An Examination of the Influence of Mutual CFO / Audit Firm Tenure on Audit Quality

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Abstract

This study examines whether the extent of professional relationships between an audit firm and their client's CFO influences audit quality. If regulators' concerns that the relationship that develops over time between an audit firm and their client's CFO impairs auditor judgment are justified, then we should observe a negative relationship between the length of audit firm's tenure with their client's CFO and audit quality. The results suggest that mutual audit firm-CFO tenure is associated with lower audit quality measured by the magnitude of discretionary accruals, the reduced incidence of issuance of going-concern audit opinions for distressed companies, and an increased likelihood of the receipt of an Accounting and Auditing Enforcement Release (AAER) from the US. Securities and Exchange Commission (SEC). To address the CAQ's (2011) conjecture that the current audit partner rotation requirement, along with relatively short CFO tenure might mitigate the "coziness" that develops between and auditing firm and management, we investigate short periods of tenure (four years or less) with the same CFO and audit firm and find no negative effect for our measures of audit quality. These findings have implications for policies related to audit firm rotation. Specifically, the results suggest that regulators need to consider other relationships underlying audit firm tenure, such as the relationships that form between audit firm and client personnel, when evaluating audit firm rotation policies.

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"Independence, both historically and philosophically, is the foundation of the public accounting profession and upon its maintenance depends the profession's strength and its stature" (Carey, 1970; 182)."

1. Introduction

The purpose of this study is to explore whether the extent of personal / professional relationships that develop over time – measured by the consecutive number of years that an audit firm and their client's CFO work together – affect audit quality. This research is motivated by a response from the Center for Audit Quality (CAQ) to the Public Company Accounting Oversight Board's request for public comment on auditor independence and audit firm rotations stating:

> "We [CAQ] also note that there are many existing factors that already limit the tenure of the engagement team and company management. In addition to the natural turnover within the audit engagement team, due to staff attrition and promotion, current independence requirements require lead audit partners and engagement quality control review partners to rotate every five years. Certain other partners involved with a company's audit must be rotated after seven years. Moreover, there is a similar natural turnover of public company CFOs…. As detailed in a Crist/Kolder Associates 2011 study on executive management volatility, from January 1, 1995 through July 31, 2011, the average CFO …tenure within the S&P 500 was 5.1 …years …. We believe that the factors described above already limit the length of the relationships between the engagement team and company management and stifle any opportunity for 'coziness' between the auditor and the company's senior management team. [Emphasis added]" (CAQ 2011, 9).

This research empirically examines this statement to ascertain its validity and inform discussions regarding mandating audit firm rotation.

We investigate mutual audit firm / CFO tenure as another setting to investigate potential independence impairment. In a report released in August of 2011, the PCAOB expressed concern that inspection reports continue to indicate a failure of auditors to exercise appropriate levels of objectivity and professional skepticism during the audit of their clients' financial

statements (PCAOB 2011a). Although the PCAOB cannot document that this loss of objectivity is directly related to long audit firm tenure, questions nevertheless persist (PCAOB 2011a). Academic investigation likewise produces inconsistent results regarding the effects of long audit firm tenure on professional skepticism and ultimately on audit quality. Although a few recent studies report decreased audit quality, most research finds audit quality improves as audit firm tenure increases. The PCAOB and the accounting profession can be informed by additional investigation of this issue.

An important aspect of the auditor-client relationship is the professional interaction between the auditing firm and their client's personnel, specifically the CFO. CFOs are directly responsible for the company's financial statements (Gibbins, McCracken, and Salterio 2007), negotiate with the audit partner regarding the fair presentation of reported balances (Gibbins, McCracken, and Salterio 2005), and normally have compensation and equity incentives based on operating results. Because of their role in financial reporting, CFOs and auditors interact frequently. Further, the CFO has more direct communication with the audit committee than any other party, and the CFO participates in the setting of the audit committee agenda 75% of the time. This gives the CFO the ability to broker knowledge between the auditor and the audit committee, and the ability to engage in negotiations with the auditor before information reaches the audit committee.

The Metcalf Report notes, "long association between a corporation and an accounting firm may lead to such a close identification of the accounting firm with the interests of its client's management that truly independent action by the accounting firm becomes difficult." (U.S. Congress 1976, 19). In addition, out of concern of relationships forming between audit firm personnel and client's personnel the Cohen commission stated, "many of the asserted advantages

of rotation can be achieved if the public accounting firm systematically rotates the personnel assigned to the engagement." (AICPA 1978, xxx). Further, at a meeting of the PCAOB's Investor Advisory Group (IAG), some members of the IAG advocated mandatory firm rotation stating that "key to concern over independence was the level of 'coziness' the firm had with the management of the company being audited." (PCAOB 2011b, 6).

On the other hand, the mutual trust that develops over time can improve inter-organizational communication, and in turn benefit the financial reporting process. If the negative aspects associated with long audit firm tenure dominate and are due to the "coziness" with client management then a frequent break-up in this relationship (either due to CFO turnover or audit firm rotation) should strengthen auditor independence and skepticism. The average CFO tenure for U.S. public companies of approximately 4 years likely creates a setting where sufficient time is not available for strong relationships and potential biases or trust to form. The "break" in the relationship between audit firm and CFO may reduce the influence that long audit firm tenure may have on audit quality. In the end, it could be that such breaks, if frequent enough, can provide a reasonable alternative to mandatory audit firm rotation.

Prior research investigating the influence of audit firm tenure on audit quality has not considered that underlying the audit firm's tenure is a subset of important relationships that form and break between client and audit firm personnel. We single out one set among many relationships: the tenure of professional relationships between a client CFO and their audit firm. By analyzing this relationship and its effect on audit quality our investigation extends the understanding of the influence of audit firm tenure on audit quality by identifying the influence of these relationships.

Specifically, we investigate audit quality measured as 1) the absolute value of discretionary accruals, and separately the income increasing and income deceasing discretionary accruals present in reported financial statements, 2) the issuance of a first time, or previous going-concern opinion for distressed companies, and 3) the receipt of an Accounting and Auditing Enforcement Release (AAER) from the US. Securities and Exchange Commission (SEC). For each examination, we use the complete time period where data is available.

The results indicate that a lengthening of the mutual tenure between an audit firm and their client's CFO leads to higher levels of discretionary accruals, measured using absolute total, income increasing and income decreasing accruals.[1] There is also a decrease in the issuance of going concern opinions for distressed companies and an increase in AAERs for clients with elevated levels of mutual tenure. These are all representative of lower audit quality. To examine the CAQ's suggestion that the organic turnover between the CFO and audit firm might mitigate auditor skepticism concerns, we investigate periods of mutual tenure, four years or less, using the mean CFO tenure of approximately four years across our analyses. We do not find a significant effect of mutual audit firm / CFO tenure for any of our measures of audit quality. This provides evidence consistent with the CAQs conjecture regarding the independence improving dynamics of auditor and CFO turnover in the auditing market.

This paper makes an important contribution to the literature. By examining the relationships that develop between audit firms and their client's CFOs, we contribute new insights to the debate on audit firm rotation. The PCAOB is concerned that audit firms that

[1] We analyze both absolute abnormal accruals and subsamples of income-increasing and income-decreasing abnormal accruals because Hribar and Nichols (2007) demonstrate that the analysis of absolute accruals may be problematic due to a correlated omitted variable problem.

identify with their clients because of a long association can compromise audit quality. The solution prescribed is to require mandatory audit firm rotation to "break" this relationship. However, the extant research suggests that perhaps it is not the long audit firm tenure per se that might lead to lower audit quality but the underlying relationships between audit firm and client personnel that can give rise to professional or even personal ties which in turn can contribute to lower auditor independence. We examine such relationships and find that increasing audit firm tenure improves audit quality, but the length of the relationship between audit firm and the client CFO weakens it. Perhaps this suggests a more sensible approach to deriving the perceived benefits from mandatory audit firm rotation, targeting those cases where the audit firm has formed and maintains long-term ties to client personnel. Thus, an audit firm's tenure with their client's CFO is an important relationship to consider when evaluating audit firm tenure effects on audit quality.

The remainder of the paper is organized as follows. Section 2 describes the background research and states the hypothesis. Section 3 describes the method, analysis and discusses limitations, and section 4 concludes the paper.

The debate surrounding audit firm rotation and empirical evidence

Audit firm rotation

Requiring audit firms to rotate from clients is a topic of current (PCAOB 2011a, House of Lords 11, European Commission 10, 11, 2013)[2] and past (AICPA 1978, GAO 2003) debate.

[2] In the revised version of the 8th Directive on Statutory Audits of Single Annual and Consolidated Financial Statements (European Union 2006), the European Union (EU) requires that by the end of June 2008, all twenty-seven-member states of the European Union enact the requirements of the revised 8th Directive into national law. One important detail of the Directive is rotation of the key audit partner. Every member state is given discretion regarding the length of the rotation period.

