

Do Auditors Price CEO-CFO Conflict?

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Abstract

We investigate the relation between audit fees and differences in CEO and CFO personality traits. Audit fees should reflect engagement risk associated with a client. This risk is likely influenced by the client's top management team's personalities and how they differ. For example, top management teams that experience more disagreement about key strategic decisions may pose higher risks to auditors. We proxy for CEO-CFO conflict by using differences in CEO and CFO "Big Five" personality traits. We examine whether these personality differences help explain audit fees after controlling for other determinants of audit fees in the literature.

We find that CEO-CFO personality differences are positively associated with audit fees, consistent with auditors assessing risk from conflicting personalities in the C-suite. This relation is partially mediated by the number of years the CEO and CFO have worked together. The relation between CEO-CFO personality differences and audit fees is moderated by auditor tenure and strong corporate governance. We also find that (i) CEO-CFO personality differences are associated with other measures of audit engagement risk, and (ii) after turnover in the CEO-CFO team, audit fees increase (decrease) in the subsample where personality differences increase (decrease).

I. Introduction

In client acceptance and retention decisions, audit firms consider engagement risk, i.e., the overall level of risk associated with an audit engagement.¹ Audit firms are unlikely to accept new clients or retain existing clients if the engagement risk associated with the client is greater than the level the audit firm is willing to accept (Arens, Elder, Beasley and Hogan 2017). For clients accepted or retained, audit standards require that auditors consider engagement risk in planning an effective audit (AICPA 2018).² Implicit in the evaluation of engagement risk is consideration of the client's top management disposition and integrity. Auditors can lower engagement risk by increasing effort (e.g., audit hours), which results in higher costs for the audit firm and likely higher audit fees charged to the client.

We examine the degree to which potential conflict between the client's CEO and CFO influence audit fees. Upper Echelons Theory suggests that the top management team (TMT) is important in influencing firm outcomes. The complexity of organizations and their business environment generally requires more skill than one individual leader can provide (Colbert, Barrick and Bradley, 2014). Therefore, the experiences, personality and values of each member of the TMT shape their interpretation of a situation, and together, influence their firm's strategic choices and effectiveness (Hambrick 2007). Auditors likely consider the client's TMT holistically when evaluating engagement risk.

We restrict our investigation of the TMT to the CEO and CFO for two reasons. First, while the CEO sets the tone at the top in an organization and is ultimately responsible for its

¹ Engagement risk includes audit risk (the likelihood of material misstatement in the client's financial statements given a level of audit effort), client business risk (risks related to management, the entity, and the industry), and auditor business risk (exposure to loss or injury from litigation, adverse publicity, or other events arising in connection with audited financial statements).

² Evaluating audit engagement risk includes assessing (i) adequacy of internal controls, (ii) inherent risk (e.g., management disposition and integrity) and (iii) detection risk (i.e., the likelihood that a given level of audit work will detect a misstatement, should it be present).

strategic decisions, it is reasonable to expect that important financial reporting decisions are jointly influenced by both the CEO and the CFO.³ Second, as we discuss in detail below, in order to measure personality traits, we must be able to observe an individual's unscripted spoken language. Quarterly conference calls offer a systematic, recurring opportunity to observe the CEO and CFO responses to questions from analysts, which in turn allows us to measure personality traits using a validated linguistic algorithm (Green, Jame, and Lock 2018; Malhotra, Reus, Zhu, and Roelofsen 2018).

While personality differences between the CEO and CFO likely affect their level of agreement on key issues and their ability to function efficiently and effectively, the direction of the effect is unclear *ex ante* (Boone and Hendricks 2009). On one hand, CEOs and CFOs with different personalities likely have more communication hurdles to overcome and greater potential for dysfunctional conflict, which should increase engagement risk (Jehn, Northcraft and Neale 1999; Li and Hambrick 2005). On the other hand, diversity in personalities can lead to more innovation, creative solutions, and better internal checks and balances in corporate decisions, which should decrease engagement risk (Boone and Hendricks 2009; Talke, Salomo, and Kock 2011). If auditors consider managers' personalities in assessing engagement risk, we expect to see a relation between differences in CEO-CFO personality traits and audit fees.⁴ However, because there are both potential positive and negative consequences of CEO-CFO personality differences, we do not make a directional prediction.

³ For example, under section 302 of the Sarbanes-Oxley Act of 2002, both the CEO and CFO are required to (i) certify that the firm's quarterly and annual financial statements are accurate and complete, (ii) certify that the firm maintains adequate internal controls, and (iii) report any changes or deficiencies in internal controls.

⁴ Sackett and Wanek (1996) find that executive's personality traits are associated with management integrity, which affects all aspects of engagement risk.

A growing body of research suggests that executive personality may influence corporate policies and outcomes (e.g., Malmendier and Tate, 2005, 2008; Gervais, Heaton, and Odean, 2011; Hirshleifer, Low, and Teoh, 2012; and Banerjee, Humphery-Jenner, Nanda, and Tham, 2018). Ham, Lang, Seybert, and Wang (2017) find that CFO narcissism (measured by signature size in the annual report) is associated with more earnings management, less timely loss recognition, weaker internal control quality, and a higher probability of restatements. Malhotra, et. al (2018) find that extraverted CEOs are more likely to engage in merger and acquisition activities. Green et. al (2018) find that extraverted CEOs are more likely to receive higher salaries, experience less turnover, and serve on more outside boards.

We extend this literature in five ways. First, to our knowledge, we are first to evaluate the effects of the “Big Five” personality traits of executives on audit fees. Second, we use a linguistic-based measure of these broad personality traits rather than relatively narrow aspects of personality such as overconfidence or narcissism. Third, by considering personality traits of *both* the CEO and CFO, we are able to (i) use *differences* in personality as a proxy for CEO-CFO conflict, and (ii) investigate whether differences in these broad personality traits affect audit fees. Fourth, we evaluate whether the relationship between CEO-CFO personality differences and audit fees is (i) mediated by the length of time the CEO and CFO have worked together and (ii) moderated by auditor tenure or higher quality corporate governance. Finally, we also consider the relation between CEO-CFO personality differences and other financial reporting outcomes related to engagement risk (e.g., F-score, internal control weaknesses). In addition to the accounting and auditing literatures, our research contributes to management research where investigations into the negative implications of TMT diversity have been somewhat neglected (Barkema and Shvyrkov 2007, p. 663; Boone and Hendriks 2009).

We measure the “Big Five” personality traits of agreeableness, conscientiousness, extraversion, emotional stability, and openness to experience for CEOs and CFOs. These five traits are widely accepted in personality psychology (Pervin and John 1999) – see Appendix A for a description of the Big Five personality traits. It is challenging to assess executive personality traits using publicly available data. We use the unscripted (question and answer portion) of conference call transcripts and a linguistic technique introduced by Mairesse, Walker, Mehl, and Moore (2007) to estimate Big Five personality traits for 2,516 CEOs and 2,682 CFOs of S&P 1500 firms over a 14-year period from 2003 to 2016. Mairesse et al. (2007) validate the measure by comparing estimates of Big Five personality traits using this method to those obtained from self-reported personality questionnaires and independent observers.⁵ We relate differences in these personality traits to audit fees as measured in Francis, Reichelt, and Wang (2005) and Fung, Gul, and Krishnan (2012).

We first examine whether CEO-CFO personality differences are associated with cross-sectional audit fees after controlling for the firm-specific economic factors identified in the prior literature (e.g., firm size, profitability, liquidity, leverage, foreign operation, number of business segments, and Big N auditor). We document a positive association between CEO-CFO personality differences and audit fees. The association is both statistically and economically significant. A one standard deviation increase in the difference between CEO-CFO personality traits is associated with a 7.6% increase in audit fees. Our evidence suggests that auditors act as if CEO-CFO personality differences create dysfunction within the firm and increase engagement risk. We also find that CEO-CFO personality differences are associated with higher turnover in

⁵ At least four recent papers use this technique to examine the association between CEO extraversion and (i) M&A activities (Malhotra et al. 2018), (ii) CEO career benefits (Green, et al., 2018), (iii) cost of capital (Adebamo, Bowen, Malhotra, and Zhu, 2019), and (iv) various firm policies (Gow, Kaplan, Larcker, and Zakolyukina 2016).

the CEO-CFO team. A one standard deviation increase in the difference between CEO-CFO personality traits is associated with an 11.2% decrease in CEO-CFO tenure.

Second, we examine whether the number of years the CEO and CFO have worked together mediates the relation between personality differences and audit fees. We find that higher turnover (lower CEO-CFO tenure) partially explains the positive association between CEO-CFO personality differences and audit fees.

Third, similar to Ge, Matsumoto and Zhang (2011) and Zhang (forthcoming), we consider moderating factors including auditor tenure and high-quality governance. We find that the positive association between CEO-CFO personality differences and audit fees is attenuated by longer auditor tenure and stronger corporate governance.

Finally, we examine departures in the CEO-CFO team. Audit fees tend to increase in the subsample where previously small CEO-CFO personality differences increased in the new CEO-CFO team. In contrast, in the subsample where previously large personality differences decreased in the new CEO-CFO team, audit fees declined in the second and third years following the departure.

Our results should be of interest to regulators, auditors and corporate boards. The Securities and Exchange Commission (SEC) oversees public company financial reports that CEOs and CFOs certify to the investing public and to the government. The Public Company Accounting Oversight Board (PCAOB) seeks to protect U.S. investors by promoting high-quality auditing of U.S. public companies through independent oversight of the audits of publicly held companies. In their monitoring role, regulatory agencies such as the SEC and PCAOB are likely interested in the information auditors use to assess engagement risk. For example, auditors' use of qualitative information could be rare (due to its inherently subjective nature) or common

(because of its potential importance to overall engagement risk). Our paper provides evidence consistent with audit firms incorporating subjective information about CEO-CFO conflict in assessing engagement risk, determining audit effort and setting audit fees. Auditors themselves should be interested in this research because CEO-CFO personality conflict can potentially affect (i) engagement risk, (ii) audit planning decisions, and (iii) client acceptance and retention decisions. Audit committees should be interested because they are responsible for hiring, retaining, monitoring and compensating the external auditor. Board members are likely to be interested as executive hiring decisions and the appropriateness of certain governance measures may depend on CEO and CFO personalities –and their differences. Finally, the TMT may be interested to discover that heterogeneity in personality among the TMT is potentially costly if it leads to conflict.

The paper is organized as follows. Section II presents our theory and hypotheses. Section III presents data on our sample, methods and variable measurements. Section IV presents empirical results and section V concludes.

II. Literature review, theory and hypotheses

We begin by discussing how personality differences in a top management team (TMT) can affect important business decisions. Second, we discuss how diversity in personalities among the TMT can lead to conflict that affects audit quality and effort. Third, we select our proxies for (i) audit quality and effort – audit fees, and (ii) potential TMT conflict – CEO-CFO personality differences. Finally, we discuss hypotheses on (i) the association between CEO-CFO personality differences and audit fees, (ii) why CEO-CFO tenure mediates the relation between CEO-CFO personality differences and audit fees, and (iii) when auditor tenure and governance quality might attenuate this influence.

