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The Price Contagion Effects of Financial Reporting Fraud and Reputational Losses: Evidence from the Individual Audit Partner Level

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Abstract

This study investigates the price contagion effects of Chinese audit partners whose clients have been sanctioned by regulators for financial reporting fraud and their associated reputational losses after we control for low quality audit offices/firms. The results suggest that the price contagion effects occur primarily through a common partner rather than through a common audit office or firm. Cross-sectional tests show that the price contagion effects are more pronounced when (1) the low quality partners failed to issue modified audit opinion during the fraud period, (2) the low quality partners were from the Top 10 audit firms, (3) the size of the sanction firm is larger and (4) there is a shorter time lapse between the sanction announcement date and fraud period. Finally, we show that low quality audit partners suffer from reputational losses in terms of a reduced market share caused by a failure to retain existing clients and attract new clients and a higher likelihood of partner turnover.

Keywords: Audit partner; Audit quality; Contagion effects; Reputational loss; Market reactions

JEL Codes: M41; M42; M48

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I. INTRODUCTION

In this study, we investigate the stock price contagion effects for the low quality audits of individual audit partners and the associated reputational losses in China. We view the audit quality of a partner to be low when his/her clients have been sanctioned by regulators owing to financial reporting fraud. Contagion occurs when an adverse event, such as financial reporting fraud, at one firm also conveys negative information about the valuation of other firms in the same industry, especially when they use the same external audit firm as fraud firms (Gleason, Jenkins, and Johnson 2008). Consequently, audit firms (or offices) that provide low quality audits suffer reputational losses (Weber, Willenborg, and Zhang 2008; Swanquist and Whited 2015). However, it is unclear whether the price contagion effects and reputational losses documented in prior literature reside at the audit firm/office level or at the individual audit partner level. This study attempts to explore this issue by investigating the market valuation of non-fraud firms audited by the same audit partners as firms that are being sanctioned by regulators owing to financial reporting concerns and the audit market consequences of these low quality partners.

This study is motivated by three major factors. First, prior studies that examine the price contagion effects of accounting information typically focus on the audit firm or office level. For example, Chaney and Philipich (2002) find that Arthur Andersen's clients experienced a statistically significant negative market reaction when the auditors admitted that they shredded a substantial number of Enron documents and that companies that were

audited by Andersen's Houston office suffered a more severe decline in abnormal returns than other companies. Weber et al. (2008) report that audit clients of KPMG Germany experienced a negative market reaction after a highly publicized accounting scandal. Additionally, Gleason et al. (2008) document that accounting restatements that adversely affect shareholder wealth at the restating firm also induce share price declines among non-restating firms in the same industry and that this effect is more pronounced when peer and restating firms use the same external audit firm. However, ex-ante it is unclear whether the contagion effects extend only to other clients of low quality individual audit partners or all clients of offices/firms associated with poor audit quality. Our paper attempts to shed light on this issue.

Second, prior studies examine the reputational loss at either the audit firm or audit office level (e.g., Weber et al. 2008; Skinner and Srinivasan 2012; Swanquist and Whited 2015). Reputational loss at the firm level is different from reputational loss at individual partner level. Firm-level loss is not related to idiosyncratic incidences of financial fraud; it is related to quality issues that are at the firm level driven by weak quality control system. However, partner-level loss could be idiosyncratic and unique to the specific partner, and it may not impair the reputation and reduce the market share of the firm. Whether the loss of market share arising from perceived poor audit quality occurs at the partner level or the office/firm level is unclear. We empirically examine this issue.

Third, prior audit quality studies have largely focused on the firm level or the city-based practice office level. Recently, there have been increasing calls for more research at the individual audit partner level to yield better insights into the auditing process (DeFond

and Zhang 2014). Indeed, several studies have moved to examine audit quality issues at the individual auditor level (Gul, Wu and Yang 2013; Aobdia, Lin, and Petacchi 2015); however, we are not aware of any study that has simultaneously considered the contagion effects of financial reporting fraud at both the firm and partner level. In line with these calls and recent evidence, in this paper, we examine the contagion effects at both the firm/office and audit partner level.

We exploit two important unique institutional features in China. The first feature is that two auditors of each audit engagement are required to sign the audit report in China.[1] The two signing auditors are either partners or senior managers, and they play a similar role as engagement partners in the U.S. The second feature is that the China Securities Regulatory Commission (CSRC) publishes findings from investigations of fraud cases similar to the Accounting and Auditing Enforcement Releases (AAERs) in the U.S. Hence, the announcement dates of these reports enable researchers to investigate the market reaction to non-fraud firms audited by the same audit partner as the sanctioned firms.

Our sample includes 327 sanction announcements associated with financial reporting fraud during the period 1999–2012. These regulatory sanctions are against firms in China whose financial statements are challenged for accounting malfeasance. An audit partner who audited a sanctioned firm during the years when financial reporting fraud occurred is identified as a "low quality partner" (hereafter LQP)[2]. We then examine the market

[1] China's Independent Auditing Standard (CIAS) requires that at least two auditors sign an audit report. In our sample, a small fraction of the reports (335 reports, about 1.5%) are signed by three auditors.

[2] This definition also applies to low quality audit offices and low quality audit firms. We denote an audit office (firm) that audited a sanctioned firm during the years when financial reporting fraud occurred as a "low quality audit office (firm)" (*LQAO; LQAF*).

reactions to four types of non-fraud firms during these sanction announcements: (1) firms audited by a LQP; (2) firms audited by a low quality audit office (LQAO); (3) firms audited by a low quality audit firm (LQAF); (4) firms audited by a different audit firm. We find that five-day cumulative abnormal returns (CARs) are significantly negative for the contagion firms that are audited by an LQAO, consistent with the findings in Chaney and Philipich (2002) and Francis and Michas (2013). However, the office level effect disappears once we control for the price contagion effects at the individual audit partner level; we only observe a significantly negative market reaction for contagion firms audited by an LQP. Additional cross-sectional analysis shows that the price contagion effects of LQPs are more pronounced when the LQPs failed to issue modified audit opinions on the sanction firms during the fraud period and when the LQPs were from the Top 10 audit firms. Further, with respect to the fraud firms, we find that the price contagion effects are stronger when the size of the sanction firms is larger and when the time lapse between the sanction announcement and fraud occurrence is shorter. We next investigate the reputational losses of LQPs on the audit partner labor market after the announcement of regulatory sanctions. Consistent with prior studies (Weber et al. 2008; Skinner and Srinivasan 2012; Swanquist and Whited 2015), we find that LQPs suffer from both losing their existing clients and acquiring less new clients and that clients audited by LQPs are more likely to change partners after the sanctions.

Our study contributes to the extant literature in several important ways. First, prior studies that examine the price contagion effects of accounting information typically focus on the audit firm or audit office (Chaney and Philipich 2002; Weber et al. 2008). We push

the unit of analysis down to the partner level and compare the firm/office and partner level. In this way, we are able to test whether it is the firm/office level or partner level contagion effect that is more important. Our findings on the significant effect of LQPs and the nonsignificant effect of LQAOs/LQAFs when tested together suggest that the price contagion effects occur primarily through a common partner rather than through a common audit office or firm. This finding is not available in the extant audit quality contagion literature. Moreover, prior studies suffer from the limitation that they examine only one highly publicized scandal, thus increasing the risk that the documented stock market reactions are spurious. For example, Nelson, Price, and Rountree (2008) show that the results of Chaney and Philipich (2002) are driven by confounding effects in the oil industry rather than damage to the auditor's reputation. Therefore, it is useful to examine a setting such as China where there are multiple accounting scandals.

Second, although Gul et al. (2013) provide evidence of significant audit partner fixed effects in China, Fee, Hadlock, and Pierce (2013) raise some methodological concerns with the use of F-tests to detect individual styles. They show that F-tests on manager-specific dummy variables are biased and are invalid indicators of managerial-style effects. This bias potentially affects numerous studies in the management style or individual audit partner literature, as they rely on F-tests to draw inferences about manager or partner fixed effects. In comparison, our setting does not rely on the audit partner fixed effects; instead, we draw inferences directly from the price contagion effects and consequences of low quality work performed by audit partners. Our research design is more likely to detect, if any, the audit quality effect of individual partner.

Third, although prior studies have examined the cross-sectional associations between audit partner characteristics and financial reporting quality, they suffer from the limitation that audit partners are assigned endogenously to their clients. For example, Aobdia et al. (2015) find that partner quality is positively associated with ERCs and negatively associated with IPO underpricing. While such cross-sectional results are interesting, there is a concern that they may be explained by endogeneity; i.e., high quality partners are more conservative and more likely to select clients with lower risk. In our study, such endogeneity is less of a concern because the regulatory sanctions against fraud firms are exogenous. Specifically, the sanctions are targeted at fraud firms audited by LQPs, but we are investigating the market reactions of other non-fraud firms audited by the same LQPs. Consequently, our market reaction tests are less likely to suffer from endogeneity problems as long as stock prices already impound all publicly available information. Although Aobdia et al. (2015) document positive market reactions when companies switch to higher quality partners, their market reaction tests are not consistently significant across alternative event windows. For example, their results are nonsignificant when the three-day window CAR (-1, +1) are used. In contrast, our market reaction results are robust to several different event windows, including CAR (-1, +1).

Fourth, we also contribute to the growing literature on audit partners. Prior studies show that high quality partners are valued by capital markets (Aobdia et al. 2015) and that the quality of audit partners has a direct bearing on audit quality (Carcello and Li 2013; Gul et al. 2013; Knechel, Vanstraelen, and Zerni 2015). We extend this literature by showing

new evidence that individual audit partners that perform poor-quality audit are penalized by the audit labor market.

Our study is related to a concurrent study by Li, Qi, Tian, and Zhang (2016), who also examine the contagion effect of low quality audit, as proxied by accounting restatements, at the individual partner level. However, our study differs from this study in several important aspects. First, the study of Li et al. (2016) likely suffers from the endogeneity problem mentioned earlier. In particular, the "contagion" that they document could reflect the characteristics of the clients audited by the partners rather than the characteristics of the partners themselves. Our study is less subject to this endogeneity issue since we investigate, at the announcement dates of regulatory sanctions, whether market valuation of non-fraud firms is affected by the sanctions. Second, our focus is on financial reporting fraud, which is a more severe audit failure that results in regulatory sanctions than the restatements used in their study. Third, we examine the reputational losses of audit partners after the regulatory sanctions, which are not investigated in their study. Although Li et al. (2016) also use a small number of government sanctions against individual auditors, as an alternative proxy for audit failures in their sensitivity check, to examine stock market reactions to the public disclosure of the sanctions, their findings are not tabulated, and hence, we are not able to directly compare the results. They find significantly negative CARs around the public disclosure of sanctions for the non-fraud clients audited by the sanctioned auditor. In comparison, our study examines all regulatory sanctions on firms, including partners that are being sanctioned and partners not being sanctioned for financial fraud. We find that the contagion effect also exists for non-fraud firms audited by non-

sanctioned partners, indicating that the contagion effect is not limited to the sanctioned partners, as documented in Li et al. (2016), but applicable to other non-sanctioned partners.

Finally, it is worth noting that our study provides some insight into the international debate on the merits and demerits of requiring auditor signatures on audit reports.[3] Our study complements prior research (e.g., Li et al. 2016; Aobdia et al. 2015) by providing indirect evidence that the availability of audit partners' signature can assist the capital market and the audit market in making informed decisions on audit quality.

The rest of the paper is organized as follows. Section II reviews the literature and presents the research hypotheses. Sections III and IV describe the research design, sample, and empirical findings for the price contagion and reputation loss tests, respectively. Section V presents the results for the sensitivity checks. We conclude the paper in Section VI.

II. BACKGROUND, PRIOR LITERATURE AND HYPOTHESIS DEVELOPMENT

Institutional background of the Chinese audit market

The Chinese audit market provides an appropriate setting for analyzing our research questions for several important reasons. First, China's auditing standards require that engagement auditors sign the audit reports and disclose the related information to the public. Typically, two engagement auditors sign each audit report, with the more senior signing auditor mainly performing the review work and the relatively junior signing auditor mainly

[3] Recently, the Public Company Accounting Oversight Board (PCAOB) in the U.S. has adopted new rules that require audit firms to disclose, among other information, the name of the engagement partner for each audit (PCAOB 2015). See http://pcaobus.org/Rules/Rulemaking/Docket029/Release-2015-008.pdf.

administering the fieldwork (Gul et al. 2013).[4] This arrangement provides the identity of the individual auditors.

