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Stock Price Contagion Effects of Low-Quality Audits at the Individual Audit Partner Level

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SUMMARY: We use Chinese audit partner data to show that partners associated with financial reporting fraud induce share price declines among non-fraudulent firms audited by the same audit partners. In cross-sectional analyses, we find that share price declines are more pronounced when low-quality partners (LQPs) failed to issue modified audit opinions during the period in question and when the LQPs were from one of the Top 10 audit firms. Additional analyses show that investors impose larger penalties on contagion firms when fraudulent firms are larger and the time lapse between sanction and fraud commitment is shorter. The personal characteristics of LQPs (except gender) do not cause a difference in market reaction to contagion firms. Overall, our results speak to the importance of audit partner identity to stock market valuation.

JEL Classifications: M41; M42; M48.

Keywords: audit partner; audit quality; price contagion effects; market reactions.

I. INTRODUCTION

Prior audit quality studies have largely focused on the audit firm or the city-based practice office. 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 Francis 2005; DeFond and Zhang 2014; Lennox and Wu 2018). Responding to these calls, several studies have moved to focus on audit quality issues at the individual audit partner level (Carcello and Li 2013; Gul, Wu, and Yang 2013; Knechel, Vanstraelen, and Zerni 2015; Li, Qi, Tian, and Zhang 2017). For example, Gul et al. (2013) show that the effects of individual auditors on audit quality are both economically and statistically significant. Knechel et al. (2015) suggest that different partners in the same audit firm make audit judgments across audits on a systematic, nonrandom basis. More recently, Li et al. (2017) focus on audit partners who have performed failed audits and find that these failed partners also deliver lower-quality audits on other engagements.

We extend prior studies by investigating how stock market investors react to non-fraudulent firms that share the same audit partner with fraudulent companies. Following the literature, we define an audit partner as a low-quality partner (LQP) when one

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or more of his/her clients has been involved in financial reporting fraud.[1] Prior studies have shown that the clients of audit firms/offices that provide low-quality audits suffer significantly negative abnormal returns (Chaney and Philipich 2002; Weber, Willenborg, and Zhang 2008). Because the audit office is often viewed as the primary decision-making unit of an audit firm (Francis and Michas 2013; Francis and Yu 2009), investors may perceive audit failure to occur at the office level, thus driving down the stock prices of all clients audited by the same office. Due to the non-availability of partner information in these prior studies, there is a lack of in-depth analysis on *whether* investors perceive low audit quality to occur at the level of individual auditors. While an expectation exists that stock market investors will react negatively to non-fraudulent firms that share an audit partner with fraudulent companies, one further question that arises concerns the circumstances that could mitigate this effect. Therefore, we explore whether the issuance of modified audit opinions (MAOs) to fraudulent companies by LQPs and whether the LQPs were from Top 10 audit firms (proxies for audit quality) affect the stock market reaction to non-fraudulent companies that share low-quality partners.

We conduct our analyses using the setting in the Chinese market, which has two important institutional features. The first feature is that two auditors of each audit engagement are required to sign the audit report in China.[2] 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 listed companies that were involved in financial fraud can clearly be identified since the China Securities Regulatory Commission (CSRC) publishes the findings of fraud investigations on its official website. These fraud cases are similar to the Accounting and Auditing Enforcement Releases (AAERs) in the U.S. Therefore, the announcement dates of these reports enable researchers to investigate market reactions to non-fraudulent 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 that audited a sanctioned firm during the years when financial reporting fraud occurred is identified as an LQP.[3] We then examine market reactions to non-fraudulent firms audited by an LQP (defined as contagion firms) during fraud-occurring years and the current year around sanction announcements.[4] The five-day cumulative abnormal returns (CARs) are significantly negative for contagion firms that are audited by an LQP compared to other firms. Our cross-sectional analysis shows that the share price decline is significantly larger when LQPs failed to issue MAOs for the sanctioned firms during the fraud period and when the LQPs were from the Top 10 audit firms. These results indicate that auditors are penalized more heavily by the market when they fail to issue a warranted qualified report (Kida 1980; Kaplan and Williams 2013) and that LQPs from the Top 10 audit firms suffer larger reputational losses.

We also conduct several additional analyses to shed light on factors that affect the price contagion effects. First, we find that the price contagion effects of LQPs vary with the severity of financial reporting frauds measured by the size of the fraudulent firm and the time lapse between the sanction announcement date and the period during which the fraud was committed.[5] Second, we find that price contagion effects are more pronounced for male LQPs than they are for female LQPs. However, we do not find that price contagion effects vary significantly with other individual characteristics, such as an LQP's age, party membership, educational background, and audit experience.

Third, we compare market reactions to three groups of contagion firms: (1) firms that were audited by LQPs during both fraud years and the current year, (2) firms audited by LQPs during fraud periods that changed to non-LQPs during the current year, and (3) firms that were audited by LQPs only during the current year and not during the fraud years. Our results show that market decline is the strongest for firms audited by LQPs during both periods. By comparison, the price contagion effect is

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[1] Two common definitions of audit failure exist. The first stream of research defines audit failure as when an auditor's clients are involved in accounting malfeasance, including restatement of earnings, fraud activity, or sanctions by the government. The second stream of research defines audit failure narrowly as a situation in which an audit firm (or its partners) is sanctioned by the government, court judgments, or SEC enforcement actions. Our definition of audit failure follows the first stream of studies, that is, we assume fraud in client firms suggests that the audit of the originally issued financial statements was of unacceptably low quality. In addition, the use of accounting malfeasance can provide insight into a much wider range of potentially low-quality audits than a narrower definition of audit failures (Francis and Michas 2013).

[2] 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 percent) were signed by three auditors.

[3] 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*).

[4] Fraud years are the periods in which clients committed fraud. The current year is the year before clients are sanctioned by CSRC. For example, if a firm committed fraud in financial reporting between 1998 and 2000 and was subsequently sanctioned in 2002, the fraud years are 1998–2000 and the current year is 2001.

[5] Because of the complexity of fraudulent financial reporting and the lack of detailed information from sanction announcements (details to be provided in Section II), determining the magnitude or type of fraud for each case is difficult. Therefore, we rely on the size of the fraudulent firm and time lapse between the sanction announcement and the period during which the fraud was committed as indirect measures of fraud severity. We acknowledge that the absence of direct measurement of the specific type and magnitude of a fraud sanction is a limitation of our findings.

significantly attenuated when contagion firms change to non-LQPs during the current year, presumably due to a "fresh set of eyes" provided by the incumbent auditors in the current year.

Fourth, we examine whether the price contagion effect is stronger for clients of LQPs who received direct sanctions from the government as a result of their clients' fraudulent reporting. We find no significant difference between market reactions to non-fraudulent clients of LQPs with or without direct government sanctions, indicating that investors' perceptions of reputational loss are not limited to LQPs with partner sanctions but extend to LQPs not directly subjected to regulatory sanctions. Fifth, we examine the market reactions of LQPs who were sanctioned once compared to those sanctioned more than once. Although market reactions to firms audited by LQPs of first-time sanctions and LQPs of subsequent sanctions are all negative and significant, the market appears to punish the former more severely. Finally, we find that the price contagion effect exists when the LQP is either the engagement partner or the review partner, suggesting that investors perceive the audit quality of both engagement and review partners to be equally bad when they are implicated in fraud.

In addition, we conduct a series of robustness tests, including the use of several alternative window periods for the market reaction tests, excluding contagion firms located in the same region or belonging to the same business group as the sanctioned firms, and controlling for the fixed effect of the individual audit partner. Our results continue to hold in all of these robustness tests.

Our study complements two recent studies by Li et al. (2017) and Knechel et al. (2015). Li et al. (2017) focus on actual audit quality as measured by abnormal accruals rather than on investors' perceptions of audit quality. Furthermore, they do not investigate the factors that influence investors' perception of audit quality.[6] Our finding is consistent with that of Knechel et al. (2015), who show that the market recognizes and prices differences in engagement partner reporting style.

Our study makes several contributions to the literature. First, prior studies that examine the price contagion effects of audit failures typically focus on the audit firm or audit office (Chaney and Philipich 2002; Weber et al. 2008). We find that price contagion effects also occur at the partner level. Our study complements prior research (e.g., Knechel et al. 2015; Aobdia, Lin, and Petacchi 2015; Li et al. 2017) by providing further evidence that the availability of audit partners' identities can assist the capital market in making informed decisions on audit quality.

Second, our study complements and extends prior research (e.g., Li et al. 2017) by providing cross-sectional evidence that the characteristics of LQPs can affect the extent of price contagion effects. Providing collective evidence on these important issues will not only help practitioners, listed companies, and regulators better understand how the market perceives audit quality but also represents a step forward in the development of auditing theory.