A. Why Personality Differences Matter

Upper Echelons Theory (Hambrick and Mason 1984, Hambrick 2007) posits that executives' experiences, values and personalities provide a "cognitive frame" through which they interpret the strategic situations they face, influence the actions they take, and ultimately affect the outcomes of the organizations where they work. It is difficult, however, to obtain conventional psychometric data on top executives that could reveal these cognitive frames. Prior studies examining executives' cognitive frames and firm outcomes have generally relied on the demographic characteristics of executives (such as age, gender, background, educational credentials and affiliations) as a proxy for their cognitive frames. Despite finding that CEO and CFO's do matter to financial reporting outcomes, the use of executives' demographic profiles has generally failed to explain *how* executive behavior affects accounting outcomes (Ge et al., 2011 and tax decisions (Dyreng, Hanlon, and Maydew 2010). An exception is Zhang (forthcoming) who finds homogeneity in background (education, function, and firm) is associated with a higher likelihood of restatements.

Upper Echelons Theory maintains that "leadership is a shared activity, and the collective cognitions, capabilities and interactions of the entire top management team" rather than a reflection of one executive such as the CEO (Hambrick 2007, p.334). As a result, much research has focused on the TMT and its relation to firm policies and outcomes. Studies of teams in organizations find that individuals tend to like, trust, and interact with others whom they regard as similar to themselves. This similarity-attraction paradigm has been demonstrated over a wide array of demographic characteristics (Li and Hambrick 2005). The demographic characteristics of team members are proxies for those individuals' points of view, mindsets and information sets. Diversity (i.e., heterogeneity) in demographic characteristics among team members has

been studied extensively with the expectation that diversity affects group processes and outcomes. However, diversity in demographic characteristics most likely captures social diversity (e.g., in gender or age), which is likely less relevant to our setting than informational diversity or values diversity. Important policy, strategy, and process decisions are likely driven more from values and information than from demographic characteristics (Nielsen 2010). We attempt to measure diversity on factors more akin to mindsets of top executives by measuring diversity in personality. Specifically, we measure diversity in personality using the Big 5 personality characteristics.⁶

The Big Five personality traits are widely accepted in Psychology personality research as broad individual traits that are stable over time and describe how people think, feel and behave in varying circumstances (John and Srivastava 1999). These five traits are Agreeableness, Conscientiousness, Emotional Stability, Extraversion, and Openness. Brief descriptions of these traits are in Appendix A. We are not interested in the individual traits per se but rather a summary statistic for personality so that we can examine diversity on this broad dimension, which is largely independent of demographic characteristics.

While diversity within teams can yield significant benefits, such as creativity, innovation, and process control, prior research also argues that heterogeneity can impair group functioning because of emotional and task conflict between dissimilar others (Boone and Hendricks 2009; Jehn et al., 1999). Emotional conflict involves interpersonal incompatibilities that breed annoyance, mistrust, and animosity. Emotional conflict limits group effectiveness. Task conflict involves disagreements on policies, priorities, risk taking, control systems, etc., because of divergent backgrounds, experiences, training, and frames of reference for problem solving.

⁶ The Big Five personality factors are also known as the FFM--Five Factor Model (Goldberg 1990).

Some task conflict, stemming from information asymmetries among a diverse TMT, is likely desirable because it allows for competing ideas, constructive debate, and creative solutions (Brodbeck, Kerschreiter, Mojzisch, and Schulz-Hardt 2007). However, when task conflict becomes too high, it causes tension, incessant arguing, dissatisfaction, withdrawal -- perhaps leading to turnover within the group. In sum, emotional conflict and high levels of task conflict can lead to “behavioral disintegration” (Li and Hambrick 2005), i.e., the breakdown of information exchange, collaboration, and joint decision making, which adversely affects performance of the organization (Boone and Hendriks 2009).

B. Effects of TMT conflict on audit quality and effort

The purpose of auditing is to provide independent assurance that a client’s financial statements are free of material misstatement. High-quality audits increase the credibility and value of financial reporting and in turn facilitate resource allocation and contracting in the economy. The ability to provide a high level of audit quality depends on the client firm’s financial reporting quality, the client’s innate characteristics, and audit effort (Defond and Zhang 2014). While a substantial body of auditing research has been devoted to understanding the determinants of audit quality, little research has looked at the effects of innate characteristics of client management such as diversity in TMT personalities on audit quality. Diversity in TMT personalities could be important because it is a source of conflict, which can positively or negatively affect the functioning of the firm.

Audit quality and effort are determined by the engagement risk associated with a client. Engagement risk has three elements: client business risk, auditor business risk, and audit risk. Client business risk is the risk that the client will fail to achieve its objectives or execute its strategies (Arens et al. 2017). Auditor’s business risk is the risk that the auditor will be sued or

suffer reputation loss as a result of its association with this client. Audit risk is the risk that a material misstatement exists and is not detected by the audit. The risk that a material misstatement exists is the product of inherent risk (innate characteristics of the client) and control risk (internal controls fail to prevent the misstatement). These risks are not orthogonal and each can be affected by TMT conflict.

Top management establishes the company's strategies and business processes, which reflect TMT's philosophies, style, risk attitude, and personality. Auditors should be concerned about client strategies and practices related to the reliability of financial reporting, the effectiveness and efficiency of operations, the effectiveness of internal controls, and compliance with laws and regulations. These touch on all three types of risk. From an auditing point of view, if diversity in TMT personalities leads to excessive conflict and behavioral disintegration, (e.g., the breakdown of information flow and control processes), engagement risk will be higher suggesting the need for greater audit effort. On the other hand, if personality differences foster competing ideas, constructive debate, creative solutions, and a form of checks and balances, engagement risk will be lower suggesting the need for lower audit effort. In a recent paper, Zhang (forthcoming) finds that TMT background homogeneity (education and function) and the length of time the TMT has worked together are each positively associated with the likelihood of financial restatement. Her argument is that homogeneity in functional backgrounds deprives the TMT of the benefit of diversity, i.e., asymmetric information. She posits that as teams work together over time, this lack of diversity is reinforced as individuals develop more similar thinking styles and routine processes, increasing the risk of misstatement.

C. Conceptual variables, proxies and hypotheses

Figure 1 presents a conceptual diagram of our research. Because audit quality is not observable, and data on audit effort are proprietary, researchers have used proxies such as going concern opinions, discretionary accruals, Big N categorization, and audit fees. Defond and Zhang (2014) argue that audit fees are a good proxy for audit effort/quality because: (i) fees are continuous and thus are better able to capture variations in quality, and (ii) there is an established literature that has developed firm-level explanations of audit fees.⁷ Thus, researchers trying to study new explanations of audit quality/effort have a baseline from which to depart. See Defond and Zhang (2014) for a review.

We predict that CEO-CFO personality differences create conflict in TMTs, which in turn affect audit effort and audit fees. Ex ante, personality differences can have positive or negative effects, thus we do not make a directional prediction.

H1: CEO-CFO personality differences are related to audit fees.

Severe conflict between the CEO and CFO should manifest in turnover of one or both of these executives. We use the inverse of turnover, i.e., the length of time the CEO and CFO work together, as our mediating variable between CEO-CFO personality differences and audit fees. Our prediction is that CEO-CFO personality differences create conflict in the TMT leading to higher turnover in the TMT, which poses higher risk to the audit firm and results in higher audit fees. See figure 1.

H2: CEO-CFO tenure mediates the relationship between CEO-CFO personality differences and audit fees.

⁷ Audit fees capture both effort, risk premia and market power. Thus, changes in audit fees cannot be unambiguously interpreted as changes in audit quality (Defond and Zhang 2014).

Finally, we predict that (i) corporate governance quality (operationalized as board independence), and (ii) auditor tenure (i.e., the length of time auditors work for a client) will moderate the effects of CEO-CFO personality differences on audit fees, such that longer auditor tenure and greater board independence each attenuates the conflict inherent in CEO-CFO personality differences.⁸ Specifically, a more independent board is likely to better monitor and manage potentially dysfunctional conflict between the CEO and CFO. An independent board is the only mechanism for intervening in TMT conflict and, in the extreme, terminating the CEO. Therefore, we predict that the effect of CEO-CFO personality differences and CEO-CFO tenure (turnover) will be moderated by board independence. Additionally, the longer the auditors work for a client, the better they are able to assess consequences of CEO-CFO conflict and adjust audit effort and fees. If turnover is high, audit fees should reflect this risk regardless of auditor tenure. However, if the CEO-CFO team have worked together for some time, longer auditor tenure will be informative for audit fees because it brings a greater understanding of the CEO-CFO relationship and the risk it presents for the audit.

H3: Auditor tenure and board independence moderate the relation between CEO-CFO personality differences and audit fees.

III. Data, Sample, and Measures

A. Data sources

⁸ The board of directors is an important part of the governance structure of large business corporations (Fama and Jensen 1983; Williamson 1983, 1984). Corporate boards have a legal responsibility to monitor and control management decision making and resolve conflicts of interest among decision makers on behalf of shareholders (Baysinger and Butler 1985). Board members can be employees of the firm (e.g., the CEO), linked to the firm (e.g., a customer, service provider or family member) or independent (with no significant connection to the firm). According to agency theory, boards that are structurally more independent from management are better able to control management decision making (Fama and Jensen, 1983). Therefore, we use board independence as a proxy for high quality governance as independent board members do not share incentives with those inside the firm.

Our sample firms are from the Execucomp database, which includes firms that are currently listed or were listed on the S&P 1500 index during our 14-year sample period, from 2003 to 2016. To calculate CEO and CFO Big Five personality traits, we collected 56,763 conference call records for these firms from the Thomson Street Events database during the sample period. The conference call records contain transcribed conversations between CEOs/CFOs and outside analysts and investors during quarterly earnings call meetings, investor relations meetings, and financial analyst meetings. Following Malhotra et al. (2018), we aggregated the transcript data in the 14-year period by CEO and CFO. We removed any executive whose speech data has less than 500 words in order to more accurately compute their personality scores. We merged the conference call data with data from Audit Analytics and Compustat. After removing firms with missing values, the final sample includes 13,140 firm-year observations on 1,499 unique firms, and 2,516 (2,682) unique CEOs (CFOs).

B. Audit Fees

Audit fees are an observable output of the audit process. Audit fees proxy for the audit effort applied to manage engagement risk to acceptable levels. Audit fee data are available in proxy statements for fiscal year ends beginning December 2000. We collect audit fee data from the Audit Analytics database.

C. Measuring Big Five personality traits

Studies in psychology and computational linguistics have identified personality markers in spoken language. For example, Gill and Oberlander (2002) find that extraverts use more words, have reduced concreteness, use fewer numbers, have a more informal style, use less self-referents, have a tendency for positive affect words, use “be”, “will be”, “I’ll be” and “I will be” rather than “should be”, are more outspoken about their ability and use “want”, “need”, or “able

to”, rather than “trying to” or “going to” which are used more by introverts. Other studies report similar findings (e.g., Carment, Miles and Cervin, 1965; Dewaele and Furnham, 1999; Pennebaker and King, 1999).

The Linguistic Inquiry and Word Count (LIWC) created by James W. Pennebaker (www.liwc.net) is a popular software tool used for research purposes. The LIWC follows a dictionary approach and calculates the degree to which people use different categories of words, e.g., the degree to which they use positive or negative emotions, self-references, causal words, and 70 other language dimensions. Mairesse et al. (2007) develop a method to measure the Big Five personality traits through computerized textual analysis by combining features from LIWC with 14 additional features from the MRC Psycholinguistic database (Coltheart, 1981). The MRC Psycholinguistic database contains statistics for over 150,000 words, such as estimates of the age of acquisition, frequency of use, and familiarity. Mairesse et al. (2007) trained their algorithm using essays written by subjects who also filled out self-reported Big Five questionnaires (the same dataset used by Pennebaker and King, 1999). They used four different algorithms based on linear regression, support vector machine regression, and tree-based methods. They found that the support vector machine (SVR) method performed best across all five personality traits.

