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Audit and non-audit fees and capital market perceptions of auditor independence ☆

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ABSTRACT

This study provides evidence on whether auditor independence-in-appearance, proxied by earnings response coefficients, is related to the non-audit fee ratio (non-audit to total fees from a client) or client importance (total fees from a client as a percentage of the total revenues of the audit firm). The results from large samples over the period 2001–2006 show, contrary to popular belief and the findings of some prior studies, that there is no evidence of a relation between perceived auditor independence and the non-audit fee ratio. However, perceived auditor independence is negatively associated with client importance, consistent with the economic theory of auditing. Our paper adds to the literature by examining the relative importance of non-audit fee ratios and client importance as determinants of independence-in-appearance.

1. Introduction

Regulators have long been concerned about the potential impact of audit and non-audit fees on auditor independence (SEC, 1979). The Securities and Exchange Commission (SEC) has repeatedly asserted that auditors must be independent in fact and in appearance (SEC, 2000). Independence-in-fact is defined by SEC as the auditor's mental state lacking any bias, while independence-in-appearance is a public perception that the auditor is objective and unaffected by a financial interest in the client (SEC, 2001). Recent papers examining the relationship between audit and non-audit fees and auditor independence tend to provide evidence on independence-in-fact (e.g., DeFond et al., 2002; Frankel et al.,

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2002; Ashbaugh et al., 2003; Chung and Kallapur, 2003; Larcker and Richardson, 2004; Kinney et al., 2004; Srinidhi and Gul, 2007; Lim and Tan, 2008).

The few studies that provide evidence on whether audit and non-audit fees influence independence-in-appearance (Higgs and Skantz, 2006; Krishnan et al., 2005; Francis and Ke, 2006) examine audit fees, non-audit fees, or non-audit fee ratio (non-audit to total fees from a client), but not client importance (fees from a given client to the total revenues of the audit firm). Economic theory suggests that auditors' incentives to compromise their independence depend on client importance and not on non-audit fee ratio (DeAngelo, 1981; Ashbaugh et al., 2003; Chung and Kallapur, 2003). Public attention has nevertheless focused on the non-audit fee ratio as causing perceptions of auditor independence impairment.[1]

In this study, we examine the relationship between audit and non-audit fees and capital market perceptions of auditor independence. Because prior studies do not address whether perceived auditor independence is a function of client importance or non-audit fee ratio, we investigate the relative importance of these two variables in influencing capital market perceptions of independence. The two fee-based metrics are not different measures of the same construct; rather, they are two separate concepts. For a given client, non-audit fee ratio measures the importance of consulting services relative to the total services provided by the external auditor. In contrast, client importance measures the significance of a client relative to the auditor's portfolio of clients.

Our study is important for conceptual and practical reasons. Conceptually, the results would show whether investors perceive independence as a function of non-audit fee ratio although academic studies conclude that client importance, and not non-audit fee ratio, impairs independence. Practically, regulators and audit committees might be misled into preventing non-audit services if the perception of auditor independence impairment is a function of client importance instead of non-audit fee ratio.

Following prior literature (Teoh and Wong, 1993; Hackenbrack and Hogan, 2002; Ghosh and Moon, 2005; Francis and Ke, 2006) we use earnings response coefficients (ERCs) as a measure of investors' perceptions of audit quality.[2] Following much of the prior literature (see Kothari, 2001), we compute ERCs from regressions of annual returns on annual earnings (levels and changes) and from regressions of returns on earnings surprises around quarterly earnings announcements.

Using a large sample of firms with audit and non-audit fee data between 2001 and 2006, and after controlling for the other determinants of ERCs, we find that ERCs are negatively associated with client importance, but there is no evidence of an association between ERCs and non-audit fee ratio. Thus, our results indicate that investors perceive client importance, and not non-audit fee ratio, as compromising auditors' independence. Further, when we decompose client importance into two components, audit fees and non-audit fees from a given client as percentages of the total revenues of the audit firm, we find that only the audit fee component is significantly negatively related to ERCs. Thus, the evidence suggests that investors are concerned about perceived auditor independence when client importance increases because of audit fees, but not because of non-audit fees.

Because size might be correlated with non-audit fee ratio and client importance, we partition the sample by size into three groups and estimate our regression model separately for each size group. We find that ERCs are insignificantly associated with non-audit fee ratio in every size group. On the other hand, the significant negative association between ERCs and client importance holds for middle-sized firms only. One explanation for our results is that auditors' concern for a loss of reputation if independence is impaired in engagements with large clients and less economic dependence in engagements with small clients are perceived as not impairing auditor independence. Another econometric-based explanation for the insignificant results is that there is little variation in non-audit fee ratio or client importance for firms in the large and small size groups compared to firms in the middle size group.

[1] The SEC Proposed Rule: Revision of the Commission's Auditor Independence Requirements (paragraph II (C) 2(a)) http://www.sec.gov/rules/proposed/34-42994.htm cites six sources: (1) Letter from Chairman of POB 1979, (2) SEC Staff Report 1994, (3) Advisory Panel on Auditor Independence (Kirk Panel) 1994, (4) AICPA Special Committee on Financial Reporting (Jenkins Committee) 1994, (5) GAO Report 1996, and (6) Earnscliffe Report 1999, mentioning that non-audit services impair auditor independence in fact or appearance.

[2] Audit quality refers to the probability of detecting and reporting a breach (DeAngelo, 1981). Independence is the probability of reporting a detected breach, and is thus a component of audit quality.

Our results are robust to several sensitivity checks. First, the results hold after controlling for fixed firm effects, which control for omitted variables that are firm-specific (Himmelberg et al., 1999). Second, our results hold for periods before and after the Sarbanes-Oxley Act (SOX, 2002). Given that non-audit fee ratios were higher before the passage of SOX, an insignificant association between non-audit fee ratio and ERC suggests that non-audit fees are not perceived as impairing independence even during a period when non-audit fees were higher and the public was more sensitized to it. Non-audit fees are also less of a concern for the post-SOX period because of the creation of the Public Company Accounting Oversight Board (PCAOB) and other SOX provisions aimed at enhancing auditor independence. Third, while our primary regression results rely on pooled data, we find similar results using yearly regressions. Finally, our results are insensitive to the treatment of outliers.

We contribute to the literature by examining auditor independence-in-appearance and whether non-audit fee ratio or client importance affects auditor independence. While the other related studies also use ERCs as a measure of independence-in-appearance, they do not compare the relative importance of the non-audit fee ratio and client importance as determinants of ERCs. In contrast to the findings of prior studies, our results question the long-held belief that higher non-audit to total fee ratios are perceived by investors to compromise auditor independence. Moreover, our results are more generalizable because we include a comprehensive sample spanning a period of six years and examine sub-periods with relatively high and low levels of non-audit fee ratio.

We organize the rest of the paper as follows. Section 2 establishes the links between audit and non-audit fees and perceptions of auditor independence. Section 3 discusses the research design, and Section 4 describes the sample selection procedure. Section 5 reports the results and Section 6 concludes the paper.

2. Hypothesis development

2.1. Related studies on auditor independence-in-appearance

Using earnings response coefficients (ERCs) as a proxy for perceived earnings quality, a few recent studies examine whether the joint provision of audit and non-audit services impairs auditor independence-in-appearance. Higgs and Skantz (2006) examine whether earnings quality is associated with engagement profitability. If the market participants perceive abnormally high fees (profitable engagements) as a threat to auditor independence, ERCs are expected to be lower for such firms. Based on residual fees derived from a two-stage regression as a proxy for engagement profitability, they find that ERCs are positively associated with abnormally high total and audit fees, but are negatively associated with abnormally high non-audit fees. Their findings are consistent with investors perceiving unusually high audit and total fees as improving earnings quality but unusually high non-audit fees as reducing audit quality because of possible independence concerns.

In a related study, Krishnan et al. (2005) examine whether investors perceive independence as being impaired when auditors provide non-audit services. They find that non-audit fee ratio and the level of non-audit fees are negatively associated with ERCs. They also find a negative association between unexpected levels of non-audit fees and ERCs in the second and third quarters following fee disclosures. Their results suggest that investors perceive non-audit services as impairing auditor independence.

Finally, Francis and Ke (2006) examine whether the SEC mandated disclosure of fees for audit and non-audit services paid by clients to their incumbent auditors affects the market's perception of auditor independence and earnings quality. They find that the post-disclosure market valuation of earnings surprises is significantly lower for firms with high levels of non-audit fees than for firms with low levels of non-audit fees. Their findings suggest that mandated fee disclosures provide new information that is viewed as relevant in appraising auditor independence and earnings quality.