Recently, the US House of Representatives passed a bipartisan bill, H. R. 1564 that prohibits the Public Company Accounting Oversight Board (PCAOB) from requiring mandatory audit firm rotation (US Congress 2013).[3] Proponents of audit firm rotation argue it provides a "fresh look" at the client's control environment and financial reporting decisions and lessens both the economic and personal relationships between the audit firm and the client (PCAOB 2011a). The PCAOB is motivated by its own inspections of audit firms that indicate a failure of audit firms to exercise appropriate levels of objectivity and skepticism. However, the PCAOB has not been able to establish that loss of objectivity and skepticism is due to a long audit firm tenure (PCAOB 2011a).

Those that oppose mandatory audit firm rotation argue that it sacrifices the formation of knowledge and expertise (as discussed in PCAOB Auditing Standard #5) that auditors develop during the performance of consecutive audits and that it can increase audit production cost (US Congress 2013). From the PCAOB call for comments on mandatory audit firm rotation, 95% of respondents opposed its implementation primarily on the grounds that rotation would negatively affect both quality and efficiency of an audit (Cohn 2012; Hanson 2013).

Extant research on this debate provides some evidence that does not support the mandatory rotation argument; however, the evidence is not consistent (PCAOB 2011a). Gerakos and Syverson (2013) indicate a significant economic cost from mandatory rotation.[4] Reid and Carcello (2017) find a negative market reaction to events that potentially increased the likelihood of regulations requiring mandatory rotation, especially for companies with longer audit firm tenure. Fiolleau, Hoang, Jamal, and Sunder (2013) note some additional potential consequences

[3] The bill passed with a vote of 321 for, 62 against. The bill did not move forward in the US Senate.

[4] They estimate[d] consumer surplus losses at approximately $2.4-3.6 billion (total audit fees in 2010 were $11 billion) if rotation were required after ten years, $4.3-5.5 billion for a four-year rotation policy.

to mandatory audit firm rotation. First, it would provide management with additional opportunities during auditor change years to seek a desired financial reporting outcomes from other bidding audit firms. Therefore, required rotation might actually escalate management's ability to influence auditors. Second, required rotation allows management to change auditors without having to disclose disagreements or problems. If disclosures related to auditor rotation are useful to financial statement users (Hennes, Leone, and Miller 2014), required rotation would remove this information for auditor changes that occur in accordance with the regulation. Opponents recommend that the PCAOB not require mandatory audit firm rotation until evidence that points to a relation between audit firm tenure and inspection report findings is documented (Anton and Melancon 2011)[5] and the cost/benefit relationship is better understood (GAO 2003).[6]

Audit Firm Tenure and Audit Quality

Existing research examines the association between audit firm tenure and various proxies for audit/financial reporting quality including discretionary or unexpected accruals, reporting earnings to meet or beat earnings targets, the cost of debt, investor response to reported earnings, financial statement restatements, and others. Johnson, Khurana, and Reynolds (2002), and Gul, Fung, and Jaggi (2009) find that accrual quality is unaffected by audit firm tenure. Stanley and DeZoort (2007) find a negative relation between the length of the auditor–client relationship and the likelihood of restatement. Myers, Myers, and Omer (2003) and Blouin, Grein, and Roundtree (2007) find that accrual quality increases in audit firm tenure. Li (2010) documents a positive association between the conservatism in reported earnings and the length of the auditor–

[5] Since PCAOB Inspection reports do not reveal the clients where deficiencies occur, this analysis cannot be performed with publicly available data.

[6] KPMG notes that countries such a Singapore, South Korea, Argentina, Brazil, Spain and Canada have implemented mandatory audit firm rotation (MAFR) and subsequently either partially or fully withdrew it. Additionally, countries such as Australia, Hong Kong, Japan, Malaysia, Mexico, New Zealand, Russia, Sri Lanka, Switzerland, Thailand and the USA have considered MAFR and decided against the adoption of MAFR. (KPMG 2017)

client relationship. In their investigation of audit partner and audit firm tenure using international data, Chen, Lin, and Lin (2008) also do not find a negative effect of tenure on earnings quality. Using data from internal audit firm inspections, Bell, Causholli, and Knechel (2015) document a positive relationship between tenure and audit quality among SEC clients. Davis, Soo, and Trompeter (2009) examine audit quality by investigating how audit firm tenure influences management's ability to use discretionary accruals to report earnings that meet or beat analysts' earnings forecast. They find longer audit firm tenure reduces the use of discretionary accruals to meet or beat analysts forecast, an indication of improved audit quality. However, they find a turning point for audit tenure of greater than 15 years, where tenure leads to a reduction of audit quality. The non-linear effect of audit firm tenure on audit quality is confirmed by Brooks, Cheng, Johnston, and Reichelt (2016). Singer and Zhang (2018) find that SOX has mitigated, but not eliminated the negative effects of long term tenure that they find leads to less timely discovery and adjustment of misstatements. They also find the magnitude of the misstatements are positively correlated with increasing audit firm tenure. Yen, Lim, Wang, and Hsu (2018) investigate a unique setting to the literature and find that audit firms with more experience with a client is better able to assess information security breech risks. Chu, Dai, and Zhang (2018) find that longer audit firm tenure for clients with increased litigation risk reduces audit quality. Investigating short tenure relationships, results using various proxies for audit quality consistently indicate that quality is diminished during the first years of an audit engagement (AICPA 1992; Geiger and Raghunandan 2002; Carcello and Nagy 2004; Johnson et al. 2002; Davis et al. 2009; Bell et al. 2015).

A goal of mandatory audit firm rotation is to reduce the length of the relationship between the audit firm and client leading to increased professional skepticism and improved

audit quality. The inconsistent results from existing literature leave the profession and regulators with little information to support requiring mandatory audit firm rotation. However, some research does find settings where long audit firm tenure reduces audit quality. Importantly, the consistent finding that audit quality is diminished in the initial years of an audit/client relationship supports opponents concerns that mandatory audit firm rotation leads to reduced audit quality. Importantly, Gipper, Hall, and Leuz (2018) find little support for the potential "fresh look" benefits of mandatory five-year partner rotations in a new study using proprietary PCAOB data from audit firm inspections.

Chief financial Officers

Extant literature investigating the influence of audit firm tenure on audit quality overlooks a critical participant in the relationship between the audit firm and their client, the client's chief financial officer (CFO).[7] CFO's typically have primary responsibility for decisions that influence their firm's financial reporting process and related financial reports (Ge, Matsumoto, and Zhang 2011; Menon and Williams, 2008).[8,9] CFOs participate in auditor-client negotiations related to accounting disputes (Geiger and North 2006; Gibbins et al. 2005). These negotiations take place between the CFO and the auditors throughout the audit process and before the financial statements and audit results are communicated to the audit committee. Likewise, the CFO has incentives to maximize their compensation by not disappointing investors with unsatisfactory financial reports (e.g., missing analysts forecast) (Jiang, Petroni, and Wang

[7]Fiolleau et al. (2013) find that audit firms actively align attributes of their key personnel with the client's CFO early in the auditing bidding process.

[8] CFO's have unique characteristics when compared to CEOs (Crist/Kolder Associates 2017). CFO's employment relationship turns over more frequently and very few CFOs (6%) become future CEOs. Interestingly, only 25% of sitting CFOs at the time of their study had accounting degrees and 32% of these have work experience in a larger international accounting firm (commonly denoted the Big-N).

[9]Krishnan and Wang (2015) examine the relation between managerial ability, i.e., ability in transforming corporate resources to revenues, and audit fees and a going concern opinion and find that incremental to firm-level attributes, both audit fees and the likelihood of issuing a going concern opinion are decreasing in managerial ability.

2010)[10] and face a greater likelihood of dismissal when reportable events are made public (Menon and Williams 2008) or company performance decreases (Coughlan and Schmidt, 1985; Gilson, 1989; Beneish, 1999; Mian 2001, Burks 2010).

The Independence Standards Board (ISB 2000) report expresses concerns that the relationship between the audit firm and client personnel can lead to biased decisions, with the auditor potentially accepting the preferences of the client over the preferences of the audit firm. And since the CFO's influence on the financial reporting process puts them in frequent ongoing contact with the auditor (Antle and Nalebuff, 1991) and the CFO plays a key role in audit committee communication and organization (Beasley, Carcello, Hermanson, and Neal 2009), the CFO-auditor relationship, consequently, has the greatest potential to affect audit quality among the various levels of management inside the audit client.

Because of the important roles the CFO and audit firm play in the financial reporting process, we focus primarily on the audit firm - CFO relationship and how it influences audit quality. Given the agency and the mutual trust perspectives on the mutual role of audit firm and CFO, it is not immediately clear as to how a long association between the audit firm and CFO will influence financial reporting and audit decisions. On the one hand, from an agency perspective, CFOs have incentives to manage earnings and exert some form of pressure (economic or social) on auditors, potentially resulting in biased reporting and low audit quality. On the other hand, the mutual trust perspective suggests the social interactions that develop with time can enhance the information flows between the two parties in turn improving the quality of auditing (Dees and Cramton, 1991).

