# The Valley of Trust: The Effect of Relational Strength on Monitoring Quality

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**Abstract**

Monitoring of firms by regulatory agencies is essential to maintaining economic sustainability, correcting information asymmetry in markets, and mitigating social and environmental externalities. Yet, monitoring failures often arise where the monitoring agent fails to detect infractions by the firms they monitor. Whereas organizational scholars cite weak relationships and a lack of trust between firms and monitors as a key source of monitoring failures, research in organizational deviance contends that increased trust in strong relationships promotes monitoring failures via negligence and collusion. Drawing on these two literatures, we propose that relationship strength exhibits a U-shaped relationship with monitoring quality, as mediated by trust: increasing relationship strength reduces monitoring failures to a certain point, but beyond which it increases monitoring failures. We test our theory with three studies: a field study using longitudinal archival data on financial restatements, a survey of Certified Public Accountants, and an experimental audit simulation.

Monitoring of firms by regulatory agencies is essential to correcting information asymmetry in markets and mitigating social and environmental externalities (Dal Bó, 2006; Laffont & Tirole, 1991; Levine, Toffel, & Johnson, 2012; Pierce & Toffel, 2013). And yet, both governmental and third party agents tasked with monitoring often fail to do so effectively, as in prominent cases involving the Federal Aviation Administration and Southwest Airlines' lapses in fuselage maintenance (Reuters, 2009), the Minerals Management Service agents and the British Petroleum oil spill in 2010 (Grant, 2011), and Arthur Anderson auditors working with Enron (Aven, 2015). Moreover, monitoring failures in the U.S. financial services sector played an instrumental role in the last three economic recessions (beginning in July 1990, March 2001, and December 2007, respectively) (Akerlof & Shiller, 2010). In cases of monitoring failures, it is common for economists, sociologists, and political scientists to implicate regulatory capture, whereby industries attempt to reduce regulatory oversight by influencing public policy and laws (Ayres & Braithwaite, 1991; Dal Bó, 2006; Downer, 2010; Hiatt & Park, 2013; Laffont & Tirole, 1991; Pozner, Stimmler, & Hirsch, 2010). Although regulatory capture may be an important consideration, the examples cited above epitomize instances in which monitoring failures stem from ineffectual enforcement by monitors rather than lax laws and policies. While members of regulated firms may want to avoid unintentional errors, their incentives to fraudulently disregard monitoring regulations are clear, as summarized in Becker's (1968) rational choice account of deviance. For monitoring agents, by contrast, it is unclear why they would fail to detect and report infractions given the potential costs that they incur for poor monitoring quality.

Why then might an individual charged with monitoring a firm fail to do so? We argue that strong relationships between monitoring agents and those they monitor, which emerge in the process of monitoring, prove to be a double-edged sword for monitoring quality. On the one hand, strong relationships improve monitoring quality by helping the monitor to acquire critical information, tacit

knowledge, and cooperation from the members of the regulated firm (Downer, 2010; Gray & Silbey, 2014; Holloway & Parmigiani, 2016; Levinthal & Fichman; 1988; Uzzi, 1997; Uzzi & Lancaster, 2003; Zaheer, McEvily, & Perrone, 1998). These strong relationships therefore enhance the monitors' ability to detect issues and errors (Argote & Ingram, 2000; Uzzi & Lancaster, 2003). Hence, the evidence from scholarship on organizational learning and embeddedness suggests that monitoring quality should be improved by strong relationships characterized by high levels of trust.

On the other hand, strong relationships have also been found to correspond with undesirable behaviors that impair monitoring quality, namely a positive bias toward the regulated firm, a lack of due diligence, and an increased willingness to collude (Ashforth & Anand, 2003; Baker & Faulkner, 2004; Duflo, Greenstone, Pande, & Ryan, 2013). Implicit biases in favor of the regulated firm have been found to reduce monitoring quality in studies by social psychologists and accountants (Bazerman, Loewenstein, & Moore, 2002; Bowlin, Hobson, & Piercey, 2015; Gino & Pierce, 2010). Scholars of organizational deviance argue that strong relationships often act as substitutes for due diligence, in turn making monitoring agents vulnerable to opportunism (Baker & Faulkner, 2004). Lastly, although collusion with firms poses substantial risks for monitors, the trust that develops in strong relationships potentially mitigates the risks via coordinated behaviors (Ashforth & Anand, 2003; Gino & Galinsky, 2012; Greve, Palmer, & Pozner, 2010; Palmer & Moore, 2016). Accordingly, the literature on organizational deviance indicates that strong relationships frequently undermine monitoring quality.

To reconcile these seemingly divergent predictions for the effects of relationship strength and trust on monitoring quality, we assert that relationship strength has non-linear effects on monitoring quality. Weak relationships exhibit low trust, lack of coordination, and reduced information sharing, which makes them susceptible to monitoring failures in the form of unintentional errors. As monitors develop strong and trusting relationships with members of firms, the risk of unintentional errors

diminishes, but there comes a point at which regulated firms can potentially take advantage of the relationship strength, whether by exploiting the monitor's complacency or through outright collusion. We also concur with perspectives that trust is an important mediator in the relationships between monitors and firms (Argote & Ingram, 2000; Aven, 2015; Gulati, 1995; Levin & Cross, 2004). Within prolonged monitoring relationships, we therefore anticipate a U-shaped effect of relationship strength on the probability of monitoring quality. This convex function, a metaphorical valley, reflects the initial reduction in failures as trust promotes coordination, later followed by an increase in failures as trust permits negligence and collusion in the monitoring process.

As a phenomenon, researchers as well as the popular press have documented both the increasing ubiquity and high cost to society of monitoring failures (Akerlof & Shiller, 2010; Fligstein & Roehrkasse, 2016). For organizational theorists and strategy researchers, the importance of this topic is evident in a recently burgeoning literature on variation in monitoring quality among auditors (Corona & Randhawa, 2010; Gendron, Suddaby, & Lam, 2006; Harris & Bromiley, 2007; Moore, Tetlock, Tanlu, & Bazerman, 2006; Zhang, Bartol, Smith, Pfarrer, & Khanin, 2008). By illuminating the relational antecedents of monitoring failures, this study bridges and extends organizational theories of unintentional errors and deviance. The study also helps to explain conflicting findings from the accounting literature, which has been slow to incorporate perspectives from social psychology on the effects of relational strength and trust (Bedard & Johnstone, 2010; Carey & Simnett, 2006; Myers, Myers, & Omer, 2003). In particular, the curvilinear pattern that we propose reflects the duality of strong relationships, specifically that strong ties and trust facilitate both beneficial coordination and unethical behavior (Granovetter, 1985).

## Declining Monitoring Failures and Strong Relationships

Monitoring quality often hinges on the monitoring agent having accurate knowledge of complex processes and commonly requires tacit information (Downer, 2010; Levinthal & Fichman,

1988). Although regulated firms are required to provide all pertinent information to the monitor, the initial encounters are frequently characterized by poor information sharing and miscommunications (Argote & Ingram, 2000; Beasley, Carcello, Hermanson, & Neal, 2009; Geiger, & Raghunandan, 2002; Gray & Silbey, 2014). As a means of reducing the costs and challenges of knowledge transfer and learning, monitors often continue to oversee the same firm over time (Bedard & Johnstone, 2010; Levinthal & Fichman, 1988). The rationale for this continued monitoring is that over time a strong relationship can be established, allowing both parties to efficiently and effectively share necessary information, thus improving monitoring quality (Almutairi, Dunn, & Skantz, 2009; Downer, 2010; Gray & Silbey, 2014; Hansen, 1999; Johnson, Khurana, & Reynolds, 2002; Levin & Cross, 2004; Levinthal & Fichman, 1988).

Auditors who forge strong ties with their clients, the regulated firms, are better able to understand and communicate with them, allowing for timely audits that reduce costs (Bedard & Johnstone, 2010; Downer, 2010; Ettredge, Xu, & Yi, 2014; Levinthal & Fichman, 1988). Longer tenure with the auditor reduces the likelihood of a client switching its auditing partner even when the client's needs change, suggesting that switching costs are a primary concern to firms (Seabright, Levinthal, & Fichman, 1992). Strong relationships also increase the willingness to provide access to private information (Holloway & Parmigiani, 2016; Ingram & Roberts, 2000; Uzzi, 1997), and this information sharing in turn informs and improves organizational learning between the firms and monitors as each develops better understandings of each other's processes (Sa Vinhas, Heide, & Jap, 2012; Uzzi & Lancaster, 2003). Moreover, organizational disclosures of private information, encouraged by strong relationships, can allow monitors and regulated firms to converge on solutions (Ingram & Roberts, 2000; Uzzi, 1997). For instance, Uzzi (1999) found that strong relationships established between firms and their banks enhanced the transfer and credibility of private information,

leading to favorable loan agreements. Experimental studies in working groups also indicate that performance is enhanced by strong relationships, which leads to increased awareness of the other members' knowledge (Argote & Ingram, 2000).

## Increasing Monitoring Failures and Strong Relationships

In contrast to the literatures on embeddedness and organizational learning, research in organizational deviance suggests that strong relationships undermine monitoring quality. Strong relationships have been found to correspond with undesirable behaviors, such as negligence, opportunism, and collusion (Ashforth & Anand, 2003; Aven, 2015; Greve et al., 2010; Palmer & Moore, 2016). For example, Podolny and Scott Morton (1999) found that strong ties encouraged the adoption of price-fixing arrangements within European shipping cartels around the turn of the century. Also, in a study of insider trading, illegal information sharing was found to be far more common when the two parties shared a strong connection, such as a familial tie (Ahern, 2017). We observe that strong relationships potentially reduce monitoring quality in three different ways.

First, monitors may become biased because they feel more accountable to the individuals and firms with whom they repeatedly interact rather than the faceless public or investors whose interests they purportedly represent (Bazerman et al., 2002; Moore et al., 2006). In other words, monitoring quality is undermined by the positive bias that monitors develop towards those they monitor, as seen in experiments that show a role-conferred bias toward clients by participants assigned to the role of auditors (Bazerman et al., 2002).

Next, sociological research suggests that stronger interorganizational relationships can foster wrongdoing by inhibiting partners from exercising their due diligence (Downer, 2010; Gray & Silbey, 2014). Monitors who have strong relationship with the regulated firm are likely to become complacent and less likely to thoroughly investigate ambiguities, in turn making the monitor vulnerable to opportunism (Ayres & Braithwaite, 1991; Granovetter, 1985; Baker & Faulkner, 2004). In such cases,

the regulated firm has come to understand the monitor's regulatory procedures, making it easier to hide infractions from the monitor. Hence, strong relationships create greater opportunities for misconduct by the regulated firm.

Finally, collusion is risky in part because it requires cooperation, and strong relationships might increase the confidence of firm members and monitors in terms of their counterparts' willingness and ability to commit a fraud. Strong relationships may serve not only as a precursor to the engagement of fraud, but may additionally help with the coordination of fraud, reducing the likelihood of detection (Ahern, 2017; Aven, 2015). Bazerman and colleagues (2002) found evidence in two experiments, including one on professional accountants, that strong connections to clients biased auditors in favor of their clients' interests. Indeed, relationships between monitors and monitoree might evolve from "cozy to corrupt if familiarity between auditors and management emboldens managers to pressure or even bribe auditors to report good results" (Short, Toffel, & Hugill, 2016: 1881). Auditors may also feel compelled to collude with their clients to retain the client's business or to protect the auditing firm's reputation (Corona & Randhawa, 2010; Levinthal & Fichman, 1988). Moreover, it is not uncommon for auditors to become employed as senior financial officers at the firms which they formerly audited, which may create greater incentives for auditors to collude with their clients (Dal Bó, 2006; DeFond & Zhang, 2014).

## The Curvilinearity of Monitoring Failures

In sum, strong relationships have been found not only to facilitate learning and information sharing, but research also indicates that they increase the risk of negligence and collusion (Corona & Randhawa, 2010; Gino & Bazerman, 2009; Gino & Galinksy, 2012; Moore et al., 2006). We argue here that although monitoring quality may improve with greater relationship strength between the monitoring agent and members of the regulated firm, the beneficial effects eventually reach a threshold. Once relationships surpass this threshold, further increases no longer improve monitoring quality but

instead can jeopardize it (Boone, Khurana, & Raman, 2008). Proximately, we anticipate that for weak relationships, monitoring failures would largely be comprised of unintended mistakes due to insufficient understandings between the monitor and monitoree, whereas for strong relationships the monitoring failures would more likely arise from biases, a lack of due diligence, or collusion. Drawing on predictions of learning and deviance for monitoring failures, our theoretical model is presented in Figure 1. By considering the characteristics of both weak and strong relationships, the model asserts that monitoring quality is highest primarily among relationships of moderate strength. Formally:

**Hypothesis 1.** There will be a curvilinear relationship (U-shaped) between relationship strength and monitoring failures, such that monitoring failures will be more likely to occur for weak and strong relationships and less likely to occur for relationships of moderate strength.