Overall, the results from these studies suggest that non-audit fee ratio is perceived as impairing auditor independence but the results using total fees or audit fees are conflicting. Moreover, all three studies focus on a short time period around the initial fee disclosures in 2001 using sample sizes between 1313 and 3133 firms.

2.2. Client importance, non-audit fees, and independence-in-appearance

Our objectives are two-fold. We re-examine the influence of audit and non-audit services on capital market perceptions of auditor independence using a comprehensive sample over a period spanning six years. More importantly, we examine client importance and non-audit fee ratio as alternative concepts that are thought to affect auditor independence. Although economic theory of auditor independence suggests that auditors' incentives to compromise independence depend on client importance (DeAngelo, 1981), according to popular belief, non-audit fee ratio is inversely related to auditor independence. Therefore, prior studies tend to concentrate on non-audit fee ratio, which is not the primary economic driver of auditor independence in extant models.

Client importance is defined as the ratio of quasi rents (revenues less marginal costs) specific to the client divided by all other quasi rents. Because quasi rents are not observable, we use the ratio of a client's total fees to audit firm's total revenues as our proxy for client importance (Stice, 1991; Lys and Watts, 1994; Chung and Kallapur, 2003). As in prior studies, non-audit fee ratio is defined as the ratio of non-audit fees to the sum of audit and non-audit fees. Because prior studies question whether high non-audit fee ratios provide auditors with incentives to compromise their independence, and considering that economic theory suggests that client importance measures auditor independence, we add to the literature by investigating how investors view these two alternative measures as affecting auditor independence.

3. Research design

3.1. Audit fees and earnings response coefficients: Annual regressions

Our earnings response coefficients (ERCs) are based on regressions of market-adjusted one-year returns on annual earnings levels and changes. We prefer a one-year measurement period because a longer period is likely to provide more powerful tests for our research question compared to a shorter window that relies on quarterly earnings announcements. Stock prices react to the revision in expectation of future-period earnings; the correlation between current-period and future-period information is likely to be lower over short periods like a quarter as compared to longer periods like one year (Kothari, 2001, p. 149). It is well known that investors anticipate much of the earnings information contained in earnings announcements. This problem is less severe for long-window association studies than for short-window event studies. Thus, an insignificant coefficient in a short-window event study may suggest that information is value irrelevant but such a result is also consistent with investors anticipating and pricing information before the announcement. Further, firms are prone to releasing confounding information with earnings which makes it difficult to isolate the market's reaction to earnings from the confounding events (Chaney and Jeter, 1992). Finally, investors have access to audit fee information on a yearly basis and the information is almost never made available on any of the earnings announcement dates.

Following Easton and Harris (1991) and Ali and Zarowin (1992), we interact earnings levels and earnings changes with non-audit fee ratio, client importance, and the other determinants of ERC.[3] We also include the main effects of each independent variable along with the interactions to mitigate concerns about correlated omitted variables problem.

Our specification is as follows:

$$\begin{aligned} RETURNS_A = {} & \beta_0 + \beta_1 E_A + \beta_2 \Delta E_A + \beta_3 E_A * \%NAF/TF + \beta_4 \Delta E_A * \%NAF/TF + \beta_5 E_A * \%TF^C/TF^{AC} \\ & + \beta_6 \Delta E_A * \%TF^C/TF^{AC} + \beta_7 \%NAF/TF + \beta_8 \%TF^C/TF^{AC} + \sum_i \beta_{7+2i} E_A * X_i \\ & + \sum_i \beta_{8+2i} \Delta E_A * X_i + \sum_i \beta_{22+i} X_i + \varepsilon \end{aligned} \quad (1)$$

[3] Ali and Zarowin (1992) note that earnings changes proxy for unexpected earnings when annual earnings are assumed to be purely permanent. However, if earnings contain both transitory and permanent components, including earnings changes and levels in the same regression increases the explanatory power and magnitude of earnings response coefficients (Easton and Harris, 1991; Ali and Zarowin, 1992).

where:

$RETURNS_A$ are market-adjusted returns computed from one month before the proxy statement filing date for fiscal year $t-1$ to one month before the proxy statement filing date for fiscal year t. Market-adjusted returns are the difference between stock returns and value-weighted *CRSP* market returns.
E_A and ΔE_A represent levels of and changes in annual earnings before extraordinary items for fiscal year t, both deflated by the market value of equity at the end of fiscal year $t-1$.
$\%NAF/TF$ and $\%TF^C/TF^{AC}$ represent percentile ranks of the non-audit fee ratio, the ratio of non-audit to total (audit + non-audit) fees from a client, and client importance, total fees received from a client (denoted with superscript C) divided by the auditor's total revenues from all clients (denoted with superscript AC), respectively, using fee data from fiscal year $t-1$. The use of fee data from year $t-1$ ensures that market participants have fee information available as they incorporate value-relevant information in the firm's stock price in year t. The percentile ranks are created based on the pooled sample (i.e., using fee observations for all the years). Conversion to percentile ranks deals with outliers as well as possible non-linearities in the relationship between audit fee measures and ERCs (Iman and Conover, 1979; Frankel et al., 2002).

We include the following control variables (X_i):

$LOSS_A$ is a dummy variable that equals 1 if a firm reports negative earnings for fiscal year t.
$RESTRUCTURE_A$ is an dummy variable that equals 1 if special items as a percentage of total assets are less than or equal to −5% for fiscal year t, and 0 otherwise.
$STDRET_M$ is the standard deviation of monthly stock returns over the previous 60 months (i.e., for fiscal years $t-5$ to $t-1$).
DE_A is the ratio of short and long term debt to total equity for fiscal year t.
MB_A is the sum of the market value of equity and the book value of debt divided by the book value of total assets for fiscal year t.
$LNMV_A$ is the natural log of the market value of equity at the end of fiscal year $t-1$.
AGE_A measures the number of years a firm is publicly traded as of the fiscal year t.
Industry dummies for each of the 13 industry groups are as identified in Frankel et al. (2002).
Subscripts A and M denote the use of annual and monthly observations, respectively.

The ERC is measured as the sum of the coefficients on E_A and ΔE_A ($\beta_1 + \beta_2$). Other things held constant, $\beta_1 + \beta_2$ represents the ERC for firms with zero non-audit fee ratio ($\%NAF/TF$) and zero client importance ($\%TF^C/TF^{AC}$), i.e., those in the lowest percentile groups for each of the two fee ratios. For firms with non-zero values of $\%NAF/TF$, ERC equals $\beta_1 + \beta_2 + \%NAF/TF * (\beta_3 + \beta_4)$. Similarly, ERC for firms with non-zero values of $\%TF^C/TF^{AC}$ equals $\beta_1 + \beta_2 + \%TF^C/TF^{AC} * (\beta_5 + \beta_6)$.

If ERC is negatively associated with non-audit fee ratio ($\%NAF/TF$) and client importance ($\%TF^C/TF^{AC}$), then $\beta_3 + \beta_4$ and $\beta_5 + \beta_6$ will be negative and significant, respectively. To control for the other determinants of ERC, we include dummy variables for loss and restructuring charges, returns volatility, debt-to-equity ratio, growth, size, firm age, and industry dummies (Collins and Kothari, 1989; Barth et al., 1998; Francis and Ke, 2006).

3.2. Audit fees and earnings response coefficients: Quarterly regressions

Francis and Ke (2006) use an alternative research design to test whether the fee disclosures affect the valuation of earnings surprises. They measure market perceptions of earnings quality using ERCs from regressions of cumulative abnormal returns on quarterly earnings around the earnings announcement dates. As a robustness check, we also use their research methodology to examine how ERCs, based on the market reactions to quarterly earnings announcements, vary with client importance and non-audit fee ratio. Specifically, we estimate the following regression:

$$CAR = \beta_0 + \beta_1 FERR_Q + \beta_2 FERR_Q * \%NAF/TF + \beta_3 FERR_Q * \%TF^C/TF^{AC} + \beta_4 \%NAF/TF + \beta_5 \%TF^C/TF^{AC} + \sum_i \beta_{5+i} FERR_Q * X_i + \sum_i \beta_{13+i} X_i + \varepsilon \quad (2)$$

where:

CAR is cumulative abnormal returns defined as market-adjusted returns cumulated over a three day window from one day before to one day after the quarterly earnings announcement. Market-adjusted returns are the difference between stock returns and *CRSP* value-weighted returns.
$FERR_Q$ is analysts' forecast error defined as the difference between reported quarterly earnings per share and the most recent median analyst forecast deflated by the fiscal year-end stock price of the prior quarter.
As in Francis and Ke (2006), we include the following control variables (X_i).
$GROWTH_Q$ is the analysts' median five year long term earnings growth forecast.
$STDRET_D$ is the standard deviation of daily stock returns over a 90-days window ending seven days prior to the earnings announcement date.
DE_Q is the ratio of short and long term debt to total equity.
$LNMV_Q$ is the natural logarithmic transformation of the market value of equity at the beginning of the quarter.
$ABSFERR_Q$ is the absolute value of $FERR_Q$.
$LOSS_Q$ is a dummy variable that equals 1 for quarters a firm reports negative earnings.
$FQTR4_Q$ is a dummy variable that equals 1 for the fourth quarter, and 0 otherwise.
$RESTRUCTURE_Q$ is an dummy variable that equals 1 if special items as a percentage of total assets are less than or equal to −5%, and 0 otherwise.
Industry dummies for each of the 13 industry groups are as identified in Frankel et al. (2002).
Subscripts *Q* and *D* denote the use of quarterly and daily observations, respectively.