[10] They report "..that the magnitude of accruals and the likelihood of beating analyst forecasts are more sensitive to CFO equity incentives than to those of the CEO" (2010, p. 513).

In summary, prior literature provides mixed evidence on the effect of audit firm tenure on audit quality. These inconsistent findings suggest the need to carefully examine the underlying relationships between an audit firm and their client's personnel to identify conditions where long audit firm tenure might be problematic. Based on the concerns documented in the extant literature and by the regulatory agencies regarding the detrimental aspect of these personal relationships we hypothesize:

Hypothesis: There is a negative relationship between mutual audit firm – client CFO tenure and audit quality.

Method and Analysis

To examine the hypothesis, we follow DeFond and Zhang's (2014) suggestion to examine multiple proxies for audit quality. They encourage the examination of measures on the opposite end of the "egregiousness" spectrum to better ascertain their impact on audit quality and suggest there is a gradient of causality to these proxies for audit quality. Therefore, we examine three measures of audit quality substantiated in prior literature: 1) discretionary accruals, 2) going concern issuance, and 3) the receipt of an AAER. Examining abnormal or discretionary accruals provides insights into management's discretion in the application of GAAP to their reported financial statements. Lawrence, Minutti-Meza, and Zhang (2011) suggest this measure can reveal auditors influence on these decisions. Discretionary accruals are powerful tools to alter reported earnings as they can be modified after year-end and right up to the earnings announcement date (Bratten, Payne, and Thomas 2016). They do not require a change in business operations or strategy; they are simply changes to the financial statement presentation of those operations.

We also examine the overall likelihood of issuing a going concern opinion and the likelihood of receiving a first time going concern opinion as a measure of quality and independence. Prior research of both auditor independence and audit quality utilize the likelihood of issuing a going concern opinion as an operational measure (Carson, Fargher, Geiger, Lennox, Raghunandan, and Willekens 2013). Specifically, the willingness to issue a going concern opinion is considered a significant measure of auditor independence (Chen, Martin, and Wang, 2013), and a measure of audit quality (DeFond and Zhang 2014). Auditors risk reputational damage and litigation costs when failing to issue a going concern, and therefore, audit firms will resist management's desire to avoid the going concern statement and report in a more conservative fashion (DeFond and Francis, 2005). We model both the overall likelihood of issuing a going concern opinion and the likelihood of issuing a first time going concern opinion to investigate the association between mutual auditor CFO tenure on audit quality and independence.

Additionally, this study employs AAERs that provide a more relevant and direct measure of audit quality by measuring actual outcomes of the audit process (DeFond and Zhang 2014; DeFond and Francis 2005). AAERs report civil litigation and administrative proceedings by the SEC's and represent severe violations of Generally Accepted Accounting Principles (Lennox and Pittman 2010).

Discretionary accruals

For our first measure of audit quality we use discretionary accruals. These represent abnormal accruals and could indicate attempts by management to alter reported financial statement balances. The sample for this analysis starts with all observations available in non-

financial service industries for the years 1994-2015 from Compustat.[11] We next collect CFO data from Execucomp and Audit Analytics. Since CFO's are not always tracked on Execucomp (Brochet, Faurel, and McVay, 2011), we select unique additional observations provided in the Audit Analytics D&O changes database. After eliminating observations without sufficient data to calculate discretionary accruals, SIC codes 6000-6999, and those lacking CFO data the final sample contains 40,052 observations (see Table 1, Panel A).

Following Dechow, Sloan, and Sweeney (1995), and Kothari, Leone, and Wasley (2005), the estimates of $\lambda_1, \lambda_2 \; and \; \lambda_3$ are those obtained from the original Jones model where total accruals are earnings before extraordinary items and discontinued operations minus the operating cash flows (IB-OANCF). $\Delta SALE_t$ is the change of total revenue from t-1 to t year, ΔREC_t is the change of net receivables from t-1 to t year, and PPE is the property, plant and equipment., ROA is the net income (NI) divided by total assets (AT).

$$\frac{Total\ Accrual_t}{AT_{t-1}} = \lambda_1(1/AT_{t-1}) + \lambda_2(\Delta SALE_t - \Delta REC_t) + \lambda_3(PPE_t) + \lambda_4(ROA_t) + \varepsilon_t$$

Consistent with prior studies, we, winsorize all variables at the one percent tails before estimating equation (1) within years and 2-digit SIC codes (excluding industries with less than six members).

Discretionary accruals, *DA* is equal to the residual values from estimating equation (1). Absolute discretionary accruals, *ABSDA*, is equal to the absolute value of *DA*. Consistent with prior studies, we eliminate observations with *ABSDA* greater than one. We estimate equation (2)

[11] The sample period in 1994 as this is the first year that 100 or more observations with available CFO data is available.

to test for a relationship between audit quality and audit firm tenure (*AUDTEN*), CFO tenure (*CFOTEN*), and the interaction of CFO and audit firm tenure.

$$ABSDA_t = \varphi_0 + \varphi_1 AUDTEN + \varphi_2 CFOTEN + \varphi_3 AUDTEN^* CFOTEN + \varphi_4 CASHFLOW + \varphi_5 LEV + \varphi_6 LITIG + \varphi_7 MB + \varphi_8 MV + \varphi_9 LOSS + \varphi_{10} FIN + \varphi_{11} LCA + \varphi_{12} BIGN + \varphi_{13} SOX + \varphi_{14} Year\ FE + \varphi_{15} Industry\ FE + \varepsilon \quad (2)$$

ABSDA as defined earlier, is the proxy for audit quality. *AUDTEN* captures the number of years the auditor has been retained by the client beginning in 1980. *CFOTEN* captures the number of years a CFO worked with a company. The interaction *AUDTEN*CFOTEN* is the variable of interest. This measures the mutual effect of audit firm tenure and CFO tenure on audit quality. If mutual audit firm-CFO tenure leads to reduced audit quality, then the coefficient on the interaction term will be positive.

We base the remaining control variables on prior research (Minutti-Meza 2013, Asthana and Boone 2012) as follows:

AUDTEN = the number of years the auditor has been retained by the client beginning in 1980. (Compustat)
CFOTEN = the number of years the client's employee has been the chief financial officer. (Execucomp and Audit Analytics)
CASHFLOW = operating cash flow (*OANCF*) scaled by total assets (*AT*), (Compustat)
LEV = total liabilities (*AT – CEQ*) scaled by lagged total assets, (Compustat)
LITIG = a dummy variable equal to one if the company-year is in a high litigation industry, defined as SIC codes: 2833-2836, 3570-3577, 3600-3674, 522-5961, 7370-7474; zero otherwise, (Compustat)
MB = market-to-book ratio (*MKVALT/CEQ*), (Compustat)
MV = the natural log of the market value of equity (*MKVALT*) at fiscal year-end, (Compustat)
LOSS = a dummy variable that equals one if net income (*NI*) is less than zero; zero otherwise. (Compustat)
FIN = a dummy variable indicating mergers or new financing and equals one if COMPUSTAT footnote *SALE_FN* equals "AB", or the percentage change in long-term debt (*DLTT*) is greater or equal to 20 percent, or the percentage change in common shares outstanding (*CSHO*), adjusted for stock splits, is greater or equal to 10 percent; zero otherwise,
LCA = the absolute value of lagged current accruals, and

BIGN = a dummy variable that equals one if the company uses a big-N audit firm; zero otherwise.[12] (Compustat)
SOX = a dummy variable that equals one for years after 2001.

Dummy variables are included to control for year and industry fixed effects. We also cluster the standard errors at the firm level.

Results

Discretionary Accruals

We present the descriptive statistics of the discretionary accruals sample in Table 1, Panel B. The mean (median) value of *ABSDA* is 0.104 (0.055) and is consistent with levels reported in prior research. The mean values of *AUDTEN* and *CFOTEN* are 10.508 and 3.766 years, respectively. Panel C provides a correlation matrix that indicates auditor tenure and CFO tenure are negatively associated with the absolute value of discretionary accruals.[13]

Table 1, Panel D presents the regression results of the discretionary accruals model (equation 2) using the absolute value of total accruals (*ABSDA*). The OLS results for our investigation of discretionary accruals, presented with our interaction term of interest in Column B, and without in column A have adjusted R-square of 0.2371 and 0.2366 respectively. These values suggest a reasonably good fit and are comparable to levels reported in prior research. Further, the increase in explanatory power when our interaction term of interest in is included, and holding the sample size constant, suggests that the inclusion of the interaction term improves the explanatory ability of the model and supports the inference that mutual auditor/CFO tenure explains levels of discretionary accruals beyond the direct effects of auditor and CFO tenure alone. Examination

[12] Big-N firms are Arthur Andersen, Deloitte, Ernst & Young, KPMG, and PricewaterhouseCoopers.
[13] The remaining control variables have values consistent with prior research and the correlations between the remaining independent variables are well within acceptable levels and do not indicate the presence of multicollinearity.

of variance inflation factors (VIFs) suggest that none of the coefficients are affected by multicollinearity.

