



Audit Quality and Auditor Reputation: Evidence from Japan

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Audit Quality and Auditor Reputation: Evidence from Japan*

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Abstract

We study events surrounding ChuoAoyama's failed audit of Kanebo, a large Japanese cosmetics company whose management engaged in a massive accounting fraud. ChuoAoyama was PwC's Japanese affiliate and one of Japan's "Big Four" audit firms. In May 2006, the Japanese Financial Services Agency (FSA) suspended ChuoAoyama's operations for two months as punishment for its role in the accounting fraud at Kanebo. This action was unprecedented, and followed a sequence of events that seriously damaged ChuoAoyama's reputation for audit quality. We use these events to provide evidence on the importance of auditors' reputation for audit quality in a setting where litigation plays essentially no role. We find that ChuoAoyama's audit clients switched away from the firm as questions about its audit quality became more pronounced but before it was clear that the firm would be wound up, consistent with the importance of auditors' reputation for delivering quality.

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1. Introduction

High quality external auditing is a central component of sound corporate governance. Yet relatively little is known about the determinants of audit quality. We study the Japanese audit market, where recent events provide a powerful setting for investigating the effect of auditor reputation on audit quality absent litigation effects.

An important but largely unresolved issue in both the academic and policy arenas is what determines audit quality. The literature focuses on two principal forces that motivate auditors to deliver quality—a litigation/insurance incentive and a reputation incentive. Under the first motive, if auditors are legally liable for audit failures to an economically significant degree, they have an incentive to deliver quality to avoid the adverse consequences of litigation. Under the second, auditors have reputational incentives to avoid audit failures because audit quality is valuable to clients and so priced in the market for audit services.

The audit profession argues that reputation effects are sufficient to ensure quality, and that auditors' legal liability for corporate failures should be limited. Regulators in several important jurisdictions, including Europe and the U.S., are considering rules that limit auditor liability, at least in part because of concerns about how the audit market would respond if another of the major firms went out of business.¹

Whether auditors' incentives to maintain reputation are sufficiently powerful to assure high quality auditing absent litigation incentives is not clear. Empirically, it is difficult to separate the effects of litigation/insurance from those of reputation in markets

¹ See, for example, Global Capital Markets and the Global Economy: A Vision from the CEOs of the International Audit Networks (2006), Interim Report of the Committee on Capital Markets Regulation (2006), European Commission (2008). See also "US auditors renew calls for liability limits" (*Financial Times*, September 1, 2008) and "Professional liability: Hard-won solution faces threat from US" (*Financial Times*, September 2, 2008).

where auditors face potentially significant litigation costs, as they do in most countries around the world. For example, studies that analyze switching around the time of audit failures, described further in Section 2, have a hard time distinguishing the effects of reputation from those of litigation/insurance because both perspectives predict switching in the face of declining audit quality.

We study the role of reputation in the market for audit services in Japan. In Japan, litigation costs are essentially non-existent.² In addition, recent events in the Japanese audit market provide a powerful setting we use to examine the effects of auditor reputation. We analyze events surrounding the collapse of ChuoAoyama, the PricewaterhouseCoopers (PwC) affiliate in Japan, which was implicated in a massive accounting fraud at Kanebo, a large Japanese cosmetics company. Over a two to three year period, events related to ChuoAoyama's audit of Kanebo revealed that ChuoAoyama's audit quality was low, causing regulators to take the drastic step of suspending the firm's operations. The subsequent revelation of another large fraud at a prominent ChuoAoyama client (Nikko Cordial) ultimately caused the firm's demise. These events provide a natural setting for us to assess how ChuoAoyama's clients reacted to a demonstrable decline in that firm's audit quality.

We provide a number of empirical analyses of the events surrounding the decline of ChuoAoyama. First, we provide evidence that a substantial number of clients dropped ChuoAoyama as the extent of its audit quality problems became apparent but before it became clear that the firm would be forced out of business.³ The timing and details of

² The Japanese institutional setting is discussed further in Section 2 and Appendix A.

³ This distinguishes the events at ChuoAoyama from those at Arthur Andersen in the wake of that firm's failed audit of Enron. Andersen went out of business within a few months of the collapse of Enron, soon after it was revealed that firm personnel had shredded documents related to the Enron audit making. This

these switches are consistent with them being attributable to a decline in audit quality. Further, we describe how PwC responded proactively to the scandal by adopting a “two firm strategy” under which it undertook to (i) improve audit quality at ChuoAoyama, which it renamed Misuzu, and (ii) establish a new, smaller “high quality” affiliate in Japan, to which a select group of ChuoAoyama clients—including Sony, Toyota, and large multinational clients with operations in Japan—were moved. Third, we undertake an event study of the events associated with ChuoAoyama’s failed audit of Kanebo to investigate whether ChuoAoyama’s clients suffered declines in equity value as these events unfolded. There is little evidence of a significant negative reaction for these events although the event study may lack power given the relatively long period over which these events unfold. Taken as a whole, we view the evidence as providing support for the view that audit quality and reputation are important in an economy where the legal system does not provide incentives for auditors to delivery quality.⁴

This research has other potential policy implications. There are now only four major audit firms worldwide (the Big Four). If another of these firms were to fail (because of the legal/regulatory consequences of another large audit failure), there are concerns about whether the remaining firms could adequately service the market. The events in Japan essentially coincide with this scenario, and provide useful evidence relevant to this debate.

relatively short time period makes it difficult for researchers to separate the effects of reputation from those of the firm’s impending closure (e.g., see Barton, 2005).

⁴ A related working paper by Murase et al. (2010) also examines auditor switching around the time of the ChuoAoyama events. Broadly similar to our findings, this paper finds that clients with larger agency costs tended to change auditors to those unaffiliated with PwC while clients with larger switching costs tended not to change auditors.

The next section provides more detail about the events surrounding the Kanebo fraud and ChuoAoyama's role therein, as well as a discussion of previous literature and empirical predictions. Section 3 describes our sample and provides empirical evidence. Section 4 offers a summary and conclusions.

2. The downfall of ChuoAoyama and empirical predictions

Section 2.1 provides details on the events that led to the suspension of ChuoAoyama and ultimately to its demise. Section 2.2 describes previous research and develops testable predictions. Appendix A describes the institutional background and in particular the nature of external auditing in the Japanese economy and how it differs from auditing in western economies.

2.1 The Kanebo fraud and the demise of ChuoAoyama

In May 2006 the Japanese Financial Services Agency (FSA) issued an order suspending the operations of ChuoAoyama, Japan's PwC affiliate, for two months. This move was unprecedented, and resulted from ChuoAoyama's involvement in a major accounting fraud at Kanebo Ltd., a large cosmetics company. The fraud had previously (in September of 2005) resulted in the arrest of four ChuoAoyama auditors, who were alleged to have had knowledge of the fraud, as well as the arrest of Kanebo executives. According to Hosono (2008), Kanebo was the largest corporate fraud in Japanese history, and the associated arrests shocked the public.⁵ Prior to Kanebo, ChuoAoyama had audited a number of other Japanese companies involved in prominent accounting frauds, including Yaohan Japan Corp (1997), Yamaichi Securities (1999), and Ashikaga Bank

⁵ Japanese GAAP first required consolidated financial reporting in the late 1990s. The Kanebo fraud resulted from its removal of eight distribution companies and six food companies from its consolidated financial statements, apparently because of these companies' poor financial performance and condition. See Hosono (2008).

(2000).⁶ Figure 1 provides a summary of key events for ChuoAoyama in the wake of its failed audit at Kanebo.

The chain of events that led to ChuoAoyama's suspension began in 2004 when Kanebo revealed the fraud and undertook an internal investigation that resulted in it dropping ChuoAoyama as its auditor (in July 2004). Events took a more serious turn in July 2005 when three former Kanebo executives were arrested and prosecutors searched ChuoAoyama's offices. The news became progressively worse for ChuoAoyama over the next few months as four of its auditors were indicted and then arrested by government prosecutors and the firm's board was forced to step down.

PwC took a number of measures to preserve its reputation in the wake of the events at ChuoAoyama. First, late in 2005 Samuel DiPiazza, head of the international firm, visited Japan to meet with regulators, ChuoAoyama executives, and management of important Japanese clients, largely to assure them of PwC's ability and commitment to correct the problems at ChuoAoyama. Second, early in 2006, PwC sent high-level audit personnel from the U.S. and U.K. to take corrective action at ChuoAoyama, including retraining its staff. In addition to making operational and training improvements at ChuoAoyama, PwC raised the possibility of forming a new, smaller audit firm that would operate independently of ChuoAoyama. Four of the firm's Japanese staff, all former Aoyama people, were put forward as candidates to head the new firm. This idea was resisted by ChuoAoyama's Japanese management, who felt that they could correct the problems without intervention from PwC and without the formation of a new firm.

⁶ ChuoAoyama was formed in April 2000 from a merger between Chuo Audit Corp. (the Coopers & Lybrand affiliate) and Aoyama (the Price Waterhouse affiliate). Chuo was responsible for all of these audit failures. At the time of the merger, Chuo (which contributed 310 partners to the merged firm) was much larger than Aoyama (which contributed 37).

Soon after these events, the Kanebo executives went on trial. Part of the trial included testimony from the accused ChuoAoyama auditors, who admitted their complicity in the fraud. This came as a surprise to other ChuoAoyama executives who had believed that the auditors were innocent of the charges. In late March 2006 the former ChuoAoyama auditors themselves went on trial, pleading guilty to the charges. These events made it more difficult for the leadership of ChuoAoyama to argue that their proposed reforms were sufficient, and PwC decided to proceed with its “two firm strategy” under which it would form a new firm (PwC Aarata; hereafter Aarata) and rename ChuoAoyama as Misuzu Audit Corp. When PwC announced this strategy (in May 2006) it indicated that the new firm would handle work related to the audits of PwC’s international clients in Japan in return for having Japanese companies’ international operations audited by PwC. Most of the former firm’s clients and staff went to Misuzu, which was essentially a rebranded ChuoAoyama while a small group of prominent clients, which were arguably those of most strategic importance to PwC internationally (Sony and Toyota are two prominent examples), went to Aarata.⁷

Soon after these events, on May 9, 2006, the FSA announced its decision to suspend ChuoAoyama’s operations for two months, beginning July 1, 2006. Although there were some exceptions to the suspension (such as for firms with July and August year-ends, which are atypical), the rule effectively forced ChuoAoyama to suspend its audit business for two months. Our analysis indicates that most of ChuoAoyama’s clients took one of three actions as a result of the suspension. First, some firms appointed an

⁷ We provide evidence below that most former Aoyama clients still audited by ChuoAoyama in F2006 went to Aarata but only a small fraction of former Chuo clients went to this firm. This is consistent with the suggestion that Aarata was essentially a reconstituted version of Aoyama, the original Price Waterhouse affiliate.

interim auditor for the period of the suspension, and then returned to ChuoAoyama when it resumed business as Misuzu on September 1. Second, other firms returned to ChuoAoyama after the suspension without appointing an interim auditor. Third, some firms chose a different auditor after the suspension was announced and did not return to ChuoAoyama, including around 50 firms that switched to Aarata, the new PwC affiliate.⁸

During the next several months, in the fall of 2006, two additional accounting frauds—at Nikko Cordial, the third largest securities firm in Japan, and Sanyo Electric—came to light. ChuoAoyama had audited both companies at the time of these frauds. As a result of these announcements and to preempt further regulatory action, PwC announced in early 2007 that Misuzu no longer complied with its quality standards, and that the firm was to be wound down, with all staff and clients transferred to affiliates of other audit firms after fiscal 2006 audits were completed in the spring of 2007.⁹ This left Japan with three major audit firms, as well as Aarata.

2.2 Previous literature and empirical predictions

Previous literature provides two types of evidence to assess the importance of auditor reputation. Both lines of research rely on the premise that, if reputation is important in the audit market, observable declines in audit firm quality will lead to reductions in the demand for its services and to adverse consequences for its clients.