%NAF/TF and $\%TF^C/TF^{AC}$ are as defined previously. Similar to Francis and Ke (2006), we use fee data from proxy statements filed with the SEC prior to the quarterly earnings announcement date (i.e., investors have knowledge about the fee information when reacting to earnings announcements). The control variables (X_i) are based on the quarterly numbers rather than yearly numbers. As before, ERC is measured as β_1 (the coefficient on $FERR_Q$) for firms whose *%NAF/TF* and $\%TF^C/TF^{AC}$ equal zero (those in the lowest percentile group). For firms with non-zero values of *%NAF/TF*, ERC equals $\beta_1 + \%NAF/TF * \beta_2$. Similarly, ERC for firms with non-zero values of $\%TF^C/TF^{AC}$ equals $\beta_1 + \%TF^C/TF^{AC} * \beta_3$.

4. Data and sample description

We begin our sample selection with the audit and non-audit fee data from *Audit Analytics* that provides auditor information for each company since 2000. We match the fee data with financial data from the *Compustat* files (active and research), and stock return and firm age data from the *CRSP* files. Because the non-audit fee ratio and client importance measures differ systematically between clients of Big 5 and non-Big 5 audit firms, we restrict our sample to clients of the Big 5 auditors. We exclude observations that do not have data required for estimating the dependent and independent variables, and are left with a sample of 21,797 firm-year observations for the years 2001–2006. Because the regression specifications include one period lagged fee data, the estimation of ERCs is based on observations from 2001 to 2006.

Further, to test how non-audit fee ratio and client importance affect the market valuation of quarterly earnings surprises, we obtain analyst forecast data from the Institutional Broker Estimate System (I/B/E/S) Summary Estimates and the I/B/E/S actual file. We limit the sample to include clients of the Big 5 that have the necessary data, and our resulting final sample consists of 51,755 firm-quarter observations over the years 2001–2006.

Table 1 provides the descriptive statistics for the variables included in Eq. (1) for 21,797 firm-year observations. Consistent with a declining trend (Plitch and Rapoport, 2004), the mean (median) ratios

Table 1
Descriptive statistics.

Variable	Mean	Standard deviation	First quartile	Median	Third quartile
NAF/TF	0.3534	0.2332	0.1605	0.3261	0.5264
TF^C/TF^{AC}	0.0009	0.0030	0.0001	0.0002	0.0006
$RETURNS_A$	0.1282	0.6713	−0.2084	0.0336	0.3214
E_A	−0.0216	0.4223	−0.0188	0.0438	0.0758
ΔE_A	0.0543	0.8462	−0.0164	0.0080	0.0368
$LOSS_A$	0.2868	0.4522	0	0	1
$RESTRUCTURE_A$	0.0909	0.2875	0	0	0
$STDRET_M$	0.1490	0.0672	0.0940	0.1380	0.1979
DE_A	2.5940	20.1540	0.0195	0.3775	0.9770
MB_A	1.7013	3.1157	0.7624	1.1538	1.8833
MV_A ($billion)	4.1040	17.3017	0.1297	0.4942	1.8000
AGE_A (years)	16.0485	15.2745	6.0000	10.5833	20.5833

The sample consists of firms with audit and non-audit fee data between the years 2001 and 2006 with a total of 21,797 firm-year observations. NAF/TF is the ratio of non-audit to total fees from a client (non-audit fee ratio). TF^C/TF^{AC} is the ratio of total fees received from a client to the auditor's total revenues from all clients (client importance). NAF/TF and TF^C/TF^{AC} are from proxy statements for the prior fiscal year. $RETURNS_A$ are market-adjusted returns over a period from one month before the prior year's proxy statement filing date to one month before the current year's proxy statement filing date. Market-adjusted returns are the difference between stock returns and value-weighted *CRSP* market returns. E_A and ΔE_A are levels of and changes in annual earnings before extraordinary items, deflated by market value of equity at the beginning of the year. $LOSS_A$ is an indicator variable that equals 1 for years in which a firm reports negative earnings. $RESTRUCTURE_A$ is an indicator variable that equals 1 if the special item as a percentage of total assets is less than or equal to −5%, and 0 otherwise. $STDRET_M$ is the standard deviation of monthly stock returns over the previous 60 months. DE_A is the ratio of short and long term debt to total equity. MB_A is the sum of market value of equity and book value of debt divided by the book value of total assets. MV_A is the market value of equity at the end of the prior fiscal year. AGE_A measures the number of years a firm is publicly traded as of the fiscal year-end. Subscripts *A* and *M* denote the use of annual and monthly observations, respectively.

of non-audit fees to total fees (NAF/TF), 0.3534 (0.3261), are lower than those reported by previous studies such as Frankel et al. (2002). We calculate client importance (TF^C/TF^{AC}) as total fees received from a client divided by the auditor's total revenues from all clients, summed across the *Audit Analytics* database.[4] The mean (median) value of client importance is 0.0009 (0.0002).

The mean (median) cumulative market-adjusted stock returns ($RETURNS_A$) are 0.1282 (0.0336).[5] The mean (median) E_A and ΔE_A, levels of and changes in earnings before extraordinary items deflated by market value of equity at the beginning of the year, are −0.022 (0.044) and 0.054 (0.008), respectively. 28.68% of firm-years report negative earnings, and 9.09% of firm-years report special items less than or equal to −5% of total assets. The mean (median) return variability ($STDRET_M$) is 0.149 (0.138). The median DE_A and MB_A are 0.378 and 1.154, respectively. The mean fiscal year end market value of equity (MV_A) is $4.104 billion, while the median is $0.494 billion. The mean (median) AGE_A is 16.05 (10.58) years.

Table 2 provides Pearson correlation matrix of the variables in Eq. (1). Consistent with previous research (Chung and Kallapur, 2003), the correlation between NAF/TF and TF^C/TF^{AC} is low at 0.18.[6] The variable with the highest correlations with NAF/TF and TF^C/TF^{AC} is size (MV_A)—the correlations are 0.06 and 0.47. Among the other variables, the dummy variables for loss ($LOSS_A$) and restructuring charges

[4] The denominator of our client importance measure is likely to be measured with an error because *Audit Analytics* database does not include private firms and also because some publicly traded firms may not be included in the database. Therefore, as a robustness check, we also compute client importance using the total fees to the audit firm for a given year as reported in Public Accounting Report. In unreported results, we find that our conclusions remain unchanged when we use this refined measure.

[5] The mean and median $RETURNS_A$ are positive and large between 2001 and 2003. However, the mean numbers from 2004 are smaller while the median numbers are negative. In our sample, a typical firm in the early period is much smaller than that in the later period. Since smaller firms are generally associated with higher returns, the mean and median $RETURNS_A$ are positive for the entire sample period. Because of differences in firm size between the two periods, we provide additional results for the pre- and post-SOX periods in Section 5.2.

[6] Chung and Kallapur (2003) report a correlation of 0.29 between NAF/TF and TF^C/TF^{AC}, which is higher than the number reported in our study. In unreported results, we find that correlation between the two fee-based measures declines from 0.27 in 2001 to 0.09 in 2004 and then increases to 0.14 in 2006. The average correlation between the two measures is 0.20 (0.10) for the pre- (post-) SOX period.

Table 2
Pearson correlation matrix.