Second, we use regulatory sanctions against firms for accounting malfeasance to infer the low audit quality of the partner who audits sanctioned firms.[5] The accounting malfeasance includes misstatement of revenue, income, assets or other items that materially change the financial position of a firm. China's Securities Law gives the CSRC authority to sanction firms and individuals suspected of securities and financial reporting fraud. The findings of the CSRC investigations are published, where internal warnings are issued for minor violations, and stronger punishments, including suspension of trading, withdrawal of licenses, civil penalties, and criminal prosecution, are enforced for material malpractice (Chen, Firth, Gao, and Rui 2006). Generally, there is a time lag between sanction announcements and the occurrence of financial reporting fraud. On average, it takes about 1.9 years, with a maximum of 12 years, for financial reporting fraud to be uncovered. The announcement dates of the sanctions against firms with severe financial reporting concerns are publicly available, which facilitates an investigation of the price contagion effects of sanctions on other firms audited by the same audit partners.

[4] The audit reports in China are predominantly signed by two partners: the review partner and engagement partner. Following Lennox, Wu and Zhang (2014), we define the first signature partner as the review partner because the name of the review partner is disclosed in the audit report above the name of the engagement partner.

[5] These regulatory sanctions are similar to the AAERs in the U.S. Prior studies use AAERs as a proxy for fraudulent financial reporting that indicates audit failure (e.g., Bonner, Palmrose, and Young 1998; Carcello and Nagy 2004; Lennox and Pittman 2010; DeFond and Zhang 2014). Our definition of low quality audit is broader than that of Li et al. (2016) and Aobdia et al. (2015), who consider only sanctioned partner as having low quality. In contrast, we view the audit quality of partners whose clients are being sanctioned to be low, regardless of whether the partners are being sanctioned by regulators. Among the 327 sanction events used in our study, there are 53 (16.21%) sanctions where the individual audit partners are also sanctioned owing to accounting fraud. We find that the price contagion effect exists for both partners being sanctioned and partners not being sanctioned. We also find that there is no significant difference in the market reactions between partners being sanctioned and partners not being sanctioned.

Third, the Chinese audit market is ideally suitable for investigating partner reputational losses, since it is characterized by low investor protection, low litigation risk for auditors (Chen, Sun, and Wu 2010; Wang, Yu, and Zhao 2015) and a less developed legal and institutional structure than that found in more developed countries (Chen et al. 2006). In China, auditors are unlikely to be a source of insurance for investors. There have been a large number of fraud cases, where angry investors have launched numerous lawsuits but no payouts have been made by audit firms (Hutchens 2003). China thus provides a good context for studying the effect of reputation as a disciplining mechanism for audit partners. The fierce competition in the Chinese audit market further exacerbates the reputational consequences of audit partners' poor audit quality (Chen et al. 2010). In the U.S. and other developed countries, the Big 4 auditors audit the majority of listed companies, whereas in China, the percentage of listed companies audited by the Big 4 auditors is only about 26% (Chen, Su, and Wu 2007).[6]

Audit Partners and Audit Quality

While prior research on audit quality largely focuses on the audit firm (e.g., DeAngelo 1981; Francis, Maydew, and Sparks 1999) or branch office (e.g., Reynolds and Francis 2000; Francis and Yu 2009) level, a recent trend in auditing research suggests that examination of the audit process at the engagement partner and team personnel level will yield better insights into the auditing process (Carcello and Li 2013; Gul et al. 2013). For

[6]The number of audit firms qualified to audit listed companies has declined over time because of mergers and acquisitions. However, since the number of partners have increased more than the number of listed firms, partner-level competition remains as fierce as before. On average, the number of clients per audit partner was 2.80 and 2.37 in year 2000 and 2012, respectively. Consequently, such a buyer's market is likely to afford clients more bargaining power and impose pressure on auditors fighting for their slice of the pie (Chen et al. 2007). A senior partner from KPMG in China also informally confirmed that the Chinese auditing market remains very competitive.

example, using data from Taiwan, Aobdia et al. (2015) report that the identity of individual audit partners provides informational value to capital market participants beyond the value provided by the identity of the audit firms.

Despite substantial variation in audit quality across different partners (Gul et al. 2013), a high (low) quality partner tends to perform high (low) quality work consistently across all engagements. Consistent with this idea, Knechel et al. (2015) find that companies audited by an individual partner, even in different industries, tend to exhibit similar levels of aggressiveness or conservativeness in audit reporting over time, and Li et al. (2016) find that individual audit partners with an audit failure also deliver lower quality on other audit engagements. This implies that while audit quality varies across the spectrum of audit partners, there appears to be consistency in the quality of their performance. Hence we could expect this will also have an impact on the market's perception of quality of those partner's other engagements. Further, we also expect that this could influence the reaction of labor market/client firms, when a signal of partner quality is available.

Price Contagion Effect of Low Quality Audit Partners

Prior research on information transfer theory typically examines the share price contagion effect of information releases by one firm on other firms, usually in the same industry. For example, prior studies document the presence of price contagion effects for earnings announcements (Foster 1981), earnings forecasts by management (Han, Wild, and Ramesh 1989), bankruptcy announcements (Lang and Stulz 1992), and accounting restatements (Gleason et al. 2008), among others. Information transfer occurs when news released by one firm affects the stock prices of other firms. Specifically, information, or

news, about one reporting entity (e.g., accounting fraud) can affect investors' reactions to different reporting entities with similar characteristics. Building on the information transfer literature, we conjecture that an audit partner auditing a client in which an accounting fraud is discovered in one firm may cause investors to reevaluate their position owing to the increased uncertainty associated with the audit quality of other firms audited by the same audit partner. For example, when an audit failure is publicized, other clients of the auditor experience a significant loss of market value (Chaney and Philipich 2002; Weber et al. 2008; Cahan, Emanuel, and Sun 2009; Huang and Li 2009; Skinner and Srinivasan 2012). Gleason et al. (2008) provide evidence that the announcement of an accounting restatement by a firm causes investors to reassess the content and credibility of the financial statements of its peer firms. Specifically, they show that non-restating companies in the same industry as a restating company also experience negative market reactions after the announcement of the restatement, indicating that investors extend their concerns regarding accounting quality to other companies in the same industry. They further report that the price contagion effect is stronger if the restating firms and their peers share the same audit firm.

We extend these prior studies by studying the price contagion effects at the individual audit partner level. Research on information transfer suggests that information from an announcing firm is useful for investors in updating their expectations of similar information on other firms that share some common characteristics with the announcing firm. We conjecture that financial fraud in a firm can cause investors to perceive the audit quality of a partner to be low when his/her clients are being sanctioned by regulators owing to financial reporting concerns. Recent research also suggests that the stock market appears

to recognize the audit quality of the audit partner. For example, Aobdia et al. (2015) find a positive association between individual audit partners' quality and earnings response coefficients; this finding suggests that investors perceive earnings to be more informative when a higher quality partner performs the audit. They also find that markets react positively when firms switch from a lower quality partner to a higher quality partner and that firms audited by higher quality partners experience a lower level of underpricing when they go public.

In our setting, the audit quality of audit partners is likely to be perceived as low if their clients are sanctioned by regulators owing to financial reporting fraud. The announcement of the sanction conveys both a negative signal about the firm's underlying true value (Titman and Trueman 1986) and a negative signal about the perceived quality of the audit partner (Dye 1993). Consequently, investors are likely to revise their expectations of the audit quality of other firms audited by the same partner downward, and the share prices of these firms are thus likely to decrease. Such a drop in share prices is consistent with the notion that the audit quality problem is perceived to be shared by all firms audited by the same audit partner. The above reasoning leads to our first hypothesis:

H1: The share price decline is greater for non-fraud firms audited by the same audit partner as firms sanctioned for financial reporting fraud than for benchmark firms.

We examine the market reactions of four distinct groups of non-fraud firms after sanction announcements: (1) firms audited by a LQP; (2) firms audited by a LQAO; (3) firms audited by a LQAF; and (4) non-contagion firms audited by a different audit firm. The firms in group (1) constitute our primary treatment firms, while firms in groups (2) to (4) are our benchmark firms.

Although prior studies have established the contagion effect at either the firm or office level (e.g., Chaney and Philipich 2002; Weber et al. 2008), it is ex-ante unclear whether the contagion effects will extend to other clients of individual audit partners associated with poor audit quality. If the price contagion effects at the audit firm/office level documented in prior studies reflect some fundamental issues in the internal quality control at the audit firm/office level, we will not find any incremental effect of low quality audit partners in the price contagion test. Thus, whether the price contagion effect of financial reporting fraud is driven by low quality partners is an empirical issue.

Low Quality Audit Partners and Reputational Losses

We also investigate the reputational loss of LQPs on the audit partner labor market after the announcement of regulatory sanctions. High quality external auditing depends on two principal forces that motivate auditors to deliver quality: a litigation/insurance incentive and a reputational incentive (Simunic 1980; DeAngelo 1981; Dye 1993). Empirically separating the effects of litigation/insurance from those of reputation in markets such as the U.S. is difficult because the largest audit firms have both the largest litigation incentives and the strongest reputational incentives. Since the Chinese audit environment is characterized by very low litigation risk relative to that in the U.S. (Chen et al. 2010; Wang et al. 2015), it is a more appropriate setting for which to study the reputational consequences of audit partners associated with financial reporting fraud. Further, the fierce competition in the Chinese audit market exacerbates the reputational consequences of partners' poor audit quality (Chen et al. 2010).

In this study, we focus on individual partner reputation for several reasons. First, partner-level characteristics exhibit significant variation across firms and locations (Gul et al. 2013). Second, since the individual audit partner is largely responsible for personnel assignment, client contracting, and many other strategic functions (Nelson and Tan 2005), it follows that partner-specific factors should contribute to audit quality and auditor reputation. We expect that low quality audits should also result in a loss of market share for low quality audit partners and that this decline in market share is expected to arise at the individual audit partner level. Further, to the extent that the audit partners of sanctioned firms are perceived to have low audit quality, we expect low quality audit partners to exhibit greater turnover at the client level. Based on this reasoning, we formulate the following hypotheses:

H2a: The market share of low quality audit partners is lower after the announcement of the financial reporting fraud than that of all other audit partners.

H2b: The incidence of a change in audit partner is higher for firms audited by low quality audit partners after the announcement of financial reporting fraud than for benchmark firms.

III. PRICE CONTAGION TESTS

Empirical Model

In H1, we test whether the price contagion effect, measured in terms of market reaction to sanctions, exists at individual audit partner. Specifically, we estimate the following cross-sectional regressions:

$$CAR = \beta_0 + \beta_1 LQP + \beta_2 LQAO + \beta_3 LQAF + \beta_4 SIZE + \beta_5 LEV + \beta_6 MTB + \beta_7 ROA + \beta_8 LARGEST + \beta_9 ABS\_DA + \beta_{10} TOP10 + \beta_{11} N\_LINKS + \beta_{12} N\_LAPSE + \beta_{13} SIZE_{sanction} + \beta_{14} CAR_{sanction} + \text{Year/Industry/Audit office fixed-effects} + \varepsilon \quad (1)$$

where *CAR* represents firms' five-day CARs around the corresponding sanction announcement date (-2, +2), where date 0 represents the day of a sanction announcement, if it is a trading day, or the first trading day after the announcement.[7] Daily abnormal returns are calculated as a firm's raw returns minus the weighted adjusted market returns on the corresponding day. *LQP* (*LQAO*, *LQAF*) is an indicator variable that equals one if the firm is audited by the same low quality partners (the same low quality audit office (LQAO), the same low quality audit firm (LQAF)) as the corresponding sanction firm during the fraud periods or current period (defined as one year before the sanction announcement date) and zero otherwise.[8] H1 is supported if the coefficient estimate on *LQP* is significantly negative.

We include a wide array of controls based on prior studies that may potentially affect the stock returns around the sanction announcements (see the Appendix). All control variables, except $CAR_{sanction}$, are measured at the fiscal year end just prior to the sanction announcement date. We control for firm size (*SIZE*) since larger firms are subject to closer scrutiny by investors, and this greater capital market pressure will heighten investors' concerns over the contagion firms' financial reporting quality that will likely exacerbate the price contagion effect (Gleason et al. 2008; Chen and Goh 2013). Consistent with

[7]Consistent with Yu, Zhang and Zheng (2015), we use (-2, +2) as the window period. Our results are not sensitive to the choice of window periods. We report the results using different window periods in the robustness checks.

[8]We also use the current period to identify contagion firms because the firms audited by low quality partners currently are also likely to be affected by the sanction announcement. In additional tests, we further separate contagion firms into three subgroups: firms that share the same audit partner (office or firm) as sanctioned firms in the fraud years but not in the current period (33.71%), firms that share the same audit partner (office or firm) as sanctioned firms currently but not in the fraud periods (14.64%), and firms that share the same audit partner (office or firm) as sanctioned firms in both the fraud and current years (51.65%). We find that the price contagion exists in all three subgroups. Because there is a time lag between sanction announcement and fraud occurrence, we also examine the effect of this time lag on the price contagion effect in the cross-sectional analysis.