Insert Figure 1 about here

Despite contrary predictions for monitoring quality, the literatures on organization learning and organizational deviance both cite trust as an important underlying mechanism for the effects of strong relationships (Argote & Ingram, 2000; Aven, 2015; Gulati, 1995; Levin & Cross, 2004). The common definition of trust provided by these streams of research regards it as confidence in the other party's behavior and benevolence (Levin & Cross, 2004; Yenkey, 2017; Zaheer et al., 1998). Prior to the formation of trust, the monitor and monitoree are uncertain of their counterpart's motivations and abilities. However, as trust develops within the relationship, it benefits both parties by allowing them to reduce contracting costs and oversight of the other's activities; and yet, it also makes monitors vulnerable to opportunism and collusion (Ayres & Braithwaite, 1991; Granovetter, 1985). As trust increases and the respective parties gradually become confident of each other's behavior and benevolent intentions, the opportunities and potential pay-offs of misconduct also increase (Brass, Butterfield, & Skaggs, 1998). Accordingly, we argue that trust underlies the curvilinear effect of

relationship strength on monitoring quality. Simply put, trust poses a trade-off for monitoring: On the one hand, it can improve coordination and reduce errors, while on the other hand, it increases the risk of both negligence and collusion. Therefore, we hypothesize:

**Hypothesis 2.** Trust mediates the curvilinear relationship (U-shaped) between relationship strength and monitoring failures, such that monitoring failures will be more likely to occur when there is either low or high trust.

## Empirical Approach

Our hypotheses suggest that monitoring failures in the form of both errors and fraud stem from the strength of social relationships and the degree of trust between individual monitors and monitorees. Given that accurate data of monitoring failures are difficult to obtain (Fligstein & Roehrkasse, 2016) and tests for the social psychological mechanisms are challenging to conduct in field settings, we consequently investigate our hypotheses with three complementary methods: archival data from financial audits, survey data of auditors, and a simulated audit experiment. Our first study examines longitudinal field data to test our main hypothesis that relationship strength exhibits a U-shaped effect on monitoring failures in the form of financial restatements. While these data on commercial banks have strong external validity, we cannot be certain of the extent to which these data might generalize beyond the particular setting, and it is difficult to isolate a causal mechanism. In Study 2, we sought to re-test Hypothesis 1 based on responses from CPAs in a range of industries as well as validate the underlying assumptions that the monitoring failures that occur on the left side of the U-shape are due to unintentional errors whereas failures that comprise the right side are more likely to be intentional and fraudulent. The final study is a controlled experiment, which allows us to examine the underlying processes of relationship strength on monitoring failures by distinguishing the unintentional errors from the intentional fraud. In addition to providing greater casual identification, this experiment allows us to test Hypothesis 2 that trust mediates the effect of relationship strength on both forms of monitoring

failures, namely errors and fraud. Overall, the aim of our theory and the subsequent three studies is to shed light on the interpersonal process underlying monitoring failures rather than relationships between firms. While scholars often treat the relationships between organizations and the relationships between the individuals employed by those firms as interchangeable, our contention is that trust, as with other forms of affective attachment, fundamentally occurs between individuals rather than firms (Sorenson and Rogan, 2014). Whereas we acknowledge that monitoring failures are predicated on monitorees committing either errors or fraud, the rationale and incentives for such behavior are largely evident, thus requiring regulatory oversight by monitors (Becker, 1968). Our attention is focused primarily on the role of the monitors to better understand the relational antecedents of monitoring failures.

**Study 1: Longitudinal Archival Data on Relationship Strength for Monitoring Quality**

To investigate the effects of trust on monitoring quality, we first examine the relationships of external auditors and their clients on financial restatements, a common measure of monitoring quality (DeFond & Zhang, 2014; Harris & Bromiley, 2007; Palmrose & Scholz, 2004). Financial restatements refer to events in which firms provide the U.S. Security and Exchange Commission (SEC) and the public with inaccurate financial statements, which may reflect either genuine errors or an occurrence of fraud. The SEC mandates that firms must hire one external auditing firm to objectively verify their financial performance and operational state so that government agencies, investors, and other professionals may rely on the veracity of the firm's financial statements and records. Thus, these external auditors play a key regulatory role as monitors of the financial system (Gendron et al., 2006). Despite the monitoring from external auditors, every year many firms must correct or restate their earnings because auditors failed to detect material errors in the financial statements (DeFond & Zhang, 2014; Palmrose & Scholz, 2004). More concerning, when the SEC litigates against firms for intentionally misreporting their financial restatements, their auditors have often been found to be complicit in the fraud (Bazerman et al., 2002; Myers et al., 2003; Persons, 2006).

We focus our study on the effects of relationship tenure on monitoring quality by analyzing the relationships between external auditors and their clients in the United States commercial banking industry who are required to file with the SEC.[1] Relationship tenure, which is synonymous with repeated exchanges in our setting because monitoring outcomes are reported on a calendar basis, is a predominant means of operationalizing relationship strength for firms (Carey & Simnett, 2006; DeFond & Zhang, 2014; Lee, 2013; Levinthal & Fichman, 1988; Myers et al., 2003; Seabright et al., 1992). We choose to focus on the U. S. commercial banking sector because it is one of the most complex industries to audit given the extent of regulation and reporting requirements (Bonner, Palmrose, & Young, 1998; Ettredge et al., 2014). Also, this particular industry has one of the highest rates of monitoring failures as compared to other industries (Persons, 2006). This permits greater opportunities to observe monitoring failures systematically, rather than focusing on a limited number of potentially anomalous cases. Furthermore, focusing on one industry limits the extent to which incommensurable regulations or market changes might influence the likelihood of restatements.

According to SEC requirements, one independent auditing firm needs to examine all the bank's annual financial statements, such as a form 10-K, which are filed with the SEC and reported to shareholders. Upon examining the bank's annual financial statements, the auditor applies "auditing procedures" to ensure that the financial reporting is in accordance with "generally accepted accounting principles" (PCAOB, 2015). In doing so, it is the auditor's responsibility to obtain an understanding of the bank, including its internal controls and its financial and legal obligations, which often entails inspection of the bank's financial data and systems. Importantly, the auditor is also mandated to assess the risk of either error or fraud for the financial statement (PCAOB, 2015). Given the extensive

[1] Banks with more than ten million dollars in assets and equity securities held by more than 2,000 owners must file with the SEC.

regulations of the United States commercial banking industry, the auditing of these banks requires specialized financial expertise and in depth information from the client bank (Downer, 2010; Levinthal & Fichman, 1988).

The auditing process begins with the design of an auditing plan for the bank and the formation of an auditing team. The external auditors then coordinate with the bank's internal auditing committee, normally comprised of board officers and the internal auditors. Throughout the auditing process, the external auditors communicate and meet regularly with the internal audit committee (Beasley et al., 2009). The number of external auditors working with the client typically varies based on the complexity and scope of client's financial reporting, and the group generally is composed of an engagement partner or the principal auditing partner, a senior manager, managers, audit seniors, audit staff, and specialists (Udeh, 2015). While all the external auditors interact with the client, the principal auditing partner usually has the greatest amount of interactions with the bank officer, who certifies the audit process internally and is the signatory on the annual reports (Bowlin et al., 2015). Although the auditing firm cannot guarantee the continuity of the auditors to the client over time, they prefer that their auditors remain with a client bank throughout the entirety of the engagement because of improvements in both the audit quality and client satisfaction (Bedard & Johnstone, 2010).

**Data**

We collected data from two sources: The Audit Analytics Audit and Compliance (AAAC) database and Standard & Poor's COMPUSTAT financial database. Our data represent the entire population of U.S. commercial banks between 2002 and 2017 who have filed a form 10-K with the SEC. The AAAC database is a proprietary database comprised largely of publicly available data via the SEC's Edgar (Electronic Data Gathering, Analysis, & Retrieval system) database of filings by corporations, funds, and individuals. These data provide both financial information about the banks, such as annual revenue, assets, and market capitalization, as well as auditing details, such as their

auditing firm and the fees for auditing services. In addition, these data are the source of our key independent variable: the relationship tenure of the bank and the auditing firm. Related information about the banks, such as their annual size, come from COMPUSTAT.

In reaction to several high-profile monitoring failures, such as Enron, the Sarbanes-Oxley Act of 2002 (SOX) was established by the U.S. Congress to further regulate both auditors and their clients. To account for dramatic shifts in regulations and reporting to the SEC, we analyze cases after SOX was implemented. Prior to 2000, we do not have the start dates or complete information for all the banks and auditing firms in our dataset, making it difficult to determine the actual tenure. To address this potential left-censoring issue, we include only relationships that formed after 2000. In this way, our sample includes only the pairs with complete information for the length of the relationship. Therefore, our data is longitudinal in that we have annual observations of financial reports from 2002 to 2017 for all commercial banks and their respective audit partners.

**Variables**

**Financial Restatements**. We use the financial restatements that were issued by the banks as a measure of monitoring quality and our outcome variable. The Financial Accounting Standards Board defines a restatement as a revision of a previously issued financial statement to correct an error. Because we are interested in monitoring failures of auditors, we focus only on occurrences involving accounting rules violations. Filed financial restatements are either the result of an error, the unintentional misapplication of "generally accepted accounting practices," or fraud, the intentional disregard of accounting practices (DeFond & Zhang, 2014). Thus, our dependent variable is a binary outcome that equals one when a bank reissues a financial statement with corrections, and zero

otherwise.[2] Because financial restatements occur after the initial earnings statement, we record the restatement for the year that it was corrected and not the year that it was reported. For instance, if it were determined in 2014 that a bank misreported its 10-K for 2011, we would record the restatement as occurring in 2011. We include statements that both under-report and over-report earnings because unintentional errors can entail either costly or beneficial mistakes.

**Bank CFO-Auditor Tenure**. As our predictor variable, we measure the tenure of the relationship between the member of the bank responsible for the internal audit and the external auditing firm. In the accounting literature, relationship tenure between firms has been commonly studied as a determinant of audit quality and outcomes (Bowlin et al., 2015; Carey & Simnett, 2006; DeFond & Zhang, 2014; Levinthal & Fichman, 1988; Myers et al., 2003; Seabright et al., 1992). In our case, we would prefer to measure the tenure of the interpersonal relationship of the individual at the bank directing the audit and the principal auditing partner directly because these individuals are ultimately responsible for the quality of the audit (Bowlin et al., 2015; Levinthal & Fichman, 1988; SEC.gov, 2017). However, although banks were required to report the firm's primary signatory,[3] the SEC did not require the name of the principal auditing partner to be reported in the SEC filings during our observation period (SEC.gov, 2017).[4] Customarily, the bank's signatory is the Chief Financial Officer (CFO), but he or she can also hold other titles such as controller (hereafter, we refer to the signatory regardless of title simply as CFO). We coded both the changes in the bank's CFO and the

[2] Detection of errors can happen via a number of means: 1) the bank itself recognizes the mistake in its previous statements, 2) often when banks change auditing firms, the new firm reviews earlier statements and finds mistakes, or 3) the SEC identifies possible discrepancies in the bank's financial reports and alerts the firm.

[3] The SEC requires that a 10-K form be signed by the firm's principal executive officer or officers, its principal financial officer or officers, its controller or principal accounting officer, and by at least the majority of the board of directors or persons performing similar functions.

[4] In 2017, after our data were collected, the SEC changed the regulation on reporting for auditors and the principal auditor is now required to be reported.

auditing firm from the banks' 10-K statements. We treat a change in either the bank's CFO or the auditing firm as the start date for the pair. Tenure is then measured in years from the start date until the partnership dissolves or the bank selects another auditing firm. Hence for each bank, *bank CFO-auditor tenure* measures the length of time that the bank's CFO worked with the auditing firm. In subsequent robustness checks, we also report the tenure between the banks and auditing firms irrespective of changes in the bank's CFO.

