Audit-Employee Turnover: Impacts to Audit Quality and the Auditor-Client Relationship

Joshua A. Khavis
Accounting and Law Department
School of Management
University at Buffalo, SUNY
346 Jacobs Management Center
Buffalo, NY 14260
jakhavis@buffalo.edu

Brandon Szerwo
Accounting and Law Department
School of Management
University at Buffalo, SUNY
366 Jacobs Management Center
Buffalo, NY 14260
bszerwo@buffalo.edu

October 2021

Acknowledgements: We are grateful for helpful comments and suggestions from Mike Dambra, Andrew Goehl, Feng Gu, Myungsun Kim, Sarah McVay, Mikhail Pevzner, Inho Suk, Weihong Xu, and workshop participants at the University at Buffalo. We thank the School of Management at the University at Buffalo, SUNY for funding that makes this study possible.

Audit-Employee Turnover: Impacts to Audit Quality and the Auditor-Client Relationship

Abstract

We measure if and how audit-employee turnover within individual offices of accounting firms relates to audit quality and the auditor-client relationship. Both the PCAOB and the Center for Audit Quality have raised concerns about the negative impact of audit-employee turnover on audit quality (PCAOB 2015; CAQ 2019). The consequences of this turnover, however, are not fully known to investors, regulators, or even audit clients, and remain largely undocumented due to data limitations. We obtain novel data to measure audit-employee turnover within accounting firms at the office level. We document a negative association between audit-employee turnover and audit quality, as measured by restatements, absolute discretionary accruals, AAERs, and going concern opinions. We find that offices experiencing high turnover charge clients more in audit fees but appear to spend less time on the audit, suggesting decreased audit effort. We also find that clients of offices experiencing high audit-employee turnover are more likely to switch auditors in the following year. We further demonstrate that the impact of turnover varies by employee rank and is more severe for turnover that occurs earlier during the audit cycle. Overall, we provide unique insights on the effects of audit-employee turnover by highlighting its costs on both audit quality and client relationships.

Keywords: audit-employee turnover, audit quality, auditor turnover, auditor switching, audit fees, audit lag.

JEL classifications: G28, G38, J63, M12, M41, M49

1. Introduction

Regulators, researchers, and accounting firms are concerned about the long-term human capital challenges faced by the auditing profession and highlight the importance of reducing employee turnover rates at accounting firms (The U.S. Department of the Treasury's Advisory Committee on the Auditing Profession (ACAP) 2008; Hermanson et al. 2016; Nouri and Parker 2020).[1] The auditor's ability to recruit and retain top talent is perceived to be an important determinant of audit quality (PCAOB 2013; 2015; CAQ 2019), yet finding and retaining qualified staff has been an ongoing challenge and is routinely listed as a top concern of auditors (AICPA 2013; 2015; 2017; 2019). The link between the recruitment and retention of talent and the quality of service provided is particularly important for the audit profession. Auditors provide a service that relies on critical thinking and deep knowledge of auditing, accounting, internal controls, and the client's business operations. This expertise requires time and experience to develop, and is not easily replaced. Yet employee turnover is notoriously high within public accounting firms, where it can exceed 25 percent per year (AICPA 2004; Monga 2017; Nouri 2017).[2] Although high turnover is commonly believed to diminish audit quality, harm client relationships, and erode the public trust, its negative effects may be muted because new audit employees typically undergo mandatory training and audit firms invest significantly into employee training and education.[3] However, our understanding of how audit-employee turnover within accounting firms affects audit quality and auditor-client relationships is limited because accounting firms do not disclose data on audit-employee turnover within their offices.

[1] Anecdotal evidence suggests that large accounting firms recognize turnover to be an issue and attempt to reduce turnover by offering associates work from home arrangements, more flexible hours, and various office perks (Monga 2017).

[2] Work/life balance and working conditions were reported as main reasons for turnover in large accounting firms 62 and 69 percent of the time, respectively (AICPA 2004). Khavis and Krishan (2020) report that audit employees rate their employers lower on work/life balance than on any other metric.