Third, as highlighted in Lennox and Wu (2018), endogeneity is a common problem for studies conducted at the partner level because the client-partner alignment process is unlikely to be random.[7] Given that assignments are determined endogenously, it is unclear whether the documented results are driven by the characteristics of the partner or the characteristics of the clients to which the partner is assigned. This problem is more acute when measures of financial reporting quality, such as accruals, are used to capture audit quality (Aobdia et al. 2015; Li et al. 2017) because financial reporting quality is a joint product of the interaction between the firm and its auditor. In our study, such endogeneity is *less* of a concern because regulatory sanctions against fraudulent firms are likely to be exogenous to non-fraudulent firms. Consequently, market reaction tests are *less* likely to suffer from endogeneity problems as long as stock prices already impound all publicly available information.

Several limitations are inherent in our study. First, although we show that price contagion effects occur at the partner level, we are unable to conclude from our research design whether partner-level effects subsume office-level effects or whether both effects exist. Second, we interpret negative reactions to non-fraudulent firms audited by LQPs as market perceptions of partners' low audit quality based on the assumption that investors know the non-fraudulent firms' underlying value. However, the market may also adjust the true value of clients upon announcements of fraud. Our research design, however, cannot disentangle the two. Last, due to the complexity of frauds and the lack of information from sanction announcements, we could not directly measure the magnitude and type of sanctions associated with LQPs.

The rest of the paper is as follows. In Section II, we review the literature and present the research hypotheses. In Section III, we describe the research design and sample. In Section IV, we present the empirical results. We conclude the paper in the final section.

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[6] In their review paper, DeFond and Zhang (2014, 288) summarize that perception-based measures capture audit quality more comprehensively than actual output measures. This is especially important in China as studies have found that Chinese-listed companies can manage earnings, other than abnormal accruals, with related-party transactions, government subsidies, and asset restructuring (Aharony, Lee, and Wong 2000; Chen, Lee, and Li 2008; Jian and Wong 2010).

[7] As noted in Lennox and Wu (2018), the evidence in Chen, Peng, Xue, Yang, and Ye (2016) shows that clients prefer more lenient partners when they shop for clean audit opinions. Hence, the match between the client and partner can be endogenous to the partner's past audit style and to the riskiness/preferences of the client.

II. BACKGROUND, PRIOR LITERATURE, AND HYPOTHESES 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 administering the fieldwork (Gul et al. 2013).[8] 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 that audits sanctioned firms.[9] Accounting malfeasance typically includes a combination of misstatement of revenue, income, or assets that materially change the financial position of a firm.[10] China's Securities Law gives the CSRC the authority to sanction firms and individuals suspected of securities and financial reporting fraud. The CSRC conducts both regular reviews and random inspections of listed companies. It also receives complaints from public sources such as investors, employees, and newspapers, all of which can lead to regulatory investigations. The findings of the CSRC investigations and sanction decisions are announced publicly on an official website with some detailed information regarding fraudulent firms' wrongdoing.[11] 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. Based on our data, an average of 1.9 years is required for financial reporting fraud to be uncovered.

Third, the Chinese audit market is suited to investigating partner reputational effect in terms of market value loss following financial reporting fraud because 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). Investors are likely to be more sensitive about audit quality because they are not well protected by laws and consequently, their investments will shrink when firms are implicated in financial fraud. In China, auditors are unlikely to be a source of insurance for investors. In a large number of fraud cases, angry investors launched numerous lawsuits, but no payouts were provided by audit firms (Hutchens 2003). Moreover, fierce competition in the Chinese audit market exacerbates the reputational consequences of poor audit quality (Chen et al. 2010). In the U.S. and other developed countries, the Big 4 firms audit the majority of listed companies, whereas in China, the percentage of listed companies audited by the Big 4 auditors is only approximately 26 percent (Chen, Su, and Wu 2007).[12]

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., Francis and Yu 2009; Reynolds and Francis 2000) 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.[13] Knechel (2000) argues that individual audit partners differ in terms of incentives, risk preferences, expertise, and

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[8] Audit reports in China are predominantly signed by two partners: the review partner and the 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.

[9] 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; DeFond and Zhang 2014; Lennox and Pittman 2010). Our definition of a low-quality audit is broader than that of Li, Qi, Tian, and Zhang (2017) and Aobdia, Lin, and Petacchi (2015), who consider only a sanctioned partner as low-quality. In contrast, we view the audit quality of partners whose clients are being sanctioned as low regardless of whether the partners are being sanctioned by regulators.

[10] For example, on December 21, 2004, Hefei Fengle Seed Co., LTD was sanctioned by the CSRC for financial reporting fraud during 1997–2002. Three major issues are involved in this case of fraud: (1) the company failed to disclose significant security investment outflows and inflows during 1997–2001, (2) the company inflated revenues and expenses during 1997–2001 to increase profits and presented the fictitious assets on the balance sheet during 1997–2002, and (3) the company provided misleading information about the use of raised funds. This information is publicly disclosed at http://www.csrc.gov.cn/pub/zjhpublic/G00306212/200804/t20080418_14421.htm

[11] Although the reports provide some quantitative information on accounting fraud (e.g., how much revenues were inflated, how much assets or expenses are underestimated), the information is incomplete and does not allow us to summarize the net impact on income, complicating the comparison of fraud magnitude across firms.

[12] 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 has 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, Su, and Wu 2007). A senior partner from KPMG in China also informally confirmed that the Chinese auditing market remains very competitive.

[13] Lennox and Wu (2018) provide a comprehensive review of the prior literature on audit partners.

cognitive abilities, which ultimately affect audit quality. Using audit data in the Chinese market, Gul et al. (2013) document substantial variation in audit quality across different partners. 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. 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. This implies that while audit quality varies across the spectrum of audit partners, there appears to be consistency in the quality of their performance.

In addition to documenting the consistency of partners' reporting style across different engagements in prior literature, other studies have investigated the impact of audit partners' characteristics and incentives on audit outcomes. For example, Goodwin and Wu (2016) document that auditors are less likely to issue first-time going-concern opinions and are associated with lower audit quality as they age. Zerni (2012) finds that engagement partner industry specialization is associated with higher fees for some partners. Chin and Chi (2009) show that accounting restatements are less likely to occur when partners have greater industry expertise. Several other studies have also investigated factors that motivate partners to provide different levels of audit quality, including clients' economic importance to the audit partner (Chen et al. 2010; Chi, Douthett, and Lisic 2012), audit partner tenure (Carey and Simnett 2006; Chen, Lee, and Li 2008; Ye, Carson, and Simnett 2011), audit partner workload (Sundgren and Svanström 2014; Goodwin and Wu 2016), and social ties or economic bonding between audit partners and their clients (Blouin, Grein, and Rountree 2007; Guan, Su, Wu, and Yang 2016).

Price Contagion Effects of Low-Quality Audits

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, Jenkins, and Johnson 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 above information transfer literature, an audit failure is likely to cause investors to reevaluate their positions owing to the increased uncertainty associated with the audit quality of other firms audited by the same auditor. Therefore, when an audit failure is publicized, other clients of the same audit firm 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). Francis and Michas (2013) show that the existence of low-quality audits in an auditor office indicates the presence of a contagion effect on the quality of other (concurrent) audits conducted by the same office, indicating that audit failure is a systematic problem with audit quality at the affected office location. Overall, the prior studies suggest that the contagion effect exists at both the audit firm level and the office level.

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, Knechel et al. (2015) find that the market penalizes firms audited by partners with a history of aggressive GCO or accrual reporting through higher implicit interest rates, lower credit ratings, and higher assessed insolvency risks. Moreover, clients of auditors with aggressive reporting are associated with lower Tobin's Q. Aobdia et al. (2015) find a positive association between individual audit partners' quality and earnings response coefficients, suggesting that investors perceive earnings to be more informative when a higher-quality partner performs the audit. They also find that the market reacts 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.

We define the audit quality of audit partners as low if their clients were involved in financial reporting fraud sanctioned by the CSRC. A sanction announcement conveys a negative connotation about both the fraudulent firm's underlying true value (Titman and Trueman 1986) and the perceived quality of the audit partner (Dye 1993). Investors of non-fraudulent firms audited by the same partner lower their expectations of audit quality and perceive an increased risk of discovering similar financial reporting issues. 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 partner.[14]

[14] We assume that investors know non-fraudulent firms' underlying true value and that value does not change with a sanction announcement. Therefore, negative reactions to other firms audited by LQPs are likely driven by perceived low audit quality. However, investors may also adjust firms' underlying value downward independent of the perceived audit quality. Our research design does not allow us to separate the two.

However, the contagion effect may not occur at the individual partner level. Audit partners are constrained by the quality control mechanisms within an auditing firm or office. They must follow auditing standards and the standardized audit procedures, and key decisions are often centralized at the audit firm/office level (Gul et al. 2013). If investors believe that an audit firm/office has strong internal control, then the fraud committed by one client firm does not necessarily affect other clients of LQPs. Thus, *a priori,* it is unclear whether the price contagion effect of financial reporting fraud resides at the individual partner level. Because of this ambiguity, we state our first hypothesis in null form:

H1: There is no significant difference in the share price decline for non-fraudulent firms audited by LQPs compared with the benchmark firms.

