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Audit Office Reputation Shocks from Gains and Losses of Major Industry Clients

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Audit Office Reputation Shocks From Gains And Losses Of Major Industry Clients*

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ABSTRACT

Our study reports evidence on the dynamic effects of client switches on auditor reputations and fee premia. Offices of large accounting firms that lose (gain) major industry clients experience a reputation shock leading to more *same-industry* client losses (gains) over the next two years. There is also a shift in audit fees charged to other same-industry clients when a major client loss (gain) results in an audit office losing (gaining) city-level industry leadership. A major client loss or gain also creates a short-term capacity shock to an audit office's ability to supply high-quality audits. However, there is no evidence of reputation spillovers to other-industry clients in the audit office, or to clients in other offices of the accounting firm.

JEL Codes: D40, L11, M20, M40

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1. Introduction

Audit office characteristics are important in understanding auditing and the city-specific nature of audit markets.[1] We contribute to this body of research by examining consequences of auditor-client realignments. Specifically, we investigate the reputation effect of an auditor change by a major industry client on an audit office's future ability to retain and attract clients, the subsequent effect of these clientele shifts on audit pricing, and the quality of audited earnings for the office's other clients. Prior work has explored negative auditor reputation effects in relatively rare events such as audit failure, regulator-identified accounting firm deficiencies, and audit firm collapses. In contrast, our investigation centers on *routine* reputational shocks that occur, both positive *and* negative, when an engagement office loses or gains a major industry client.

Our first research question asks if the reputation effects from a loss or gain of a major industry client leads to herding by other clients in that industry, consistent with economic theories of herding (Scharfstein and Stein 1990). We refer to this effect as "contagion." Although our main focus is on herding behavior by clients in the same office and industry, we also test for broader contagion and herding effects on the audit office's other-industry clientele and other offices of the same accounting firm. Our second research question examines if the short-term reputation shock of a major client loss or gain affects future audit fees for an office's other clientele. Specifically, do fees increase (decrease) for same-industry clients following a major

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[1] Audit contracting takes place between a client and an audit partner in a local engagement office of the accounting firm that administers the audit and issues the audit report on the audit office's letterhead (Wallman 1996). Prior studies document audit office characteristics are associated with audit quality: for example, auditors report more conservatively when a client is large relative to overall engagement office size (Reynolds and Francis 2000; Li 2009); a fee premium exists for engagement offices with city-specific industry expertise (Ferguson, Francis, and Stokes 2003); larger engagement offices are more likely to issue going concern audit reports and have fewer client restatements, which are suggestive of higher quality audits (Francis and Yu 2009; Choi, Kim, Kim, and Zhang 2010; Francis and Michas 2013; Francis, Michas, and Yu 2013); and audited earnings quality is higher for offices with city-level industry expertise (Reichelt and Wang 2010).

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client gain (loss) due to the office's enhanced (diminished) reputation for industry expertise?

We focus on auditor changes by the largest firms in industry sectors as these firms represent the "high profile" clients for which an auditor change is most likely to create a reputation shock for engagement offices and cause subsequent herding behavior by other audit clients. Importantly, our analysis also incorporates the fact that major client auditor changes occur for a number of different reasons: specifically, those that are (1) voluntarily undertaken to obtain a better fit between the firm's needs and the auditor's expertise and which results in better audits (Francis and Wilson 1988; Johnson and Lys 1990; DeFond 1992; Cahan et al. 2008); (2) the result of auditor resignations; (3) changes related to the receipt of going concern opinion (opinion shopping); (4) the result of an SEC enforcement action for financial misconduct; (5) auditor changes associated with top-level management turnover; and (6) other reasons not in the abovementioned categories.

Our sample consists of 39,021 total firm-year observations between 2001-2013 that receive an audit opinion from a Big 6 auditor (the Big 4 plus Grant Thornton and BDO Seidman). The sample includes 1,341 unique major industry client gains and 1,074 major industry client losses for Big 6 offices. The empirical findings are as follows. First, audit offices that lose (gain) a major client in an industry sector in period t are statistically more likely to have additional same-industry losses (gains) in period $t+1$, consistent with reputation shocks and economic theories of herding. Importantly, contagion only occurs when the switch by a major industry client results in better audits for that client, defined as switches which result in both higher audit fees and better earnings quality (measured by working capital accruals). Such audit switches are unlikely to occur for opportunistic reasons. In economic terms, when there is a major client loss (gain) in period t that involves a switch to a higher quality auditor, we find that other same-

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industry firms are 36 percent (24 percent) more likely to dismiss (engage) the same audit office in the next period *t+1*, compared to audit clients in those offices without a major client loss or gain in period *t*. Furthermore, the results hold for offices irrespective of whether an office is a city-specific industry leader or not. Finally, the effects appear to be limited to the office's same-industry clients as there is no evidence of broader herding spillover to other industries in the same office, or to the firm's other offices.

Second, we find that auditors losing (gaining) a major industry client subsequently decrease (increase) audit fees for the office's other same-industry clients. Additional tests show the fee effects are concentrated in cases where the client loss (gain) causes the office to lose (obtain) city-level industry leadership status. The average fee effect is an increase of 10.50 percent following a major client gain and an 11.90 percent reduction following a major client loss. As with the contagion tests, the effect is significant only for those cases where the major industry leader switches to obtain a better audit (higher fees and smaller accruals). Counter-factual tests indicate that herding and audit fee changes do not occur following auditor changes by *non-major* clients.

When offices lose (gain) a major industry client, there may be a short-term shock that increases (decreases) the office's capacity to produce high-quality audits to other clients. A supplementary analysis finds that an audit office's short-term capacity to produce high-quality audits is affected by the loss or gain of a major industry client. The capacity effect is driven by the smallest 75 percent of audit offices where capacity shocks are likely to be greatest following a major client lose or gain. To illustrate, for these offices the fees related to a major client loss (gain) represent approximately 35.8 (34.3) percent of the office's total audit fees, compared to only 8.9 (8.7) percent of total fees for the top size quartile of audit offices.

The study adds significantly to our understanding of short-term dynamics in city-level audit markets and the effects of reputation shocks to audit offices, as well as the consequences of a major client loss or gain on an audit office's capacity to conduct high-quality audits. The study is likely to be of interest to regulators, accounting firms and their audit clients. Our findings are relevant to multiple streams of auditing and accounting research. First, we examine the effect of an auditor switch on the audit office and audit office's set of clients rather than the effect on the switching client, per se. In contrast, prior audit research has mainly investigated the determinants and consequences of auditor-client realignments from the viewpoint of the switching client.[2]

Our findings also contribute to a large body of work on auditor industry expertise. Extant research has largely focused on the *static* relation between auditor reputations and fee premiums (e.g., Ferguson et al. 2003; Francis, Reichelt, and Wang 2005; Numan and Willekens 2012). Our study provides evidence on the *dynamic* nature of the demand for industry expertise and fee premiums in response to short-term reputational shocks to an audit office and how the effect is conditioned by an office's status as the city-level industry leader. Our evidence is suggestive of a causal relation, in contrast to prior research that is best described as associational in nature and which takes a more static view of industry expertise. Finally, the study is relevant to understanding the determinants of earnings quality and more specifically, to the role of auditing in the reporting of high-quality earnings (Balsam, Krishnan, and Yang 2003; Reichelt and Wang 2010; Francis and Yu 2009). We document a new *dynamic* factor affecting earnings quality that

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[2] Determinants examined in prior studies include financial distress (Schwartz and Menon 1985), audit fees (Barber, Brooks, and Ricks 1987), negative audit opinions (Chow and Rice 1982; Carcello and Neal 2003), signaling about quality, litigation risk (Krishnan and Krishnan 1997; DeFond and Subramanyam 1998; Shu 2000), auditor and client demands for realignment (Johnson and Lys 1990; Landsman, Nelson, and Rountree 2009), board and audit committee characteristics (Chen and Zhou 2007), and responses to alleged audit failures or low-quality audits (Barton 2005; Landsman et al. 2009; Skinner and Srinivasan 2012). Some of the consequences of auditor-client realignments include the effect on audit opinions (opinion shopping) (Lennox 2000), initial engagement pricing of audits (Simon and Francis 1988), earnings quality (Blouin, Grein, and Rountree 2007), and stock market reactions (Balsam et al. 2003; Knechel, Naiker, and Pacheco 2007).

links earnings quality to short-term shocks in the auditor's capacity due to an audit office's loss or gain of a major industry client.

The paper proceeds as follows. The next section develops the hypotheses. Section 3 discusses the sample and research design. Section 4 presents the primary results and a supplemental analysis of earnings quality is reported in Section 5. We conclude in Section 6.

2. Empirical Predictions

Prior research examines the effects on auditor reputation stemming from client losses. Most of this work focuses on instances of "extreme" shocks to auditor reputation. One stream of research examines the effect of a high-profile audit failure on the audit firm's ability to attract and retain clients. For example, Skinner and Srinivasan (2012) examine an audit failure in Japan (Kanebo) for the Japanese PwC affiliate ChuAoyama. They find that ChuAoyama lost around one quarter of its clientele following the suspension. Furthermore, larger firms and those with greater growth opportunities were more likely to leave ChuAoyama. In similar research, Weber, Willenborg and Zhang (2008) find that an audit failure (ComROAD AG) by the German practice of KPMG resulted in the loss of clients with high growth options.

A second research stream examines the effect of regulator-identified audit deficiencies on the audit firm's ability to attract and retain clients. For example, Wilson and Grimlund (1990) examine the effect of SEC enforcement actions; Hilary and Lennox (2005) examine the effect of negative reports from the AICPA's Public Oversight Board inspection program; and Lennox and Pittman (2010) and Boone, Khurana and Raman (2015) analyze the consequences of negative PCAOB inspection comments and reports. These studies all find evidence consistent with the argument that shocks to auditor reputation affect an auditor's ability to acquire and retain clients. A third stream of research examines the effect of a major audit firm failure on its clients' market

value (Menon and Williams 1994; Chaney and Philipich 2002) and the absorption of Arthur Andersen's clients following its collapse in 2001 (Blouin et al. 2007).

In contrast to existing research on the consequences of a specific negative shock to auditor reputation, we focus instead on the consequences of a *routine* reputation shock following an audit office's loss or gain of a major industry client. Our prediction relies on economic theories of herding, which is the phenomenon of following others and imitating group behavior. The theories have roots in Keynes (1930), which argues that herding occurs because people follow others that are perceived to be better informed. Subsequent models of herding are founded on Bayesian hypotheses: others' actions constitute information, which is used when adjusting probabilities and expectations. In updating their probabilities, individuals will use Bayes' rule, systematically revising their probabilistic judgments using information about others' actions, which in turn generates herding and "information cascades" (Scharfstein and Stein 1990). If auditor-client realignment creates a reputation shock for an audit office with respect to its industry reputation and expertise, a client loss (gain) in period t will lead to further same-industry losses (gains) in the following period $t+1$. We focus on the losses and gains of major industry clients as these are the most visible firms in an industry. The arguments above lead to Hypothesis H1, which is stated in alternative form:

HYPOTHESIS 1. An audit office that loses (gains) a major industry client in t is more likely to lose (gain) *same-industry* clients in the following period $t+1$.

A priori, it is unclear if all losses or gains of major industry clients will result in contagion. We predict a reputation shock and contagion only for voluntary auditor changes that result in better audits (measured by higher audit fees and smaller working capital accruals, following the auditor change). A large body of audit research documents the linkage between auditor characteristic with higher fees and the quality of audited earnings, in particular smaller

accruals (Francis 2011, DeFond and Zhang 2014). For all of the other categories of auditor switches we make no predictions but we do test if there is contagion (i.e., switches relating to auditor resignations, going concern opinions, SEC enforcement actions for misreporting, and top management changes).[3] Although H1 predicts a *same-industry* reputation shock, it is also possible a major client loss or gain could have a broader herding spillover effect to other industry sectors within the audit office, or to other offices of the accounting firm. For completeness, we test for these effects, though we make no empirical predictions.

Next, we consider how audit offices may adjust future audit fees for their *other same-industry clients* in reaction to a major client loss or gain. Economic theories of product differentiation argue that expertise is demanded and priced (Klein and Leffler 1981; Shapiro 1983) and is supported by empirical evidence from studies of industry expertise (Craswell, Francis, and Taylor 1995; Ferguson et al. 2003; Cahan, Godfrey, Hamilton, and Jeter 2008; Numan and Willekens 2012).[4] Thus, if the loss (gain) of a major industry client in period t diminishes (enhances) the perception of the auditor's industry expertise, then we expect that the auditor subsequently decreases (increases) fees to other same-industry clients in period $t+1$.[5] Hypothesis H2 in alternative form is:

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[3] Theories of negative externalities from information spillovers suggest audit clients may prefer an auditor that is not used by a major competitor (e.g., see Demski, Lewis, Yao, and Yildirim 1999; Dye and Sridhar 2003; and Bönte and Wiethaus 2007). A recent study by Aobdia (2015) provides empirical support: Aobdia finds that audit clients are less likely to engage an auditor used by an industry competitor because of concerns about information spillovers. To the extent there is an aversion to being audited by the same audit firm (or audit office) as that of a close competitor, the effect would be to work against the predicted contagion effects.

[4] A related study by Asthana and Kalelkar (2014) finds that audit fees for an office's clients increase following another client's inclusion in the S&P 500 because the office's association with a reputed client enhances the auditor's reputation, prestige, and establishes a brand name for the office. Our paper is different to theirs in a number of ways. First, a key innovation in our study is that we focus on the consequences of changes in an auditor's reputation via major changes in the client portfolio, rather than the effect of changes in the status of *existing* clients. Second, Asthana and Kalelkar (2014) do not examine the impact of capacity constraints because the S&P designation does not cause changes in office portfolios.

[5] To illustrate, in 2012 KPMG's Philadelphia office won the audit for ViroPharma Inc (NASDAQ: VPHM; SIC 2-digit industry: 28), a major pharmaceutical company. KPMG Philadelphia had seven other clients in the same

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HYPOTHESIS 2. When an audit office loses (gains) a major industry client in *t*, the office decreases (increases) audit fees in *t+1* for same-industry clients.

As with H1, the focus in H2 is on audit offices that lose or gain a major industry client and the subsequent effect on the fees of the office's other *same-industry* clients. However, for completeness we also test for fee adjustment for clients in other industries in the office and in other offices of the accounting firm.[6]

3. Sample and Empirical Models

Sample Selection

The sample consists of all U.S. listed firms in the Audit Analytics database from 2001 to 2013. For each firm-year observation, we identify the firm's auditor and audit office, audit fees, audit opinion, auditor market share, auditor turnover, and executive turnover events. We remove firms in the Financial Services and Utilities industries because different reporting requirements for firms in these industries could affect inferences for the tests of audit fees and earnings quality. We then merge firm-specific location, financial and industry data from the Compustat Annual file. To ensure the results are not driven by changes in the audit environment surrounding the collapse of Arthur Andersen, we drop all firm-year observations for Arthur Andersen's clients.[7] We also delete all firm-year observations that have missing values for the test variables and clients not audited by one of the Big 6 audit firms, because the overwhelming majority of major industry clients across all 2-digit SIC industries are audited by one of these six large accounting

industry at the time it gained the ViroPharma audit. In the following year, audit fees for the seven other same-industry clients increased by an average of 7.9 percent.

[6] It is unclear if the predictions in H2 will hold. For example, if fee reductions are viewed as a signal of lower audit quality, then auditors might be reluctant to lower fees (Simunic 1980; Francis and Simon 1987). Fee increases following the gain of a major client in an industry in period *t* may also be problematic. An auditor may risk losing some clients in the industry sector who are reluctant to pay a premium despite the auditor's enhanced reputation following the gain of a major industry client.