[3] For example, Ernst & Young invested $530 million in employee training in 2019 (EY 2021).

We obtain a proprietary dataset based on employees' online profiles from professional social media networks (e.g., LinkedIn) to overcome the data limitation challenge. More specifically, we obtain headcount and departure data for 20 large U.S. accounting firms that allows us to measure actual turnover and empirically examine how audit-employee turnover within accounting offices (e.g., EY Los Angeles vs. KPMG Houston) impacts audit quality and the auditor-client relationship for the 2010 to 2017 fiscal years. This allows us to quantify the consequences of actual audit-employee turnover in accounting firms at a sufficiently detailed level to make meaningful generalizable inferences.

We document a negative relation between turnover and audit quality. Specifically, we find that higher audit-employee turnover rates in the twelve months leading to the audit report are associated with higher ex post restatement rates, larger absolute discretionary accruals, and lower reporting of going concern opinions. We find that the negative effect of turnover on restatements is especially pronounced for audit offices with constrained resources, as proxied by high audit fee growth. We also find that turnover's negative effects on restatements are attenuated when audit offices have access to a larger accounting labor pool, as proxied by the number of local schools with accounting programs, as well as the adoption of CPA mobility laws by the audit office's state.

We also document a negative association between audit quality and an office's *abnormal* turnover, measured as the *change* in turnover rates relative to the prior year, which is conceptually and empirically distinct from turnover rates as it captures the unexpected portion of turnover (Call et al. 2015). Specifically, we document that *abnormal* turnover is positively associated with restatements, absolute discretionary accruals, and receipt of accounting and auditing enforcement releases (AAERs) from the Securities and Exchange Commission (SEC).

When examining turnover in the context of the auditor-client relationship, we find evidence that auditors pass down some employee turnover costs to their clients in the form of higher audit fees. We also document a negative association between turnover rates and the timing of the audit report, as measured by the number of days between the fiscal year end and the audit report date. That is, auditors with higher turnover rates spend fewer days on the audit. This finding implies lower audit effort or thoroughness. Additionally, we show that turnover is associated with non-recurrence of the auditor on the following year's audit. That is, turnover, which reduces a client's benefits to staying with the current auditor and lowers a client's differential costs to switching auditors, is ultimately associated with client loss. In additional tests, we provide evidence that auditors are more likely to pass down turnover costs to clients that require complex audits, as proxied by XBRL tags, and when local demand for audit services increases, as proxied by recent IPO activity within the MSA. However, we find that auditors are less likely to pass down their turnover costs to large important clients.

We also conduct more granular analyses of turnover, first by employee rank and then by the timing of turnover, to provide deeper insights. We document that the impact of audit-employee turnover on audit quality is more pronounced for lower-rank employees (staff and seniors) than for higher-rank employees (managers, senior managers, directors, and partners). When examining the auditor-client relationship, we document that turnover for both lower- and higher-rank employees is associated with negative outcomes, suggesting that turnover in both groups impacts the auditor-client relationship.

Our second turnover split, as shown in Figure 1, is by the timing of turnover—whether audit-employee turnover occurs during the first or last six months of the audit cycle (the twelve-month period ending with the audit opinion date). Our audit quality and client relationship results

are typically much stronger for turnover occurring earlier in the audit cycle (during the first six months of the audit cycle). However, we find that turnover occurring later in the audit cycle is particularly important to non-recurrence of the auditor and the timing of the audit report.

Our study makes numerous contributions to the accounting and management literatures. First and foremost, we shed light on the direct effects of turnover within accounting firms, a topic of long interest to regulators, investors, and audit clients that has gone largely unexplored due to a lack of data. This is the first study, to our knowledge, that directly examines and *quantifies* the costs of turnover within accounting firms by providing large-scale evidence on how audit-employee turnover is linked with audit quality and aspects of the auditor-client relationship.[4] For example, we find that a one standard deviation increase in the audit-employee turnover is associated with a 9.2 percent increase in the probability of a restatement, a 1.8 percent increase in audit fees, and an 11.6 percent increase in the propensity for non-recurrence of the auditor for the client. We validate the long-held suspicions about the importance of audit-employee turnover by empirically establishing and quantifying the consequences of audit-employee turnover using historical data. We believe such insights will be particularly relevant to regulators and audit clients as they seek to manage audit-employee turnover in the future.