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. *NAF/TF*	1.00											
2. TF^C/TF^{AC}	0.18	1.00										
3. $RETURNS_A$	0.01	−0.02	1.00									
4. E_A	−0.02	0.01	0.09	1.00								
5. ΔE_A	0.01	−0.01	0.06	0.02	1.00							
6. $LOSS_A$	0.01	−0.06	−0.13	−0.37	0.01	1.00						
7. $RESTRUCTURE_A$	0.09	−0.01	−0.10	−0.27	−0.03	0.42	1.00					
8. $STDRET_M$	0.08	−0.11	0.03	−0.24	0.09	0.52	0.29	1.00				
9. DE_A	−0.01	−0.00	−0.01	−0.00	−0.00	0.01	0.02	0.00	1.00			
10. MB_A	−0.02	−0.03	0.06	−0.00	−0.01	0.04	−0.00	0.10	−0.00	1.00		
11. MV_A	0.06	0.47	−0.03	0.03	−0.01	−0.11	−0.03	−0.17	−0.00	0.01	1.00	
12. AGE_A	0.01	0.22	−0.02	0.08	−0.02	−0.20	−0.09	−0.37	−0.01	−0.04	0.23	1.00

This table reports Pearson correlations for variables in Eq. (1). *NAF/TF* is the ratio of non-audit to total fees from a client (non-audit fee ratio). TF^C/TF^{AC} is the ratio of total fees received from a client to the auditor's total revenues from all clients (client importance). *NAF/TF* and TF^C/TF^{AC} are from proxy statements for the prior fiscal year. $RETURNS_A$ are market-adjusted returns over a period from one month before the prior year's proxy statement filing date to one month before the current year's proxy statement filing date. Market-adjusted returns are the difference between stock returns and value-weighted *CRSP* market returns. E_A and ΔE_A are levels of and changes in annual earnings before extraordinary items, deflated by market value of equity at the beginning of the year. $LOSS_A$ is an indicator variable that equals 1 for years in which a firm reports negative earnings. $RESTRUCTURE_A$ is an indicator variable that equals 1 if the special item as a percentage of total assets is less than or equal to −5%, and 0 otherwise. $STDRET_M$ is the standard deviation of monthly stock returns over the previous 60 months. DE_A is the ratio of short and long term debt to total equity. MB_A is the sum of market value of equity and book value of debt divided by the book value of total assets. MV_A is the market value of equity at the end of the prior fiscal year. AGE_A measures the number of years a firm is publicly traded as of the fiscal year-end. Subscripts *A* and *M* denote the use of annual and monthly observations, respectively.

($RESTRUCTURE_A$) have −0.37 and −0.27 correlations with the level of earnings (E_A). $LOSS_A$ also has high correlations with $RESTRUCTURE_A$ and $STDRET_M$. These correlations are 0.42 and 0.52, respectively, and are higher than any of the other correlations. Overall, multicollinearity does not seem to be severe (this is also confirmed by the condition indexes as described later).

5. Results

The results presented in Tables 3–6 are based on a pooled regression analysis. We delete a few influential observations having DFBETAS exceeding 1 in absolute value from our empirical analyses (Belsley et al., 1980). Consequently, the actual number of observations used in each regression varies due to elimination of influential observations. The sample size ranges from 21,744 to 21,764 in Table 3. The statistical significance of the estimated coefficients is based on Rogers (1993) clustered standard errors, which correct for within-firm and within-year correlations.[7]

5.1. Annual returns-earnings regression results

Table 3 reports results of regressing $RETURNS_A$ on the non-audit fee ratio and client importance. Our interest is in the sum of the coefficients on $E_A \times \%NAF/TF$ and $\Delta E_A \times \%NAF/TF$ ($\beta_3 + \beta_4$) and that on $E_A \times \%TF^C/TF^{AC}$ and $\Delta E_A \times \%TF^C/TF^{AC}$ ($\beta_5 + \beta_6$). Consistent with prior research, we find that reported earnings are significantly positively associated with returns. The sum of the coefficients on E_A and ΔE_A, or ERC ($\beta_1 + \beta_2$), ranges from 0.9341 to 1.1591 in the different models.

[7] In a recent study, Petersen (2009) examines different methods for estimating standard errors when residuals are correlated across firms or years for panel data. He shows that clustered standard errors from pooled regressions provide unbiased estimates of the true standard errors.

Table 3
Audit fees and earnings response coefficients: Annual regressions.

Variable	(Coefficient)	(1)	(2)	(3)
Intercept	(β_0)	0.1005 (3.67)**	0.1746 (5.70)**	0.2048 (6.80)**
E_A	(β_1)	1.2548 (5.21)**	1.3109 (6.10)**	1.1834 (5.25)**
ΔE_A	(β_2)	−0.3207 (−2.21)*	−0.1517 (−1.11)	−0.2461 (−1.66)
	($\beta_1 + \beta_2$)	0.9341 (3.64)**	1.1591 (5.06)**	0.9373 (4.11)**
E_A * %NAF/TF	(β_3)	−0.0003 (−0.44)		−0.0001 (−0.15)
ΔE_A * %NAF/TF	(β_4)	0.0003 (0.46)		0.0011 (1.35)
	($\beta_3 + \beta_4$)	0.0000 (0.02)		0.0010 (1.03)
E_A * $\%TF^C/TF^{AC}$	(β_5)		0.0011 (1.25)	0.0007 (0.70)
ΔE_A * $\%TF^C/TF^{AC}$	(β_6)		−0.0037 (−4.56)**	−0.0041 (−3.55)**
	($\beta_5 + \beta_6$)		−0.0026 (−2.43)*	−0.0034 (−2.25)*
%NAF/TF	(β_7)	0.0001 (0.95)		−0.0005 (−3.22)**
$\%TF^C/TF^{AC}$	(β_8)		0.0028 (11.47)**	0.0032 (12.22)**
Control variables				
E_A * $LOSS_A$(β_9)/ΔE_A * $LOSS_A$	(β_{10})			
	($\beta_9 + \beta_{10}$)	−1.0411 (−5.66)**	−1.1138 (−5.57)**	−0.8502 (−4.46)**
E_A * $RESTRUCTURE_A$ (β_{11})/ΔE_A * $RESTRUCTURE_A$ (β_{12})				
	($\beta_{11} + \beta_{12}$)	−0.0534 (−0.95)	−0.0908 (−1.62)	−0.0917 (−1.46)
E_A * $STDRET_M$ (β_{13})/ΔE_A * STDRET_M (β_{14})				
	($\beta_{13} + \beta_{14}$)	0.5139 (0.74)	−0.0341 (−0.06)	−0.2294 (−0.42)
E_A * DE_A (β_{15})/ΔE_A * DE_A (β_{16})				
	($\beta_{15} + \beta_{16}$)	−0.0004 (−0.24)	−0.0002 (−0.12)	−0.0010 (−0.59)
E_A * MB_A (β_{17})/ΔE_A * MB_A (β_{18})				
	($\beta_{17} + \beta_{18}$)	0.0909 (2.35)*	0.1186 (3.18)**	0.1083 (2.94)**
E_A * $LNMV_A$ (β_{19})/ΔE_A * $LNMV_A$ (β_{20})				
	($\beta_{19} + \beta_{20}$)	0.0392 (1.98)*	0.0589 (2.69)**	0.0700 (3.01)**
E_A * AGE_A (β_{21})/ΔE_A * AGE_A (β_{22})				
	($\beta_{21} + \beta_{22}$)	−0.0020 (−1.02)	−0.0010 (−0.56)	−0.0019 (−0.90)
$LOSS_A$	(β_{23})	−0.2071 (−11.55)**	−0.1957 (−11.28)**	−0.2102 (−12.06)**
$RESTRUCTURE_A$	(β_{24})	−0.0720 (−3.38)**	−0.0802 (−3.85)**	−0.0746 (−3.50)**
$STDRET_M$	(β_{25})	0.6676 (5.42)**	0.4939 (4.11)**	0.5747 (4.72)**
DE_A	(β_{26})	−0.0001 (−0.50)	−0.0003 (−1.19)	−0.0002 (−0.78)
MB_A	(β_{27})	0.0226 (4.91)**	0.0258 (4.61)**	0.0262 (4.61)**
$LNMV_A$	(β_{28})	−0.0337 (−11.77)**	−0.0634 (−14.28)**	−0.0678 (−14.62)**
AGE_A	(β_{29})	0.0002 (1.15)	−0.0002 (−0.96)	−0.0002 (−0.82)
Observations		21,764	21,744	21,762
Adjusted R^2		16.32%	17.87%	17.38%

The dependent variable $RETURNS_A$ is market-adjusted returns over a period from one month before the prior year's proxy statement filing date to one month before the current year's proxy statement filing date. Market-adjusted returns are the difference between stock returns and value-weighted *CRSP* market returns. The independent variables are defined as follows. E_A and ΔE_A are levels of and changes in annual earnings before extraordinary items, deflated by market value of equity at the beginning of the year. *%NAF/TF* is the percentile rank of the non-audit fee ratio, the ratio of non-audit to total fees from a client. $\%TF^C/TF^{AC}$ is the percentile rank of client importance, the ratio of total fees received from a client to the auditor's total revenues from all clients. *NAF/TF* and TF^C/TF^{AC} are from proxy statements for the prior fiscal year. $LOSS_A$ is an indicator variable that equals 1 for years in which a firm reports negative earnings. $RESTRUCTURE_A$ is an indicator variable that equals 1 if the special item as a percentage of total assets is less than or equal to −5%, and 0 otherwise. $STDRET_M$ is the standard deviation of monthly stock returns over the previous 60 months. DE_A is the ratio of short and long term debt to total equity. MB_A is the sum of market value of equity and book value of debt divided by the book value of total assets. $LNMV_A$ is the natural log of the market value of equity at the end of the prior fiscal year. AGE_A measures the number of years a firm is publicly traded as of the fiscal year-end. Subscripts *A* and *M* denote the use of annual and monthly observations, respectively. The reported coefficients and the corresponding *t*-statistics in parentheses are based on pooled cross-sectional regressions. Statistical significance of the reported coefficients is based on Rogers (1993) clustered standard errors correcting for within-firm and within-year correlations. * and ** denote statistical significance at the 5% and 1% level, respectively, for a two-tailed test.

