummy variable indicating that the client firm received a modified opinion. *POST* is a dummy variable indicating that the observations are from the post-merger period. All of the other independent variables are defined as in Table 3. The continuous variables have been transformed into cross-sectional percentile ranks, and the ranks (from 0 to 99) are scaled by 99. The *Z*-statistics are based on robust standard errors clustered by client firms.

*, **, and *** denote two-tailed significance at the 0.10, 0.05, and 0.01 level, respectively.

TABLE 5

Auditors' reporting decisions for the experimental and the control sample firms

	(1) MULTI group (n = 1,428, including 680 experimental and 748 control firms)		(2) SINGLE group (n = 2,158, including 1,180 experimental and 978 control firms)	
Independent variables	Coefficients	*Z*-Statistics	Coefficients	*Z*-Statistics
Intercept	-1.937	-2.823***	-2.669	-4.319***
EXP	0.139	0.573	0.063	0.315
POST	-0.391	-1.590	-0.111	-0.528
EXP×POST	**1.061**	**3.277*** **	**0.246**	**0.959**
CURRENT	-0.465	-0.809	0.411	0.783
ARINV	0.616	1.349	0.813	2.034**
LEV	0.307	0.472	1.620	2.878***
TURN	-1.326	-3.038***	-1.394	-4.505***
ROA	-1.668	-2.677***	-1.494	-2.928***
LOSS	0.772	2.472**	1.121	4.237***
AGE	0.848	1.983**	0.672	1.741*
EM	0.609	1.843*	0.336	1.110
RET	-0.334	-1.218	-0.033	-0.132
STDR	1.205	3.497***	0.621	2.122**
Ln(*TAST*)	-0.261	-0.611	-0.739	-2.015
χ^2 for *POST*+*EXP*×*POST*	7.372***		0.459	
Wald χ^2	188.575***		326.961***	
Pseudo R^2	16.17%		18.70%	
χ^2 for the cross-sample difference in the *EXP*×*POST* coefficient: 3.893**				

The estimates are based on the Logit method. The dependent variable is *MAO*, a dummy variable indicating that the client firm received a modified opinion. The independent variables are defined as in Table 3. The *Z*-statistics are based on robust standard errors clustered by client firms.

The sample CPA firms are matched with firms that did not merge during our sample period by year and by total client assets audited at the end of year -1. The dummy variable *EXP* equals one if the observation is audited by one of the experimental CPA firms, and zero otherwise. There are 680 and 748 client observations in the MULTI-merger sample and its matched non-merger sample, respectively. For the SINGLE group, the number of observations for the merger and matched non-merger sample is 1,180 and 978, respectively.

*, **, and *** denote two-tailed significance at the 0.10, 0.05, and 0.01 level, respectively.

TABLE 6

Analysis of selection bias caused by audit firms' merger decisions

Panel A: *Analysis of audit firm merger decisions* (n = 85)			***Panel B:*** *Analysis of auditors' reporting decisions based on a propensity-matched sample*				
				(1) MULTI group (n = 715)		(2) SINGLE group (n = 539)	
Variables	Coefficients	Asy. *t*-stat.	Variables	Coefficients	*Z*-Statistics	Coefficients	*Z*-Statistics
Intercept	-2.278	-1.474	Intercept	-2.255	-2.090**	-2.330	-2.193**
Legal	0.576	2.098**	***POST***	**0.709**	**3.343*****	**-0.179**	**-0.615**
Beijing	-2.207	-2.297**	*CURRENT*	-0.261	-0.303	0.178	0.176
Shanghai	0.306	0.229	*ARINV*	0.326	0.508	1.300	1.492
∑*Ln*(*TAST*)	-0.003	-1.699*	*LEV*	0.848	0.988	1.456	1.386
F_Score	-0.929	-1.919*	*TURN*	0.109	0.179	-2.849	-3.808***
Sanction	-2.196	-1.976**	*ROA*	-2.747	-2.777***	-2.486	-2.537**
			LOSS	0.520	1.205	1.545	2.655***
Wald χ^2	13.80**		*AGE*	0.194	0.338	0.393	0.499
Pseudo R^2	21.07%		*EM*	1.013	2.344**	-1.608	-1.782*
			RET	-0.755	-1.648*	-0.035	-0.064
			STDR	1.697	3.013***	1.760	2.719***
			Ln(*TAST*)	-0.228	-0.402	-0.398	-0.537
			Wald χ^2	111.909***		84.336***	
			Pseudo R^2	20.07%		26.55%	
			χ^2 for the cross-sample difference in the *POST* coefficient: 6.070**				

The estimates are based on the Logit method.

In Panel A, the sample includes 85 pre-merger audit firms. The dependent variable is *MULTI*, which is equal to one if the merger type is multi-license, and zero otherwise. *Legal* is the legal environment index from Fan and Wang (2004); *Beijing* is equal to one if the audit firm is located in Beijing, and zero otherwise; *Shanghai* is equal to one if the audit firm is located in Shanghai, and zero otherwise; ∑*Ln*(*TAST*) is the logged total assets audited; *F_Score* is the mean value of clients' first factor score for the variables that may affect audit reports (i.e., the variables in Table 3); and *Sanction* is a dummy variable indicating that the audit firm was sanctioned in year -1 to 1. The independent variables are measured at the beginning of the merger year.