Second, our study is particularly important because it documents that the *departure* of audit employees specifically, which inevitably leads to low team continuity and loss of talent, drives the decline in audit quality. Christensen et al. (2021) provide novel insights on the role that audit-team continuity plays in affecting audit quality.[5] Our study provides insights on the

[4] Prior research has primarily focused on turnover *intentions* (e.g., Fogarty et al. 2000; Parker, R., and J. Kohlmeyer 2005; Kalbers and Cenker 2007; Hall and Smith 2009; Jones et al. 2010; Herda and Lavelle 2012) whereas we focus on *actual* turnover.

[5] Using data from an anonymous single audit firm, Christensen et al. (2021) find that low team continuity, measured as the proportion of audit fees charged by the same audit employees, is related to lower audit quality. However, it is unclear whether and to what extent the team continuity measure captures employee turnover (e.g., low team continuity may be driven solely by new employees joining the audit team). Furthermore, firms with low team

role of audit-employee turnover—an antecedent to lower audit-team continuity—in determining audit quality. Additionally, by using a multiple-firm sample, we are able to document how turnover is associated with non-recurrence of the auditor.

Third, we add to our understanding of how audit office characteristics affect audits from those offices. This is a growing area of research with previous research finding that audit quality is influenced by office size (Francis and Yu 2009; Francis et al. 2013), office-specific industry expertise (Reichelt and Wang 2010), industry diversity (Beardsley et al. 2020), and distraction by non-audit services (Beardsley et al. 2021). We contribute by demonstrating that audit-employee turnover within an office has a pervasive and economically significant effect on audit quality and auditor-client relationships within the office.

Fourth, we contribute to our understanding of collective turnover by investigating turnover for an entire industry. Hausknecht and Holwerda (2013) note: "The turnover properties that we describe may be more difficult to isolate in macro level contexts," indicating a need for research on industry-wide turnover. We document macro-level findings related to many of their propositions, including how time and positional dispersion of collective turnover relate to unit performance. We provide additional insights on turnover by examining unexpected (abnormal) turnover, turnover by employee rank, and the timing of turnover within the audit cycle.

Importantly, this study provides large-scale empirical evidence that validates the turnover concerns long held by regulators and audit recipients. As such, we believe this study will be of interest to regulators, audit committees, audit firms, and others.

continuity may not necessarily experience turnover (e.g., a firm may experience no employee turnover but regularly reassign employees to new teams).

2. Hypothesis Development

The Public Company Accounting Oversight Board (PCAOB) considers that "turnover of audit personnel" is a potential audit quality indicator, warning that a "high rate of turnover […] may adversely affect audit quality (PCAOB 2015, Section 8)." The International Auditing and Assurance Standards Board (IAASB) lists public accounting firms' ability to "attract and retain individuals with appropriate qualities" as an important audit quality input (IAASB 2014, p. 11). The Center for Audit Quality (an AICPA affiliate) also considers employee turnover to be an important audit quality indicator and recommends that public accounting firms monitor and publicly disclose their employee turnover rates (CAQ 2019, p. 18). Robert Conway, a former regional director of PCAOB and former audit partner, warns that auditors will find it difficult to achieve a high level of objectivity and professional skepticism when employee turnover is high (Conway 2015). Auditors also perceive that high turnover in public accounting firms results in loss of audit expertise and knowledge, leading to lower audit quality and frustrated clients (Persellin et al., p. 116). Indeed, clients routinely experiencing changes in their auditor engagement staff may become frustrated from regularly incurring the costs of training new audit staff and begin to question the service quality provided by the auditor (GAO 2003; Nouri and Parker 2020).