Gleason et al. (2008), we control for the effect of leverage (*LEV*), firm performance (*ROA*), and growth (*MTB*) on observed stock price reactions to informational events. Because large shareholders have a significant influence on the financial reporting process (Gul, Kim, and Qiu 2010; Yu et al. 2015), we include the largest shareholder's ownership (*LARGEST*) to capture the shareholder's monitoring role in the financial reporting process in China. Gleason et al. (2008) find that restatement-induced contagion stock returns are correlated with measures of accounting quality; thus, we control for the earnings quality (*ABS_DA*) of contagion firms and non-contagion firms prior to the sanction announcement date. We also control for the quality of the audit firm (*TOP10*) that audits the sample firms; the number of years that the firm was audited by low-quality partners, low-quality audit offices, or low-quality audit firms (*N_LINKS*); and the number of years that have elapsed since the last fraud year to the year of sanction (*N_LAPSE*).

Following Gleason et al. (2008), we control for sanction firms' CARs surrounding the sanction announcement date ($CAR_{sanction}$), as the magnitude of the information transferred by the event firm affects the degree of spillover (Yu et al. 2015). We also control for the size of the sanction firms ($SIZE_{sanction}$) because larger firms are more likely to provoke greater contagion effects (Chen and Goh 2013)[9]. Finally, we include a set of indicator variables that represent the year, industry and audit office to control for year, industry and audit office fixed effects.

Sample Selection

[9]Our results remain unchanged if we remove $SIZE_{sanction}$ and $CAR_{sanction}$ from the regression model.

The original regulatory sanction sample comprises all regulatory sanction events suspected of financial reporting fraud from 1999 to 2012, collected from the China Stock Market and Accounting Research (CSMAR) database[10]. As shown in Panel A of Table 1, the sample starts with 411 sanction events.[11] Data on individual audit partner and stock returns are also collected from the CSMAR database. We delete observations if stock returns around the sanction announcement date are not available (51 events), if audit partners are unidentifiable (20 events), or if fraudulent firms' audit partners have no other clients (11 events). Finally, we exclude two sanctions that involve firms in the financial industry. Our final sample includes 327 regulatory sanctions announcements (involving 275 firms) associated with financial reporting fraud during our sample period.

Contagion Firms with a Common Audit Partner, Common Audit Office, Common Audit Firm and Non-Contagion Firms

Panels B and C of Table 1 provide sample selection procedures for contagion firms and non-contagion firms. We define a firm as a contagion firm through a common audit partner (common audit office or firm) if the firm was audited by the same individual audit partner (the same audit office or the same audit firm) as sanction firms during the financial reporting fraud periods and current period. As shown in Panel B, we first identify 21,654

[10]The CSMAR database covers all kinds of corporate scandals of listed Chinese firms. They can be classified into five categories: (1) financial reporting fraud, misstatement of revenue, income, assets or other items that materially change the financial position of a firm; (2) incomplete, late or lagging information disclosure or information concealment; (3) corruption or others; (4) insider trading or market manipulation; and (5) other administrative violations, irregularities and other crimes. Similar to prior studies (e.g., Yu et al. 2015), we define the first category as sanctions related to financial reporting fraud.

[11]We manually check each of the sanction announcement dates from multiple data resources, including public announcements released by the listed firms, the CSRC, stock exchanges and news reports in China's major business and finance newspapers. When there is more than one date related to the same fraud sanction, we employ the earliest one as the announcement date to calculate CARs in price contagion tests. For all 411 sanction events in our study, we corrected 84 (20%) announcement dates compared to the information acquired from CSMAR database.

observations as contagion firms through a common audit firm. We then delete 1,142 observations that have insufficient stock returns data, 150 observations that belong to the financial industry, and 2,413 observations that have other public disclosures surrounding the sanction announcements[12]. We impose the last requirement to enhance our ability to detect sanction-induced stock price contagion and avoid confounding effects due to the announcements of other public information. Our final sample includes 17,949 firm-year observations as contagion firms with common audit firms. Among which, 2,421 observations are contagion firms with common audit partners, and 10,606 are contagion firms with common audit offices.

Panel C of Table 1 provides the sample selection of non-contagion benchmark firms. For each sanction, we identify non-contagion benchmark firms as those in the same industry as the sanction firm but report neither fraud nor share the same audit firm as the sanction firms. Industry classification is based on CSRC 2-digit codes. Since the total number of firms in different industries is different, ranging from 16 to 504, we further restrict benchmark firms to be no more than 60 firms with the closest size as the sanction firm.[13] We obtain 17,592 matched observations. We delete 1,343 observations that have insufficient stock returns data and 1,493 firms that had another public disclosure during the sanction announcement period. Our final sample for the non-contagion firms is 14,756. In the price contagion effect test, we use all 32,705 (17,949 + 14,756) contagion and non-

[12] We exclude observations in which other public information was announced during the sanction announcement period (day -2 to day +2). Other public information includes earnings release, earnings warnings, de-listing, suspension of listing, annual reports, quarterly reports, special treatment (ST), and particular transfer (PT).

[13] If the number of non-contagion firms in the same industry as the sanction firms is less than 60, we keep all the firms in the same industry as the sanction firms as non-contagion firms. Our results are robust to setting an alternative number of restrictions (such as 50 or 70 firms) or using no restrictions.

contagion firm observations in the empirical analysis. Similar to prior studies (e.g., Gul et al. 2013), we obtain data on control variables such as financial data, stock return data, and ownership information from the CSMAR database. Consequently, we discard 3,104 observations with missing data for the control variables. The final observations in the price contagion test are 29,601, as shown in Panel D of Table 1. We winsorize all continuous variables at the bottom and top one percentile to mitigate the undue influence of outliers.[14]

Table 2, Panels A and B, presents the distribution of sanction, contagion and non-contagion firms based on the sanction announcement year and industry, respectively. The sanctions are not evenly distributed across the years. For example, 78 sanctions are announced in 2012, the largest number during our sample period. We present observations of the three types of contagion firms separately.

Empirical Results of the Price Contagion Effect Test

Table 3, Panel A reports the descriptive statistics for the variables used in the price contagion test. The distribution of these variables is comparable to that in prior studies (e.g., Gul et al. 2013; Yu et al. 2015). The mean of *LQP* is 0.0748, indicating that 7.48% of observations are contagion firms with the same low quality partner (*LQP*) as the sanction firms.

In Panel B of Table 3, we report the mean and median of CARs for a variety of window periods for contagion and non-contagion firms, separately. The results are consistent across different CARs. We focus our discussion on the five-day CAR from day -2 to day 2 (CAR

[14]We also compare the characteristics of sanction firms and non-sanction (i.e., contagion and non-contagion) firms during the sample period. The univariate analysis shows that sanction firms are significantly smaller (t=7.76), less profitable (t=13.04), less likely to be audited by Top 10 audit firms (t=3.67), and less likely to be state owned (t=5.30).

(-2, +2)) since this is the window we use to test our hypothesis. The mean and median CAR (-2, +2) are -0.56% and -0.86% for contagion firms with common low quality partner; -0.12% and -0.57% for contagion firms with a common audit office but not with a common low quality partner; -0.08% and -0.46% for contagion firms with a common audit firm but without a common low quality partner or audit office; and -0.23% and -0.59% for non-contagion firms, respectively. The negative market reaction of non-contagion firms is consistent with the intra-industry information transfer documented in Gleason et al. (2008).

Panel C of Table 3 reports the univariate tests of differences in mean and median between contagion firms with a LQP with the benchmark firms. The difference in the CARs of contagion firms with a LQP from contagion firms with a LQAO but not a LQP (and those with a LQAF but not a LQP or LQAO) is statistically significant, indicating that negative market reaction to contagion firms with a common audit partner is more severe than that to other contagion firms. We also find that market reaction to contagion firms with a LQP is significantly more negative than that to non-contagion firms. These results provide preliminary support for H1 that the stock price decline for the contagion firms that share at least one common audit partner with the sanction firm is greater than that of benchmark firms.[15]

Table 4 provides results from regression analysis of equation (1). We first re-examine the office-level price contagion effect by excluding *LQP* from equation (1). As shown in

[15] We also compare the CARs between contagion firms with a LQAO (group 1 and 2; N=10,606) and non-contagion firms (group 4), as well as between the CARs of contagion firms with a LQAF (group 1, 2 and 3; N=17,949) and non-contagion firms (group 4). Interestingly, we find that there is no significant difference in the CARs between the contagion firms with a LQAO/LQAF and non-contagion firms. The univariate results suggest that the contagion effect through the same audit offices or audit firms is no greater than the contagion effect through the same industry.

column (1), the coefficient on *LQAO* is negative and significant. This result supports the existence of office-level contagion effect documented in prior studies (e.g., Chaney and Philipich, 2002; Francis and Michas 2013)[16]. In column (2), we include variable *LQP* to examine the price contagion effect at the individual audit partner level. Consistent with H1, we find that the coefficient on *LQP* is negative and statistically significant at 1%. In contrast, after adding *LQP*, the coefficient on *LQAO* becomes nonsignificant. We find that the coefficient on *LQAF* is not statistically significant in both columns. Collectively, these results indicate that the office- (or firm-) level contagion effect documented in earlier studies is mainly driven by an audit partner-level effect. In terms of economic significance, the CARs is 0.5% lower for contagion firms that share common partners with the sanction firms, after we control for office and firm effects. This magnitude is economically significant, given that the mean and median values of five-day CAR around the corresponding sanction announcement date for all contagion firms and non-contagion firms are -0.15% and -0.57%, respectively (Panel A, Table 3).

For the set of control variables, the coefficients on *LEV*, *MTB* and *ROA* are positive and significant, suggesting that contagion stock returns are higher for firms with higher profitability, growth opportunities and leverage. The significant and positive coefficient on $CAR_{sanction}$ indicates that contagion stock returns are highly correlated with stock returns of sanction companies. In particular, more negative news released in financial fraud sanction

[16]We also run the same model with *LQAF* but without *LQAO* and *LQP*, however, we find that the coefficient on *LQAF* is nonsignificant. One possible explanation for the nonsignificant coefficient on *LQAF*, as indicated in the previous footnote, is that the contagion effect through the same audit firm is no greater than the contagion effect through the same industry since the selection of the non-contagion firms is from the same industry as the sanction firms.

leads to a more severe information spillover to other firms. The coefficient on *ABS_DA* is marginally significant and negative, which provides weak evidence that contagion firms with lower accounting quality suffer a more severe price contagion effect. Other variables, however, are not statistically significant at the conventional levels.

Overall, our results are consistent with H1 that the sanction announcements induce stock price declines among the contagion firms owing to investors' concerns over the low quality of audit partners. More importantly, our results show that the price contagion effect at the audit office level is driven by an individual audit partner-level effect, suggesting that the identification of audit partners provides information in the capital market additional to information from audit offices and audit firms.

Cross-sectional Analysis for the Price Contagion Effect

In this section, we consider two sets of factors that may potentially affect investors' perception of LQP quality and their moderating effect on the magnitude of the market reaction. The first relates to the attributes of LQP – whether LQPs issued a modified audit opinion (*MAO*)[17] and whether LQPs were from the TOP 10 audit firms ($TOP10_{sanction}$).[18] An individual audit partner who failed to issue MAOs to sanction firms indicates low audit quality because audit partners either could not detect the fraud or did not report the problem. We expect audit partners that issued MAOs to reduce investors' concerns about auditors' quality, leading to a less pronounced price contagion effect.

[17] Consistent with the literature (Huang, Raghunandan, Chiou, and Huang 2014), we define Modified Audit Opinions (MAO) as one of the following: (1) unqualified opinions with explanatory notes, (2) qualified opinions, (3) disclaimers, and (4) adverse opinions.

[18] In our main regression model, we control for *TOP10*, the quality of audit firms that audit contagion and non-contagion firms. In comparison, $TOP10_{sanction}$ controls for the quality of audit firm that audits sanction firms during fraud period.

We expect LPQs from Top 10 audit firms ($TOP10_{sanction}$) to affect the price contagion effect since the Top 10 are perceived to be high quality auditors in China (e.g., Fang, Pittman, Zhang and Zhao 2015). We also expect less price contagion for clients audited by Top 10 auditors. However, if the investors expect high quality audits from partners of large audit firms, the very fact that their audit clients are sanctioned would send a negative surprise shock to investors, resulting in a more negative market reaction. Thus, it is not clear *ex ante* whether the Top 10 audit firms can reduce or enhance the price contagion effect.

Our second set of factors relate to the characteristics of the sanction: the size of the sanction firm (*LARGE_SANC*) and the time lapse between the sanction announcement date and fraud committed period (*N_LAPSE*). Sanction announcements may induce a greater price contagion effect if sanction firms are larger because such sanction firms face stronger capital market pressure and draw more attention from investors (Gleason et al. 2008). Further, we expect a longer time lapse between the sanction announcement date and fraud period to have a less pronounced effect on price contagion because investors' concerns about low quality audits or low quality partners may be reduced with the passage of time.