Panel D Column A reports the results of our discretionary accruals model without the interaction term employed to capture the incremental effect of mutual auditor/CFO tenure. This model reports that both auditor tenure and CFO tenure are significantly negatively associated with discretionary accrual levels (*AUDTEN*, -0.001, $p < 0.01$; *CFOTEN*, -0.003, $p < 0.01$). The coefficient on *AUDTEN* is negative and significant, indicating higher audit quality with longer audit firm tenure consistent some prior research (e.g., Myers et al. 2003). Similarly, negative and significant coefficient on *CFOTEN* suggests that the CFOs' tenure is associated with lower levels of accruals-based earnings management. Panel D Column B reports the results of our model including the interaction of auditor tenure and CFO tenure to capture the incremental effect of mutual auditor/CFO tenure associated with levels of discretionary accruals. We find that, holding the levels of CFO and auditor tenure constant,[14] the incremental effect of another year of mutual auditor/CFO tenure is positive and significant (*AUDTEN*CFOTEN*, 0.001, $p < 0.01$), suggesting that increasing mutual tenure between the auditor and CFO reduces audit quality as measured by increased levels of discretionary accruals.[15]

To further examine the impact of mutual tenure, we test our predictions in a subsample of firms where overall mutual auditor/CFO tenure is less than or equal to 4 years. This sample restriction presents mutual auditor/CFO tenure relationships driven primarily by organic CFO

[14] An advantage of using the interaction term *AUDTEN*CFOTEN* and the inclusion of *AUDTEN* and *CFOTEN* main effects over the use of a raw mutual tenure measure is the ability to control for the underlying effect of auditor and CFO tenure independently of the incremental effect. For example, three years of mutual tenure would not likely have the same effect when the auditor's tenure was 5 years versus when the auditor's tenure was 20 years.

[15] The use of both audit firm tenure and CFO tenure as continuous variables and the use of their interaction to capture the incremental effect of mutual tenure suggests that audit quality is affected more by auditor tenure at higher levels of CFO tenure and, similarly, that audit quality is affected more by CFO tenure at higher levels of audit firm tenure. The reported positive values for our interaction term of interest implies this relation holds. Therefore, as mutual tenure increases, the effect on audit quality is magnified.

and auditor turnover while still controlling for the independent effects of long auditor and CFO tenure. The results of this sample are presented in Panel D Column C, this sample restriction reduces the relevant sample size from 40,052 to 30,962, a 22.7% reduction, and reduces the R^2 of the model from 0.2371 to 0.2080. In this sample, the effect of mutual auditor/CFO tenure insignificant (*AUDTEN*CFOTEN*, 0.000 $p > 0.10$). This suggests that short mutual tenure relationships do not exhibit attributes of accruals-based earnings management.

In addition to the short tenure sample restriction, we also split our sample between signed positive and negative discretionary accruals. This investigation, reported in Table 1 Panel E columns A and B, finds that for income-increasing accruals (POSDA) the coefficient on *AUDTEN*CFOTEN* is positive and significant (0.001, $p < 0.01$), and for income-decreasing accruals, the coefficient is also positive and significant (0.001, $p < 0.01$). Thus, both the levels of discretionary accruals are greater when the mutual tenure between the audit firm and CFO is longer.

To further investigate the validity of this interaction term we center both auditor tenure and CFO tenure on their median value; specifically, nine years for audit firm tenure and three years for CFO tenure, respectively (Jaccard, Wan, and Turrisi 1990). The results of our models with these median centered values and their interaction (untabulated) strongly support the negative audit quality implications of longer mutual auditor/CFO tenure. We also control for the non-linearity in the relationship between audit firm tenure and audit quality (e.g., Davis et al. 2009) by including transformed values (squared) for audit firm tenure and the results of this model (untabulated) are qualitatively similar.

The results from these analyses indicate that as the mutual tenure of the CFO and audit firm increases, audit quality is reduced as more discretionary accruals are used by management

in their reported financial statements. In other words, financial statement quality, as measured by management's use of discretionary accruals, is lessened as mutual tenure increases. Our results also suggest that the break in CFO and audit firm tenure caused by the organic turnover of CFO's and changes in auditors can mitigate this quality reducing relationship.

Going Concern Opinion Issuance

The sample for this analysis includes all observations available in the non-financial services industries from the intersection of Compustat, Execucomp, and Audit Analytics. After eliminating observations without sufficient data to calculate control variables, SIC codes 6000-6999, and those lacking CFO data, then following Bruynseels and Cardinaels (2014) we further restrict our sample to distressed firms allowing a better sample identification of going concern probability. We identify distressed firms as those with negative earnings in the reporting year; this final restriction leaves a sample of 11,601 distressed firms. We specify and estimate equation (3) to test for a relationship between going concern issuance, audit firm tenure (*AUDTEN),* CFO tenure (*CFOTEN*), and the interaction of *AUDTEN* and *CFOTEN*. Control variables are motivated by DeFond, Raghanandan, and Subramanyam, (2002), and Bruynseels and Cardinaels (2014).

The coefficients are estimated in the following logistic regression including controls for industry and year fixed effects:

$$GC_t \text{ or } FGC_t = \varphi_0 + \varphi_1 AUDTEN_t + \varphi_2 CFOTEN_t + \varphi_3 AUDTEN_t * CFOTEN_t + \varphi_4 ZSCORE_t + \varphi_5 AGE_t + \varphi_6 LEV + \varphi_7 FIN_t + \varphi_8 BIGN_t + \varphi_9 CASHFLOW + \varphi_{10} SOX_t + \varphi_{11} Year\ FE + \varphi_{12} Industry\ FE + \varepsilon \quad (3)$$

Where (previously undefined):

GC	= to one if the firm received a going concern opinion in the current year, 0 otherwise (Audit Analytics)

FCF	= to one if the firm received a going concern opinion in the current year and did not receive a going concern opinion in the prior year
CASHFLOW	= operating cash flow (*OANCF*) scaled by total assets (*AT*). (Compustat)
ROA	= net income before extraordinary items scaled by lagged assets. (Compustat)
ISSUE	= An indicator variable equals one if the sum of new long-term debt plus new equity exceeds 20% of total assets. (Compustat)
ZSCORE	=-4.336-4.513*(Net Income/Total Assets)+5.679*(Total Liabilities/Total Assets)+0.004*(Current Assets/Current Liabilities). (Compustat)

Results

We present the descriptive statistics of the going concern sample in Table 2, Panel B. On average, about 17.2% (4.0%) of the observations experience going concern (GC) (first time going concern (FGC)) reports. The mean values of *AUDTEN* and *CFOTEN* are 8.708 and 3.293 years, respectively. The correlation matrix shown in Panel C provides initial evidence that audit firm tenure and CFO tenure are associated with going concern issuance and that audit tenure is associated with first time going concern issuance. The correlations between the remaining independent variables are below levels that would indicate multicollinearity problems.

Table 2. Panel D presents the logit regression results of the going concern model (equation 3 for *GC*). In Panel D Column A, for the model of only the main effects of auditor tenure and CFO tenure the coefficient on audit tenure is significant and positive (*AUDTEN*, 0.010, $p < 0.10$), indicating that longer audit firm tenure is associated with an increased likelihood of going concern issuance. The coefficient on CFO tenure is negative and significant (*CFOTEN*, -0.063, $p < 0.01$), implying the likelihood of a going concern is significantly lower as the CFO tenure increases. In Panel D Column 2 we introduce the interaction between auditor tenure and CFO tenure (*AUDTEN*CFOTEN*) into the model to investigate the incremental effect of mutual auditor and CFO tenure. When controlling for the effect of mutual auditor/CFO tenure we find the main effects of auditor tenure is positive and significant, suggesting that, controlling for CFO

and auditor/CFO mutual tenure, longer auditor tenure increases the likelihood of a going concern issuance (*AUDTEN*, 0.023, $p < 0.01$). However, we do see that an increase in mutual auditor/CFO tenure is associated with a decreased likelihood of going concern issuance (*AUDTEN*CFOTEN* -0.005, $p < 0.05$). This implies that when controlling for the main effects of auditor and CFO tenure, the number of years the CFO and auditor work together have an negative incremental effect on the likelihood of issuing a going concern opinion and support our hypothesis that increasing mutual tenure between the auditor and the CFO audit quality.

We next examine a subsample of firms restricted to mutual auditor/CFO mutual tenure of four or fewer years (Panel D Column C). This sample investigates if short auditor/CFO tenure relationships exhibit the same attributes of longer auditor/CFO tenure relationships. Panel D column C reports the resulting sample size reduction from 11,601 to 9,845 and a reduction in model fit. This short mutual tenure model finds that, controlling for the direct effects of Auditor and CFO tenure, the incremental effect of Auditor/CFO mutual tenure is insignificant within the short tenure window (*AUDTEN*CFOTEN*, -0.006, $p > 0.10$), supporting the inference that short mutual tenure does not necessarily impair independence, but that longer spans of mutual auditor/CFO are associated with lower going concern issuance.