We measure CEO and CFO personalities by applying the SVR linguistic algorithm of Mairesse et al. (2007) to the language spoken by CEOs and CFOs in the question and answer (Q&A) portion of conference calls. The Mairesse et al. (2007) algorithm is available through a Java command-line application, The Personality Recognizer, which reads text files and computes estimates of personality scores along the Big Five personality dimensions. The algorithm was used and independently validated in the conference call setting by Green et al. (2018) and

Malhotra et al. (2018). We measure the difference between the CEO and the CFO scores on each of the five personality traits. Our measure is the Euclidian distance over all five traits between the two executives (i.e., the square root of the average of the sum of the squared differences in traits).

Conference call transcripts for our sample firms generally follow a structure that includes three distinct segments: (1) the call participants list, (2) management discussion, and (3) the Q&A segment. We focus exclusively on the Q&A segment because the management discussion segment is likely to be scripted by others, and therefore may not be suitable for accurately gauging personality. In contrast, spontaneous language spoken by CEOs and CFOs in response to analyst questions is likely unscripted (Matsumoto, Pronk and Roelofsen, 2011) because analysts' questions can be direct, complex, and difficult to anticipate. Moreover, as Malhotra et al (2018) argue, language spoken during the Q&A segment is particularly appropriate because personality traits are more readily revealed under complex and stressful conditions (Dewaele and Furnham, 1999).

Within the Q&A segment, there is a title above each section that denotes the speaker's name. We require that each speaker's name be included in the list of conference call participants. We identify when the speaker is the CEO (CFO) by hand-matching the name from the conference call transcript to the CEO (CFO) name in Execucomp and the company ticker and name from the conference call transcript to the firm ticker and firm name in Execucomp. Given that more spoken language yields more reliable personality scores and following Malhotra et al. (2018), we aggregate language spoken by a given CEO or CFO in the Q&A segment across all conference call transcripts in our sample.⁹ We include only those CEOs or CFOs who spoke at

⁹ Using all available earnings call transcripts is feasible because personality traits should not vary over time. However, we acknowledge that using forward looking earnings call transcripts to measure personality differences raises concerns about reverse causality, which we address in section IV (F).

least 500 words across the transcripts in our sample. The average word count for CEOs (CFOs) in our sample is 10,147 (19,402) words per CEO (CFO) per call, with a range of 506 (501) to 113,956 (229,302) words. Table 1 lists the 15 CEO-CFO teams with the largest and smallest “Big Five” personality differences in our sample.

[insert Table 1 about here]

IV. Empirical Results

A. Descriptive results

Table 2 reports descriptive statistics. Our dependent variable, audit fees has a mean (median) of \$3.27 (\$1.74) million and a standard deviation of \$4.67 million. The interquartile range is between \$0.94 million and \$3.70 million. The mean (median) of audit fees scaled by total assets equals 0.16% (0.11%). We use the natural log of audit fees in our empirical tests to address skewness in audit fee data. Mean sample values for personality scores for the CEO and CFO, respectively, are *Agreeableness* (3.3, 3.5), *Conscientiousness* (6.5, 6.4), *Emotional Stability* (3.0, 3.3), *Extraversion* (6.9, 6.0), and *Openness* (6.2, 6.3). See Appendix A for descriptions of these personality traits. Our key treatment variable is the sum of the squared-differences in personality traits of CEO-CFO teams. The mean value of CEO-CFO Personality Difference is 0.75 with a standard deviation of 0.37.

With respect to control variables, less than 1% of sample firms experienced a detected fraud, 18% of firm-years reported a loss, 35% of firms report operating leases, 34% have non-December 31 fiscal year ends, 64% have foreign operations, and 92% are audited by a Big 4 audit firm. Mean current assets to total assets is 0.44, quick ratio is 1.93, debt-to-equity equals 0.2, and return on assets equals 0.09.

[insert Table 2 about here]

B. CEO-CFO personality differences and Audit fees

We begin our empirical analysis by examining the null hypothesis that *differences* in personality traits between CEO and CFO teams are unrelated to firms' audit fees by estimating the following panel regression:

$$LAF_{i,t} = \beta_0 + \beta_1 CEO/CFO \text{ Personality Diff}_j + \theta Controls_{i,t} + FE_t + FE_i + \varepsilon_{i,t}, \quad (1)$$

Where:

$$CEO-CFO \text{ Personality Difference}_{i,t} = \sqrt{\frac{\sum_{j=1}^5 (CEO_{j,i,t} - CFO_{j,i,t})^2}{5}}$$

and $CEO_{j,i,t}$ is CEO's personality j in firm i in year t ; $CFO_{j,i,t}$ is CFO's personality j in firm i in year t ; $j \in (\text{Agreeableness, Conscientiousness, Emotional Stability, Extraversion, Openness})$.

Following Ferguson, Francis, and Stokes (2003) and Frances et al. (2005), we control for the following determinants of audit fees identified in the literature:

LTA = natural log of total assets in millions of dollars;

CATA = ratio of current assets to total assets;

QUICK = ratio of current assets (less inventories) to current liabilities;

DE = ratio of long-term debt to total assets;

ROI = ratio of earnings before interest and taxes to total assets;

LSEG = natural log of the number of unique business segments;

FOREIGN = indicator variable for foreign operations;

YE = indicator variable equals 1 if non-December 31 yearend;

LOSS = indicator variable equals 1 if report loss in current fiscal year;

Big 4 = indicator variable equals 1 if audited by a big 4 CPA firm;

FE_t = dummy variable for each year in the sample;

FE_i = dummy variable for each firm in the sample; and

e = error term.

Following Malmendier and Tate (2008), we include year and firm fixed effects to control for constant unobservable variables. We adjust standard errors for heteroscedasticity using the Huber-White adjustment. We also report a firm random effects model as a robustness test.¹⁰

Table 3 reports results for two models that use the natural log of audit fees as the dependent variable. Our fixed effects models in columns (1) and (2) explain 77.6% of the variation in firms' audit fees. Relying on the fixed effects model in column (1), we find that the coefficient on CEO-CFO personality differences is positive (0.053) and significant (at the 5% level) indicating that larger personality differences are associated with larger audit fees. To gauge economic significance, we rely on an untabulated OLS model where raw audit fees are the dependent variable. The coefficient on CEO-CFO Personality differences (0.675) indicates that a one standard deviation increase in personality differences is associated with an increase in audit fees of approximately \$0.25 million (i.e., $\$0.3707 * 0.675 = \0.2502). Given the mean (median) audit fee is \$3.27 million (\$1.74 million) in Table 2, \$0.25 million represents a 7.6% (14.4%) increase relative to the mean (median) audit fee, which we interpret to be economically meaningful. More importantly, our results suggest that CEO-CFO conflict in our sample is not beneficial on balance. Rather, greater differences in CEO-CFO personality are consistent with dysfunctional conflict within the C-suite, which increases engagement risk because of disintegrated behavior (e.g., hampered information flow, disagreements over process, and difficult negotiations for audit adjustments). Overall, auditors appear to recognize the increased

¹⁰ We conducted a Hausman test to compare the fixed effects model and the random effects model. The Hausman test statistics is significant (p value < 0.001), which suggests the fixed effects model is more appropriate than the random effects model. Thus, we focus our interpretations on fixed effects models. We also ran a generalized estimating equation (GEE) model with Gaussian distribution, identity link function, and an exchangeable correlation structure, with the firm set as the grouping variable. GEE uses both within and between firm variation in the data and helps control for unobserved differences across firms (Liang and Zeger, 1986). Our main results remain the same. GEE model results are available upon request.

engagement risk associated with personality differences of the CEO and CFO, and respond by increasing audit effort and audit fees.

[Insert Table 3 about here]

Although our theory is based on overall CEO-CFO personality differences, column (2) of Table 3 presents results on differences in individual personality traits. Of the five traits, only emotional stability (the lack of neuroticism) stands out as significant. While larger differences in CEO versus CFO emotional stability are associated with larger audit fees, we should interpret this result cautiously given the five personality traits are highly correlated (e.g., the lowest pair-wise correlation between the five CEO/CFO personality traits in our sample is -0.36 and the highest correlation is +0.72).

Finally, our control variables are generally significant in expected directions. For example, larger firms obviously have larger audit fees. Firms that have losses, high leverage, more business segments, and are audited by the ‘big 4’ have higher audit fees. Firms with higher quick ratios and higher return on assets presumably have less risk and lower audit fees.

C. Is the positive relation between CEO-CFO personality differences and audit fees mediated by CEO-CFO tenure?

We find that personality differences can create conflict between the CEO and CFO (Table 3). We propose that some CEO-CFO teams learn to manage these conflicts over time, and thus the negative effects of personality differences should dissipate with tenure (Katz 1982; Zhang forthcoming). However, if CEO-CFO conflict is excessive, one or both of the executives may leave. Therefore, we argue that the effect of CEO-CFO personality differences on audit fees is mediated by CEO-CFO tenure, i.e., how long they have worked together. CEO-CFO tenure measures the degree of conflict with longer time together indicating less conflict for a given level of personality difference. Thus, we expect a negative relation between CEO-CFO personality

differences and CEO-CFO tenure and a negative relation between CEO-CFO tenure and audit fees – see Figure 1.

The results reported in columns (2), (3) and (4) of Table 4 indicate that (i) CEO-CFO personality differences are negatively related to CEO-CFO tenure (coefficient = -1.256, $p < 0.01$, column 2)¹¹ and (ii) CEO-CFO tenure is negatively related to audit fees (coefficient = -0.006, $p < 0.01$, column 3). When both CEO-CFO personality differences and CEO-CFO tenure are included in the model for audit fees (column 4), the coefficient on CEO-CFO personality difference drops in magnitude and significance (i.e., the regression coefficient drops from 0.053 to 0.046, and the p-value increases from 2% to 4.5%), while CEO-CFO tenure remains highly significant with the identical coefficient. Taken together, these results suggest that CEO-CFO tenure partially mediates the effects of CEO-CFO personality differences on audit fees.¹² Our interpretation is that CEO-CFO personality differences lead to more conflict and turnover in the TMT, which poses higher risk to the audit firm and results in higher audit fees.

[Insert Table 4 about here]

D. Is the positive relation between CEO-CFO personality differences and audit fees moderated by board independence and auditor tenure?

¹¹ This relationship is economically significant. The coefficient on CEO-CFO Personality differences (-1.256) indicates that a one standard deviation increase in personality differences is associated with a decrease in CEO-CFO tenure of approximately 0.47 year (i.e., $0.3707 * (-1.256) = 0.47$). Given the mean (median) CEO-CFO tenure is 4.15 years (6 years) in Table 2, 0.47 year represents an 11.2% (7.8%) decrease relative to the mean (median) CEO-CFO tenure.

¹² We test the significance of the mediation effects by examining the confidence interval around the indirect effect using the bootstrapping test (Preacher and Hayes 2008). More specifically, we estimated a bias-corrected confidence interval with a bootstrapping procedure (5,000 iterations) to test the indirect effect of CEO-CFO personality difference on audit fees. Since Preacher and Hayes (2008) bootstrapping procedure was developed for pooled sample OLS models, we test the indirect effect using the OLS model with the same control variables and year fixed effects in Table 4. We find support for CEO-CFO tenure as a partial mediator of the relationship between CEO-CFO personality difference and audit fees. Specifically, the 95% confidence interval (CI) for the indirect effects of CEO-CFO personality difference on audit fees via CEO-CFO tenure excluded zero ([CI = 0.009, 0.018; $\beta = 0.013$; $p < 0.001$]).