To examine the impact of these moderating variables, we add the moderating variables and their interaction with *LQP* (*LQAO, LQAF*) in equation (1). We summarize the results (untabulated) below:

Moderating effect of MAO: The result shows that the coefficient on *LQP*MAO* (*MAO* is an indicator variable that equals one if the sanction firm received a modified audit opinion during the financial reporting fraud periods and zero otherwise) is positive and significant

at the 5% level, suggesting that the price contagion effect at the individual audit partner level is less pronounced when the audit partners issue modified audit opinions to sanction firms.

Moderating effect of $TOP10_{sanction}$*:* The result shows that the coefficient on *LQP** $TOP10_{sanction}$ (*TOP10*$_{sanction}$ is an indicator variable that equals one if the sanction firm was audited by a Top 10 audit firm during the fraud periods and zero otherwise) is significantly negative at the 5% level, indicating that the price contagion effect is more pronounced when the LQPs were from Top 10 audit firms. This result is consistent with the interpretation that LQPs of Top 10 audit firms are penalized more heavily if their clients are sanctioned for poor financial reporting.

Moderating effect of sanction firm size: The result shows that the coefficient on *LQP*LARGE_SANC (LARGE_SANC* is an indicator variable that equals one if the sanction firm's size is greater than the sample median and zero otherwise*)* is significantly negative at the 5% level, suggesting that the price contagion effect is more pronounced for larger sanctioned firms.

Moderating effect of time lapse: The result shows that the coefficient on *LQP*N_LAPSE* is significantly positive at the 10% level, indicating that the price contagion effect is less pronounced when the time lapse between the sanction announcement date and fraud period is longer.

IV. REPUTATION LOSS TESTS

In this section, we report the research design, sample selection, and empirical results on the reputational losses of low quality partners after the regulatory sanctions. We expect

sanctions to impair partners' reputation and diminish the value of the partners' bonding services.

Empirical Model

In China, the audit market is highly competitive and characterized by a high degree of dispersion. To increase profits, the audit firm or audit partner typically must compete fiercely by retaining existing clients, acquiring new clients or charging fee premiums. To the extent that LQPs suffer from reputational losses subsequent to sanction announcements, we predict that the reputational losses of LQPs are likely to be reflected in (i) a larger market share decline after the regulatory sanctions and (ii) a higher likelihood of partner turnover. Specifically, we use the following models to test our predictions:

$$\Delta MShare = \delta_0 + \delta_1 LQP + \delta_2 LQAO + \delta_3 LQAF + \delta_4 M\_CASH + \delta_5 M\_GROWTH + \delta_6 M\_INVREC + \delta_7 M\_ROA + \delta_8 M\_SIZE + \delta_9 M\_LEV + \delta_{10} M\_LOSS + \delta_{11} M\_ABS\_DA + \delta_{12} M\_OPINION + \delta_{13} M\_TENURE + \delta_{14} TOP10 + \text{Year/Audit office fixed-effects} + \varepsilon \quad (2)$$

$$Partner\_change = \delta_0 + \delta_1 LQP + \delta_2 LQAO + \delta_3 LQAF + \delta_4 CASH + \delta_5 GROWTH + \delta_6 INVREC + \delta_7 ROA + \delta_8 SIZE + \delta_9 LEV + \delta_{10} LOSS + \delta_{11} ABS\_DA + \delta_{12} OPINION + \delta_{13} SANCTION + \delta_{14} TENURE + \delta_{15} TOP10 + \text{Year/Industry/Audit office fixed-effects} + \varepsilon \quad (3)$$

In equation (2), we examine the change in audit partners' market shares after sanction announcements. $\Delta MShare$ is a partner-year level measure defined as a percentage change of a partner's market share from year t to t+1, where market share is proxied by total client number, total client size and total audit fees, respectively ($\Delta NUMBER$, $\Delta SIZE$, and ΔFEE). Year t is year that we identify LQPs from public sanction announcements. Our test variables

are *LQP* (whether the partner is identified as a low quality partner), *LQAO* (whether the partner is associated with a low quality audit office) and *LQAF* (whether the partner is associated with a low quality audit firm). A lower Δ*MShare* reflects the inability of the audit partner to retain existing clients or attract new clients. If the sanctions result in reputational loss of LQPs, we expect the coefficient on *LQP* to be significantly negative. If the sanctions also tarnish the reputation of the audit office and audit firm, we would expect the coefficients on *LQAO* and *LQAF* to be negative. This market share test provides insights on aggregated reputational losses of the audit partner after the announcement of financial reporting fraud.

In equation (3), we examine audit partners' retention by their existing clients after sanctions are publicly disclosed. *Partner_change* is an indicator variable that equals one if there is a change of the review partner in the year following sanction announcements and zero otherwise.[19] Similar to equation (2), our key independent variables are *LQP*, *LQAO*, and *LQAF*. To the extent that the sanction announcements impair audit partner's reputation, the partners may face a higher likelihood of dismissal by their existing clients. We therefore expect the coefficient on *LQP* to be significantly positive. If the sanctions also affect the audit office or audit firm associated with the LQP, we would expect the coefficients on *LQAO* and *LQAF* to be positive.

We include a battery of control variables in equations (2) and (3) adapted from Landsman, Nelson, and Rountree (2009). Consistent with Swanquist and Whited (2015),

[19] In this test, we examine the retention decisions for the review partner who undertakes more responsibility for the auditing process. We also examine the partner change for the engagement audit partner but find non-significant results, suggesting that partner turnover is observed mainly for the review partners.

we measure clientele characteristics at mean value of client attributes for each partner-year observation in equation (2). Definitions for controls are described in the Appendix. Specifically, we include *ROA*, *LOSS*, *LEV* and *CASH* to control for financial risk. More profitable firms pose less financial risk to the auditor, while higher leverage or firms with less cash increase the likelihood of financial difficulties, all of which will affect the audit outcome variables. We control for growth opportunities (*GROWTH*), level of inventories and receivables (*INVREC*) and audit opinions (*OPINION*) as proxies of audit risk. We control for firm size (*SIZE*) because the costs of auditing or changing auditors are expected to be higher for larger clients. We also control for the accruals (*ABS_DA*) and whether the firm is audited by one of the Top 10 audit firms (*TOP10*). Finally, we control for the partner's tenure (*TENURE*) because of the mandatory rotation in China[20]. As before, we control for the year, industry and audit office fixed effects in the regressions.

Sample Selection

The sample selection procedures for reputational loss tests are shown in Table 5. Panel A indicates the sample selection for the market share change tests in equation (2). There are 16,506 partner-year observations during the sample period. Of these observations, we drop 3,781 observations with insufficient data to compute partner-year control variables and 1,347 partner-year observations without conducting audits in year t+1, possibly because they leave the audit market. Our final sample consists of 11,378 partner-year

[20] Under Articles 3 and 5 issued by the CSRC and the Ministry of Finance (October 8, 2003), individual audit partners have to be rotated every five years or, in the case of newly listed companies, at the end of the second year following the initial public offering (IPO). The rule for newly listed companies requires that the IPO prospectus contains three years of audited financial statements, and so, the second year post-IPO is counted as the partner's fifth year of tenure.

observations for the market share change model in terms of total client number and total client size. We further drop 1,889 observations without audit fee data, resulting in a final sample of 9,489 observations for the market share change model in terms of total audit fees.

Table 5, Panel B, reports the sample selection for partner turnover tests in equation (3). There are 19,091 firm-year observations from 1999 to 2012. We drop 1,781 observations without audit partner information, 183 firms in the financial industry, and 1,715 observations with insufficient data for the control variables. In addition, we drop 1,936 firm-year observations where the partners do not conduct any auditing service in year t+1. Our final sample includes 13,476 firm-year observations to examine the association between LQP and the likelihood of partner change[21].

Panel A, Table 6, presents the descriptive statistics of the variables used for market share change tests. The descriptive statistics of each variable are measured at the partner-year level. On average, we observe a net increase in total market share based on number of clients, firm size and audit fees. Among all 11,378 partner-year observations, 4.04% partners were identified as *LQP*, 25.90% as *LQAO*, and 39.90% as *LQAF*. We report descriptive statistics for the variables used in the audit partner change test in Table 6, Panel

[21] We drop the observations where partners do not conduct any auditing service in year t+1 in both the market share change model and the partner change model because the partners could leave the auditing profession owing to reputation damage following the sanctions or any other reasons. Our results are robust if we do not drop the observations where partners do not conduct any auditing service in year t+1. Our results are also robust if we only drop the observations where the partners are barred from conducting audits in year t+1. Among the 460 partner-year observations identified as low quality partners, only 20 and 67 observations where partners were barred from providing audit service in the year following the sanction announcements in the market share change test, and partner change test, respectively.

B. On average, the partner turnover rate is 35.60%.[22] Of these observations, 6.93% relates to LQP, 27.60% to LQAO, and 40.10% to LQAF.

Table 7 reports descriptive statistics and univariate analysis for the market share change and partner turnover of contagion firms and non-contagion firms. As shown in Panel A of Table 7, we observe a smaller increase in market share (*⊿NUMBER*, *⊿SIZE*, *⊿FEE*) of LQPs compared with contagion firms audited by other partners from the same office and audit firm. In addition, the mean value of *Partner_change* of contagion firms with common audit partner, contagion firms with common audit office (but not same partner), contagion firms with common audit firm (but not same office), and non-contagion firms are 0.4111, 0.3604, 0.3700 and 0.3452, respectively. These statistics suggest that there is a greater turnover for LQPs following sanction announcements, compared with turnover in the contagion firms audited by other partners of the same audit office or audit firm. Consistent with these descriptive statistics, the univariate analyses in Panel B indicate that the differences in market share change and the partner change between LQPs and other partners of the contagion firms is statistically significant. Overall, Table 7 provides preliminary support for our two hypotheses (H2a and H2b)—that LQPs suffer greater reputational loss following the associated sanction announcement.

Table 8, Panel A, presents regression results for equation (2). The dependent variable is market share change, where market share is measured by the percentage change in terms of number of clients (Δ*NUMBER*), client size (Δ*SIZE*), and audit fees (Δ*FEE*) at partner-

[22]In Huang et al. (2014), the percentage of both audit partners leaving the clients is about 20%. In our case, we define *Partner_change* as equal to one when the review partner leaves the client. Thus, the percentage of partner turnover is higher because there are many cases where companies just dismiss one of the partners.

year level. The negative and significant coefficients on *LQP* in all three columns support H2a. Taking the market change of client number as an example, we find that the market share change of LQPs is 11.7 percent smaller than that of other groups of individual audit partners. The coefficient estimates on the control variables are generally consistent with prior literature (i.e., Swanquist and Whited 2015). Overall, the evidence provides strong support that LQPs suffer from reputational damage in terms of smaller market share increases after sanction announcements.

The smaller increases in market share for LQP may arise from the failure to retain current clients and/or inability to attract new clients. To distinguish the two causes, we define *LOSS_NUMBER (LOSS_SIZE or LOSS_FEE)* to capture market share loss in terms of number of clients (client size or audit fee). These variables are calculated as the percentage of clients that dropped an audit partner in year t+1 versus the total client size in year t. Similarly, we define *ACQUIRE_NUMBER (ACQUIRE_SIZE or ACQUIRE_FEE*) to measure acquisition in terms of the number of clients (client size or audit fee). We then use market share loss and market share new acquisition as dependent variables in equation (2). The results are reported in Panel B and C of Table 8, respectively.

Table 8, Panel B, shows that the coefficients on *LQP* in all market share loss specifications are positive and statistically significant. These results support the contention that LQPs lose significantly more clients than other partners after the sanction was publicly announced.[23] Table 8, Panel C, reports significant and negative coefficients on *LQP*,

[23]Although our results suggest that LQPs lose clients after the sanctions, we are unable to disentangle whether the loss in clients is due to clients switching away from an LQP or the audit firm assigns fewer clients to the LQP. This is a caveat that should be noted when interpreting the client loss results. Though we are not able

suggesting that LQPs acquire less new clients than other partners. Collectively, the results in Panels B and C support the contention that LQPs have lower market share change than others owing to the difficulty in retaining current clients and attracting new clients.

Table 9 presents the regression results of equation (3). In column (1), the coefficient on *LQP* is positive and significant, indicating that low quality audit partners are more likely to lose clients following sanction announcements.[24] In terms of economic significance, the marginal effect of engaging LQPs increases the probability of partner turnover by 5.57%.[25] In contrast, the coefficients on *LQAO* and *LQAF* are both nonsignificant, indicating that other partners in the contagion office or firm do not experience significant reputational losses. Because audit partners are mandated to rotate clients every 5 years in China, we include *TENURE* in the model to avoid finding a spurious relation. To further alleviate the confounding concerns of mandatory partner rotation, we drop firms for which the review partner is in the final year of tenure and repeat the test. The results are reported in column (2) of Table 9. We obtain consistent results as in column (1), indicating that our findings are not driven by the mechanical relation due to mandatory rotation.[26] The evidence provides support for H2b, suggesting that low quality partners suffer from reputational loss

to tease out the two possible explanations, both are consistent with reputation loss of LQP. Client firms stay away because of impaired reputation of partner, and again, audit firm assigned fewer clients to the partner because of the impaired reputation of the partner.