Cross-Sectional Analysis of the Price Contagion Effects

We expect that the price contagion effect, if it exists, will be stronger in instances in which the LQP's reputation is likely to be severely tarnished. We consider two factors related to the attributes of the LQP: whether the LQP issued an MAO to fraudulent firms and whether the LQP was from one of the Top 10 audit firms.

Auditors can mitigate their risk exposure by issuing MAOs. Several studies find that auditors increase their issuance of MAO to clients with higher litigation risk (Kaplan and Williams 2013) and to clients with larger accruals (Francis and Krishnan 1999). The issuance of MAOs, particularly to financially distressed clients prior to bankruptcy, lowers alleged audit failure, auditor litigation, and litigation settlements (Carcello and Palmrose 1994; Kaplan and Williams 2013). Further, Kida (1980) reports that audit partners believe that failure to issue an audit opinion when it is warranted is "grounds for alleging auditing negligence." Hence, an individual audit partner that failed to issue MAOs to sanctioned firms indicates lower audit quality because the audit partner either could not detect the fraud or did not report the problem. Consequently, we expect that audit partners that issued MAOs will alleviate investors' concerns about individual auditors' quality, leading to a less pronounced price contagion effect.

However, prior studies show that whether investors can clearly differentiate the content of MAOs from clean opinions is unclear. For example, Chow and Rice (1982) find no significant market reaction to MAOs, whereas Choi and Jeter (1992) report negative price reactions to MAOs. Using Chinese market data, Chen, Su, and Zhao (2000) find that investors did not react negatively to MAOs in the year of issuance. Their study suggests that two to three years were required for investors to form a consensus belief about the implications of MAOs on the informativeness of earnings. Therefore, whether the issuance of MAOs by LQPs will affect investors' perception is an empirical question. We state the hypothesis in null form as follows:

H2: The price contagion effect is not dependent on whether LQPs issued an MAO for the sanctioned firm.

We also expect LQPs from Top 10 audit firms to affect the price contagion effect. Top 10 auditors are generally perceived to be of high-quality in China (Fang, Pittman, Zhang, and Zhao 2017). For example, Top 10 auditors are more likely to issue MAOs to firms with questionable accounting practices (DeFond, Wong, and Li 1999), are less likely to be subject to political influence or political connections (Chan, Lin, and Mo 2006; Yang 2013), are associated with higher market valuation of earnings (Gul, Sun, and Tsui 2003), and facilitate the flow of more credible firm-specific information into the stock market (Gul, Kim, and Qiu 2010). We therefore expect less price contagion for clients audited by Top 10 firms. However, if the investors expect high-quality audits from the partners of large audit firms to begin with, the very fact that their audit clients are sanctioned would send a negative 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, and we do not offer a directional prediction. Based on the above discussion, we formulate our hypotheses as follows:

H3: The price contagion effect is not dependent on whether LQPs were from the Top 10 audit firms.

III. RESEARCH DESIGN AND SAMPLE

Empirical Model

In H1, we test whether the price contagion effect, measured in terms of market reactions of non-fraudulent firms to sanctions, exists at the individual audit partner level. In particular, we examine market reactions to non-fraudulent firms audited by an LQP during fraud years and/or the current year.[15] To be comparable with prior studies, we also examine market reactions

[15] In additional tests, we further separate contagion firms into three subgroups: firms that share the same audit partner as sanctioned firms in the fraud years but not in the current period (34 percent), firms that share the same audit partner as sanctioned firms in the current period but not in the fraud periods (15 percent), and firms that share the same audit partner as sanctioned firms in both the fraud and current periods (51 percent). We find that the price contagion effect exists in all three subgroups.

to non-fraudulent firms that were audited by the office/firm in which the LQP is located. Accordingly, we identify four distinct groups of non-fraudulent firms around sanction announcements: (1) firms audited by an LQP; (2) firms audited by an LQAO (the office in which the LQP is located); (3) firms audited by an LQAF (the audit firm in which the LQP is located); and (4) non-contagion firms audited by a different audit firm. Specifically, we estimate the following cross-sectional regressions:

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

where *CAR* represents 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.[16] Daily abnormal returns are calculated as a firm's raw returns minus the same-day weighted adjusted returns of the market in which the firms are listed.[17] *LQP* is an indicator variable that equals 1 if at least one of the partner's client firms was sanctioned for an accounting-related problem and 0 otherwise. We provide an example of how we code *LQP* in Appendix A. Price contagion effects at the partner level exist if the coefficient estimate of *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. Detailed definitions of these variables are reported in Appendix B. All control variables, except $CAR_{sanction}$, are measured at the fiscal year end 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 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 in China (Gul et al. 2010; Yu, Zhang, and Zheng 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 LQPs, LQAOs, or LQAFs (*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 include sanctioned firms' *CAR*s surrounding the sanction announcement date ($CAR_{sanction}$) to control for differences in investor perceptions of the severity and importance of the sanction and related information in the announcement, 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 sanctioned firms ($SIZE_{sanction}$) because larger firms are more likely to provoke greater contagion effects than small firms (Chen and Goh 2013). 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.[18]

To test H2 and H3, we include the moderating variables (*MAO* and $Top10_{sanction}$) and their interactions with *LQP* in Equation (1). Consistent with Huang, Raghunandan, Huang, and Chiou (2015) and He, Pittman, Rui, and Wu (2017), we define *MAO* as one of the following: (1) unqualified opinions with explanatory notes, (2) qualified opinions, and (3) adverse opinions.[19] $TOP10_{sanction}$ is an indicator variable that equals 1 if the LQP was from the Top 10 audit firms during the fraud period and 0 otherwise.[20] The coefficients of interest in H2 and H3 are $LQP \times MAO$ and $LQP \times TOP10_{sanction}$, respectively.

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[16] 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.

[17] There are two stock markets in China: the Shenzhen stock market and the Shanghai stock market. The market returns used to calculate CARs are the market in which the firms are listed.

[18] The industry classification is based on CSRC two-digit codes for non-manufacturing industries and three-digit codes for manufacturing industries. Our results continue to hold when we remove the office fixed-effect from the regressions.

[19] Huang et al. (2015) and He et al. (2017) also include a disclaimer in their definitions of *MAO*. We do not include a disclaimer because none of the sanctioned firms were issued a disclaimer during the fraud periods in our sample. Although the CICPA interprets unqualified opinions with explanatory notes in a manner similar to the "emphasis of matter" in U.S. GAAS, this type of audit report is often issued in lieu of a qualified opinion in China. Previous China-based studies all treat it as a form of audit opinion modification (e.g., DeFond et al. 2000; Chen et al. 2010; Huang et al. 2015; He et al. 2017).

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

Sample Selection

The original regulatory sanction sample comprises all regulatory sanction events suspected of financial reporting frauds from 1999 to 2012 collected from the China Stock Market and Accounting Research (CSMAR) database.[21] As shown in Panel A of Table 1, the sample starts with 411 sanction events.[22] 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 unique firms) associated with financial reporting fraud during our sample period.[23]

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 the sanctioned firms during the financial reporting fraud periods and current period. As shown in Panel B, we first identify 21,654 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.[24] 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 2,421 firm-year observations with common audit partners. Among those, 10,606 (17,949) observations with common audit offices (firms) are included.

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 sanctioned firm but that neither report fraud nor share the same audit firm as the sanctioned firms.[25] 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 sanctioned firm.[26] 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-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. We discard 3,104 observations with missing data for the control

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[21] 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.

[22] We manually check each of the sanction announcement dates from multiple data sources, 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 percent) announcement dates compared to the information acquired from the CSMAR database. Although we take steps to ensure that the announcements represent "new" information to the capital markets, some information leakage may occur before the sanction announcement dates. To alleviate this concern, we compute the CARs of sanctioned firms for preannouncement dates (−10, −3). The mean CAR is −0.14 percent, which is not significantly different from 0. The result suggests that sanction announcements likely represent *new* information and no evidence of information leakage before the announcement date.

[23] We also compare the characteristics of sanctioned firms and non-sanctioned (i.e., contagion and non-contagion) firms during the sample period. The univariate analysis shows that the sanctioned 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 ($t = 5.30$).

[24] 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).

[25] With these criteria imposed for selecting non-contagion benchmark firms, the CARs of non-contagion firms actually capture the price contagion effect of the same industry. (Gleason et al. 2008). *Ex ante,* it is unclear if the price contagion effect of a common low-quality partner will be greater or smaller than the price contagion effect of the same industry.