[7] As our sample begins in 2001, the removal of all Andersen client changes in 2001 and 2002 around the firm's collapse effectively deletes all Andersen-related observations from our sample. In untabled robustness tests, we find that our results are qualitatively similar after we remove all 2001 and 2002 observations to account for the possibility that our results are affected by second-order effects stemming from the Andersen collapse.

firms. Note that the results are qualitatively similar if we restrict the sample to those companies audited by Big 4 audit firms, or if we use all companies and all auditors in Compustat and Audit Analytics. Finally, a few cases involve a client moving to another office of the same audit firm. These cases are not treated as a major industry loss or gain as such changes likely represent an internal arrangement within the client's audit firm. For each year in our sample period, we identify all audit offices that experience the loss or gain of a major industry client, defined as a firm in the top 30 percent of each 2-digit SIC industry based on total assets for that year.[8] We obtain restatement information from the Audit Analytics Non-Compliance database and AAER data from the Center for Financial Reporting and Management at the University of Berkley. We exclude restatements relating to retrospective revisions for comparative purposes, retrospective application of accounting principles, and changes in presentation as a result of mergers. Our final sample consists of 39,021 firm-year observations. Table 1 Panel A presents the sampling procedure that yields the final sample for the empirical tests.

Empirical Models

The logit model in equation (1) tests the prediction in H1 that a reputation shock in period *t* when an audit office loses (gains) a major industry client results in contagion in the subsequent period *t+1*:

Client Loss (Gain)$_{k,r,t+1}$ = β_0 + β_1 *Local_Client_BetterAudit$_{k,r,t}$* + β_2 *Local_Client_AAER$_{k,r,t}$* + β_3

Local_Client_GCIssue$_{k,r,t}$ + β_4 *Local_Client_MgmtChange$_{k,r,t}$* + β_5

Local_Client_AuditorResign$_{k,r,t}$ + β_6 *Local_Client_OtherReason* + β_7 *Local_Client_OtherInd$_{\neg k,r,t}$*

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[8] Untabled sensitivity tests indicate that the empirical results are qualitatively similar when we impose the following restrictions on the definition of major industry clients: (1) industries in which the top 30 percent of firms do not comprise at least 75 percent of total industry assets are excluded; (2) industry leaders are set to the top 15, top 20, or top 25 percent of firms in the industry based on total assets; (3) industry leaders are classified based on total revenues (rather than total assets); (4) firms with greater than $500 million in total revenue (assets); (5) use of 3-digit industry classifications or Fama-French industry groups.

$$+ \beta_8 \, National\_Client_{k,\neg r,t} + \Sigma_m \, \theta_m \, \text{Control Variables}_t + \xi \tag{1}$$

The dependent variable *Client Loss (Gain)*$_{k,r,t+1}$ is set to one if a firm in industry k leaves

(joins) audit office r, in period $t+1$ and zero otherwise. The test variables are captured by the

coefficients β_1 to β_6, which measure if an auditor switch in $t+1$ follows a major client switch in

the prior period t for various reasons. Specifically, *Local_Client_BetterAudit* is an indicator

variable set to one if in the prior year t, a major client in the same industry k switched to or from

the same audit office r to obtain a better audit (measured by higher fees and smaller accruals)

and zero otherwise. *Local_Client_AAER* is an indicator variable set to one if in the prior year t, a

major client in the same industry k switched to or from the same audit office r and received an

AAER in the two years preceding the switch year and zero otherwise. *Local_Client_GCIssue* is

an indicator variable set to one if in the prior year t, a major client in the same industry k

switched to or from the same audit office r and was issued a modified audit opinion in either of

the two years preceding the switch year and zero otherwise. *Local_Client_MgmtChange* is an

indicator variable set to one if in the prior year t, a major client in the same industry k switched

to or from the same audit office r and experienced a CEO or CFO change in either of the two

years preceding the switch year and zero otherwise. *Local_Client_AuditorResign* is an indicator

variable set to one if in the prior year t, a major client in the same industry k switched to or from

the same audit office r because the auditor resigned from the engagement and the client was

forced to find a new auditor and zero otherwise. Finally, *Local_Client_OtherReason* is an

indicator variable set to one if in the prior year t, a major client in the same industry k switched

to or from the same audit office r, for reasons not captured in the other *Local_Client* variables.[9]

The default control sample in the estimation of equation (1) consists of firm-year observations in

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[9] *Local_Client_OtherReason* includes all other scenarios that can explain major client switches, including higher fees or lower quality, lower fees or lower quality, and higher fees or higher quality.

audit offices that do not have a same-industry client gain or loss in period t and therefore no contagion effects.[10]

The contagion model in equation (1) is estimated separately for firm-year observations of each large accounting firm in the study. We estimate the regressions for clients of each audit firm rather than using pooled regressions for a number of reasons. First, it allows the coefficients on auditor control variables to vary across auditors. Second, since the gain tests are conditional on a client's decision to switch auditors, we cannot run pooled regressions since the dependent variable would be set to one for all cases. By pooling observations by auditor, the dependent variable (in the gain tests) captures a client's decision to choose a given auditor (Gain = 1) or not (Gain = 0). Although the loss tests are unconditional and not subject to the same econometric concern, we report these tests by auditor to present symmetric loss and gain test results.

To examine if there are broader contagion effects, the indicator variable $Local\_Client\_OtherInd_{\neg k,r,t}$ is set to one if in the prior period t, a major industry client in another industry (not industry k), departs the same audit office r and zero otherwise. This variable tests if major client switches in other industries in the same office results in contagion effects. $National\_Client_{k,\neg r,t}$ is an indicator variable set to one if in the prior period t, a major industry client in industry k, switches from another audit office of the same firm (but not the same office r) and set to zero otherwise. This variable tests if there is broader contagion from other offices of the auditor following a major industry client loss or gain. We make no predictions for $Local\_Client\_OtherInd$ or $National\_Client$.

We include a number of variables from prior literature to control for non-contagion

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[10] In sensitivity tests, we find that the tabulated results are similar when we 1) exclude firm-years that have business model shocks as suggested by Owens, Wu, and Zimmerman (2015); and 2) remove the *t-1* and *t+1* firm-year observations for all firms that switch auditors in year *t*. These results mitigate concerns that our main findings may be driven by economic changes to clients that occur around auditor switches.

determinants of the auditor switching decision. The control variables are measured at period *t* and defined in Appendix A. Our results are unchanged if the control variables are measured at period *t+1* instead of period *t*. Landsman et al. (2009) suggest that audit risk and financial risk of the clients are important determinants of the auditor-client alignment decision. We capture audit risk using sales growth (Stice 1991), the magnitude of working capital discretionary accruals (Dechow & Dichev 2002), the sum of client inventory and accounts receivable scaled by total assets (Krishnan 1994; Dao, Raghunandan, and Rama 2012), and auditor tenure (Stice 1991; Krishnan and Krishnan 1997). We control for whether the client CEO or CFO was replaced during the three years prior to the auditor change. To the extent CEO or CFO turnover reflects internal control issues and potential litigation risk, auditor turnover is likely to be influenced by executive turnover. For instance, Palmrose (1987) finds that many litigation cases brought against large auditing firms involved financial reporting irregularities, including management fraud. We also control for potential litigation risk using the metric in Kim and Skinner (2012) who suggest that a firm's industry affiliation and other characteristics can predict the likelihood of security litigation risk.[11]

Next, we control for a firm's size, financial risk using ZScore (Lys and Watts 1994; Schwartz and Menon 1985),[12] leverage, ROA, cash holdings (Johnstone and Bedard 2004), and prior year losses (Barton 2005). Finally, we also control for the audit firm's national market share of industry assets audited (Hogan and Jeter 1999),[13] and the issuance of significant long-term debt or equity during the three-year period prior to auditor turnover (Whisenant,

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[11] We use model 3 in their Table 3 (p. 302), which they conclude is "probably the most cost effective solution for researchers interested in measuring litigation risk".

[12] We find similar results if we use the probability of bankruptcy measure from Zmijewksi (1984).

[13] Prior studies show that the industry expertise of the auditor helps to reduce auditor's business risk because specialists have the requisite resources and knowledge to detect errors (Cenker and Nagy 2008; Carcello and Nagy 2002; Johnstone 2000). Balsam et al. (2003) find that industry-specialist auditors supply higher quality services.

Sankaraguruswamy, and Raghunandan 2003). Standard errors are Huber-White Sandwich estimators clustered by firm and audit office to control for heteroscedasticity and serial correlation.[14] All specifications include year and industry fixed effects as additional controls for the systematic effects of time period and industries. Although there may be a selection threat in any auditor choice study, the potential for selection bias is less likely in our analysis since 1) we are analyzing auditor changes and thus use the firm as its own control; and 2) we are studying the incremental effect of a major client change on an audit office's next-period clientele (Minutti-Meza 2013).

The OLS regression model in equation (2) tests the prediction in H2 that audit fees of other pre-existing clients will change in period $t+1$ after an office's major industry client loss or gain in period t:

$$\%\Delta Audit\ Fee_{k,r,t,t+1} = \beta_0 + \beta_1\ Local\_Client\_BetterAudit_{k,r,t} + \beta_2\ Local\_Client\_AAER_{k,r,t} + \beta_3$$

$$Local\_Client\_GCIssue_{k,r,t} + \beta_4\ Local\_Client\_MgmtChange_{k,r,t} + \beta_5$$

$$Local\_Client\_AuditorResign_{k,r,t} + \beta_6\ Local\_Client\_OtherReason + \beta_7\ Local\_Client\_OtherInd_{\neg k,r,t}$$

$$+ \beta_8\ National\_Client_{k,\neg r,t} + \Sigma_m\ \theta_m\ Control\ Variables_t + \xi \qquad (2)$$

In contrast to the estimation of equation (1), we pool all observations for the fee change tests because the dependent variable is now continuous. Robust standard errors are Huber-White Sandwich estimators clustered by firm and office. All models have year, industry, and auditor fixed effects. The dependent variable $\%\Delta Audit\ Fee_{k,r,t,t+1}$ measures the percentage change in audit fees from t to $t+1$. Audit fee changes are measured as the change from the end of period t after the office has a major client loss or gain, to the end of period $t+1$ because it would most likely take one period before the reputation shock would affect audit fees of the office's other

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[14] In untabled sensitivity tests, the results are qualitatively similar if we estimate standard errors with clustering by year or clustering by firm and year.

same-industry clients. The other test variables are as previously defined. We drop firm-year observations for clients that change auditors in this test and focus on the continuing office clientele. We include year-over-year changes in controls for the auditor's relative distance to its nearest competitor (Numan and Willekens 2012), audit firm national industry share, auditor tenure, client firm size, leverage, market-to-book ratio, and return on assets.

Descriptive Statistics

Table 1 presents summary statistics. Panel A reports the sample selection process and descriptive data about offices that lose or gain a major industry client. The final firm-year sample consists of 39,021 observations. A small number of offices experience multiple major industry client losses (31) or gains in the same year (38), or both the loss and gain of a major industry client in the same year (40). Results are unchanged when these observations are dropped.

Table 1, Panel B reports audit office clientele data. The median audit office in the sample has 13 (7) publicly-listed clients (major industry clients), with a maximum of 126 (45).[15] The fact that the median audit office has only seven major industry clients, underscores that the gain or loss of a single major client is, on average, likely to be an important event affecting the office's reputation. There are 1,341 unique major client gains and 1,074 unique major client losses in the final sample (the two differ because of movement to or from non-Big 6 auditors and thus movement into or out of our sample). The majority of these auditor changes result in better quality audits (higher fees and smaller accruals). More specifically, we find that among the sample major client gains (losses), there are 776 (667) that result in better audits, 52 (37) are due to auditor resignation, 13 (13) due to AAER, 80 (80) due to going concern opinion, 376 (343)

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[15] The audit office with 45 major industry clients is PwC in San Jose, CA, in 2003.

due to management changes, and 139 (33) due to any other reason.[16]

To underscore the importance of a major client loss or gain to an audit office, there are 786 unique audit offices in the study of which 405 have a major client gain and 490 have a major client loss. Thus more than half of the unique offices in the study experienced at least one major client gain or one major client loss over the sample period. Further, 109 of the 1,341 major industry client gains (8.1 percent) cause audit offices to become city-specific industry leaders and 135 of the 1,074 client losses (12.6 percent) cause offices to go from the city-industry leader to a non-leader in year *t*.

Table 1 Panel C presents summary statistics for major industry client switches at the office level. We categorize offices into four quartiles based on the office's total audit fees. We observe that within each quartile, the proportion of clients lost and gained is similar. Table 1, Panel D reports descriptive information on model variables for the 39,021 firm-year observations in the sample. About 4 percent of firm-years leave their auditor and 7 percent move to a new auditor. The difference in loss versus gain statistics is due to differential movement to or from the non-Big 6 group auditors. The average change in audit fees is 10.3 percent for the loss contagion sample and 14.6 percent for the gain contagion. Median values of the earnings quality changes variables are close to zero as would be expected for the abnormal accrual metrics (*Kothari* and *DGLS*). Median change in working capital accruals (*WC_ACC*) is 2.8 percent and approximately 20.5% of sample firm-years are associated with restatements. Next we present descriptive statistics for the independent test variables. Major industry client auditor changes are relatively uncommon events. In aggregate, all six of the *Local-Client* variables represent a

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[16] The reason these sub-groups add up to more than the unique gains or losses is because a small number of the switches occur for more than one switch reason. These cases represent 95 cases in our gain sample and 99 cases in our loss sample. Our empirical results are robust to the removal of these cases.

combined 9.4 percent of firm-year observations, the majority of which are switches that result in better quality auditors (5.2 percent). The proportion of switches in our sample is consistent with other studies (Johnson and Lys 1990; Landsman et al. 2009).

On average, sample firms have $5,122 million in *Total Assets* with median assets of $496 million. The mean audit firm national industry market share is 24.5 percent and the average auditor tenure is roughly 10.3 years. The average relative distance of local market share between audit office and its closest competitor is 0.277. Approximately 14.4 percent of the sample observations experience a CEO or CFO change during the sample period. About 25 percent of sample firms experience a loss each year. The average 5-year sales growth rate is 29 percent and mean leverage is 18.9 percent. About 18.5 percent of total assets are represented by inventory and accounts receivable. Average ROA is -2.3 percent and the median is 3.8 percent. The average firm holds about 22 percent of its total assets in cash and 53 percent of sample firms issue new debt or equity. Standard deviation of cash flow during the last five years is 0.112 and the standard deviation of sales is 0.533. Sample firms have an average (log) operating cycle of 4.44 or 82 days.

4. Results

Test of H1: Major Client Losses or Gains and Next-Period Contagion

Table 2 presents tests of H1 for whether major industry client losses or gains result in next-period contagion. Panel A (B) reports the loss (gain) tests for each of the Big 6 accounting firms. The evidence in Panel A is consistent with contagion following industry leader auditor switches, but only when the industry leader switch is for a better quality audit. The coefficient on *Local_Client_BetterAudit* is positive and statistically significant at $p < 0.01$ for tests across all the largest four audit firms (Big 4) in Columns 1 to 4 and statistically significant at $p < 0.10$ for

each of the other two large firms (GT and BDO in Columns 5 and 6 respectively). In economic terms, an office losing a major client to a higher quality auditor in period t is between 9.3% and 31.3% more likely to lose another same-industry client in the next period, relative to offices with no major industry leader client losses or gains in the previous year.[17] We also present output for the area under the ROC curve for each specification. The values range from 0.82 to 0.85. In untabulated analyses, we find that tests excluding the *Local_Client_BetterAudit* reduce the area under the ROC curve between 0.19 and 0.20.

We find no statistical evidence that major client losses that occur for any other reason result in contagion. All the other *Local_Client* test variables are statistically insignificant at conventional levels. We caveat these findings by noting that the insignificance of these other switching factors might be due to limited power. In addition, we find no statistical evidence that contagion extends to other industries in the audit office (*Local_Client_OtherInd)* or to other offices of the accounting firm (*National_Client)*.