[24] In this test, we include firms that are sanctioned by regulators and a control variable (*SANCTION*) that indicates the occurrence of sanction. Our results are robust if we remove these sanction firms and the variable, *SANCTION*, from the model.

[25]The marginal effect indicates the change in the probability of partner turnover with the employment of low quality partners relative to the benchmark firms. The marginal effect for *LQP* is computed as p x (1-p) x b, where p is the base rate (35.60%) and b is the estimated coefficient from the logistic regression (Liao 1994).

[26]We also manually check the year when firms changed LQPs. In most of the cases (4291/4798=89.43%), the turnover occurred at less than the terminal fifth year; hence, our results on LQP turnover are not likely to be driven by the mandatory rotation policy.

in terms of a higher likelihood of partner change.[27] The coefficients on the control variables are generally consistent with the findings of prior studies (e.g., Swanquist and Whited 2015).

Overall, our evidence suggests that clients are more concerned about the quality of the audit partner than that of the audit office or the audit firm. Our results provide strong support for H2a and H2b, indicating that low quality partners suffer greater reputational losses in terms of lower market share change and a higher likelihood of partner change after sanctions against clients that they are associated with.

V. SENSITIVITY ANALYSES

Alternative specification of LQPs for the Price Contagion Test

In the main tests of price contagion effect, we define contagion firms with LQPs as the firms audited by low quality partners from the fraud periods and current period (defined as one year before the sanction announcement date). For completeness, we further separate the contagion firms with LQPs into three groups: (i) firms audited by LQPs during the fraud periods but not current period (LQP_{fraud}=1); (ii) firms audited by LQPs in the current period but not during the fraud period ($LQP_{current}$=1); and (iii) firms audited by LQPs during both the fraud and current periods ($LQP_{both\_periods}$ =1). We replace LQP with LQP_{fraud}, $LQP_{current}$ *and* $LQP_{both\_periods}$ in equation (1). We report the results in Table 10, Panel A. In the interest of parsimony, we report only the main variables of interest in Table 10 and the subsequent

[27] Following Swanquist and Whited (2015), we also examine the association between low quality audit office and office dismissal. Our results (untabulated) show that the likelihood of office change is significantly higher for firms audited by a low quality audit office, consistent with the results in Swanquist and Whited (2015). However, when we include *LQP* in the regression, the effect at the office level disappears.

tables. We find that all three indicator variables regarding LQP are significantly negative, suggesting that our results of a price contagion effect are not driven by any specific period definition.[28]

We investigate whether there is a differential effect between low quality review partners and low quality engagement partners in the price contagion test. LQP_{review} ($LQP_{engagement}$) is an indicator variable that equals one if the review (engagement) partner of contagion firms is of low quality but the engagement (review) partner is not and zero otherwise, whereas $LQP_{both\_partners}$ is an indicator variable that equals one if both the review and engagement partners are of low quality and zero otherwise. The results are reported in Panel B of Table 10. The coefficients on all three indicator variables are all significantly negative, indicating that investors react to the low quality of the review partner, engagement partner or both.[29]

We next examine the effect of LQPs with repeated offenses on the price contagion. LQPs associated with multiple sanctions may indicate more severe quality issues, leading to a larger price contagion effect. However, if the stock price has impounded the information about LQPs who are sanctioned repeatedly, we would likely not observe a larger sanction-induced price contagion effect for these repeated offenders. Panel C, Table 10, reports our test results, where LQP_{one} ($LQP_{multiple}$) is an indicator variable that equals one if the firms is audited by an LQP for one (multiple) time(s) of sanction(s) and zero

[28]We also compare the differences in the magnitude of coefficients among the LQP indicators. Our F-tests show that the coefficient on $LQP_{both\_periods}$ is significantly more negative than that on LQP_{fraud} at the 5% level. Coefficients on LQP_{fraud} and $LQP_{current}$ or coefficients on $LQP_{both\_periods}$ and $LQP_{current}$ are not statistically different from each other.

[29]Our F-tests show that there is no significant differences between any pair of partner indicator variables.

otherwise. We find that the coefficients on LQP_{one} and $LQP_{multiple}$ are both significant and negative, and the result from our F-test shows that there is no significant difference in magnitude between these two coefficients (F-statistic=2.13). The evidence suggests that the price contagion effect is similar for one-time or repeated offenders.[30]

Finally, we examine whether there are differences in the price contagion effect of financial reporting fraud with individual audit partners being sanctioned and individual audit partners not being sanctioned by regulators. In the 327 sanction announcements used to identify LQPs, there are 53 cases with individual audit partners being sanctioned accompanied with fraudulent firms. Panel D, Table 10, reports our test results, where $LQP_{sanction}$ ($LQP_{no\_sanction}$) is an indicator variable that equals one if the firms is audited by LQP with (without) being sanctioned by regulator and zero otherwise. We find that the coefficients on $LQP_{sanction}$ and $LQP_{no\_sanction}$ are both significant at the conventional levels, and the result from our F-test shows that there is no significant difference in magnitude between these two coefficients (F-statistics=0.21). The result suggests that investors perceived the audit quality of partners to be low, regardless of whether they are being sanctioned or not, so long as their clients are being charged of accounting malfeasance.

Expanded Window Periods for the Price Contagion Test

In our main analysis, we use CARs (-2, +2) to measure the market reaction of the sanction announcements. We also use alternative window periods to test robustness of our results. Following Aobdia et al. (2015), we use CARs in the alternative windows including (-1, +1), (-1, +2), (-2, +3), (-2, +5) and (-1, +10). We report the results in Panel A, Table

[30]As an additional robustness check, we exclude LQPs who are being sanctioned more than once from the sample. The results continue to hold.

11. The coefficients on *LQP* in all specifications are significantly negative, indicating that our main inferences remain unchanged with these alternative window periods.

Excluding Contagion Firms in the Same Location or Same Business Group

We examine whether our results regarding the price contagion effect still hold after excluding contagion firms located in the same location or contagion firms belonging to the same business group. It is possible that the sanction induced stock price decline is driven by the contagion firms located in the same region as the sanction firms or the contagion firms belong to the same business group as the sanction firms. We report the results of this sensitivity check in Panel B, Table 11. In column (1), we drop the contagion firms with the same location (province) as the corresponding sanction firms. In column (2), we redefine the non-contagion firms as firms with the same industry and same location (province) as the sanction firms and rerun the regression[31]. The coefficients on *LQP* in column (1) and column (2) are both significant and negative, indicating that our results are not driven by price contagion effect in the same location. In column (3), we exclude the contagion firms in the same business group as the corresponding sanction firm. The significant and negative coefficient on *LQP* suggests that the price contagion effect at the individual audit partner level is not driven by the contagion firms from the same business group as the sanction firms.

Control for Partner Fixed Effects

[31]During the matching process, we are not able to find matched firms for some sanction firms (90 out of 327) in the same industry and same province. We therefore drop those sanction firms and corresponding contagion firms from the analysis. This explains the reduced sample size in column (2).

Although we control for a battery of variables in our regressions, we may have omitted some important individual audit partner characteristics that are associated with price contagion and reputational losses. Therefore, we include partner fixed effects in both the price contagion and market share changes tests to control for time invariant partner attributes such as expertise and experience. The results reported in Panel C, Table 11, are qualitatively the same as before. The coefficients on *LQP* remain significant in all specifications. This result suggests that the price contagion effect and associated reputational losses at the individual audit partner level is not driven primarily by partner attributes.

Reduced Contagion Sample That Includes Only Sanction Firms with Negative CARs

In our main analysis, we use all the sanction firms related to financial reporting fraud to identify low quality auditors, including audit partners, audit offices and audit firms because prior studies (e.g., Francis and Michas 2013; Chiu, Teoh, and Tian 2013) suggest that earnings management contagion through common audit offices or board interlocks reflect a systemic problem regardless of how the earnings management is recognized by the capital market. In our last sensitivity check, we use a reduced contagion sample following Gleason et al. (2008) and restrict the sample to contagion firms associated with sanction announcements with negative CARs. Specifically, we identify auditors associated with sanction firms whose CARs around the sanction announcement dates are negative as low quality.[32] We repeat all our tests and report the results in Panel D, Table 11.

[32]Among the 327 sanction events used in our main analysis, 206 sanctions have negative CARs and 121 have positive CARs.

Two insights emerge from this analysis. First, the stock returns contagion through low quality partners, captured by the coefficients on *LQP*, still exists for all specifications. However, the coefficients on *LQAO* or *LQAF* are all nonsignificant, suggesting that stock returns contagion occurs mainly through common low quality partners, rather than through common audit offices or audit firms in this reduced sample. Second, these partners continue to suffer from reputational losses in terms of lower market share change and higher partner turnover after the regulatory sanctions.

VI. CONCLUSION

This paper examines whether stock price contagion effect exists for low quality audit of individual audit partners and the associated reputational losses in China. We use the clients sanctioned by the Chinese government for financial reporting fraud to identify LQPs. We investigate whether market valuation of the contagion firms is affected by the identification of LQPs associated with regulatory sanctions. We find that such sanctions induce a significant stock price decline only among the contagion firms that share common LQPs. Additionally, we find that the price contagion effects of LQPs are less pronounced when the LQPs issue a modified audit opinion during the fraud period and when the time lapse between sanction announcement date and fraud period is longer. Further, the price contagion effect of LQPs is more pronounced when the sanction firms are audited by Top 10 audit firms during the fraud periods and when the size of the sanction firm is larger.

We next investigate whether LQPs suffer from reputational losses in terms of a reduced market share at the partner level and a higher likelihood of partner turnover. We find that the market share change of LQPs is significantly lower than that of other partners following sanction announcements. Further analysis indicates that the lower market share change of LQPs is caused by a failure to retain existing and attract new clients. At the client firm level,

we also find that LQP turnover is higher after sanctions are imposed. Collectively, our results indicate that there are real economic consequences for auditors that performed low quality audits.

Our paper has important several policy implications. Apart from the real economic consequences of low quality audits by partners, this paper has implications for regulators around the world who are considering disclosing individual partner information in financial reports. Our study suggests that the identification of an audit partner is valued by the both the capital and audit labor market. The implication of the current study is that the disclosure of the identity of an individual engagement partner would likely, via the stock and labor market, help in enforcing accountability and in enhancing auditor quality.

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Table 1 Sample selection procedure

Panel A: sanctions selection	
Number of sanctions between 1999 and 2012	411
Less: number of sanctions that	
Have insufficient stock returns data	51
Have no information about individual audit partners	20
Have no shared individual audit partners with other firms	11
Are in the financial industry	2
Number of sanction observations in our sample (275 unique firms)	327

Panel B: contagion firms	
Number of observations that are matched with the above 327 sanction observations through common low quality audit firm	21,654
Less: number of matched observations that	
Have insufficient stock returns data	1,142
Are in the financial industry	150
Have other public information disclosures	2,413
Number of contagion observations in our sample	17,949
contagion firms with common low quality partners	2,421
contagion firms with common low quality audit offices	10,606
contagion firms with common low quality audit firms	17,949

Panel C: non-contagion firms	
Number of observations that are matched with the above 327 sanctions in the same industry and similar firm size	17,592
Less: number of matched observations that	
Have insufficient stock returns data	1,343
Have other public disclosures	1,493
Number of non-contagion observations in our sample	14,756

Panel D: sample for price contagion model (for H1)	
contagion firms and non-contagion firms (17949+14756)	32,705
Less:	
Observations with insufficient data to calculate control variables	3,104
Number of observations in the price contagion model	29,601

This table provides details of our sample construction in the price contagion effect test. Panels A, B and C describe the sample selection procedures for the sanction sample, contagion firm sample and non-contagion firm sample, respectively. Panel D presents the sample for price contagion model.