⁸ In addition, some firms dropped ChuoAoyama in the months before the suspension was announced.

⁹ There is some ambiguity about who initiated the closure of Misuzu. Some articles, including those that cite Samuel Di Piazza, then CEO of PwC, characterize this as a decision taken by PwC internationally (*Financial Times*, February 20, 2007, “PwC to axe scandal-hit affiliate in Japan”). Others have told us that the decision was made by the local (Japanese) management of Misuzu, who wanted to preempt its loss of clients as a result of the cumulative effect of the accounting scandals (see “Former ChuoAoyama forced to call it quits,” *Asahi Shimbun*, February 21, 2007; “Auditor Misuzu jettisons CPAs, corporate work,” *Japan Times*, February 21, 2007). This was partly to avoid the firm “losing face” by having to close involuntarily and lay off staff. Thus, soon after the two new frauds came to light, the firm cooperated with other audit firms, including Tohmatsu, ShinNihon, and AZSA (the remaining Big Four firms), to place its audit personnel and their associated clients with those other firms, thus winding up Misuzu. There is little doubt, however, about the basic cause and effect—the revelation of the accounting frauds at Nikko Cordial and Sanyo quickly resulted in the demise of Misuzu.

One line of research examines auditor switching around the time of events that signal changes in audit quality for a given audit firm. Lennox (1999) analyzes the relation between audit firm size and auditor turnover among client firms using U.K. data from 1987-1994. Consistent with the liability argument, Lennox finds that larger auditors are more likely to be sued but that publicity surrounding audit failures does not lead clients to drop incumbent auditors, as would be expected under the reputation argument.

Other evidence from this literature is similarly inconclusive regarding the link between changes in audit quality and audit switches. Johnson and Lys (1990) examine “voluntary” auditor changes (those initiated by the client) and attribute these largely to changes in the business and financing characteristics of client firms. Johnson and Lys do not find evidence of significant stock price changes at the time of the auditor changes. Shu (2000) looks at auditor resignations and finds, consistent with the litigation argument, that changes are due to increases in client litigation risk as well as to changes in audit firm characteristics. Also consistent with the litigation argument, she finds that client firms tend to move to smaller audit firms after a large auditor resigns, and that there is a significant negative stock price reaction to these events.

Barton (2005) examines auditor switches after market participants learned about the scope of Andersen’s audit failure at Enron. However, the events at Enron and the associated demise of Andersen occur over a short period of time, making it difficult to decide whether the auditor switches are attributable to reputation or were forced by the Andersen closure. (Barton finds that 95% of switches away from Andersen occur after it was indicted in March 2002.)

Landsman et al. (2009) look at the realignment of “Big-N” auditors and their clients in the wake of an increased concern among auditors about audit risk following the collapse of Enron, the increased supply of clients after the demise of Andersen, and the enactment of the Sarbanes Oxley Act (2006) and in particular Section 404 that required more intensive auditing of internal controls. Perhaps because of the countervailing effects of these events, the authors do not find clear evidence that client risk and/or misalignment became a more important consideration for auditors after these events.

Overall, there is little consistent evidence from auditor changes consistent with the reputational view that clients switch away from auditors revealed to be of low quality.

A second line of research examines the stock price reaction to events that change market perceptions of audit quality for a given audit firm.¹⁰ Menon and Williams (1994) and Baber et al. (1995) examine the reaction of client firm stock prices to the bankruptcy of Laventhol and Horwath, at the time the seventh largest audit firm in the U.S. These authors argue that the firm’s financial difficulties lowered its audit quality and that this was revealed to the market by the bankruptcy announcement. Both studies report a significant negative reaction to the announcement, consistent with both the insurance and reputational roles for auditors. The negative reaction can also be interpreted as impounding the costs associated with changing auditors.

Chaney and Philipich (2002) examine the stock price reaction for clients of Arthur Andersen when that firm revealed that its personnel had shredded documents related to

¹⁰ This is a basic premise of positive accounting theory. See Watts and Zimmerman (1979, p. 279, note 26): “Share prices are unbiased estimates of the extent to which the auditor monitors management and reduces agency costs...The larger the reduction in agency costs effected by an auditor...the higher the value of the corporation’s shares and bonds and, *ceteris paribus*, the greater the demand for that auditor’s services. If the market observes the auditor failing to monitor management, it will adjust downwards the share prices of all firms who engage this auditor...and this will reduce the demand for his services.”

the Enron audit. These authors also find a significantly negative reaction, which they interpret as attributable to Andersen's loss of reputation, although Nelson et al. (2008) question these results. Cahan et al. (2009) investigate the stock price reaction to Enron-related events for the non-U.S. clients of Andersen and find evidence of significantly negative reactions, which supports the importance of auditor reputation (which suggests the news has implications for non-US clients) but not the litigation insurance argument (which does not). Krishnamurthy et al. (2006) also provide evidence that Andersen clients suffered negative market returns around the time of Enron-related events and tie this to cross-sectional measures of audit quality.

Other methodological problems held aside, a general problem with these studies is their inability to distinguish the insurance and reputational explanations for auditing.¹¹ To address this, Weber et al. (2008) examine an audit failure in Germany, where auditors' legal liability is limited, reducing the viability of the insurance rationale. Consistent with the reputation argument and inconsistent with the insurance argument, they find that the stock prices of KPMG clients declined at the time of events that revealed that KPMG's involvement in an audit failure at ComROAD, a highly visible German technology firm.

We see the events at ChuoAoyama as providing an even more powerful setting for assessing the importance of auditor reputation. First, litigation against auditors, like

¹¹ Shu (2000) finds that auditor resignations generate a negative stock price reaction for client firms, which is generally consistent with the litigation argument but not with the reputation argument. A recent paper by Brown, Shu, and Trompeter (2008) examines the stock price reaction to the news in 2005 that KPMG settled charges brought by the U.S. Department of Justice regarding the firm's involvement in tax shelter arrangements, which the authors argue affected the market's assessment of the viability of KPMG's insurance role but did not affect client perceptions of the firm's audit quality. The authors report results consistent with the importance of the insurance role for auditors in the U.S. The study does not address the importance of audit quality, which is our main research question.

litigation more generally, is virtually non-existent in Japan. This means that auditing does not play an insurance role in the Japanese setting.¹²

Second, the FSA's decision to suspend ChuoAoyama and its subsequent demise was both unexpected and unprecedented in Japan, and so was as significant in Japan as Andersen's failed audit of Enron was in the U.S.

Third, the events at Kanebo and ChuoAoyama unfold over a relatively long period of time, from when the problems at Kanebo first came to light in the spring of 2004 through early 2007 when the decision that Misuzu would cease operations was taken. This allows us to more clearly identify the effects of audit reputation and separate them from the effects of the firm's termination.

Fourth, we have direct evidence that auditor reputation played an important role in these events—PwC intervened quickly and forcefully when it became clear that ChuoAoyama's problems at Kanebo were going to attract the attention of investors and regulators in a significant way. It seems clear that the management of PwC perceived that its international reputation was at stake and was prepared to sacrifice a large part of its Japanese business to preserve its reputation.¹³

¹² This is clearly true for Japanese firms that are not listed outside Japan. It is less likely to hold for firms that are cross-listed in the U.S. and so also subject to U.S. securities laws. Litigation in Japan, including securities litigation, is much less prevalent than in Western countries although this is gradually changing (Ginsburg and Hoetker, 2006). In spite of an increase in litigation rates since around 1990, it is still the case that expected litigation costs are lower in Japan than in the U.S.; West (2001) provides evidence that the number of shareholder derivative lawsuits has increased but that settlements are unusual and that stockholders lose most of these cases.

¹³ Consider the following quote from Samuel DiPiazza, the CEO of PwC during this time period (“Big consultancies should focus more on quality, transparency.” *Czech Business Monthly*, 9/17/2007): “In PwC we’re not perfect, but I think we have sent the message. In Japan we shut that firm down. We gave up a major amount of businesses, but we did it because we felt that the most important [asset] was our quality in that market to be at the highest level. We feel that we have that today: even if it’s smaller, it’s a better quality.” Recent revelations that PwC was also involved in a prominent audit failure at Satyam Computer Services in India have put further strain on the firm’s international reputation (see “Satyam Chief Admits Huge Fraud,” *New York Times*, January 7 2009).

We use two basic empirical approaches to assess the extent to which evidence from these events in Japan supports the importance of auditor reputation. First, we analyze auditor changes during the period over which these events unfolded. If auditor reputation is important, we expect client firms to switch auditors when the incumbents are revealed to be of low quality. In this setting, we examine the extent of client defections before, during, and after the suspension of ChuoAoyama. If auditor reputation is important, clients should switch earlier in this sequence of events.

Because of the Japanese setting, the switching analysis is much richer than that available in previous research. For example, in Japan, partners sign the audit report in their own names as well as that of the firm. This means that we can examine the extent to which client firms follow their audit teams from one audit firm to another, which offers an alternative explanation for switching that is not obviously consistent with improving audit quality.

Finally, we undertake an event study analysis of the stock price reaction to events that led to the FSA's suspension of ChuoAoyama. If reputation is important and we have identified these events correctly, the costs of lower quality auditing should be observable as declines in the stock prices of ChuoAoyama's clients.

3. Empirical Analysis

Our empirical analysis consists of four sections. We first provide details of our sample and descriptive statistics (Section 3.1). Second, we analyze changes in auditor market share (Section 3.2) to see whether evidence from auditor changes is consistent with the auditor quality/reputation argument. Next, in Section 3.3, we analyze the

determinants of ChuoAoyama audit clients' decisions after the FSA suspension was announced. Finally, Section 3.4 presents event study evidence based on these events.

3.1 Sample and Descriptive Statistics

We sample all firms listed on the First and Second Sections of the Tokyo Stock Exchange (TSE) in February 2008, a total of 2,199 firms. To mitigate possible survivor bias, we went back to the beginning of 2004 and added firms that delisted from the TSE during this period, which increases the sample by about 200 firms. We identify the sample firms' external auditors from the audit reports that form part of the regular securities filings for Japanese firms (*yukoshoken hukoksho*) from fiscal 2002 through fiscal 2008.¹⁴ Table 3 provides details of the number of firm/year observations in the panel; there are approximately 2,000 firms available from F2001 through F2007. We obtain sample firms' financial data from *Worldscope*, the *Japan Company Handbook* (all volumes, 2004), the Citibank ADR database, and *Industrial Groupings in Japan* (2001). We provide details of data sources and variable definitions in Appendix B.

Table 1 provides descriptive statistics for all firm/year observations in the panel. Firms in our sample have a mean (median) market capitalization of \$1,598 million (\$254 million) and total assets of \$5,942 million (\$542 million).¹⁵ Leverage (long term debt to total assets) is 0.55 while mean (median) market-to-book is 1.51 (1.10), lower than for the typical U.S. firm. Mean (median) profitability is also generally lower than for U.S. firms: ROA is 2.71% (2.47%) and ROE is 5.06% (5.64%) although the fraction of losses is 15%, lower than for U.S. firms. Variability of earnings also seems low, with average

¹⁴ In Japan most companies have a March 31 fiscal year-end. We use the *Compustat* convention to label firm/years; for example, the fiscal year ended March 31, 2007 will appear as F2006 in our data. Data on the external auditors of Japanese firms are not available from *Worldscope* or other commercially available databases and are hand collected from the Japanese language filings.

¹⁵ *Worldscope* reports these variables in US dollars.

standard deviation of ROA only 2.34% and of ROE only 8.52%. Annual stock returns are about 13% (2%) at the mean (median) while dividend yields are 1% (1%). The relatively low profitability, valuation, and dividends of Japanese firms are consistent with the notion that these firms are typically not run in the interests of stockholders (see Appendix A).