In Panel B, the sample consists of client-firm years for 28 pre-merger firms involved in MULTI-license mergers and their SINGLE matches. The match is based on the propensity to select MULTI-type mergers estimated in Panel A. The dependent variable is *MAO*, a dummy variable indicating that the client firm receives a modified opinion, and all independent variables are defined as in Table 3. The continuous variables have been transformed into cross-sectional percentile ranks, and the ranks (from 0 to 99) are scaled by 99. The *Z*-statistics are based on robust standard errors clustered by client firms.

*, **, and *** denote two-tailed significance at the 0.10, 0.05, and 0.01 level, respectively.

TABLE 7

Tests of the alternative explanations for the MULTI group

Independent variables	(1) Excluding mergers involving Big N (n = 934)		(2) Excluding joint audit observations (n = 963)		(3) Mergers within the same region (n = 524)		(4) Mergers across regions (n = 523)	
	Coefficients	*Z*-Statistics	Coefficients	*Z*-Statistics	Coefficients	*Z*-Statistics	Coefficients	*Z*-Statistics
Intercept	-2.401	-2.820***	-1.946	-2.285**	-1.735	-1.506	-2.553	-2.090**
POST	**0.502**	**2.703***	**0.556**	**3.074***	**0.572**	**2.334****	**0.603**	**2.251****
CURRENT	-0.212	-0.307	-0.691	-1.007	-0.361	-0.400	0.590	0.571
ARINV	0.687	1.373	0.959	1.821*	0.662	1.073	0.276	0.308
LEV	0.638	0.821	0.116	0.148	1.198	1.123	0.299	0.253
TURN	-0.562	-1.173	-0.475	-0.996	-0.692	-1.187	-0.663	-0.915
ROA	-2.148	-3.058***	-2.282	-3.171***	-1.641	-1.669*	-3.697	-3.758***
LOSS	0.495	1.394	0.554	1.548	1.018	1.920*	-0.094	-0.185
AGE	0.696	1.437	0.588	1.226	0.107	0.167	0.600	0.846
EM	0.567	1.463	0.553	1.425	1.223	2.547**	-0.101	-0.153
RET	-0.655	-1.843*	-0.683	-1.936*	-0.862	-1.697*	-0.266	-0.580
STDR	1.503	3.262***	1.505	3.331***	1.779	2.953***	1.267	1.783*
Ln(*TAST*)	0.125	0.262	0.079	0.172	-0.973	-1.522	1.022	1.507
Wald χ^2	136.300***		147.143***		154.508***		50.130***	
Pseudo R^2	17.72%		18.95%		24.75%		12.34%	

The estimates are based on the Logit method. The dependent variable is *MAO*, a dummy variable indicating that the client firm received a modified opinion. The independent variables are defined as in Table 3. The *Z*-statistics are based on robust standard errors clustered by client firms.

In Column (1), we report the results based on a sample that excludes merger cases involving Big N firms. In Column (2), we drop observations belonging to client firms that were jointly audited by different pre-merger audit firms in year 0. In Columns (3) and (4), we estimate the regression for merger cases within and across regions (province or equivalent in China) separately.

*, **, and *** denote two-tailed significance at the 0.10, 0.05, and 0.01 level, respectively.

TABLE 8

Further analysis of the post-merger change in the propensity for MAO issuance in the MULTI group

Panel A: *Association between the magnitude of merger impact on listed clientele and post-merger change in the propensity for MAOs*

Independent variables	(1) Continuous specification		(2) Rank specification	
	Coefficients	*Z*-Statistics	Coefficients	*Z*-Statistics
Intercept	-2.284	-2.788***	-2.230	-2.676***
POST	**0.061**	**0.244**	**-0.005**	**-0.015**
POST×RELSIZE	**0.150**	**3.223*****	**0.804**	**1.870***
CURRENT	-0.184	-0.284	-0.248	-0.371
ARINV	0.774	1.561	0.794	1.580
LEV	0.656	0.873	0.563	0.741
TURN	-0.567	-1.236	-0.578	-1.240
ROA	-2.289	-3.366***	-2.256	-3.343***
LOSS	0.533	1.534	0.535	1.555
AGE	0.512	1.090	0.492	1.043
EM	0.537	1.413	0.539	1.422
RET	-0.789	-2.281**	-0.800	-2.333**
STDR	1.608	3.635***	1.660	3.794***
Ln(*TAST*)	-0.004	-0.008	-0.006	-0.012
Wald χ^2	153.944***		154.872***	
Pseudo R^2	18.59%		18.42%	

(*Continued on next page*)

TABLE 8 (Cont.)