In their review of collective turnover research, Hausknecht and Trevor (2011) note: "Collective turnover can lead to undesirable outcomes because it entails the loss of firm specific human and social capital, disrupts operations and collective function, saddles remaining members with newcomer socialization and training, and increases recruitment and selection costs." Meta analyses and reviews of collective turnover find strong support for a negative relation between turnover rates and unit performance, including decreased service performance and diminished customer outcomes (Hancock et al. 2013; Heavey et al. 2013; Park and Shaw

2013). Additionally, collective turnover theories by Hausknecht and Holwerda (2013) and Nyberg and Ployhart (2013) identify mechanisms driving this negative relation, mediating and moderating its effects, and other factor that can have an influence. These theories, when applied to auditors and auditing, predict that high audit-employee turnover rates would have deleterious effects on audit quality and the auditor-client relationship.

2.1 Turnover and Audit Quality

We first hypothesize a potential relation between audit-employee turnover and the quality of the audits provided. In this case, we are interested in the quality of the service provided by the audit office to its client customers. As such, we focus on two particularly relevant perspectives that offer predictions for service outcomes—the human capital and the social capital perspectives.

The human capital perspective posits that auditors leaving accounting firms will take with them a collection of knowledge, skills, and abilities (Hausknecht and Holwerda 2013), which in turn will reduce the performance of the collective unit (Batt 2002; Kacmar et al. 2006; Koys 2001). Indeed, Libby and Luft (1993) model auditor performance as a function of experience, knowledge, and abilities, suggesting that auditing requires high levels of human capital. Thus, when auditors leave, the loss of high levels of knowledge, skills, and abilities reduce the collective human capital of the audit office and, in turn, audit quality.

The social capital perspective also predicts a negative relation between collective audit-employee turnover and service quality. Social capital is built within a unit when relationships among the employees foster instrumental actions among employees (Coleman 1988). Because the audit process involves many individuals, comprises interdependent tasks, and requires synchronized interactions, auditing resembles an intensive workflow structure (Nyberg and

Ployhart 2013). Within intensive workflow structures, collective turnover is expected to have a negative association with performance because it causes greater disruptions to collective performance (Shaw et al. 2005). In their meta-analysis of collective turnover, Hancock et al. (2013) note that this relation is particularly strong in professional industries, which would include auditing.

Although turnover may provide benefits by removing low-quality employees and bringing in new ideas (Hausknecht and Trevor 2011; Nyberg and Polyhart 2013), beliefs within the audit industry reflect concerns that turnover negatively impacts performance and damages service quality. Auditors surveyed by Persellin et al. (2019) indicate that staff turnover and understaffing are among the top three impediments to providing a quality audit. The surveyed auditors suggest that high employee turnover leads to staff shortages that contribute to workload pressures, which in turn lead to shortcuts in audit procedures and impaired auditor judgment.[6] The inclusion of "turnover of audit personnel" as an audit quality indicator by the PCAOB (2013) also establishes regulator expectations of turnover leading to lower audit quality.

Because high turnover results in loss of collective collection of knowledge, skills, and abilities and social capital acquired by auditors, we expect that audit quality suffers when audit-employee turnover is high.[7] We thus state our first hypothesis in the alternative form:

H1: *Audit-employee turnover negatively impacts audit quality.*

[6] Persellin et al. (2019) also find that some auditors perceive heavy workloads to reduce audit quality for reasons related to turnover. This suggests a vicious cycle whereby turnover leads to understaffing, which in turn results in heavy workloads, which then contribute to more turnover.