Some of these firms have business and financing links overseas, which likely leads to a demand for higher audit quality (see Section 2). The mean (median) level of foreign ownership in these firms is 8.25% (3.95%), with foreign sales about 11% (0%) of overall sales. One percent of these firms are listed on U.S. securities exchanges, while a total of 7% are listed in the U.S., including on OTC markets.

We report two *keiretsu* variables that measure whether and to what extent these firms are part of the large corporate groups common in Japan (see Appendix A). Both measures come from *Industrial Groupings in Japan* (IGJ, 2001).¹⁶ We define an indicator variable that is set to 1 for companies that are part of corporate groups and 0 otherwise, as well as a *keiretsu* “inclination” variable that measures the extent to which the company is inclined towards the group. This variable ranges from 0 for companies that are not part of a *keiretsu* to 4 for companies with the highest level of inclination (“nucleus” group companies).¹⁷ According to this measure, 34% of our sample firms are linked to main bank/*keiretsu* groups and the average inclination is 0.84.

¹⁶ 2001 is the most recently available edition of this source. Dewenter and Warther (1998) and Kaplan and Minton (1994) also use *Industrial Groupings in Japan* to measure main bank group/*keiretsu* affiliations.

¹⁷ The measured inclination is based on five factors: (i) the characteristics and historical background of the groups and/or the company; (ii) sources and amount of bank loans, (iii) board of directors sent by and/or sent to nucleus and/or other group companies, (iv) the company attitude towards the group, (v) the company connections with other groups and/or non-group companies (see IGJ, 2001).

We have also compared firms audited by ChuoAoyama to those audited by the other Big Four auditors as well as to firms that use non-Big Four (not reported in tables).¹⁸ We make these comparisons for firm/years before F2004 so they predate the Kanebo allegations. As expected, firms audited by ChuoAoyama and the other Big Four firms are substantially larger than firms audited by other auditors but not significantly different from one another. Firms audited by the Big Four are also more profitable (higher ROA and ROE), have higher foreign ownership, are more likely to be listed in the U.S., and have stronger links to corporate groups than firms audited by non-Big Four firms. ChuoAoyama's clients are similar to clients of the other three Big Four firms, which indicates that ChuoAoyama does not audit obviously riskier firms or have clients that otherwise differ in systematic ways from the other Big Four.¹⁹

Table 2 provides evidence on correlations among these variables. Firm size is positively related to leverage (0.35), foreign ownership (0.38), ratio of overseas sales (0.15), number of segments (0.19), U.S. listing (0.37), and *keiretsu* inclination (0.31). Size is negatively related to the variability of ROA (-0.34). Financial leverage is negatively related to ROA (-0.35), foreign ownership (-0.17), and dividend yield (-0.17), and positively related to *keiretsu* affiliation (0.19). Foreign ownership is positively related to profitability (0.18).

¹⁸ Even prior to the demise of Andersen (and the consequent demise of Asahi, its Japanese affiliate), Japan only had the Big Four because KPMG did not have a significant presence. KPMG AZSA was formed in January 2004 through a merger of Asahi and Azsa, which was in turn formed in 2003 from KPMG's Japanese practice. By the time this firm was formed, Asahi (the Andersen affiliate) had disappeared.

¹⁹ The only variable that is significantly different for ChuoAoyama clients versus those of other Big Four firms is the variability of profitability, which is higher for ChuoAoyama clients (measured as the standard deviation of historical ROA and ROE).

3.2 Analysis of Market Share

We report the number of publicly-listed firms audited by Big Four and non-Big Four auditors by year in Panel A of Table 3. The Big Four audit firms in Japan (with their affiliations to the Big Four worldwide) are Asahi (Andersen), AZSA (KPMG), ChuoAoyama/Misuzu/Aarata (PwC), ShinNihon (Ernst & Young), and Tohmatsu (Deloitte).²⁰ We do not have a full year of data for F2007 because our data end with the annual filings of March 31 firms.

The data in Panel A of Table 3 show that, as is the case elsewhere in the world, there is a high degree of audit market concentration in Japan. The Big Four audited 81.2% (by number) of sample firms in F2001, a fraction that stays largely the same through F2007.²¹ Market concentration is larger when weighted by the size of client firms. The Big Four audit 93.6% of these firms by value in F2001 and 92.1% by value in F2007 even though only three Big Four firms remain in F2007, as we discuss below.

For each of the Big Four affiliates, Panel B of Table 3 provides a breakdown of market share by number of client firms while Panel C of Table 3 provides market share based on the size (market capitalization) of client firms. Panel B shows that in F2001 and F2002 four firms dominate the market—Asahi (16-17% of the total market), ChuoAoyama and Tohmatsu (each with 20-21%), and ShinNihon (24%). There is a shift in F2003, during which Asahi combined with Azsa to form AZSA, which essentially replaces Asahi (Andersen) in the Big Four. The numbers for F2004 are similar.

²⁰ We refer to this set as the Big Four because at any given time there have only ever been four of these firms having a significant presence in Japan.

²¹ These numbers are consistent with those reported in previous studies of the Japanese audit market. Pong and Kita (2006) report that Asahi, ChuoAoyama, ShinNihon, and Tohmatsu together audited 85% of firms (by sales) on the First Section of the TSE in 2000. Suzuki (1999) indicates that the largest five firms at the time of his study were Asahi, Century, Chuo, ShowaOta, and Tohmatsu. ShowaOta and Century merged (in 2000) to form Century Ota Showa which then merged with other firms in 2004 to form ShinNihon. Taylor (1997) reports that these same five firms plus Aoyama had 78% of the audit market in 1994.

The problems at Kanebo (and hence ChuoAoyama) first came to light in 2004, when Kanebo announced an internal investigation due to suspicion of fraud (April 2004) and dropped ChuoAoyama as its auditor (July 2004). The problems became more serious in the middle of 2005, when executives from Kanebo and auditors from ChuoAoyama were arrested and ChuoAoyama's offices were searched by Government prosecutors (see Figure 1 for details of the chronology). This means that any switching away from ChuoAoyama could have begun in F2005 (fiscal year ended March 2006). However, since auditor changes can only be made and voted on at the annual meeting each year, and these meetings are typically held in late June for March year-ends, it seems unlikely that switching would occur in F2005. Consistent with this, the number of ChuoAoyama clients stays essentially unchanged in F2005.

The market share numbers for F2006 more likely reflect the reputational effects of the events at ChuoAoyama. The suspension of ChuoAoyama was announced by the FSA in May 2006. This means that companies had time to decide on whether to switch auditors for the F2006 year before their annual stockholder meetings in June of that year. In F2006 Misuzu (the rebranded ChuoAoyama) had 303 clients and Aarata had 52. The combined total is 114 less than the number audited by ChuoAoyama in F2005, implying that a significant number of firms moved away from ChuoAoyama as these events unfolded. The other Big Four firms were the primary beneficiaries—from F2005 to F2006 AZSA gained 33 clients, ShinNihon gained 41 clients, and Tohmatsu gained 19 clients, with non-Big Four firms gaining 11 clients. Given the lead time necessary to complete an audit, and the fact that the decision to wind down Misuzu was not taken until February 2007, it seems reasonable to interpret the F2006 audit changes as a response to

concerns about audit quality rather than being forced by the termination of Misuzu (which continued to operate until July 2007 to finalize F2006 audits).²²

The F2006 to F2007 audit changes away from Misuzu are likely forced by its closure and so hard to interpret as reflecting reputational concerns. The closure was announced in late February 2007, allowing firms time to react by June to have a new auditor in place for F2007. Thus, we see that all but a few of the 303 Misuzu clients in F2006 had left the firm by F2007.²³

To summarize, these data show that ChuoAoyama's set of publicly-listed audit clients was essentially unchanged in F2005 but declined significantly in F2006 and even more drastically in F2007. We attribute the movement away from ChuoAoyama in F2006 as being due to concerns about audit quality, supporting the importance of reputation effects in auditing. The more drastic decline in F2007 is due to the fact that the firm was wound up following completion of audits for that year.

By F2007, when the audit changes forced by the termination of Misuzu had largely occurred, the market share attributable to the remaining Big Four firms (the Big Three plus Aarata) was 81.3% (by number, see Panel B of Table 3), only marginally below the peak for the full sample period of 83.8% in F2005. If we exclude Aarata, this

²² During F2006 many firms that used Misuzu as their auditor also listed an interim auditor for the year (i.e., they had dual auditors). This supports our interpretation that the 303 firms that remained with Misuzu for F2006 intended to stay with the firm in spite of the decline in that firm's perceived audit quality. Our understanding is that Japanese companies must have an external auditor under contract on a continuous basis, so those firms that wished to stay with Misuzu hired an additional "temporary" auditor for the period of the suspension. The use of such interim auditors is analyzed further below.

²³ Twelve client firms remain with Misuzu in F2007. Presumably, these are firms with fiscal years that end after March 31 for which the F2007 year-end concludes in calendar 2007 so that Misuzu could complete the F2007 audit before it shut its doors on July 31 of that year. In addition, it is not clear from the table where the 303 Misuzu clients in F2006 went in F2007 (the numbers in the other columns do not increase by a number close to the decrease in the number of Misuzu clients). Because of data requirements (in particular the requirement that we have market capitalization data) we lose a significant number of observations from F2006 to F2007. When we reproduce the table without this requirement we find that many of the clients that leave Misuzu in F2006 wind up with other auditors in F2007. These numbers are available upon request.

fraction falls only slightly, to 78.6%, meaning that the Big Three now dominate Japan's audit market, with one firm (ShinNihon, with 31.6%) having the largest share. As before, if we look at the size-weighted shares reported in Panel C of Table 3, concentration is even more pronounced, with 92.1% of total TSE market capitalization audited by the Big Three + Aarata, only slightly below the peak of 95.3%, and 83.6% audited by the Big Three alone (the dominant firm is now KPMG AZSA, which audits 31.0% of total capitalization).

Whether this high level of audit market concentration is problematic is unclear. However, to the extent we can generalize beyond Japan, this result implies that a failure of another of the Big Four auditors would see further market concentration, perhaps because audit firms outside this group do not have the scale, expertise, or quality required to be effective substitutes for the Big Four.²⁴

To provide evidence on how client turnover at ChuoAoyama/Misuzu for F2006 compares to normal auditor turnover rates, Panel D of Table 3 reports audit turnover for the entire panel (the numbers start in F2002 because these are changes). In all six years of the sample period audit turnover for the Big Four in Japan is low, ranging from 0.6% in F2004 to 2.5% in F2003 with most years around 1%.²⁵ The rate of turnover is higher for non-Big Four auditors, at around 8% for F2002, F2004 and F2005, and 10% for F2006 and F2007. The numbers for ChuoAoyama for F2002 to F2005 are comparable to those for other Big Four auditors, at around 1%-2%. However, there is a very substantial increase, to 23.7%, in F2006, consistent with the numbers in Panels B and C. This

²⁴ If anything, given some Japanese companies' preference for local (Japanese) auditors, we believe the numbers for Japan understate the tendency for concentration among the remaining Big Four firms relative to what might occur in western economies.

²⁵ This rate seems lower than that for auditors in the U.S. Based on numbers reported in Landsman et al. (2009), the rate for U.S. firms over 1993-2001 is 4.5%.

number is unusually large relative to Japanese norms, consistent with a strong move away from ChuoAoyama as its problems became more evident. Turnover for ChuoAoyama/Misuzu in F2007 is much higher again, at 91.9%, but this is due to the winding up of the firm.