The information reported in the bank's 10-K statements represents the formal onset of the relationship, but barring a change in either the bank's signatory or the auditing firm, it is not possible to discern when the relationship ended. Assuming that the relationships continue in perpetuity would not be accurate, so we adopt a common practice in network studies: a moving time window (cf. Baum, McEvily, & Rowley, 2012; Cattani & Ferriani, 2008). In 2002, SOX mandated that the principal auditing partner, the individual at the accounting firm who oversees the client's audit, rotate off the client account every five years (Bedard & Johnstone, 2010). Because the maximum relationship tenure overlap for the CFO and the principal auditing partner is five years, we opted to examine their relationship tenure within a 10-year window, double the auditing partner's potential assignment with the bank, as a conservative estimate of the possible overlap between the two individuals. Thus, *bank CFO-auditor tenure* ends with a change in either the bank's signatory or its auditing firm; otherwise we include only the first ten years of observations for the pair. In all, this exclusion of the lengthiest relationships reduces our sample of dyad-year observations by approximately 6% (in subsequent robustness checks, we consider the effect of *bank CFO-auditor tenure* on *financial restatements* in a sample that includes the omitted observations). Finally, because our hypothesis predicts a U-shaped relationship between *bank CFO-auditor tenure* and *financial restatements*, we include in our models a second-order polynomial term for relationship tenure.

**Control Variables**

**Bank Size.** Prior research shows that financial errors are more prevalent among smaller companies (Carey & Simnett, 2006; Levinthal & Fichman, 1988; Myers et al., 2003), and thus we created a variable, *bank size*, that measures the total assets held by the bank in each year, expressed in hundreds of millions of dollars. Controlling for the total assets held by a bank is also important in light of evidence that monitors might engage in wealth-based discrimination when auditing clients (Gino & Pierce, 2010).

**Big Four Auditing Firm.** This binary variable takes the value of one if the auditing firm is one of the four major auditing firms in the market, often referred to as the "Big Four" (i.e., Deloitte, Ernst and Young, KPMG, and Price Waterhouse Coopers), and zero otherwise. Auditing research commonly controls for these auditing firms due to their considerable size and influence (Carey & Simnett, 2006; Gendron et al., 2006; Myers et al., 2003).

**Auditor Market Share**. This variable measures the market share of the individual auditing firm in the commercial banking market by year. Some scholars posit that auditors with a larger market share will be less susceptible to client pressures to relax monitoring quality (Moore et al., 2006). *Auditor market share* captures the size of the auditing firm relative to other firms in the market. It is calculated annually as the audit fees that the firm charges to its client banks divided by the sum of audit fees charged by all auditors to all banks. Thus, high values are indicative of auditors with a large portion of the U.S. commercial bank market. For example, a value of one would indicate a perfect monopoly, with only one auditing firm serving the entire population of commercial banks.

**Auditor Dependence**. Banks might have greater ability to coerce an auditing firm if the bank represents a majority of the auditing firm's business. The power that the banks wield over auditors can lead auditors to compromise the integrity of their audits by failing to challenge financial records that make clients appear more profitable than they truly are (Carey & Simnett, 2006; Myers et al., 2003). To

account for this, we measure *auditor dependence*, which is a measure of the bank's auditing fees divided by the sum of the auditor's auditing fees for all of its client banks in that year.

**Fee Ratio.** This variable is the proportion of audit fees to the total fees (auditing and non-auditing) that an auditing firm charges a particular bank. Audit fees consist of fees charged by external auditors in exchange for performing an audit or review of banks, and these fees provide insight about the bank's risk, complexity, and size (Ettredge et al., 2014). Non-audit fees pertain to fees charged by external auditors in exchange for performing audit-related services, benefits plan services, IT services, tax services, and other services for banks. *Fee ratio* is commonly used in the accounting literature as a control variable because it is thought to create a conflict of interest for the audit firm (Carey & Simnett, 2006; Moore et al., 2006; Pierce & Toffel, 2013). A low *fee ratio* indicates that the auditing firm's charges to the bank are largely comprised of fees for non-auditing activities.

**Estimation Approach for Financial Restatements**

To estimate our dependent variable, the likelihood of a *financial restatement*, we modeled the effects of *bank CFO-auditor tenure* on a *financial restatement* using both conditional logit and linear regression models with fixed effects for the bank-auditor dyad. All models also include fiscal year fixed effects to account for temporal variations, such as varying regulatory climates or different reporting standards. Given that the repeated observations of banks and auditors introduces non-independence into the sample, we estimate standard errors with multi-way clustering for the banks and the auditors, respectively. Although the number of auditors in some models is below the recommended threshold of 40 observations (Angrist & Pischke, 2009), our results remain consistent when we instead cluster on the dyads or the banks, neither of which fall below this threshold (see Supplemental Table S.1 and Table S.2). Finally, we follow the approach suggested by Lind and Mehlum (2010) for examining curvilinear functions, and we additionally apply Simonsohn's (2017) two-lines test to the relationship between *bank CFO-auditor tenure* and *financial restatements*.

Our models include fixed effects for the dyad to account for unobserved heterogeneity among these pairs that could bias the estimated effects of relationship tenure. For example, banks with strong organizational cultures may have longer tenures with their auditing firms and be more likely to have a *financial restatement*. Conditioning on the dyad reduces the potential bias introduced by such omitted variables. Conditional logit models are the characteristic choice for estimating the probabilities of binary outcome variables, but these models are undefined when there is a lack of variation within categories, which applies in this case when dyads report no *financial restatements* during the study period. That is, of the 370 unique dyads in the dataset, only 64 reported a restatement, and the conditional logit models are therefore estimated on this subsample of dyads. In order to exploit variation in the full population via the inclusion of pairs without *financial restatements*, we also estimate linear probability models with similar specifications to the conditional logit models. While these models again include both fixed effects for dyads and fiscal year, all observations are retained, including the dyads that did not report a *financial restatement*.

**Results for Financial Restatements**

Table 1a and Table 1b present the descriptive statistics for our variables of interest for the conditional logit sample and the full population of dyads, respectively. In Table 2, Models 1-3, we report results from the conditional logit regression models for *financial restatements*. The first model in Table 2 reports a baseline model without the control variables and only the first-order effect of *bank CFO-auditor tenure,* which is not independently predictive of *financial restatements*. When we include both *bank CFO-auditor tenure* and its quadratic term in Model 2, a Wald test indicates that it significantly improves the fit of the model ($p = 0.007$). The first-order effect of *bank CFO-auditor tenure* is negative and significant ($\beta = -0.869$, $p = 0.006$), and the positive and significant quadratic term ($\beta = 0.076$, $p = 0.013$) indicates a convex relationship. For instance, as seen in Figure 2, the model predicts that the probability of a restatement is 0.32 in the second year of the relationship tenure. This

probability drops to 0.15 after five years of tenure, followed by an increase to 0.28 when a bank CFO and auditing firm have worked together for eight years. This U-shaped function therefore provides support for Hypothesis 1. We add the full set of control variables to Model 3, and the U-shaped effect of *bank CFO-auditor tenure* remains consistent. Of the control variables, *bank size* is significantly positive ($\beta = 0.008$, $p < 0.001$), while *auditor market share* and *auditor dependence* are negatively related to *financial restatements* ($\beta = -9.169$, $p = 0.003$; $\beta = -8.708$, $p < 0.001$, respectively). In other words, these results suggest that increases in a bank's size are associated with a greater likelihood of *financial restatements,* but an increase in auditor's control in the market has the opposite effect on the likelihood of *financial restatements* in this subsample. Interestingly, our results indicate that increases in *auditor dependence* reduce the likelihood of *financial restatements.*

The linear probability models in Table 2 provide additional support for the U-shaped effects of *bank CFO-auditor tenure* on the probability of *financial restatements*. These models indicate that the lowest probability of restatements occurs at approximately five and a half years of relationship tenure. Also, the control variables generally exhibit similar effects to the conditional logit estimates, though *bank size* is not a significant predictor in these models. Overall, these results support Hypothesis 1, and *bank CFO-auditor tenure* exhibits similar effects in both the sample of dyads that report a financial restatement and the full population of commercial banks and their respective audit partners.

Insert Table 1a, Table 1b, Table 2, and Figure 2 about here

Although a significant quadratic term suggests a curvilinear relationship between *bank CFO-auditor tenure* and *financial restatements,* it is not a conclusive test of a U-shaped relationship (Lind & Mehlum, 2010; Simonsohn, 2017). Two additional requirements need to be met: The turning point in the U must be located within the data range, and the slope must be sufficiently steep at both ends of the data range. In our case, the turning point for our model is well within our data (*Extreme point* = 5.747 for the conditional logit models, and *Extreme point* = 5.717 for the linear regression models), and both

slopes are significantly steep, as shown by the fact that Sasabuchi's (1980) test of a U-shaped relationship for *bank CFO-auditor tenure* is significant ($p = 0.023$; $p = 0.015$, respectively). In some cases, however, the above tests are still vulnerable either to specification errors or failing to detect a U-shape when it is in fact present. To account for such issues, we implement the two-lines test that Simonsohn (2017) proposes, which determines the extreme point of the function and then estimates two linear segments with a discontinuity at the extreme point. The results of the two-lines test support Hypothesis 1 (see Figure 3). The effect of *bank CFO-auditor tenure* on the probability of financial restatements is significant and negative ($\beta = -0.016$; $p = 0.006$) until the extreme point, after which the effect then becomes significantly positive ($\beta = 0.014$; $p = 0.010$).

Insert Figure 3 about here

**Robustness Checks**

Given that our arguments depend on the measure for relationship tenure, as a robustness check we explored alternative measures and models. First, we replaced the *bank CFO-auditor tenure* with the tenure between the two respective firms, *bank-auditor tenure* (Supplemental Table S.3). This variable for tenure reflects the number of years that the bank and the audit firm worked together, potentially involving multiple CFOs. While we find a similar curvilinear pattern as presented for the logit models with this less conservative measure (see Supplemental Table S.3, Models 1-3), the quadratic term is no longer significant in the linear probability models (Supplemental Table S.3, Models 4-6) and does not pass the two-lines test. These results suggest that the initial reduction for monitoring failures is evident for *bank-auditor tenure*, but the second-order effect evidently pertains to the interpersonal relationship captured by the *bank CFO-auditor tenure*.

Another potential concern for our predictor variable is the use of the moving time window, which we used to address the lack of information on when the interpersonal relationships ended. To address this concern, we replicated the models presented in Tables 2 using *bank CFO-auditor tenure*

without the 10-year window and the addition of its third-order polynomial term. We include the cubic term for *bank CFO-auditor tenure* because of uncertainty about the functional form beyond 10 years and our expectation that the rate of restatements would not increase indefinitely in lengthier relationships. For both the logit and linear probability models, the addition of the cubic term does not improve model fit, and the implied predictions of the models continue to support a U-shaped effect of relationship tenure on financial restatements (Supplemental Table S.4).[5]

**Discussion**

The emergent pattern for restatements is supportive of our argument for the U-shaped effect of relationship strength on monitoring quality in Hypothesis 1. Relationship tenure reduces monitoring failures to the inflection point, but restatements begin to increase after approximately 5.7 years in the relationship tenure of the bank CFO and auditor. These results provide preliminary evidence that initially monitors and monitorees must learn to work together to avoid errors, but the continuation of the relationship also fosters the conditions necessary to commit fraud. Two challenges remain from this study. First, financial restatements must be detected and reported to the SEC to be included in our dataset, and thus the results may be biased by the process of detection. Second, although high trust is common in strong relationships with long tenure (Gulati, 1995; Levin & Cross, 2004), in Study 1 we were unable to directly measure the amount of trust between the bank CFO and the auditor. We address the potential detection biases in the following two studies and directly examine trust in the Study 3 while providing additional tests of Hypothesis 1.

[5] The models with cubic terms suggest that the probability of a financial restatement continues to increase as relationship tenure exceeds 10 years, but owing to the scarcity of data in these ranges, further research is needed before inferences can be made about monitoring quality in long-lasting relationships.

## Study 2: Survey of Certified Public Accountants

In the second study, we sought to further test Hypothesis 1 that relationship tenure exhibits a U-shaped pattern with monitoring quality and to substantiate our assumption that the left-hand side of the U-shape is driven by errors while the right-hand side is largely due to fraud. For this study, a survey was administered to a sample of 198 licensed Certified Public Accountants (CPAs), who are professional auditors and therefore can provide unique insights into the behavior of financial monitors that might not have been detected in the data from Study 1 (Gendron et al., 2006). The survey was administered by a private survey research firm, and the CPAs received payment for their participation. The participants reported an average of 12 years of experience working as a CPA, ranging from 1 to 39 years. Participants were approximately 39 years old on average ($SD$ = 10), and 92 were female. While 44 percent of the CPAs in our sample specialized in Financial Services, Commercial Banking, or Capital Markets, over 12 different industrial specializations were reported in our sample (see Supplemental Table S.5 for descriptive statistics of specializations).