[26] We take two approaches to mitigating the selection bias of the non-contagion firms. First, we use a propensity-score procedure to find the non-contagion firms. The probability of a firm being sanctioned in a given year is estimated based on firm size, turnover, loss, operating cash flow, the issuance of a modified audit opinion and whether the firm is audited by a Top 10 audit firm. After obtaining the propensity scores, we match each treatment firm with 60 non-contagion firms with the closest propensity scores as the set of non-contagion benchmark firms. Second, to further ensure that our results are not caused by the selection bias for non-contagion firms, we restrict the sample firms to include only the contagion firms. Our inferences remain, indicating that that our results are not affected by the selection of non-contagion firms.

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 of 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 tests. 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 final sample for the price contagion tests.

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.

In Table 2, Panels A and B present the distribution of sanctioned, 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.

IV. EMPIRICAL RESULTS OF THE PRICE CONTAGION EFFECT TEST

Descriptive Statistics

In 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 percent of observations are contagion firms with the same LQP as the sanctioned firms.

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 Firms	Sanctioned Firms	Contagion Firms With LQP	Contagion Firms With LQAO	Contagion Firms With LQAF	Non-Contagion Firms
Agriculture	508	2	73	203	371	514
Exploring	391	3	28	143	266	145
Manufacturing	13,060	154	1,506	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. 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, respectively. Four distinct groups of firms are used in the analysis: (1) firms audited by low-quality partners (LQPs), 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. For reasons of brevity, industry is classified using one digit.

In Panel B of Table 3, we report the mean and median of *CAR*s for a variety of window periods for contagion and non-contagion firms, separately. The results are consistent across different *CAR*s. We focus our discussion on the five-day *CAR* from day −2 to day 2 (*CAR* (−2, +2)) since this is the window we use to test our hypothesis. The mean and median *CAR* (−2, +2) are −0.56 percent and −0.86 percent for contagion firms with common LQP; −0.12 percent and −0.57 percent for contagion firms with a common audit office but not with a common LQP; −0.08 percent and −0.46 percent for contagion firms with a common audit firm but without a common LQP or audit office; and −0.23 percent and −0.59 percent for non-contagion

TABLE 3

Univariate Analysis of the Price Contagion Effects

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
$SIZE_{sanction}$	20.9084	20.7881	20.3026	21.6021	1.0136
$CAR_{sanction}$	−0.0024	−0.0070	−0.0393	0.0218	0.0662

This panel presents descriptive statistics for the variables used in the price contagion model. Detailed definitions of the variables are outlined in Appendix B. The number of observations is 29,601 except for $SIZE_{sanction}$ and $CAR_{sanction}$, which are based on 327 sanctioned firms.

Panel B: Market Reaction for Contagion Firms and Non-Contagion Firms Around Sanction Announcements

	(1) Contagion Firms with LQP n = 2421		(2) Contagion Firms with LQAO (without LQP) n = 8185		(3) Contagion Firms with LQAF (without LQP or LQAO) n = 7343		(4) Non-Contagion Firms 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%***

(continued on next page)

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 an LQP with the other three groups of firms. The difference in the *CAR*s of contagion firms with an LQP from contagion firms with an LQAO but not an LQP (and those with an LQAF but not an 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 an LQP is significantly more negative than that to non-contagion firms. These results suggest that the stock price decline for the contagion firms that share at least one common audit partner with the sanctioned firm is greater than that of benchmark firms.

Main Analysis

We report the results for testing H1 in Table 4. We first re-examine the firm and office-level price contagion effects in the first two columns. *LQAF* (*LQAO*) is an indicator variable that equals 1 if at least one client firm was sanctioned for an

TABLE 3 (continued)

Panel C: Univariate Analysis in Market Reactions

	Contagion Firms in (1) versus Contagion Firms in (2)		Contagion Firms in (1) versus Contagion Firms in (3)		Contagion Firms in (1) versus 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

***, **, * Denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively, based on two-tailed tests.
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 1 percentile to mitigate the undue influence of outliers. Detailed definitions of the variables are outlined in Appendix B. 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 reports test statistics (t-value for mean and z-value for median) 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.

accounting-related problem and 0 otherwise. In column (1), we find that the coefficient for *LQAF* is non-significant.[27] In column (2), the coefficient for *LQAO* is negative and significant, suggesting the existence of an office-level contagion effect as documented in prior studies (e.g., Chaney and Philipich 2002; Francis and Michas 2013). Column (3) presents the result for H1 regarding whether the price contagion effect occurs at the individual partner level. The coefficient for *LQP* is negative and statistically significant at 1 percent, indicating that the price contagion effect occurs at the individual partner level. In terms of economic significance, the *CAR*s are 0.5 percent lower for contagion firms that share common partners with the sanctioned firms than those for benchmark firms. This magnitude represents a 33 percent (= 0.5/1.5) reduction in *CAR*s from the sample mean *CAR*s (Table 3, Panel A).

For the set of control variables, the coefficients on *LEV* and *MTB* are positive and significant, suggesting that contagion stock returns are higher for firms with higher growth opportunities and leverage. The significant and positive coefficient on $CAR_{sanction}$ indicates that contagion stock returns are highly correlated with stock returns of sanctioned companies. In particular, more negative news released in financial fraud sanctions leads to a more severe information spillover to other firms. The coefficient on *ABS_DA* is marginally significant and negative, which provides some 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 in Table 4 suggest that the sanction announcements induce stock price declines among the contagion firms owing to investors' concerns over the low quality of audit partners. The price contagion effect occurs at the audit partner level, suggesting that the identification of audit partners provides information to the capital market in addition to information from audit offices and audit firms.[28]

Cross-Sectional Analysis

We provide the results for testing H2 and H3 in Table 5. In column (1), the coefficient for $LQP \times MAO$ is positive and significant at the 1 percent level, suggesting that the price contagion effect at the individual audit partner level is less pronounced when the audit partners issue MAOs to sanctioned firms. In column (2), the coefficient on $LQP \times TOP10_{sanction}$ is

[27] One possible explanation for the non-significant coefficient for *LQAF* is that the contagion effect through the same audit firm is no greater than the contagion effect through the same industry since the non-contagion firms were selected from the same industry as the sanctioned firms.

[28] Columns (2) and (3) of Table 4 show that both office and individual level contagion effects exist. One limitation of our setting is that we cannot determine whether price contagion effects at the office level co-exist with the price contagion effects at the partner level since all the variation in LQAO is subsumed by the variation in LQP.

TABLE 4

Results for the Price Contagion Effects of Low-Quality Partners

	Dependent Variable = *CAR* (−2, +2)		
Variables	**(1)**	**(2)**	**(3)**
LQP			−0.005***
			(−4.796)
LQAO		−0.002**	
		(−1.993)	
LQAF	0.000		
	(0.291)		
SIZE	0.000	0.000	0.000
	(0.167)	(0.154)	(0.137)
LEV	0.005***	0.005***	0.005***
	(2.909)	(2.901)	(2.918)
MTB	0.032***	0.032***	0.032***
	(5.133)	(5.149)	(5.139)
ROA	0.000	0.000	0.000
	(0.279)	(0.288)	(0.246)
LARGEST	0.001***	0.001***	0.001***
	(3.467)	(3.441)	(3.416)
ABS_DA	−0.010*	−0.010	−0.010*
	(−1.647)	(−1.643)	(−1.652)
TOP10	−0.001	−0.001	−0.001
	(−0.575)	(−0.623)	(−0.483)
N_LINKS	0.000	0.000	0.000
	(0.275)	(0.319)	(0.501)
N_LAPSE	0.000	0.001	0.001*
	(0.003)	(1.575)	(1.821)
$SIZE_{sanction}$	−0.000	−0.000	−0.000
	(−0.731)	(−0.746)	(−0.795)
$CAR_{sanction}$	0.014***	0.014***	0.014***
	(2.774)	(2.803)	(2.732)
Constant	−0.006	−0.006	−0.005
	(−0.523)	(−0.487)	(−0.418)
Year Fixed Effect	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes
Audit Office Fixed Effect	Yes	Yes	Yes
Observations	29,601	29,601	29,601
Adjusted R^2	1.7%	1.8%	1.8%

***, **, * Denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively, based on two-tailed tests.

This table presents the results for the following regression: $CAR = \beta_0 + \beta_1 LQP(LQAO,\ LQAF) + \beta_2 SIZE + \beta_3 LEV + \beta_4 MTB + \beta_5 ROA + \beta_6 LARGEST + \beta_7 ABS\_DA + \beta_8 TOP10 + \beta_9 N\_LINK + \beta_{10} N\_LAPSE + \beta_{11} SIZE_{sanction} + \beta_{12} CAR_{sanction} + Year/Industry/Audit\ Office\ Fixed\ Effects + \varepsilon$

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 Appendix B. The t-statistic in parentheses is adjusted for firm clustering. We report two sets of results. Model (1) is the regression with *LQAF*. Model (2) is the regression with *LQAO*. Model (3) is the regression with *LQP*.

significantly negative at the 5 percent 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.