To test whether the auditor changes away from ChuoAoyama during F2006 are unusually frequent, we estimate a logit model of factors that explain auditor changes for our panel. The control variables are drawn from previous research on auditor changes (DeFond, 1992; Francis and Wilson, 1988; Weber et al., 2008); we explain auditor changes as a function of firm size (log of total assets), growth (percentage change in total assets), leverage, change in leverage, profitability (ROA), a loss dummy, U.S. listing, *keiretsu* inclination, and include industry fixed effects. We include dummy variables for whether the client switches away from ChuoAoyama in F2006 as well as for whether the client switches away from ChuoAoyama before F2006.²⁶ The former variable is the variable of primary interest because it measures the extent to which client firms switch away from ChuoAoyama in F2006, when we argue that auditor reputation is most likely to play a role in switching. Because the conventional logit coefficients on interaction variables do not provide a statistical test of whether the economic interaction of interest is statistically significant (Ai and Norton, 2003; Norton, Wang, and Ai, 2004; Greene, 2009) we provide the estimated mean marginal effect for this variable along with the corresponding Z-statistic at the bottom of the table.²⁷

²⁶ We exclude the changes away from ChuoAoyama/Misuzu after F2006 because these switches are likely forced by the decision to shut down Misuzu.

²⁷ We also examined, but do not report, the graphical analyses suggested by these authors that plots the estimated interaction effects for various levels of the predicted probabilities. The interaction effect for our variable of interest, CA*F2006 dummy, is positive and statistically significant for all relevant levels of the predicted probability (y variable). These graphs are available upon request.

We report the results of the auditor change logit regressions in Table 4. In the first estimation a change from ChuoAoyama to Aarata is not classified as a change while in the second estimation these observations are treated as changes.

Consistent with our prediction, the results indicate that the likelihood of an auditor change is higher in F2006 when ChuoAoyama was the incumbent auditor. For the first specification, the mean marginal effect on this variable is 0.23 with an associated Z-statistic of 7.22 (see Norton et al., 2004, for details). This implies, other variables held constant, that a client of ChuoAoyama is 23% more likely to switch auditors in F2006, an effect that we attribute to reputation loss. The associated main effects show that client firms are, in general, less likely to switch away from ChuoAoyama than other audit firms (marginal effect -.01) while client firms are generally more likely to switch in F2006 (marginal effect of .01). These effects are, however, smaller and less significant than that for the interaction variable, which is of primary interest. The results for the control variables show that firms are more likely to change auditors when they are smaller, less profitable, and listed on a U.S. exchange.

The results for this interaction variable are even stronger for the second specification in Table 4 (which treats moves to Aarata as auditor changes), with a mean marginal effect on the interaction term of 0.33 and an associated z-statistic of 9.17. This indicates that clients of ChuoAoyama were one-third more likely to switch in F2006 than those of other auditors/fiscal years. The (McFadden) pseudo R-squared increases from .119 to .179 in the second specification. Coefficients and significance levels for the control variables in this specification are largely consistent with those for the first specification. These results support the notion that there was an unusually high

likelihood of switching away from ChuoAoyama/Misuzu during F2006, when doubts about the quality of that firm's audit practice manifested themselves in a significant way.

These results are stronger than those reported in previous research. For example, Weber et al. (2008, Table 6) report a similar regression for the German ComROAD case but report substantially smaller coefficients and a pseudo R-squared of only 3.7%. We attribute this difference to relatively stronger reputation effects in Japan and/or the greater relative importance of the events surrounding ChuoAoyama.

3.3 Determinants of auditor outcome for former ChuoAoyama clients

To provide further evidence on the auditor quality/reputation hypothesis, we next examine the auditor changes in more detail. Specifically, we classify the 469 publicly-listed ChuoAoyama clients in F2005 (Table 3, Panel B) into groups based on their auditor choices for F2006. We then obtain more detailed evidence on these choices from Japanese securities filings; for example, we obtain actual dates of the auditor changes and so can determine when during F2006 these changes occurred.²⁸ There are three principal groups:

- (1) Firms that did not use an interim auditor during the suspension and reverted to ChuoAoyama (Misuzu) when the suspension was lifted on September 1, 2006 (99 firms).
- (2) Firms that use an interim auditor for the period of the suspension and reverted to ChuoAoyama (Misuzu) when the suspension was lifted (199 firms).
- (3) Firms that appoint a new auditor before the suspension began and continued to use that auditor after the suspension ended (145 firms).

²⁸ We obtain this information from the TSE Timely Disclosure Network (TDnet). The filing document is known as *konin kaikeishi tou no idou* ("Change (transfer) of certified public accountant" in English).

Of the remaining 26 firms, ten announced an audit change prior to the suspension announcement, nine had previously used two auditors and simply dropped ChuoAoyama for the period of the suspension, and seven firms lacked the requisite data.

Based on these groupings, we classify the audit choices of the former ChuoAoyama clients into three principal groups that imply different relative levels of audit quality. First, some firms (in group (1)) return to ChuoAoyama (by this time renamed Misuzu) after the suspension without using an interim auditor. These firms are apparently relatively unconcerned about audit quality. Second, some firms (group (2)) return to ChuoAoyama (Misuzu) after using an interim auditor for the period of the suspension. We view the use of an interim auditor as committing the firm to higher audit quality than the first group of firms. However, of the 199 client firms that use an interim auditor, 173 (87%) use a non-Big Four interim auditor while the remaining 26 (13%) use a Big Four interim auditor, which suggests that the interim audit may not add much rigor. Our results continue to hold if we combine these groups.²⁹

The third category comprises 155 firms that switch to a new auditor for F2006 (the 145 group (3) firms that switch after the suspension was announced and the ten firms that announced a switch before that time). Of this group, 49 (32%) went to Aarata, 88 (57%) went to a different Big Four firm, while the remaining 18 firms (11%) went to a non-Big Four auditor. We view this third group as comprising firms that value audit quality most highly.

²⁹ An article in the *Nihon Keizai Shimbun* newspaper on September 9, 2006, indicated that 274 of ChuoAoyama's publicly listed clients lacked an auditor during the suspension period, primarily because the other major auditors were simply unable to do the work because of capacity constraints.

We view moves to Aarata as changes that enhanced audit quality.³⁰ The firm's makeup is consistent with this interpretation as is the way it was characterized by PwC.³¹ First, its key management and most staff came from Aoyama, which was seen to have higher audit quality than Chuo. Second, its clients came disproportionately from Aoyama. Of the 50 former ChuoAoyama clients that went to Aarata at its inception on July 1, 2006, 14 were previously—prior to the April 2000 merger of Chuo and Aoyama—clients of Aoyama (the Price Waterhouse affiliate), 11 were previously clients of Chuo (the Coopers and Lybrand affiliate), while 18 were previously clients of other firms (there are an additional seven firms for which these data were unavailable). Because Chuo was substantially larger than Aoyama, these numbers show that while the majority of former Aoyama clients still with ChuoAoyama in F2005 ended up at Aarata (14 of 23 firms, or 60.9%) only a small fraction of former Chuo clients with ChuoAoyama in F2005 did so (11 of 307 firms, or 3.6%). Thus, Aarata took a much larger fraction of former Aoyama clients than it did former Chuo clients, consistent with an argument made to us that Aarata was staffed principally by former Aoyama personnel who considered that firm to be of higher quality than Chuo.^{32,33}

³⁰ We have performed our analyses with and without the Aarata firms to ensure our conclusions are robust to this assumption. Results are qualitatively similar; notable differences are discussed in the text.

³¹ In a May 10, 2006 press release PwC announced the formation of a new firm that “will adopt international best practices... will meet high standards of audit quality... (and have a) high level of oversight by PwC.” Consider also the following from an *FT* article that quotes the PwC's CEO at the time, Samuel DiPiazza: “Mr DiPiazza told the Financial Times on Tuesday that Aarata's limited size reflected the availability of staff who met the firm's performance standards. “We would have hoped the Japanese profession evolved to a higher level of quality over the years,” he said. “It did not.” Cultural differences, he added, “cannot be used as an excuse for lower quality.”” (*Financial Times*, February 20, 2007, “PwC to axe scandal-hit affiliate in Japan.”).

³² There are at least three non-mutually exclusive explanations for the way clients were allocated to Aarata: (a) PwC encouraged certain firms to move to Aarata because it wished to maintain the client relationship given the size/visibility of these clients (e.g., Sony, Toyota, non-Japanese multinationals such as Unilever); (b) these firms were originally clients of Aoyama that followed its external audit personnel to ChuoAoyama and then to Aarata, (c) these are other firms for which audit quality is especially important, perhaps because

The evidence to this point supports our interpretation that audit quality was an important determinant of how ChuoAoyama's clients reacted to the revelations related to its failed audit of Kanebo, and especially to the news of the FSA suspension. To investigate this more formally, we fit an ordered logit model of these firms' auditor decisions for F2006. Based on the three groups described above, the dependent variable in this regression is set to 0 for firms that went back to ChuoAoyama (Misuzu) without using an interim auditor, to 1 for firms that went back to ChuoAoyama (Misuzu) after using an interim auditor, and 2 for firms that switched away from ChuoAoyama (Misuzu). We view this as an ordinal ranking of audit quality. We use largely the same set of independent variables as for the previous regressions in Table 4; in both cases these variables are intended to capture cross-sectional variation in the demand for audit quality. In the first estimation we set the dependent variable to 2 for firms that moved to Aarata and in the second estimation we drop these firms.

We report the results of these regressions in Table 5. In the first estimation (which includes the Aarata clients), size (log of total assets) and market-to-book are both positively related to switching (at significance levels of 5% or better) while in the second estimation (which excludes the Aarata clients) size remains significant at the 5% level, market-to-book is significant at the 10% level, while net income becomes negative and significant.³⁴ This says that larger firms and firms with relatively higher market

of their size/visibility or links to overseas (foreign sales, investors, listings, or some combination thereof). These explanations are all consistent with these firms valuing audit quality relatively highly.

³³ Aarata's clients were two to three times larger (based on total assets, sales, or market capitalization) than those of Misuzu and 50%-100% larger than those of other audit firms. They also have higher levels of foreign ownership, overseas sales, and US listings.

³⁴ We have also estimated ordered logit models where the dependent variable is classified as 0 for firms that revert to ChuoAoyama/Misuzu following the suspension, 1 for firms that were audited by Aarata after the suspension, and 2 for firms that switched to a firm other than Aarata (non-PwC). Results are similar to those reported here.

valuations (and/or that are growing more quickly) are more likely to switch away from ChuoAoyama to higher quality auditors. No other variables are significant. Because client firm size and market-to-book are likely to be associated with higher quality, these results offer support for our hypothesis that these changes are explained by differential demands for audit quality. Also consistent with this, Aarata's clients were two to three times larger (based on total assets, sales, or market capitalization) than those that stayed with Misuzu and 50%-100% larger than that moved to other audit firms. They also have higher levels of foreign ownership, overseas sales, and U.S. listings.

Our main argument in favor of the auditor reputation interpretation is that the auditor changes in the first half of calendar 2006 were voluntary and so likely due to a perceived decline in ChuoAoyama's ability to deliver audit quality. An alternative explanation is that audit clients simply followed their audit teams from one audit firm to another. Blouin et al. (2007) provide evidence that a significant number of Arthur Andersen's audit clients followed their audit teams to new audit firms following Andersen's demise in 2002 to minimize switching costs. Given the closeness and longevity typical of relationships between auditors and their clients in Japan, we expect this to be an important phenomenon in Japan as well.³⁵ However, if the goal of changing auditors is to improve audit quality, it seems likely that firms would view a change in the audit team as being necessary.

In Japan, audit reports are signed by audit partners individually rather than in the name of their firms, as is more often true in other countries. This means that we can

³⁵ Kyocera Corporation, a large Japanese electronics company listed in the U.S., was a former Misuzu client. When that firm was wound up, Kyocera asked its audit team to set up a new audit corporation, now known as Kyoto Audit Corporation, to be its auditors rather than having them join a firm affiliated with one of the remaining Big Four.

identify the audit partner(s) responsible for the audits (it is not unusual for audit reports in Japan to be signed by two or three partners). These data thus allow us to directly test whether the auditor changes we document above are cases in which clients follow their auditors, which would cast doubt on the audit quality interpretation.