In Panel B we also find evidence of contagion following a major client gain, but only for the Big 4 accounting firms and only for those switches that result in a better quality audit. The coefficient on *Local_Client_BetterAudit* is positive and statistically significant at $p < 0.05$ for each of the Big 4 audit firms. The area under ROC curves ranges from 0.83 to 0.85. If we exclude the coefficient on *Local_Client_BetterAudit*, the area under the ROC curves drop by between 0.18 - 0.19 (untabulated). As with losses in Panel A, none of the other reasons for auditor changes are statistically significant, nor is there evidence of broader contagion effects for other industries within an office, or to other offices of the accounting firm. In economic terms,

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[17] We calculate this probability for industry leader peer firms of EY as $e^{1.467} / (1+e^{1.467}) = 0.813$ and 0.5 for non-peer firm industry leaders. As such, the probability difference is $(0.813-0.5) = 31.3$ percent. Alternatively, the odds ratio of the two scenarios is $e^{1.467} / e^0 = 4.34$, indicating that the former case has 4.34 times greater odds of dismissing the auditor than the latter case.

Big 4 offices that gain an industry leader client in *t* have a 4.4 to 26.1 percent greater likelihood of obtaining more clients from the same industry in *t+1*, relative to the control sample of audit offices with no major industry client gains or losses in the prior year.[18]

In summary, the results in Table 2 support the contagion prediction in H1 that additional client losses (gains) occur following a prior-period major client loss (gain), but only when the auditor change results in a better quality audit and only for same-industry clients in the audit office. A new and important implication from our study is that a short-term reputation shock affects the demand for an audit office.

Supplementary Analyses

Survey evidence indicates that CFOs value the engagement office's industry experience in selecting auditors (Carcello, Hermanson, and McGrath 1992). Empirical studies document the importance of industry experience and expertise in the auditor choice decision (Williams 1988; Haskins and Williams 1990; Cahan et al. 2008). We re-perform our analyses replacing each *Local_Client* variable with two new variables ending with *"_Lead"* or *"_NonLead"* based on whether the losing or gaining office is the city-specific industry leader office. The leader status is based on an audit office's clientele at the end of period *t*, after the effect of major client gains or losses during period *t*. We find that the coefficients on *Local_Client_BetterAudit_Lead* and *Local_Client_BetterAudit_Nonlead* are statistically significant. An *F*-test indicates there is no statistical difference between the two variables. We conclude that reputation shock and contagion following a major client loss or gain does not appear to differ between leader and non-leader audit offices.

Doyle, Ge, and McVay (2007) note that it is possible that auditors apply different

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[18] We calculate the probability of following a leader for EY as $e^{1.159} / (1 + e^{1.159}) = 76.1$ percent. The probability of not following a leader is 50. Therefore the probability difference is 76.1 percent - 50 percent = 26.1 percent.

materiality standards in deciding to disclose material weaknesses, and this could affect the client's decision to switch auditors. However, using a subsample for the period since 2004 with internal control weakness (ICW) data, we find no evidence that contagion occurs when major industry auditor switches are linked to the issuance of an ICW report.

Test of H2: Major Client Losses or Gains and Changes in Audit Fees

Table 3 reports the findings from tests of H2. We only retain those continuing clients that have not switched to their current auditor recently (in either year *t-1* or *t*) and continue to use the auditor for the following two years. Panel A presents results of estimating equation (2). Column 1 (2) reports the effect on fees for other same-industry clients following major client losses (major client gains). The evidence confirms the prediction in H2. Following major client losses (major client gains), next-period audit fees are significantly lower (higher) for the office's same-industry clients, but only when the auditor switch results in a better quality audit. In Column 1, the coefficient on *Local_Client_BetterAudit* is negative and significant ($t = -2.33$, $p < 0.05$). None of the other *Local_Client* variables is statistically significant. Similarly, in Column 2, the coefficient on *Local_Client_BetterAudit* is positive and significant ($t = 3.01$, $p < 0.01$). In addition, we find no statistical evidence that audit fees are affected for clients in other industries in the audit office, or in other offices of the accounting firm.

Figure 1 Panel A (Panel B) present graphical evidence of audit fees for an audit office's other same-industry clients around major client losses (gains). To highlight the effect of contagion from different drivers of major client switches, we present fee effects for each of the different reasons for major client switches. The evidence in Figure 1 is consistent with our empirical findings. Fee changes for other office clients in the years following the major client switch are greatest for those major client switches associated with better quality audits.

In Table 3, Panel B we report the results from an additional test to determine if the audit fee results in Panel A are driven by those audit offices that experience the largest shocks to their reputation following the loss or gain of a major industry client. We measure shocks using changes in an office's leadership status from period *t-1* to *t* based on sets of four indicator variables that capture the set of possible year-over-year (leader to non-leader; non-leader to leader; leader to leader; and non-leader to non-leader) and use these as alternative test variables.

Table 3 Panel B indicates that the fee adjustments (in Panel A) are significant only in those audit offices that experience a change in their leader status following a major client loss or gain related to demand for a higher quality auditor. This finding is consistent with the loss or gain of city-level industry leadership driving an office's ability to maintain a fee premium for industry leadership or expertise. In economic terms, major client losses associated with a switch to a higher quality audit, a change in an office's status following a major client loss (gain) for higher quality reasons is associated with 12.2 (10.8) percent decrease (increase) in audit fees for *other* same-industry clients of the losing office.[19] None of the other office industry leadership change variables is statistically significant. *F*-tests (untabled) indicate that the effect is statistically larger for major client losses associated with fee and earnings quality increases relative to major client losses or gains for any of the other reasons.

The results in Panel B highlight the rapid audit fee adjustments in response to a short-term change in audit office's status as the city-level industry leader. The evidence reinforces the finding in prior research that auditors earn a fee premium for their city-level industry reputation and expertise. Further, the results indicate that contagion is not a systematic phenomenon that

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[19] The coefficient of -0.122 indicates that audit fees decrease by 12.2 percent for the losing office's remaining industry clients. Given that the average audit fee for sample firms is $2.25 million, the clients experience a decrease in audit fees of approximately $2.25 million * 12.2 percent = $274,500. The coefficient of 0.108 indicates that audit fees increase by 10.8 percent for the gaining office's pre-existing clients. Given that the average audit fee for sample firms is $2.25 million, the clients experience an increase in audit fees of approximately $217,000.

always occurs following a major client loss or gain; that is, there is not always a shock to the audit office's reputation. The evidence on fees reinforces the findings in Table 2 that a reputation shock is more likely to occur when the auditor switch is motivated for positive reasons (better audit quality) instead of opportunistic reasons (fee or opinion shopping, SEC enforcements).

The overall evidence in Tables 2 and 3 support three findings: (1) a contagion effect when major client losses or gains are associated with voluntary auditor-client realignments for better audit quality; (2) evidence that contagion occurs for both city-specific industry leader and non-leader offices; and (3) evidence that contagion is limited to same-industry clients and does not appear to spread to other industries in the office, or to other offices of the accounting firm. Our study provides unique evidence of a causal (rather than associational) relation by documenting that the industry specialization fee premium is dynamic and can change in just one period after an office becomes (or ceases to be) the city-level industry leader following the gain or loss of a major industry client. Further, our results indicate that the fee premia attributable to an auditor's change in leader status are affected by the underlying reason for the auditor switch.

Counterfactual Tests

We extend the analysis by reporting results from counter-factual tests that center on auditor changes undertaken by smaller clients (non-industry leaders) that are not in the top 30 percent in their industry sectors. We do not expect auditor changes by smaller non-top 30 firms to create a shock to an audit office's reputation (and thus would not result in contagion).

We conduct counterfactual tests for both the contagion and fee specifications. Table 4 Panels A and B present the counterfactual contagion loss and gain results respectively. Across both panels, the results are consistent with our priors; none of the auditor test coefficients is significant at the 10 percent level when auditor changes in period *t* are restricted to non-top 30

percent industry clients. The average area under ROC curves is approximately 0.66, which is 0.17 lower than the area under ROC curves reported in our main findings in Table 2. This indicates that the effects of major client switches have strong explanatory power relative to the effects for non-major client switches. Finally, Panel C reports the counterfactual fee change results. We again find no statistical evidence of a fee effect when auditor changes in period *t* are restricted to non-top 30 percent industry clients.

Office-Industry Level Analysis

We also conduct tests of contagion and changes in fees that rely on an alternative research design in which we aggregate the number of clients lost or gained by the audit office and the corresponding aggregate office level fee changes, both at the office-industry level. These office-industry level tests allow us to capture the total office-level magnitude of the switching effect after a major client loss or gain, whereas the firm-year tests in Table 2 capture the likelihood of a further client switch after a major client loss or gain. Thus, the dependent variable is a continuous variable capturing an office's total number of clients lost or gained in a given industry. For the fee change tests, the dependent variable is the average percentage change in audit fees for the continuing clients in the same industry. Table 5 Panel A (B) present results from tests of office-level loss (gain) tests, and Panel C presents the audit fee tests. The evidence for the contagion and fee tests in Table 5 is consistent with the findings from our main specification using firm-level observations.

Multiperiod Tests

We examine if the reputation shocks documented in Tables 2 and 3 extend beyond one year by testing for contagion persistence to the second and third years. Untabled results indicate that there are significant second-year contagion effects for both major client gains and major

client losses when those auditor switches result in better quality audits (higher fees and smaller accruals). However, there is no evidence of contagion in the third year. We find similar results for the fee tests. Therefore we conclude that there is two-period contagion following the reputation shock of a major client gain or loss. We also find that by the third year those audit offices with a major client loss in period t are statistically more likely to re-gain a client in the same industry, relative to offices with no major client losses or gains, indicating that the negative consequences of the initial reputation shock have dissipated by the third year.

5. Changes in Earnings Quality Following Major Client Losses or Gains

In this section, we examine how a major client loss or gain affects the quality of audited earnings for other existing clients in the auditor's portfolio. Audit office capacity can be significantly affected when an office loses or gains a major industry client. Offices losing a major client will have short-term surplus capacity (excess labor) and can better avoid low-quality audits associated with the well-known workload compression and time-pressure problems (McDaniel 1990; Panel on Audit Effectiveness 2000; Public Company Accounting Oversight Board 2010; Lopez and Peters 2012). Alternatively, offices that lose a major client may have a decrease (rather than increase) in earnings quality if auditors are more accommodating of the client to ensure they do not have further client losses.

In contrast, offices gaining a major client will experience a short-term capacity constraint (labor shortage) that could exacerbate workload or time-pressure problem and lead to lower-quality audits for same-industry clients.[20] However, it is also possible that audit quality could

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[20] Bills, Swanquist, and Whited (2016) find that clients of offices that experience increases in workload over the prior year have greater absolute discretionary accruals as well as an increased likelihood of restatement, but the effect is transient and vanishes after one year. Our study focuses on both office growth and contraction due to a major client gain or loss and examines contagion and fee effects as well as changes in earnings quality. In addition, we show the effect of increased (decreased) workload on earnings quality is confined to the office-industry level and that the office-industry effect persists for two years, not just one year.

increase (rather than decrease) because the auditor will have more clients in an industry sector, which could enhance the auditor's industry expertise and efficiency and thus improve the quality of audited earnings for same-industry clients.

In practice, the actual effect is also dependent on the degree to which frictions reduce labor mobility, both within and between audit offices.[21] The degree to which labor frictions exist or are mitigated is an empirical question, but if fully mitigated then changes in client portfolios should not affect the quality of audited earnings.

Consistent with prior studies, we infer the change in audit quality using changes in the quality of audited earnings of the office's clientele (Frankel, Johnson, and Nelson 2002; Ashbaugh, LaFond, and Mayhew 2003; Chung and Kallapur 2003). We estimate the following OLS regression model:

$\Delta Earnings\ Quality_{k,r,t-1,,t} = \beta_0 + \beta_1\ Local\_Client_{k,r,t} + \beta_2\ Local\_Client\_OtherInd_{\neg k,r,t} + \beta_3\ National\_Client_{k,\neg r,t} + \Sigma_m\ \theta_m\ \Delta Control\ Variables_t + \xi$ (3)

The dependent variable is the change in the quality of audited earnings between period *t-1* (the last period before the major client loss or gain) to period *t*, for a client in industry *k* serviced by audit office *r*. The change in earnings quality is measured as the change from the end of period *t-1* (before the office has a major client loss or gain in period t) and the end of period *t*, because the capacity of the office is affected during period *t* when the major industry client loss or gain occurs. Note that the test sample excludes the major industry clients that switch auditors because our goal is to examine the consequences of the major client losses (gains) on the earnings quality of the auditor's other clients.

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[21] For example, in offices that lose clients, audit quality may be unaffected if offices reallocate their workforce to other industry sectors within the office, or to other offices, thus eliminating the short-term excess capacity. Similarly, offices that gain clients may not experience a short-term capacity constraint if they can reallocate their employees from the audits of other industries within the office, or if they can obtain additional labor from other audit offices.

All earnings quality measures are coded such that larger values indicate higher earnings quality. The first earnings quality measure *(ΔKothari)* is the change in performance-matched signed discretionary accruals (Ashbaugh et al. 2003; Kothari, Leone, and Wasley 2005). Results are robust to using unsigned discretionary accruals. The second measure *(ΔDGLS)* is accruals estimation error and defined as the change in the industry-adjusted absolute value of the Dechow and Dichev (2002) residual, based on the cross-sectional adaptation of the model in Dechow, Ge, Larson, and Sloan (2011). The third measure we use is the change in the absolute value of working capital accruals *(ΔWC_ACC)* based on the model in Dechow and Dichev (2002). The fourth measure *(ΔRestatement)* is the change in the ex post realization of earnings by the firm between two years before and after the major client loss or gain. All earnings variables are defined in Appendix B.[22]

We follow Owens et al. (2015) and remove those firm-year observations with business model shocks in order to limit the possibility that abnormal accrual model estimates are biased by such cases. This results in the removal of 2,385 firm-year observations from our sample. To facilitate comparability across measures, we also remove business model shock cases from tests using *Restatements* to measure earnings quality. In untabled tests, our results are qualitatively similar if we do not exclude these dropped observations.

The auditor test variable *Local_Client* is an indicator variable set to one if the auditor loses (gains) a major industry leader client in period *t* and zero otherwise. We consolidate the separate *Local_Client* variables used in our main tests into one variable because our objective is to examine office-level capacity effects of a major client auditor switch, regardless of reason for

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[22] Because *Kothari* and *DGLS* are both based on abnormal accruals, as a robustness we also test the absolute value of total accruals, scaled by average assets. Results for absolute total accruals are significant and consistent with all three accrual metrics.

the switch. In other words, the audit office's capacity will be affected by all major client gains and losses, irrespective of the reason underlying the auditor switch.

We include a number of auditor-specific and firm-specific controls that are potentially correlated with the earnings quality metrics: specifically, the audit firm's national market share of industry clients (Weber et al. 2008), client firm size, leverage, market-to-book ratio, and ROA. We also include controls for innate firm-specific factors that need to be isolated from earnings quality (Francis, LaFond, Olsson, and Schipper 2005), i.e., the standard deviation of cash flow from operations for *t-4* to *t*, the standard deviation of sales for *t-4* to *t*; and the firm's operating cycle, measured in period *t*. All variables are defined in Table 1. Standard errors are Huber-White Sandwich estimators clustered by firm and audit office to control for heteroscedasticity and serial correlation. All specifications include year, industry, and audit firm fixed effects.

We present regression results in Table 6. Panel A (Panel B) presents results from loss (gain) tests. Panels C and D present counterfactual tests using switches by non-major industry clients (and thus smaller clients that are unlikely to impose the same level of capacity issues as major client switches). The evidence in Panel A indicates that earnings quality increases for same-industry clients in offices that experience a major client loss (more capacity). The coefficients on all four earnings quality change metrics are positive and significant ($p < 0.05$). The evidence in Panel B indicates that offices with a major client gain (a new capacity constraint) exhibit a decrease in earnings quality for other same industry clients across all four earning quality metrics. As in other tests in the study, coefficients on *Local_Client_OtherInd* and *National_Client* are not significant at conventional levels across all specifications and are not discussed further. The findings from counterfactual tests in Panels C and D indicate that audit

clients of offices that experience non-industry leader client losses or gains do not experience changes in earning quality.