In Table 6, we separately examine the moderating effect of each type of audit opinion (unqualified opinions with explanatory notes, qualified opinions, and adverse opinions) on the price contagion effects. Our results show that the coefficients for $LQP \times MAO\_emphasis$ and $LQP \times MAO\_adverse$ are positive and significant at the convention level, while the

TABLE 5

Cross-Sectional Analysis of Price Contagion Effects for H2 And H3

	Dependent Variable = *CAR* (−2, +2)	
Variables	**(1)** ***Mod_Var = MAO***	**(2)** ***Mod_Var = TOP10$_{sanction}$***
LQP	−0.007***	−0.003**
	(−5.549)	(−2.196)
LQP × Mod_Var	0.005***	−0.004**
	(2.713)	(−1.972)
Mod_Var	−0.002***	−0.000
	(−2.625)	(−0.571)
SIZE	0.000	0.000
	(0.115)	(0.412)
LEV	0.005***	0.005***
	(2.915)	(2.957)
MTB	0.032***	0.031***
	(5.150)	(4.938)
ROA	0.000	0.000
	(0.241)	(0.089)
LARGEST	0.001***	0.001***
	(3.429)	(3.640)
ABS_DA	−0.010	−0.008
	(−1.640)	(−1.363)
TOP10	−0.001	−0.000
	(−0.407)	(−0.032)
N_LINKS	0.000	0.001
	(0.734)	(0.794)
N_LAPSE	0.001*	0.001
	(1.826)	(1.452)
SIZE$_{sanction}$	−0.000	−0.000
	(−0.886)	(−0.850)
CAR$_{sanction}$	0.014***	0.015**
	(2.632)	(2.558)
Constant	−0.003	−0.002
	(−0.263)	(−0.175)
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%	3.0%

***, **, * Denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively, based on two-tailed tests.

This table reports the cross-sectional analysis results of the price contagion effects for H2 and H3. 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. Daily abnormal return is calculated as a firm's raw return minus the weighted adjusted market return on the corresponding day. We extend Equation (1) by adding the interaction between *LQP* and the following moderating variables (*Mod_Var*): (1) Modified Audit Opinion (*MAO*) and (2) *TOP10$_{sanction}$*, and the results are presented in column (1) and column (2), respectively. Detailed definitions of the variables are outlined in Appendix B. The t-statistic in parentheses is adjusted for firm clustering.

coefficient for *LQP × MAO_qualified* is positive but non-significant. These results suggest that the issuance of unqualified opinions with explanatory notes and adverse opinions can mitigate investors' concerns about LQPs.

To summarize, our cross-sectional analyses show that price contagion effects are more pronounced when (1) LQPs failed to issue MAOs on the sanctioned firms; and (2) LQPs were from the Top 10 audit firms, which is consistent with the notion that investor reactions are more negative when more severe damage to a partner's reputation is sustained.

TABLE 6

Further Analysis on Different Types of MAO in H2

Variables	Dependent Variable = *CAR* (−2, +2) (1)
LQP	−0.007***
	(−5.347)
LQP × *MAO_emphasis*	0.005*
	(1.867)
LQP × *MAO_qualified*	0.004
	(1.621)
LQP × *MAO_adverse*	0.012**
	(2.421)
MAO_emphasis	−0.003
	(−0.984)
MAO_qualified	−0.009
	(−0.974)
MAO_adverse	−0.009
	(−1.457)
Controls	Yes
Year Fixed Effect	Yes
Industry Fixed Effect	Yes
Audit Office Fixed Effect	Yes
Observations	29,601
Adjusted R^2	3.4%

***, **, * Denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively, based on two-tailed tests.
This table reports the result for the effect of different audit opinion types on the price contagion effects of low-quality partners in H2. 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. Daily abnormal return is calculated as a firm's raw return minus the weighted adjusted market return on the corresponding day. *MAO_emphasis* (*MAO_qualified*; *MAO_adverse*) is an indicator variable that equals 1 if the sanctioned firm was issued an unqualified opinion with explanatory notes (qualified opinions; adverse opinions) during the fraud period and 0 otherwise. Detailed definitions of the variables are outlined in Appendix B. The t-statistic in parentheses is adjusted for firm clustering.

Further Analyses

Fraud Severity and Price Contagion Effects

We explore how fraud severity affects price contagion effects. We include two moderating variables, the size of the sanctioned firm (*LARGE_SANC*) and the time lapse between the sanction announcement date and fraud-committed period (*N_LAPSE*), and their interactions with *LQP* in Equation (1). *LARGE_SANC* is an indicator variable that equals 1 if the size of the corresponding sanctioned firm is greater than the median size of sanctioned firms and 0 otherwise. *N_LAPSE* is the natural log of 1 plus the number of years that have elapsed since the last fraud year to the year of sanction.

The results are reported in Table 7. The coefficient for *LQP* × *LARGE_SANC* is significantly negative at the 10 percent level, suggesting that the price contagion effect is more pronounced for larger sanctioned firms. Furthermore, we find that the coefficient on *LQP* × *N_LAPSE* is significantly positive at the 10 percent level, indicating that the price contagion effect is less pronounced when the time lapse between the sanction announcement date and fraud period is longer.

Individual Characteristics and Price Contagion Effects

In this section, we explore whether the price contagion effects vary with LQPs' individual characteristics. Following Gul et al. (2013), we identify several demographic characteristics, including gender, age, party membership, educational background, audit experience, and number of audit engagements conducted. Panel A of Table 8 reports the descriptive statistics for these characteristics, and Panel B reports the results based on the individual characteristics of LQPs. Overall, the results indicate that the price contagion effects are more pronounced for male LQPs than for female LQPs, but price contagion effects do not vary significantly with LQPs' age, party membership, educational background, or audit experience.

TABLE 7

Effect of Fraud Severity on an LQP's Price Contagion Effect

	Dependent Variable = *CAR* (−2, +2)	
	(1)	(2)
Variables	***Mod_Var* = *LARGE_SANC***	***Mod_Var* = *N_LAPSE***
LQP	−0.003**	−0.008***
	(−2.018)	(−4.527)
LQP × *Mod_Var*	−0.004*	0.003*
	(−1.884)	(1.825)
Mod_Var	−0.001	0.000
	(−0.609)	(0.569)
SIZE	0.000	0.000
	(0.335)	(0.617)
LEV	0.005***	0.005***
	(2.790)	(3.270)
MTB	0.031***	0.031***
	(5.042)	(5.234)
ROA	0.000	−0.000
	(0.033)	(−0.040)
LARGEST	0.001***	0.001***
	(3.615)	(3.271)
ABS_DA	−0.008	−0.010*
	(−1.329)	(−1.732)
TOP10	−0.001	0.001
	(−0.841)	(1.543)
N_LINKS	0.001**	0.001
	(2.050)	(1.299)
N_LAPSE	0.000	
	(0.559)	
$SIZE_{sanction}$	0.000	−0.000
	(0.123)	(−0.864)
$CAR_{sanction}$	0.014***	0.016***
	(2.623)	(2.795)
Constant	−0.013	−0.004
	(−0.949)	(−0.327)
Year Fixed Effect	Yes	Yes
Industry Fixed Effect	Yes	Yes
Audit Office Fixed Effect	Yes	Yes
Observations	29,601	29,601
Adjusted R^2	2.7%	1.3%

***, **, * Denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively, based on two-tailed tests.

This table reports the results for the effect of fraud severity on LQPs' price contagion effects. 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. Daily abnormal return is calculated as a firm's raw return minus the weighted adjusted market return on the corresponding day. We extend Equation (1) by adding the interaction between *LQP* and the following moderating variable (*Mod_Var*): (1) *LARGE_SANC*; (2) *N_LAPSE*, and the results are presented in column (1) and column (2), respectively. Detailed definitions of the variables are outlined in Appendix B. The t-statistic in parentheses is adjusted for firm clustering.