We report the results of analyzing the auditor signatory data in Table 6. In Panel A, for the set of client firms that switch away from ChuoAoyama between F2005 and F2006 (Table 3, Panel B), including those that went to Misuzu and Aarata, we obtain data on the audit partner(s) who signed these firms' audit reports in F2005 (on behalf of ChuoAoyama) and in F2006 (on behalf of the new firm). We then classify the firm as either having at least one common signatory—which we interpret as implying the same audit team at the new firm—or not.³⁶ The results (in Panel A) show that there was a strong tendency for firms that stayed with PwC (at either Misuzu or Aarata) to have a common signatory, as we expect given that these firms were formed from ChuoAoyama. Of the 50 Aarata clients that came from ChuoAoyama, 38 (76%) had signatories in common; of the 281 Misuzu clients, 239 (85%) had signatories in common. In stark contrast, none of the other audit firms had any signatories in common with the F2005 ChuoAoyama audits. The data thus clearly reject the idea that switches away from ChuoAoyama in F2006 were due to audit clients following their audit teams to new firms. The data also confirm our understanding that firms that went to Aarata generally did so with their audit teams.³⁷

³⁶ In a given year firms typically have one, two, or three auditors who sign the report. Japan has mandatory auditor rotation (of audit partners within firms) so we don't expect these percentages to equal 100% even when there is no turnover.

³⁷ As discussed above, we see this as being consistent with these clients demanding higher audit quality even though audit personnel didn't change because of the higher audit quality of the Aarata personnel relative to those that stayed at ChuoAoyama and PwC's clear commitment to making Aarata of higher quality.

This impression changes dramatically for the F2005 to F2007 auditor changes, also consistent with our interpretation. In Panel B of Table 6 we repeat the analysis for firms with signatory data available for F2005 and F2007. Here we find that there was significant overlap in signatories for all the F2007 audit firm groups—55% for Aarata, 35% for AZSA, 54% for ShinNihon, 29% for Tohmatsu, and 29% for other audit firms collectively. This is consistent with the process we describe above for the winding up of Misuzu under which audit team/client pairings tended to move to new audit firms together. It also reinforces our conclusion that the changes from F2006 to F2007 are different to those from F2005 to F2006.

3.4 Event study analysis

We follow previous studies that analyze the market reaction to events associated with downward changes in the market's beliefs about an auditor's quality and/or ability to survive as a going concern (e.g., Menon and Williams, 1994; Baber et al., 1995; Chaney and Philipich, 2002; Weber et al., 2008). These studies typically attribute a decline in client firm equity values to a decline in the value of the auditor's insurance role, a decline in audit quality, the costs of switching auditors, or some combination of these factors. Because there is no significant litigation risk for auditors in Japan and because switching was not forced at the time of most of the events related to ChuoAoyama's audit of Kanebo, any abnormally negative returns to ChuoAoyama clients at the time of these events are likely due to changes in expectations about audit quality.

Similar to previous research, to address cross-sectional correlation among the contemporaneous daily stock returns of the ChuoAoyama client firms, we form a

portfolio of these firms and estimate an adjusted market model regression model using the time-series of portfolio returns.³⁸ Specifically, we estimate:

$$Return_t = \alpha_0 + \beta_1 Return_{TSE\ INDEX, t} + \theta_k Event_{k,t} + \varepsilon_t \quad (1)$$

$Return_t$ is the return on day t to an equal-weighted portfolio of ChuoAoyama client firms,

$Return_{TSE\ INDEX, t}$ is the return on the TSE Topix index for day t , and

$Event_{k,t}$ is a dummy variable that turns on during the three trading day window centered on each of the nine events, $k = 1 \dots 9$.

We estimate the regression over the period from January 1, 2004 through March 31, 2007, which includes the full set of events.

To identify the events, we search *Factiva* for media articles related to the Kanebo fraud or otherwise discussing ChuoAoyama, Misuzu, or Aarata during the period outlined in Section 2.1. Important events in this sequence are shown in Figure 1, with the nine events used in our event study listed as Appendix C. One concern with this approach is that we do not search Japanese language media documents, which may cover these events more extensively than media sources available in English.³⁹ However, there are three

³⁸ We follow an approach similar to the multivariate regression model (MVRM) used previously in the literature (Schipper and Thompson, 1983; Bernard, 1987). Under this approach, which Schipper and Thompson (ST) refer to as the joint GLS estimator, the time series of individual firms' returns is used to compute return cross-correlations. That is, the portfolio of returns is a weighted average of all the returns, where the weights are calculated based on the inverse of the variance-covariance matrix estimated from firm-by-firm regressions. For this procedure to be effective requires a large number of time-series observations relative to the number of sample firms (e.g., see Bernard, 1987, p. 6). Because we have a relatively large number of firms compared to the number of time-series observations we use a variant of the joint GLS approach also used by ST where we use unweighted averages of the firm level returns, which assumes that the true covariance matrix is a scalar times the identity matrix. When we estimate the Table 7 regression specifications using the joint GLS estimator, the overall return is 0.03% ($t = .90$).

³⁹ It is the case, however, that there are several good English-language news sources in Japan, including the English version of Japanese newspapers such as *Nikkei* (the most prominent source of business news), the *Asahi Shimbun*, and the *Japan Times*.

other studies by Japanese authors that also look at these events.⁴⁰ We compare our set of events to those used by these other authors to ensure we have a complete set of events. One difficulty with conducting an event study using these events is that they unfold over a relatively long period of time, making it difficult to accurately capture those days on which important changes in the market's information set occurred.

We estimate equation (1) for each of the events individually as well as for the combined set of events, and report the results of these regressions in Table 7. The results in Table 7 provide little evidence of any significant effect on most event dates. The coefficients on the event dummies are small and insignificant for eight of the nine events. The only exception is event 8 (when PwC sent auditors from the U.S. and U.K. to address the problems at ChuoAoyama) which shows a statistically significant negative return of -0.88% ($t = -3.56$). When we combine the set of events, the coefficient on the overall event dummy is -0.20% ($t = -2.40$), which is small in economic terms.

If the reputation argument matters more for larger, more prominent firms in Japan, then we might expect the results of the Table 7 to be weakened by including all listed clients. To address this possibility, we also estimate the regressions for those ChuoAoyama clients listed on the First Section of the TSE (the largest, most prominent firms).⁴¹ These results (not reported in tables) are much the same as those we report in Table 7, with an overall return of -0.20% ($t = -2.49$).

⁴⁰ These studies are Numata and Takeda (2009), Sakuma (2009), Takeda and Saito (2009). We became aware of these studies in August 2009 after we had circulated the first draft of our paper. These studies do not overlap very much with our work since their focus is on the event study analysis.

⁴¹ As another robustness check, we have also examined the raw and market-adjusted returns for these firms in short-windows around each of these events as well as for the subset listed on the First Section of the TSE. The market-adjusted returns to some of these events (most notably events 1 and 9) are significantly negative and significantly more negative than those for the non-ChuoAoyama clients. The magnitudes of these abnormal returns and the differences in abnormal returns, however, are quite small. These results are somewhat stronger when we restrict attention to stocks listed on the TSE First Section. Perhaps the

As a further robustness check, we also perform these tests using returns to a portfolio of all non-PwC clients in our sample as the benchmark rather than the market index returns (not reported in tables). There is again little evidence of systematically negative returns, with an overall return of -0.04% ($t = -1.87$). Overall then, there is again at best modest evidence that any of these events is associated with abnormal event performance.

To summarize, the results of the event study provide little evidence that the former clients of ChuoAoyama suffered any material decline in equity value on the event dates that we identify. However, it is difficult to reach very strong conclusions based in this evidence given the relatively long time period over which concerns about ChuoAoyama's low audit quality were revealed. It could also be that these events had negative implications for firms generally in Japan (especially those on the First Section of the TSE) rather than just for the ChuoAoyama clients.⁴²

4. Summary and Conclusions

In the spring of 2006, the Japanese FSA took the unprecedented step of suspending the operations of ChuoAoyama, the PwC affiliate in Japan, for two months as a result of its role in a major accounting fraud at Kanebo. Even before the suspension was announced, PwC had taken its own actions to address the apparent shortcomings of its Japanese unit. First, it brought in high-level personnel from overseas to revamp ChuoAoyama's audit operations in an attempt to improve audit quality. Second, it set up

strongest evidence in favor of an effect is that we observe a negative raw (market-adjusted) return of -3.14% (-0.64%) for First Section ChuoAoyama clients when the FSA suspension is announced (event 9) although the corresponding returns for non-ChuoAoyama clients are also negative, at -2.59% (-0.10%). Although statistically significant, differences between these amounts seem small in economic magnitude.

⁴² If this is the case, by market-adjusting the returns we are removing the effect of interest. For First Section TSE stocks the raw returns for the ChuoAoyama clients on the suspension announcement date are -3.14% while those for other TSE stocks (the rest of the set of stocks including in the market index) are -2.59% which is some evidence in favor of this possibility.

a new, smaller Japanese affiliate (PwC Aarata), which it held out as a “high quality” audit firm. PwC used this firm to audit important Japanese clients (such as Sony and Toyota) as well as the Japanese operations of large multinational clients (such as Unilever). Third, when, after the suspension was lifted and ChuoAoyama resumed business as Misuzu, additional fraud cases came to light, PwC quickly shut down Misuzu’s operations, ceding a large part of its Japanese business to competitors. These actions make it clear that PwC viewed the audit quality issues at ChuoAoyama as potentially damaging to its international reputation, and supports our view that an auditor’s reputation for quality is of first order importance.

We use these events to provide evidence on the importance of an auditor’s reputation for quality. Previous studies using U.S. data have trouble gauging the relative importance of the two principal factors hypothesized to drive audit quality: (i) an auditor’s market-driven incentive to maintain a reputation for delivering quality audits, and (ii) the possibility that auditors are subject to potentially large (even “catastrophic”) legal liability for defective audits. Because litigation concerns are negligible in Japan, the litigation argument can effectively be ruled out. Consequently, we focus on whether the events around the Kanebo scandal in Japan support the importance of auditor reputation.

Our results are largely consistent with the importance of audit quality. We find evidence that a large number of ChuoAoyama’s clients left the firm for other auditors as the seriousness of ChuoAoyama’s quality problems came to light. We show that the rate of auditor turnover at ChuoAoyama in F2006, before it became apparent that the firm would be shut down but after questions about its quality had been raised, was

substantially higher than would otherwise be expected, consistent with clients leaving once the firm's reputation for quality was seriously diminished. Moreover, we find that the likelihood of switching is higher for large firms with higher market-to-book ratios, characteristics associated with a demand for higher audit quality (similarly, firms that moved to Aarata were larger, with higher market-to-book ratios, a greater extent of cross-listing, higher foreign ownership, etc.). These switches cannot be explained by audit clients' tendency to follow their audit teams to new auditors. Our event study results weakly support the auditor quality argument but these tests are likely to lack power due to the long period over which questions about ChuoAoyama's audit quality were revealed.

These events also have implications for the recent debate on how the audit market might evolve if one of the remaining Big Four was wiped out, perhaps by a catastrophic event similar to that which befell Andersen. This is essentially what happened to PwC in Japan where its business was principally divided among the remaining Big Three, which raises questions about whether lower tier audit firms are viable substitutes for the Big Four around the world.

Appendix A. External auditing in Japan

Over the last ten years there have been significant changes in Japanese auditing practice that reflect wider changes in Japan's overall financial system and corporate governance. During the 1990s, following several decades of prosperity, the Japanese economy became mired in a sustained economic slump, known as the lost decade. Many commentators blamed this slump on Japan's unusual financial system.⁴³ This view led to significant reforms in the Japanese financial system, including changes that affect external auditing. We provide a brief background of how Japanese auditing has evolved because the institutional context is important to our study.