### Procedure

The survey research firm invited panel members to participate in an online survey about perceptions of the auditing industry, of which our survey was a subset of the questionnaire. To participate in the study, respondents had to be at least 18 years old and a licensed CPA currently working in the United States. In addition to answering demographic questions, respondents were asked to indicate the likelihood of a CPA failing to identify financial misstatements by a client and the prevalence of misstatements that are intentionally overlooked by auditors. We opted to ask CPAs about monitoring quality of hypothetical peers rather than asking direct questions about poor monitoring because research shows that self-reports of unethical behaviors are more prone to social desirability bias than are reports about others' behavior (Randall & Fernandes, 1991). The increments of

relationship tenure used in the questions were based on empirical patterns found in Study 1. The order of the questions in the survey was randomized to prevent order effects.[6]

**Results for Misstatements & Intentionality**

In this study, financial misstatements such as incorrect 10-K forms are indicators of monitoring failures, but unlike in Study 1, they are not contingent on detection and reporting to the SEC. Using a five-point response scale ranging from 1 (extremely unlikely*)* to 5 (extremely likely), CPAs were asked the following question four times with the different time intervals listed: "*In your opinion, what is the likelihood that CPAs will fail to identify a material misstatement by a client when they have worked with the client for* {0-3 years, 3-5 years, 5-10 years, and 10 years or longer}?"[7] Based on these responses, we re-tested Hypothesis 1 here using an OLS regression model with the respondent's perceived likelihood of *financial misstatements* as the dependent variable and *client-auditor tenure* and its quadratic term as predictors.[8] The models also include fixed effects for individual CPAs.[9]

In Table 3, Model 1 includes only the first-order effect of *client-auditor tenure*, which is not an informative predictor of the *financial misstatements*. Model 2 includes both *client-auditor tenure* and its quadratic term, showing that both coefficients are statistically significant ($\beta = -0.290$, $p = 0.045$, and $\beta = 0.057$, $p = 0.046$). Similar to the pattern found for financial restatements in Study 1, these results indicate a U-shaped relationship between *client-auditor tenure* and *financial misstatement*, which we

[6] Eight respondents were dropped from the sample for failing to complete the survey.
[7] Before answering each question, participants were required to pass a comprehension check on the relationship length to ensure they understood the construct that was currently being targeted.
[8] Ordered logistic regressions produce similar results to those in Table 3 and are reported in Supplemental Table S.6. We present the OLS results for ease of interpretation.
[9] In a comparison of the fit statistics for models reported in Table 3 and models that did not include CPA fixed effects, we found that the majority of response variation was derived from individual respondent differences.

present in Figure 4.[10] In sum, the CPA reports of monitoring failures amplify support for Hypothesis 1 by suggesting that the convex function in the first study on banks is not a by-product of the process of detection.

Insert Table 3 and Figure 4 about here

Given that the distinction between errors and fraud lies in the intentionality of the individuals, we investigated the underlying assumption of Hypothesis 1 that the left side of the U-shape is driven by unintentional errors while intentional fraud drives the right side. Specifically, CPA respondents were asked "*In your opinion, what percentage of CPAs who have worked with a client for* {3 years or less; 5 years or longer} *have INTENTIONALLY overlooked a material misstatement at least once*?"[11] Respondents reported that they thought that other accountants who had worked with a client for over five years were more likely to intentionally overlook a financial misstatement (26.4%) than CPAs who had worked with a client for 3 years or less (20.0%). A paired *t*-test indicates a significant difference between these means ($t = -6.226$, df = 197, $p < .001$).

**Discussion**

Study 2 extends the findings of Study 1 in three ways. First, it substantiates our finding of a curvilinear relationship between relationship strength and monitoring quality in that CPAs report failures to be more common either earlier or later in the relationship, irrespective of detection or reporting to the SEC. Second, the CPAs' responses support the assumption that weak auditor-client relations are conducive to unintentional monitoring errors, whereas strong relationships correspond to

[10] We found a similar pattern of results when we treated each relationship tenure interval as a categorical variable. In particular, the pattern revealed that the significant difference in the likelihood of *financial misstatements* appears to be driven by a decrease in misstatements between short (i.e., 0 to 3 years) and medium (i.e., 3 to 5 years) *client-auditor tenure*.

[11] We also included a similar question regarding the likelihood of unintentional errors. Although the respective percentages are 35.04 for working with a client from 0 to 3 years and 36.83 for working with a client for over 5 years, a paired *t*-test indicates that these means are not conclusively different from each other ($p = .068$).

greater intentional errors (i.e., fraud or collusion). Finally, the CPAs surveyed specialize across different industries, which suggests that the effects we find in Study 1 generalize beyond the context of the commercial banking industry.

## Study 3: Experiment on Relationship Strength for Financial Errors and Fraud

The main purpose of the third study is to test Hypothesis 2 that trust is the mechanism linking relationship strength to monitoring failures, and the experimental design also allows us to address the possible issues of endogeneity in Studies 1 and 2. In addition, although Study 2 suggested that unintentional errors would be more likely for weak relationships while intentional fraud would be more common for strong relationships, it was not possible in the archival analysis to distinguish true errors from fraud. In the following experiment, we attempt to address these issues and test the second hypothesis that trust mediates the effect of relationship strength on both errors (where we expect the effect of tenure and trust to be negative) and fraud (where we expect tenure and trust to have a positive effect).

### Participants and Experimental Design

We recruited 140 participants (70 pairs; $M_{age}$ = 24.80, $SD_{age}$ = 8.04, 69 female) to participate in a 30-minute online 'Decision Making' study in exchange for either course credit or $2 payment.[12] In addition, participants had the opportunity to earn up to $4 in bonus money depending on their decisions in the study. Participants were recruited from two universities located in the United States as well as from Amazon MTurk.[13]

[12] In the Supplemental Table S.7 we present the models similar to those presented in Table 4 that also include a control that distinguishes the paid participant pool. While paid participants did demonstrate a significant positive effect on trust, it was not significant for the estimates of errors or fraud.

[13] The sample was 33% White, 38% Asian, 5% Black, 3% Hispanic, and 21% other (e.g., multiracial, American Indian). Thirty-five participants had missing data on race due to voluntarily declining to provide a response.

To understand the causal effects of relationship strength, we used a four by two experimental design. Within each of the eight conditions as we describe below, the members of the participant pair were randomly assigned to act as either a "bank CFO" or an "auditor" in three audit simulation tasks. Those assigned to the banker role prepared financial statements on behalf of a hypothetical firm whereas participants assigned to the auditor role reviewed the banker's financial statements for accuracy. The payoffs for each role were designed to mirror the incentives and risks present in an actual audit, where the participant in the banker role could profit from over-reporting on their financial statement. To instantiate risk of detection, all pairs were instructed that they were subject to a random oversight by the experimenter, and they would be fined for submitting an incorrect financial statement.

A challenge with examining the effects of social relationships experimentally, especially those involving varying relationship strength, is the infeasibility of randomly assigning individuals to strong relationships. Here, we use a strategy common to negotiation studies where we recruit pairs with various relationship tenures (Tenbrunsel, Wade-Benzoni, Moag, & Bazerman, 1999). As with studies 1 and 2, we again operationalize relationship strength as tenure. Upon signing up for the study, participants were randomly assigned to one of the eight experimental conditions: treatment or control across four relationship tenure conditions: stranger, weak, moderate, and strong. Those assigned to the weak tenure, moderate tenure, and strong tenure conditions were told they must find a partner who fit their condition-specific criteria to complete the study with them, or otherwise they would not be allowed to participate. In the *stranger* condition, participants completed the audit simulation with a randomly assigned partner whom they had never met.[14] Participants then completed the audit

[14] To ensure that the participants were random, we assigned partners from different recruitment pools (e.g., different universities).

simulation with a partner whom they knew for three years or less in the *weak tenure* condition, a partner they knew for three to five years in the *moderate tenure* condition, and a partner they knew for five years or longer in the *strong tenure* condition.[15] Participants did not learn about the study design until after they began the study with their partner in order to minimize selection effects for the chosen partner.

In addition to the tenure condition, each pair was also randomly assigned to either an over-report treatment or a control condition. In the over-report condition, participants in the banker role were given confidential instructions to over-report their firm's earnings on the financial statements, which would increase their profits. Additionally, participants were told not to share their confidential instructions to over-report earnings with their auditor counterpart, or otherwise they would not receive payment from the study. In the control condition, participants in the banker role were not given instructions to over-report the firm's earnings on the financial statements. This condition allows us to examine the behavior of the monitor in response to fraud.

We structured payouts to reflect the different incentives of bankers and auditors. Participants in the banker role received a bonus for reporting larger profits on their financial statement when approved by the participant in the auditor role. Participants in the auditor role were paid a flat rate to monitor whether the banker's financial reports were accurate. Participants also learned that their decisions in the audit simulation would be subject to a random oversight (conducted by the experimenter). If an error was detected in the financial statements and approved by the auditor, both participants were fined ($0.75 each). If an error was detected in the financial statements but the auditor did not approve the

[15] We compared tenure by condition to the mean of participants' self-reported relationship tenure (i.e., 'How many years have you known your partner?'). The average relationship tenure across each condition was: stranger, 0 years; weak tenure, 2.3 years; moderate tenure, 4.7 years; strong tenure, 9.74 years.

statement, only the banker was fined ($0.75). Participants assigned to the over-report condition and the banker role were not subject to fines for over-reporting earnings, but their auditor counterpart still received fines for inaccurate monitoring.

**Procedure**

After reading the instructions for the audit simulation, participants completed a comprehension check about their role and the audit simulation task's procedures. If participants answered a question incorrectly during the comprehension check, they were asked to review the instructions again and re-answer the missed question(s) until the correct response was chosen. Each pair in the experiment individually answered a series of questions about themselves and their relationship with their partner. These questions, which were counterbalanced within the experiment to mitigate order effects, included individual demographics, the number of years they had known their partner, and how much they trusted their partner. Prior to the audit simulation, participants individually completed two practice sessions in which they prepared or reviewed a financial statement (depending on their role). The audit simulation was conducted with their partner and participant interactions were computer mediated via shared digital documents. Each pair jointly prepared and reviewed three financial statements in the audit simulation. After completing the audit simulation, participants individually answered questions about their behavior in the study (e.g., whether they colluded with their partner, whether they behaved honestly during the audit simulation). The experimenter randomly selected pairs to evaluate for accuracy and issued fines, if any, before compensating participants for their involvement.

**Variables**

**Total Errors and Fraud**. In Study 1, we had monitoring failures in the form of financial restatements where we could not distinguish errors and fraud. Here, we attempt to distinguish the two forms of monitoring failures as separate dependent variables, *errors* and *fraud*. Specifically, we expect errors to decrease as relationship tenure increases, whereas we predict the opposite for fraud (i.e.,

relationship tenure will increase fraud). We coded a pair's outcome as an *error* if the banker misreported earnings on the financial statement, the auditor did not correct the error, and the auditor did not report colluding. We coded a pair's outcome as *fraud* if the banker over-reported earnings on the financial statement, the auditor approved the statement, and the auditor reported that the pair colluded in the audit task. We measured auditor collusion using the auditor's self-reported engagement in it (i.e., "Did you collude with your partner to over-report income in the task?") after completing the audit simulation.[16] For each participant pair, we calculated the total number of errors and the total number of fraudulent statements.

**Average Trust**. We examined trust between the participant pair as our mediator of *tenure by condition*. We measured trust using each pair's average self-reported trust in their partner (i.e., "*How much do you trust your partner?*"). Single-item measures are not unusual in papers examining trust (Milne & Boza, 1999). Indeed, past research has shown that when a construct is focused and precise, then a single-item measure should be sufficient to accurately and reliably measure such a construct (Bergkvist & Rossiter, 2007).