Alternative Specification of LQPs

We provide additional analyses on how alternative specifications of LQPs may affect the price contagion. First, in the main tests of the price contagion effect, we define contagion firms with LQPs as the firms audited by LQPs 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: (1) firms audited by LQPs during the fraud periods but not the current period

TABLE 8

Individual Characteristics and Price Contagion Effects

Panel A: Descriptive Statistics

	LQP	Non-LQP	Difference
Female			
Mean	0.2451	0.3346	5.287***
Median	0.0000	0.0000	5.281***
Age			
Mean	38.8622	38.0715	−3.064***
Median	38.0000	37.0000	−3.310***
CCP_Member			
Mean	0.3182	0.2502	−4.268***
Median	0.0000	0.0000	−4.265***
Master_Degree			
Mean	0.1826	0.1437	−3.006***
Median	0.0000	0.0000	−3.005***
Accounting_Major			
Mean	0.7748	0.7835	0.556
Median	1.0000	1.0000	0.556
Audit Experience			
Mean	8.6348	8.6832	0.212
Median	9.0000	8.0000	−0.880
Number of Clients			
Mean	3.1536	2.1668	−18.050***
Median	2.0000	2.0000	−13.582***

(continued on next page)

($LQP_{fraud} = 1$); (2) firms audited by LQPs in the current period but not during the fraud period ($LQP_{current} = 1$); and (3) 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 show the descriptive statistics of all alternative specifications of LQP for the contagion firms sample in Panel A of Table 9. We report the re-estimation results in Panel B. All three indicator variables regarding LQPs are significantly negative, suggesting that our results of a price contagion effect are not driven by any specific period definition. In addition, we compare the differences in the magnitudes of coefficients among the *LQP* indicators. F-tests show that the coefficient on $LQP_{both\_periods}$ is significantly more negative than that on LQP_{fraud} at the 5 percent level. This result suggests that the price contagion effect is significantly attenuated when the contagion firms change LQPs during the current period, presumably due to a "fresh set of eyes" brought in by incumbent auditors in the current period. The coefficients on LQP_{fraud} and $LQP_{current}$ or the coefficients on $LQP_{both\_periods}$ and $LQP_{current}$ are not significantly different from each other.

Next, we examine whether the price contagion effect is stronger for LQPs who received a direct sanction from the government that is attributable to clients' fraudulent reporting. In the 327 firm sanction events, there are 53 cases in which individual audit partners were sanctioned. We separate the LQPs into two types: LQPs where both client and partner were sanctioned (53 cases) and LQPs where only the client was sanctioned (274 cases). Specifically, we define $LQP_{partnersanction}$ as an indicator variable that equals 1 if that specific partner was sanctioned for an accounting-related problem for all years covering the sanction period and 0 otherwise. $LQP_{firmsanction}$ as an indicator variable that equals 1 if at least one of that partner's client firms was sanctioned for an accounting-related problem for all years covering the sanction period and 0 otherwise. We report the results in Table 9, Panel C. The coefficients on $LQP_{partnersanction}$ and $LQP_{firmsanction}$ are both significant, and the result of the 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.

We also investigate whether a differential effect in price contagion exists between LQPs identified for the first time and LQPs identified for subsequent sanctions. LQP_{first} (LQP_{not_first}) is an indicator variable that equals 1 if a partner of contagion firms is identified as a low-quality partner (not) for the first time and 0 otherwise. We find that 30.8 percent of unique LQPs are identified more than once due to clients' sanctions, and 50.93 percent of the contagion firms are considered associated with

TABLE 8 (continued)

Panel B: Regression Results for Effects of LQPs' Personal Characteristics on Price Contagion Effects

	Dependent Variable = *CAR* (−2, +2)						
Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
LQP_{female}	−0.003						
	(−1.313)						
LQP_{male}	−0.005***						
	(−4.069)						
LQP_{old}		−0.004***					
		(−2.654)					
LQP_{young}		−0.005***					
		(−3.236)					
LQP_{party}			−0.004**				
			(−2.118)				
$LQP_{nonparty}$			−0.005***				
			(−3.442)				
LQP_{master}				−0.007***			
				(−2.758)			
$LQP_{nonmaster}$				−0.004***			
				(−3.095)			
LQP_{major}					−0.004***		
					(−3.396)		
$LQP_{nonmajor}$					−0.007***		
					(−2.607)		
LQP_{more_exp}						−0.003**	
						(−2.177)	
LQP_{less_exp}						−0.006***	
						(−3.834)	
$LQP_{moreclients}$							−0.005***
							(−3.116)
$LQP_{lessclients}$							−0.005***
							(−3.924)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Audit Office Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	29,183	29,183	29,112	29,111	29,042	28,978	29,601
Adjusted R^2	1.8%	1.8%	2.7%	1.8%	1.8%	1.8%	1.8%

***, **, * Denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively, based on two-tailed tests.
This table reports the results for the effects of LQPs' personal characteristics on price contagion effects, including gender, age, party membership, master's degree, accounting major, and auditing experience. Panel A reports the descriptive statistics for the personal characteristics of individual audit partners. Panel B reports the regression results for price contagion effects after separating the LQPs into two groups based on the personal characteristics above. 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. 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 Appendix B. The t-statistic in parentheses is adjusted for firm clustering.

these LQPs with multiple sanctions. We report the results in Panel D. Although the coefficients for both LQP_{first} and LQP_{not_first} are negative and significant, the result of the F-test shows a significant difference in magnitude between the two coefficients (F-statistic = 2.89), indicating that the market punishes LQPs identified for the first time more severely.

Audit reports in China disclose the names of both the review partner and engagement partner, and in most cases, the two partners share the same legal liability (Lennox et al. 2014). In our fourth specification of LQPs, we investigate whether a differential effect exists 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 1 if the review (engagement) partner of contagion firms is of low

TABLE 9

Alternative Specification of LQPs for the Price Contagion Test

Panel A: Descriptive Statistics for The Contagion Firms Sample

Variables	n	Mean	Median	Q1	Q3	Std. Dev.
LQP_{fraud}	2,213	0.3371	0.0000	1.0000	0.0000	0.4728
$LQP_{current}$	2,213	0.1464	0.0000	0.0000	0.0000	0.3536
$LQP_{both\_periods}$	2,213	0.5165	1.0000	1.0000	0.0000	0.4998
$LQP_{partnersanction}$	2,213	0.0944	0.0000	0.0000	0.0000	0.2925
$LQP_{firmsanction}$	2,213	0.9056	1.0000	1.0000	1.0000	0.2925
LQP_{first}	2,213	0.4907	0.0000	0.0000	0.0000	0.5000
LQP_{not_first}	2,213	0.5093	1.0000	0.0000	0.0000	0.5000
LQP_{review}	2,213	0.4876	0.0000	1.0000	0.0000	0.5000
$LQP_{engagement}$	2,213	0.2061	0.0000	0.0000	0.0000	0.4046
$LQP_{both\_partners}$	2,213	0.3064	0.0000	1.0000	0.0000	0.4611

Panel B: Different Types of Contagion Firms with LQPs

	Dependent Variable = *CAR* (−2, +2)
Variables	**(1)**
LQP_{fraud}	−0.003*
	(−1.816)
$LQP_{current}$	−0.004*
	(−1.824)
$LQP_{both\_periods}$	−0.007***
	(−5.440)
Controls	Yes
Year Fixed Effect	Yes
Industry Fixed Effect	Yes
Audit Office Fixed Effect	Yes
Observations	29,601
Adjusted R^2	0.9%

Panel C: Contagion Firms with Sanctioned and Non-Sanctioned LQPs

	Dependent Variable = *CAR* (−2, +2)
Variables	**(1)**
$LQP_{partnersanction}$	−0.006*
	(−1.949)
$LQP_{firmsanction}$	−0.005***
	(−4.482)
Year Fixed Effect	Yes
Industry Fixed Effect	Yes
Audit Office Fixed Effect	Yes
Observations	29,601
Adjusted R^2	1.8%

(continued on next page)

quality but the engagement (review) partner is not of low quality and 0 otherwise; whereas $LQP_{both\_partners}$ is an indicator variable that equals 1 if both the review and engagement partners are of low quality and 0 otherwise. The results are reported in Panel D of Table 9. 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]

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

TABLE 9 (continued)

Panel D: Contagion Firms with First-Time Sanctioned and Non-First-Time Sanctioned LQPs

Variables	Dependent Variable = *CAR* (−2, +2) (1)
LQP_{first}	−0.007***
	(−4.730)
LQP_{not_first}	−0.003**
	(−2.301)
Year Fixed Effect	Yes
Industry Fixed Effect	Yes
Audit Office Fixed Effect	Yes
Observations	29,601
Adjusted R^2	2.7%

Panel E: Contagion Firms with a Low-Quality Review Partner, Engagement Partner, or Both

Variables	Dependent Variable = *CAR* (−2, +2) (1)
LQP_{review}	−0.004***
	(−2.925)
$LQP_{engagement}$	−0.005***
	(−2.666)
$LQP_{both\_partners}$	−0.006***
	(−3.534)
Controls	Yes
Year Fixed Effect	Yes
Industry Fixed Effect	Yes
Audit Office Fixed Effect	Yes
Observations	29,601
Adjusted R^2	1.8%

***, **, * Denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively, based on two-tailed tests.
This table presents the results on how alternative specifications of LQPs may affect the price contagion. All control variables are not tabulated for parsimony. The t-statistic in parentheses is adjusted for firm clustering. Panel A reports the descriptive statistics for the main independent variables. Panel B reports the results for different contagion firms with an LQP during the fraud period, during current period or during both of periods. Panel C reports the results for LQPs sanctioned or not sanctioned by regulators. Panel D reports the results for LQPs who are sanctioned for the first time versus those who are not sanctioned for the first time. Panel E reports the results for different contagion firms with a low-quality review partner, with a low-quality engagement partner, or with both LQPs.