[7] There is a collection of behavioral research focused on auditor turnover intentions at the individual level. For example, Fogarty et al. (2000) presents evidence that high levels of turnover intentions and low levels of performance for accountants are associated with high levels of burnout tendencies. Additionally, auditor turnover intentions are influenced by flexible work arrangements (Almer and Kaplan 2002), organizational injustice (Parker and Kohlmeyer 2005), mentoring (Hall and Smith 2009), healthy lifestyles (Jones et al. 2010), and perceived fairness of the firm (Herda and Lavelle 2012). We focus on the collective turnover literature to build our hypotheses because collective turnover is different conceptually and empirically from individual turnover (Nyberg and Ployhart 2013).

2.2 Turnover and the Auditor-Client Relationship

The above discussion in section 2.1 is broadly applicable to multiple measures of unit performance. Beyond output quality, the arguments are also applicable to customer service outcomes. That is, the loss of human capital and social capital will also diminish customer service provided by the unit and harm the auditor-client relationship.

Prior accounting research further suggests that the level of service quality provided by the accounting firm influences the client's commitment to their accounting firm (de Ruyter and Wetzels 1999) and that client perceptions of audit quality are affected more by the audit employees' characteristics than the accounting firm-level attributes (Schroeder et al. 1986; Carcello et al. 1992). Dassen (1995) establishes that auditees often consider subjective perceptions of audit quality to be more important than objectively verifiable indicators of audit quality (e.g., detecting and reporting errors/irregularities pertaining to the financial statement). Additionally, audit clients often prefer a relational (social exchange-based) approach with their auditors rather than a transactional (economic exchange-based) approach (Fontaine and Pilote 2011; 2012). In fact, behavioral reasons (e.g., the auditor-client relationship) may drive clients to switch auditors more than economic reasons (e.g., Addams and Davis 1994; Addams et al. 1996; Magri and Baldacchino 2004; Fontaine et al. 2013). For example, clients are more likely to switch accounting firms when they perceive that their auditor is not available to them (Fontaine et al. 2013).

High turnover at the audit office is more likely to result in frustrated clients as it robs the auditor of experience and knowledge, and creates "auditors who are not familiar with clients" (Persellin et al. 2019). We thus expect that turnover will impair or reset important social

connections between the auditor and client and client perceptions of the auditor. As such, our second hypothesis, stated in the alternative form, is:

H2: *Audit-employee turnover leads to non-recurrence of the auditor.*

3. Research Design

3.1 Measuring Audit-Employee Turnover and Abnormal Turnover

We obtain proprietary employee turnover data on 20 large U.S. accounting firms for 2009 to 2018, which allows us to examine fiscal years 2010 through 2017, from a leading employment analytics company.[8] The company absorbs raw unstructured data from public online resumes and job profiles of nearly half a billion people from social media platforms and multiple websites (e.g., LinkedIn). The company converts the raw data from the public online profiles and resumes into structured employment datasets using proprietary algorithms. The employment data contains the number of employees within a particular job category and specific Metropolitan Statistical Area (MSA) location that leave an accounting firm in a particular month-year, as well as the number of average employees per job category within the accounting firm's MSA location in that month-year.[9]

Detecting the effects of employee turnover depends on how representative the structured data is of the actual employee population at the firm. Because employees in white-collar occupations are most likely to be represented by the data, we are more likely to detect the effects of turnover in our setting—examining audit professionals employed by accounting firms.[10] We

[8] To avoid losing observations, we use turnover data from 2009 to construct changes variables for 2010 observations. The inferences from our main results, based on the level of turnover, are unchanged if we move the beginning period for our study from 2010 to 2009 (untabulated).

[9] We examine turnover in general and not voluntary turnover because we do not have the data on the reason for employees leaving the firm (e.g., whether employees quit or were terminated).

[10] Multiple studies use data from online job profiles to draw inferences (e.g., Li et al. 2021; Hendricks et al. 2021; Krishnan et al. 2020). More than 90 percent of accountants surveyed use LinkedIn—the most frequently used social media site among accountants (Bramwell 2013). For example, Deloitte had 89 percent of its employees on LinkedIn

validate the data by obtaining the total of accounting firm employees from *Accounting Today*'s Top 100 Accounting Firms annual lists (Khavis and Krishnan 2021). When we compare the proportion of total employees for each of the top eight out of the fifteen largest accounting firms in our sample to those in *Accounting Today*, we observe a very similar pattern (Figure 2). Additionally, to the extent that there is selection bias, we expect such bias to similarly affect all accounting firms within our sample, and we rely on the *variation* in our turnover metric to draw our inferences.