Since the Second World War, much economic activity in Japan has been organized through large corporate groups, known generally as *keiretsu*. There are two principal types of *keiretsu*, one organized horizontally around the main banks (also known as "main bank" groups) and the other organized vertically as subcontractors or suppliers associated with a large core firm (such as those organized around the large Japanese automakers). The major source of corporate finance during this period was bank debt, which gave banks a large role in corporate governance. Banks, along with the other group companies within *keiretsu*, typically held substantial equity stakes in other group companies, which meant there were large cross-holdings of shares. Boards of directors of group companies include managers of affiliated companies, bank representatives, and company executives. The close-knit nature of the inter-company relationships within these groups as well as the banks' access to private information from

⁴³ For example, see Fukao (2003), Hoshi and Kashyap (2001).

group companies effectively substituted for market-based discipline, reducing the demand for high quality external auditing.⁴⁴

The nature of corporate governance in Japan also helps explain why the traditional Japanese audit model differs from that in western economies. In western economies, the goal of corporate governance is to ensure that management focuses on maximizing stockholder value, and external auditors support this process by providing independent verification of the representations made by management in the financial statements. In Japan, auditors traditionally cooperate with management to help it achieve its goals, which are often more about serving the interests of stakeholders generally—such as employees, suppliers, and creditors, especially banks—than about maximizing shareholder value.⁴⁵ The audit culture was one of accepting management judgments about the *status quo* rather than forming an independent assessment of the reliability of financial reporting.

Pong and Kita (2006) and Suzuki (1999) provide evidence that companies in a corporate group, including banks, tend to share a common auditor. This structure is efficient given the close-knit corporate relationships within *keiretsu*, but likely compromises auditor independence, especially given the long-term nature of these relationships.

During the 1990s, ongoing economic problems in Japan raised questions about whether its unusual financial system had outlived its usefulness. In 1996 the Japanese Government announced a large slate of financial reforms known collectively as the Big

⁴⁴ See Hoshi and Kashyap (2001, Ch. 6) or Suzuki (1999) for a discussion of how the *keiretsu* system addresses adverse selection and moral hazard problems in external financing. Aoki et al. (1994) provide an overview of the main bank system in Japan. More details on the evolution of corporate governance and financing in Japan are provided by Hoshi and Kashyap (2001).

⁴⁵ For discussions of Japanese corporate governance, see Aoki (2007), Milhaupt (2006), and Patrick (2004).

Bang. Part of these reforms involved improving the transparency of financial reporting in the wake of a series of spectacular corporate failures, which were often tied to fraudulent accounting.⁴⁶

As a result of the Big Bang, the past decade has seen a number of important changes in Japanese financial reporting. Prior to 2001, accounting rules in Japan were set by the Business Accounting Deliberation Council (BADC), a committee of the Ministry of Finance (MOF). Japanese accounting rules were heavily influenced by the Government, and were substantially different to those in the U.S., U.K., and other western countries. Benston et al. (2006) indicate that the main aims of Japanese accounting were stewardship, creditor protection, and the satisfaction of tax requirements.⁴⁷ There was no dedicated securities regulator akin to the U.S. SEC; instead, many functions were served by the Ministry of Finance (MOF), which had as its overarching goal the promotion of business interests as opposed to the enforcement of securities laws. This contributed to a perception that Japanese accounting was of low quality.

In 2001, the Accounting Standards Board of Japan (ASBJ) was set up as an independent standard setter, similar to the U.S. FASB. In 2003, the CPA Law in Japan was amended, and made a number of significant changes to audit practice, including

⁴⁶ Fukao (2003) argues that one of the main factors between the Japanese financial crisis in late 1997 was lost confidence in the accounting and auditing system in Japan. He discusses the case of Hokkaido Takushoku Bank which collapsed in November 1997 in spite of financial statements that showed 0.3 trillion yen in book value, subsequently restated to negative 1.2 trillion yen. Similarly, Yamaichi Securities was apparently hiding 260 billion yen in securities losses when it collapsed at about the same time. See also Hoshi and Kashyap (2001) for more details about the Big Bang in Japan.

⁴⁷ Japanese accounting rules are rooted in a “triangular” legal system, comprised of the Commercial Code, the Securities and Exchange Law, and the Corporate Income Tax Law. There was no going concern concept in Japanese accounting until 2002, and no principle that accounting should follow substance over form. Instead, accounting rules were interpreted very literally, so that accounting practices were deemed acceptable unless specifically inconsistent with the law, which arguably led to a culture in which ‘window dressing’ was common practice.

restrictions on the provision of non-audit services, mandatory auditor rotation (within the audit firm), reforming the CPA exam, changes in the legal procedures for organizing and operating an audit corporation, and strengthening auditor oversight. Some of these changes mirrored reforms introduced in the U.S. as part of the Sarbanes-Oxley reforms. The CPA and Audit Oversight Board (CPAFOB) was set up in Japan to monitor the audit profession, similar to the Public Company Accounting Oversight Board (PCAOB) in the U.S. In 2002 a new set of auditing standards was issued. The objective of these new standards was to bring Japanese auditing standards into line with international standards as well as to address changes in the Japanese corporate and audit environment (JICPA, 2004).

In short, a series of reforms were instituted in the early 2000s that were intended to transform the Japanese audit profession from its traditional role supportive of management to a monitoring function more similar to those of western countries. However, while much was done to change the laws and procedures that governed the audit profession, it is unclear how quickly actual audit practice changed, especially given the longstanding relationships between auditors and their clients typical in Japan. For example, in many Japanese companies external auditors still report to the board of statutory auditors, who in turn are subject to influence by management.⁴⁸

⁴⁸ Two types of auditors are required under Japanese law (the Commercial Code and Securities Exchange Law). The first are known as statutory auditors (*kansayaku*) and are internal to the company. The statutory auditors (which may be an individual or a committee) sit on a board separate from the board of directors and have technical responsibility for approving the financial statements for presentation to the stockholders at the annual meeting. In some ways, this group serves a role similar to that of the audit committee of the board of directors in the U.S. with the important difference that they are company employees. The external auditors (*kaikai-kansinin*) play a similar role to that of external auditors elsewhere in the world. External auditors were first required in Japan under the Securities and Exchange Law (1949). For more detail, see Someya (1996, Ch. 3) or Matsumoto (1999).

To provide some evidence on how the quality of auditing in Japan differs from that in the U.S., we examined comparative audit fee data for Japan and the U.S.⁴⁹ The data (not reported in tables) cover around 4,000 listed companies in each country and are drawn from 2006 and 2007. These data show that audit fees in Japan are only a fraction of those in the U.S. For these samples, the average U.S. firm paid just over \$2 million in fees in 2007, compared to an average of only \$285,000 for Japanese firms. The large differences remain when deflated by sales: the average U.S. firm paid audit fees of 1.11% of sales whereas the average Japanese firm paid audit fees of only 0.17% of sales.⁵⁰

Conversely, these data also show that Japanese firms cross-listed in the U.S. have audit fees roughly comparable to those of U.S. firms. For 42 Japanese firms cross-listed in the U.S., average audit fees are \$10.8 million, which is slightly larger than the average audit fees paid by the group of the largest U.S. firms of \$7.7 million. This is consistent with the idea that Japanese firms that list on U.S. exchanges are prepared to incur the associated costs (including higher quality external audits) because there are net benefits to doing so.⁵¹ The evidence is consistent with Seetharaman et al. (2002), who find that U.K. auditors charge more when their clients access U.S. but not non-U.S. capital markets.

⁴⁹ These data are from *Jōjō Kigyō Kansajin; Kansa Hōshū Hakusho*, 2008 and 2009 (Listed Company Auditor; White Paper on Audit Fees, 2008 and 2009 editions) published by Seibunsha, Tokyo.

⁵⁰ To provide assurance that these results are not due to size differences, we also compared audit fees for five firm size categories. The numbers continue to show that audit fees in Japan are much lower than those in the U.S. For example, we find that, for firms with sales of less than \$100m, U.S. firms pay average audit fees of \$318 thousand (3.0% of sales) vs. \$151 thousand (0.5% of sales) for Japanese firms. At the other end of the scale, U.S. firms pay fees of \$7,726,000 (0.07%) versus \$842,000 (0.01%) for Japanese firms. Thus, the differences remain large across all size categories.

⁵¹ Doidge et al. (2004) show that there is a valuation premium (measured using Tobin's q ratios) for foreign firms listed in the U.S. compared to companies from the same country that are not U.S.-listed. For Japanese firms they report a premium of 20% (with an associated t-statistic of 2.97). They argue that this premium results from the better governance associated with U.S. listing and show that the result is stronger for firms from countries with weaker governance.

Overall, the data show clearly that, at least based on fees, auditing in Japan is still different to auditing in the U.S. It is well-accepted that audit fees increase with audit quality.⁵² The auditing literature associates quality with a “Big-N” audit firm premium as well as with auditor specialization by industry, and generally finds that audit fees are positively related to these variables, even after controlling for client firm size, and generally associates these variables with audit quality (DeAngelo, 1981; Craswell et al., 1995). Consequently, the data support the notion that auditing in Japan is generally of lower quality than that in the U.S.⁵³

Prior literature also supports the general notion that audit quality varies across countries based on the underlying legal system. Cahan et al. (2009) provide evidence that there was a negative stock price reaction for non-U.S. clients of Arthur Andersen at the time of two events related to that firm’s audit failure at Enron, and that this effect is more pronounced for clients in common law countries than in code law countries, consistent with the view that audit quality matters more in common law countries. Because Japan is a code law country, this idea is consistent with our characterization of the Japanese system as being less reliant on the quality of external auditing than the U.S. system.⁵⁴

In this context, the events at ChuoAoyama and particularly the decision by the FSA to suspend ChuoAoyama’s operations can be seen as a watershed event in Japanese

⁵² See Craswell et al. (1995) and the papers cited therein. Craswell et al. provide evidence that auditors that invest in brand names and that have greater industry expertise charge higher audit fees because of the higher quality that they deliver.

⁵³ A related interpretation is that the higher audit fees in the U.S. reflect in part the litigation-driven insurance role of auditors in the U.S. However, it seems unlikely that this could explain the entire difference. Moreover, the insurance role is likely to provide additional incentives for auditors to deliver quality.

⁵⁴ This is generally consistent with the view from, for example, Ball et al. (2000) that in common law countries ownership is more dispersed so that agency problems are more severe. Francis et al (2003) find that in common law countries relatively more is spent on auditing and that the market share of the Big Five firms is larger, consistent with an equilibrium in which audit quality is higher in common law countries. The unusual nature of the Japanese economic system helps explain why the quality of external auditing has traditionally been lower in Japan than in western countries.

audit practice. The FSA used these events to send a message to the Japanese auditing community that the old ways of doing business would no longer be tolerated, and that it was serious about reforming audit practice.

Appendix B: Variable definitions

The table provides definitions and data source for all the variables used in the subsequent tests.