Robustness Tests

Expanded window periods for the price contagion test. In our main analysis, we use *CAR*s (−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 *CAR*s in the alternative windows including (−1, +1), (−1, +2), (−2, +3), (−2, +5) and (−1, +10). We report the results in Panel A of Table 10. 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 sanctioned firms or the contagion firms belonging to the same business group as the sanctioned firms. We report the results of this sensitivity check in Panel B of Table 10. In column (1), we drop the contagion firms with the same location (province) as the corresponding sanctioned firms. In column (2), we redefine the non-contagion firms as firms with the

TABLE 10

Robustness Checks

Panel A: Alternative Windows for the Price Contagion Effects

Variables	(1) [−1,+1]	(2) [−1,+2]	(3) [−2,+3]	(4) [−2,+5]	(5) [−2,+10]
LQP	−0.003***	−0.004***	−0.006***	−0.004***	−0.004**
	(−3.263)	(−4.388)	(−5.183)	(−3.176)	(−2.577)
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%	2.3%

Panel B: Excluding Contagion Firms with the Same Location and Business Group as the Sanctioned Firms

	Dependent Variable = *CAR* (−2, +2)		
Variables	(1) Exclude Contagion Firms in the Same Location as that of Sanctioned Firms	(2) Non-Contagion Firms in the Same Industry and Location as that of Sanctioned Firms	(3) Exclude Contagion Firms in Same Business Group as that of Sanctioned Firms
LQP	−0.005***	−0.005***	−0.005***
	(−3.267)	(−4.032)	(−4.553)
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%	3.1%	1.8%

Panel C: Controlling for Partner Fixed Effects

Variables	Dependent Variable = *CAR* (−2, +2) (1)
LQP	−0.005***
	(−4.777)
Controls	Yes
Year Fixed Effect	Yes
Industry Fixed Effect	Yes
Partner Fixed Effect	Yes
Observations	29,601
Adjusted R^2	7.4%

(continued on next page)

same industry and same location (province) as the sanctioned firms and rerun the regression.[30] 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

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

TABLE 10 (continued)

Panel D: Contagion Firms of the Sanctioned Firms with Only Negative *CAR*s

Variables	Dependent Variable = *CAR* (−2, +2) (1)
LQP	−0.005***
	(−3.716)
Controls	Yes
Year Fixed Effect	Yes
Industry Fixed Effect	Yes
Audit Office Fixed Effect	Yes
Observations	18,827
Adjusted R^2	2.4%

***, **, * Denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively, based on two-tailed tests.
This table reports the results for robustness checks. 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 types of possible price contagion effects. Model (1) is the regression results after dropping observations with the same location (province) as the corresponding sanctioned firms. Model (2) is the regression where we define the benchmark firms (non-contagion firms) with the same industry and same location as the sanctioned firms. Model (3) is the regression results after dropping observations with the same business group as the corresponding sanctioned 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 price contagion tests after controlling for partner fixed effects. Panel D reports the results when we identify low-quality partners (LQPs) associated with the sanctioned firms with negative CARs around the sanction announcement date. 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.

in the same location. In column (3), we exclude the contagion firms in the same business group as the corresponding sanctioned 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 sanctioned firms.

Control for partner fixed effects. 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. Therefore, we include partner fixed effects in the price contagion test to control for time invariant partner attributes such as expertise and experience. The results, reported in Panel C of Table 10, are qualitatively unchanged, suggesting that the price contagion effect at the individual audit partner level is not driven primarily by partner attributes.

Reduced contagion sample that includes only sanctioned firms with negative CARs. In our main analysis, we use all sanctioned firms related to financial reporting fraud to identify low-quality auditors, including audit partners, audit offices, and audit firms because prior studies (e.g., Chiu, Teoh, and Tian 2013; Francis and Michas 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 *CAR*s. Specifically, we identify auditors associated with sanctioned firms whose *CAR*s around the sanction announcement dates are negative as low-quality.[31] We repeat all our tests and report the results in Panel D of Table 10. The results indicate that the stock returns contagion through LQPs, captured by the coefficients on *LQP,* is negative and significant.

Other robustness checks. We conduct a number of other robustness checks, which are not tabulated for brevity. First, we compare the contagion effects in state-owned firms (SOEs) versus non-state-owned firms (Non-SOEs). We identify four LQP types based on whether the sanction firms and contagion firms are SOEs or Non-SOEs. We find significantly negative market reactions for all situations. The results suggest that investors are concerned about audit quality in both SOEs and Non-SOEs.

Second, we examine the contagion effects within the same industry and across industries. We separate LQP into two types based on whether the sanction firm and contagion firm are from the same industry or different industries. We find that the contagion effects of LQPs exist both within the same industry and across different industries.

[31] Among the 327 sanction events used in our main analysis, 206 sanctions have negative *CAR*s and 121 have positive *CAR*s. The main reasons for the positive market reactions are confounding events. To identify the likely source of positive sanction announcement stock returns, we examine the 10 events with the largest positive five-day abnormal returns (mean returns of 17.66 percent, with a range from 11.83 percent to 26.08 percent). Generally, these firms released some favorable information before the sanction announcement, such as a rights offering, asset restructuring, potential for an acquisition, or specific measures to improve corporate governance. We include these sanctions with positive CARs in the main analysis because the confounding events should not affect the contagion and non-contagion firms.

Third, we remove sanction firms when there are important announcements concurrent with the sanction announcement. Twenty-five sanction firms experienced other public information disclosures on earnings release, earnings warning, delisting, suspension of listing, annual reports, interim reports, quarterly reports, special treatment (ST), or particular transfer (PT) during the (−2, +2) window. All of our results hold after excluding 1,544 contagion firms associated with these announcements.

Fourth, we remove the 78 sanctioned firms from 2012 to alleviate the concern that our results are driven by an unduly large number of sanctions in 2012 (Table 2, Panel A). Our results remain after removing the observations associated with sanctions in 2012.

Fifth, our sample period ranges from 1999 to 2012, which overlaps with two important regulatory reforms, split share structure reform (SSSR) in 2005 and the approval of new accounting standards in 2007.[32,33] Our sample period also covers the 2008 financial crisis. To mitigate the concern that our results are driven by these special events, we re-estimate the regressions separately in each of these different time periods, i.e., pre- and post-SSSR, pre- and post-new accounting standards and pre- and post-financial crisis period. We find that price contagion effects exist in all periods, suggesting that contagion effects are not driven by any regulatory change or financial distress.

Finally, we repeat our main tests after excluding LQPs with less than two clients and examining the price contagion effects separately in manufacturing and non-manufacturing industries. Our results remain in these two alternative settings.

V. CONCLUSION

This paper examines whether stock price contagion effects exist for low-quality audits of individual audit partners. We use the clients sanctioned by the Chinese government for financial reporting fraud to identify LQPs and investigate whether market valuation of contagion firms is affected by the identification of LQPs associated with regulatory sanctions. Our findings suggest that such sanctions induce a significant stock price decline among the contagion firms that share the same LQPs. Additionally, we find that the price contagion effects of LQPs are more pronounced when the LQPs failed to issue an MAO during the fraud period and when the sanctioned firms were audited by Top 10 audit firms during the fraud periods. Our additional tests reveal that the price contagion effects of LQPs are more pronounced when the sanctioned firm is larger and when the time lapse between sanction announcement date and fraud period is shorter. We find that the price contagion effects are more pronounced for male LQPs than they are for female LQPs, but we find no differences for other LQP characteristics such as age, educational background, and audit experience. We find a significant price contagion effect regardless of whether the LQPs are directly sanctioned by the government or whether the LQPs are engagement or review partners.

Our study is subject to some limitations due to data availability and the empirical design. First, we cannot conclude whether an office-level contagion effect co-exists with a partner level contagion effect. Second, we are unable to determine whether the negative market reactions of LQPs are due to perceived low quality of partners or a downward adjustment of the contagion firms' underlying true value. Last, due to data limitations and the complexity of fraudulent transactions, we could not directly measure the impacts of the magnitude and type of sanctions associated with LQPs.

Despite the above caveats, our paper has important policy implications. Apart from the real economic consequences of low-quality audits by partners, this paper has implications for regulators around the world that have already mandated or still consider disclosing individual partner information in financial reports. Our study suggests that the identification of an audit partner is valued by the capital market. The implication of the current study is that the disclosure of the identity of an individual engagement partner would likely, via the stock market, help in enforcing accountability and in enhancing auditor quality.