To further explore the observed positive relation between CEO-CFO personality differences and audit fees, we next examine how the relation between CEO-CFO personality differences and audit fees is moderated by two variables: board independence and auditor tenure with the client firm— see figure 1. If CEO-CFO personality differences indicate dysfunctional conflict (Table 3), a more independent board is likely to have monitored and attenuated negative aspects of CEO-CFO personality differences. Thus, we predict a negative coefficient on the interaction between CEO-CFO personality differences and board independence. The results reported in column 1 of Table 5 suggest that board independence attenuates the effects of personality differences on CEO-CFO tenure, which reduces audit fees. The coefficient on the interaction between CEO-CFO personality differences and board independence is negative and highly significant.

If auditors' assessments of CEO-CFO personality differences suggest conflict (Table 3), the auditor's length of experience with the firm gives the audit team more opportunities to observe the conflict and adjust the audit plan for the risk. Column 2 of Table 5 suggests that auditor tenure attenuates the effects of conflict (CEO-CFO tenure) on audit fees. The coefficient on the interaction between personality differences and audit tenure is negative and marginally significant.

[Insert Table 5 about here]

E. CEO-CFO personality differences and risk

Above, we attribute the positive association between CEO-CFO personality differences and audit fees to auditors' assessments of risk inherent in CEO-CFO conflict. To provide further evidence on whether the link between audit fees and personality differences is related to risk, we evaluate whether CEO-CFO personality differences are associated with other observable

measures of risk, including F-score, fraud indicator, count of internal control weaknesses, off-balance-sheet financing (operating leases to total assets), and discretionary accruals. However, each of these measures only captures an element of engagement risk.

In Table 6, we report that coefficients on CEO-CFO personality differences are positive and significantly associated with F-score (coefficient = 0.059, $p < 0.01$, column 1), a fraud indicator (coefficient = 2.091, $p < 0.01$, column 2), and operating leases (coefficient = 0.015, $p < 0.05$, column 4), respectively. The relation between CEO-CFO personality differences and a count of internal control weaknesses (column 3) and discretionary accruals (column 5) is also positive but not significant at conventional levels. Taken together, we interpret these findings as providing some reinforcing evidence that CEO-CFO personality differences are associated with other measures of risk. Given that audit fees respond to risk, these results support our theory for why audit fees are associated with CEO-CFO personality differences.

[Insert Table 6 about here]

F. What happens to Audit Fees after a CEO-CFO team departure?

Next, we examine situations where a member of a CEO-CFO team leaves. During our sample period, there are 1,119 cases of CEO-CFO team turnover (i.e., either the CEO or CFO leaves their position) where the departing CEO-CFO team or the newly-formed CEO-CFO team have at least two years of consecutive audit fee data. We compare the CEO-CFO personality difference between the departing team and the newly-formed team around each turnover event. More specifically, we subtract the new team's personality difference from the departing team's personality difference and rank the value from low to high. We take the top 75th percentile of ranked observations (i.e., the new team has a much higher CEO-CFO personality difference than the departing team's personality difference) as well as the bottom 25th percentile of the ranked

observations (i.e., the new team has a much lower CEO-CFO personality difference than the departing team's personality difference). If the change in audit fees is driven by CEO-CFO personality differences, audit fees should increase faster in the 75th percentile group compared to the 25th percentile group.

Figure 2 plots audit fees before and after a CEO-CFO team turnover event in year 0. The dashed line represents audit fees for a sub-sample of relatively large CEO-CFO personality differences that changed to relatively small CEO-CFO personality differences following turnover in the CEO-CFO team (i.e., the 25th percentile group). The solid line represents audit fees for a sub-sample of relatively small CEO-CFO personality differences that changed to relatively large CEO-CFO personality differences following turnover in the CEO-CFO team (i.e., the 75th percentile group). Each group has 280 CEO-CFO team turnover events.

In the pre-turnover period, the large personality difference sample (dashed line) has higher average audit fees than the relatively small personality difference sample (solid line). As predicted, after a CEO-CFO team turnover event, the sample where CEO-CFO personality differences increase (solid line) shows generally increasing audit fees, while the sample where CEO-CFO personality differences decrease (dashed line) shows declining audit fees in years $t+2$ and $t+3$. These results are again consistent with personality differences influencing audit fees.

[Insert Figure 2 about here]

G. Robustness tests

G.1. CEO and CFO individual personality traits and Audit fees

Our investigation concerns how differences in personalities between the CEO and CFO influence audit fees. However, for robustness we test whether *individual* CEO and CFO personality traits, respectively, are related to firms' audit fees. We estimate the following panel regression:

$$\begin{aligned}
LAF_{i,t} = & \beta_0 + \beta_1 Extraversion_j + \beta_2 Emotional\ Stability_j + \beta_3 Openness_j \\
& + \beta_4 Agreeableness_j + \beta_5 Conscientiousness_j + \theta Controls_{i,t} + FE_t + FE_i \\
& + \varepsilon_{i,t},
\end{aligned} \tag{1}$$

Where:

LAF = natural log of audit fees in dollars paid by client firm *i* in year *t*;

Agreeableness, *Conscientiousness*, *Emotional stability*, *Extraversion*, and *Openness* are the Big Five personality traits obtained from linguistic analysis of conference call transcripts.

Other control variables as defined in section IV.B.

Table 7 reports associations between audit fees and individual CEO personality traits (model 1), CFO personality traits (model 2) and combined CEO and CFO personality traits (model 3). Interestingly, we do not find a systematic association between CFO personality traits and audit fees. We do find that firms managed by CEOs with higher emotional stability and agreeableness, but lower openness to experience, tend to pay lower audit fees. This result is consistent with other research that documents relations between CEO personality and firm policy and outcomes (e.g., Banerjee, et al., 2018; Gervais, et al., 2011; Green, et al., 2018; Hirshleifer, et al., 2012; Ham, et al., 2017, Malhotra, et al., 2018; Malmendier and Tate, 2005, 2008). While we do not want to over-interpret these results, they suggest that CEOs that have personalities that are “easier to get along with” and are not highly innovative or social will incur lower audit fees. This profile suggests an executive less prone to conflict and thus, less risky from an audit perspective.

[Insert Table 7 about here]

G.2. CEO and CFO personality differences and CEO-CFO age, gender and financial expertise differences

To make sure that our results on CEO-CFO personality differences are not driven by other commonly observed demographic differences, such as age, gender, and professional

expertise differences, such as financial/accounting related education or CPA/CFA professional designations, we conduct robustness checks by controlling for these variables in our main regression model. More specifically, we extract both CEOs' and CFOs' age and gender information from the Execucomp database. We also collect the past education and professional designation information for CEOs from the BoardEx database. We take the absolute value difference between CEOs' and CFOs' ages to measure age difference. We use an indicator variable that equals 1 if the CEO and CFO have the same gender. In addition, based on the past education and professional designation information, we create a dummy variable that equals 1 if a CEO has an accounting/finance degree (at either the undergraduate or postgraduate level) or has a CPA or CFA designation. We assume that a CEO with an accounting or finance degree or professional designation would have professional expertise that is more similar to the CFO.

Table 8 reports the regression results after controlling for age, gender and professional expertise differences between CEOs and CFOs. We find that none of these variables explain the variation in audit fees. However, the personality difference variable remains positive and significant in both fixed (and untabulated random) effects models. Our results appear to be explained by the more fundamental and stable CEO-CFO personality trait differences, rather than gender, age, and financial education and experience differences.

[Insert Table 8 about here]

G3. Correction for sample selection bias

In order for the linguistic computational program to accurately estimate the personality scores for CEOs and CFOs, we need conference call transcripts with a minimum of 500 words for both CEOs and CFOs in their responses during the Q&A sessions. This may cause a potential sample selection bias as not all CEOs or CFOs participate in all conference calls.

Particularly, we are concerned that absent CEOs or CFOs in conference meetings may endogenously reflect CEO-CFO conflict. If this were the case, the missing values in CEO-CFO personality differences in our sample could be correlated with “extreme” internal conflict and personality differences that we are not able to observe due to the limitations in our measurement instrument.¹³ To address this potential sample selection bias, we conduct a robustness test using the 2-stage Heckman selection model (Heckman, 1979).

We use all firms in the Execucomp database and download their firm level characteristics (including control variables used in Table 3 and two additional firm characteristics, analyst coverage and number of conference meetings hosted by each firm in a sample year) from the Compustat database, I/B/E/S database, and Thomson Street database between 2003 and 2016. In total, there are 27,860 firm-year observations. In Table 9 Panel A, we report descriptive statistics for the firms in our treatment sample (i.e., 13,140 firm observations) and for those firms not included in our sample (14,720 firm observations). We find there is a systematic difference between our sample firms and the other firms in the S&P 1500 index.¹⁴

[Insert Table 9 about here]

To correct potential sample selection bias, we follow Heckman’s (1979) two-stage method. First, we estimate a Probit model based on the entire sample in the S&P 1500 index between 2003 and 2016. The dependent variable is an indicator variable which equals 1 for the 13,410 firm observations in our sample, and 0 otherwise. We regress this variable on a list of firm characteristics (used as control variables in Table 3) and two additional firm characteristics:

¹³ The sample selection problem could also be due to the non-random missing values in various firm characteristics, which limits our sample size in the multivariate regression analyses.

¹⁴ We find that our sample firms tend to be smaller, more profitable, less liquid, less leveraged, more diversified, have more foreign operations, and are more often audited by big 4 audit firms than non-selected S&P 1500 firms. We don’t compare with all firms in Compustat, as firms that are selected into S&P 1500 index are systematically different from the population of all publicly listed firms. To reduce the sample noise, we only make the comparison within the S&P 1500 index firms.

number of analysts covering the firm and number of conference meetings in each year. We also include year fixed effects in the model. The Probit model is shown in Panel B (model 1). Based on the Probit model, we estimate the predicted probability of each observation being in our sample, and calculate the “Inverse Mills ratio.” In the second stage regression, we re-estimate the models in Table 3 and control for the “Inverse Mills ratio.” If sample selection bias systematically affects our results, we expect a significant attenuation of the relationship between CEO-CFO personality difference and audit fees.

After controlling for the “Inverse Mills ratio” in Table 9 Panel B, the coefficient on CEO-CFO personality differences remains positive and significant in both fixed effects (and untabulated random effects) models. The coefficients are comparable to the coefficients in Table 3, which suggests our results are robust after correcting for sample selection bias.

V. Conclusion

Implicit in the audit firm’s evaluation of engagement risk, is consideration of the client’s top management disposition and integrity. We investigate whether auditors consider, and price, differences in the personality of the CEO and CFO as part of the audit engagement risk. Ex ante, diversity in personalities can support innovation, creativity and controls on ‘group-think.’ Alternatively, personality differences can result in dysfunctional conflict.

We measure the Big Five personality traits of CEOs and CFOs (agreeableness, conscientiousness, emotional stability, extraversion, and openness) by applying a linguistic algorithm to the language spoken by CEOs and CFOs in the Q&A portion of conference calls. We use the differences in these personality traits as a proxy for CEO-CFO conflict and find that CEO-CFO personality differences are positively associated with higher audit fees, consistent

with auditors assessing conflicting personalities in the C-suite as engagement risk, requiring increased audit effort and therefore, higher audit fees.