Variable Name	Definition	Source
Market cap	Market value of equity in USD Millions	Worldscope
Sales	Total sales in USD Millions	Worldscope
Total Assets	Total assets in USD Millions	Worldscope
Ln (Assets)	Natural log of Total assets	Worldscope
Market to Book	Market value of equity/book value of equity	Worldscope
Leverage	Long term debt divided by total assets	Worldscope
Net Income	Net income in USD Million	Worldscope
ROA	Net Income divided by total assets	Worldscope
ROE	Net Income divided by book value of equity	Worldscope
Loss	Indicator variable that takes the value 1 if Net income is less than zero and 0 otherwise	
Annual returns	Fiscal year stock returns	Datastream
Dividend yield	Dividend per share divided by share price at the end of the fiscal year	
Foreign ownership	Percent ownership of the firm's equity by foreign entities	Japan Company Handbook, All volumes, 2004
Overseas sales ratio	Ratio of sales outside Japan to total sales expressed in percentage	Japan Company Handbook, All volumes, 2004
Number of segments	Number of distinct divisions for which share of total sales are reported.	Japan Company Handbook, All volumes, 2004
Firm Age	Age since the firm was founded.	Japan Company Handbook, All volumes, 2004
US Exchange Listing	Listing on NYSE, Nasdaq and American Stock Exchange	Citibank ADR database
US Any Listing	All US listings including through stock exchange, portal and the OTC.	Citibank ADR database

Variable Name	Definition	Source
Std Dev ROA	Standard deviation of ROA between 1990 - 2005 subject to a minimum of 9 years of data being available. For firms with less than 9 years of available data the measure is not computed.	Worldscope
Std Dev ROE	Standard deviation of ROE between 1990 - 2005 subject to a minimum of 9 years of data being available. For firms with less than 9 years of available data the measure is not computed.	Worldscope
Industry	Industry affiliation of the company	Datastream
TSE index	The Tokyo Stock Price Index (TOPIX) is a composite index of all common stocks listed on the first section of the Tokyo Stock Exchange.	Datastream
Keiretsu	Indicator variable that takes the value 1 if the firm is identified as part of a keiretsu; 0 otherwise. The information is as of 2000.	Industrial Groupings in Japan, 14 th ed., 2001. Brown & Company Ltd
Keiretsu inclination	Keiretsu inclination measures the closeness to the keiretsu - higher number indicates closer inclination to group. There are two types of Keiretsu, horizontal (also known as 'main bank groups') and vertical. The data are from Part III of the book for the horizontal groups and from Part II of the book for the vertical groups. This information is as of 2000.	Industrial Groupings in Japan, 14 th ed., 2001. Brown & Company Ltd

Appendix C: Significant events in the Kanebo/ChuoAoyama scandal, including events used in event study analysis.

	Date	Event
Event 1	10/28/2004	Kanebo reports that the preliminary internal investigation has found fraud. Investigation continues.
	3/31/2005	End of Fiscal 2004
Event 2	4/13/2005	Results of fraud investigation announced by Kanebo. Will restate last five years of financial statements
Event 3	7/29/2005	Two former Kanebo executives are arrested. CA offices are searched.
Event 4	8/18/2005	Indictments brought against Chuo Aoyama auditors
Event 5	9/13/2005	Three auditors from CA who audited Kanebo are arrested
Event 6	9/19/2005	Top executives from CA are questioned by prosecutors.
Event 7	10/3/2005	CA partners step down. Three CA auditors indicted. FSA indicates it will impose penalties on CA.
Event 8	2/20/2006	PwC sends team of auditors from U.K. and U.S. to revamp ChuoAoyama
	3/31/2006	End of Fiscal 2005
Event 9	5/10/2006	CA suspension announced.
	3/31/2007	End of Fiscal 2006

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Figure 1: Critical events in Kanebo fraud with ramifications for ChuoAoyama Audit Corp.

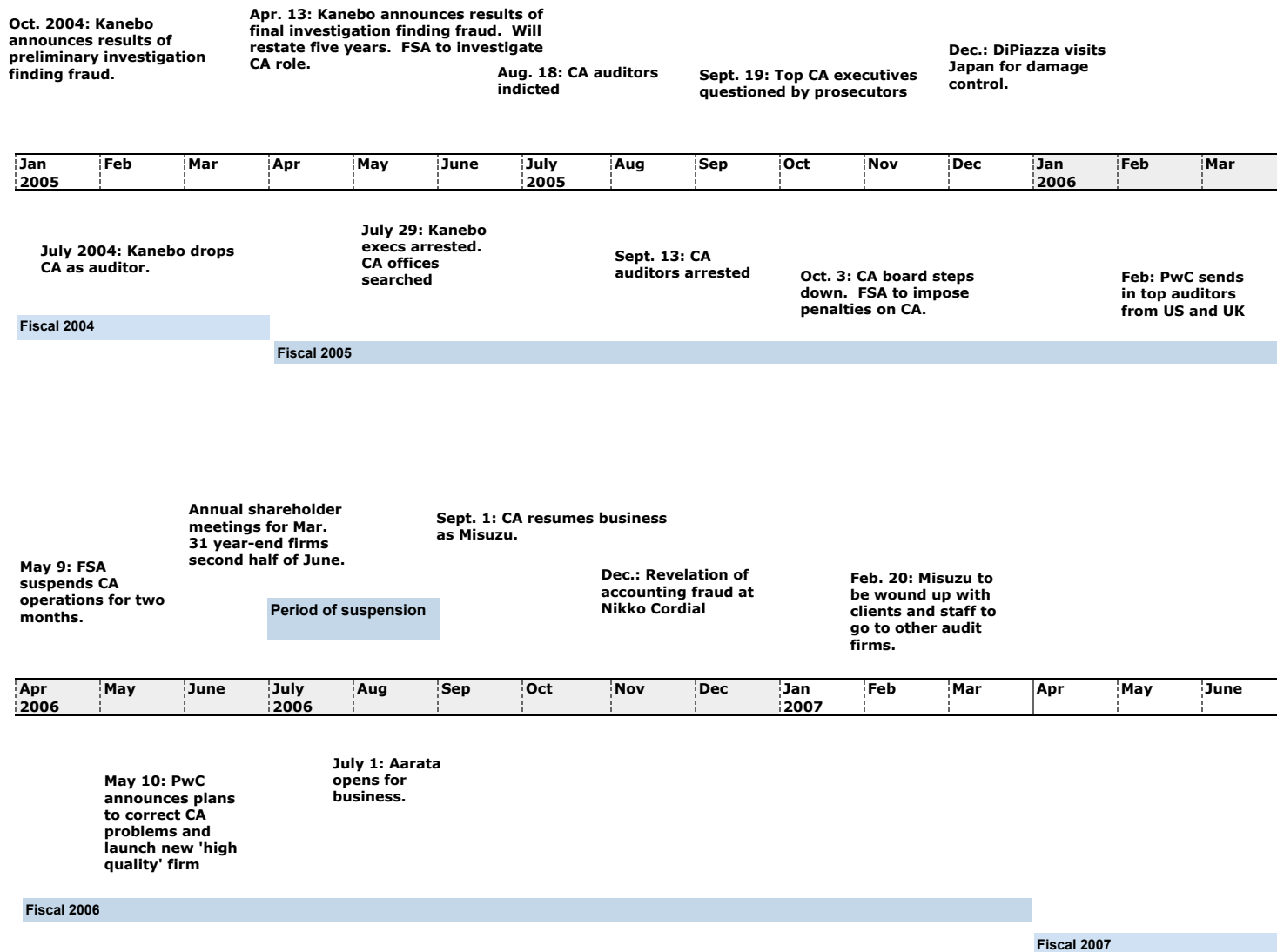


Table 1
Descriptive Statistics

The table provides the mean and median values of various firm characteristics for full sample of Tokyo Stock Exchange firms with available auditor data, F2001-F2007. Variable definitions and data sources are in Appendix B.

	Mean	Median
Market cap	1597.81	254.76
Sales	2355.90	523.13
Total Assets	5942.30	541.97
Market to Book	1.51	1.10
Leverage (LTD/TA)	0.55	0.55
Net Income	62.94	10.92
ROA (%)	2.71	2.47
ROE (%)	5.06	5.64
Loss (If NI<0)	0.15	0.00
Annual returns	0.13	0.02
Dividend Yield	0.01	0.01
Foreign ownership (%)	8.25	3.95
Overseas sales ratio (%)	11.25	0.00
Number of Segments	3.61	3.00
Firm Age	54.90	56.00
US Exchange Listing	0.01	0.00
US Any Listings	0.06	0.00
Std Dev ROA	2.34	1.93
Std Dev ROE	8.52	5.46
Keiretsu	0.34	0.00
Keiretsu inclination	0.84	0.00

Table 2
Correlation Matrix

Table presents Pearson correlations between the variables with p-values of the correlation below the coefficient values.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Log Total Assets	1														
2 Market to Book	-0.05	1													
3 Leverage	0	0	1												
4 Net Income	0.35	0.06	0	1											
5 ROA	0	0	-0.01	0	1										
6 Loss	-0.07	0.27	-0.35	0.17	0	1									
7 Annual returns	0	0	0	0	-0.64	0	1								
8 Dividend Yield	-0.07	-0.03	0.19	-0.16	0	0	0	1							
9 Foreign ownership	0	0	0	0	0	0	0	-0.2	1						
10 Overseas sales ratio	0.38	0.15	-0.17	0.17	0.18	-0.07	-0.01	-0.09	0	1					
11 Number of Segments	0	0	0	0	0	0	-0.51	0	0.3	0	1				
12 Firm Age	0.15	0.06	-0.1	0.12	0.09	0	0.03	-0.11	0	0.3	-0.05	1			
13 Any US Listings	0	0	0	0	0	-0.54	0	0	0	0	0	0	1		
14 Std Dev ROA	0.19	0.02	0.14	0.02	-0.01	-0.02	-0.01	-0.01	0.04	-0.05	0.01	0.01	0.04	1	
15 Keiretsu Inclination	0	0	0	-0.04	-0.1	-0.02	-0.29	-0.1	0	0	-0.09	0	-0.09	0	1
	0.1	-0.1	0.08	0.01	-0.13	0.03	-0.01	0.01	-0.04	0.05	0.01	0.05	0.08	0.04	0.01
	0	0	0	-0.14	0	0	-0.11	-0.08	0	0	0	0	0	0	0
	0.37	0.06	0.06	0.22	0.01	0	-0.01	-0.04	0.3	0.21	0.08	0.04	0.04	0.08	0.04
	0	0	0	0	-0.41	-0.81	-0.16	0	0	0	0	0	0	0	0
	-0.34	0.2	-0.08	-0.05	-0.1	0.25	0.04	-0.22	0	0.15	-0.14	-0.09	-0.09	-0.01	1
	0	0	0	0	0	0	0	0	-0.77	0	0	0	0	-0.15	0
	0.31	-0.03	0.19	0.11	-0.07	0.01	0.01	-0.06	0.09	0.17	0.05	0.15	0.2	-0.08	0
	0	0	0	0	0	-0.21	-0.09	0	0	0	0	0	0	0	0

Table 3**Market Share Analysis of Japanese Audit Market, F2001-F2007**

Big 5 refers to the following audit firms (with their affiliations to the Big Five audit networks worldwide) - Asahi (Andersen), AZSA (KPMG), ChuoAoyama/Misuzu/Aarata (PwC), ShinNihon (Ernst & Young), and Tohmatsu (Deloitte). Non Big 5 are all other audit firms. Size of clients is measured by market capitalization at the end of the fiscal year. The count of companies in all panels includes only those firms for whom market capitalization data are available.

Panel A: Distribution of clients across time.

<i>Fiscal year</i>	<i>Big 5</i>	<i>Big 5 % by Number of clients</i>	<i>Big 5 % by Size of client</i>	<i>Non Big 5</i>	<i>Non Big 5 % by Number of clients</i>	<i>Non Big 5 % by Size of client</i>	<i>Total</i>
2001	1,565	81.2%	93.6%	363	18.8%	6.4%	1,928
2002	1,757	82.0%	93.4%	386	18.0%	6.6%	2,143
2003	1,820	82.1%	93.6%	396	17.9%	6.4%	2,216
2004	1,852	82.9%	94.4%	382	17.1%	5.6%	2,234
2005	1,872	83.8%	95.1%	361	16.2%	4.9%	2,233
2006	1,857	83.3%	95.3%	372	16.7%	4.7%	2,229
2007	1,544	81.3%	92.1%	356	18.7%	7.9%	1,900
Total	12,268	82.4%	94.1%	2616	17.6%	5.9%	14,884

Panel B: Time series distribution of number clients across the Big 5 auditors.