The evidence in Table 6 is consistent with a capacity constraint effect. To further identify if the change in the quality of audited earnings is driven by audit office capacity, we partition audit offices each year into the largest quartile versus all other offices based on the office's total yearly audit fees, consistent with recent studies (Francis and Michas 2013; Francis et al. 2013). The reason for this partition is that short-term capacity surplus or constraints are more likely to affect smaller offices than larger offices that have greater capacity and staffing flexibility to absorb shocks.

Results in Table 7 indicate that the capacity effects documented in Table 6 persist across both large and small office partitions, but have a relatively larger effect for the smallest 75 percent of audit offices. Economically, in Panel A for the loss tests, small (large) offices that lose major clients observe an average increase in earnings quality ranging from 10.5 percent to 22.4 percent (1.2 to 5.5 percent). In Panel B for the gain tests, small (large) offices that gain major clients observe an average decrease in earnings quality ranging from 14.9 to 25.7 percent (6.1 to 9.7 percent).[23]

Although percentage increases in coefficient values are significant, they are not intuitive in understanding the magnitudes of the changes in earnings quality. To better gauge this we compute the change in absolute value of total accruals (scaled by average assets) for the office's same-industry clients from period t to period $t+1$. For offices with a major client loss, same-industry clients have average accruals of 10.9 percent in t and 10.1 percent in period $t+1$, a

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[23] In Panel A, we calculate the magnitude as the coefficient of test variables divided by the average EQ measures for small offices (Kothari is 0.19, DGLS is 0.077, and WC_ACC is 0.098). In Panel B, for small offices, the average Kothari is 0.175, DGLS is 0.074, and WC_ACC is 0.097.

decrease of 0.8 percentage points (a 7.3 percent decrease). For offices with a major client loss, same-industry clients have average accruals of 10.6 percent in period *t* and 11.2 percent in period *t+1*, an increase of 0.6 percentage point (a 5.7 percent increase). Magnitudes of these accrual changes are large enough to have a material effect on earnings per share and key financial ratios.[24]

In sum, the evidence is strongly suggestive of a capacity effect and is reinforced by the magnitude of fees that these major client losses and gains contribute to total office audit fees. Table 7 Panel C reports that a major client loss represents 35.8 percent of a small office's total audit fees in the year prior to the loss and a major client gain represents 34.3 percent of a small office's fees in the year of the gain. These are large shifts compared to large offices where major client losses and gains are rather inconsequential and represent only 8.9 percent and 8.7 percent of office fees, respectively.

An important contribution of our study is that we extend prior research which finds that an auditor change can have consequences on the earnings quality of the firm that changes its auditor (e.g., DeFond and Subramanyam 1998). The evidence in Tables 6 and 7 indicate that major client auditor changes affect earnings quality for same-industry clients in the affected audit offices. The results are consistent with a capacity explanation in which offices that lose a major client reallocate surplus labor resources and provide higher quality audit services for its remaining same-industry clients. In the short-run, though, offices that gain major clients are capacity constrained and unable to maintain audit quality for other same-industry clients. [25]

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[24] Untabled results indicate that the effects on earnings quality persist for a second year, but by the third year none of the auditor test variables is significant. This finding is consistent with the earlier findings for multiperiod contagion and fee effects following major client losses or gains.

[25] The results in Tables 6 and 7 for major client gains do not contradict prior findings that auditor industry expertise is positively associated with earnings quality (Francis 2011; DeFond and Zhang 2014). First, there is an increase in audit quality for a majority of the major industry clients that switch auditors. However, these clients are excluded

6. Conclusion

Prior research has examined the effect of negative reputation shocks due to relatively rare events such as an audit firm collapse, high-profile audit failures, and regulator-identified audit deficiencies. We extend this stream of research by investigating the effects of routine and more frequent reputation shocks to audit offices, *both* positive and negative, as a result of auditor changes by major clients in industry sectors. We find that offices of Big 6 accounting firms that lose (gain) a major industry client are likely to have further losses (gains) during the following two years, but only when the initial loss or gain is due to client preference for a higher quality auditor. This result holds for both city-specific industry leader and non-industry leader offices.

We also find that offices that lose (obtain) status as city-level industry leaders as a result of the major client loss significantly reduce (increase) audit fees for same-industry clients over the next two periods. The evidence is supportive of a causal relation in which audit fee adjustments take place very quickly following a change in the office's industry leadership status and which is indicative of highly dynamic city-specific audit markets.

We also find evidence that the loss or gain of a major industry client creates a "capacity shock" that affects the quality of audited earnings for *other same-industry* clients in the audit office. Cross-sectional tests show the effect is greatest for smaller offices that are more likely to be affected by the loss or gain of a major industry client. Our findings suggest that major client gains draw resources away from the office's other same-industry clients and results in lower quality audits for these other clients and major client losses increase the office's slack resources which leads to higher quality audits for other existing same-industry clients.

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from the analysis because of our focus on the office's *other* clients. Second, our findings are concentrated within same-industry clients and offices with a major client gain which only represent 6.5 percent of the total firm-years in the sample.

Our findings contribute to an understanding of (1) the impact of major industry client gains and losses on audit offices and their ability to attract and retain same-industry clients; (2) local audit market dynamics and the rapid fee adjustment that occurs when a major client loss or gain changes an office's status as the city-specific industry leader or non-leader; and (3) the implications on earnings quality of other clients due to short-term capacity shocks following the loss or gain of a major industry client. Our results are likely to be of interest to accounting firms and regulators, particularly as the findings suggest a limitation to the ability of audit offices to maintain audit quality (in the short run) following the gain of a major client. The results also contribute to a better understanding of the role played by auditors in the production of high-quality earnings and the consequences of short-term capacity shocks arising from an audit office's gain or loss of a major industry client.

Appendix A: Variable Definitions

Client Loss (Client Gain)$_{k,r,t+1}$: An indicator variable set to 1 if a firm in industry k leaves (joins) audit office r, in period $t+1$ and set to 0 otherwise, using SIC 2-digit industry categories.

Local_Client_BetterAudit$_{k,r,t}$: An indicator variable set to 1 if in the prior year t, a firm in the top 30 percent of the same 2-digit SIC industry k (based on assets) switches to or from the same audit office r, with higher audit fees and higher accruals quality after the switch and set to 0 otherwise.

Local_Client_AAER$_{k,r,t}$: An indicator variable set to 1 if in the prior year t, a firm in the top 30 percent of the same 2-digit SIC industry k (based on assets) switches to or from the same audit office r and receives an AAER in period t or $t-1$ and set to 0 otherwise.

Local_Client_GCIssue$_{k,r,t}$: An indicator variable set to 1 if in the prior year t, a firm in the top 30 percent of the same 2-digit SIC industry k (based on assets) switches to or from the same audit office r, and receives a going concern opinion in period t or $t-1$ and set to 0 otherwise.

Local_Client_MgmtChange$_{k,r,t}$: An indicator variable set to 1 if in the prior year t, a firm in the top 30 percent of the same 2-digit SIC industry k (based on assets) switches to or from the same audit office r and experiences CEO or CFO turnover in period t or $t-1$, and set to 0 otherwise.

Local_Client_AuditorResign$_{k,r,t}$: An indicator variable set to 1 if in the prior year t, a firm in the top 30 percent of the same 2-digit SIC industry k (based on assets) switches to or from the same audit office r and the switch is because the auditor resigns from the engagement, and set to 0 otherwise.

Local_Client_OtherReason$_{k,r,t}$: An indicator variable set to 1 if in the prior year t, a firm in the top 30 percent of the same 2-digit SIC industry k (based on assets) switches to or from the same audit office r and the switch is due to a reason not captured by the other *Local_Client* variables of interest, and set to 0 otherwise.

Local_Client_OtherInd$_{\neg k,r,t}$: An indicator variable set to 1 if in the prior year t, a firm in the top 30 percent of a different 2-digit SIC industry (not industry k) (based on assets) switches to or from the same audit office r and set to 0 otherwise.

National_Client$_{k,\neg r,t}$: An indicator variable set to 1 if in the prior year t, a firm in the top 30 percent of the same 2-digit SIC industry k (based on assets) switches to or from another audit office of the firm (not office r) and set to 0 otherwise.

%ΔAudit Fee: The percentage change in audit fees between t and $t+1$.

Auditor_Share: The auditor's national industry share, measured by the proportion of the total assets of all firms in the same SIC 2-digit industry.

Auditor_Tenure: The number of consecutive years the auditor has been engaged.

Cash: Cash and Short-Term Investments divided by Total Assets.

CEOCFO_Change: An indicator variable set to 1 if the target firm experiences a CEO or CFO change during the prior three years and set to 0 otherwise.

Size: The log of total assets.

DGLS: Earnings quality metric based on Dechow et al. (2011). See Appendix B.

Growth: Geometric growth rate of sales over the prior 5 years from *t-6* to *t-1*.

INV+ACR: Inventory plus Accounts Receivables divided by Total Assets.

Issuance: An indicator variable set to 1 if the target firm issued new long-term debt or common equity greater than 10 percent of prior year's long-term debt or common equity in the three years preceding the audit switch and set to 0 otherwise.

Kothari: Earnings quality metric based on performance-matched discretional accruals in Kothari et al. (2005). See Appendix B.

Leverage: Long-term Debt divided by Total Assets.

Litigation Risk: The predicted value based on Model (3) of Table 3 in Kim and Skinner (2012, p. 302), calculated as $-7.883 + 0.566$ x $FPS_t + 0.518$ x $Assets_{t-1} + 0.982$ x Sales $Growth_{t-1} + 0.379$ x $Return_{t-1} - 0.108$ x $Returnskewness_{t-1} + 25.635$ x $Returnstddev_{t-1} + 0.00007$ x $Turnover_{t-1}$. ROA, loss, and cash FPS = 1 if the firm is in the biotech (SIC codes 2833–2836 and 8731–8734), computer (3570–3577 and 7370–7374), electronics (3600–3674), or retail (5200–5961) industry and set to 0 otherwise; Assets = log of total assets; Return = Market-adjusted 12-month stock return; Returnskewness = skewness of the firm's 12-month return; Returnstddev = standard deviation of the firm's 12-month returns. Sales Growth is current year sales less last year sales scaled by beginning of current year total assets; Turnover = daily trading volume accumulated over the fiscal year scaled by beginning of the year's shares outstanding (in thousands).

Loss: An indicator variable set to 1 if the firm experiences a loss in the prior year and set to 0 otherwise.

Merger: Acquisitions cash flow divided by investing activity net cash flow.

Market-to-book: Market value of common equity divided by the book value of common equity.

OperCycle: Log of (Days in Account Receivables + Days Sales in Inventory).

Relative Distance: The absolute value of the difference between an auditor office's local industry market share and that of its closest local industry competitor, as in Numan and Willekens (2012).

Restatement: An indicator variable set to 1 if a firm's earnings during that year are subsequently restated that year's earnings related to that year's earnings, and set to 0 otherwise.

ROA: Income before Extraordinary Items divided by Total Assets.

WC_ACC: Absolute working capital accruals as in Dechow and Dichev (2002). See Appendix B.

ZScore: Altman's measure of bankruptcy risk, which is calculated as 1.2*(Working Capital / Total Assets) + 1.4*(Retained Earnings / Total Assets) + 3.3*(Earnings Before Interest & Tax / Total Assets) + 0.6*(Market Value of Equity / Total Liabilities) + 1.0*(Sales / Total Assets).

σ(CFO): Standard deviation of operating cash flow, measured over the previous 10 years.

σ(SALES): Standard deviation of total sales, measured over the previous 10 years.

Appendix B: Earnings Quality Measures

All three measures of earnings quality (EQ) are defined such that EQ increases with larger values.

Kothari: Performance-Matched Discretional Accruals (Kothari et al. 2005).

We estimate abnormal accruals for each firm-year and subtract the value from the discretionary-accruals of the performance-matched firm. The modified Jones model of abnormal accruals model is estimated cross-sectionally each year using all firm-year observations in the same SIC 2-digit industry.

$$TA_{it} = \beta_0 + \beta_1(1 / ASSETS_{it-1}) + \beta_2(\Delta SALES_{it} - \Delta AR_{it}) + \beta_3\Delta PPE_{it} + \xi_{it}$$

where TA (total accruals) is the change in net income minus operating cash flow, scaled by lagged total assets; $\Delta SALES_{it}$ is change in sales; ΔAR_{it} is change in account receivable; and ΔPPE_{it} is change in gross property, plant and equipment, all scaled using lagged total assets, $ASSETS_{it-1}$. Use of assets as the deflator is intended to mitigate heteroscedasticity in the residuals.

Residuals from the annual cross-sectional industry regression model in the modified Jones model are used to measure estimated abnormal accruals. We then match each firm-year observation with another firm from the same SIC 2-digit industry and year with the closest return on assets in the current year, ROA_{it} (net income divided by total assets). We define the EQ2 for firm *i* in year *t* as the abnormal accrual in year *t* minus the performance-matched abnormal accrual for year *t*.

DGLS: Mean-Adjusted Absolute Value of DD Residual (Dechow et al. 2011)

We first regress working capital accruals (WC_ACC) on operating cash flows in the current year (CFO_t), the preceding year (CFO_{t-1}), and the following year (CFO_{t+1}):

$$WC\_ACC_{i,t} = \alpha_{0,i} + \beta_{1,i} CFO_{i,t-1} + \beta_{2,i} CFO_{i,t} + \beta_{3,i}CFO_{i,t+1} + v_{i,t}$$

where WC_ACC = $\Delta CA - \Delta CL - \Delta CASH + \Delta STDEBT + \Delta TAXES$, where ΔCA = change in current assets between year *t-1* and *t*, ΔCL = change in current liabilities between year *t-1* and *t*, $\Delta CASH$ = change in cash and Short-Term Investments between year *t-1* and *t*, $\Delta STDEBT$ = change in short-term debt between year *t-1* and *t*, and $\Delta TAXES$ = change in taxes payable between year *t-1* and *t*.

All variables are scaled by average total assets and winsorized at the 1 percent and 99 percent levels. We estimate equation (6) by year for each of the two-digit SIC industry groups. EQ is the absolute value of each firm's residual less the average absolute value for the corresponding industry.

WC_ACC: Working Capital Accruals (Dechow & Dichev 2002)

We use the absolute value of working capital accruals measure as in Dechow and Dichev (2002) as the third measure, which is [ΔAR - ΔInventory - ΔAP - ΔTP - ΔOther Assets (net)], where AR is accounts receivable, AP is accounts payable, and TP is taxes payable, which we obtain from cash flow statement (Hribar and Collins 2002). All variables are scaled by average total assets.

Restatements

We obtain all restatements to earnings during our sample period from Audit Analytics and exclude those relating to retrospective revisions for comparative purposes, retrospective application of accounting principles, and changes in presentation as a result of mergers. *Restatement* is an indicator variable set to one for firm-year observations for which earnings are restated, and zero otherwise.

Figure 1 Office-Industry Audit Fees after Major Client Switch

This figure presents the change in audit fees for other same industry clients around major client switches that occur at period $t = 0$. Panel A (Panel B) present graphs for the effects on audit fees for other industry clients following major client losses (gains). We present the effects on fees for each of the six reasons used to explain major client switches.