Table 2 Sample description

Panel A: Distribution of sanctioned firms, contagion firms and non-contagion firms by year

Year	All listed firms	Sanctioned Firms	Contagion firms With LQP	Contagion firms With LQAO	Contagion firms With LQAF	Non-Contagion Firms
1999	927	5	35	66	66	220
2000	1,062	5	39	100	100	235
2001	1,140	14	89	254	273	627
2002	1,204	28	219	495	623	1,154
2003	1,268	20	181	441	523	831
2004	1,356	26	218	654	864	1,252
2005	1,352	20	137	433	571	889
2006	1,435	15	137	311	472	650
2007	1,549	15	85	377	578	618
2008	1,603	15	83	354	468	686
2009	1,752	27	202	1,011	1,325	1,286
2010	2,107	24	235	872	1,295	1,075
2011	2,336	35	236	1,607	2,311	1,621
2012	2,385	78	525	3,631	8,480	3,612
Total	21,476	327	2,421	10,606	17,949	14,756

Panel B: Distribution of sanctioned firms, contagion firms and non-contagion firms by industry

Industry	All listed firm	Sanctioned Firms	Contagion fir With LQP	Contagion fir With LQA	Contagion fir With LQAF	Non-Contagion Firms
Agriculture	508	2	73	203	371	514
Exploring	391	3	28	143	266	145
Manufacturing	12,816	154	2,506	6,625	11,300	9,296
Utilities	789	4	76	300	482	179
Construction	441	4	52	234	397	112
Transportation	811	10	65	330	523	343
Technology	1,495	28	138	819	1,427	1,310
Commerce	1,368	11	156	613	1,015	632
Properties	667	17	84	347	584	460
Services	663	43	72	308	501	462
Media	189	12	19	76	163	13
Conglomerate	1,094	39	152	608	920	1,290
Total	21,476	327	2,421	10,606	17,949	14,756

This table provides information on the sample distribution by year and by industry and descriptive statistics in price contagion effect tests. Panel A and Panel B show the distribution of all listed firms, the sanctioned firms, contagion firms and non-contagion firms by year and industry. Four distinct groups of firms are used in the analysis: (1) firms audited by low quality partners, which we denote as contagion firms with LQPs; (2) firms audited by low quality audit offices, which we denote as contagion firms with LQAOs (this group of firms also includes contagion firms with LQPs); (3) firms audited by low quality audit firms, which we denote as contagion firms with LQAFs (this group of firms also includes contagion firms with LQPs and contagion firms with LQAOs); and (4) benchmark firms with the same industry and similar firm size as the corresponding sanctioned firms, which we denote as non-contagion firms. Panel A shows the distribution of sanctioned firms, contagion firms and non-contagion firms by year; and Panel B shows the distribution of sanctioned firms, contagion firms and non-contagion firms by industry.

Table 3: Univariate analysis for the price contagion effect

Panel A: Descriptive statistics in price contagion model (N=29,601)

VARIABLES	Mean	Median	Q1	Q3	Std Dev.
CAR(-2,+2)	-0.0015	-0.0057	-0.0270	0.0190	0.0526
LQP	0.0748	0.0000	0.0000	0.0000	0.2630
LQAO	0.3230	0.0000	0.0000	1.0000	0.4680
LQAF	0.5510	1.0000	0.0000	1.0000	0.4970
SIZE	21.3700	21.2200	20.6700	21.9400	1.0480
LEV	0.5380	0.5070	0.3150	0.6970	0.3350
MTB	2.5330	1.8280	1.3390	2.8730	2.3970
ROA	0.0405	0.0371	0.0120	0.0711	0.0770
LARGEST	36.7600	34.4900	24.4300	47.9200	15.4900
ABS_DA	0.0596	0.0421	0.0187	0.0800	0.0607
TOP10	0.4350	0.0000	0.0000	1.0000	0.4960
N_LINKS	0.4640	0.6930	0.0000	0.6930	0.4980
N_LAPSE	0.4860	0.0000	0.0000	0.6930	0.5500
$SIZE_{sanction}$	21.0700	20.9000	20.4800	21.7800	1.0620
$CAR_{sanction}$	0.0027	-0.0071	-0.0305	0.0212	0.0736

Panel B: Market reaction for contagion firms and non-contagion firms around sanction announcements

	(1) Contagion firms with LQP		(2) Contagion firms with LQAO (without LQP)		(3) Contagion firms with LQAF (without LQP or LQAO)		(4) Non-contagion firms	
	N=2421		N=8185		N=7343		N=14756	
Variable	Mean	Median	Mean	Median	Mean	Median	Mean	Median
CAR (-1,+1)	-0.30%***	-0.46%***	-0.09%**	-0.39%***	-0.04%	-0.33%***	-0.11%***	-0.39%***
CAR (-2, +2)	-0.56%***	-0.86%***	-0.12%**	-0.57%***	-0.08%	-0.46%***	-0.23%***	-0.59%***
CAR (-2, +3)	-0.63%***	-0.74%***	-0.14%**	-0.61%***	-0.07%	-0.55%***	-0.28%***	-0.65%***
CAR (-2, +5)	-0.53%***	-0.89%***	-0.16%**	-0.71%***	-0.12%*	-0.62%***	-0.32%***	-0.80%***
CAR (-2, +10)	-0.63%***	-1.38%***	-0.31%***	-1.14%***	-0.23%***	-0.91%***	-0.55%***	-1.25%***
CAR (-2, +30)	-1.07%***	-2.17%***	-0.94%***	-2.24%***	-0.56%***	-1.95%***	-1.17%***	-2.35%***

Panel C: Univariate analysis in market reactions

	contagion firms in (1) vs contagion firms in (2)		contagion firms in (1) vs contagion firms in (3)		contagion firms in (1) vs non-contagion firms in (4)	
Variable	Difference in Mean	Difference in Median	Difference in Mean	Difference in Median	Difference in Mean	Difference in Median
CAR (-1,+1)	-2.58***	-1.96*	-3.21***	-2.90***	-2.41**	-1.59
CAR (-2, +2)	-4.38***	-3.32***	-4.61***	-4.18***	-3.35***	-2.52**
CAR (-2, +3)	-4.40***	-3.13***	-4.82***	-3.87***	-3.18***	-2.02**
CAR (-2, +5)	-2.86***	-2.45**	-3.14***	-3.21***	-1.67*	-1.33
CAR (-2, +10)	-1.94*	-1.74*	-2.41**	-2.66***	-0.50	-0.38
CAR (-2, +30)	-0.50	-0.38	-1.94*	-2.04**	0.39	0.45

Panel A reports the descriptive statistics for the samples used in the price contagion test. All continuous variables are winsorized at the bottom and top one percentile to mitigate the undue influence of outliers. Detailed definitions of the variables are outlined in the Appendix. Panel B reports the cumulative abnormal returns (CARs) in different intervals. CAR is calculated as a firm's raw return minus the weighted adjusted market return on the corresponding day. Day 0 is the day of a sanction announcement, if it is a trading day, or the first trading day after the announcement. Panel C report test statistics for differences in the CARs between the contagion firms with common partner and contagion firms with common audit office but without common partner, between contagion firm with common partner and contagion firms with common audit firm but without common partner or audit office, or between contagion firms with common partner and non-contagion firms. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests.

Table 4 Results for the price contagion effect of low quality partners

	Dependent Variable=CAR(-2,+2)	
VARIABLES	(1)	(2)
LQP		-0.005***
		(-4.278)
LQAO	-0.002**	-0.001
	(-2.245)	(-1.204)
LQAF	0.001	0.001
	(1.160)	(0.976)
SIZE	0.000	0.000
	(0.143)	(0.122)
LEV	0.005***	0.005***
	(2.891)	(2.904)
MTB	0.001***	0.001***
	(3.461)	(3.430)
ROA	0.032***	0.032***
	(5.143)	(5.142)
LARGEST	0.000	0.000
	(0.279)	(0.245)
ABS_DA	-0.010*	-0.010*
	(-1.647)	(-1.654)
TOP10	-0.001	-0.001
	(-0.664)	(-0.549)
N_LINKS	0.000	0.001
	(0.330)	(0.836)
N_LAPSE	0.000	0.000
	(0.325)	(0.511)
$SIZE_{sanction}$	-0.000	-0.000
	(-0.757)	(-0.808)
$CAR_{sanction}$	0.014***	0.014***
	(2.788)	(2.737)
Constant	-0.005	-0.005
	(-0.480)	(-0.402)
Year Fixed Effect	Yes	Yes
Industry Fixed Effect	Yes	Yes
Audit Office Fixed Effect	Yes	Yes
Observations	29,601	29,601
Adjusted R^2	1.8%	1.8%

This table presents the results for the following regression:

$CAR = \beta_0 + \beta_1\ LQP + \beta_2\ LQAO + \beta_3\ LQAF + \beta_4\ SIZE + \beta_5\ LEV + \beta_6\ MTB + \beta_7\ ROA + \beta_8\ LARGEST + + \beta_9\ ABS\_DA + \beta_{10}\ TOP10 + \beta_{11}\ N\_LINK + \beta_{12}\ N\_LAPSE + \beta_{13}\ SIZE_{sanction} + \beta_{14} CAR_{sanction} +$ Year/Industry/Audit office fixed-effects + ε

The dependent variable is the firms' five-day cumulative abnormal returns around the corresponding sanction announcement date (-2, +2), where date 0 represents the day of a sanction announcement, if it is a trading day, or the first trading day after the announcement. The daily abnormal return is calculated as a firm's raw return minus the weighted adjusted market return on the corresponding day. Detailed definitions of the variables are outlined in the Appendix. The t-statistic in parentheses is adjusted for firm clustering. We report two sets of results. Model (1) is the regression without controlling partner effect *LQP*. Model (2) is the regression with controls for low quality partner *LQP*. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests.

Table 5 Sample selection for reputational loss

Panel A: sample selection for market share change model (for H2a)	
Number of partner-year observations	16,506
Less:	
Observations with insufficient data to calculate partner-year control variables	3,781
Observations for partner-year without conducting audits in year t+1	1,347
Number of partner-year observations in our sample for market share change model	11,378
Less: observations without audit fee data	1,889
Number of partner-year observations for market share change in terms of audit fee	9,489

Panel B: sample selection for partner change model (for H2b)	
Number of firm-year observations	19,091
Less:	
Observations without partner information	1,781
Observations in the financial industry	183
Observations with insufficient data to calculate firm-year control variables	1,715
Observations for partner without conducting audits in year t+1	1,936
Number of firm-year observations in our sample for partner change model	13,476

This table provides detailed information of the sample construction in the reputational losses tests. Panel A presents the sample selection procedure for the market share change model based on partner-year observations. Panel B presents the sample selection procedure for partner change model based on firm-year observations.

Table 6 Descriptive statistics for reputational loss tests

Panel A: Audit partner market share change test (N=11,378)

VARIABLES	Mean	Median	Q1	Q3	Std Dev.
△NUMBER	0.1850	0.0000	0.0000	0.3330	0.6600
LOSE_NUMBER	0.3010	0.0000	0.0000	0.5000	0.3600
ACQUIRE_NUMBER	0.4820	0.2500	0.0000	1.0000	0.6460
△SIZE	0.8600	0.1390	-0.1310	0.6250	2.7250
LOSE_SIZE	0.2980	0.0000	0.0000	0.6140	0.3840
ACQUIRE_SIZE	1.0420	0.0754	0.0000	0.7410	2.7340
△FEE	0.3687	0.0526	-0.1852	0.5600	1.0300
LOSE_FEE	0.2995	0.0000	0.0000	0.5670	0.3739
ACQUIRE_FEE	0.5498	0.0000	0.7341	0.7341	0.9253
LQP	0.0404	0.0000	0.0000	0.0000	0.1970
LQAO	0.2590	0.0000	0.0000	1.0000	0.4380
LQAF	0.3990	0.0000	0.0000	1.0000	0.4900
MEAN_CASH	0.1750	0.1530	0.0979	0.2300	0.1090
MEAN_GROWTH	0.1840	0.1130	0.0200	0.2350	0.3670
MEAN_INVREC	0.2790	0.2680	0.1870	0.3570	0.1380
MEAN_ROA	0.0266	0.0354	0.0130	0.0585	0.0761
MEAN_SIZE	21.3700	21.2400	20.7500	21.8400	0.9910
MEAN_LEV	0.5180	0.4850	0.3780	0.6020	0.2680
MEAN_LOSS	0.1170	0.0000	0.0000	0.0000	0.2590
MEAN_ABS_DA	0.0600	0.0490	0.0277	0.0772	0.0477
MEAN_OPINION	0.0888	0.0000	0.0000	0.0000	0.2260
MEAN_TENURE	1.9770	2.0000	1.0000	2.5000	0.9810
TOP10	0.2990	0.0000	0.0000	1.0000	0.4580

Panel B: Audit partner change test (N=13,476)

VARIABLES	Mean	Median	Q1	Q3	Std Dev.
Partner_change	0.3560	0.0000	0.0000	1.0000	0.4790
LQP	0.0693	0.0000	0.0000	0.0000	0.2540
LQAO	0.2760	0.0000	0.0000	1.0000	0.4470
LQAF	0.4010	0.0000	0.0000	1.0000	0.4900
CASH	0.1650	0.1320	0.0755	0.2180	0.1290
GROWTH	0.2460	0.1490	-0.0108	0.3400	0.6570
INVENC	0.2830	0.2580	0.1500	0.3920	0.1760
ROA	0.0307	0.0364	0.0101	0.0675	0.0825
SIZE	21.3500	21.2300	20.6100	21.9900	1.1140
LEV	0.5090	0.4940	0.3460	0.6330	0.2690
LOSS	0.1170	0.0000	0.0000	0.0000	0.3220
ABS_DA	0.0600	0.0426	0.0192	0.0797	0.0590
TOP10	0.3170	0.0000	0.0000	1.0000	0.4650
OPINION	0.0928	0.0000	0.0000	0.0000	0.2900
SANCTION	0.0161	0.0000	0.0000	0.0000	0.1260
TENURE	2.1930	2.0000	1.0000	3.0000	1.3100

This table provides the descriptive statistics for the sample used in the reputational loss tests. All continuous variables are winsorized at the bottom and top one percentile to mitigate the undue influence of outliers. Panel A presents the descriptive statistics for the variables used in the market share change model. This panel shows the mean values of clients' characteristics measured at the individual audit partner level. The sample size when dependent variable is *⊿FEE* is smaller (N=9,489) due to the missing audit fee data. And Panel B presents the descriptive statistics for the variables used in the partner change model. Detailed definitions of the variables are outlined in the Appendix.