Panel B: *Equality of participating audit firms before mergers and post-merger change in the propensity to issue MAOs*

	(1)		(2)	
	Without controlling for *RELSIZE*		Controlling for *RELSIZE*	
Independent variables	Coefficients	*Z*-Statistics	Coefficients	*Z*-Statistics
Intercept	-2.163	-2.690***	-2.281	-2.785***
POST	**0.459**	**2.211****	**0.052**	**0.206**
POST*×*EQUAL	**0.385**	**1.100**	**0.148**	**0.380**
POST*×*RELSIZE			**0.144**	**2.796*****
CURRENT	-0.316	-0.480	-0.194	-0.298
ARINV	0.839	1.675*	0.783	1.575
LEV	0.493	0.658	0.643	0.854
TURN	-0.594	-1.290	-0.569	-1.243
ROA	-2.288	-3.362***	-2.294	-3.368***
LOSS	0.531	1.515	0.527	1.508
AGE	0.537	1.143	0.520	1.104
EM	0.513	1.369	0.529	1.388
RET	-0.761	-2.222**	-0.789	-2.283**
STDR	1.575	3.592***	1.608	3.641***
Ln(*TAST*)	-0.002	-0.004	0.000	0.001
Wald χ^2	153.065***		153.680***	
Pseudo R^2	18.22%		18.60%	

The estimates are based on the Logit method. The dependent variable is *MAO*, a dummy variable indicating that the client firm received a modified opinion.

In Panel A, *RELSIZE* is defined as $\frac{\sum_{i=1}^{n} Size_{i,-1}}{Size_{i,-1}}$, where $Size_{i,-1}$ is the size of audit firm *i* in year -1, and $\sum_{i=1}^{n} Size_{i,-1}$ is the sum of firm size for *n* audit firms involved in a merger. Audit firm size is measured by total client assets. Other independent variables are defined as in Table 3. For the continuous specification, *RELSIZE* is measured continuously. For the rank specification, *RELSIZE* is transformed to tercile ranks (from 0 to 2) and then divided by 2.

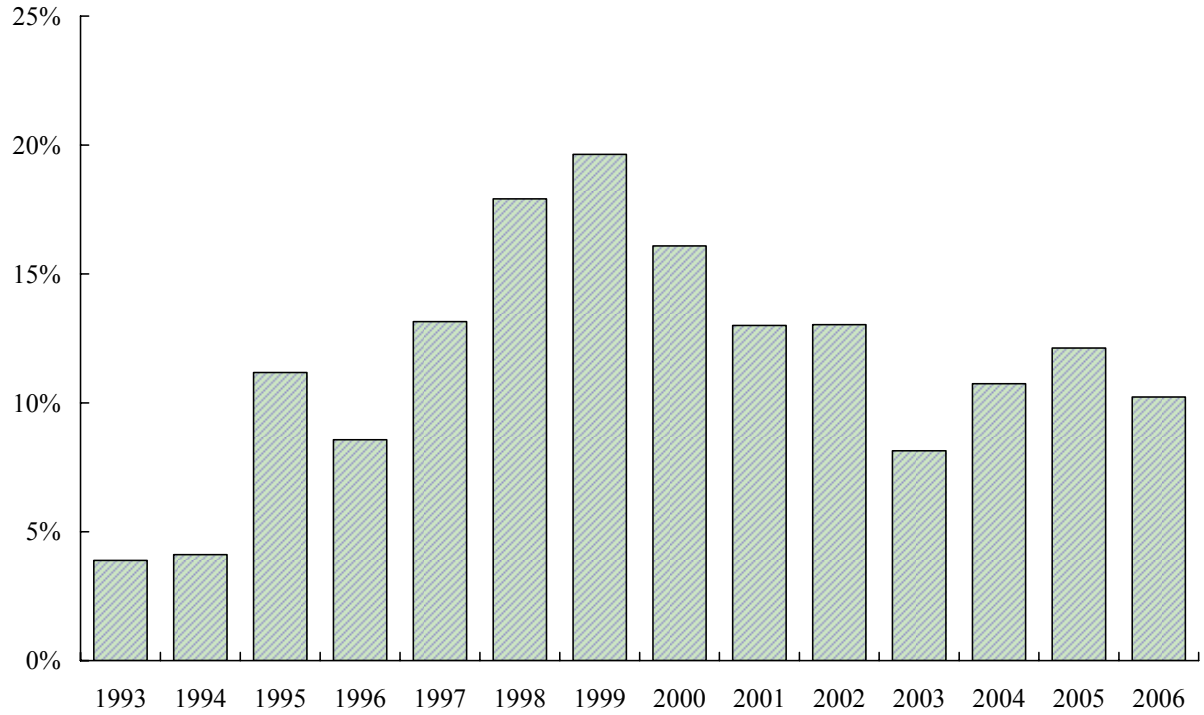
In Panel B, *EQUAL* is a dummy variable indicating merger cases in which the difference in pre-merger audit firm size between the mergees is below 20%.

The *Z*-statistics are based on robust standard errors clustered by client firms.

*, **, and *** denote two-tailed significance at the 0.10, 0.05, and 0.01 level, respectively.

FIGURE 1

Relative frequency of modified audit opinions for the population of Chinese listed firms from 1993 to 2006



The relative frequencies are calculated as the number of modified audit opinions (including unqualified opinions with explanatory notes) divided by the total number of listed firms at the end of the respective year.