We find that the relation between CEO and CFO personality differences and audit fees is partially explained by length of time the CEO and CFO have worked together – greater CEO-CFO conflict is associated with higher executive turnover (lower CEO-CFO tenure), which in turn is associated with higher audit fees. We also find evidence that auditor tenure and board independence moderate the relation between personality differences and audit fees. As auditor tenure increases, the auditors appear to adjust and learn how to manage the audit in light of potential conflict. Along the same lines, a more independent board is likely to have monitored and attenuated negative aspects of CEO-CFO personality differences.

We also find that subsequent to a departure in the CEO-CFO team, when previously large CEO-CFO personality differences become smaller in the new team, audit fees tend to decrease. Similarly, when previously small CEO-CFO personality differences become larger in the new team, audit fees tend to increase. Again, these findings are consistent with auditors using CEO-CFO personality differences to assess engagement risk and set audit fees.

We contribute to the growing body of research suggests that executive personality may influence corporate policies and outcomes.

Appendix A -- Big Five personality traits

The Big Five personality traits are widely accepted in Psychology personality research as broad individual traits that are stable over time and describe how people think, feel and behave in varying circumstances (John and Srivastava 1999):

- *Agreeableness* is a trait associated with trusting, straightforward, compliant, and sympathetic behavior. Executives who are lower on agreeableness are more achievement oriented (i.e., they have high expectations for performance and are competitive).
- *Conscientiousness* is a trait associated with competence, order, dutifulness, thoroughness, self-discipline, and deliberateness. Executives who are high in conscientiousness know and follow the rules and attend to detail.
- *Emotional stability* (versus neuroticism) is a trait negatively associated with anxiety, hostility, depression, self-consciousness, impulsiveness. Individuals high in emotional stability possess higher self-esteem. Barrick, Stewart, Neubert, and Mount (1988) found that groups with members who were low in emotional stability experienced more conflict. Auditors and other members of the TMT may find it difficult to work with those low in emotional stability.
- *Extraversion* is a trait associated with individuals who are often described as sociable, assertive, energetic, adventurous and enthusiastic. Executives who are high in extraversion are likely more risk-seeking than those who are low on this trait because of their adventurousness (Adebambo et al. 2019).
- *Openness* is a trait associated with curiosity, imagination, appreciation for art or aesthetics, broad interests and unconventional values. Executives who are high in openness are likely to try new things and come up with creative solutions to problems.

Appendix B – Variable Definitions

Variable Name	Variable Definition and Construction
<i>ln(Audit fees)</i>	Natural logarithm of audit fees reported
<i>Extraversion</i>	Aggregate extraversion score estimated from CEO and CFO responses during the Q&A portion of conference calls and calculated using Mairesse et al. (2007) Support Vector Machine linguistic method.*
<i>Emotional Stability</i>	Aggregate Emotional Stability score estimated from CEO and CFO responses during the Q&A portion of conference calls and calculated using Mairesse et al. (2007) Support Vector Machine linguistic method.*
<i>Openness</i>	Aggregate Openness score estimated from CEO and CFO responses during the Q&A portion of conference calls and calculated using Mairesse et al. (2007) Support Vector Machine linguistic method.*
<i>Conscientiousness</i>	Aggregate Conscientiousness score estimated from CEO and CFO responses during the Q&A portion of conference calls and calculated using Mairesse et al. (2007) Support Vector Machine linguistic method.*
<i>Agreeableness</i>	Aggregate Agreeableness score estimated from CEO and CFO responses during the Q&A portion of conference calls and calculated using Mairesse et al. (2007) Support Vector Machine linguistic method.*
<i>CEO-CFO Personality Diff</i>	$\text{CEO-CFO Personality Difference}_{i,t} = \sqrt{\frac{\sum_{j=1}^5 (\text{CEO}_{j,i,t} - \text{CFO}_{j,i,t})^2}{5}}$ <p>where $\text{CEO}_{j,i,t}$ is CEO's personality j in firm i in year t; $\text{CFO}_{j,i,t}$ is CFO's personality j in firm i in year t; $j \in$ (Agreeableness, Conscientiousness, Emotional Stability, Extraversion, Openness).</p>
<i>CEO-CFO tenure</i>	Length of time in years that the CEO and CFO work together
<i>Auditor tenure</i>	Length of time in years that the company is audited by the same audit firm in Compustat.
<i>Governance Quality</i>	The ratio of the number of independent board members and total board members in a firm. The affiliation of each board member is based on the ISS database definition.
<i>LTA</i>	Natural logarithm of Total Assets, item AT from Compustat
<i>LOSS</i>	Indicator variable = 1 if the firm experienced a loss in a given year.
<i>YE</i>	Indicator variable = 1 if the firm has a non-December 31 fiscal yearend.
<i>CATA</i>	Ratio of current assets to total assets
<i>QUICK</i>	Ratio of current assets (less inventories) to current liabilities
<i>DE</i>	Ratio of long-term debt to total assets
<i>ROI</i>	Ratio of earnings before interest and tax to total assets
<i>LSEG</i>	Natural log of the number of business segments
<i>Foreign</i>	Indicator variable = 1 if the firm reports operations outside of the U.S.

<i>Big 4</i>	Indicator variable = 1 if the firm is audited by a Big N CPA firm
<i>F-score</i>	The scaled probability of fraud from Dechow, Ge, Larson, and Sloan (2011), p. 61). Predicted value= -7.9893 + 0.790 (RSST ACC) + 2.518 (CH REC) + 1.191 (CH INV) + 1.979 (SOFT ASSETS) +0.171 (CH CS) - 0.932 (CH ROA) + 1.029 (ISSUE).
<i>Fraud</i>	Indicator variable = 1 if the company is alleged by an Accounting and Auditing Enforcement Release (AAER) to have engaged in fraud during the year, 0 otherwise.
<i>Count of Internal control weaknesses</i>	Count of disclosed internal control weaknesses from Audit Analytics.
<i>Operating leases</i>	Ratio of operating leases to total assets, following Ge et al. (2011).
<i>Discretionary accruals</i>	Residuals from the following pooled regression based on two-digit SIC code: $\frac{TA_{i,t}}{ASSET_{i,t-1}} = \alpha_0 + \alpha_1 \left(\frac{1}{ASSET_{i,t-1}} \right) + \alpha_2 \left(\frac{\Delta SALES_{i,t} - \Delta AR_{i,t}}{ASSET_{i,t-1}} \right) + \alpha_3 \left(\frac{PPE_{i,t}}{ASSET_{i,t-1}} \right) + \alpha_4 \left(\frac{NI_{i,t}}{ASSET_{i,t-1}} \right) + \varepsilon_{i,t}$ <p>Where for firm i year t, $TA_{i,t}$ is total accruals, which equal Net Income minus Cash Flow from Operations, (data18 - data308); $ASSET_{i,t-1}$ is lagged Total Assets (data6); $\Delta SALES_{i,t}$ is the change in Sales (data12); $\Delta AR_{i,t}$ is the change in Accounts Receivables (data2); and $PPE_{i,t}$ is Net Property, Plant, and Equipment (data8). $NI_{i,t}$ is Net Income (data18), following Ge et al. (2011).</p>
<i>CEO-CFO age difference</i>	Absolute value difference between CEO's and CFO's age in a given year
<i>CEO-CFO gender difference</i>	Indicator variable = 1 if the CEO and CFO have the same gender
<i>CEO financial expertise</i>	Indicator variable = 1 if the CEO has an accounting or finance degree at either the undergraduate or graduate level, or has a CFA or a CPA designation.

* We require that the CEO and CFO each speak at least 500 words to be included in our sample. We collect conference calls from Thomson Reuters. Details of the linguistic procedure and measure construction are in Section III. C.

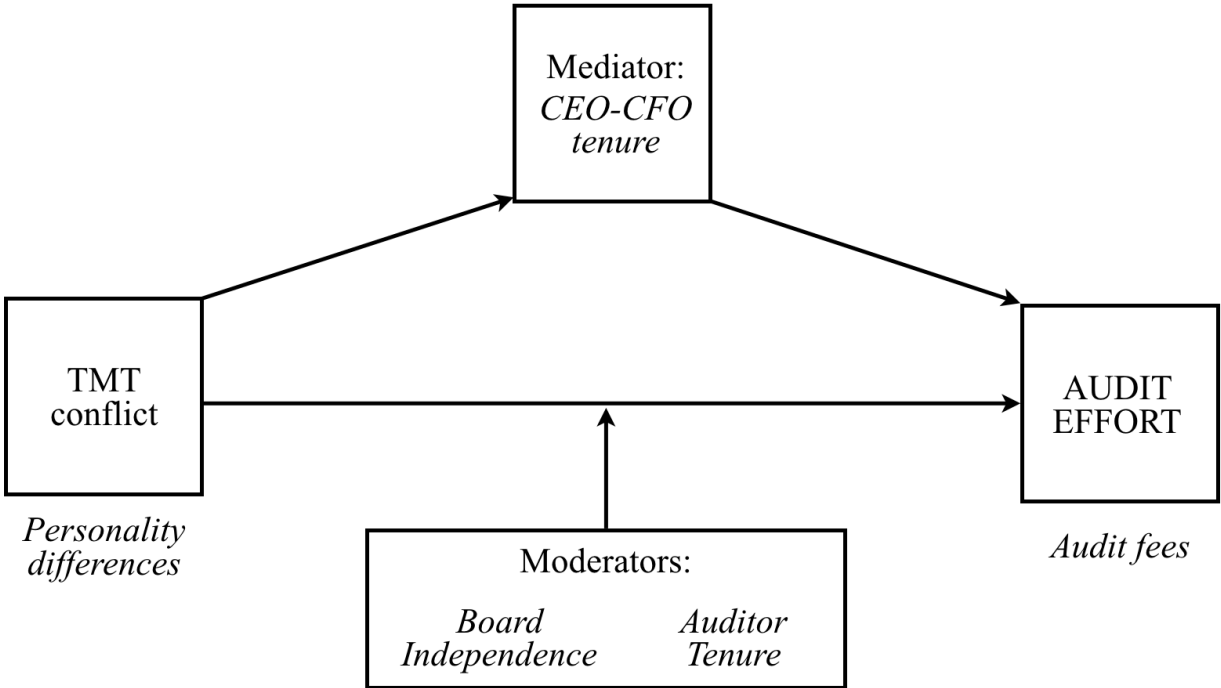
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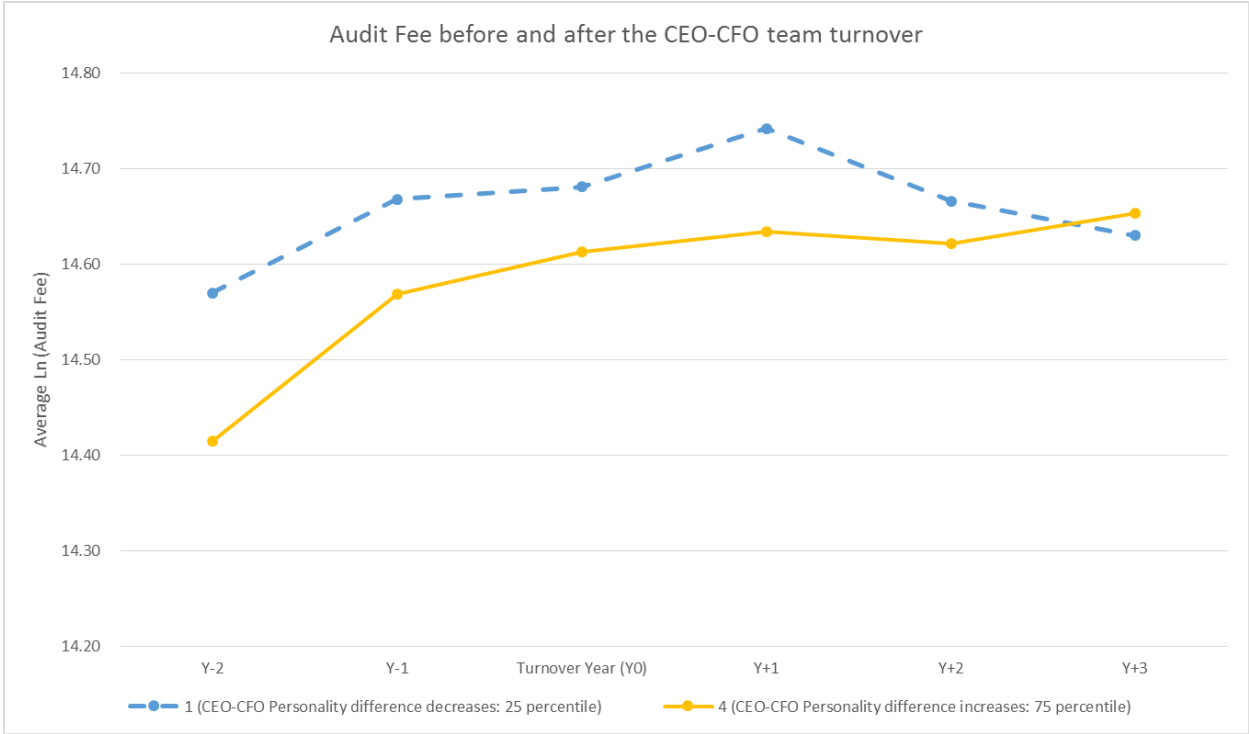
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Figure 1: CEO-CFO personality differences and Audit Fees — conceptual relationships