Panel A: Major Client Loss
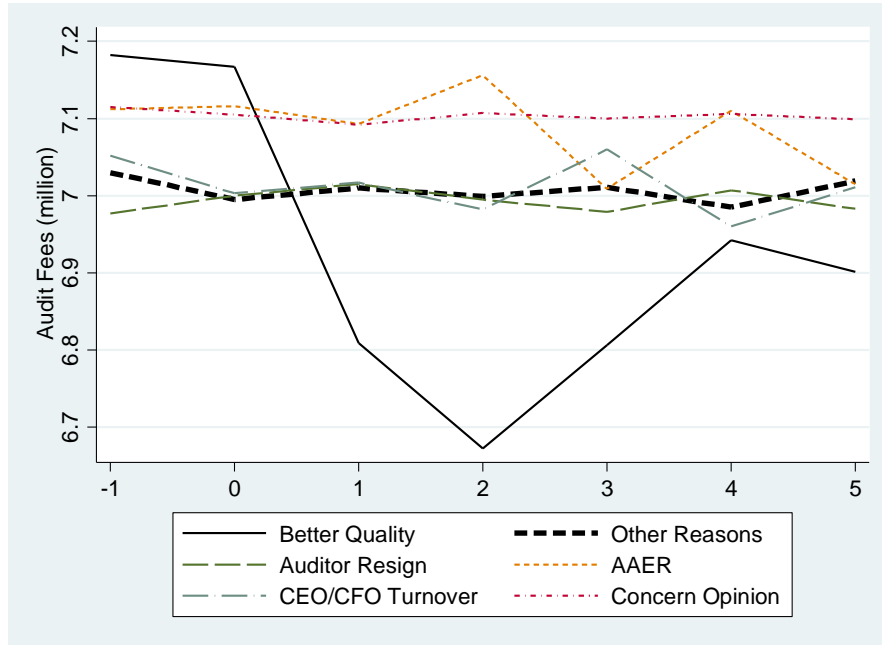
Panel B: Major Client Gain
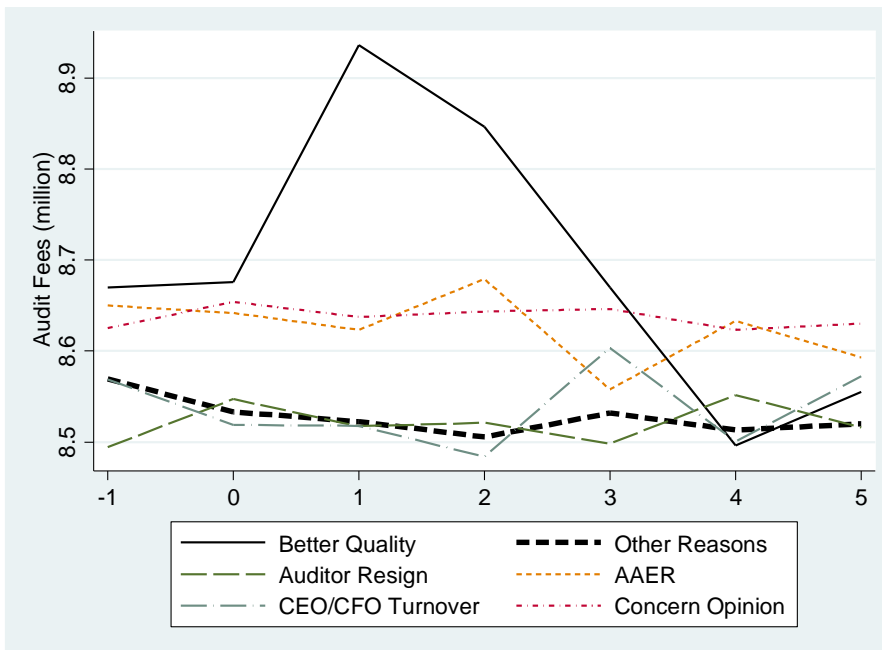
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TABLE 1
Descriptive Statistics
Panel A presents details about the sample selection. Panel B reports data on auditor office clientele. Panel C reports descriptive statistics for major client turnover by audit office size and Panel D present descriptive statistics for variables used in multivariate tests. Variable definitions are in Appendix A.

Panel A: Sample Selection

	N
Initial Sample from 2001-2013	104,572
Less:	
Observations with non-Big 6 auditors	(25,334)
Observations with Arthur Andersen	(1,967)
Observations with missing data for variables	(16,013)
Observations with foreign firms or auditors	(8,209)
Observations with clients in financial or utility industries	(14,028)
Final Firm-Year Sample	**39,021**
Final Sample represents:	
Unique clients (unique audit offices)	6,224 (786)
Auditor office-years	6,149
Number of auditor office-years in which an office has more than one major industry client loss (gain) in period *t-1*	31 (38)
Number of auditor office-years in which an office has both a major industry client loss and client gain in period *t-1*	40

Panel B: Audit Office Clientele Data

	Minimum	Bottom Quartile	Median	Top Quartile	Maximum
Total Clients in Office	1	6	13	25	126
# Major Industry Clients in Audit Office	0	3	7	13	45

Major Industry Client Losses in the Study

Unique major client losses in final sample (and # of unique offices experiencing losses)	1,074 (490)
Average percentage of total office audit fees represented by a major client loss in the last period audited:	9.2%

Major Industry Client Gains in the Study

Unique major client gains in final sample (and # of unique offices experiencing gains)	1,341 (405)
Average percentage of total office audit fees represented by a major client gain in the first period audited:	9.8%

Panel C: Distribution of Major Client Turnover Across Offices

	Office Quartile (total audit fees)			
	Top	2	3	Bottom
(1) # major clients	5,172	4,249	1,624	991
(2) # major client losses	378	300	233	163

(3) # major client gains	540	355	261	185
% of clients lost (2 ÷ 1)	7.31	7.06	14.35	16.45
% of clients gained (3 ÷ 1)	10.44	8.35	16.07	18.67

Panel D: Variables Used in Model Estimations, n = 39,021 Firm-Year Observations (See Appendix A for Variable Definitions).

	Mean	**Median**	**Std. Dev.**
Dependent Variable			
Client Loss	0.042	0.000	0.200
Client Gain	0.072	0.000	0.257
%ΔAudit Fee$_{t,t+1}$ (Loss)	0.103	0.052	0.434
%ΔAudit Fee$_{t,t+1}$ (Gain)	0.146	0.038	0.450
Kothari	-0.017	-0.006	0.353
DGLS	0.008	0.008	0.092
WC_ACC	0.057	0.028	0.127
Restatement	0.205	0.000	0.403
Independent Variables of Interest			
Local_Client_BetterAudit (% coded 1)	5.22	0.000	19.53
Local_Client_AAER (% coded 1)	0.09	0.000	2.90
Local_Client_GCIssue (% coded 1)	0.58	0.000	5.11
Local_Client_MgmtChange (% coded 1)	1.91	0.000	8.77
Local_Client_AuditorResign (% coded 1)	0.38	0.000	5.09
Local_Client_OtherReason (% coded 1)	1.20	0.000	10.72
Local_Client_OtherInd (% coded 1)	20.02	0.000	40.01
National_Client (% coded 1)	35.03	0.000	47.67
Control Variables			
Total Assets ($m)	5,122.068	498.107	23,750.260
ZScore	3.404	2.957	10.944
Auditor Share	0.245	0.229	0.160
Auditor Tenure	10.312	8.000	8.235
Relative Distance	0.277	0.154	0.283
CEOCFO Change (percent coded 1)	0.144	0.000	0.351
Litigation risk	-2.834	-2.780	0.718
Loss (percent coded 1)	0.250	0.000	0.377
Merger (percent coded 1)	0.362	0.000	0.351
Growth	0.290	0.121	0.758
Leverage	0.189	0.152	0.193
INV+ACR	0.184	0.154	0.141
ROA	-0.023	0.038	0.225
Cash	0.223	0.126	0.236
Issuance (percent coded 1)	0.533	1.000	0.442
Market-to-book	2.942	2.143	4.904
σ(CFO)	0.112	0.059	0.154
σ(SALES)	0.533	0.201	0.269
OperCycle	4.444	4.500	0.641

TABLE 2
New Client Losses or Gains Following Prior-Year Major Client Losses or Gains
We present results from logit regressions that examine the effect of major industry client losses or gains in period t on next-period client losses or gains in $t+1$. The dependent variable is an indicator variable set to 1 if a client dismisses (engages) their auditor in year $t+1$, and 0 otherwise. All variables are defined in Appendix A. Standard errors are Huber-White Sandwich estimators (clustered by firm and audit office). All specifications include year and SIC 2-digit industry fixed effects. The t-statistics are reported in parentheses. ***, **, and * denotes statistical significance at the 1%, 5%, and 10% two-tail levels, respectively.

Panel A: Contagion Effect of n = 1,074 Major Client Losses

	(1)	(2)	(3)	(4)	(5)	(6)
	PWC	EY	Deloitte	KPMG	GT	BDO
Dependent Variable:			Client Loss			
Constant	-0.555	-0.184	-1.108	-0.011	1.826	-0.129
	(-0.62)	(-0.30)	(-1.23)	(-0.03)	(1.42)	(-0.15)
Local_Client_BetterAudit	0.733***	1.467***	0.722***	0.789***	0.509*	0.375*
	(2.85)	(8.16)	(2.65)	(2.79)	(1.92)	(1.82)
Local_Client_AAER	-0.150	-0.091	-0.101	-0.135	0.036	-0.029
	(-0.49)	(-0.41)	(-0.23)	(-0.88)	(0.55)	(-0.27)
Local_Client_GCIssue	0.156	-0.166	-0.282	-0.466	-0.321	-0.125
	(0.78)	(-1.40)	(-0.80)	(-0.45)	(-0.69)	(-0.33)
Local_Client_MgmtChange	-0.405	0.050	-0.111	0.150	0.121	-0.190
	(-0.80)	(0.19)	(-0.95)	(0.50)	(0.70)	(-0.69)
Local_Client_AuditorResign	-0.205	-0.217	-0.088	-0.530	-0.133	-0.061
	(-0.45)	(-1.09)	(-0.61)	(-1.10)	(-0.40)	(-0.22)
Local_Client_OtherReason	-0.119	-0.123	-0.075	-0.211	-0.155	-0.095
	(-0.90)	(-0.78)	(-0.52)	(-1.09)	(-0.70)	(-1.10)
Local_Client_OtherInd	-0.033	-0.025	-0.110	-0.040	-0.089	-0.062
	(-1.40)	(-0.22)	(-0.82)	(-0.55)	(-0.57)	(-0.77)
National_Client	-0.129	-0.111	-0.109	-0.089	-0.168	-0.143
	(-1.19)	(-0.77)	(-0.88)	(-0.55)	(-0.71)	(-0.89)
Size	-0.355***	-0.318***	-0.340***	-0.268***	-0.337***	-0.427***
	(-8.67)	(-6.10)	(-8.33)	(-7.72)	(-4.39)	(-3.88)
Zscore	-0.010**	-0.007**	-0.005*	-0.003	-0.003	-0.006
	(-2.11)	(-2.10)	(-1.78)	(-1.10)	(-0.89)	(-1.10)
Auditor_Share	0.030	0.089	0.521	0.456	0.785	0.769
	(0.27)	(0.22)	(0.55)	(0.41)	(0.30)	(0.11)
Auditor_Tenure	-0.617***	-0.405***	-0.466***	-0.390***	-0.045	-0.050
	(-8.09)	(-4.62)	(-6.39)	(-7.99)	(-0.45)	(-0.58)
CEOCFO_Change	0.150	0.358***	0.237	0.426***	0.160	0.016
	(1.22)	(2.78)	(1.43)	(3.29)	(0.90)	(0.09)
Litigation risk	-0.006	-0.015	0.055	0.332*	-0.255	-0.233
	(-0.06)	(-0.12)	(0.40)	(1.82)	(-0.99)	(-1.50)
WC_ACC	-0.016	-0.015	-0.002	-0.012	-0.078	0.035
	(-0.56)	(-0.78)	(-0.11)	(-0.50)	(-1.21)	(0.67)
Loss	0.319***	0.405***	0.399***	0.172**	0.321	-0.196
	(3.09)	(4.30)	(2.68)	(2.50)	(1.32)	(-1.09)
Merger	0.088	0.316**	0.311*	0.085	-0.136	-0.377
	(0.73)	(2.22)	(1.73)	(0.55)	(-0.60)	(-1.22)
Growth	-0.061	-0.017	-0.015	-0.082*	-0.036	-0.052
	(-0.89)	(-0.50)	(-0.33)	(-1.70)	(-0.55)	(-0.92)
Leverage	-0.378	-0.301	-0.196	-0.621	0.188	-1.056**
	(-1.29)	(-1.29)	(-0.70)	(-1.40)	(1.28)	(-2.27)
INV+ACR	0.641***	0.529**	0.188	0.321*	0.506*	0.793
	(3.32)	(2.22)	(1.49)	(1.69)	(1.79)	(1.28)

ROA	0.192	0.146**	0.062	0.031	0.092	0.025
	(0.90)	(2.11)	(0.50)	(0.60)	(0.86)	(0.47)
Cash	-0.562**	-0.911***	-0.972***	-1.019***	-0.669*	-0.612
	(-2.20)	(-3.10)	(-3.75)	(-3.02)	(-1.85)	(-1.39)
Issue	-0.082	-0.088	-0.153	-0.092	-0.023	-0.323
	(-0.82)	(-0.97)	(-0.91)	(-0.99)	(-0.21)	(-0.96)
Year and Industry Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Observations	8,712	11,782	7,654	7,069	2,452	1,353
Pseudo R^2	0.135	0.135	0.110	0.117	0.111	0.168
ROC	0.82	0.83	0.84	0.84	0.83	0.83

Panel B: Contagion Effect of n = 1,341 Major Client Gains

Dependent Variable:	(1) PWC	(2) EY	(3) Deloitte	(4) KPMG	(5) GT	(6) BDO
			Client Gain			
Constant	1.308	1.322**	1.207**	1.209	1.674**	0.966**
	(0.67)	(2.01)	(2.27)	(1.25)	(2.12)	(2.50)
Local_Client_BetterAudit	0.330***	1.159**	1.135**	0.175**	0.159	0.077
	(2.89)	(2.40)	(2.11)	(2.29)	(0.51)	(0.69)
Local_Client_AAER	-0.002	-0.012	-0.025	-0.034	-0.008	0.010
	(-0.22)	(-0.56)	(-0.37)	(-0.37)	(-0.11)	(0.31)
Local_Client_GCIssue	-0.106	-0.202	-0.049	-0.288	-0.026	-0.003
	(-0.24)	(-0.99)	(-0.78)	(-0.88)	(-0.69)	(-0.11)
Local_Client_MgmtChange	0.111	0.589	0.287	0.322	0.032	0.055
	(1.09)	(0.90)	(0.36)	(0.51)	(0.55)	(0.88)
Local_Client_AuditorResign	-0.227	-0.259	-0.117	-0.090	-0.127	-0.028
	(-0.66)	(-1.39)	(-1.19)	(-0.55)	(-1.42)	(-0.30)
Local_Client_OtherReason	-0.089	-0.101	-0.056	-0.070	0.022	-0.011
	(-0.78)	(-1.19)	(-0.50)	(-0.82)	(0.19)	(-0.26)
Local_Client_OtherInd$_t$	-0.205	-0.099	0.013	0.095	0.250	0.005
	(-0.99)	(-0.56)	(0.10)	(0.78)	(0.78)	(0.02)
National_Client$_t$	-0.233	-0.872	-0.072	-0.096	-0.196	0.209
	(-1.50)	(-0.95)	(-0.50)	(-1.50)	(-1.33)	(1.22)
Size	-0.015	-0.091**	-0.059	-0.082*	0.015	-0.019
	(-0.30)	(-1.99)	(-1.33)	(-1.83)	(0.20)	(-0.27)
Zscore	0.002	-0.011*	0.001	-0.009	0.004	-0.007
	(0.27)	(-1.73)	(0.10)	(-1.22)	(0.60)	(-0.76)
Auditor_Share	1.649*	2.710**	0.355*	0.750**	0.782	0.733*
	(1.85)	(2.27)	(1.79)	(2.05)	(1.50)	(1.78)
CEOCFO_Change	0.716**	0.039	0.310	0.070	0.260	0.219
	(2.42)	(0.30)	(1.50)	(0.38)	(1.30)	(0.82)
Litigation risk	-0.033	-0.258	-0.402	-0.507	-0.226	0.069
	(-0.18)	(-1.29)	(-1.28)	(-1.18)	(-0.80)	(0.25)
WC_ACC	0.047	-0.026	0.032	0.012	0.069	0.042
	(1.01)	(-0.70)	(0.89)	(0.68)	(1.52)	(0.30)
Loss	0.122	-0.177	-0.009	0.033	0.178	-0.356*
	(0.70)	(-1.17)	(-0.03)	(0.28)	(0.85)	(-1.70)
Merger	0.081	0.122	-0.242	-0.075	0.333	-0.068
	(0.40)	(0.82)	(-1.25)	(-0.39)	(1.29)	(-0.35)
Growth	-0.029	-0.088*	-0.060	-0.028	-0.211	-0.137
	(-0.60)	(-1.78)	(-1.02)	(-0.49)	(-1.50)	(-1.19)
Leverage	0.116	0.621*	0.819**	0.226	1.118*	0.727
	(1.43)	(1.76)	(2.00)	(0.99)	(1.90)	(1.56)
INV+ACR	0.213	-0.400	0.519	0.155	0.639	0.300*
	(0.45)	(-0.70)	(0.91)	(1.35)	(1.18)	(1.70)
ROA	-0.066	-0.219	-0.362	-0.025	-0.060	-0.078
	(-0.36)	(-1.47)	(-1.11)	(-0.22)	(-0.39)	(-0.59)
Cash	0.516	0.272	0.319	0.045	0.667	0.745
	(0.93)	(0.67)	(0.70)	(0.13)	(1.07)	(1.19)
Issue	-0.003	-0.027	-0.081	-0.109	-0.024	0.146
	(-0.30)	(-0.19)	(-0.50)	(-0.68)	(-0.15)	(0.77)
Year and Industry Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Observations	2,441	2,392	2,699	2,660	2,906	2,150
Pseudo R^2	0.263	0.126	0.066	0.071	0.632	0.525
ROC	0.83	0.83	0.85	0.84	0.83	0.83