We find similar results for our model of first-time going concern issuance (*FGOCO*) presented in Table 2 Panel E. We find that when considering only going concern opinions issued when no going concern opinion was issued in the prior year that mutual auditor/CFO tenure decreases the likelihood of first-time going concern issuance (*AUDTEN*CFOTEN*, -0.010, $p < 0.01$), and the effect of mutual auditor/CFO tenure in our short window sample for first time going concern statements is insignificant (*AUDTEN*CFOTEN*, -0.002, $p > 0.10$). Taken together, these results indicate that there is an association between longer periods of mutual

auditor/CFO tenure and reduced first time going concern issuance, and association which is not readily apparent in a short mutual tenure window, implying that longer mutual auditor/CFO tenure impairs independence and reduces audit quality.

AAERs

Accounting and Auditing Enforcement Releases (AAERs) have been issued by the SEC since 1982 and report the outcomes SEC investigations in which companies and/or auditors accept fines or other administrative action but do not formally plead guilty. In addition to examining discretionary accruals, we follow the suggestions of DeFond and Francis (2005) and DeFond and Zhang (2014) encouraging the examination of fraudulent activity using AAERs as an additional relevant and direct measure of quality. The sample for this analysis starts with all observations available in the non-financial services industries for the years 1994-2013 from Compustat, Execucomp, and Audit Analytics with non-missing data.[16]

Adapting the model developed in Lennox and Pittman (2010), we investigate if audit firm and CFO tenure is associated with the likelihood of the audit client receiving an AAER from the SEC. The resulting model, including industry and year fixed effects, is specified as:

$$\begin{aligned} AAER\ Fraud_{i,t} = {} & \beta_0 + \beta_1 AUDTEN_{i,t} + \beta_2 CFOTEN + \beta_3 (AUDTEN * CFOTEN) + \\ & \beta_4 Ln(ASSETS)_{i,t} + \beta_5 ROA_{i,t} + \beta_6 BIG4_{i,t} + \beta_7 AGE_{i,t} + \beta_8 MERGER_{i,t} + \\ & \beta_9 NEG\ EQUITY_{i,t} + \beta_{10} ISSUE_{i,t} + \beta_{11} CASHFLOW_{i,t} + \beta_{12} FCF_{i,t} + \\ & \beta_{13} SOX_{i,t} + \beta_{14} Year\ FE + \beta_{15} Industry\ FE + \varepsilon_t \end{aligned} \quad (3)$$

Where *AAER Fraud* is an indicator variable equal to one if the audit client is subject to an AAER and zero otherwise.

[16] We obtained the AAER data from the Center for Financial Reporting & Management at the University of California, Berkeley, Haas School of Business. A detailed description of the data collection is available in Dechow, Ge, Larson and Sloan (2011). Note that there is a significant time lag between the release of the AAER and the financial statement reporting date, which restricts our sample period. Our data ends with AAER 3706 issued September 28, 2015.

Where (previously undefined):

AGE	Natural logarithm of the number of years that the client firm has been listed on COMPUSTAT. Source: Compustat
NEG Equity	An indicator variable equals 1 if the client firm has negative book value of equity. Source: Compustat
DEBT Equity Issued	An indicator variable equals 1 if the sum of new long-term debt plus new equity exceeds 20% of total assets. Source: Compustat

Sample and Descriptive Statistics

Table 3, Panel A presents the sample selection procedure for the AAER fraud model. First, we derive fraud sample clients from AAERs released through the latest available complete year, 2013. To remain consistent with the other analyses provided previously, we collect an initial sample of non-financial service industry firm-year observations from Compustat, Execucomp, and Audit Analytics, starting in the year 1994. Excluding firm-year observations that lack the necessary data to calculate audit firm, and CFO tenure, along with the control variables, the final sample consists of 30,322 firm-year observations. Panel B of Table 4 reports the descriptive statistics for the sample used in this test.

Multiple Regression Results

To investigate the association between mutual auditor/CFO tenure and AAERs, we specify a logit model where *AAER Fraud* equals one for AAER clients and zero otherwise. Table 3, Panel B provides the descriptive statistics. *AUDTEN* is 10.225 years on average with *CFOTEN* average tenure of 3.582 years. The other variables have values consistent with prior research. Table 3, Panel C presents the correlations. None are at worrisome levels. Panel D of Table 3 presents the results of the logistic regression. Panel C Column A reports the result of our AAER model without our interaction variable of interest to capture the main effects of auditor and CFO tenure. We find that auditor tenure and CFO tenure are both negatively associated with AAER issuance, however the effect of auditor tenure is insignificant when controlling for CFO

tenure, suggesting that AAER issuance may be more a function of CFO tenure than auditor tenure (*AUDTEN*, -0.015, $p > 0.10$; *CFOTEN*, -0.059, $p < 0.05$).[17]

In our full model, reported in Panel D Column B, including the interaction term to capture the incremental effect of mutual auditor/CFO tenure, the coefficient of *AUDTEN* is negatively associated (-0.037, $p < 0.01$) with the likelihood of a client receiving an AAER from the SEC. Likewise *CFOTEN* is negatively associated with the receipt of an AAER (-0.132, $p < 0.01$). The likelihood ratios reported in Table 3 Panel D suggest that the inclusion of the interaction term to capture the incremental effect of mutual auditor/CFO tenure improves the model fit over the reduced form model. As with the prior analyses, extended periods of mutual tenure between the firm and a CFO leads to lower audit quality as evidenced by increased receipt of an AAER (*AUDTEN*CFOTEN*, 0.006, $p < 0.10$). This suggests that stability within the audit engagement and the CFO position separately reduces the likelihood of an AAER, when controlling for mutual auditor/CFO tenure, but that when holding those values constant, an increase in mutual auditor/CFO tenure significantly reduces audit quality and increases the likelihood of receiving an AAER. Control variables are generally consistent with expectations.

Table 3 Panel D Column C reports the results of our investigation of short mutual auditor/CFO tenure periods of four years or less. This sample restriction reduces our sample size from 30,322 to 23,132, and significantly reduces the model fit. Within this short mutual auditor/CFO tenure model both auditor tenure and CFO tenure remain negative and significant predictors of AAER issuance (*AUDTEN*, -0.047, $p < 0.10$; *CFOTEN*, -0.221, $p < 0.01$); however, the interaction term included to capture the incremental effect of mutual auditor/CFO tenure is an insignificant predictor of AAER issuance (*AUDTEN*CFOTEN*, 0.010, $p > 0.10$). These results

[17] If a directional prediction is made that increased auditor tenure would reduce the likelihood of an AAER issuance, then the coefficient on *AUDTEN* would be marginally significant at $p < 0.10$.

suggest that shorter windows of mutual auditor/CFO tenure may not be associated with reduced audit quality.

Additional Procedures and Robustness Tests

Endogeneity Concerns

Because mutual tenure requires a decision to retain the current auditor there are potential endogeneity concerns regarding selection bias that may enter the testing environment due to unexpected correlated variables affecting both the auditor retention decision and the dependent variables of interest. Extant research (Dhaliwal, Lamoreaux, Lennox, and Mauler 2015; Cohen, Krishnamoorthy, and Wright 2010) find that management (mainly CFOs) continue to have significant influence over auditor selection in the post-SOX period, even in the presence of high quality audit committees. Therefore, we specify a 'two-stage' simultaneous model[18] with the auditor retention decision as the first stage and our primary investigation models as the second stage. We create an indicator variable equal to one if the auditor was retained from the prior year and regress that variable on auditor selection determinants from year *t-1* simultaneously. Informed by (Gul et al., 2009), we include measures of company financial performance and risk and auditor quality into our selection model[19] and examine if (1) there is significant endogeneity between the choice of auditor retention and our model of mutual auditor CFO/tenure and (2) if controlling for that endogeneity alters our findings.[20]

[18] This model is both 'two-stage' and simultaneous because 'two-stage' is generally an artifact related to when the premium on computing power did not allow for the computation of simultaneous models. Like a two-stage model, the inclusion of the selection model controls for that model's effects on the second stage model of interest, but essentially error matrices are calculated together for both models in an iterative fashion to minimize error and optimize the general nonlinear function (SAS Institute, 2011).

[19] Control variables are included for Asset Turnover, Current Ratio, ROA, Growth, CashFlow, Age, BIGn, Debt-to-Asset Ratio

[20] For sake of parsimony, we do not tabulate our full selection model results.