**Results for Average Trust, Errors, and Fraud**

Given that the outcomes of interest were count variables across three trials per dyad, we present linear and negative binomial estimates for the effects of *tenure by condition* on our mediator, *average trust*, and our two dependent variables, *total errors* and *total fraud* in Table 4. In Model 1, relationship *tenure by condition* is associated with higher *average trust* between the pair, as expected ($\beta = 0.883$, $p < 0.001$), indicating that *average trust* increases with relationship tenure. The negative effect of tenure on *total errors* ($\beta = -0.475$, $p = 0.064$) in Model 2 suggests that longer tenure reduces the likelihood of

[16] Ten auditors had missing data on this item due to voluntarily choosing not to answer the question. We treated these cases as if the auditor denied colluding; however, we find similar results to those presented in Table 4 when we exclude these cases (see Supplemental Table S.8).

a financial mistake in the audit simulation but fails to meet conventional statistical significance. In Model 3, the *average trust* does not appear to mediate the effect of *tenure by condition* on *total errors* ($\beta = 0.188$, $p = 0.505$). Next, Model 4 demonstrates that pairs with longer relationship *tenure* were more likely to commit *total fraud* ($\beta = 0.795$, $p = 0.029$), and in Model 5, this effect is mediated by the *average trust* between the pair ($\beta = 1.376$, $p = 0.022$). Thus, we find partial support for the mediation and Hypothesis 2.[17]

Insert Table 4 and Figure 5 about here

Next, we also probed our mediation path for both outcomes using bias-corrected and accelerated confidence intervals of 5,000 samples (Imai, Keele, & Yamamoto, 2010). Figure 5 presents the results from Table 4 as well as the average causal mediation effects (ACME) and average direct effects for both *total errors* (Panel 5A) and *total fraud* (Panel 5B). As shown in Panel 5A, although *average trust* was in the predicted direction, the mediation criteria for *total errors* were not met (ACME = 0.456, 95% CI [–0.796, 0.533]). In Panel 5B, the analysis indicates *average trust* does mediate the effect of *tenure by condition* on *total fraud* in the anticipated direction (ACME = 0.175, 95% CI [0.004, 0.860]). Taken together, these results provide partial support for Hypothesis 2. While we find evidence for the indirect effect of *tenure by condition* and *average trust* on *total fraud,* the evidence is not consistent for the indirect effect on *total errors*.

**Discussion**

The results of Study 3 show that longer relationship tenure increases fraud and longer relationship tenure also corresponded to higher levels of trust in one's partner, which mediates fraud. While relationship tenure and the mediating effect of trust on errors were in the predicted direction,

[17] As an alternative, we also modeled these data with a multinomial logistic regression for the outcomes of each round and *tenure by condition* exhibited similar estimates to the coefficients in the negative binomial models; however, mediation analysis for multinomial logistic regression is not well established. Hence we model our data as count variables to facilitate mediation analysis.

neither were significant. Given the low sample size, which was partly constrained by the dyadic design, the potential inferences from this study are limited primarily to ruling out strong effects of these variables on errors. We consider three possible explanations for this result. First, unlike actual audits, which typically take months to complete and involve high levels of complexity and uncertainty (Ettredge et al., 2014; Levinthal & Fichman, 1988; Myers et al., 2003), the audit simulation task took approximately ten minutes to complete and required only simple math. That is, the task did not require a high degree of information sharing and joint problem-solving, and therefore relationship tenure and trust may not have been required to reduce errors in the simulation. Second, while participants were assured that answering the question about collusion would not affect their payment, some participants may still have colluded and not reported it. Thus, despite our efforts to separate errors from fraud in Study 3, errors may also entail participants who include fraud similar to financial restatements in Study 1. Third, whereas our measure of trust is a unidimensional construct, other scholarships have emphasized multiple variants of trust, such as benevolence, competence, and integrity-based trust (Levin & Cross, 2004; Yenkey, 2017). Future studies might refine our understanding of relationship strength and monitoring errors by including such variations of trust.

## General Discussion

Our three studies examined the effects of relationship strength on monitoring quality with trust as the mediating mechanism. By considering relationships over time, we show that greater relationship strength initially improves monitoring quality, but eventually strong relationships are also predictive of monitoring failures. The triangulation of archival, survey, and experimental methods combine to establish the real-world validity of our theory while elucidating a causal relationship between financial errors and relationship strength. This U-shaped relationship, a metaphorical valley of trust, receives support from the analysis of detected monitoring failures in the form of financial restatements and the survey of professional CPAs on the likelihood of monitoring failures irrespective of their detection.

Despite the external validity of the archival study and the survey, neither is free of potential confounds or endogeneity concerns. Accordingly, the experimental study bolsters our causal claims by demonstrating that relationship strength potentially reduces errors but also increases fraud, and trust mediates the relationship for fraud, as high levels of trust lead participants to collude more. Despite the simplicity of the experiment's task and the stark differences from actual financial audits of firms, this experimental study produces findings similar to those we found in the real-world settings. Hence, the replication of the effects of relationship strength on monitoring quality across these three studies, even in the artificial setting of Study 3, points to the evident generalizability of the findings.

## Conclusion

Our research contributes to the important phenomenon of monitoring failures, which permeate modern societies and warrant greater attention by organizational scholars, especially given their substantial cost for society at large (Akerlof & Shiller, 2010; Downer, 2010; Dal Bó, 2006; Duflo et al., 2013; Laffont & Tirole, 1991; Moore et al., 2006; Simpson, 2013). In addition, monitoring failures occur within and between organizations, which suggests that organizational theory may enrich our understanding of their antecedents and contingencies. Particularly, this research also speaks to the relational conditions that foster negligence and collusion, responding to calls for additional research on this topic (Ashforth & Anand, 2003; Greve et al., 2010). Because the most destructive and costly forms of fraud involve coordination among multiple individuals (Ashforth & Anand, 2003; Brass et al., 1998; Greve et al., 2010; Palmer & Moore, 2016), a relational perspective is needed to uncover the precursors of collusion. While our findings speak specifically to firms and their auditors, we predict a similar U-shaped relationship in other settings where collusion is preceded by initial stages of familiarization and emergent trust, such as investor fraud (Baker & Faulkner, 2004) or price-fixing between competitors (Ingram & Roberts, 2000; Podolny & Scott Morton, 1999).

Despite theoretical perspectives on the antecedents of monitoring failures, it is rare for

organizational scholars to engage empirically with the relational dimensions of monitoring failures (Ashforth & Anand, 2003; Brass et al., 1998). While some scholars have delved into important contingencies of regulatory capture, such as innovation beyond existing regulatory categories (Pozner et al., 2010), third-party involvement (Hiatt & Park, 2013), and the role of the monitor's reputation (Corona & Randhawa, 2010; Pierce & Toffel, 2013), apparently none have explored the relational factors that permit such failures. Our research contributes to this literature by demonstrating the curvilinearity of relational hazards for monitoring. Although experimental studies have shown that over time pairs of individuals learn to monitor more effectively and that they become progressively more biased, these processes have been examined independently without consideration for how they may evolve in concert (Bazerman et al., 2002; Gino & Bazerman, 2009; Gino & Galinsky, 2012). In response to these diverse literatures, our studies show how organizational learning and deviance combine to form the two sides of the U-shaped function, the valley of trust.

The monitoring failures for financial restatements that we examine warrant specific attention given their increasing ubiquity and large economic consequences (Corona & Randhawa, 2010; Defond & Zhang, 2014; Gendron et al., 2006; Harris & Bromiley, 2007; Moore et al., 2006; Palmrose & Scholz, 2004; Zhang et al., 2008). This study shows a curvilinear effect of relationship strength on monitoring failures, which potentially clarifies divergent findings in the accounting literature on the correlation between monitoring failures and relationship tenure (Bedard & Johnstone, 2010; Carcello & Nagy, 2004; Carey & Simnett, 2006; Chen, Lin, & Lin, 2008; Myers et al., 2003; Stanley & DeZoort, 2007). Although these mixed findings may reflect a lack of attention to curvilinear effects, other unexamined factors such as the complexity of the client and their industry reporting standards may also moderate the effect of auditor tenure on audit quality.

From a policy perspective, this study suggests that the mandatory auditor rotation programs

favored by government agencies may reduce audit failures stemming from unethical behavior fueled by strong relationships, while inadvertently increasing audit failures overall due to coordination challenges at the onset of auditing relationships (Myers et al., 2003). Phrased differently, because auditing tenure does not have a consistently positive or negative effect on monitoring quality, this study implies that there is an optimal duration of monitoring relationships. Policy makers must therefore design programs that weigh the trade-offs stemming from variation in relational strength.

The results presented here also contribute to research on embeddedness by showing how strong relationships have both positive and negative ramifications. Extant research on embedded relationships has given limited attention to monitoring within relationships, despite Granovetter's (1985) warning that "Both enormous trust and enormous malfeasance, then, may follow from personal relations" (p. 491). Instead, past research has conventionally focused on how strong relationships benefit individuals and firms (Gulati, 1995; Levin & Cross, 2004). Our findings, however, reveal the dark side of embeddedness, thus contributing to an emerging theme in economic sociology on the potential risks of doing business within embedded relationships (Holloway & Parmigiani, 2016; Lee, 2013; Rogan & Sorenson, 2014; Tenbrunsel et al., 1999). Extending this stream of research, we show how the valley of trust unfolds, initially benefiting both members of the pair via fewer unintended errors but then eventually facilitating risky and unethical behavior in the form of fraud.

Our theory and empirical findings imply that relationship strength and trust jointly emerge over time. Although our studies do not directly examine this temporal process (e.g., observing or manipulating trust over time), other scholars of monitoring failures have found that repeated interactions may set the stage for fraud (Corona & Randhawa, 2010). Additional experimental research indicates that lengthy relationships foster tolerance for gradual increases in unethical behavior (Gino & Bazerman, 2009; Moore et al., 2006). These studies combine with our findings to suggest a gradual

increase in negligence and collusion over time. Our third study provides evidence for trust as the mechanism for collusion, but the experiment did not permit observations of the formation of trust. A clearer understanding of the emergence of trust, particularly in monitoring contexts, is an important priority for future research.

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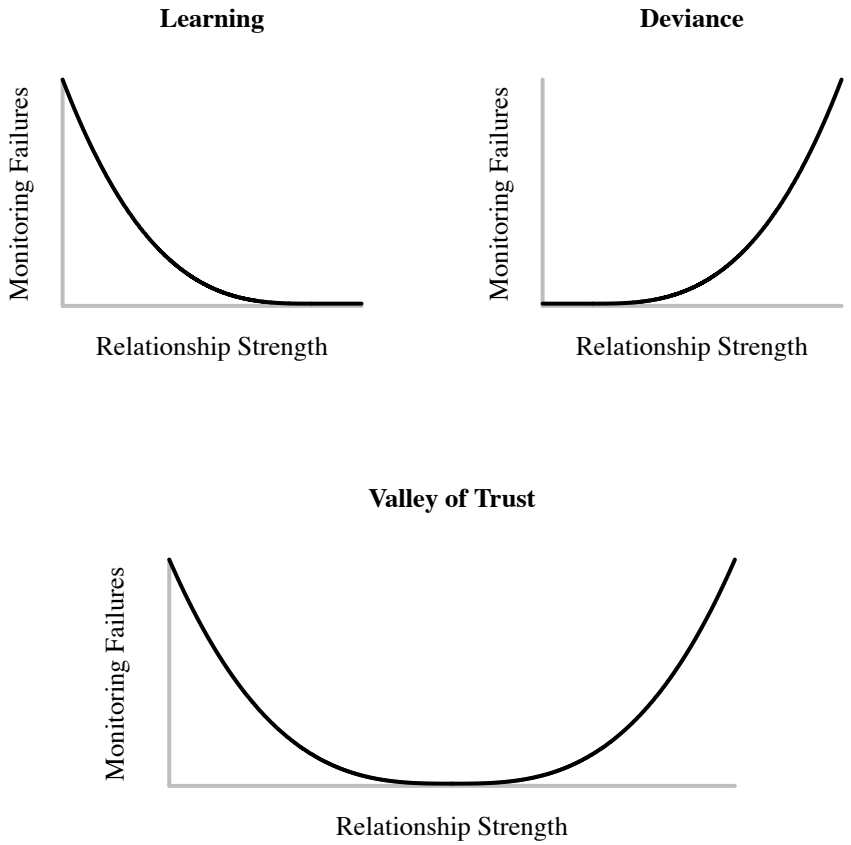



**Figure 1.**

Theoretical model combining the predictions of learning and deviance for monitoring quality. The model incorporates perspectives that weak and distrustful relationships induce monitoring failures from unfamiliarity and a lack of coordination whereas strong relationships and trust potentially lead to monitoring failures via negligence, biases, and collusion. These considerations are less evident in monitoring relationships of moderate strength, resulting in monitoring quality that varies as a convex function of relationship strength.