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[32] The 2005 share reform specified a time period during which large (and typically, controlling) shareholders of Chinese-listed firms were required to convert their previously non-tradable shares into shares that are freely exchangeable in the capital market, subject to shareholder approvals and appropriate compensation to holders of tradable shares (Li, Wang, Cheung, and Jiang 2011). The reform significantly affects the stock liquidity by removing a significant market friction, which may affect the price contagion in our study.

[33] The new Chinese accounting standards were released in 2006 with mandatory implementation by public companies as of January 1, 2007. The new standards are designed to converge CAS with IFRS, where "converge" refers to the elimination of current differences between IFRS and CAS, and to prevent future differences from arising (DeFond, Gao, Li, and Xia 2014). The approval of new Chinese accounting standards brought challenges to CPA industries and to individual audit partners. The investors may change their expectation about the role of auditing in the quality of financial statement after the new accounting standards approval, which may affect the price contagion effects of LQPs in our setting.

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APPENDIX A

An Example of Key Variable Coding and Contagion Firms

We provide an example of how we code the key variables of an LQP (LQAO and LQAF). On the 27th of July in 2004, TONTEC Technology Co., Ltd (the stock code is 600862) was sanctioned by the CSRC for financial reporting frauds during 1999–2001. According to the CSRC announcement, the company manipulated revenues and inflated profits, resulting in −17.17 percent cumulative abnormal returns (CARs) around the sanction announcement date. In this example, the fraud years are 1999–2001, and the current year is 2003.

For the fraudulent periods in the years 1999–2001, the company's auditing firm/office/partners were as follows. In the year 1999, the company was audited by the Tianjin Xinde CPA firm, Shenzhen Office, Dongxin LI and Zhicheng LIU. In the year 2000, TONTEC was audited by Tianjin Xinde CPA, Shenzhen Office, Changru GAN and Renyan ZHUANG; in the year 2001, TONTEC was audited by Tianhua Dapeng CPA, Nanjing Office, Hongqing CHEN and Xianzhi GAO. The table summarizes the above information:

Fraud Occurring Year	Audit Firm	Audit Office	Audit Partners
1999	Tianjin Xinde CPA firm	Shenzhen Office	Dongxin LI and Zhicheng LIU
2000	Tianjin Xinde CPA firm	Shenzhen Office	Changru GAN and Renyan ZHUANG
2001	Tianhua Dapeng CPA firm	Nanjing Office	Hongqing CHEN and Xianzhi GAO

Thus, in this case, we identify 2 low-quality audit firms: Tianjin Xinde CPA and Tianhua Dapeng CPA; 2 low-quality audit offices: Tianjin Xinde CPA, Shenzhen Office and Tianhua Dapeng CPA, Nanjing Office; 6 LQPs: Dongxin LI, Zhicheng LIU, Changru GAN, Renyan ZHUANG, Hongqing CHEN, and Xianzhi GAO. Based on the identification of these low-quality auditors, we identify contagion firms audited by LQPs in the fraud years and in the current year. In 1999, Dongxin LI audited another two firms: Harbin Hatou Investment Co., Ltd (600864), and SDIC Power Holdings Co., Ltd (600886). In 2000, Changru GAN audited two firms in addition to TONTEC: COFCO Property Co., Ltd (000031), and Shenzhen Airport Co., Ltd (000089). In the current year 2003, Changru GAN audited another two firms: Shenzhen Expressway Company Limited (600548) and Shenzhen Guangju Energy Co., Ltd (000096). Therefore, we have 6 contagion firms with the LQP for the sanctioned firm TONTEC, for which the variable LQP of these 6 observations will be coded as 1. The coding for LQAO and LQAF is the same as for LQP.

APPENDIX B

Variable Definitions

Variable	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.
Variables of Interest	
LQP	An indicator variable that equals 1 if either that company's specific partner or at least one of that partner's other client firms was sanctioned for an accounting-related problem and 0 otherwise.
LQAO	An indicator variable that equals 1 if either that company's audit office or at least one of that audit office's other client firms was sanctioned for an accounting-related problem and 0 otherwise.
LQAF	An indicator variable that equals 1 if either that company's audit firm or at least one of that audit firm's other client firms was sanctioned for an accounting-related problem and 0 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 1 if the firm is audited by a Top 10 audit firm and 0 otherwise. The definition of a Top 10 audit firm is based on the ranking of total client size in a specific year.
N_LINKS	The natural log of 1 plus the number of years in which the clients were audited by LQPs, low-quality audit offices, or low-quality audit firms.
N_LAPSE	The natural log of 1 plus the number of years that have elapsed since the last fraud year to the year of sanction.
$SIZE_{sanction}$	Natural log of the sanctioned firm's total assets.
$CAR_{sanction}$	The CARs of sanctioned firms over a five-day window (−2, +2) that spans the day of first announcement for sanction.
MAO	An indicator variable that equals 1 if the sanctioned firm was issued a modified audit opinion during the fraud period and 0 otherwise.
MAO_emphasis	An indicator variable that equals 1 if the sanctioned firm was issued an unqualified audit opinion with explanatory notes during the fraud period and 0 otherwise.
MAO_qualified	An indicator variable that equals 1 if the sanctioned firm was issued a qualified audit opinion during the fraud period and 0 otherwise.
MAO_adverse	An indicator variable that equals 1 if the sanctioned firm was issued an adverse audit opinion during the fraud period and 0 otherwise.
$TOP10_{sanction}$	An indicator variable that equals 1 if the sanctioned firms were audited by a Top 10 audit firm during the fraud period and 0 otherwise.
LARGE_SANC	An indicator variable that equals 1 if the size of sanctioned firm is greater than the median size of sanctioned firms and 0 otherwise.
LQP_{fraud}	An indicator variable that equals 1 if the firm is a contagion firm that 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 0 otherwise.
$LQP_{current}$	An indicator variable that equals 1 if the firm is a contagion firm that shares at least one common partner with a sanctioned firm during the current period but not during the fraud period and 0 otherwise.
$LQP_{both\_periods}$	An indicator variable that equals 1 if the firm is a contagion firm that shares at least one common partner with a sanctioned firm during the current period and also during the fraud period and 0 otherwise.
LQP_{review}	An indicator variable that equals 1 if the firm is a contagion firm that shares a review partner but not an engagement partner with a sanctioned firm and 0 otherwise.
$LQP_{engagement}$	An indicator variable that equals 1 if the firm is a contagion firm that shares an engagement partner but not a review partner with a sanctioned firm and 0 otherwise.
$LQP_{both\_partners}$	An indicator variable that equals 1 if the firm is a contagion firm that shares both a review partner and engagement partner with a sanctioned firm and 0 otherwise.
$LQP_{partnersanction}$	An indicator variable that equals 1 if that specific partner was sanctioned for an accounting-related problem for all years covering the sanction period and 0 otherwise.

(continued on next page)

APPENDIX B (continued)

Variable	Definition
$LQP_{firmsanction}$	An indicator variable that equals 1 if only the firm is sanctioned but not the LQP and 0 otherwise.
LQP_{first}	An indicator variable that equals 1 if a partner of contagion firms is identified as a low-quality partner for the first time and 0 otherwise.
$LQP_{not\ first}$	An indicator variable that equals 1 if a partner of contagion firms is not identified as a low-quality partner for the first time and 0 otherwise.
LQP_{female}	An indicator variable that equals 1 if the LQP is female and 0 otherwise.
LQP_{male}	An indicator variable that equals 1 if the LQP is male and 0 otherwise.
LQP_{old}	An indicator variable that equals 1 if the LQP's age is above the sample median value and 0 otherwise.
LQP_{young}	An indicator variable that equals 1 if the LQP's age is below the sample median value and 0 otherwise.
LQP_{party}	An indicator variable that equals 1 if the LQP is a member of the Chinese Communist Party and 0 otherwise.
$LQP_{nonparty}$	An indicator variable that equals 1 if the LQP is not a member of the Chinese Communist Party and 0 otherwise.
LQP_{master}	An indicator variable that equals 1 if the LQP has a Master's degree and 0 otherwise.
$LQP_{nonmaster}$	An indicator variable that equals 1 if the LQP does not have a Master's degree and 0 otherwise.
LQP_{major}	An indicator variable that equals 1 if the LQP majored in accounting during university education and 0 otherwise.
$LQP_{nonmajor}$	An indicator variable that equals 1 if the LQP did not major in accounting during university education and 0 otherwise.
LQP_{more_exp}	An indicator variable that equals 1 if the LQP's number of years for conducting audits is above the sample median value and 0 otherwise.
LQP_{less_exp}	An indicator variable that equals 1 if the LQP's number of years for conducting audits is below the sample median value and 0 otherwise.
$LQP_{moreclients}$	An indicator variable that equals 1 if the LQP's number of clients audited is above the sample median value and 0 otherwise.
$LQP_{lessclients}$	An indicator variable that equals 1 if the LQP's number of clients audited is below the sample median value and 0 otherwise.