We utilize firm age as our instrumental variable in our discretionary accrual selection model and find no significant endogeneity between the current periods discretionary accruals and the choice to retain the auditor after the prior year's engagement (*Rho*, -0.001, $p > 0.10$). Further, within this model we find our variable of interest is still positive and significantly associated with discretionary accruals suggesting that mutual auditor CFO tenure has a negative impact on audit quality. Next, utilizing asset turnover as our instrumental variable, we find our AAER model has marginally significant endogeneity with our auditor retention model (*Rho*, 0.019, $p < 0.10$), and that within this model our results are consistent with our primary investigation, including a positive and significant association between mutual auditor/CFO tenure and the likelihood of receiving an AAER from the SEC. Finally, we include firm age as our instrumental variable and find both our going concern and first time going concern models do not demonstrate significant endogeneity with our auditor retention model (*GC - Rho*, 0.019, $p < 0.10$; *FGC - Rho*, 0.002, $p < 0.10$). In our selection model regarding overall going concern issuance our mutual auditor/CFO tenure viable is insignificant; however in our model of first time going concerns we do replicate the results of our initial investigation, including a negative and significant effect for mutual auditor/CFO tenure suggesting that increasing mutual auditor CFO tenure is associated with impaired auditor independence and reduced audit quality.

Limitations

As with prior studies on the determinants of audit quality, there are several potential disadvantages to the measures used to assess audit quality. Schelleman and Knechel (2010) question the appropriateness of discretionary accruals as they are likely closely monitored by auditors. Discretionary accruals also likely contain measurement error (DeFond and Zhang 2014). Another limitation is that the absence of a going concern opinion or AAER cannot be

interpreted as high audit quality as less egregious within-GAAP earnings management might have occurred. Another drawback of AAERs and going concern opinions is that they are relatively rare events, especially AAERs. An additional concern is that material misstatements allowed by low-quality audits may simply go undetected by expost reviews by the SEC, investors, management, and auditors. We attempt to control for these limitations by examining three separate proxies for audit quality that represent distinct levels of reporting error.

However, because of potential uncontrolled endogeneity problems, an alternative interpretation of these findings is that lower financial reporting quality leads to shorter CFO and auditor tenure (DeFond and Zhang 2014; Lennox, Wu, and Zhang 2014). Another limitation is the lack of actual audit partner data to determine the audit partner/CFO relation in many studies. Litt, Sharma, Simpson, and Tanyi (2014) generate a proxy statistic for audit partner rotation. Assuming audit partners remain on engagement for the entire five-year rotation period, they simulate audit partner change for the time period under SOX. This measure likewise introduces measurement error, as the actual audit partners are not known. Another limitation to this method is that less than three percent of Gipper et. al's (2018) PCAOB data on audit partner tenure derived from auditor changes. Because of limited data, research on audit partner rotation is limited to a few studies mostly from international settings where audit partner information is available.[21] These studies do not provide consistent evidence that audit partner tenure provides additional information over audit firm tenure (Chi, Huang, Liao, and Xie 2009; Chen et al. 2008; Moore, Tetlock, Tanlu, and Bazerman 2006; Fitzgerald, Thompson, and Omer 2012) and importantly, none of these studies consider the potential influence of the mutual tenure with the client's CFO. In a recent review of the audit partner rotation studies, Lennox and Wu (2018) note

[21] Taiwan, Australia, Belgium, and others require the lead audit partner to personally sign the audit opinion.

that U.S. studies provide somewhat mixed evidence on the consequences of partner rotation. Future research could use actual partner tenure, as the data becomes available, to examine its potential influence on the relationships found in this study and to contribute to the ongoing debate of the usefulness of mandatory audit partner rotation.

Conclusion

In this paper, we examine the influence of the relationship between the audit firm and their client's CFOs on audit quality. We specifically address the statement from the CAQ (2011) that organic turnover of the CFO and audit firm potentially limits a relationship developing between senior management and audit firm/partner effectively mitigating an independence impairing situation. Our results support this conjecture. Previous research that has extensively examined the effects of audit firm tenure on the quality of the audit provides inconsistent evidence. We argue that investigating audit firm effects alone, without considering the underlying relationships that develop between a client and an audit firm, could be one reason for the inconsistent results. In this paper, we attempt to identify one such important relationship, that between an audit firm and their client's CFOs. The results indicate that an increase in the audit firm's tenure with their client's CFO is associated with clients reporting more discretionary accruals, fewer going concern opinions, and that are more likely to receive an AAER. These are all indicative of lower audit quality. However, investigation of periods of short mutual tenure (4 years or less) between the audit firm and CFO does not find a significant effect on our metrics for audit quality. We suggest this provides support for the CAQ's conjecture.

This paper presents interesting new evidence on how relationships between audit firms and client CFOs can affect audit quality. These results should be useful to regulators as they consider

policies on mandatory audit firm rotation. The results suggest that perhaps regulators should use a more targeted approach to audit firm rotation by focusing on those companies where audit firm tenure with the client as is their relationship with their client's CFO.

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TABLE 1
Discretionary Accruals Model and Analysis

Panel A: Selection of sample

Observations from non-financial services industries with available data in Compustat in (1994-2015)	175,227
Less: Observations lost from merger with Execucomp (CFO data), Audit Analytics (CFO data)[22]	(135,175)
Missing data for control variables	(1,544)
Observations used in analysis	40,052

Panel B: Descriptive statistics

Variable	Mean	SDT. Dev.	25th Pct.	Median	75th Pct.
ABSDA	0.104	0.138	0.023	0.055	0.122
AUDTEN	10.508	7.646	4.000	9.000	15.000
CFOTEN	3.766	3.018	2.000	3.000	5.000
CASHFLOW	0.043	0.262	0.025	0.086	0.145
LEV	0.617	.738	0.347	0.534	0.703
LITIG	0.337	0.473	0.000	0.000	1.000
MB	2.846	6.274	1.202	2.032	3.507
MV	6.442	2.199	5.116	6.599	7.915
LOSS	0.318	0.466	0.000	0.000	1.000
FIN	0.279	0.448	0.000	0.000	1.000
LCA	0.128	0.508	0.015	0.036	0.084
BIGN	0.783	0.412	0.000	1.000	1.000
SOX	0.798	0.401	1.000	1.000	1.000

[22] There were 22,559 data year observations from Audit Analytics and 28,243 from Execucomp. For instances without Execucomp data, Audit Analytics data was used providing a mutual sample of 41,596 observations.

Panel C: Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1.ABSDA												
2.AUDTEN	-0.12											
3.CFOTEN	-0.08	0.23										
4.CASHFLOW	-0.37	0.12	0.09									
5.LEV	0.22	-0.02	-0.03	-0.39								
6.LITIG	0.07	-0.06	-0.05	-0.07	-0.05							
7.MB	-0.02	-0.02	-0.01	0.06	-0.14	0.07						
8.MV	-0.31	0.31	0.17	0.40	-0.21	-0.04	0.15					
9.LOSS	0.28	-0.17	-0.13	-0.46	0.19	0.10	-0.06	-0.49				
10.FIN	0.08	-0.05	-0.05	-0.12	0.08	-0.03	**-0.01**	-0.06	0.10			
11.LCA	0.25	-0.09	-0.07	-0.43	0.35	0.03	-0.03	-0.23	0.19	0.05		
12.BIGN	-0.28	0.28	0.08	0.33	-0.15	-0.04	0.04	0.58	-0.30	-0.07	-0.24	
13. SOX	0.14	0.03	0.13	-0.12	0.05	0.04	-0.04	0.12	0.14	-0.4	0.06	-0.24

Note: Correlations in bold are not significant at $p < .05$.

Panel D: Audit Firm Tenure, CFO Tenure and Discretionary Accruals (ABSDA)

$$ABSDA_t = \varphi_0 + \varphi_1 AUDTEN + \varphi_2 CFOTEN + \varphi_3 AUDTEN^* CFOTEN + \varphi_4 CASHFLOW + \varphi_5 LEV + \varphi_6 LITIG + \varphi_7 MB + \varphi_8 MV + \varphi_9 LOSS + \varphi_{10} FIN + \varphi_{11} LCA + \varphi_{12} BIGN + \varphi_{13} SOX + \varphi_{14} YEAR\ FE + \varphi_{15} INDUSTRY\ FE + \varepsilon \quad (2)$$

	(A)			(B)			(C)		
Variables	Coef.	t-stat		Coef.	t-stat		Coef.	t-stat	
AUDTEN	-0.001	-4.20	***	-0.001	-6.15	***	0.000	-1.72	*
CFOTEN	-0.003	-6.33	***	-0.003	-7.83	***	-0.003	-4.68	***
*AUDTEN*CFOTEN*				0.001	5.14	***	0.000	-0.16	
CASHFLOW	-0.094	-12.41	***	-0.094	-12.39	***	-0.106	-11.71	***
LEV	0.014	6.27	***	0.014	6.32	***	0.011	3.68	***
LITIG	-0.003	-1.07		-0.003	-1.06		0.012	5.15	***
MB	0.001	6.5	***	0.001	6.43	***	0.001	5.57	***
MV	-0.008	-14.51	***	-0.008	-14.47	***	-0.008	-10.86	***
LOSS	0.015	7.02	***	0.015	6.95	***	0.019	6.89	***
FIN	0.009	5.35	***	0.009	5.29	***	0.012	5.23	***
LCA	0.020	6.25	***	0.020	6.2	***	0.017	4.69	***
BIGN	-0.020	-7.36	***	-0.020	-7.31	***	-0.026	-7.66	***
SOX	0.276	7.59	***	0.276	7.88	***	0.025	13.61	***
Constant	0.196	14.42	***	0.201	14.82	***	0.144	27.69	***
Industry Dummies	Yes			Yes			Yes		
Year Dummies	Yes			Yes			Yes		
N	40,052			40,052			30,962		
R-square	0.2366			0.2371			0.2080		