TABLE 3
Strategic Fee Adjustment Following Major Client Losses or Gains
This table presents report regressions examining auditor fee changes in response to client losses or gains in the prior period. The dependent variable is the percentage change in audit fees for continuing clients, measured from period *t* to *t+1*. All variables are detailed in Appendix A. Panel A presents results based on major industry client loss or gain at the end of year *t*, and Panel B presents results of the effect representing changes in office leader status as a result of the major industry client switch. Standard errors are Huber-White Sandwich estimators (clustered by firm and audit office). All specifications include year, auditor, and SIC 2-digit industry fixed effects. The t-statistics are reported in parentheses. ***, **, and * denotes statistical significance at the 1%, 5%, and 10% two-tail levels, respectively.

Panel A: Main Test

	(1)	(2)
	Client Loss	**Client Gain**
Dependent Variable:	**%ΔAudit Fee$_{t,t+1}$**	**%ΔAudit Fee$_{t,t+1}$**
Constant	0.255***	0.062
	(3.52)	(0.70)
Local_Client_BetterAudit	**-0.050****	**0.066****
	(-2.33)	**(3.01)**
Local_Client_AAER	-0.011	0.015
	(-0.87)	(0.92)
Local_Client_GCIssue	-0.027	0.004
	(-0.90)	(0.11)
Local_Client_MgmtChange	-0.018	0.015
	(-0.80)	(0.77)
Local_Client_AuditorResign	-0.011	-0.009
	(-0.25)	(-1.32)
Local_Client_OtherReason	-0.012	-0.016
	(-1.02)	(-1.16)
Local_Client_OtherInd$_t$	-0.003	0.000
	(-0.21)	(0.30)
National_Client$_t$	0.004	-0.001
	(0.53)	(-0.60)
ΔRelative Distance	0.185***	0.182***
	(5.09)	(5.10)
ΔAuditor_Share	0.045**	0.029**
	(2.42)	(2.42)
ΔSize	0.178***	0.137***
	(4.09)	(5.82)
ΔLeverage	0.106**	0.011**
	(2.43)	(2.50)
ΔMarket-to-book	0.001	-0.001
	(0.55)	(-1.26)
ΔROA	-0.089***	-0.099***
	(-2.72)	(-3.38)
Year, Industry, & Audit Firm Fixed Effects	*Yes*	*Yes*
Observations	25,270	25,970
Adjusted R^2	0.232	0.235

Panel B: Office Status Change and Audit Fee Effect of Major Client Loss or Gain

Dependent Variable:	(1) Client Loss %ΔAudit Fee$_{t,t+1}$	(2) Client Gain %ΔAudit Fee$_{t,t+1}$
Lead$_{t-1}$_to_Nonlead$_t$_BetterAudit (β_1)	-0.122***	-0.019
	(-2.56)	(-1.17)
Nonlead$_{t-1}$_to_Lead$_t$_BetterAudit (β_2)	0.022	0.108***
	(1.30)	(2.85)
Lead$_{t-1}$_to_Lead$_t$_BetterAudit	-0.014	0.024
	(-0.99)	(1.42)
Nonlead$_{t-1}$_to_Nonlead$_t$_BetterAudit	0.013	0.012
	(1.21)	(1.40)
Lead$_{t-1}$_to_Nonlead$_t$_Other (β_3)	-0.033	-0.009
	(-1.54)	(-1.08)
Nonlead$_{t-1}$_to_Lead$_t$_Other (β_4)	0.008	0.020
	(0.37)	(1.60)
Lead$_{t-1}$_to_Lead$_t$_Other	-0.012	0.008
	(-1.26)	(1.22)
Nonlead$_{t-1}$_to_Nonlead$_t$_Other	0.011	0.001
	(0.51)	(0.50)
Local_Client_OtherInd$_t$	-0.003	0.001
	(-0.32)	(0.32)
National_Client$_t$	0.003	-0.001
	(0.55)	(-0.47)
ΔRelative Distance	0.186***	0.176***
	(5.33)	(4.96)
ΔAuditor_Share	0.043**	0.025**
	(2.41)	(2.51)
ΔSize	0.185***	0.141***
	(4.36)	(5.88)
ΔLeverage	0.101**	0.011**
	(2.50)	(2.50)
ΔMarket-to-book	0.000	-0.001
	(0.70)	(-1.22)
ΔROA	-0.087***	-0.096***
	(-2.85)	(-3.32)
Controls:	*Yes*	*Yes*
Year, Industry, & Audit Firm Fixed Effects	*Yes*	*Yes*
F-test: $\beta_1 = \beta_3 \mid \beta_2 = \beta_4$	5.80**	6.10**
Observations	27,627	28,184
Adjusted R^2	0.232	0.233

TABLE 4
Counter Factual Test
This table reports counter-factual test results based on non-top industry clients switching auditors. Panel A presents results for non-major client loss and Panel B non-major client gain. We present results from logit regressions that examine the effect of major client losses or gains in period *t* on client losses or gains in *t+1*. The dependent variable is an indicator variable set to 1 if a client dismisses (engages) their auditor in year *t+1*, and 0 otherwise. Panels A and B present the values for the area under ROC curve estimations. Panel C examines audit fee change for continuing clients after non-major industry client loss or gain. All variables are defined in Appendix A. Standard errors are Huber-White Sandwich estimators (clustered by firm and audit office). All specifications include year, auditor, and SIC 2-digit industry fixed effects. The t-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% two-tail levels, respectively.

Panel A: Non-Major Client Loss

	(1)	(2)	(3)	(4)	(5)	(6)
	PWC	EY	Deloitte	KPMG	GT	BDO
Dependent Variable:	Loss					
Constant	0.338	0.055	-0.187	0.829	-0.255	0.211
	(0.49)	(0.10)	(-0.17)	(0.91)	(-1.23)	(0.30)
Local_Client_BetterAudit	0.411	0.103	0.283	0.178	0.333	-0.328
	(0.85)	(0.30)	(0.55)	(0.49)	(0.95)	(-1.16)
Local_Client_AAER	-0.173	-0.092	-0.147	-0.206	-0.211	-0.355
	(-0.55)	(-0.35)	(-0.75)	(-0.59)	(-0.59)	(-0.69)
Local_Client_GCIssue	0.666	-0.132	0.015	-0.022	0.032	-0.010
	(0.72)	(-0.16)	(0.33)	(-0.50)	(0.55)	(-0.71)
Local_Client_MgmtChange	-0.060	-0.040	0.181	0.416	0.036	-0.022
	(-0.71)	(-0.81)	(0.25)	(1.40)	(0.72)	(-0.55)
Local_Client_AuditorResign	0.322	0.183	0.233	0.027	0.095	0.129
	(0.54)	(0.72)	(0.96)	(0.16)	(0.62)	(1.18)
Local_Client_OtherReason	-0.102	-0.067	0.032	-0.092	-0.058	-0.033
	(-0.79)	(-0.50)	(0.20)	(-0.91)	(-0.82)	(-0.41)
Local_Client_OtherInd	0.322	0.099	0.137	0.356	0.096	0.227
	(0.70)	(0.65)	(1.37)	(1.03)	(1.31)	(1.16)
National_Client	0.171	0.065	0.003	0.199	0.122	0.427
	(1.04)	(0.32)	(0.02)	(0.79)	(0.58)	(0.75)
Size	-0.535***	-0.415***	-0.389***	-0.416***	-0.339***	-0.452***
	(-7.09)	(-7.52)	(-4.10)	(-12.27)	(-5.33)	(-3.37)
Zscore	-0.008	-0.008**	0.006	-0.003	0.002	-0.007
	(-1.52)	(-2.02)	(0.88)	(-0.81)	(0.40)	(-1.21)
Auditor_Share	-0.356	0.550	0.010	-1.472	-12.112	6.267
	(-0.49)	(0.74)	(0.02)	(-0.75)	(-1.12)	(1.02)
Auditor_Tenure	-0.555***	-0.408***	-0.547***	-0.511***	-0.050	-0.106
	(-5.56)	(-3.88)	(-5.52)	(-7.50)	(-0.50)	(-0.82)
CEOCFO_Change	0.162	0.333*	0.301***	0.819***	0.065	-0.056
	(1.00)	(1.92)	(2.85)	(5.00)	(0.39)	(-0.25)
Litigation risk	-0.077	-0.219	-0.117	0.115	-0.315	-0.257
	(-0.40)	(-1.48)	(-0.50)	(0.52)	(-1.08)	(-1.28)
WC_ACC	-0.017	0.046*	0.027	-0.033	-0.082	0.028
	(-0.46)	(1.70)	(0.30)	(-0.60)	(-1.09)	(0.60)
Loss	0.282**	0.422***	0.388**	0.150	0.355	-0.206
	(2.55)	(4.69)	(2.20)	(1.22)	(1.50)	(-0.99)
Merger	-0.017	0.178	0.122	-0.121	-0.172	-0.382
	(-0.15)	(1.07)	(0.44)	(-0.45)	(-0.59)	(-1.19)
Growth	-0.031	-0.012	0.007	-0.082	0.033	0.053
	(-0.50)	(-0.36)	(0.18)	(-1.33)	(0.56)	(0.89)
Leverage	-0.127	-0.250	0.176	-0.255	0.235	-1.114**

	(-0.36)	(-0.79)	(0.60)	(-0.55)	(1.60)	(-2.21)
INV+ACR	0.811*	0.311	-0.272	0.482	-0.556**	-0.616
	(1.90)	(1.35)	(-0.55)	(1.05)	(-2.50)	(-1.07)
ROA	0.233	0.222***	0.045	0.028	-0.080	0.022
	(0.89)	(3.09)	(0.41)	(0.35)	(-0.82)	(0.21)
Cash	-0.755***	-1.056***	-1.666***	-1.382**	-0.772**	-0.533
	(-3.50)	(-3.68)	(-5.38)	(-2.50)	(-2.16)	(-1.29)
Issue	-0.155	-0.032	0.250	-0.145	0.001	0.362**
	(-1.21)	(-0.34)	(1.43)	(-1.23)	(0.02)	(2.21)
Year and Industry Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Observations	5,507	8,102	5,049	5,003	2,502	1,537
Pseudo R^2	0.128	0.121	0.101	0.117	0.106	0.153
ROC	0.66	0.66	0.65	0.65	0.65	0.65

Panel B: Non-Major Client Gain

Dependent Variable:	(1) PWC	(2) EY	(3) Deloitte	(4) KPMG	(5) GT	(6) BDO
			Gain			
Constant	1.322**	1.369*	1.278**	1.369*	1.520*	1.333*
	(2.00)	(1.90)	(2.18)	(1.89)	(1.90)	(1.88)
Local_Client_BetterAudit	0.422	-0.722	0.301	-0.011	0.417	-0.319
	(0.99)	(-0.91)	(0.90)	(-0.03)	(0.78)	(-0.55)
Local_Client_AAER	0.130	0.046	-0.111	0.287	-0.511	-0.289
	(0.98)	(0.69)	(-0.96)	(1.42)	(-1.37)	(-1.25)
Local_Client_GCIssue	0.502	-0.025	0.028	0.222	0.366	-0.896
	(0.50)	(-0.36)	(0.44)	(0.20)	(0.50)	(-1.11)
Local_Client_MgmtChange	0.045	0.268	-0.725	1.428	0.266	-1.103
	(0.10)	(0.41)	(-0.59)	(1.39)	(0.38)	(-0.60)
Local_Client_AuditorResign	0.217	0.145	-0.232	-0.112	0.229	-0.029
	(0.96)	(0.66)	(0.89)	(0.98)	(0.87)	(-0.78)
Local_Client_OtherReason	0.116	0.155	0.078	0.137	-0.045	0.038
	(0.90)	(1.06)	(0.62)	(1.17)	(-0.29)	(0.51)
Local_Client_OtherInd	-0.180	-0.017	0.017	0.311	0.818	-0.269
	(-0.70)	(-0.11)	(0.09)	(1.29)	(1.20)	(-0.78)
National_Client	0.046	-0.419	-0.409	-0.919	-1.011	0.290
	(0.22)	(-0.76)	(-1.50)	(-0.80)	(-1.42)	(1.45)
Size	-0.095	-0.211***	-0.030	-0.147***	-0.036	0.003
	(-1.40)	(-3.52)	(-0.54)	(-2.70)	(-0.38)	(0.03)
Zscore	0.008	-0.021**	0.015	-0.002	0.004	-0.003
	(1.20)	(-2.30)	(1.10)	(-0.25)	(0.65)	(-0.37)
Auditor_Share	-8.442***	-2.965***	-0.835	1.025**	6.112***	6.672***
	(-6.81)	(-4.57)	(-1.40)	(2.03)	(9.80)	(3.55)
CEOCFO_Change	0.801**	-0.046	0.537**	0.130	-0.222	0.238
	(2.40)	(-0.28)	(2.11)	(0.70)	(-0.85)	(0.80)
Litigation risk	0.002	-0.430	-0.119	-0.046	-0.358	0.006
	(0.01)	(-1.30)	(-0.33)	(-0.20)	(-0.88)	(0.03)
WC_ACC	0.007	-0.072	0.108	0.001	-0.212	0.091
	(0.20)	(-0.56)	(1.18)	(0.10)	(-1.22)	(0.82)
Loss	0.033	-0.450*	-0.269	0.002	-0.022	-0.319
	(0.16)	(-1.90)	(-1.09)	(0.02)	(-0.15)	(-1.20)
Merger	0.226	0.042	-0.085	-0.028	0.577	-0.350
	(0.90)	(0.22)	(-0.50)	(-0.16)	(1.45)	(-0.88)
Growth	-0.076	-0.146**	-0.077	0.011	0.278**	-0.219**
	(-1.11)	(-2.13)	(-0.89)	(0.10)	(2.22)	(-2.18)
Leverage	-0.459	1.350**	0.758	-0.629	1.009*	-1.569***
	(-0.88)	(2.50)	(1.50)	(-1.34)	(1.88)	(-2.60)
INV+ACR	-1.009	0.688	0.958	-1.223*	-0.869	0.630
	(-1.50)	(0.99)	(1.39)	(-1.72)	(-0.91)	(0.77)
ROA	-0.211	-0.070	-0.737	-0.139	-0.439	-0.187
	(-0.87)	(-0.20)	(-0.72)	(-0.88)	(-1.25)	(-0.99)
Cash	-0.133	0.620	0.166	-0.459	-0.332	0.461
	(-0.27)	(1.05)	(0.36)	(-0.67)	(-0.50)	(0.69)
Issue	0.133	-0.015	-0.178	-0.255	0.041	0.422
	(0.70)	(-0.07)	(-0.82)	(-1.32)	(0.19)	(1.50)
Year and Industry Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Observations	1,709	1,674	1,889	1,862	2,034	1,505
Pseudo R^2	0.244	0.144	0.094	0.088	0.636	0.538
ROC	0.67	0.65	0.66	0.67	0.67	0.66