Table 7 Univariate analysis for reputational losses

Panel A: Likelihood of partner change and audit market share change

	(1) LQP		(2) LQAO (not LQP)		(3) LQAF (not LQP or LQAO)		(4) Others	
Variable	Mean	Median	Mean	Median	Mean	Median	Mean	Median
△NUMBER	0.0716	0.0000	0.2117	0.0000	0.2171	0.0000	0.1746	0.0000
△SIZE	0.6503	0.0922	0.8674	0.1278	0.9877	0.1517	0.8412	0.1423
△FEE	0.2415	0.0588	0.3653	0.0611	0.3996	0.0613	0.3716	0.0483
Partner_change	0.4111	0.0000	0.3604	0.0000	0.3700	0.0000	0.3452	0.0000

Panel B: Univariate analysis in reputational loss

	(1) vs (2)		(1) vs (3)		(1) vs (4)	
	Difference in Mean	Difference in Median	Difference in Mean	Difference in Median	Difference in Mean	Difference in Median
△NUMBER	4.13***	4.16***	4.09***	3.85***	3.33***	3.48***
△SIZE	1.58	1.57	2.21**	2.04**	1.50	2.26**
△FEE	2.27**	2.07**	2.81***	2.65***	2.44**	2.02**
Partner_change	-2.79***	-2.79***	-2.07**	-2.06**	-4.00***	-3.99***

This table presents the univariate analysis for reputational losses. Four distinct groups of firms or partners are used in this analysis: (1) LQP, which is the firms audited by low quality partners in partner change test and low quality partners in market share change tests; (2) LQAO (without LQP), which is the firms audited by low quality audit office but not low quality audit partners in partner change test and partners that are from low quality audit office but not low quality per se in the market share change tests; (3) LQAF (without LQAO or LQP), which is the firms audited by low quality audit firms but not low quality audit offices or low quality audit partners in partner change test and partners that are from low quality audit firm but not from low quality audit office and not low quality per se in the market share change tests; and (4) Others, which is the firms that are not audited by low quality auditors in partner change test and partners that are not from low quality audit firms in the marker share change tests. Panel A reports the mean value and median value of market share change in terms of total client number (*△NUMBER*), total client size (*△SIZE*) and total audit fee (*△FEE*) for different groups of firms, and likelihood of partner change for different groups of individual audit partners. Panel B reports the univariate analysis for differences in means and medians between firms audited by low quality partners and other groups of firms and also reports the univariate analysis for differences in means and medians between low quality partners and other groups of partners. Detailed definitions of the variables are outlined in the Appendix. ***, ** and * denote significance at the 1%, 5% and 10% levels respectively, based on two-tailed tests.

Table 8 Results for low quality partners and market share change

Panel A: Total change in market share

	(1)	(2)	(3)
VARIABLES	△NUMBER	△SIZE	△FEE
LQP	-0.117***	-0.341***	-0.113**
	(-3.934)	(-2.939)	(-2.256)
LQAO	0.009	0.150	0.018
	(0.388)	(1.438)	(0.449)
LQAF	0.031	-0.008	0.016
	(1.330)	(-0.078)	(0.421)
MEAN_CASH	-0.321***	-0.639**	-0.295**
	(-4.667)	(-2.016)	(-2.440)
MEAN_GROWTH	-0.046***	-0.147**	-0.030
	(-2.606)	(-2.542)	(-1.052)
MEAN_INVREC	0.019	-0.815***	-0.013
	(0.373)	(-3.677)	(-0.149)
MEAN_ROA	0.018	0.057	-0.020
	(0.154)	(0.094)	(-0.100)
MEAN_SIZE	0.017**	-0.884***	-0.127***
	(2.045)	(-20.821)	(-8.598)
MEAN_LEV	-0.083***	-0.148	-0.241***
	(-3.027)	(-0.928)	(-5.004)
MEAN_LOSS	-0.034	0.098	-0.012
	(-0.997)	(0.605)	(-0.198)
MEAN_ABS_DA	0.168	1.227*	0.649**
	(1.088)	(1.759)	(2.557)
MEAN_OPINION	0.040	0.312*	0.053
	(1.056)	(1.675)	(0.777)
MEAN_TENURE	-0.034***	-0.027	-0.037***
	(-5.121)	(-0.944)	(-3.393)
TOP10	-0.061**	0.073	-0.043
	(-2.100)	(0.572)	(-0.892)
Constant	0.119	19.870***	2.957***
	(0.622)	(21.451)	(7.438)
Year Fixed Effect	Yes	Yes	Yes
Audit Office Fixed Effect	Yes	Yes	Yes
Observations	11,378	11,378	9,489
Adjusted R^2	4.9%	11.9%	7.5%

Panel B: Client losses

	(1)	(2)	(3)
VARIABLES	LOSS_NUMBER	LOSS_SIZE	LOSS_FEE
LQP	0.048***	0.044**	0.051***
	(2.768)	(2.313)	(2.677)
LQAO	0.000	0.002	-0.012
	(0.024)	(0.129)	(-0.832)
LQAF	-0.001	0.004	0.007
	(-0.093)	(0.327)	(0.475)
MEAN_CASH	0.103***	0.118***	0.135***
	(2.630)	(2.846)	(3.078)
MEAN_GROWTH	0.005	-0.008	0.007
	(0.504)	(-0.730)	(0.600)
MEAN_INVREC	0.014	0.021	0.025
	(0.489)	(0.666)	(0.747)
MEAN_ROA	-0.034	0.019	-0.022
	(-0.505)	(0.248)	(-0.307)
MEAN_SIZE	-0.013***	-0.008*	-0.007
	(-2.828)	(-1.717)	(-1.262)
MEAN_LEV	0.008	0.004	0.010
	(0.464)	(0.195)	(0.517)
MEAN_LOSS	0.037*	0.038*	0.038*
	(1.944)	(1.880)	(1.792)
MEAN_ABS_DA	-0.008	-0.007	0.025
	(-0.096)	(-0.088)	(0.271)
MEAN_OPINION	0.033	0.031	0.047*
	(1.555)	(1.405)	(1.824)
MEAN_TENURE	0.046***	0.046***	0.050***
	(12.799)	(12.202)	(12.465)
TOP10	0.006	0.010	0.013
	(0.422)	(0.614)	(0.771)
Constant	0.448***	0.346***	-0.012
	(4.354)	(3.236)	(-0.101)
Year Fixed Effect	Yes	Yes	Yes
Audit Office Fixed Effect	Yes	Yes	Yes
Observations	11,378	11,378	9,489
Adjusted R^2	7.6%	6.9%	7.9%

Panel C: Client acquisitions

	(1)	(2)	(3)
VARIABLES	ACQUIRE_NUMBER	ACQUIRE _SIZE	ACQUIRE _FEE
LQP	-0.068**	-0.286**	-0.095**
	(-2.445)	(-2.490)	(-2.187)
LQAO	0.008	0.140	0.010
	(0.350)	(1.334)	(0.276)
LQAF	0.029	0.016	0.027
	(1.283)	(0.167)	(0.761)
MEAN_CASH	-0.217***	-0.542*	-0.200*
	(-3.109)	(-1.681)	(-1.688)
MEAN_GROWTH	-0.037**	-0.180***	-0.050**
	(-2.060)	(-3.109)	(-1.964)
MEAN_INVREC	0.037	-0.736***	-0.006
	(0.714)	(-3.273)	(-0.072)
MEAN_ROA	-0.010	-0.314	-0.127
	(-0.086)	(-0.516)	(-0.676)
MEAN_SIZE	0.004	-0.873***	-0.141***
	(0.473)	(-20.489)	(-9.960)
MEAN_LEV	-0.073***	-0.170	-0.194***
	(-2.650)	(-1.045)	(-4.258)
MEAN_LOSS	0.008	0.171	0.015
	(0.239)	(1.046)	(0.271)
MEAN_ABS_DA	0.135	1.109	0.387
	(0.877)	(1.583)	(1.642)
MEAN_OPINION	0.069*	0.401**	0.094
	(1.823)	(2.141)	(1.449)
MEAN_TENURE	0.013*	0.022	0.017
	(1.873)	(0.758)	(1.588)
TOP10	-0.057**	0.059	-0.029
	(-2.001)	(0.454)	(-0.645)
Constant	0.566***	19.660***	2.899***
	(2.927)	(21.154)	(9.040)
Year Fixed Effect	Yes	Yes	Yes
Audit Office Fixed Effect	Yes	Yes	Yes
Observations	11,378	11,378	9,489
Adjusted R^2	5.6%	11.9%	6.7%

This table presents the results for the association between low quality partner and the change in partner's market share, based on the following regression:

$\Delta MShare = \delta_0 + \delta_1\ LQP + \delta_2\ LQAO + \delta_3\ LQAF + \delta_4\ M\_CASH + \delta_5\ M\_GROWTH + \delta_6\ M\_INVREC + \delta_7\ M\_ROA + \delta_8\ M\_SIZE + \delta_9\ M\_LEV + \delta_{10}\ M\_LOSS + \delta_{11}\ M\_OPINION + \delta_{12}\ M\_TENURE$ + Year/Audit office fixed-effects + ε

The dependent variables are Δ*MShare*, which is the percentage change in market share of the audit partner measured in terms of total client number, total client size and total audit fees from year t to year t+1 for each partner-year observation (Δ*NUMBER*, Δ*SIZE*, and Δ*FEE*), where year t is the time period that we identify low quality partners from the regulatory sanctions. Panel A reports the regression results of association between low quality partner and total market share change Δ*MShare*; we separate the failure to retain clients in terms of losing more clients and failure to attract clients in terms of acquiring less clients in Panel B and Panel C. The clientele characteristics are measured at the mean value of the client attributes for each partner-year observation. Detailed definitions of the variables are outlined in the Appendix. The t-statistic in parentheses is adjusted for individual partner clustering. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests.

Table 9 Results for low quality partners and partner change

	Dependent Variable=*Partner_change*	
VARIABLES	(1)	(2)
LQP	0.243***	0.282***
	(2.858)	(3.240)
LQAO	-0.081	-0.067
	(-1.018)	(-0.814)
LQAF	0.001	-0.004
	(0.012)	(-0.049)
CASH	0.829***	0.908***
	(4.769)	(5.136)
GROWTH	-0.046	-0.026
	(-1.476)	(-0.816)
INVENC	0.126	0.173
	(0.942)	(1.224)
ROA	-0.039	-0.204
	(-0.102)	(-0.527)
SIZE	-0.020	-0.034
	(-1.021)	(-1.595)
LEV	-0.085	-0.093
	(-0.916)	(-0.985)
LOSS	0.249***	0.259***
	(3.187)	(3.257)
ABS_DA	0.769**	0.719**
	(2.323)	(2.086)
TOP10	0.178**	0.200**
	(2.212)	(2.349)
OPINION	0.314***	0.287***
	(3.989)	(3.640)
SANCTION	-0.050	-0.082
	(-0.318)	(-0.517)
TENURE	0.224***	0.085***
	(16.776)	(5.283)
Constant	0.391	0.549
	(0.263)	(0.368)
Year Fixed Effect	Yes	Yes
Industry Fixed Effect	Yes	Yes
Audit Office Fixed Effect	Yes	Yes
Observations	13476	12791
Pseudo R^2	4.8%	3.9%

This table presents the results for the association between low quality partner and partner change based on the following regression:

$Partner\_change = \delta_0 + \delta_1 LQP + \delta_2 LQAO + \delta_3 LQAF + \delta_4 CASH + \delta_5 GROWTH + \delta_6 INVREC + \delta_7 ROA + \delta_8 SIZE + \delta_9 LEV + \delta_{10} LOSS + \delta_{11} OPINION + \delta_{12} SANCTION + \delta_{13} TENURE$ +Year/Industry/Audit office fixed-effects + ε

The dependent variable is *Partner*_change, an indicator variable that equals one if there is a change in audit partner following the sanction. Detailed definitions of the variables are outlined in the Appendix. The t-statistic in parentheses is adjusted for firm clustering. We report two set of results. Model (1) is the regression result for all the firm-year observation during the sample period. Model (2) is the regression result after dropping observations where the partner is in the final year of the tenure. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests.