Notes:
 TMT = Top Management Team proxied by CEO-CFO team
 Personality differences = sum of squared differences between CEO-CFO personality score for each Big Five trait
 CEO-CFO co-work tenure = length of time a CEO-CFO team works together
 Auditor tenure = auditor’s time with the client firm in years
 Governance quality = proxied by board independence

Figure 2: What happens to Audit Fees after CEO-CFO team turnover?



The dashed line represents audit fees for the sample of relatively large CEO-CFO personality differences that changed to relatively small CEO-CFO personality differences following turnover in the CEO-CFO team.

The solid line represents audit fees for the sample of relatively small CEO-CFO personality differences that changed to relatively large CEO-CFO personality differences following turnover in the CEO-CFO team.

Table 1 – Personality differences between CEOs and CFOs – 15 largest and smallest

This table lists the 15 CEO-CFO teams with the largest and smallest “Big Five” personality differences from our final sample of S&P 1500 firms over the 2004-2016 sample period. We estimate Big Five personality traits using a linguistic technique and a sample of unscripted speech from quarterly conference call transcripts. We obtain conference call transcripts from Thomson Reuters for the period 2004-2016. Each trait is measured based on CEO and CFO responses during the Q&A portion of the call and calculated using Mairesse et al. (2007) Support Vector Machine method. We require that each executive to speak at least 500 words to be included in our sample. We use company ticker symbols, company names, and CEO (CFO) names to match CEOs (CFOs) from the conference call transcripts to the Execucomp database.

Company Names	CEO Names	CFO Names	CEO Personality Traits					CFO Personality Traits					CEO-CFO Personality Differences
			Extraversion	Emotional Stability	Agreeableness	Conscientiousness	Openness	Extraversion	Emotional Stability	Agreeableness	Conscientiousness	Openness	
<i>Panel A. Least different CEO-CFO Personality Teams</i>													
BALL CORP	John A. Hayes	Scott C. Morrison	6.979	3.219	3.499	6.405	5.891	6.772	3.140	3.554	6.318	5.806	0.116
PUBLIC SERVICE ENTRP GRP INC	Ralph Izzo	Caroline D. Dorsa	6.336	3.398	3.554	6.705	6.236	6.395	3.387	3.797	6.775	6.288	0.119
BRIGHTPOINT INC	Robert J. Laikin	Anthony W. Boor	6.929	3.302	3.350	6.827	6.486	6.678	3.322	3.447	6.748	6.496	0.126
AIR PRODUCTS & CHEMICALS INC	John E. McGlade	Michael Scott Crocco	7.289	2.620	4.350	8.063	7.931	7.513	2.493	4.375	8.015	8.067	0.132
ARCHER-DANIELS-MIDLAND CO	Juan Ricardo Luciano	Ray Guy Young	6.998	2.635	3.269	6.640	6.536	6.889	2.717	3.238	6.407	6.659	0.133
BRIGGS & STRATTON	John S. Shiely	James E. Brenn	6.784	3.626	3.536	6.883	6.184	6.823	3.541	3.651	6.637	6.081	0.136
FORRESTER RESEARCH INC	George F. Colony	Michael A. Doyle	6.690	3.300	2.901	6.108	5.587	6.818	3.190	3.164	6.077	5.503	0.145
AKAMAI TECHNOLOGIES INC	Paul L. Sagan	J. Donald Sherman	7.135	3.258	3.216	6.365	5.798	7.086	3.102	3.356	6.523	5.995	0.148
WELLMAN INC	Thomas M. Duff	Keith R. Phillips	6.322	3.473	3.762	6.445	6.043	6.106	3.609	3.776	6.348	6.232	0.149
APPLIED MATERIALS INC	Michael R. Splinter	George S. Davis	6.601	3.049	3.100	6.528	5.743	6.638	3.281	3.016	6.647	5.929	0.149
HASBRO INC	Brian D. Goldner	Deborah M. Thomas	6.828	3.320	3.297	6.140	6.363	6.861	3.086	3.233	5.933	6.259	0.151
BOSTON SCIENTIFIC CORP	James R. Tobin	Samuel R. Leno	6.551	3.506	3.257	5.865	5.605	6.395	3.324	3.183	6.045	5.741	0.151
CHIPOTLE MEXICAN GRILL INC	M. Steven Ells	John R. Hartung	6.912	3.106	3.041	6.024	5.504	7.166	3.229	3.074	5.848	5.421	0.154
OMNICARE INC	John G. Figueroa	John L. Workman	6.896	2.934	3.545	6.681	6.019	7.099	3.110	3.630	6.589	6.199	0.155
BROCADE COMMUNICATIONS SYS	Michael A. Klayko	Richard J. Deranleau	7.263	3.062	3.526	6.668	6.416	7.010	3.155	3.423	6.529	6.560	0.157
<i>Panel B. Most different CEO-CFO Personality Teams</i>													
INTEVAC INC	Wendell T. Blonigan	Jeffrey S. Andreson	4.686	1.131	2.940	7.820	7.931	5.971	3.918	3.565	5.278	5.371	2.137
PIONEER ENERGY SERVICES CORP	William Stacy Locke	William D. Hibbetts	7.476	3.113	3.090	6.474	5.770	4.202	1.319	4.567	7.563	8.154	2.144
ETHAN ALLEN INTERIORS INC	M. Farooq Kathwari	Corey Whitely	7.582	2.323	2.804	6.450	6.222	3.475	4.250	4.191	5.930	5.603	2.152
POSSIS MEDICAL INC	Robert G. Dutcher	Eapen Chacko	6.817	2.878	3.417	7.738	7.088	7.513	1.319	2.650	4.050	4.608	2.157
CASEYS GENERAL STORES INC	Robert J. Myers	William J. Walljasper	3.492	1.875	3.866	5.229	4.674	6.744	3.717	3.557	7.418	6.819	2.166
INTEGRA LIFESCIENCES HLDGS	Stuart M. Essig	Maureen B. Bellantoni	6.847	3.469	3.367	6.604	6.339	2.288	2.853	4.015	6.095	7.671	2.173
GENERAL DYNAMICS CORP	Nicholas D. Chabreja	L. Hugh Redd	7.002	3.433	3.558	6.499	5.768	2.288	3.170	4.012	5.861	4.780	2.185
HONEYWELL INTERNATIONAL INC	David M. Cote	David John Anderson	7.534	3.599	3.153	6.117	5.545	2.769	2.794	3.600	5.766	6.595	2.226
DISH NETWORK CORP	Charles W. Ergen	Steven E. Swain	7.727	3.418	3.167	6.613	5.982	2.890	3.464	3.943	5.387	6.604	2.276
GENERAL DYNAMICS CORP	Jay Lynn Johnson	L. Hugh Redd	7.185	3.123	2.805	6.329	5.913	2.288	3.170	4.012	5.861	4.780	2.321
HANDY & HARMAN LTD	Glen M. Kassan	James F. McCabe, Jr.	6.656	3.057	3.569	7.373	7.037	2.780	3.304	3.992	4.622	5.004	2.322
SOLERA HOLDINGS INC	Tony Aquila	Renato C. Giger	7.603	3.201	3.274	5.608	6.056	2.667	4.422	3.791	6.628	6.746	2.351
INTL SPEEDWAY CORP -CL A	Lesla France Kennedy	Daniel W. Houser	3.492	3.245	4.350	4.326	4.674	7.513	3.181	3.269	6.901	7.156	2.455
PARK ELECTROCHEMICAL CORP	Brian E. Shore	P. Matthew Farabaugh	7.615	2.607	3.417	7.411	6.507	2.288	3.780	3.851	5.855	5.620	2.575
CPI CORP	Renato Cataldo, Jr.	Dale E. Heins	3.492	1.131	2.320	4.326	4.674	7.403	2.527	3.286	7.391	7.461	2.659

Table 2: Descriptive Statistics

This table presents descriptive statistics of firm and CEO-CFO variables for a sample of S&P 1500 firms over the 2003-2016 sample period. We report the sample size (N), mean, standard deviation (S.D.), 25th percentile, median, and 75th percentile statistics in the table. Sample sizes vary due to missing values.