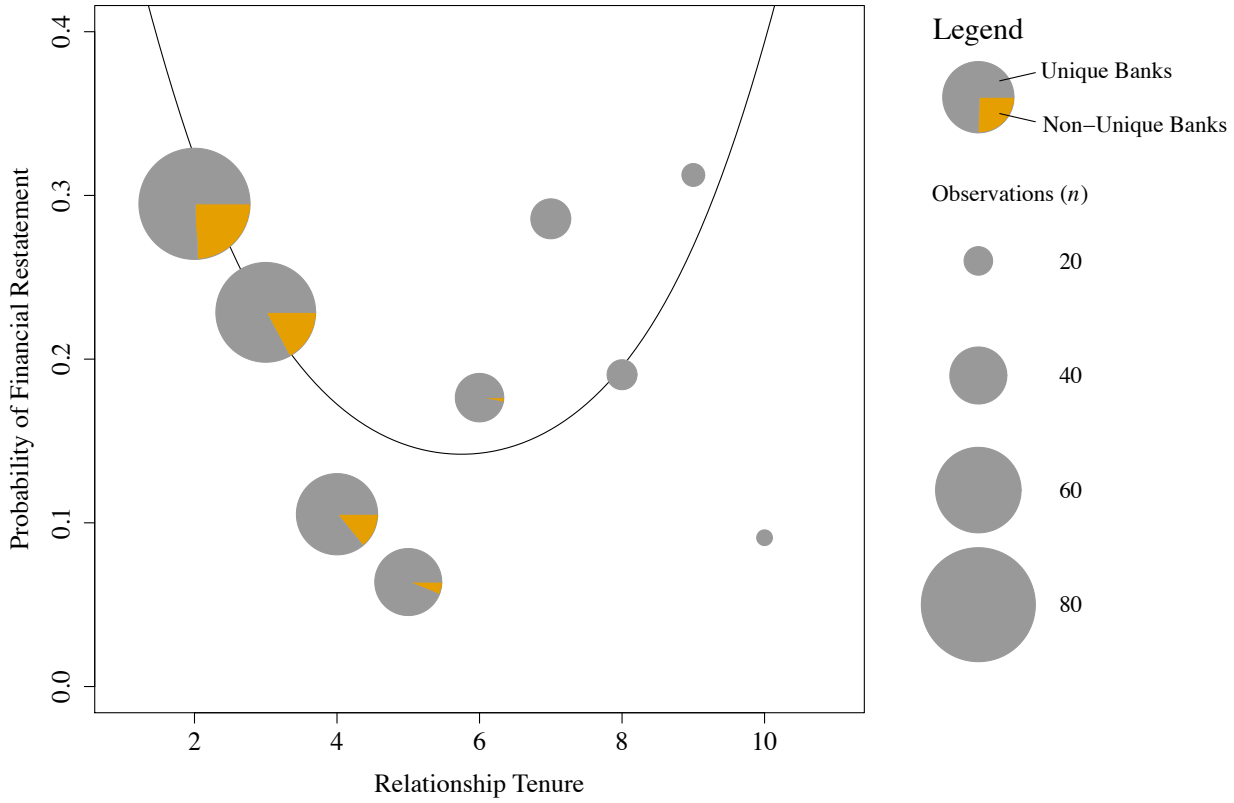



**Figure 2.**

Study 1: The predicted probability of financial restatements as a function of bank CFO-auditor tenure, measured in years, from Model 2 in Table 2. The circles represent the observed data and are proportionally sized to the number of observations per year. Gray portions of circles indicate the proportion of unique banks that contributed only one dyad-year observation to a given year of relationship tenure whereas orange portions represent the proportion of banks for which there are repeated observations. The majority of the data is composed of banks for which we observe only a single auditing relationship.

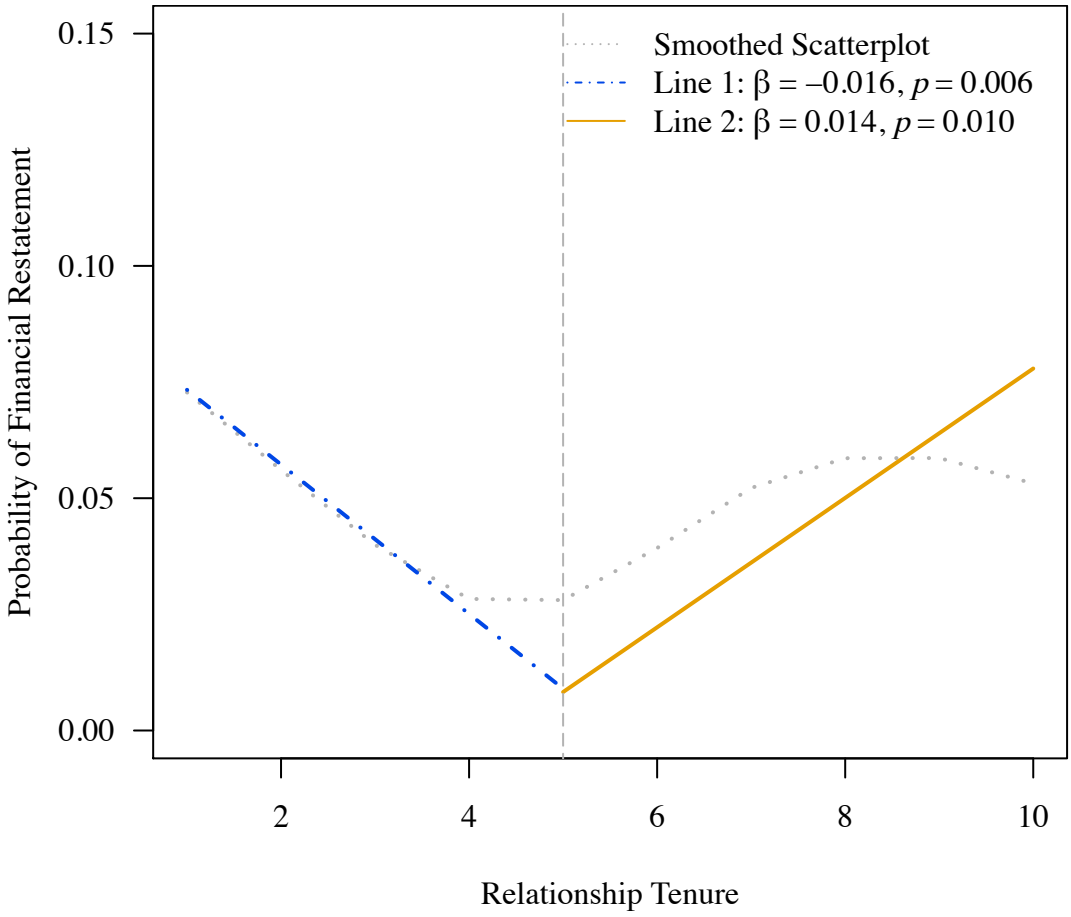



**Figure 3.**

Study 1: Two-Lines Analysis of *financial restatements* as a function of *bank CFO-auditor tenure*, measured in years with dyad fixed effects ($N$ = 1,746). The plotted lines depict linear fits to the sample after being divided at the extreme point, as represented by the vertical line. A non-parametric smoother from a generalized additive model provides an additional comparison.

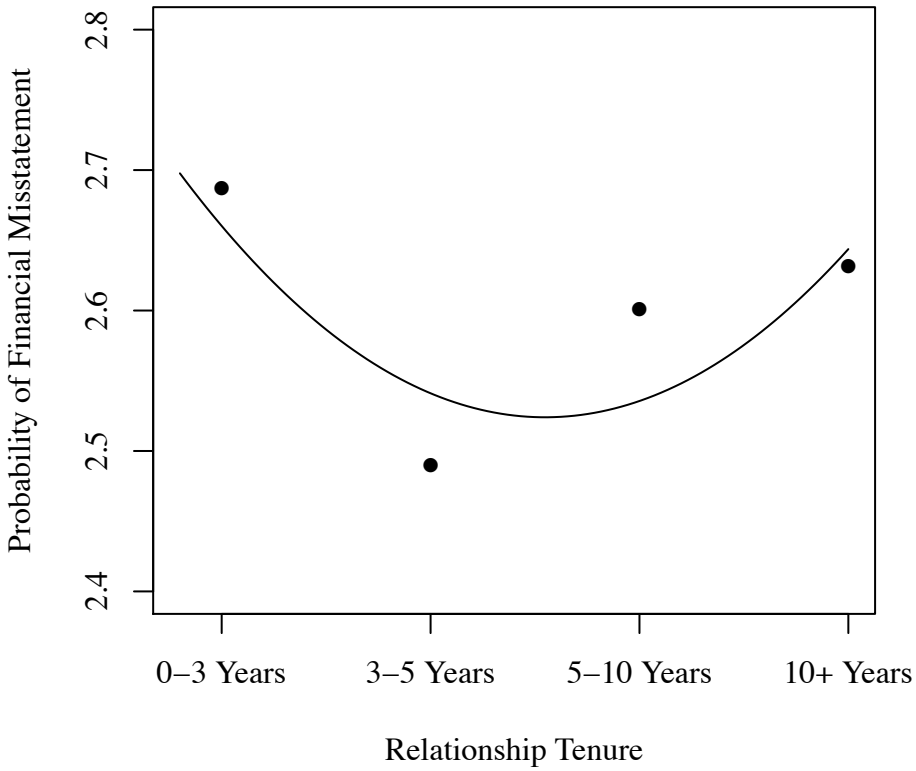
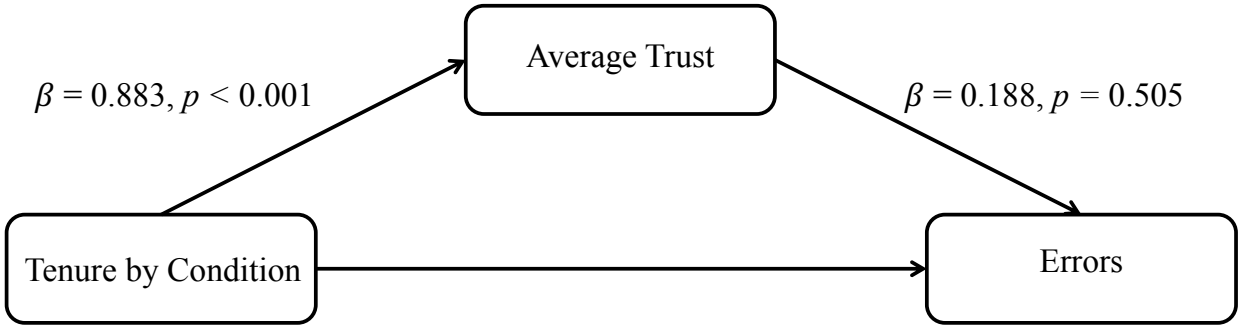



**Figure 4.**

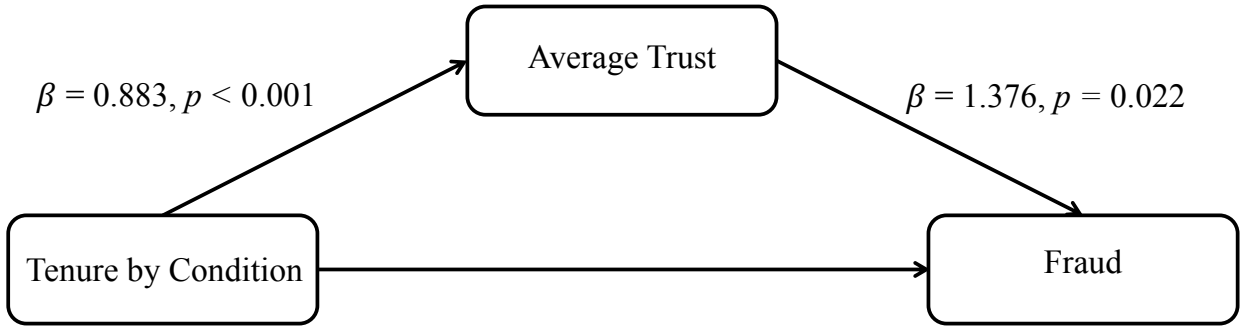
Study 2: Predicted likelihood of Certified Public Accountants' perceptions of financial misstatements as a function of relationship tenure and its second-order polynomial term, from Model 2 in Table 3. The points represent the averages of the empirical data.