Panel C: Audit Fee Change after Non-Major Client Loss or Gain

Dependent Variable:	(1) Client Loss %ΔAudit Fee$_{t,t+1}$	(2) Client Gain %ΔAudit Fee$_{t,t+1}$
Constant	0.322***	-0.100
	(3.79)	(-1.25)
Local_Client_BetterAudit	-0.022	0.025
	(-0.11)	(0.75)
Local_Client_AAER	-0.005	0.009
	(-0.82)	(0.82)
Local_Client_GCIssue	-0.012	0.005
	(-0.71)	(0.22)
Local_Client_MgmtChange	0.010	0.011
	(0.80)	(0.82)
Local_Client_AuditorResign	-0.011	0.007
	(-0.50)	(0.75)
Local_Client_OtherReason	-0.012	0.007
	(-0.28)	(0.67)
Local_Client_OtherInd$_t$	-0.002	0.000
	(-0.33)	(0.26)
National_Client$_t$	0.004	0.001
	(0.69)	(0.43)
ΔRelative Distance	0.211***	0.167***
	(5.52)	(4.89)
ΔAuditor_Share	0.040**	0.029**
	(2.33)	(2.45)
ΔAuditor_Tenure	0.019*	0.041***
	(1.88)	(3.99)
ΔSize	0.178***	0.143***
	(4.30)	(5.67)
ΔLeverage	0.110**	0.011**
	(2.46)	(2.39)
ΔMarket-to-book	0.001	-0.001
	(0.66)	(-1.30)
ΔROA	-0.092***	-0.091***
	(-2.77)	(-3.15)
Year, Industry, & Audit Firm Fixed Effects	*Yes*	*Yes*
Observations	25,270	25,970
Adjusted R^2	0.200	0.200

TABLE 5
Office-Industry Level Analysis
This table reports test results at the audit office-industry level following major industry clients switching auditors. Panel A and B present Tobit regression results that examine the effect of major client losses or gains in period *t* on client losses or gains in *t+1*. The dependent variable is the number of non-top 30% industry clients dismiss or engaging their auditor in year *t+1*. Panel C examines audit fee change for continuing clients after major industry client loss or gain. The dependent variable is the average percentage change in audit fees for continuing clients. All variables are defined in Appendix A. Standard errors are Huber-White Sandwich estimators (clustered by firm and audit office). All specifications include year, auditor, and SIC 2-digit industry fixed effects. The t-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% two-tail levels, respectively.

Panel A: Major Client Loss

Dependent Variable:	(1) PWC	(2) EY	(3) Deloitte	(4) KPMG	(5) GT	(6) BDO
			Loss			
Constant	-1.319	-1.629**	-1.225**	-0.902	0.232***	-0.019
	(-1.50)	(-2.28)	(-2.09)	(-0.86)	(3.09)	(-0.18)
Local_Client_BetterAudit	1.327***	1.995***	1.092***	1.652***	1.119***	1.439***
	(2.99)	(5.66)	(3.41)	(4.33)	(3.14)	(3.70)
Local_Client_AAER	-0.922	-1.319	-1.226	-1.672	-1.208	-1.116
	(-0.56)	(-0.90)	(-1.19)	(-1.37)	(-1.06)	(-1.16)
Local_Client_GCIssue	1.111	1.659	1.125	1.678	0.992	1.117
	(1.28)	(1.38)	(1.19)	(0.89)	(0.89)	(1.08)
Local_Client_MgmtChange	0.145	0.130	0.617	0.689	0.655	0.532
	(0.45)	(0.28)	(1.12)	(1.48)	(0.60)	(0.60)
Local_Client_AuditorResign	0.858	-1.222	-1.538	0.028	0.069	-0.555
	(0.53)	(-1.28)	(-1.40)	(0.30)	(0.30)	(-0.97)
Local_Client_OtherReason	0.355	0.293	0.469	0.216	0.662	0.327
	(0.78)	(0.67)	(1.09)	(0.55)	(1.00)	(0.86)
Local_Client_OtherInd	0.222	0.311	0.432	0.426	0.895	0.510
	(0.50)	(0.99)	(1.30)	(0.99)	(1.19)	(1.38)
National_Client	0.056	0.102	0.005	0.022	0.069	0.505
	(0.49)	(0.58)	(0.15)	(0.22)	(0.79)	(0.69)
Size	-0.192***	-0.219***	-0.210***	-0.206***	-0.156***	-0.207**
	(-4.11)	(-4.30)	(-5.59)	(-8.77)	(-9.34)	(-2.30)
Zscore	-0.028***	-0.001	0.003	0.002	0.007**	-0.005
	(-4.50)	(-0.25)	(0.59)	(0.20)	(2.06)	(-0.67)
Auditor_Share	0.342	0.352	0.351	0.919	0.078	3.782
	(0.66)	(0.66)	(0.55)	(0.77)	(0.27)	(1.33)
Auditor_Tenure	-0.466***	-0.388***	-0.372***	-0.395***	-0.036***	-0.022
	(-4.32)	(-4.18)	(-5.55)	(-6.88)	(-10.73)	(-0.50)
CEOCFO_Change	0.001	0.387***	0.230	0.277	0.205***	-0.226
	(0.01)	(2.78)	(1.60)	(1.40)	(18.56)	(-1.42)
Litigation risk	-0.030	0.311	0.227	0.211	0.211	0.117
	(-0.26)	(1.28)	(1.48)	(1.09)	(1.43)	(0.90)
WC_ACC	0.009	0.045	-0.011	-0.073	-0.042*	-0.016
	(0.22)	(1.10)	(-0.50)	(-0.89)	(-1.80)	(-0.52)
Loss	0.350***	0.539***	0.277**	0.272**	0.188***	-0.155
	(3.51)	(4.67)	(2.07)	(2.52)	(3.28)	(-1.43)
Merger	0.070	0.221*	0.252	0.069	0.026	-0.355
	(0.70)	(1.78)	(1.51)	(0.37)	(1.32)	(-1.33)
Growth	-0.031	-0.066	-0.022	-0.078	-0.008	0.011
	(-0.69)	(-1.20)	(-0.50)	(-1.33)	(-1.29)	(0.28)
Leverage	-0.430	-0.219	0.233	-0.052	-0.152***	-0.829**

	(-1.55)	(-1.10)	(1.40)	(-0.25)	(-2.89)	(-2.23)
INV+ACR	0.792**	0.526	0.029	0.211	-0.520**	-0.633**
	(2.10)	(1.60)	(0.20)	(0.50)	(-2.10)	(-2.30)
ROA	0.390**	0.025	-0.048	-0.066	-0.255**	-0.092
	(2.36)	(0.48)	(-0.47)	(-1.11)	(-2.20)	(-1.32)
Cash	0.379	-0.039	-0.217	-0.389	-0.449	-0.418
	(1.23)	(-0.20)	(-0.56)	(-1.10)	(-1.10)	(-1.29)
Issue	-0.226	0.048	0.238*	-0.133	0.217	0.126
	(-1.32)	(0.66)	(1.69)	(-0.89)	(1.34)	(1.06)
Year and Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,316	6,473	4,835	4,950	1,811	1,024
Pseudo R^2	0.123	0.118	0.095	0.109	0.109	0.077

Panel B: Major Client Gain

Dependent Variable:	(1) PWC	(2) EY	(3) Deloitte	(4) KMPG	(5) GT	(6) BDO
			Gain			
Constant	-1.880***	-1.911***	-1.516***	-1.239***	-1.427**	-1.495**
	(-3.01)	(-3.77)	(-3.28)	(-2.80)	(-2.11)	(-2.19)
Local_Client_BetterAudit	0.415**	0.900**	1.292***	1.376**	0.789	0.765
	(2.33)	(2.28)	(2.99)	(2.38)	(0.78)	(1.30)
Local_Client_AAER	0.092	0.005	0.355	0.147	0.155	0.259
	(0.60)	(0.14)	(1.11)	(0.90)	(0.90)	(1.46)
Local_Client_GCIssue	0.018	0.009	0.056	0.119	0.205	-0.188
	(0.10)	(1.00)	(0.51)	(0.70)	(0.45)	(-0.56)
Local_Client_MgmtChange	0.068	0.200	0.888	0.836	0.189	0.679
	(0.56)	(1.09)	(1.28)	(0.80)	(0.78)	(0.72)
Local_Client_AuditorResign	0.250	0.017	0.045	-0.289	0.144	0.341
	(1.11)	(0.16)	(0.19)	(-0.76)	(1.02)	(0.60)
Local_Client_OtherReason	0.220	0.266	0.178	0.233	0.189	0.205
	(0.78)	(1.03)	(0.70)	(0.92)	(0.69)	(0.95)
Local_Client_OtherInd	-0.280	-0.081	-0.311	0.356	0.333	-0.399
	(-1.33)	(-0.79)	(-0.56)	(1.00)	(1.18)	(-0.89)
National_Client	-0.040	-0.555	-0.325	-0.277	-1.347	0.288
	(-0.90)	(-0.99)	(-1.32)	(-1.42)	(-1.28)	(1.40)
Size	-0.092*	-0.124***	-0.118***	-0.115***	0.088	-0.027
	(-1.82)	(-2.68)	(-2.88)	(-3.00)	(1.11)	(-0.35)
Zscore	-0.002	-0.015**	0.006	0.001	0.012*	-0.010
	(-0.30)	(-2.09)	(0.85)	(0.11)	(1.88)	(-1.60)
Auditor_Share	-7.738***	-4.389***	-0.645*	-0.109	6.479**	5.367***
	(-10.05)	(-12.67)	(-1.88)	(-0.33)	(2.29)	(5.29)
CEOCFO_Change	0.412	-0.145	0.265	-0.041	-0.088	0.122
	(1.56)	(-0.90)	(1.35)	(-0.30)	(-0.56)	(0.60)
Litigation risk	0.045	-0.109	-0.345	0.357	0.177	-0.222
	(0.20)	(-0.60)	(-1.16)	(1.55)	(0.50)	(-0.88)
WC_ACC	-0.011	-0.027	-0.052	-0.073	-0.028	0.060
	(-0.33)	(-0.72)	(-0.55)	(-1.10)	(-0.61)	(0.99)
Loss	-0.125	-0.319**	0.215	0.177	0.321	-0.366
	(-0.6)	(-2.11)	(1.35)	(1.10)	(1.26)	(-1.32)
Merger	0.119	-0.112	-0.082	-0.109	0.433	-0.010
	(0.55)	(-0.70)	(-0.50)	(-0.70)	(1.32)	(-0.06)
Growth	0.055	-0.028	-0.001	-0.045	0.219***	-0.133**
	(0.70)	(-0.41)	(-0.02)	(-0.90)	(3.55)	(-2.09)
Leverage	-0.202	0.059	0.125	-0.177	1.076**	-1.262***
	(-0.55)	(0.32)	(0.33)	(-0.66)	(2.30)	(-2.66)
INV+ACR	0.370	0.533	0.355	-0.405	-1.025	0.77
	(0.60)	(1.05)	(0.82)	(-0.99)	(-1.50)	(1.01)
ROA	0.035	0.366***	-0.230	-0.060	-0.218	0.177
	(0.35)	(3.01)	(-1.06)	(-0.47)	(-1.30)	(0.87)
Cash	-0.131	-0.092	-0.055	-0.480	-0.532	0.473
	(-0.30)	(-0.29)	(-0.20)	(-1.26)	(-0.92)	(0.80)
Issue	-0.360	0.188	0.317**	-0.050	-0.010	-0.023
	(-1.60)	(1.35)	(2.08)	(-0.30)	(-0.10)	(-0.19)
Year and Industry Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Observations	1,709	1,674	1,889	1,862	2,034	1,505
Pseudo R^2	0.091	0.140	0.116	0.117	0.092	0.095

Panel C: Audit Fee

Dependent Variable:	(1)	(2)
	Client Loss	Client Gain
	ΔAudit Fee$_{t,t+1}$	ΔAudit Fee$_{t,t+1}$
Constant	0.051	0.045
	(1.35)	(1.19)
Local_Client_BetterAudit	**-0.066****	**0.111****
	(-2.29)	**(2.45)**
Local_Client_AAER	-0.056	0.004
	(-0.55)	(0.28)
Local_Client_GCIssue	0.002	0.026
	(0.28)	(0.58)
Local_Client_MgmtChange	-0.007	0.024
	(-0.46)	(1.15)
Local_Client_AuditorResign	0.025	-0.050
	(0.78)	(-1.22)
Local_Client_OtherReason	-0.011	-0.045
	(-0.23)	(-0.58)
Local_Client_OtherInd$_t$	-0.004	0.001
	(-0.66)	(0.18)
National_Client$_t$	0.004	0.004
	(1.11)	(0.99)
ΔRelative Distance	0.157***	0.165***
	(5.22)	(4.52)
ΔAuditor_Share	0.033	0.020
	(0.70)	(0.35)
ΔSize	0.311***	0.301***
	(15.89)	(13.79)
ΔLeverage	0.068**	0.082***
	(2.51)	(2.89)
ΔMarket-to-book	-0.000	-0.000
	(-0.30)	(-0.11)
ΔROA	-0.192***	-0.200***
	(-5.60)	(-6.18)
Year, Industry, & Audit Firm Fixed Effects	*Yes*	*Yes*
Observations	9,603	9,691
Adjusted R^2	0.255	0.252

TABLE 6
Audit Office Capacity and Earnings Quality Changes (Excludes Firm-Years with Business Shocks)
We examine the effect of contagion on the change in earnings quality of the continuing clients of the audit office, following a major client loss or gain. Panel A (B) present the results for major industry client losses (gains) and Panels C and D present results from corresponding counterfactual tests for major industry client switches. The dependent variables are changes in earnings quality – ΔKothari, ΔDGLS, and ΔWC_ACC – which are defined in Appendix B, as well as change in restatement (Tobit regression). All other variables are described in Appendix A. Standard errors are Huber-White Sandwich estimators (clustered by firm and audit office). All specifications include year, auditor, and SIC 2-digit industry fixed effects. The t-statistics are reported in parentheses. ***, **, and * denotes statistical significance at the 1%, 5%, and 10% two-tail levels, respectively.