More important, regression results reported in Columns (1) and (2) indicate that the magnitude of ERC decreases as $\%TF^C/TF^{AC}$ increases ($\beta_5 + \beta_6 = -0.0026$; *t*-stat = −2.43), but has no statistically significant relation with *%NAF/TF* ($\beta_3 + \beta_4 = 0.0000$; *t*-stat = 0.02). Similarly, when interactions of both

Table 4
Audit fees and earnings response coefficients: Annual regressions across firm size.

Variable	(Coefficient)	Firm size		
		Small	Middle	Large
Intercept	(β_0)	−0.0725 (−0.76)	0.2109 (2.99)**	0.4314 (8.35)**
E_A	(β_1)	0.5185 (1.64)	2.5884 (5.04)**	0.1314 (0.17)
ΔE_A	(β_2)	−0.3596 (−2.24)*	−0.0529 (−0.14)	0.0454 (0.06)
	($\beta_1 + \beta_2$)	0.1589 (0.49)	2.5354 (4.99)**	0.1768 (0.25)
E_A * *%NAF/TF*	(β_3)	−0.0001 (−0.13)	0.0008 (0.51)	0.0052 (2.41)*
ΔE_A * *%NAF/TF*	(β_4)	0.0016 (1.63)	−0.0005 (−0.44)	−0.0067 (2.80)**
	($\beta_3 + \beta_4$)	0.0015 (1.36)	0.0003 (0.18)	−0.0015 (−0.53)
E_A * $\%TF^C/TF^{AC}$	(β_5)	0.0025 (1.77)	0.0007 (0.35)	0.0005 (0.16)
ΔE_A * $\%TF^C/TF^{AC}$	(β_6)	−0.0027 (−2.13)*	−0.0062 (−3.59)**	0.0000 (0.01)
	($\beta_5 + \beta_6$)	−0.0002 (−0.22)	−0.0054 (−2.48)*	0.0005 (0.15)
%NAF/TF	(β_7)	−0.0001 (−0.38)	−0.0003 (−1.47)	−0.0006 (−2.90)**
$\%TF^C/TF^{AC}$	(β_8)	0.0029 (5.96)**	0.0021 (8.33)**	0.0020 (7.19)**
Control variables				
E_A * $LOSS_A$ (β_9)/ΔE_A * $LOSS_A$	(β_{10})			
	($\beta_9 + \beta_{10}$)	−0.7892 (−3.22)**	−2.0729 (−8.49)**	−2.4106 (−6.75)**
E_A * $RESTRUCTURE_A$ (β_{11})/ΔE_A * $RESTRUCTURE_A$ ($\beta\beta_{12}$)	($\beta_{11} + \beta_{12}$)	−0.0297 (−0.39)	−0.4083 (−2.79)**	−0.9924 (−3.64)**
E_A * $STDRET_M$ (β_{13})/ΔE_A * $STDRET_M$ (β_{14})	($\beta_{13} + \beta_{14}$)	1.5012 (1.72)	1.8291 (1.85)	5.6889 (3.05)**
E_A * DE_A (β_{15})/ΔE_A * DE_A(β_{16})	($\beta_{15} + \beta_{16}$)	−0.0032 (−0.93)	−0.0032 (−0.40)	0.0014 (0.73)
E_A * MB_A (β_{17})/ΔE_A*MB_A (β_{18})	($\beta_{17} + \beta_{18}$)	0.2001 (3.32)**	−0.0402 (−0.62)	0.4500 (3.15)**
E_A * $LNMV_A$ (β_{19})/ΔE_A * $LNMV_A$ (β_{20})	($\beta_{19} + \beta_{20}$)	0.1054 (3.71)**	−0.0142 (−0.19)	0.1596 (2.25)*
E_A * AGE_A (β_{21})/ΔE_A * AGE_A (β_{22})	($\beta_{21} + \beta_{22}$)	−0.0020 (−0.77)	−0.0041 (−1.23)	−0.0017 (−0.46)
$LOSS_A$	(β_{23})	−0.3349 (−9.31)**	−0.1131 (−4.99)**	−0.0408 (−1.76)
$RESTRUCTURE_A$	(β_{24})	−0.0975 (−2.06)*	−0.1038 (−3.49)**	−0.0981 (−4.21)**
$STDRET_M$	(β_{25})	1.5192 (5.18)**	−0.0730 (−0.49)	−0.5786 (−3.57)**
DE_A	(β_{26})	−0.0004 (−0.34)	0.0001 (0.19)	−0.0011 (−2.50)*
MB_A	(β_{27})	0.0556 (3.67)**	0.0301 (4.37)**	0.0673 (9.68)**
$LNMV_A$	(β_{28})	−0.0475 (−2.53)*	−0.0666 (-6.35)**	−0.0716 (−11.16)**
AGE_A	(β_{29})	−0.0034 (−3.44)**	0.0001 (0.26)	0.0004 (1.38)
Observations		6511	8694	6525
Adjusted R^2		22.35%	19.18%	22.04%

Sample firms are partitioned into three groups based on market value of equity at the beginning of the year. Small firms consist of firms with the lowest 30 percentile of market value of equity, large firms contain firms with the highest 30 percentile of market value of equity, and middle firms contain the rest of the sample. The dependent variable $RETURNS_A$ is market-adjusted returns over a period from one month before the prior year's proxy statement filing date to one month before the current year's proxy statement filing date. Market-adjusted returns are the difference between stock returns and value-weighted *CRSP* market returns. The independent variables are defined as follows. E_A and ΔE_A are levels of and changes in annual earnings before extraordinary items, deflated by market value of equity at the beginning of the year. *%NAF/TF* is the percentile rank of the non-audit fee ratio, the ratio of non-audit to total fees from a client. $\%TF^C/TF^{AC}$ is the percentile rank of client importance, the ratio of total fees received from a client to the auditor's total revenues from all clients. *NAF/TF* and TF^C/TF^{AC} are from proxy statements for the prior fiscal year. $LOSS_A$ is an indicator variable that equals 1 for years in which a firm reports negative earnings. $RESTRUCTURE_A$ is an indicator variable that equals 1 if the special item as a percentage of total assets is less than or equal to −5%, and 0 otherwise. $STDRET_M$ is the standard deviation of monthly stock returns over the previous 60 months. DE_A is the ratio of short and long term debt to total equity. MB_A is the sum of market value of equity and book value of debt divided by the book value of total assets. $LNMV_A$ is the natural log of the market value of equity at the end of the prior fiscal year. AGE_A measures the number of years a firm is publicly traded as of the fiscal year-end. Subscripts *A* and *M* denote the use of annual and monthly observations, respectively. The reported coefficients and the corresponding *t*-statistics in parentheses are based on pooled cross-sectional regressions. Statistical significance of the reported coefficients is based on Rogers (1993) clustered standard errors correcting for within-firm and within-year correlations. * and ** denote statistical significance at the 5% and 1% level, respectively, for a two-tailed test.

%NAF/TF and $\%TF^C/TF^{AC}$ with earnings are included in Column (3), $\beta_3 + \beta_4$ remains insignificant (0.0010, *t*-stat = 1.03) while $\beta_5 + \beta_6$ remains significant (−0.0034, *t*-stat = −2.25).[8] Regression estimates indicate

[8] Further test results indicate that the difference between the two sets of coefficients is statistically significant ($\beta_5 + \beta_6 - \beta_3 - \beta_4 = -0.0044$, *t*-stat = −2.45).

Table 5
Audit fees and earnings response coefficients: Quarterly regressions.