5A. Error Analysis




Average Causal Mediation Effect = 0.456, 95% CI [–0.796, 0.533]
Average Direct Effect = –2.383, 95% CI [–11.529, 0.004]

5B. Fraud Analysis




Average Causal Mediation Effect = 0.175, 95% CI [0.004, 0.860]
Average Direct Effect = −0.090 , 95% CI [−0.491, 0.030]

**Figure 5.**

Study 3: Mediation models for Tenure by Condition, Average Trust, Total Errors, and Total Fraud. All models include Period and Control vs. Over-report controls. The bias-corrected and accelerated confidence intervals for the average causal medication effects are based on 5,000 samples.

**TABLE 1a.** Summary Statistics for Bank CFO-Firm Dyads between 2002-2017 in Study 1 (Conditional Logit Sample, *N* = 388)

| | Mean | SD | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|---|---|
| (1) Financial Restatement | 0.201 | 0.401 | | | | | | | | |
| (2) Bank CFO-Auditor Tenure | 4.322 | 2.353 | -0.052 | | | | | | | |
| (3) Bank-Auditor Tenure | 5.412 | 2.994 | -0.080 | 0.586* | | | | | | |
| (4) Bank Size in US Dollars (in billions) | 56.216 | 250.573 | -0.017 | 0.112 | 0.042 | | | | | |
| (5) Big Four Auditing Firm | 0.361 | 0.481 | -0.015 | -0.007 | 0.131 | 0.282* | | | | |
| (6) Auditor Market Share | 0.077 | 0.129 | -0.044 | -0.005 | 0.112 | 0.470* | 0.675* | | | |
| (7) Auditor Dependence | 0.281 | 0.334 | 0.051 | 0.032 | -0.078 | 0.054 | -0.421* | -0.327* | | |
| (8) Fee Ratio | 0.818 | 0.163 | -0.097 | 0.107 | 0.097 | -0.004 | 0.069 | 0.013 | -0.098 | |
| (9) Fiscal Year | 2008.531 | 3.642 | 0.035 | 0.282* | 0.657* | -0.028 | -0.006 | -0.027 | -0.020 | 0.163 |

* $p < .001$

Note: Banks = 59; Auditors = 31; Dyads = 64

**TABLE 1b.** Summary Statistics for Bank CFO - Audit Firm Dyads between 2002-2017 in Study 1 (*N* = 1,746)

| | Mean | SD | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|---|---|
| (1) Financial Restatement | 0.045 | 0.207 | | | | | | | | |
| (2) Bank CFO-Auditor Tenure | 4.140 | 2.235 | -0.006 | | | | | | | |
| (3) Bank-Auditor Tenure | 4.810 | 2.762 | 0.010 | 0.686* | | | | | | |
| (4) Bank Size in US Dollars (in billions) | 46.259 | 224.953 | 0.001 | 0.099* | 0.084* | | | | | |
| (5) Big Four Auditing Firm | 0.249 | 0.432 | 0.049 | 0.030 | 0.099* | 0.198* | | | | |
| (6) Auditor Market Share | 0.079 | 0.136 | -0.020 | 0.016 | 0.107* | 0.408* | 0.592* | | | |
| (7) Auditor Dependence | 0.250 | 0.316 | 0.045 | -0.022 | -0.055 | 0.068 | -0.325* | -0.309* | | |
| (8) Fee Ratio | 0.798 | 0.160 | -0.016 | 0.044 | 0.026 | -0.054 | -0.080* | -0.143* | -0.034 | |
| (9) Fiscal Year | 2008.645 | 4.223 | 0.007 | 0.213* | 0.416* | 0.065 | -0.095* | 0.044 | -0.006 | 0.150* |

* $p < .001$

Note: Banks = 288; Auditors = 77; Dyads = 370

Note: Two observations are missing for Bank Size in US Dollars (in Billions)

**TABLE 2**. Logit and Linear Probability Estimates of Bank CFO-Audit Firm Relationship Tenure for Financial Restatements between 2002-2017 in Study 1

| | Logit Models | | | Linear Probability Models | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Bank CFO-Auditor Tenure | -0.144 | -0.869** | -0.984** | -0.004 | -0.025* | -0.025* |
| | (0.093) | (0.315) | (0.337) | (0.005) | (0.010) | (0.010) |
| Bank CFO-Auditor Tenure$^2$ | | 0.076* | 0.087* | | 0.002* | 0.002* |
| | | (0.033) | (0.035) | | (0.001) | (0.001) |
| Bank Size in US Dollars (in billions) | | | 0.008*** | | | 0.000 |
| | | | (0.002) | | | (0.000) |
| Big Four Auditing Firm | | | 0.067 | | | 0.015 |
| | | | (1.345) | | | (0.042) |
| Auditor Market Share | | | -9.169** | | | -0.155** |
| | | | (3.061) | | | (0.055) |
| Auditor Dependence | | | -8.708*** | | | -0.153** |
| | | | (2.198) | | | (0.049) |
| Fee Ratio | | | -2.197 | | | -0.095 |
| | | | (1.527) | | | (0.072) |
| Constant | -0.271 | -1.469 | 11.645*** | | | |
| | (1.307) | (1.586) | (3.243) | | | |
| Fixed Effects | Dyad, Fiscal Year | Dyad, Fiscal Year | Dyad, Fiscal Year | Dyad, Fiscal Year | Dyad, Fiscal Year | Dyad, Fiscal Year |
| Clusters | Bank, Auditor, Dyad | Bank, Auditor, Dyad | Bank, Auditor, Dyad | Bank, Auditor, Dyad | Bank, Auditor, Dyad | Bank, Auditor, Dyad |
| AIC | 482.272 | 477.730 | 471.139 | -1034.020 | -1037.676 | -1038.296 |
| Log Likelihood | -162.136 | -158.865 | -150.570 | 518.010 | 520.838 | 526.148 |
| Observations | Observations = 388; Banks = 59; Auditors = 31; Dyads = 64 | Observations = 388; Banks = 59; Auditors = 31; Dyads = 64 | Observations = 388; Banks = 59; Auditors = 31; Dyads = 64 | Observations = 1,746; Banks = 288; Auditors = 77; Dyads = 370 | Observations = 1,746; Banks = 288; Auditors = 77; Dyads = 370 | Observations = 1,744; Banks = 288; Auditors = 77; Dyads = 369 |

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed test)

**TABLE 3**. Fixed Effect Estimates of Perceived Effects of Client-Auditor Tenure on Financial Misstatements in Study 2 ($N$ = 198 CPA Respondents)

| | (1) | (2) |
|---|---|---|
| Client-Auditor Tenure | -0.006 | -0.290* |
| | (0.025) | (0.144) |
| Client-Auditor Tenure$^2$ | | 0.057* |
| | | (0.028) |
| Constant | 2.014*** | 2.298*** |
| | (0.406) | (0.429) |
| Log Likelihood | -833.73 | -831.061 |
| Observations | 792 | 792 |

* p < .05; ** p < .01; *** p < .001 (two-tailed test)

Note: Fixed effects for the CPA respondent are included in all models.

**TABLE 4**. Estimates for Average Trust as a Mediator of Relationship Tenure for Both Total Errors and Fraud in Study 3 ($N$ = 70 Participant Dyads)

| | Average Trust | Total Errors | | Total Fraud | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| | GLM | Negative Binomial | | | |
| Tenure by Condition | 0.883*** | -0.475 | -0.662 | 0.795* | 0.010 |
| | (0.106) | (0.257) | (0.382) | (0.364) | (0.514) |
| Average Trust | | | 0.188 | | 1.376* |
| | | | (0.283) | | (0.600) |
| Over-Report Condition | -0.061 | 2.402*** | 2.454*** | -0.179 | -1.017 |
| | (0.255) | (0.702) | (0.710) | (0.788) | (0.841) |
| Constant | 0.952** | -1.236 | -1.408 | -3.432** | -6.236** |
| | (0.336) | (0.831) | (0.873) | (1.251) | (2.209) |
| AIC | 210.871 | 117.945 | 119.6 | 95.183 | 91.308 |
| Log Likelihood | -102.436 | -55.973 | -55.8 | -44.591 | -41.654 |

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed test)

**SUPPLEMENTAL TABLE S.1**. Logit Estimates of Bank CFO-Audit Firm Relationship Tenure for Financial Restatements between 2002-2017 in Study 1

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Bank CFO-Auditor Tenure | -0.983** | -0.930** | -0.927** | -0.667** | -0.667* | -0.667* |
| | (0.338) | (0.310) | (0.342) | (0.215) | (0.276) | (0.282) |
| Bank CFO-Auditor Tenure$^2$ | 0.087* | 0.082** | 0.081* | 0.068*** | 0.068** | 0.068** |
| | (0.035) | (0.032) | (0.036) | (0.020) | (0.024) | (0.024) |
| Bank Size in US Dollars (in billions) | 0.008*** | | 0.008*** | | | |
| | (0.002) | | (0.001) | | | |
| Big Four Auditing Firm | | | 0.603 | | | |
| | | | (1.753) | | | |
| Auditor Market Share | -9.198** | -8.639* | | | | |
| | (3.222) | (3.727) | | | | |
| Auditor Dependence | -8.705*** | -8.544*** | | | | |
| | (2.207) | (1.958) | | | | |
| Fee Ratio | -2.198 | -2.223 | | | | |
| | (1.521) | (1.526) | | | | |
| Constant | 11.643*** | 11.380*** | -1.540 | 1.222** | 1.222** | 1.222** |
| | (3.250) | (2.975) | (1.621) | (0.417) | (0.543) | (0.556) |
| Fixed Effects | Dyad, Fiscal Year | Dyad, Fiscal Year | Dyad, Fiscal Year | Dyad | Dyad | Dyad |
| Clusters | Bank, Auditor, Dyad | Bank, Auditor, Dyad | Bank, Auditor, Dyad | Bank, Auditor, Dyad | Dyad | Bank |
| AIC | 469.141 | 470.389 | 478.652 | 488.000 | 488.000 | 488.000 |
| Log Likelihood | -150.570 | -152.194 | -157.326 | -178.000 | -178.000 | -178.000 |
| Observations | Observations = 388; Banks = 59; Auditors = 31; Dyads = 64 | Observations = 388; Banks = 59; Auditors = 31; Dyads = 64 | Observations = 388; Banks = 59; Auditors = 31; Dyads = 64 | Observations = 397; Banks = 59; Auditors = 31; Dyads = 64 | Observations = 397; Banks = 59; Auditors = 31; Dyads = 64 | Observations = 397; Banks = 59; Auditors = 31; Dyads = 64 |

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed test)

Note: *Big Four Auditing Firm* and *Auditor Market Share* are correlated at over 0.5. We present Models 1-3 to demonstrate that our variables of interest, *Bank CFO-Auditor Tenure* and *Bank CFO-Auditor Tenure*$^2$, are not affected by potential collinearity.

**SUPPLEMENTAL TABLE S.2**. Linear Probability Estimates of Bank CFO-Audit Firm Relationship Tenure for Financial Restatements between 2002-2017 in Study 1

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Bank CFO-Auditor Tenure | -0.025* | -0.025* | -0.025* | -0.024** | -0.024* | -0.024* |
| | (0.010) | (0.010) | (0.011) | (0.009) | (0.010) | (0.010) |
| Bank CFO-Auditor Tenure$^2$ | 0.002* | 0.002* | 0.002* | 0.002** | 0.002** | 0.002** |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| Bank Size in US Dollars (in billions) | 0.000 | | 0.000 | | | |
| | (0.000) | | (0.000) | | | |
| Big Four Auditing Firm | | | 0.018 | | | |
| | | | (0.050) | | | |
| Auditor Market Share | -0.158* | -0.148* | | | | |
| | (0.062) | (0.067) | | | | |
| Auditor Dependence | -0.152** | -0.151** | | | | |
| | (0.049) | (0.049) | | | | |
| Fee Ratio | -0.095 | -0.092 | | | | |
| | (0.072) | (0.071) | | | | |
| Fixed Effects | Dyad, Fiscal Year | Dyad, Fiscal Year | Dyad, Fiscal Year | Dyad | Dyad | Dyad |
| Clusters | Bank, Auditor, Dyad | Bank, Auditor | Bank, Auditor, Dyad | Bank, Auditor, Dyad | Dyad | Bank |
| AIC | -1040.185 | -1044.149 | -1031.295 | -1005.588 | -1005.588 | -1005.588 |
| Log Likelihood | 526.092 | 527.074 | 519.647 | 504.794 | 504.794 | 504.794 |
| Observations | Observations = 1,744; Banks = 288; Auditors = 77; Dyads = 369 | Observations = 1,746; Banks = 288; Auditors = 77; Dyads = 370 | Observations = 1,744; Banks = 288; Auditors = 77; Dyads = 369 | Observations = 1,746; Banks = 288; Auditors = 77; Dyads = 370 | Observations = 1,746; Banks = 288; Auditors = 77; Dyads = 370 | Observations = 1,746; Banks = 288; Auditors = 77; Dyads = 370 |

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed test)

Note: *Big Four Auditing Firm* and *Auditor Market Share* are correlated at over 0.5. We present Models 1-3 to demonstrate that our variables of interest, *Bank CFO-Auditor Tenure* and *Bank CFO-Auditor Tenure*$^2$, are not affected by potential collinearity.