Panel A: Major Client Loss

Dependent Variable:	(1) ΔKothari	(2) ΔDGLS	(3) ΔWC_ACC	(4) ΔRestatement
Constant	0.033	-0.013	-0.003	0.015
	(0.89)	(-1.16)	(-1.00)	(0.17)
Local_Client$_t$	**0.130****	**0.095****	**0.029****	**-0.480****
	(2.45)	**(2.30)**	**(2.11)**	**(-2.49)**
Local_Client_OtherInd$_t$	-0.003	-0.001	-0.002	-0.021
	(-0.50)	(-0.50)	(-0.76)	(-1.01)
National_Client$_t$	-0.008	-0.003	-0.001	0.002
	(-1.35)	(-0.85)	(-0.15)	(0.50)
ΔAuditor_Share	0.028	0.011	0.004	-0.010
	(1.09)	(1.05)	(0.80)	(-0.82)
ΔSize	0.018***	0.022***	0.025***	-0.065***
	(3.29)	(3.95)	(3.33)	(-3.01)
ΔLeverage	0.075**	0.031**	0.007**	-0.010
	(2.19)	(2.22)	(2.19)	(-0.73)
ΔMarket-to-book	0.001	0.001	0.001	-0.002
	(0.23)	(0.96)	(0.80)	(-0.66)
ΔROA	-0.055**	-0.051**	-0.011**	0.017
	(-2.33)	(-2.25)	(-2.31)	(1.21)
ΔSTDCFO	-0.210**	-0.012**	-0.039**	0.110
	(-2.28)	(-2.22)	(-2.30)	(1.09)
ΔSTDSALE	-0.010*	-0.006*	-0.012**	0.036
	(-1.80)	(-1.80)	(-2.26)	(1.57)
ΔOPERCYCLE	-0.100***	-0.102***	-0.012**	0.027**
	(-8.82)	(-7.88)	(-2.22)	(2.01)
Year, Industry, & Audit Firm Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*
Observations	25,270	25,270	25,270	25,270
Adjusted Pseudo R^2	0.053	0.093	0.080	0.056

Panel B: Major Client Gain

Dependent Variable:	(1) ΔKothari	(2) ΔDGLS	(3) ΔWC_ACC	(4) ΔRestatement
Constant	-0.012	0.007	0.006	0.025
	(-0.98)	(0.30)	(0.43)	(0.35)
Local_Client$_t$	**-0.035***	**-0.357***	**-0.022**	**0.222**
	(-3.22)	**(-2.88)**	**(-2.19)**	**(2.50)**
Local_Client_OtherInd$_t$	-0.001	0.005	-0.001	0.011
	(-0.30)	(0.87)	(-0.21)	(0.90)
National_Client$_t$	-0.001	-0.010	-0.003	0.022
	(-0.77)	(-0.88)	(-1.19)	(0.99)
ΔAuditor_Share	0.033*	0.050	0.005	-0.067
	(1.72)	(1.26)	(0.69)	(-1.10)
ΔSize	0.010**	0.003**	0.023***	-0.067***
	(2.05)	(2.36)	(2.79)	(-3.22)
ΔLeverage	0.026**	0.049**	0.011**	-0.041
	(2.19)	(2.45)	(2.38)	(-1.02)
ΔMarket-to-book	0.001	0.001	0.001	-0.002
	(0.20)	(0.19)	(0.85)	(-0.78)
ΔROA	-0.050**	-0.055**	-0.009**	0.046
	(-2.41)	(-2.29)	(-2.29)	(1.43)
ΔSTDCFO	-0.035*	-0.028**	-0.040**	0.102
	(-1.79)	(-2.33)	(-2.40)	(0.93)
ΔSTDSALE	-0.003	-0.031*	-0.019**	0.040
	(-1.23)	(-1.83)	(-2.46)	(1.11)
ΔOPERCYCLE	-0.111***	-0.113***	-0.016**	0.032**
	(-8.89)	(-10.09)	(-2.20)	(2.26)
Year, Industry, & Audit Firm Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*
Observations	25,970	25,970	25,970	25,970
Adjusted Pseudo R^2	0.089	0.067	0.056	0.055

Panel C: Counter-Factual Test (Non-Leader Client Loss)

Dependent Variable:	(1) ΔKothari	(2) ΔDGLS	(3) ΔWC_ACC	(4) ΔRestatement
Constant	0.010	-0.015	-0.020	0.016
	(0.67)	(-1.33)	(-0.78)	(0.39)
Local_Client	**0.003**	**-0.002**	**0.005**	**-0.025**
	(0.31)	**(-0.40)**	**(0.85)**	**(-0.55)**
Local_Client_OtherInd$_t$	-0.002	-0.001	-0.002	-0.005
	(-0.33)	(-0.16)	(-0.43)	(-0.78)
National_Client$_t$	-0.002	-0.004	-0.001	-0.002
	(-0.55)	(-0.89)	(-0.45)	(-0.21)
ΔAuditor_Share	0.028	0.010	0.004	-0.015
	(1.18)	(1.01)	(0.85)	(-1.21)
ΔSize	0.016***	0.027***	0.024***	-0.037**
	(2.99)	(4.02)	(3.29)	(-2.15)
ΔLeverage	0.078**	0.039**	0.005**	-0.056
	(2.37)	(2.46)	(2.11)	(-1.09)
ΔMarket-to-book	0.001	0.001	0.001	-0.004
	(0.30)	(0.91)	(0.73)	(-0.79)
ΔROA	-0.046**	-0.047**	-0.013**	0.049
	(-2.22)	(-2.21)	(-2.20)	(1.29)
ΔSTDCFO	-0.225**	-0.011**	-0.037**	0.111
	(-2.31)	(-2.26)	(-2.19)	(1.28)
ΔSTDSALE	-0.010*	-0.006*	-0.011**	0.040
	(-1.73)	(-1.88)	(-2.18)	(1.00)
ΔOPERCYCLE	-0.111***	-0.108***	-0.015**	0.031**
	(-8.88)	(-7.82)	(-2.50)	(2.25)
Year, Industry, & Audit Firm Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*
Observations	22,885	22,885	22,885	22,885
Adjusted Pseudo R^2	0.050	0.088	0.078	0.053

Panel D: Counter-Factual Test (Non-Leader Client Gain)

Dependent Variable:	(1) ΔKothari	(2) ΔDGLS	(3) ΔWC_ACC	(4) ΔRestatement
Constant	0.009	0.013	-0.016	0.017
	(0.77)	(0.92)	(-0.83)	(0.42)
Local_Client	**-0.005**	**-0.008**	**-0.003**	**0.021**
	(-0.51)	**(-0.91)**	**(-1.13)**	**(0.25)**
Local_Client_OtherInd$_t$	-0.002	0.002	0.002	-0.011
	(-0.30)	(0.29)	(0.30)	(-0.99)
National_Client$_t$	-0.003	0.005	0.001	0.003
	(-1.05)	(1.11)	(0.75)	(0.22)
ΔAuditor_Share	0.030*	0.040	0.005	-0.050
	(1.72)	(1.02)	(0.70)	(-0.70)
ΔSize	0.013*	0.004**	0.025***	-0.048***
	(1.92)	(2.40)	(2.77)	(-3.11)
ΔLeverage	0.029**	0.050**	0.010**	-0.029
	(2.22)	(2.51)	(2.33)	(-0.66)
ΔMarket-to-book	0.001	0.001	0.001	-0.003
	(0.27)	(0.19)	(0.88)	(-1.19)
ΔROA	-0.050**	-0.051**	-0.008**	0.050
	(-2.42)	(-2.27)	(-2.22)	(1.50)
ΔSTDCFO	-0.031*	-0.026**	-0.043**	0.102
	(-1.82)	(-2.33)	(-2.20)	(1.27)
ΔSTDSALE	-0.003	-0.034*	-0.019**	0.041
	(-1.33)	(-1.86)	(-2.37)	(1.49)
ΔOPERCYCLE	-0.105***	-0.100***	-0.015**	0.032***
	(-9.00)	(-9.78)	(-2.33)	(2.70)
Year, Industry, & Audit Firm Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*
Observations	23,520	23,520	23,520	23,520
Adjusted Pseudo R^2	0.083	0.061	0.050	0.053

TABLE 7
Earnings Quality Changes Partitioned by Audit Office Size

We examine the effect of contagion on the change in earnings quality of other clients of the auditor partitioned by the size of the audit office, following a major client loss or gain. Panel A present the results for major industry client loss and Panels B for major client gain. Large offices are those in the upper quartile of yearly size based on total audit fees, and small offices are those in the bottom three quartiles. The dependent variables are changes in earnings quality – ΔKothari, ΔDGLS, and ΔWC_ACC – which are defined in Appendix B as well as change in restatement (Tobit regression). All other variables are described in Appendix A. Standard errors are Huber-White Sandwich estimators (clustered by firm and audit office). All specifications include year, auditor, and SIC 2-digit industry fixed effects. The t-statistics are reported in parentheses. ***, **, and * denotes statistical significance at the 1%, 5%, and 10% two-tail levels, respectively.

Panel A: Earnings Quality Change for Big and Small Offices After Major Client Loss

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Big Office				Small Office			
Dependent Variable:	ΔKothari	ΔDGLS	ΔWC_ACC	ΔRestatement	ΔKothari	ΔDGLS	ΔWC_ACC	ΔRestatement
Constant	0.004	-0.060	-0.003	0.026	-0.022	0.043	-0.008*	0.016
	(0.48)	(-0.80)	(-0.37)	(0.67)	(-1.22)	(1.18)	(-1.89)	(0.68)
Local_Client$_t$	0.003*	0.004*	0.001	-0.055*	0.020**	0.015**	0.022**	-0.277**
	(1.75)	(1.85)	(1.41)	(-1.89)	(2.49)	(2.39)	(2.26)	(-2.50)
Local_Client_OtherInd$_t$	-0.001	0.001	-0.001	-0.006	-0.004	0.002	-0.003	-0.001
	(-0.16)	(0.12)	(-0.33)	(-0.43)	(-0.50)	(0.75)	(-1.23)	(-0.11)
National_Client$_t$	0.002	-0.015	0.001	-0.003	0.016	0.001	-0.001	-0.002
	(0.56)	(-1.51)	(0.49)	(-0.50)	(1.25)	(0.41)	(-0.39)	(-0.45)
ΔAuditor_Share	0.030	0.120	0.010	-0.069	0.008	0.025	0.001	-0.050
	(1.31)	(1.20)	(1.11)	(-1.01)	(0.50)	(0.45)	(0.16)	(-0.90)
ΔSize	0.020	0.034	0.001	-0.062	0.029***	0.095***	0.006	-0.022
	(1.30)	(1.23)	(0.22)	(-1.54)	(3.30)	(3.02)	(1.25)	(-1.32)
ΔLeverage	0.022	0.075	0.019	-0.011	0.050**	0.061	0.003	-0.022
	(0.97)	(1.03)	(0.80)	(-0.50)	(2.22)	(1.35)	(1.39)	(-1.09)
ΔMarket-to-book	0.003	0.003	0.000	-0.003	-0.001	-0.001	0.001	0.003
	(1.17)	(1.22)	(0.06)	(-0.79)	(-1.10)	(-0.70)	(0.79)	(1.60)
ΔROA	-0.092***	-0.127***	-0.005	0.015	-0.117***	-0.241***	-0.020*	0.042
	(-7.11)	(-2.60)	(-1.36)	(1.11)	(-5.88)	(-7.02)	(-1.89)	(1.54)
ΔSTDCFO	-0.105	-0.700**	-0.038*	0.087	-0.018	-0.063	-0.050**	0.028
	(-1.09)	(-2.37)	(-1.52)	(1.22)	(-0.59)	(-0.60)	(-2.11)	(0.50)
ΔSTDSALE	-0.013	-0.011	-0.035**	0.100	-0.005	-0.015	-0.004	0.032
	(-1.30)	(-1.22)	(-2.32)	(1.32)	(-0.59)	(-0.57)	(-0.86)	(1.29)
ΔOPERCYCLE	-0.096***	-0.077**	-0.015**	0.069	-0.118***	-0.140***	-0.027***	0.035
	(-13.11)	(-2.27)	(-2.46)	(1.50)	(-14.79)	(-10.55)	(-3.59)	(1.33)
Controls:	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Year, Industry, & Audit Firm Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Observations	5,721	5,723	5,726	5,726	17,164	17,168	17,177	17,177

Adjusted Pseudo R^2		0.059	0.078	0.061	0.053	0.057	0.110	0.100	0.056

Panel B: Earnings Quality Change for Big and Small Offices After Major Client Gain

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Big Office				Small Office			
Dependent Variable:	ΔKothari	ΔDGLS	ΔWC_ACC	ΔRestatement	ΔKothari	ΔDGLS	ΔWC_ACC	ΔRestatement
Constant	-0.011	0.032	-0.020	0.026	0.016	-0.008	-0.004	0.031
	(-0.48)	(0.69)	(-1.25)	(0.67)	(0.55)	(-0.72)	(-0.78)	(0.55)
Local_Client	-0.011*	-0.007*	-0.009	0.111	-0.026***	-0.019**	-0.020**	0.359***
	(-1.88)	(-1.80)	(-1.52)	(1.32)	(-2.66)	(-2.45)	(-2.38)	(3.11)
Local_Client_OtherInd$_t$	0.004	0.008	0.001	0.013	-0.008	-0.003	-0.001	0.007
	(0.46)	(1.26)	(0.85)	(1.23)	(-1.52)	(-1.10)	(-0.73)	(0.67)
National_Client$_t$	0.008	0.003	0.001	-0.014	0.004	0.002	0.003	-0.011
	(0.66)	(0.80)	(0.91)	(-0.76)	(0.81)	(0.62)	(0.37)	(-0.89)
ΔAuditor_Share	0.073***	0.062	0.021**	-0.109	0.033	0.030	0.007	-0.058
	(3.52)	(1.42)	(2.53)	(-1.22)	(1.60)	(0.52)	(0.72)	(-0.58)
ΔSize	0.022	0.052**	0.012	-0.059	0.027***	0.106***	0.002	-0.012
	(1.50)	(2.05)	(1.28)	(-1.46)	(2.95)	(3.32)	(0.56)	(-0.69)
ΔLeverage	0.037	0.129	0.011	-0.011	0.062***	0.075*	0.007	-0.030
	(1.13)	(1.50)	(0.78)	(-0.20)	(4.21)	(1.90)	(1.11)	(-0.99)
ΔMarket-to-book	0.001**	0.002	-0.001	-0.004	0.001	0.001	0.001**	-0.006**
	(2.11)	(0.88)	(-0.42)	(-0.90)	(1.25)	(0.96)	(2.11)	(-2.33)
ΔROA	-0.089***	-0.140*	-0.050	0.008	-0.111***	-0.228***	-0.012	0.021
	(-6.50)	(-1.82)	(-1.32)	(1.20)	(-6.26)	(-7.03)	(-1.45)	(1.27)
ΔSTDCFO	-0.066	-0.509	-0.066	0.021	-0.030	-0.050	-0.033*	0.082
	(-1.35)	(-1.51)	(-1.40)	(0.89)	(-1.36)	(-0.68)	(-1.87)	(0.85)
ΔSTDSALE	-0.027*	-0.067	-0.033**	0.132*	-0.011*	-0.035	-0.007	0.026
	(-1.80)	(-1.53)	(-2.25)	(1.80)	(-1.88)	(-0.92)	(-1.28)	(0.67)
ΔOPERCYCLE	-0.102***	-0.088**	-0.018	0.021	-0.128***	-0.132***	-0.022***	0.035**
	(-10.12)	(-2.35)	(-1.37)	(1.23)	(-13.09)	(-9.88)	(-3.32)	(2.45)
Controls:	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Year, Industry, & Audit Firm Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Observations	5,880	5,880	5,880	5,880	17,640	17,640	17,640	17,640
Adjusted Pseudo R^2	0.056	0.081	0.061	0.055	0.062	0.102	0.066	0.057

Panel C: Impact of a Major Client Loss or Gain on Fees of Small and Large Audit Offices

	Industry Leader Loss (Industry Leader Fees as a % of Total Office Fees)	Industry Leader Gain (Industry Leader Fees as a % of Total Office Fees)
Small Leader Office	35.8%	34.3%
Large Leader Office	8.9%	8.7%
t-test of difference (Small – Large)	*7.99****	*7.11****