Variable	(Coefficient)	(1)	(2)	(3)
Intercept	(β_0)	−0.0326 (−0.15)	0.0653 (0.29)	0.0897 (0.39)
$FERR_Q$	(β_1)	120.4792 (5.39)**	93.3090 (3.25)**	82.9368 (2.88)**
$FERR_Q$ * %NAF/TF	(β_2)	0.1157 (1.53)		0.1292 (1.66)
$FERR_Q$ * $\%TF^C/TF^{AC}$	(β_3)		−0.4237 (−2.61)**	−0.4469 (−2.74)**
%NAF/TF	(β_4)	−0.0013 (−1.00)		−0.0019 (−1.40)
$\%TF^C/TF^{AC}$	(β_5)		0.0017 (1.13)	0.0023 (1.44)
Control variables				
$FERR_Q$ * $GROWTH_Q$	(β_6)	0.6112 (2.70)**	0.7573 (2.82)**	0.7962 (3.35)**
$FERR_Q$ * $STDRET_D$	(β_7)	−985.0051 (−4.65)**	−900.6564 (−4.38)**	-873.7574 (−3.80)**
$FERR_Q$ * DE_Q	(β_8)	0.1455 (1.59)	0.1446 (1.62)	0.1262 (1.51)
$FERR_Q$ * $LNMV_Q$	(β_9)	7.9769 (3.23)**	14.2924 (4.08)**	15.2047 (4.29)**
$FERR_Q$ * $ABSFERR_Q$	(β_{10})	−1.3576 (−1.00)	0.2191 (0.16)	−0.4054 (−0.31)
$FERR_Q$ * $LOSS_Q$	(β_{11})	−132.5860 (-8.63)**	−112.1798 (−5.21)**	−111.0651 (−5.17)**
$FERR_Q$ * $FQTR4_Q$	(β_{12})	-21.8798 (−4.04)**	−19.1768 (−3.53)**	-20.5928 (−3.85)**
$FERR_Q$ * $RESTRUCTURE_Q$	(β_{13})	−1.6166 (−0.28)	−12.8846 (−1.90)	-8.0928 (−1.19)
$GROWTH_Q$	(β_{14})	−0.0095 (−2.47)*	−0.0090 (−2.30)*	−0.0092 (−2.36)*
$STDRET_D$	(β_{15})	17.1002 (3.44)**	16.8502 (3.36)**	17.1952 (3.43)**
DE_Q	(β_{16})	−0.0001 (−0.19)	−0.0001 (−0.18)	−0.0002 (−0.32)
$LNMV_Q$	(β_{17})	−0.0033 (−0.16)	−0.0316 (−1.06)	−0.0327 (−1.10)
$ABSFERR_Q$	(β_{18})	10.1876 (2.59)**	12.9126 (2.76)**	12.5397 (2.68)**
$LOSS_Q$	(β_{19})	−1.3585 (−13.54)**	−1.3915 (−13.40)**	−1.3879 (−13.38)**
$FQTR4_Q$	(β_{20})	−0.0760 (−1.20)	−0.0766 (−1.20)	−0.0770 (−1.21)
$RESTRUCTURE_Q$	(β_{21})	0.5111 (1.66)	0.4586 (1.49)	0.4898 (1.58)
Observations		51,733	51,733	51,733
Adjusted R^2		4.22%	4.05%	4.15%

The dependent variable *CAR* is market-adjusted returns cumulated over a 3-day window (−1 to +1) around the quarterly earnings announcements. Market-adjusted returns are the difference between stock returns and value-weighted *CRSP* market returns. $FERR_Q$ is analysts' forecast error defined as the difference between reported quarterly earnings per share and the most recent median analyst forecast, deflated by the fiscal year end stock price of the prior quarter. $\%NAF/TF$ and $\%TF^C/TF^{AC}$ are percentile ranks of the ratios of non-audit to total fees from a client (non-audit fee ratio) and of total fees received from a client to the auditor's total revenues from all clients (client importance), respectively. NAF/TF and TF^C/TF^{AC} are from most recent proxy statements. $GROWTH_Q$ is analysts' median five year long term earnings growth forecast. $STDRET_D$ is the standard deviation of daily stock returns over a 90-days window ending seven days prior to the earnings announcement date. DE_Q is the ratio of short and long term debt to total equity. $LNMV_Q$ is natural log of the market value of equity at the beginning of the quarter. $ABSFERR_Q$ is the absolute value of $FERR_Q$. $LOSS_Q$ is an indicator variable that equals 1 for quarters in which a firm reports negative earnings. $FQTR4_Q$ is an indicator variable that equals 1 for the fourth quarter, and 0 otherwise. $RESTRUCTURE_Q$ is an indicator variable that equals 1 if the special item as a percentage of total assets is less than or equal to −5%, and 0 otherwise. Subscripts *Q* and *D* denote the use of quarterly and daily observations, respectively. The coefficients are based on a pooled cross-sectional regression while the statistical significance is based on Rogers (1993) clustered standard errors correcting for within-firm and within-year correlations. * and ** denote statistical significance at the 5% and 1% level, respectively, for a two-tailed test.

that an increase from the first to third quartile (i.e., 25th to 75th percentile) in NAF/TF and TF^C/TF^{AC} leads to 5.2% (=0.05/0.9623) increase and 19.9% (=−0.17/0.8523) decrease in ERC, respectively. Therefore, our results suggest that client importance, rather than non-audit fee ratio, is negatively associated with investor perceptions of earnings.[9]

In Columns (2) and (3), the coefficient β_5 involving interaction of $\%TF^C/TF^{AC}$ with E_A is smaller (and has an insignificant *t*-value) than β_6 involving interaction with ΔE_A. The weight on earnings levels (earnings changes) in determining ERCs is increasing if earnings are perceived as transitory (permanent) (Easton and Harris, 1991; Ali and Zarowin, 1992); the higher value on β_6 compared to

[9] It is possible that the non-audit fee ratio affects perceived auditor independence but also has other favorable effects on ERCs (because firms' future profitability or growth increases by the purchase of non-audit services), resulting in an insignificant coefficient on average. This does not invalidate our conclusion—our research question deals with the overall perception of non-audit fee ratios.

Table 6
Audit fees and earnings response coefficients: Quarterly regressions across firm size.

Variable	(Coefficient)	Firm size		
		Small	Middle	Large
Intercept	(β_0)	1.2718 (1.89)	−0.8585 (−1.05)	−0.3183 (−0.65)
$FERR_Q$	(β_1)	30.4147 (1.15)	311.8246 (2.42)*	75.9467 (0.39)
$FERR_Q$ * %NAF/TF	(β_2)	0.1201 (1.22)	0.5364 (1.34)	−0.3739 (−0.91)
$FERR_Q$ * $\%TF^C/TF^{AC}$	(β_3)	−0.1974 (−1.30)	−1.0149 (−2.81)**	−0.7289 (−1.33)
$\%NAF/TF$	(β_4)	−0.0044 (−1.64)	0.0004 (0.17)	−0.0027 (−1.21)
$\%TF^C/TF^{AC}$	(β_5)	0.0066 (2.47)*	0.0003 (0.18)	0.0007 (0.32)
Control variables				
$FERR_Q$ * $GROWTH_Q$	(β_6)	0.5862 (2.88)**	2.9870 (1.97)*	2.9930 (1.64)
$FERR_Q$ * $STDRET_D$	(β_7)	−841.2462 (−4.97)**	−964.6032 (−1.73)	−972.7382 (−2.66)**
$FERR_Q$ * DE_Q	(β_8)	0.1111 (1.90)	0.3012 (1.66)	−1.2554 (−0.83)
$FERR_Q$ * $LNMV_Q$	(β_9)	13.5726 (4.90)**	−4.0474 (−0.22)	22.9525 (1.10)
$FERR_Q$ * $ABSFERR_Q$	(β_{10})	−0.9149 (−0.70)	-326.3390 (−2.51)*	65.1275 (0.36)
$FERR_Q$ * $LOSS_Q$	(β_{11})	−76.5265 (−5.00)**	−124.8895 (−4.44)**	-217.6422 (-6.37)**
$FERR_Q$ * $FQTR4_Q$	(β_{12})	−13.4940 (−2.34)*	−99.9505 (−5.24)**	-50.5460 (−2.40)*
$FERR_Q$ * $RESTRUCTURE_Q$	(β_{13})	2.9800 (0.50)	−129.6083 (−4.12)**	89.8934 (2.19)*
$GROWTH_Q$	(β_{14})	−0.0165 (−2.78)**	−0.0093 (−1.38)	0.0229 (2.61)**
$STDRET_D$	(β_{15})	23.0807 (2.73)**	13.6234 (1.70)	3.2942 (0.34)
DE_Q	(β_{16})	0.0022 (0.84)	−0.0011 (−2.29)*	−0.0023 (−0.50)
$LNMV_Q$	(β_{17})	−0.2480 (−2.21)*	0.1265 (1.16)	−0.0244 (−0.47)
$ABSFERR_Q$	(β_{18})	11.8734 (2.72)**	0.5454 (0.04)	19.3259 (1.22)
$LOSS_Q$	(β_{19})	−1.8576 (−11.38)**	−0.9275 (−5.75)**	−0.8907 (−4.18)**
$FQTR4_Q$	(β_{20})	−0.2808 (−2.06)*	−0.1030 (−1.04)	0.1749 (1.84)
$RESTRUCTURE_Q$	(β_{21})	1.1248 (2.44)*	0.2314 (0.47)	−0.4246 (−0.63)
Observations		15,510	20,690	15,515
Adjusted R^2		5.46%	5.66%	4.66%