Variables	N	Mean	S.D.	25 th percentile	Median	75 th percentile
Audit fees (million USD)	13140	3.27	4.6716	0.9431	1.7441	3.6935
F score	11553	1.0146	0.654	0.5959	0.9118	1.3044
Fraud dummy	13140	0.005	0.0707	0	0	0
Count of internal control weakness	12137	0.0925	0.676	0	0	0
Operating leases	11839	0.3489	0.3692	0.0611	0.1539	0.6549
Discretionary accrual	13039	-0.0746	0.3483	-0.1338	-0.0324	0.0253
CEO Extraversion	13140	6.8847	0.6909	6.573	6.956	7.326
CEO Emotional Stability	13140	3.0486	0.5	2.774	3.106	3.375
CEO Agreeableness	13140	3.2882	0.3476	3.068	3.289	3.509
CEO Conscientiousness	13140	6.4871	0.592	6.125	6.493	6.85
CEO Openness	13140	6.1791	0.5563	5.815	6.1435	6.5283
CFO Extraversion	13140	6.0354	0.8178	5.618	6.16	6.596
CFO Emotional Stability	13140	3.2968	0.498	3.011	3.335	3.635
CFO Agreeableness	13140	3.5228	0.3709	3.28	3.515	3.759
CFO Conscientiousness	13140	6.3808	0.5982	6.019	6.393	6.754
CFO Openness	13140	6.2801	0.592	5.879	6.269	6.641
CEO-CFO Big 5 Personality Diff	13140	0.7466	0.3707	0.4786	0.6737	0.9284
CEO-CFO Extraversion Diff	13140	1.7658	2.7205	0.2016	0.7957	2.117
CEO-CFO Emotional Stability Diff	13140	0.4163	0.6963	0.0369	0.1624	0.508
CEO-CFO Agreeableness Diff	13140	0.2508	0.384	0.0237	0.1082	0.3136
CEO-CFO Conscientiousness Diff	13140	0.5433	0.9462	0.0462	0.1927	0.6296
CEO-CFO Openness Diff	13140	0.4979	0.7955	0.0437	0.198	0.6149
LTA	13140	7.5369	1.6152	6.375	7.4274	8.5744
LOSS dummy	13140	0.1802	0.3844	0	0	0
YE dummy	13140	0.3391	0.4734	0	0	1
CATA	13140	0.4408	0.2177	0.2711	0.4412	0.6019
QUICK	13140	1.9262	2.0213	0.9451	1.3991	2.1685
DE	13140	0.1999	0.1901	0.0159	0.1775	0.3044
ROI	13140	0.0877	0.1117	0.0501	0.0879	0.134
LSEG	13140	1.57	0.8912	1.0986	1.6094	2.3026
Foreign operations dummy	13140	0.6432	0.4791	0	1	1
Big 4 dummy	13140	0.9231	0.2665	1	1	1
CEO-CFO co-work tenure	13140	4.1541	3.7616	1	3	6
Ln (audit tenure)	13140	2.3134	0.8462	1.7918	2.3979	2.8904
Board independence	8850	0.7794	0.1191	0.7143	0.8	0.875

Table 3: CEO-CFO Personality Differences and Audit Fees

This table reports estimates from a panel regression of the natural log of audit fees on differences in CEO-CFO Big Five personality traits and a set of control variables. We estimate personality traits using (i) a linguistic technique based on Mairesse et al's (2007) Support Vector Machine method and (ii) a sample of unscripted speech from quarterly conference call transcripts obtained from Thomson Reuters for the period 2003-2016. We require that each executive speak at least 500 words during the Q&A portion of the call to be included in our sample. We use company tickers and names and CEO (CFO) Names to match CEOs (CFOs) from conference call transcripts to the ExecuComp database. Appendix B provides definitions of all variables. Column 1 tests the impact of CEO-CFO personality differences aggregated across five personality measures. Column 2 tests the impact of each of the five personality differences. Firm fixed effects are reported in the table (the results are also robust with random effects models). Standard errors (reported in parentheses) are adjusted for heteroskedasticity using Huber-White adjustment. Superscripts *, **, and *** denote statistical significance at 10%, 5%, and 1%, two-tailed, respectively.

Dependent Variable	(1)	(2)
Ln (Audit Fees)	FE Model	FE Model
CEO-CFO Big 5 Personality Difference	0.053** (0.023)	
CEO-CFO Extraversion Difference		0.004 (0.003)
CEO-CFO Emotional Stability Difference		0.030*** (0.011)
CEO-CFO Agreeableness Difference		0.009 (0.022)
CEO-CFO Conscientiousness Difference		0.012 (0.009)
CEO-CFO Openness Difference		-0.016 (0.011)
LTA	0.350*** (0.017)	0.348*** (0.017)
LOSS	0.053*** (0.018)	0.052*** (0.018)
YE	-0.089 (0.094)	-0.082 (0.094)
CATA	0.351*** (0.075)	0.349*** (0.075)
QUICK	-0.048*** (0.005)	-0.048*** (0.005)
DE	0.176*** (0.056)	0.179*** (0.056)
ROI	-0.273*** (0.072)	-0.270*** (0.072)
LSEG	0.033** (0.013)	0.032** (0.013)
Foreign	0.033 (0.027)	0.031 (0.027)
Big 4	0.235*** (0.046)	0.236*** (0.046)
Constant	10.622*** (0.151)	10.651*** (0.150)
Firm and year fixed effects	Yes	Yes
Firm-year observations	13,140	13,140
R Squared	0.7764	0.7763
# of unique firms	1,499	1,499

Table 4: CEO-CFO Personality Differences and Audit Fees – the mediating effect of CEO-CFO tenure

This table reports the mediation effect of CEO-CFO tenure on the relationship between CEO-CFO personality differences and audit fees. In Column 1, we repeat the main effect of CEO-CFO personality difference on audit fee (from Table 3). Column 2 examines the effect of CEO-CFO personality difference on CEO-CFO tenure, i.e, length of time the CEO-CFO team have worked together. Column 3 tests the link between CEO-CFO tenure and audit fees. Column 4 regresses audit fees on both CEO-CFO personality differences and CEO-CFO tenure. All models include the same set of control variables and firm and year fixed effects. Standard errors (reported in parentheses) are adjusted for heteroskedasticity using Huber-White adjustment. Superscripts *, **, and *** denote statistical significance at 10%, 5%, and 1%, two-tailed, respectively.

	(1)	(2)	(3)	(4)
Dependent Variables	Ln (Audit Fee)	CEO-CFO co-worked years	Ln (Audit Fee)	Ln (Audit Fee)
CEO-CFO Big 5 Personality Difference	0.053** (0.023)	-1.195*** (0.106)		0.046** (0.023)
CEO-CFO co-worked years			-0.006*** (0.002)	-0.006*** (0.002)
LTA	0.350*** (0.017)	0.598*** (0.082)	0.352*** (0.017)	0.353*** (0.017)
LOSS	0.053*** (0.018)	-0.327*** (0.083)	0.050*** (0.018)	0.051*** (0.018)
YE	-0.089 (0.094)	0.232 (0.441)	-0.086 (0.094)	-0.088 (0.094)
CATA	0.351*** (0.075)	-0.688* (0.353)	0.341*** (0.075)	0.347*** (0.075)
QUICK	-0.048*** (0.005)	0.012 (0.023)	-0.048*** (0.005)	-0.048*** (0.005)
DE	0.176*** (0.056)	-1.079*** (0.261)	0.169*** (0.056)	0.169*** (0.056)
ROI	-0.273*** (0.072)	-0.406 (0.337)	-0.275*** (0.072)	-0.275*** (0.072)
LSEG	0.033** (0.013)	-0.049 (0.061)	0.032** (0.013)	0.033** (0.013)
Foreign	0.033 (0.027)	-0.086 (0.125)	0.033 (0.027)	0.032 (0.027)
Big 4	0.235*** (0.046)	-0.008 (0.216)	0.236*** (0.046)	0.235*** (0.046)
Constant	10.622*** (0.151)	0.163 (0.709)	10.675*** (0.149)	10.623*** (0.151)
Firm and year fixed effects	Yes	Yes	Yes	Yes
Firm-year observations	13,140	13,140	13,140	13,140
R Squared	0.7763	0.5132	0.7764	0.7765
# of unique firms	1,499	1,499	1,499	1,499

Table 5: CEO-CFO Personality Differences and Audit Fees – the moderating effects of Board Independence and Auditor tenure

This table reports estimates from a panel regression of the natural log of audit fees on differences in CEO-CFO personality traits interacted with two moderating variables: board independence and auditor tenure. We estimate personality traits using (i) a linguistic technique based on Mairesse et al's (2007) Support Vector Machine method and (ii) a sample of unscripted speech from quarterly conference call transcripts obtained from Thomson Reuters for 2003-2016. We require that each executive speak at least 500 words during the Q&A portion of the call to be included in our sample. We use company tickers and names and CEO (CFO) Names to match CEOs (CFOs) from conference call transcripts to the ExecuComp database. Appendix B provides definitions of all variables. Column 1 tests the interaction effect between CEO-CFO personality differences and board independence. Column 2 tests the interaction effect with auditor tenure. Both columns present firm-fixed effect models; results are robust using random effects models. Standard errors (reported in parentheses) are adjusted for heteroskedasticity using Huber-White adjustment. Superscripts *, **, and *** denote statistical significance at 10%, 5%, and 1%, two-tailed, respectively.

Dependent Variables	(1) Ln (Audit Fees)	(2) Ln (Audit Fees)	(3) Ln (Audit Fees)
CEO-CFO Personality Diff X Board Independence	-0.653*** (0.151)		-0.694*** (0.152)
Board Independence	0.604*** (0.139)		0.635*** (0.139)
CEO-CFO Personality Diff X Ln (Auditor Tenure)		-0.039* (0.021)	0.014 (0.021)
Ln (Auditor Tenure)		0.126*** (0.020)	0.076*** (0.020)
CEO-CFO Personality Diff	0.564*** (0.121)	0.141*** (0.054)	0.556*** (0.126)
LTA	0.466*** (0.020)	0.338*** (0.017)	0.455*** (0.020)
LOSS	0.037* (0.019)	0.052*** (0.018)	0.035* (0.019)
YE	0.021 (0.116)	-0.132 (0.094)	-0.008 (0.116)
CATA	0.481*** (0.085)	0.351*** (0.075)	0.476*** (0.084)
QUICK	-0.069*** (0.006)	-0.048*** (0.005)	-0.069*** (0.006)
DE	0.211*** (0.065)	0.189*** (0.055)	0.217*** (0.065)
ROI	-0.229** (0.091)	-0.271*** (0.072)	-0.238*** (0.091)
LSEG	0.028** (0.014)	0.036*** (0.013)	0.031** (0.014)
Foreign	0.032 (0.028)	0.035 (0.026)	0.033 (0.028)
Big 4	0.236*** (0.052)	0.151*** (0.047)	0.169*** (0.053)
Constant	9.272*** (0.202)	10.545*** (0.156)	9.263*** (0.204)
Firm and year fixed effects	Yes	Yes	Yes
Firm-year observations	8,850	13,140	8,850
R Squared	0.8556	0.7777	0.8566
# of unique firms	1,268	1,499	1,268

Table 6: CEO-CFO personality differences and other measures of risk

This table reports the effects of CEO-CFO personality differences on a battery of more traditional measures of audit engagement risk, including F-score (column 1), fraud dummy (column 2), count of internal control weakness (column 3), operating lease (column 4) and discretionary accruals (column 5). We follow Ge et al. (2011) and include the same set of control variables in all models. Appendix B provides definitions of all variables. We present firm fixed effects models in the table, but our results are similar using random effect models. Standard errors (reported in parentheses) are adjusted for heteroskedasticity using Huber-White adjustment. Superscripts *, **, and *** denote statistical significance at 10%, 5%, and 1%, two-tailed, respectively.