<i>Fiscal year</i>	<i>Aarata</i>	<i>Asahi</i>	<i>Azsa</i>	<i>ChuoAoyama</i>	<i>Misuzu</i>	<i>Shin Nihon</i>	<i>Tohmatsu</i>	<i>Non Big</i>
2001	0	324	0	396	0	465	380	363
2002	0	348	4	452	0	515	438	386
2003	0	12	373	464	0	518	453	396
2004	0	0	395	471	0	525	461	382
2005	0	0	410	469	0	532	460	361
2006	52	0	443	7	303	573	479	372
2007	51	0	426	0	12	600	455	356

Panel C: Time series distribution of clients weighted by market capitalization

<i>Fiscal year</i>	<i>Aarata</i>	<i>Asahi</i>	<i>Azsa</i>	<i>Chuo Aoyama</i>	<i>Misuzu</i>	<i>Shin Nihon</i>	<i>Tohmatsu</i>	<i>Non Big</i>
2001	0.0%	19.5%	0.0%	26.7%	0.0%	28.1%	19.4%	6.4%
2002	0.0%	19.2%	0.6%	25.2%	0.0%	28.4%	20.0%	6.6%
2003	0.0%	0.1%	20.8%	27.3%	0.0%	26.4%	19.0%	6.4%
2004	0.0%	0.0%	21.1%	26.3%	0.0%	27.0%	20.1%	5.6%
2005	0.0%	0.0%	23.9%	24.2%	0.0%	25.7%	21.2%	4.9%
2006	8.8%	0.0%	25.6%	0.1%	11.7%	26.0%	23.0%	4.7%
2007	8.5%	0.0%	31.0%	0.0%	0.2%	27.9%	24.6%	7.9%

Panel D: Auditor Changes in Big 5 and Non Big auditors

The table presents the percent change in auditor from the previous fiscal year. Change of auditor from ChuoAoyama to Misuzu or Aarata is not counted as an auditor change.

<i>Fiscal year</i>	<i>Big Auditors Excluding ChuoAoyama and Misuzu</i>	<i>Non Big Auditors</i>	<i>ChuoAoyama and Misuzu</i>
2002		0.9%	8.0%
2003		2.5%	3.1%
2004		0.6%	8.1%
2005		1.2%	7.6%
2006		1.2%	10.7%
2007		1.9%	10.6%

Table 4
Auditor Change Logit regressions – Changes away from ChuoAoyama

$$\begin{aligned}
 \left. \begin{aligned}
 & \text{If AuditorChange}_{i,t} \\
 & \text{Otherwise}
 \end{aligned} \right\} = \alpha_0 + \alpha_1 CA_{i,t-1} + \alpha_2 FY2006 + \alpha_3 CA_{i,t-1} * FY2006 + \alpha_4 \ln(\text{TotalAssets})_{i,t} + \\
 \alpha_5 \% \Delta \text{TotalAssets}_{i,t} + \alpha_6 \text{Leverage}_{i,t} + \alpha_7 \Delta \text{Leverage}_{i,t} + \alpha_8 \text{ROA}_{i,t} + \alpha_9 \text{Loss}_{i,t} + \alpha_{10} \text{US Listing} \\
 + \alpha_{11} \text{Keiretsu Inclination}_{i,t} + \text{Industry Fixed Effects} + \varepsilon
 \end{aligned}$$

AuditorChange takes the value 1 when the auditor the next fiscal year is not the same as the auditor in the current fiscal year. Data are from FY 2001 to FY 2006 (inclusive). Auditor change from ChuoAyoma to Misuzu is not counted as a change. Change from ChuoAoyama to Aarata is not considered a change in Column (1) and is counted as a change in Column (2). Z-statistics of coefficient estimates based on robust standard errors reported are in parentheses. marginal effects are computed at the means of the independent variables except for dummy variables where it is the change in value from 0 to 1. The Ai and Norton marginal effects and Z-statistics on the interaction term are calculated following Norton, Wang and Ai (2004).

Variable	Column (1) - Excludes Moves to Aarata			Column (2) - Includes Moves to Aarata		
	Coeff	z-statistic	Marginal effects	Coeff	z-statistic	Marginal effects
Constant	-2.68	(-5.97)***		-2.70	(-6.45)***	
CA	-0.68	(-3.03)***	-0.01	-0.71	(-3.13)***	-0.01
Fiscal year 2006	0.31	(1.88)*	0.01	0.30	(1.80)*	0.01
CA*Fiscal Year 2006	2.98	(10.46)***	0.28	3.53	(12.54)***	0.40
Ln (Assets)	-0.12	(-2.35)**	0.00	-0.06	(-1.18)	0.00
%Change in Assets	0.02	(1.52)	0.00	0.02	(1.23)	0.00
Leverage	-0.13	(-0.42)	0.00	-0.22	(-0.70)	-0.01
Change in leverage	0.34	(0.30)	0.01	0.50	(0.43)	0.01
ROA	-0.04	(-1.99)**	0.00	-0.04	(-1.97)**	0.00
Loss	0.34	(1.73)*	0.01	0.32	(1.62)	0.01
US Listing	0.48	(1.87)*	0.01	0.49	(2.13)**	0.01
Keiretsu Inclination	-0.05	(-0.93)	0.00	-0.07	(-1.51)	0.00
Industry Fixed Effects	Included			Included		
Observations	10723			10798		
Pseudo r sq	0.1193			0.1794		
Ai and Norton marginal effect for CA*Fiscal year 2006		(7.22)***	0.23		(9.17)***	0.33

*, **, *** represents significance at the 10%, 5%, and 1% respectively (two-sided tests)

Variables not defined earlier

AuditorChange : One if the audit firm changes and zero otherwise

% ΔTotalAssets : Percentage change in total assets

ΔLeverage : Change in Leverage

CA : One if ChuoAoyama is the prior year audit firm; zero otherwise

CA*FY2006 : One if ChuoAoyama is the audit firm in FY2005 and year is FY2006; Zero Otherwise

Table 5

Ordered logit estimation of the likelihood that ChuoAoyama clients during the period of suspension: (i) do not report an interim auditor (ii) switch to an interim auditor and then go back to Misuzu, or (iii) switch to a final audit firm (do not revert back to Misuzu after suspension ends).

The dependent variable takes the value 0 if the firms do not have any interim auditor during the suspension, 1 if they adopt an interim auditor and go back to Misuzu as the auditor after suspension ends, 2 if they adopt a final auditor and do not revert back to Misuzu after the suspension ends. Column 1 includes companies that move to Aarata as the final auditor after the suspension, whereas Column (2) excludes companies that move to Aarata. All independent variables are measured for fiscal year 2005. Robust Z-stats are in parentheses. The column Odds Change presents the value of the change in odds for one standard deviation change in the value of the independent variable measured as $\exp(b \cdot SD \text{ of } X)$ i.e. the change in odds for standard deviation increase in X. *, **,*** represents significance at the 10%, 5%, and 1% respectively (two-sided tests).

VARIABLES	(1) Includes Aarata			(2) No Aarata		
	Coeff	z-stat	Odds Change	Coeff	z-stat	Odds Change
Log Total Assets	0.28	(2.74)***	1.59	0.27	(2.31)**	1.51
Market to Book	0.18	(2.08)**	1.32	0.16	(1.90)*	1.28
Leverage	-0.03	(-0.04)	0.99	0.19	(0.26)	1.04
Net Income	0.00	(-0.14)	0.99	0.00	(-2.56)**	0.84
ROA	-0.02	(-0.56)	0.92	0.00	(-0.03)	0.99
Loss	-0.12	(-0.28)	0.96	0.09	(0.21)	1.03
Annual returns	0.00	(0.87)	1.10	0.00	(0.91)	1.12
Dividend Yield	2.97	(0.15)	1.02	-0.80	(-0.05)	0.99
Foreign ownership	0.00	(-0.05)	0.99	0.00	(0.12)	1.02
Overseas sales ratio	-0.01	(-1.30)	0.85	-0.01	(-1.49)	0.83
Number of Segments	0.08	(1.06)	1.12	0.08	(0.94)	1.12
Firm Age	0.01	(1.53)	1.18	0.00	(0.71)	1.09
Any US Listings	0.18	(0.37)	1.04	0.27	(0.55)	1.06
Keiretsu Inclination	0.05	(0.58)	1.06	0.12	(1.31)	1.15
Constant Cut 1	0.78	(0.87)		0.97	(1.02)	
Constant Cut 2	2.92	(3.18)***		3.36	(3.43)***	
Industry Fixed Effects	Included			Included		
Observations	427			380		
Pseudo R-squared	0.0676			.0572		

Table 6
The relation between audit signatories at ChuoAoyama in F2005 and those at subsequent audit firms in F2006 and F2007

The table provides descriptive statistics on the how many ChuoAoyama clients were audited by the same audit partners in the successor audit firms as the audit partner who audited them in ChuoAoyama in FY 2005. Audit partners are identified by the signatories to the auditor report. For companies with multiple signatories any one of the signatories being present in the next audit firm is counted as a common audit partner.

Panel A: Continuation of at least one audit partner from ChuoAoyama to the successor audit firm between FY 2006 and FY 2005

Successor Audit Firm	Same partner in next audit firm as in ChuoAoyama				Total
	No common signatory (% of total)		At least one common signatory (% of total)		
Aarata	12	24%	38	76%	50
Azsa	29	100%	0	0%	29
Misuzu	42	15%	239	85%	281
Shin Nihon	37	100%	0	0%	37
Tohmatsu	23	100%	0	0%	23
Other Auditors	19	100%	0	0%	19
Total	162	37%	277	63%	439

Panel B: Continuation of at least one audit partner from ChuoAoyama to the successor audit firm between FY 2007 and FY 2005

Successor Audit Firm	Same partner in next audit firm as in ChuoAoyama				Total
	No signatory in common (% of total)		At least one common signatory (% of total)		
Aarata	21	45%	26	55%	47
Azsa	47	65%	25	35%	72
Misuzu	0	0%	4	100%	4
Shin Nihon	68	46%	81	54%	149
Tohmatsu	39	71%	16	29%	55
Other Auditors	30	71%	12	29%	42
Total	205	56%	164	44%	369

Table 7

Event study analysis of reaction to important events related to revelation of fraud and Kanebo and ChuoAoyama's role therein using Schipper and Thomson (1983) methodology

The table presents the coefficients and t-statistics (in parentheses) of the following regression. The Event dates are presented in Appendix C. Please see Appendix B for variable definitions and data sources. TSE Index returns are computed using the Tokyo Stock Price Index (TOPIX).

$$Return_t = \alpha_0 + \beta_1 Return_{TSE\ INDEX} + \theta_k Event_{k,t} + \varepsilon_t \quad (1)$$

<i>Variable</i>	<i>Event 1</i>	<i>Event 2</i>	<i>Event 3</i>	<i>Event 4</i>	<i>Event 5</i>	<i>Event 6</i>	<i>Event 7</i>	<i>Event 8</i>	<i>Event 9</i>	<i>All Events 1-9</i>
Constant	0.03* (1.83)	0.03* (1.80)	0.03* (1.79)	0.03* (1.75)	0.03* (1.75)	0.03* (1.82)	0.03* (1.75)	0.03** (2.00)	0.03* (1.82)	0.03** (2.18)
TSE Index returns	0.87*** (58.51)	0.86*** (58.39)	0.87*** (58.46)	0.86*** (58.45)	0.86*** (58.43)	0.87*** (58.47)	0.86*** (58.45)	0.86*** (58.80)	0.86*** (58.35)	0.86*** (58.62)
Event i	-0.28 (-1.12)	-0.16 (-0.63)	-0.12 (-0.49)	0.05 (0.18)	0.06 (0.25)	-0.24 (-0.95)	0.03 (0.11)	-0.88*** (-3.56)	-0.22 (-0.88)	-0.20** (-2.40)
Observations	798	798	798	798	798	798	798	798	798	798
Adjusted R2	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81