Sample firms are partitioned into three groups based on market value of equity at the beginning of the quarter. Small firms consist of firms with the lowest 30 percentile of market value of equity, large firms contain firms with the highest 30 percentile of market value of equity, and middle firms contain the rest of the sample. The dependent variable *CAR* is market-adjusted returns cumulated over a 3-day window (−1 to +1) around the quarterly earnings announcements. Market-adjusted returns are the difference between stock returns and value-weighted *CRSP* market returns. $FERR_Q$ is analysts' forecast error defined as the difference between reported quarterly earnings per share and the most recent median analyst forecast, deflated by the fiscal year end stock price of the prior quarter. $\%NAF/TF$ and $\%TF^C/TF^{AC}$ are percentile ranks of the ratios of non-audit to total fees from a client (non-audit fee ratio) and of total fees received from a client to the auditor's total revenues from all clients (client importance), respectively. NAF/TF and TF^C/TF^{AC} are from most recent proxy statements. $GROWTH_Q$ is analysts' median five year long term earnings growth forecast. $STDRET_D$ is the standard deviation of daily stock returns over a 90-days window ending seven days prior to the earnings announcement date. DE_Q is the ratio of short and long term debt to total equity. $LNMV_Q$ is natural log of the market value of equity at the beginning of the quarter. $ABSFERR_Q$ is the absolute value of $FERR_Q$. $LOSS_Q$ is an indicator variable that equals 1 for quarters in which a firm reports negative earnings. $FQTR4_Q$ is an indicator variable that equals 1 for the fourth quarter, and 0 otherwise. $RESTRUCTURE_Q$ is an indicator variable that equals 1 if the special item as a percentage of total assets is less than or equal to −5%, and 0 otherwise. Subscripts *Q* and *D* denote the use of quarterly and daily observations, respectively. The coefficients are based on a pooled cross-sectional regression while the statistical significance is based on Rogers (1993) clustered standard errors correcting for within-firm and within-year correlations. * and ** denote statistical significance at the 5% and 1% level, respectively, for a two-tailed test.

β_5 suggests that ERC's negative association with $\%TF^C/TF^{AC}$ is largely attributable to investor perceptions of the permanent components of earnings.[10]

[10] We also examine whether the client importance findings are driven by audit fees or non-audit fees. Therefore, we decompose the single measure of client importance (TF^C/TF^{AC}) into two components based on audit (AF^C/TF^{AC}) and non-audit (NAF^C/TF^{AC}) fees. We interact each of the client importance variables, after converting them into percentile ranks, with earnings (E_A and ΔE_A) in Eq. (1). We find that only client importance based on audit fees has a statistically significant negative effect on ERC. Client importance measure based on non-audit fees does not appear to affect ERCs. The sum of the coefficients on $E_A \times \%AF^C/TF^{AC}$ and $\Delta E_A \times \%AF^C/TF^{AC}$ is −0.0035 (t-stat = −2.34), while the sum on $E_A \times \%NAF^C/TF^{AC}$ and $\Delta E_A \times \%NAF^C/TF^{AC}$ is 0.0008 (t-stat = 0.64). Our results suggest that capital market participants perceive auditor independence as being impaired when audit fees collected from a particular client increase the client's importance to the auditor relative to the total fees collected from all clients.

Because they have been extensively analyzed in prior studies (Collins and Kothari, 1989; Hayn, 1995; Francis and Ke, 2006), we restrict ourselves to a brief discussion of the results of the control variables.[11] The coefficients on the interactions between earnings and $LOSS_A$ ($\beta_9 + \beta_{10}$) are negative and significant, indicating that ERC is lower for firms with losses. As in prior studies, we find that ERC is higher for growth firms (MB_A) and large firms ($LNMV_A$). ERC does not vary with $RESTRUCTURE_A$, $STDRET_M$, DE_A, and AGE_A. The coefficients on $LOSS_A$, $RESTRUCTURE_A$, $STDRET_M$, MB_A, and $LNMV_A$ are all significant at the 1 percent level.

The correlation matrix in Table 2 shows that firm size is relatively highly correlated with the non-audit fee ratio and client importance, particularly the latter. The inclusion of the market value of common equity as a control variable may not control fully for the effect of size on ERCs (Conrad et al., 2002). Moreover, Reynolds and Francis (2000) and Chung and Kallapur (2003) argue that the relation between client importance and auditor independence could differ for different size groups. Therefore, we further analyze the influence of non-audit fee ratio and client importance on ERC across different firm size.

Table 4 presents results of estimating regression model specified in Eq. (1) on each size group separately. We divide the sample into three groups (small, middle, and large) by the market value of equity at the end of fiscal year $t-1$. Small (large) firms consist of sample firms with the lowest (highest) 30 percentile of market value of equity and middle firms contain the rest of the sample.

Consistent with results in Table 3, ERC's association with $\%NAF/TF$ ($\beta_3 + \beta_4$) is statistically insignificant in every size group; it is 0.0015 (t-stat = 1.36), 0.0003 (t-stat = 0.18), and −0.0015 (t-stat = −0.53) for small, middle, and large firms, respectively. Thus, our results about the insignificance of the non-audit fee ratio are robust to partitioning the sample by size. In contrast, ERC's association with $\%TF^C/TF^{AC}$ ($\beta_5 + \beta_6$) is negative and significant for medium-sized firms only.[12] $\beta_5 + \beta_6$ is negative and positive for small and large firms, respectively, but in both cases the sum of the coefficients is statistically insignificant.

One explanation for our results is that auditors' concern for their reputation in the case of large clients is perceived by investors as being strong enough to prevent them from compromising their independence. It is possible that client importance does not impact ERC because investors have few concerns about auditor independence for small clients as they are less likely to be important to auditors. Another explanation is that client size could proxy for client characteristics such as scope and complexity; large client firms have a greater need for audit and non-audit services than small clients and thus are likely to pay higher audit and non-audit fees. Finally, insufficient variation in non-audit fee ratio or client importance for firms in the large and small size groups could be another potential explanation for the insignificant results.

5.2. Robustness checks and additional analyses

5.2.1. Multicollinearity

Our findings are unlikely to be affected by multicollinearity; the condition indexes (Belsley et al., 1980) in the three regressions in Table 3 range from 25.4 to 28.4, which are lower than, although close to, the cutoff of 30 suggested by Belsley et al. Our results are also unaffected by the particular cutoff points used to delete outliers (|DFBETAS| > 1)—our results are unchanged when we delete observations whose |DFBETAS| lies in the top 0.5%, 1% and 2%.

5.2.2. Fixed effects model

One concern in cross-sectional studies is that the association between the variables of interest and the dependent variable could be attributable to correlated omitted variables. Himmelberg et al. (1999) argue that the inclusion of fixed firm effects largely addresses the concern because the firm effects

[11] To conserve space, as in Ghosh and Moon (2005), we do not report the individual coefficients on the interactions between each control variable and $E_A/\Delta E_A$. Instead, we report the sum of the two interaction coefficients.

[12] Further test results indicate that the difference between the two sets of coefficients for the firms in the middle size group is statistically significant ($\beta_5 + \beta_6 - \beta_3 - \beta_4 = -0.0057$, t-stat = −2.15).

control for all firm-specific omitted variables. When we include firm dummies in the regressions and then estimate standard errors clustered by year, our results are unchanged.

When we estimate regression model specified in Eq. (1) including interactions of both *%NAF/TF* and $\%TF^{C}/TF^{AC}$ with earnings, and using fixed firm effects, $\beta_3 + \beta_4$, which measures ERC's association with the non-audit fee ratio, is insignificant (0.0009, *t*-stat = 1.18) while $\beta_5 + \beta_6$, which measures ERC's association with client importance, remains significant (−0.0042, *t*-stat = −2.54), consistent with the findings in Table 3.

5.2.3. Yearly regressions

Our results are based on percentile rankings of fee ratios (non-audit fee ratio and client importance) after including all the observations for the six years. One concern with percentile rankings from a pooled sample is that the bulk of the variation in fee ratios, and therefore in fee rankings, may be confined to a few years. Thus, it is possible that the significance of the results on the interaction between client importance and ERC is confined to a few isolated years rather than being descriptive of the sample period. Another related concern is that if ERCs and fee ratios both vary over time because of unrelated reasons, our results could pick up this mechanical relationship.