Dependent Variables	F-score	Fraud dummy	Count of internal control weakness	Operating leases	Discretionary accrual
	(1)	(2)	(3)	(4)	(5)
	FE Model	FE Logit Model	FE Model	FE Model	FE Model
CEO-CFO Personality Diff	0.059*** (0.018)	2.091*** (0.634)	0.034 (0.025)	0.015** (0.006)	0.007 (0.012)
ROA	-0.426*** (0.059)	-1.812 (2.436)	-0.364*** (0.086)	-0.021 (0.021)	-0.280*** (0.040)
Leverage	-0.023 (0.039)	-5.008*** (1.701)	0.103* (0.057)	-0.831*** (0.014)	0.054** (0.026)
Sales Growth	0.734*** (0.015)	0.264 (0.300)	0.018 (0.022)	-0.017*** (0.006)	-0.029*** (0.011)
Firm size	0.152*** (0.012)	-1.196** (0.467)	0.017 (0.016)	-0.108*** (0.004)	-0.017** (0.008)
Cash flow to assets	0.309*** (0.043)	2.617 (2.010)	-0.020 (0.062)	-0.074*** (0.015)	-0.131*** (0.029)
Market to book	0.000 (0.001)	0.035 (0.040)	0.001 (0.001)	-0.000 (0.000)	-0.001 (0.000)
Constant	-0.189** (0.092)		-0.047 (0.121)	1.322*** (0.032)	0.031 (0.062)
Firm and year fixed effects	Yes	Yes	Yes	Yes	Yes
Firm-year observations	11,874	334	12,572	12,550	13,777
R Squared	0.5957	0.0162	0.2149	0.8351	0.2606
# of unique firms	1,476	33	1,496	1,469	1,553

Table 7. Individual CEO/CFO personality traits and audit fees

This table reports estimates from a panel regression of the natural log of audit fees on Big Five individual personality traits of CEOs and CFOs – see appendix A. We estimate personality traits using (i) a linguistic technique based on Mairesse et al's (2007) Support Vector Machine method and (ii) a sample of unscripted speech from quarterly conference call transcripts obtained from Thomson Reuters for the period 2003-2016. We require that each executive speak at least 500 words during the Q&A portion of the call to be included in our sample. We use company tickers and names and CEO (CFO) Names to match CEOs (CFOs) from conference call transcripts to the ExecuComp database. Appendix B provides definitions of all variables. Column 1 examines the impact of the CFO's five personality traits on audit fees. Column 2 examines the impact of the CEO's five personality traits on audit fees. Column 3 tests the impact of five personality traits of both CFOs and CEOs on audit fees. All models include the same set of control variables similar to Table 3. Firm fixed effects are reported in the table (the results are also robust with random effect models). Standard errors (reported in parentheses) are adjusted for heteroskedasticity using Huber-White adjustment. Superscripts *, **, and *** denote statistical significance at 10%, 5%, and 1%, two-tailed, respectively.

Dependent Variable	(1)	(2)	(3)
Ln (Audit Fees)	FE Model	FE Model	FE Model
CFO Extraversion	0.004 (0.013)		0.007 (0.013)
CFO Emotional Stability	-0.027 (0.019)		-0.026 (0.019)
CFO Agreeableness	0.045 (0.032)		0.053 (0.032)
CFO Conscientiousness	-0.003 (0.023)		-0.003 (0.023)
CFO Openness	-0.013 (0.022)		-0.016 (0.022)
CEO Extraversion		-0.006 (0.016)	-0.006 (0.016)
CEO Emotional Stability		-0.050** (0.022)	-0.047** (0.022)
CEO Agreeableness		-0.069** (0.033)	-0.074** (0.033)
CEO Conscientiousness		-0.043* (0.023)	-0.044* (0.023)
CEO Openness		0.072*** (0.024)	0.074*** (0.024)
LTA	0.348*** (0.017)	0.350*** (0.017)	0.350*** (0.017)
LOSS	0.053*** (0.018)	0.051*** (0.018)	0.052*** (0.018)
YE	-0.088 (0.094)	-0.076 (0.094)	-0.077 (0.094)
CATA	0.346*** (0.075)	0.339*** (0.075)	0.340*** (0.075)
QUICK	-0.048*** (0.005)	-0.048*** (0.005)	-0.048*** (0.005)
DE	0.177*** (0.056)	0.173*** (0.056)	0.174*** (0.056)
ROI	-0.273*** (0.072)	-0.274*** (0.072)	-0.275*** (0.072)
LSEG	0.033** (0.013)	0.032** (0.013)	0.032** (0.013)
Foreign	0.034	0.033	0.033

	(0.027)	(0.027)	(0.027)
Big 4	0.235***	0.235***	0.233***
	(0.046)	(0.046)	(0.046)
Constant	10.681***	10.913***	10.896***
	(0.198)	(0.223)	(0.253)
Firm and year fixed effects	Yes	Yes	Yes
Firm-year observations	13,140	13,140	13,140
R Squared	0.7762	0.7767	0.7767
# of unique firms	1,499	1,499	1,499

Table 8. Controls for CEO/CFO age, gender differences and CEO financial expertise

This table reports estimates from a panel regression of the natural log of audit fees on CEO-CFO personality differences after controlling for (i) differences in CEO-CFO age (in Column 1), (ii) differences in CEO-CFO gender (in Column 2), and (iii) CEO financial expertise (in Column 3). We control for all three variables in Column 4. We collect CEO and CFO age and gender information from the Execucomp database. We collect past education and professional designation information for CEOs from the BoardEx database. We take the absolute value of the difference between CEOs' and CFOs' ages to measure the age difference. We use a dummy variable that equals 1 if the CEO and CFO have the same gender. In addition, based on past education and professional designation information, we create a dummy variable that equals 1 if a CEO has an accounting/finance degree (at either the undergraduate or postgraduate level) or has a CPA or CFA designation. We assume that a CEO with an accounting or finance degree or professional designation would have professional expertise that is more similar to the CFO. Firm fixed effects are reported in the table (the results are also robust with random effect models). Standard errors (reported in parentheses) are adjusted for heteroskedasticity using Huber-White adjustment. Superscripts *, **, and *** denote statistical significance at 10%, 5%, and 1%, two-tailed, respectively.

Dependent Variable	(1)	(2)	(3)	(4)
Ln (Audit Fees)	FE Model	FE Model	FE Model	FE Model
CEO-CFO Personality Diff	0.054** (0.023)	0.052** (0.023)	0.052** (0.023)	0.054** (0.023)
LTA	0.351*** (0.018)	0.350*** (0.017)	0.350*** (0.017)	0.351*** (0.018)
LOSS	0.056*** (0.018)	0.053*** (0.018)	0.053*** (0.018)	0.056*** (0.018)
YE	-0.077 (0.097)	-0.089 (0.094)	-0.092 (0.094)	-0.080 (0.097)
CATA	0.346*** (0.077)	0.351*** (0.075)	0.350*** (0.075)	0.344*** (0.077)
QUICK	-0.048*** (0.005)	-0.048*** (0.005)	-0.048*** (0.005)	-0.048*** (0.005)
DE	0.171*** (0.057)	0.176*** (0.056)	0.176*** (0.056)	0.172*** (0.057)
ROI	-0.265*** (0.074)	-0.273*** (0.072)	-0.272*** (0.072)	-0.265*** (0.074)
LSEG	0.031** (0.013)	0.033** (0.013)	0.033** (0.013)	0.031** (0.013)
Foreign	0.019 (0.027)	0.033 (0.027)	0.032 (0.027)	0.018 (0.027)
Big 4	0.294*** (0.048)	0.235*** (0.046)	0.234*** (0.046)	0.293*** (0.048)
CEO-CFO gender difference	-0.001 (0.001)			-0.001 (0.001)
CEO-CFO age difference		0.011 (0.027)		-0.001 (0.028)
CEO financial expertise			0.041 (0.041)	0.040 (0.042)
Constant	10.595*** (0.155)	10.621*** (0.151)	10.622*** (0.151)	10.593*** (0.155)
Firm and year fixed effects	Yes	Yes	Yes	Yes
Firm-year observations	12,837	13,140	13,140	12,837
R Squared	0.7754	0.7763	0.7763	0.7753
# of unique firms	1,466	1,499	1,499	1,466

Table 9. Correction for sample selection bias

This table reports a robustness check using the two-stage procedure in Heckman (1979) to correct for potential sample selection bias. First, we download all firms in the Execucomp database and collect their firm level characteristics from the Compustat database, I/B/E/S database, and Thomson Street database between 2003 and 2016. In total, there are 27,860 firm-year observations. In Panel A, we report descriptive statistics for (i) firms in our treatment sample (i.e., 13,140 firm observations) and (ii) firms not included in our sample (14,720 firm observations). We conduct simple t-tests to compare mean differences between our sample firms and other firms in the S&P 1500 index.

In Panel B, we follow Heckman's (1979) two-stage method. First, we estimate a Probit model based on the entire sample in the S&P 1500 index between 2003 and 2016. The dependent variable is an indicator variable which equals 1 for the 13,410 firm observations in our treatment sample, and 0 otherwise. We regress this variable on a list of firm characteristics (used as control variables in Table 3) and two additional firm characteristics: number of analysts covering the firm and number of conference meetings in each year. We also include year fixed effects in the model (see Column 1). Based on the Probit model, we estimate the predicted probability of each observation being in our sample, and calculate the "Inverse Mills ratio." In the second stage regression (in Column 2), we re-estimate the main firm fixed effects model in Table 3 and control for the "Inverse Mills ratio." The results are also robust with random effect models. Standard errors (reported in parentheses) are adjusted for heteroskedasticity using Huber-White adjustment. Superscripts *, **, and *** denote statistical significance at 10%, 5%, and 1%, two-tailed, respectively.

Panel A. Descriptive statistics of selected (and non-selected) sample firms

Firm characteristics	Selected firms in our sample				Non-selected firms in the S&P 1500 index				t stats.
	N	Mean	Median	S.D.	N	Mean	Median	S.D.	
LTA	13,140	7.537	7.427	1.615	14,648	7.925	7.890	1.966	-17.9 ***
LOSS	13,140	0.180	0.000	0.384	9,783	0.222	0.000	0.416	-7.9 ***
YE	13,140	0.339	0.000	0.473	14,718	0.214	0.000	0.410	23.7 ***
CATA	13,140	0.441	0.441	0.218	9,712	0.438	0.423	0.234	1.0
QUICK	13,140	1.926	1.399	2.021	9,264	2.005	1.359	2.467	-2.6 ***
DE	13,140	0.200	0.178	0.190	14,554	0.209	0.152	0.215	-3.7 ***
ROI	13,140	0.088	0.088	0.112	9,779	0.065	0.080	0.289	8.3 ***
LSEG	13,140	1.570	1.609	0.891	14,720	1.334	1.099	0.978	20.9 ***
Foreign	13,140	0.643	1.000	0.479	14,627	0.416	0.000	0.493	38.8 ***
Big 4	13,140	0.923	1.000	0.267	14,414	0.891	1.000	0.312	9.1 ***

Table 9. Correction for sample selection bias (continued)

Panel B. Heckman two-stage estimation procedure to correct sample selection bias

Heckman two-stage estimation models	(1) First Stage Probit Selection Model	(2) Second Stage FE Model: Ln(audit fees)
CEO-CFO Big 5 Personality Difference		0.052** (0.023)
LTA	-0.038*** (0.009)	0.352*** (0.018)
LOSS	0.065** (0.029)	0.053*** (0.018)
YE	0.031 (0.022)	-0.089 (0.094)
CATA	0.037 (0.060)	0.353*** (0.075)
QUICK	-0.012** (0.005)	-0.048*** (0.005)
DE	0.052 (0.059)	0.175*** (0.056)
ROI	0.202*** (0.069)	-0.269*** (0.072)
LSEG	0.000 (0.012)	0.034*** (0.013)
Foreign	0.084*** (0.022)	0.033 (0.027)
Big 4	0.116*** (0.038)	0.238*** (0.046)
Analyst coverage	0.007*** (0.002)	
Number of conference meetings	0.471*** (0.006)	
Inverse Mills ratio		0.023 (0.021)
Constant	-1.640*** (0.084)	10.585*** (0.155)
Firm fixed effects	No	Yes
Year fixed effects	Yes	Yes
Firm-year observations	22,060	13,140
R Squared	0.3556	0.7763
# of unique firms	2,266	1,499