Consistent with anecdotal evidence that turnover is a bigger issue for Big 4 than for non-Big 4 accounting firms, we observe that total employee turnover, calculated as the 12-month rolling average turnover for all employees, is greater for the Big 4 accounting firms than for the next eight largest accounting firms for most of the sample period (Figure 3). Figure 4 illustrates the variation in the average total turnover for the Big 4 firms throughout our sample period and that turnover has increased for each of the firms.

We calculate our measures of turnover based on the number of job separations and employees in audit-related jobs for a particular accounting firm-MSA location (office) for each month-year. To ensure our metric captures turnover of accounting firm employees most likely to be involved in auditing, we first exclude data with missing job titles or with non-audit related job titles (e.g., "tax," "consultant," "software engineer"). We then drop offices with less than 30 employees to avoid potentially extreme turnover measures caused by small denominators. We construct our metric at the MSA level to better capture office-level turnover, as there is significant variation in audit outputs for different offices of the same accounting firm (e.g.,

during 2014, a greater proportion than large non-audit firms such as JP Morgan Chase (71 percent) or GE (55 percent) (Economist 2014).

Francis and Yu 2009; Reichelt and Wang 2010) and the host office typically performs the bulk of the audit work for the client.

Although much of the collective turnover research has focused on turnover rates, both Hausknecht and Holwerda (2013) and Nyberg and Ployhart (2013) note the important role that time plays in influencing how turnover rates affect unit performance. Whereas turnover rates measure the collective turnover over a period of time against total employment, changes in turnover rates measure if turnover is increasing or decreasing over time. As noted by Call et al. (2015), turnover rates and turnover rate changes are conceptually and empirically distinct and "turnover rate change evokes theoretical considerations not realized or observable in static turnover rates."[11] Thus, measuring both turnover and unexpected, or abnormal, turnover using turnover rates and changes in turnover rates, respectively, allows us to more fully examine the impact of audit-employee turnover on audit quality and the auditor-client relationship.

Furthermore, examining abnormal turnover (i.e., changes in turnover rates) allows us to provide insights on how the unexpected portion of turnover impacts audit outcomes and client relationships. Additionally, the changes specifications effectively differences out unmeasured and unchanging causes of employee turnover (e.g., auditor and office characteristics) that may be associated with audit outcomes.

We calculate each office's turnover rate, *Turnover*, as the total number of audit employees leaving the office during the previous 12 months relative to the audit report date

[11] Call et al. (2015) discuss the conceptual differences between turnover rates and changes in turnover rates, and how both measures are expected to have a negative association with performance. They note specifically that increasing turnover rates compounds problems with workloads and workflow such that "turnover rate changes act as a disruption to operational performance in a different way than does a static turnover rate" and that increasing turnover rates produce negative psychological experiences. In their empirical tests, they find support that turnover rates and changes in these rates are distinct.

divided by the average number of audit employees at the office during the past 12 months.[12] The metric effectively captures the twelve-month average turnover of audit employees at a particular accounting firm in a given MSA location as of a specific month (see Figure 1). We define our abnormal turnover measure as the change in turnover, *ΔTurnover*, calculated as $Turnover_t$ - $Turnover_{t-1}$, consistent with the approach used in Call et al. (2015). We match each constructed turnover metric to the client observation using the auditor's name, auditor's MSA location, and the month and year of the signature date from the auditor's opinion.[13]

3.2 Measuring Audit Quality

We use four measures of audit quality: absolute discretionary accruals (*ABS_DA*), financial restatements (*Restatement*), AAERs issued by the SEC (*AAER*), and auditor's going concern opinions (*GoingConcern*). As noted by Defond and Zhang (2014), each measure is a common proxy for actual audit quality and has various strengths and weaknesses.