***, ** and * denote statistical significance at the 1, 5 and 10 percent levels, respectively, using two-tailed tests. The t-statistics reported in parentheses are based on standard errors that are heteroskedasticity robust and clustered at the firm level

Panel E: Audit Firm Tenure, CFO Tenure and Discretionary Accruals (POSDA and NEGDA)

	POSDA		NEGDA	
Variables	Coef.	t-stat	Coef.	t-stat
AUDTEN	-0.001	-4.99***	-0.001	-4.27***
CFOTEN	-0.004	-6.61***	-0.002	-4.95***
*AUDTEN*CFOTEN*	0.001	4.12***	0.001	3.57***
CASHFLOW	-0.180	-18.02***	0.009	0.85
LEV	0.005	1.59	0.027	8.40***
LITIG	-0.004	-1.02	-0.003	-0.77
MB	0.001	4.18***	0.001	4.55***
MV	-0.010	-13.09***	-0.005	-8.45***
LOSS	-0.024	8.12***	0.050	19.26***
FIN	0.011	5.07***	0.006	2.81***
LCA	0.017	3.51***	0.023	5.89***
BIGN	-0.020	-5.50**	-0.019	-5.48***
SOX	0.040	9.07***	0.022	4.10***
Constant	0.246	12.80***	0.141	9.83***
Industry Dummies	Yes		Yes	
Year Dummies	Yes		Yes	
N	19,816		20,236	
R-square	.24		.21	

*** and ** denote statistical significance at the 1 and 5 percent levels, respectively, using two-tailed tests.

Panel F: Variable definitions

Variable Definition

ABSDA = Following Dechow, Sloan, and Sweeney (1995), and Kothari, Leone, and Wasley (2005), the estimates of λ_1, λ_2 *and* λ_3 are those obtained from the original Jones model where total accrual is earnings before extraordinary items and discontinued operations minus the operating cash flows (IB-OANCF). $\Delta SALE_t$ is the change of total revenue from t-1 to t year, ΔREC_t is the change of net receivables from t-1 to t year, and PPE is the property, plant and equipment., ROA is the net income (NI) divided by total assets (AT). (Compustat)

$$\frac{Total\ Accrual_t}{AT_{t-1}} = \lambda_1(1/AT_{t-1}) + \lambda_2(\Delta SALE_t - \Delta REC_t) + \lambda_3(PPE_t) + \lambda_4(ROA_t) + \varepsilon_t$$

AUDTEN = the number of years the auditor has been retained by the client beginning in 1980. (Compustat)

CFOTEN = the number of years the client's employee has been the chief financial officer. (Execucomp and Audit Analytics)

CASHFLOW = operating cash flow (*OANCF*) scaled by total assets (*AT*), (Compustat)

LEV = total liabilities (*AT – CEQ*) scaled by lagged total assets, (Compustat)

LITIG = a dummy variable equal to one if the company-year is in a high litigation industry, defined as SIC codes: 2833-2836, 3570-3577, 3600-3674, 522-5961, 7370-7474; zero otherwise, (Compustat)

MB = market-to-book ratio (*MKVALT/CEQ*), (Compustat)

MV = the natural log of the market value of equity (*MKVALT*) at fiscal year-end, (Compustat)

LOSS = a dummy variable that equals one if net income (*NI*) is less than zero; zero otherwise. (Compustat)

FIN = a dummy variable indicating mergers or new financing and equals one if COMPUSTAT footnote *SALE_FN* equals "AB", or the percentage change in long-term debt (*DLTT*) is greater or equal to 20 percent, or the percentage change in common shares outstanding (*CSHO*), adjusted for stock splits, is greater or equal to 10 percent; zero otherwise,

LCA = the absolute value of lagged current accruals, and

BIGN = a dummy variable that equals one if the company uses a big-N audit firm; zero otherwise.[23] (Compustat)

SOX = a dummy variable that equals one for years after 2001.

Dummy variables are included to control for year and industry fixed effects.

[23] Big-N firms are Arthur Andersen, Deloitte, Ernst & Young, KPMG, and PricewaterhouseCoopers.

TABLE 2

Going Concern Issuance Model and Analysis

Panel A: Selection of sample

Observations from non-financial services industries with available data in Compustat in 2000-2015	120,716
Less: Observations lost from merger with Execucomp (CFO data), Audit Analytics (CFO data)[24]	(83,781)
Missing data for control variables	(5,344)
Non-loss / Non-negative cashflow firms not included as 'at risk'	(19,990)
Going Concern Model Sample	11,601

Panel B: Descriptive statistics

Variable	N	Mean	Std Dev	25th	Median	75th
GC	11601	0.172	0.378	0	0	0
FGC	11601	0.040	0.200	0	0	0
AUDTEN	11601	8.708	6.742	4	7	12
CFOTEN	11601	3.293	2.673	1	2	4
ZSCORE	11601	22.379	495.20	-1.720	-0.381	1.433
AGE	11601	17.906	13.133	9	14	22
LEV	11601	0.819	1.221	0.336	0.570	0.837
FIN	11601	0.336	0.472	0	0	1
BIGN	11601	0.575	0.494	0	1	1
CASHFLOW	11601	-0.137	0.372	-0.160	-0.019	0.051
SOX	11601	0.912	0.284	1	1	1

[24] There were 22,299 firm-year observations from Audit Analytics and 21,513 from Execucomp. When Execucomp data was missing, Audit Analytics data was included, providing a mutual sample of 34,736 observations.

Panel C: Correlations

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
GC	1									
FGC	0.45	1								
AUDTEN	0.45	-0.02	1							
CFOTEN	-0.09	**-0.03**	0.21	1						
ZSCORE	-0.10	**-0.01**	**0.22**	**-0.01**	1					
AGE	-0.16	0.00	0.41	-0.01	**-0.02**	1				
LEV	-0.09	0.04	**0.01**	-0.03	-0.02	-0.04	1			
FIN	0.06	**-0.01**	-0.06	0.23	**0.02**	-0.04	0.06	1		
BIGN	0.10	-0.07	0.42	0.09	0.31	0.19	0.05	-0.11	1	
CASHFLOW	-0.40	-0.03	0.12	-0.03	-0.12	-0.07	-0.39	-0.09	0.31	1
SOX	-0.16	0.04	0.00	**0.01**	**0.02**	-0.06	-0.19	0.03	0.30	-0.12

Note: Correlations in bold are ***not*** significant at $p < .05$.

Panel D: Audit Firm Tenure, and CFO Tenure and Going Concern Issuance

$$GC_t = \varphi_0 + \varphi_1 AUDTEN_t + \varphi_2 CFOTEN_t + \varphi_3 AUDTEN_t * CFOTEN_t + \varphi 4 ZSCORE_t + \varphi 5 AGE_t + \varphi_6 LEV + \varphi_7 FIN_t + \varphi_8 BIGN_t + \varphi_9 CASHFLOW + \varphi_{10} SOX_t + \varphi_{11} YEAR\ FE + \varphi_{12} INDUSTRY\ FE + \varepsilon \quad (3)$$

	Going Concern					
	(A)		(B)		(C)	
Variables	Coef.	Chi-Sqr.	Coef.	Chi-Sqr.	Coef.	Chi-Sqr.
AUDTEN	0.010	2.95 *	0.023	8.76 ***	0.027	4.60 **
CFOTEN	-0.063	17.67 ***	-0.013	0.23	0.011	0.12
*AUDTEN*CFOTEN*			-0.005	5.58 **	-0.006	1.87
ZSCORE	0.080	78.66 ***	0.078	77.47 ***	0.073	55.57 ***
AGE	-0.023	47.40 ***	-0.022	49.30 ***	-0.022	38.67 ***
LEV	0.874	145.30 ***	0.834	145.13 ***	0.916	126.44 ***
FIN	-0.128	3.89 **	-0.126	4.08 **	-0.073	1.15
BIGN	-1.322	341.86 ***	-1.302	340.38 ***	-1.282	282.82 ***
CASHFLOW	-1.122	162.42 ***	-1.104	163.97 ***	-1.161	151.14 ***
SOX	0.316	3.69 *	0.306	3.80 *	0.279	2.69
Constant	-1.889	104.63 ***	-2.028	110.19 ***	-2.094	107.42 ***
Industry Dummies	Yes		Yes		Yes	
Year Dummies	Yes		Yes		Yes	
N	11,601		11,601		9,845	
Likelihood Ratio	3523.68 ***		3529.67 ***		3007.09 ***	