Table 10 Additional tests for the price contagion effect

Panel A: Different types of contagion firms with LQP

	Dependent Variable=CAR(-2,+2)
VARIABLES	(1)
LOP_{fraud}	-0.003*
	(-1.772)
$LQP_{current}$	-0.004*
	(-1.793)
$LQP_{both\ periods}$	-0.007***
	(-5.246)
Controls	Yes
Year Fixed Effect	Yes
Industry Fixed Effect	Yes
Audit Office Fixed Effect	Yes
Observations	29,601
Adjusted R^2	0.9%

Panel B: Contagion firms with low quality review partner, engagement partner or both

	Dependent Variable=CAR(-2,+2)
VARIABLES	(1)
LOP_{review}	-0.004***
	(-2.614)
$LQP_{engagement}$	-0.005**
	(-2.472)
$LQP_{both\ partners}$	-0.006***
	(-3.277)
Controls	Yes
Year Fixed Effect	Yes
Industry Fixed Effect	Yes
Audit Office Fixed Effect	Yes
Observations	29,601
Adjusted R^2	1.8%

Panel C: Contagion firms with LQP involved in sanction for one or multiple times

	Dependent Variable=CAR(-2,+2)
VARIABLES	(1)
LOP_{one}	-0.003**
	(-2.297)
$LQP_{multiple}$	-0.006***
	(-4.270)
Year Fixed Effect	Yes
Industry Fixed Effect	Yes
Audit Office Fixed Effect	Yes
Observations	29,601
Adjusted R^2	1.8%

Panel D: Contagion firms with LQP sanctioned by regulatory or not

	Dependent Variable=CAR(-2,+2)
VARIABLES	(1)
$LOP_{sanction}$	-0.006*
	(-1.844)
$LQP_{no\ sanction}$	-0.005***
	(-4.009)
Year Fixed Effect	Yes
Industry Fixed Effect	Yes
Audit Office Fixed Effect	Yes
Observations	29,601
Adjusted R^2	1.8%

This table presents the results for some additional tests in the price contagion effect. All control variables are not tabulated for parsimony. The t-statistic in parentheses is adjusted for firm clustering. Panel A reports the results for different contagion firms with a LQP during the fraud period, during current period or during both of periods. Panel B reports the results for different contagion firms with low quality lead partner, with low quality concurring partner, or with both of partners. Panel C reports the results for different contagion firms with a LQP involved in sanctions for one time or for multiple times. Panel D reports the results separately for LQPs being sanctioned and LQPs not being sanctioned by regulator. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests.

Table 11 Other sensitivity checks

Panel A: Alternative windows for the price contagion effect

	(1)	(2)	(3)	(4)	(5)
VARIABLES	[-1,+1]	[-1,+2]	[-2,+3]	[-2,+5]	[-1,+10]
LQP	-0.002***	-0.004***	-0.006***	-0.004***	-0.008*
	(-2.651)	(-3.826)	(-4.701)	(-2.939)	(-1.712)
LQAO	-0.001*	-0.001	-0.002	-0.001	0.001
	(-1.753)	(-1.424)	(-1.490)	(-0.566)	(0.504)
LQAF	0.001	0.001	0.002*	0.001	0.000
	(1.141)	(1.051)	(1.826)	(0.608)	(0.133)
Controls	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Audit Office Fixed Effect	Yes	Yes	Yes	Yes	Yes
Observations	29,601	29,601	29,601	29,601	29,601
Adjusted R^2	1.5%	1.7%	1.9%	2.0%	1.0%

Panel B: Excluding contagion firms with the same location and business group as the sanction firms

	Dependent variable=CAR(-2,+2)		
	(1)	(2)	(3)
VARIABLES	Exclude contagion firms with the same location as sanction firms	Non-contagion firms as firms in the same industry and location as sanction firms	Exclude contagion firms in same business group as sanction firms
LQP	-0.004***	-0.004***	-0.005***
	(-2.807)	(-3.644)	(-4.094)
LQAO	-0.001	-0.002	-0.001
	(-1.323)	(-1.466)	(-1.056)
LQAF	0.001	0.001	0.001
	(0.905)	(0.591)	(1.056)
Controls	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Audit Office Fixed Effect	Yes	Yes	Yes
Observations	25,429	16,497	29,319
Adjusted R^2	2.0%	2.9%	1.8%

Panel C: Controlling for the partner fixed effect

	Price contagion	Market share change			Partner change
VARIABLES	*CAR(-2,+2)*	*ΔNUMBER*	*ΔSIZE*	*ΔFEE*	*Partner_change*
LQP	-0.005***	-0.125***	-0.241*	-0.120*	0.277***
	(-4.343)	(-3.163)	(-1.676)	(-1.762)	(2.779)
LQAO	-0.001	0.024	0.088	0.047	-0.081
	(-0.910)	(0.732)	(0.699)	(0.877)	(-0.862)
LQAF	0.002	0.020	0.000	-0.039	0.014
	(1.183)	(0.688)	(0.003)	(-0.819)	(0.167)
Controls	Yes	Yes	Yes	Yes	Yes
Partner Fixed Effect	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	No	No	No	Yes
Observations	29,601	11,378	11,378	9,489	13,476
Adjusted R^2	7.4%	16.7%	32.5%	22.9%	20.4%

Panel D: Contagion firms of the sanctioned firms with only negative CARs

	Price contagion	Market share change			Partner change
VARIABLES	*CAR(-2,+2)*	*ΔNUMBER*	*ΔSIZE*	*ΔFEE*	*Partner_change*
LQP	-0.005***	-0.099***	-0.339***	-0.097*	0.191*
	(-4.343)	(-2.941)	(-2.862)	(-1.696)	(1.938)
LQAO	-0.001	-0.042	-0.012	-0.059	-0.029
	(-0.910)	(-1.394)	(-0.100)	(-1.236)	(-0.291)
LQAF	0.002	0.047	0.015	0.011	-0.024
	(1.183)	(1.624)	(0.127)	(0.241)	(-0.262)
Controls	Yes	Yes	Yes	Yes	Yes
Partner Fixed Effect	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	No	No	No	Yes
Observations	29,601	10,118	10,118	8,471	12,002
Adjusted R^2	7.4%	5.5%	12.6%	6.8%	4.7%

Panel A presents results with expanded window periods to test robustness of the results. We use CARs in the window periods including (-1, +1), (-1, +2), (-2, +3), (-2, +5) and (-2, +10). Panel B presents results after excluding other kinds of possible price contagion effects. Model (1) is the regression results after dropping observations with the same location (province) as the corresponding sanction firms. Model (2) is the regression where we define the benchmark firms (non-contagion firms) with the same industry and same location as the sanction firms. Model (3) is the regression results after dropping observations with the same business group as the corresponding sanction firms. The sample size for this model is much smaller because we delete the sanction events without benchmark firms (non-contagion firms) owing to industry and location restrictions. Panel C reports the results when we repeat all our tests after controlling for partner fixed effects, including price contagion tests, market share change tests, and partner change tests. The regression models are as described in the footnotes of the previous tables. Panel D reports results when we identify low quality auditors (LQP, LQAO, and LQAF) associated with the sanctioned firms with negative CARs around the sanction announcement date. We then repeat our tests for the price contagion effect, market share change, and partner change. The regression models are as described in the footnotes of the previous tables. All control variables are not tabulated for parsimony. The t-statistic in parentheses is adjusted for firm clustering. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests.

Appendix: variables definition

Dependent variables

CAR	The five-day CARs around sanction announcements for non-sanction contagion firms and non-contagion firms. Daily abnormal return is calculated as a firm's raw return minus the weighted adjusted market return on the corresponding day.
Partner_change	An indicator variable that equals one if the client employed a different individual audit partner in year t+1, compared with year t, and zero otherwise.
Δ*NUMBER*	Percentage change in total client number audited by the partner, calculated by (total client number in year t+1 - total client number in year t)/total client number in year t.
Δ*SIZE*	Percentage change in total client size audited by the partner, calculated by (total client size in year t+1 - total client size in year t)/total client size in year t.
Δ*FEE*	Percentage change in total audit fee earned by the partner, calculated by (total audit fee in year t+1 - total audit fee in year t)/total audit fee in year t.
LOSS_NUMBER	Percentage in losing client number audited by the partner, calculated by number of losing clients in year t+1/total client number in year t.
LOSS_SIZE	Percentage in losing client size audited by the partner, calculated by total size of losing clients in year t+1/total client size in year t.
LOSS_FEE	Percentage in losing audit fee audited by the partner, calculated by audit fee of losing clients in year t+1/total audit fee in year t.
ACQUIRE_NUMBER	Percentage in acquiring client number audited by the partner, calculated by number of acquiring clients in year t+1/ total client number in year t.
ACQUIRE_SIZE	Percentage in acquiring client size audited by the partner, calculated by total size of acquiring clients in year t+1/total client size in year t.
ACQUIRE_FEE	Percentage in acquiring audit fee audited by the partner, calculated by audit fee of acquiring clients in year t+1/total audit fee in year t.

Variables of interest

LQP	An indicator variable that equals one if the firm is a contagion firm which shares at least one common partner with a sanctioned firm, and zero otherwise.
LQAO	An indicator variable that equals one if the firm is a contagion firms audited by the same audit office as the sanction firms and zero otherwise.
LQAF	An indicator variable that equals one if the firm is a contagion firm audited by the same audit firm as the sanction firms and zero otherwise.

Control variables

SIZE	Natural log of a client firm's total assets.
LEV	The client's total liabilities, scaled by total assets.
MTB	The client's market value of equity, scaled by book value of equity.
ROA	The client's net income, scaled by total assets.
LARGEST	The client's largest shareholder's ownership.
ABS_DA	The absolute value of the residual from the regression models in Kothari, Leone and Wasley (2005).
TOP10	An indicator variable that equals one if the firm is audited by Top 10 audit firm and zero otherwise. The definition of Top 10 audit firms is based on the ranking of total client size in specific year.
N_LINKS	The natural log of one plus the number of year in which the clients were audited by low quality partners, low quality audit offices, or low quality audit firms.
N_LAPSE	The natural log of one plus the number of years that have elapsed since the last fraud year to the year of sanction.
$SIZE_{sanction}$	Natural log of the sanction firm's total assets.
$CAR_{sanction}$	The CARs of sanction firms over a five-day window (-2, +2) that spans

	the day of first announcement for sanction.
GROWTH	The client's one-year percentage growth in company's total assets.
INVENC	The sum of inventory and receivables, scaled by total assets.
LOSS	An indicator variable that equals one if the client's net income is negative, and zero otherwise
CASH	The client's total cash, scaled by total assets.
OPINION	An indicator variable that equals one if the client receives a modified audit opinion, and zero otherwise
SANCTION	An indicator variable equals one if the client is sanctioned for financial reporting fraud, and zero otherwise.
TURNOVER	The client's total sales, scaled by total assets.
TENURE	The length of partner's tenure for firm in years.
MAO	An indicator variable that equals one if sanction firm was issued modified audit opinion during the fraud period and zero otherwise.
$TOP10_{sanction}$	An indicator variable that equals one if the sanction firms were audited by Top 10 audit firm during the fraud period, and zero otherwise.
LARGE_SANC	An indicator variable that equals one if the size of corresponding sanction firm is greater than the median of size of sanction firms and zero otherwise.
LQP_{fraud}	An indicator variable that equals one if the firm is a contagion firm which shares at least one common partner with a sanctioned firm during the fraud period but not during the current period which is the year before the sanction announcement date, and zero otherwise.
$LQP_{current}$	An indicator variable that equals one if the firm is a contagion firm which shares at least one common partner with a sanctioned firm during the current period but not during the fraud period, and zero otherwise.
$LQP_{both\_periods}$	An indicator variable that equals one if the firm is a contagion firm which shares at least one common partner with a sanctioned firm during the current period and also during the fraud period, and zero otherwise.
LQP_{review}	An indicator variable that equals one if the firm is a contagion firm which shares lead partner but not the concurring partner with a sanctioned firm, and zero otherwise.
$LQP_{engagement}$	An indicator variable that equals one if the firm is a contagion firm which shares concurring partner but not the lead partner with a sanctioned firm, and zero otherwise.
$LQP_{both\_partners}$	An indicator variable that equals one if the firm is a contagion firm which shares both of lead partner and concurring partner with a sanctioned firm, and zero otherwise.
LQP_{one}	An indicator variable that equals one if the firm is a contagion firm which shares common partners that are involved in financial reporting fraud for only one time with a sanctioned firm, and zero otherwise.
$LQP_{multiple}$	An indicator variable that equals one if the firm is a contagion firm which shares common partners that are involved in financial reporting fraud for multiple times with a sanctioned firm, and zero otherwise.
$LQP_{sanction}$	An indicator variable that equals one if the firm if a contagion firm with LQP who is also sanctioned by regulatory and zero otherwise.
$LQP_{no\_sanction}$	An indicator variable that equals one if the firm if a contagion firm with LQP who is not sanctioned by regulatory and zero otherwise.
M_X	The mean of a client-level variable (X) for all the engagements within a partner-year.