We address these collective concerns by estimating yearly regressions. The percentile rankings of the two fee ratios, non-audit fee ratio and client importance, are computed using yearly observations. We calculate the overall statistical significance of the estimated coefficients across years based on variation in the estimated coefficients. We find that our results and conclusions remain unchanged when we estimate yearly regressions. For instance, when we estimate year-by-year regressions in Column (3) of Table 3, we find that the average $\beta_3 + \beta_4$, which measures ERC's association with non-audit fee ratio, is statistically insignificant (0.0019, *t*-stat = 1.66). In contrast, the average $\beta_5 + \beta_6$, which measures ERC's association with client importance, remains significant (−0.0062, *t*-stat = −2.90).[13]

5.2.4. Client importance and SOX

The Sarbanes-Oxley Act (SOX) had an impact on the auditing profession. Because of the various SOX provisions, there was a large increase in audit fees following SOX but non-audit fees declined over the same period. Moreover, with the creation of the PCAOB, auditor independence might have become less of a concern following SOX. Therefore, we examine whether our conclusions remain unchanged for the pre- and post-SOX periods. To test whether the influence of audit fees on ERCs changes between the two periods, we construct an indicator variable, *SOX*, that is 1 for years 2003–2006 and 0 for years 2001–2002.

When we include *SOX*, interactions of *SOX* with earnings (E_A and ΔE_A), interactions of *SOX* with earnings × *%NAF/TF*, and interactions of *SOX* with earnings × $\%TF^{C}/TF^{AC}$ as additional independent variables in regression model specified in Eq. (1), we find that our results hold in both periods. The sum of the coefficients on $E_A \times$ *%NAF/TF* and $\Delta E_A \times$ *%NAF/TF* is 0.0008 (*t*-stat = 0.65) and the sum on $E_A \times$ *%NAF/TF* × *SOX* and $\Delta E_A \times$ *%NAF/TF* × *SOX* is −0.0015 (*t*-stat = −0.63). On the other hand, the sum of the coefficients on $E_A \times \%TF^{C}/TF^{AC}$ and $\Delta E_A \times \%TF^{C}/TF^{AC}$ is −0.0054 (*t*-stat = −3.12) and the sum on $E_A \times \%TF^{C}/TF^{AC} \times SOX$ and $\Delta E_A \times \%TF^{C}/TF^{AC} \times SOX$ is 0.004 (*t*-stat = 0.18).

Our results suggest that investors perceive client importance as impairing auditor independence for both pre- and post-SOX years. In contrast, the non-audit fee ratio is not perceived as impairing auditor independence even for the pre-SOX years when the ratio was considerably higher.

5.3. Returns-quarterly earnings surprises regression results

Francis and Ke (2006) use an alternative research methodology by estimating the market valuation of quarterly earnings surprises.[14] Table 5 reports the results using the alternative research model spec-

[13] Specifically, the yearly $\beta_3 + \beta_4$ ($\beta_5 + \beta_6$) is −0.0009 (−0.0078), 0.0024 (−0.0076), 0.0028 (0.0044), 0.0067 (−0.0093), −0.0009 (−0.0086), and 0.0014 (−0.0086), respectively, over the years 2001–2006.

[14] While we use their methodology as a robust check in this subsection, there are two differences. First, we include the main effects of each independent variable as well as the interactions. Secondly, Francis and Ke (2006) use size-adjusted *CARs* over a 3-day window around the quarterly earnings announcement, while we use market-adjusted *CARs* to maintain consistency with $RETURNS_A$ in Eq. (1).

ified in Eq. (2). We find that the results are almost identical to those in Table 3. Columns (1) and (2) report regression results including *%NAF/TF* and $\%TF^{C}/TF^{AC}$ separately in the model. The coefficient on $FERR_Q \times \%NAF/TF$ is positive but insignificant (0.1157, *t*-stat = 1.53), which indicates that investors do not discount the earnings of firms with high non-audit fee ratios. In contrast, the coefficient on $FERR_Q \times \%TF^{C}/TF^{AC}$ is negative and significant (−0.4237, *t*-stat = −2.61) indicating a lower ERC for firms having high client importance. When interactions of both *%NAF/TF* and $\%TF^{C}/TF^{AC}$ with $FERR_Q$ are included in the same regression, the coefficient on $FERR_Q \times \%NAF/TF$ remains insignificant (β_2 = 0.1292, *t*-stat = 1.66) while the coefficient on $FERR_Q \times \%TF^{C}/TF^{AC}$ remains significant (β_3 = −0.4469, *t*-stat = −2.74). Moreover, the difference between the two coefficients is statistically significant ($\beta_3 - \beta_2$ = −0.5761, *t*-stat = −2.90). Our results again suggest that investors perceive high client importance, not the non-audit fee ratio, negatively as affecting auditor independence.

Consistent with prior research, we find that earnings surprises are significantly positively associated with returns in Table 5. For instance, the coefficient on $FERR_Q$ is 120.4792 (*t*-stat = 5.39) in Column (1). The results of the control variables are generally consistent with Francis and Ke (2006). One difference is that the coefficient on $FERR_Q \times STDRET_D$ is negative and significant, indicating that ERC is lower for firms with greater stock return variability.

Similar to Table 4, Table 6 reports the results of estimating the regression model specified in Eq. (2) separately for small, middle, and large firms. We partition sample firms into three groups based on market value of equity at the beginning of the quarter and use the same method to divided the sample as described in the previous subsection. Consistent with results in Table 4, ERC's association with *%NAF/TF* is insignificant in every size group; the coefficient on $FERR_Q \times \%NAF/TF$ is 0.1201 (*t*-stat = 1.22), 0.5364 (*t*-stat = 1.34), and −0.3739 (*t*-stat = −0.91) for small, middle, and large firms, respectively. Similarly, ERC's association with $\%TF^{C}/TF^{AC}$ is negative and significant for medium-sized firms only; the coefficient on $FERR_Q \times \%TF^{C}/TF^{AC}$ for firms in each size group is −0.1974 (*t*-stat = −1.30), −1.0149 (*t*-stat = −2.81), and −0.7289 (*t*-stat = −1.33), respectively. Thus, our results about the insignificance of the non-audit fee ratio in Table 5 are robust to partitioning the sample by size. Further, our results in Table 6 indicate that lower ERCs for firms having high client importance are driven by the subset of middle-sized firms in the sample.

6. Conclusions

In this paper we provide evidence on the determinants of auditor independence-in-appearance using earnings response coefficients (ERCs) as a proxy for investor perceptions of earnings, and therefore audit, quality. An examination of auditor independence-in-*appearance* is important because regulators and the AICPA have emphasized that auditors should be independent not only in fact but also in appearance. Although economic theory suggests that auditor incentives to compromise independence depend on client importance, SEC rules and public surveys indicate that perceived auditor independence is a function of non-audit fee ratio. Accordingly, our paper examines the relative importance of client importance and the non-audit fee ratio as determinants of perceived auditor independence.

Based on a large sample of firms over the years 2001–2006, we find that the non-audit fee ratio (ratio of non-audit to total fees from a given client) is insignificantly associated with ERCs. In contrast, client importance (ratio of fees from a given client to the total revenues of the audit firm) is significantly negatively associated with ERCs. Our results suggest that a negative investor perception exists toward high levels of client importance, not toward non-audit fee ratio. Our results are robust to the inclusion of fixed firm effects to control for correlated omitted variables and to periods before and after the Sarbanes-Oxley Act.

We further estimate our regressions separately for three size groups to explore whether the relation between perceived auditor independence and auditor related fees differs for different size firms. We find that ERCs do not vary with non-audit fee ratio in any size group. However, the relation between ERC and client importance holds only for middle-sized firms. The ERCs for the large and small size firms are both are statistically insignificant. We conjecture that because auditors are likely to be especially concerned about the loss of reputation from a perception that independence is impaired for large clients, and because auditors are less economically dependent on small clients, investors are less concerned about loss of independence for engagements with large and small clients.

Our study contributes to the literature on auditor independence by examining whether the non-audit fee ratio or client importance affects auditor independence-in-appearance. Although prior studies provide some evidence on independence-in-appearance (Higgs and Skantz, 2006; Krishnan et al., 2005; Francis and Ke, 2006), they do not compare the relative importance of non-audit fee ratio and client importance. Moreover, these studies focus on the period around the initial fee disclosures in 2001. By examining the relative importance of client importance and non-audit fee ratio as determinants of independence-in-appearance with a large sample covering the years 2001 to 2006, our paper provides additional market-based empirical evidence on the influence of audit and non-audit fees on perceived auditor independence.

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