***, ** and * denote statistical significance at the 1, 5 and 10 percent levels, respectively, using two-tailed tests.

Panel E: Audit Firm Tenure, and CFO Tenure and First Time Going Concern Issuance

$$FGC_t = \varphi_0 + \varphi_1 AUDTEN_t + \varphi_2 CFOTEN_t + \varphi_3 AUDTEN_t * CFOTEN_t + \varphi_4 ZSCORE_t + \varphi_5 AGE_t + \varphi_6 LEV + \varphi_7 FIN_t + \varphi_8 BIGN_t + \varphi_9 CASHFLOW + \varphi_{10} SOX_t + \varphi_{11} YEAR\ FE + \varphi_{12} INDUSTRY\ FE + \varepsilon \quad (3)$$

	First Time Going Concern								
	(A)			(B)			(C)		
Variables	Coef.	Chi-Sqr.		Coef.	Chi-Sqr.		Coef.	Chi-Sqr.	
AUDTEN	-0.004	0.18		0.032	5.99	**	0.012	0.47	
CFOTEN	0.015	0.60		0.107	12.32	***	0.112	10.70	***
*AUDTEN*CFOTEN*				-0.010	11.57	***	-0.002	0.16	
ZSCORE	-0.007	5.08	**	-0.007	5.12	***	-0.008	4.67	**
AGE	-0.005	1.24		-0.007	2.08		-0.003	0.30	
LEV	0.178	14.61	***	0.178	14.44	***	0.195	13.70	***
FIN	0.070	0.50		0.063	0.40		0.116	1.17	
BIGN	-0.524	23.36	***	-0.519	22.99	***	-0.514	19.00	***
CASHFLOW	-0.192	2.45		-0.200	2.65		-0.226	2.85	*
SOX	0.623	5.92	**	0.634	6.13	**	0.557	4.38	**
Constant	-3.620	167.04	***	-3.907	180.76	***	-3.917	166.51	***
Industry Dummies	Yes			Yes			Yes		
Year Dummies	Yes			Yes			Yes		
N	11,601			11,601			9,845		
Likelihood Ratio	89.95	***		103.06	***		90.71	***	

Panel F: Variable definitions not previously defined.

Going Concern Model	
GC	equal to one if the firm received a going concern opinion in the current year, 0 otherwise (Audit Analytics)
FGC	equal to 1 if the firm received a going concern opinion in the current year and did not receive a going concern opinion in the prior year
CASHFLOW	operating cash flow (*OANCF*) scaled by total assets (*AT*). (Compustat)
ROA	net income before extraordinary items scaled by lagged assets. (Compustat)
ISSUE	An indicator variable equals 1 if the sum of new long-term debt plus new equity exceeds 20% of total assets. (Compustat)
ZSCORE	=-4.336-4.513*(Net Income/Total Assets)+5.679*(Total Liabilities/Total Assets)+0.004*(Current Assets/Current Liabilities). (Compustat)

Table 3: AAER Model and Analysis

Panel A: Selection of sample

Observations from non-financial services industry with available data in Compustat in (1994-2013)	171,575
Less: Observations lost from merger with Execucomp (CFO data), Audit Analytics (CFO data)[25]	(133,869)
Missing data for control variables	(7,384)
Observations used in analysis	30,322

Panel B: Descriptive statistics

Variable	Mean	SDT. Dev.	25th Pct.	Median	75th Pct.
AAER	0.010	0.096	0.000	0.000	0.000
AUDTEN	10.225	7.385	5.000	8.000	15.000
CFOTEN	3.582	2.911	1.000	3.000	5.000
MUTUALEN	3.176	2.598	1.000	2.000	4.000
LNASSETS	6.382	2.225	5.133	0.086	0.145
ROA	-0.531	20.478	-0.029	0.534	0.703
BIGN	0.789	0.408	1.000	1.000	1.000
AGE	23.923	9.303	17.000	24.000	34.000
FIN	0.038	0.274	0.000	0.000	0.017
NEGEQUITY	0.061	0.239	0.000	0.000	0.000
ISSUE	0.156	0.362	0.000	0.000	0.000
CASHFLOW	0.046	0.284	0.025	0.086	0.146
FCF	199.167	1260.050	-4.970	16.305	103.600
SOX	0.781	0.414	1.000	1.000	1.000

[25] There were 20,020 data year observations from Audit Analytics and 26,755 from Execucomp. For instances without Execucomp data, Audit Analytics data was used providing a mutual sample of 38,706 observations.

Panel C: Correlations

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1	AAER												
2	AUDTEN	**-0.01**											
3	CFOTEN	-0.02	0.23										
4	LNASSETS	0.04	0.30	0.22									
5	ROA	0.00	0.01	0.02	0.13								
6	BIGN	0.03	0.29	0.12	0.59	0.05							
7	AGE	0.01	0.40	0.26	0.42	0.03	0.24						
8	MERGER	0.00	-0.01	-0.01	0.04	**0.00**	0.01	**-0.01**					
9	NEG EQUITY	-0.02	-0.06	-0.06	-0.26	-0.09	-0.17	-0.12	-0.01				
10	ISSUE	0.01	-0.08	-0.09	-0.17	-0.03	-0.15	-0.11	0.10	0.08			
11	CFO	0.01	0.12	0.11	0.47	0.15	0.33	0.21	0.03	-0.32	-0.20		
12	FCF	-0.02	0.13	0.10	0.28	0.00	0.08	0.14	0.00	-0.04	-0.04	0.09	
13	SOX	-0.06	**0.01**	0.10	-0.13	-0.01	-0.24	-0.11	-0.01	0.08	0.02	-0.12	0.03

Note: Correlations in bold are not significant at $p < .05$.

Panel D: Audit Firm Tenure, CFO Tenure and AAERs

Adapting the model developed in Lennox and Pittman (2010), we investigate if variation in mutual auditor/CFO tenure is associated with the likelihood of the audit client receiving an AAER from the SEC. The resulting model, including industry and year fixed effects, is specified as:

$$AAER_{i,t} = \beta_0 + \beta_1 AUDTEN_{i,t} + \beta_2 CFOTEN + \beta_3 (AUDTEN * CFOTEN) + \beta_4 Ln(ASSETS)_{i,t} + \beta_5 ROA_{i,t} + \beta_6 BIG4_{i,t} + \beta_7 AGE_{i,t} + \beta_8 MERGER_{i,t} + \beta_9 NEG\ EQUITY_{i,t} + \beta_{10} ISSUE_{i,t} + \beta_{11} CASHFLOW_{i,t} + \beta_{12} FCF_{i,t} + \beta_{13} SOX_{i,t} + \varepsilon_t$$

	(A)			(B)			(C)		
Variables	Coef.	Chi-Sqr.		Coef.	Chi-Sqr.		Coef.	Chi-Sqr.	
AUDTEN	-0.015	1.76		-0.037	4.86	**	-0.047	3.71	*
CFOTEN	-0.059	4.38	**	-0.132	6.65	***	-0.221	7.48	***
*AUDTEN*CFOTEN*				0.006	3.28	*	0.010	1.27	
LNASSET	0.385	73.10	***	0.389	74.22	***	0.343	54.46	***
ROA	0.373	4.70	**	0.372	4.67	**	0.336	5.52	**
BIGN	-0.500	3.71	*	-0.490	3.55	*	-0.025	0.01	
AGE	-0.017	10.41	***	-0.017	9.79	***	-0.025	21.53	***
MA	0.317	5.13	**	0.313	4.98	**	0.351	5.22	**
NEG EQUITY	-2.494	5.62	**	-2.472	5.59	**	-3.123	5.70	**
ISSUE	0.198	1.46		0.197	1.43		0.225	1.64	
CASHFLOW	-1.284	12.72	***	-1.260	12.21	***	-0.780	3.59	*
FCF	0.000	12.42	***	0.000	11.99	***	0.000	21.11	***
SOX	-14.158	0.01		-14.173	0.01		-1.151	63.15	***
Constant	-5.232	42.84	***	-5.060	39.45	***	-5.006	177.04	***
Industry Dummies	Yes			Yes			Yes		
Year Dummies	Yes			Yes			Yes		
N	30,322			30,322			23,132		
Likelihood Ratio	508.56	***		511.69	***		234.742	***	

This table presents the regression results of AAER fraud model regression. Regressions include year and fixed effects. The χ^2-statistics reported in parentheses are based on standard errors. ** and *** indicate statistical significance at the 5%, and 1% levels (two-tailed), respectively.

Panel D: Variable Definitions Not Previously Defined

AAER Model	
AAER	An indicator variable equals 1 if the audit client is subject to AAER, 0 otherwise (AAER database UC-Berkeley).
AGE	Natural logarithm of the number of years that the client firm has been listed on COMPUSTAT. (Compustat)
NEG EQUITY	An indicator variable equals 1 if the client firm has a negative book value of equity. (Compustat)
ROA	net income before extraordinary items scaled by lagged assets. (Compustat)
ISSUE	An indicator variable equals 1 if the sum of new long-term debt plus new equity exceeds 20% of total assets. (Compustat)