**SUPPLEMENTAL TABLE S.3**. Logit and Linear Probability Estimates of Bank-Audit Firm Relationship Tenure for Financial Restatements between 2002-2017 in Study 1

| | Logit Models | | | Linear Probability Models | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Bank-Auditor Tenure | -0.888** | -1.579*** | -1.453*** | -0.032*** | -0.049*** | -0.049*** |
| | (0.317) | (0.433) | (0.405) | (0.006) | (0.013) | (0.013) |
| Bank-Auditor Tenure$^2$ | | 0.079** | 0.082* | | 0.002 | 0.002 |
| | | (0.030) | (0.033) | | (0.001) | (0.001) |
| Bank Size in US Dollars (in billions) | | | 0.007*** | | | 0.000 |
| | | | (0.002) | | | (0.000) |
| Big Four Auditing Firm | | | 0.040 | | | -0.070 |
| | | | (1.905) | | | (0.067) |
| Auditor Market Share | | | -7.489* | | | -0.085 |
| | | | (3.235) | | | (0.060) |
| Auditor Dependence | | | -8.099*** | | | -0.159** |
| | | | (2.286) | | | (0.056) |
| Fee Ratio | | | -1.290 | | | -0.057 |
| | | | (2.092) | | | (0.088) |
| Constant | -2.886 | -1.25 | 8.216 | | | |
| | (5.508) | (4.519) | (6.680) | | | |
| Fixed Effects | Dyad, Fiscal Year | Dyad, Fiscal Year | Dyad, Fiscal Year | Dyad, Fiscal Year | Dyad, Fiscal Year | Dyad, Fiscal Year |
| Clusters | Bank, Auditor, Dyad | Bank, Auditor, Dyad | Bank, Auditor, Dyad | Bank, Auditor, Dyad | Bank, Auditor, Dyad | Bank, Auditor, Dyad |
| AIC | 458.638 | 454.378 | 452.585 | -548.075 | -548.079 | -551.484 |
| Log Likelihood | -152.319 | -149.189 | -143.293 | 276.037 | 277.039 | 283.742 |
| Observations | Observations = 345; Banks = 57; Auditors = 31; Dyads = 62 | Observations = 345; Banks = 59; Auditors = 31; Dyads = 64 | Observations = 345; Banks = 57; Auditors = 31; Dyads = 62 | Observations = 1,683; Banks = 288; Auditors = 77; Dyads = 370 | Observations = 1,683; Banks = 288; Auditors = 77; Dyads = 370 | Observations = 1,683; Banks = 288; Auditors = 77; Dyads = 369 |

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed test)

**SUPPLEMENTAL TABLE S.4.** Conditional Logit and Linear Regression Estimates of Bank CFO-Audit Firm Relationship Tenure for Financial Restatements between 2002-2017 in Study 1, Inclusive of Relationships that Exceed 10 Years in Duration

| | Logit Model | | | Linear Probability Model | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Bank CFO-Auditor Tenure | -0.605** | -0.950* | -1.140* | -0.019 | -0.031* | -0.033* |
| | (0.195) | (0.438) | (0.521) | (0.010) | (0.014) | (0.013) |
| Bank CFO-Auditor Tenure$^2$ | 0.042** | 0.099 | 0.131 | 0.001* | 0.003 | 0.004 |
| | (0.013) | (0.072) | (0.090) | (0.001) | (0.002) | (0.002) |
| Bank CFO-Auditor Tenure$^3$ | | -0.002 | -0.004 | | 0.000 | 0.000 |
| | | (0.003) | (0.004) | | (0.000) | (0.000) |
| Bank Size in US Dollars (in billions) | | | 0.006* | | | 0.000 |
| | | | (0.002) | | | (0.000) |
| Big Four Auditing Firm | | | 0.616 | | | 0.042 |
| | | | (1.296) | | | (0.048) |
| Auditor Market Share | | | -4.991** | | | -0.115** |
| | | | (1.712) | | | (0.041) |
| Auditor Dependence | | | -7.871*** | | | -0.124** |
| | | | (2.151) | | | (0.037) |
| Fee Ratio | | | -1.475 | | | -0.076 |
| | | | (1.596) | | | (0.078) |
| Constant | 0.582 | 1.200 | 10.331** | | | |
| | (1.098) | (1.603) | (3.878) | | | |
| Fixed Effects | Dyad, Fiscal Year | Dyad, Fiscal Year | Dyad, Fiscal Year | Dyad, Fiscal Year | Dyad, Fiscal Year | Dyad, Fiscal Year |
| Clusters | Bank, Auditor, Dyad | Bank, Auditor, Dyad | Bank, Auditor, Dyad | Bank, Auditor, Dyad | Bank, Auditor, Dyad | Bank, Auditor, Dyad |
| AIC | 536.687 | 537.828 | 533.904 | -1027.801 | -1026.868 | -1025.734 |
| Log Likelihood | -182.343 | -181.914 | -174.952 | 515.900 | 516.434 | 520.867 |
| Observations | Observations = 490; Banks = 65; Auditors = 31; Dyads = 70 | Observations = 490; Banks = 65; Auditors = 31; Dyads = 70 | Observations = 490; Banks = 65; Auditors = 31; Dyads = 70 | Observations = 1,864; Banks = 288; Auditors = 77; Dyads = 370 | Observations = 1,864; Banks = 288; Auditors = 77; Dyads = 370 | Observations = 1,862; Banks = 288; Auditors = 77; Dyads = 369 |

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed test)

**SUPPLEMENTAL TABLE S.5.** CPA Specializations in Study 2 ($N$ = 198 CPA Respondents)

| | Mean |
|---|---|
| (1) Asset Management, Private Equity, or Venture Capital | 0.23 |
| (2) Construction | 0.15 |
| (3) Energy | 0.06 |
| (4) Financial Services, Commercial Banking, or Capital Markets | 0.44 |
| (5) Government | 0.12 |
| (6) Healthcare | 0.10 |
| (7) Insurance | 0.06 |
| (8) Manufacturing | 0.09 |
| (9) Media Entertainment | 0.02 |
| (10) Retail | 0.14 |
| (11) Technology | 0.09 |
| (12) Telecommunications | 0.02 |
| (13) Other | 0.16 |

Note: CPA respondents could select multiple specializations, and therefore the means by specialization do not sum to 1.

**SUPPLEMENTAL TABLE S.6**. Ordered Logit Models Estimates of Perceived Effects of Client-Auditor Tenure on Financial Misstatements in Study 2 ($N$ = 198 CPA Respondents)

| | (1) | (2) |
|---|---|---|
| Client-Auditor Tenure | -0.004 | -0.869* |
| | (0.068) | (0.382) |
| Client-Auditor Tenure$^2$ | | 0.171* |
| | | (0.074) |
| CPA Respondent Fixed Effects Included | Yes | Yes |
| Log Likelihood | -752.54 | -749.889 |
| Observations | 792 | 792 |

* $p < .05$; ** $p < .01$; *** $p < .001$

**SUPPLEMENTAL TABLE S.7**. Estimates for Average Trust as a Mediator of Relationship Tenure for Both Total Errors and Fraud in Study 3 ($N$ = 70 Participant Dyads)

| | Average Trust | Total Errors | | Total Fraud | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| | GLM | Negative Binomial | | | |
| Tenure by Condition | 0.769*** | -0.537 | -0.719 | 0.747 | 0.027 |
| | (0.117) | (0.306) | (0.403) | (0.385) | (0.513) |
| Average Trust | | | 0.185 | | 1.424* |
| | | | (0.296) | | (0.643) |
| Over-Report Condition | -0.108 | 2.368*** | 2.421*** | -0.197 | -1.020 |
| | (0.250) | (0.703) | (0.714) | (0.786) | (0.844) |
| Paid Participants | 0.576** | 0.271 | 0.258 | 0.228 | -0.238 |
| | (0.282) | (0.729) | (0.768) | (0.812) | (0.862) |
| Constant | 1.020** | -1.181 | -1.349 | -3.407** | -6.353** |
| | (0.330) | (0.841) | (0.898) | (1.256) | (2.296) |
| AIC | 208.598 | 119.813 | 121.484 | 97.107 | 93.223 |
| Log Likelihood | -100.299 | -55.907 | -55.742 | -44.553 | -41.611 |

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed test)

**SUPPLEMENTAL TABLE S.8**. Estimates for Average Trust as a Mediator of Relationship Tenure for Both Total Errors and Fraud in Study 3 ($N$ = 60 Participant Dyads)

| | Average Trust | Total Errors | | Total Fraud | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| | GLM | Negative Binomial | | | |
| Tenure by Condition | 0.878*** | -0.411 | -0.537 | 0.868* | 0.212 |
| | (0.120) | (0.302) | (0.421) | (0.366) | (0.506) |
| Average Trust | | | 0.123 | | 1.124** |
| | | | (0.305) | | (0.557) |
| Over-Report Condition | -0.071 | 2.362** | 2.411** | 0.043 | -0.626 |
| | (0.294) | (0.763) | (0.770) | (0.787) | (0.834) |
| Constant | 0.998** | -1.323 | -1.432 | -3.566** | -5.834** |
| | (0.374) | (0.926) | (0.976) | (1.262) | (2.073) |
| AIC | 187.923 | 97.691 | 99.575 | 91.212 | 88.48 |
| Log Likelihood | -90.961 | -45.845 | -45.787 | -42.606 | -40.24 |

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed test)

**SUPPLEMENTAL TABLE S.9.** Summary Statistics for CPA Response to Financial Misstatements

| | Mean | SD |
|---|---|---|
| (1) 0 to 3 years | 2.690 | 1.100 |
| (2) 3 to 5 years | 2.490 | 1.040 |
| (3) 5 to 10 years | 2.600 | 1.250 |
| (4) Over 10 years | 2.630 | 1.410 |
| Respondent Mean Centered | | |
| (5) 0 to 3 years | 0.085 | 0.954 |
| (6) 3 to 5 years | -0.112 | 0.442 |
| (7) 5 to 10 years | -0.001 | 0.512 |
| (8) Over 10 years | 0.029 | 0.738 |

Note: Rows 1-4 show the raw means and standard deviations and rows 5-8 present the mean centered responses and standard deviations for the likelihood of a financial misstatements by relationship tenure category. For each of respondents' responses, we subtracted the mean of all four of his/her responses to create the mean centered values.

**SUPPLEMENTAL Table S.10**. Negative Binomial Estimates for Average Trust as a Mediator of Relationship Tenure for Failures, Errors, and Fraud in Study 3 ($N$ = 70 Participant Dyads)

| | Failure | | Errors | | | Fraud | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Tenure by Condition | 0.067 | 1.141 | -0.475 | -0.470 | -1.135 | 0.795** | 5.442* | 3.601 |
| | (0.186) | (1.105) | (0.257) | (1.533) | (1.965) | (0.364) | (2.993) | (3.922) |
| Tenure by Condition$^2$ | | -0.214 | | -0.001 | 0.086 | | -0.854* | -0.605 |
| | | (0.217) | | (0.310) | (0.362) | | (0.508) | (0.644) |
| Over-Report Condition | 0.928* | 0.888* | 2.402*** | 2.402*** | 2.516*** | -0.179 | -0.542 | -1.019 |
| | (0.449) | (0.445) | (0.702) | (0.703) | (0.723) | (0.788) | (0.797) | (0.830) |
| Average Trust | | | | | 0.225 | | | 1.175** |
| | | | | | (0.331) | | | (0.584) |
| Constant | -1.467* | -2.479 | -1.236 | -1.241 | -1.044 | -3.432** | -8.799** | -10.300* |
| | (0.700) | (1.295) | (0.831) | (1.608) | (1.707) | (1.251) | (4.260) | (6.089) |
| AIC | 184.741 | 185.758 | 117.945 | 119.945 | 121.538 | 95.183 | 93.931 | 92.293 |
| Log Likelihood | -88.37 | -87.879 | -55.973 | -55.973 | -55.769 | -44.591 | -42.966 | -41.146 |

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed test)