Our first measure of audit quality, *ABS_DA*, is the absolute value of discretionary accruals, estimated cross-sectionally using the Modified Jones model for each two-digit SIC industry year with at least 10 observations. Each company-year's residual is then differenced with the residual from a company in the same two-digit industry and year with the closest ROA (Kothari, Leone, and Wasley 2005). We interpret greater *ABS_DA* as indicative of lower audit quality (e.g., Reynolds and Francis 2001; Reichelt and Wang 2010; Cunningham et al. 2019). Our second measure, *Restatement*, is coded one if the client-year's audited 10-K is restated, and zero otherwise. Restatements of original-issuance financial statements reflect lower audit quality. For our third measure, following Dechow et al. (2011), we code *AAER* as one if the client

[12] This measure follows the PCAOB's illustrative calculation of turnover as the "percentage of … audit staff… that have left the firm … in the preceding 12 months" (PCAOB 2015, Section 8).
[13] The MSA for each city and state location were determined based on Census Bureau data available at: https://www.census.gov/programs-surveys/metro-micro/about/delineation-files.html

receives an accounting and auditing enforcement release for the applicable fiscal year, and zero otherwise. We use the propensity of an auditor to issue a going concern opinion as our last measure of audit quality (*GoingConcern*). Following prior work, our going-concern sample consists of distressed clients—those reporting a loss or negative operating cash flows (e.g., Reynolds and Francis 2001; DeFond et al. 2002; Carson et al. 2013).

3.3 Auditor-Client Relationship Measures

We examine the effect of audit-employee turnover on the auditor-client relationship using multiple measures, each capturing an aspect of the auditor-client relationship. To better understand the dynamics behind the auditor-client relationship, we first examine the effect of turnover on audit fees charged and on the timing of the audit's completion. We then use the propensity of the audit relationship between the auditor and the client to end as our primary measure of the auditor-client relationship. To capture audit fees, we take the natural log of audit fees charged by the auditor for the fiscal year (*AuditFees*). As a related measure, we also calculate abnormal audit fees (*AbnAuditFees*) following the model used by Doogar et al. (2015). Our logit regression (untabulated) used to calculate abnormal audit fees has an R^2 of 0.853. We capture the timing of audit completion by counting the number of days between the client's fiscal year end and the audit opinion date, which is the date the audit is substantially completed (*AuditLength*). Finally, we examine if the client has a new auditor in the following year by comparing the current year's auditor to the subsequent year's auditor. If the auditor is different, the dichotomous variable *AuditorSwitch* is set to one, and zero otherwise.

3.4 Data and Sample

Table 1, Panel A presents our sample construction. We begin our sample with the intersection of public firms ("clients") with a U.S. auditor in the COMPUSTAT and Audit

Analytics databases for the 2010-2017 fiscal years. We then merge the sample with our turnover metrics, constructed at the auditor-MSA-month-year level (i.e., office-month-year level). We remove 8,892 client-year observations without turnover metrics. We then remove 4,047 client-year observations with missing controls variables. We require each office to have a minimum of 30 audit employee profiles, which removes 996 observations.[14] Our final sample contains 25,317 client-year observations, 4,825 unique clients, and 412 offices from 20 audit firms.

Table 1, Panel B provides the sample distribution for our main sample. EY has the highest proportion of client-year observations (25.3 percent) in our main sample, followed by PwC (17.9 percent), KPMG (17.4 percent), and Deloitte (16.5 percent). These largest four accounting firms (*Big4*) comprise 77 percent, and the top eight accounting firms comprise 93 percent, of our main sample.

3.5 Empirical Design

We estimate the following model to examine how turnover is linked with audit quality and the auditor-client relationship:

$$\begin{aligned} AuditOutcome = {} & \beta_0 + \beta_1 Turnover + \beta_2 Specialist + \beta_3 OfficeSize + \beta_4 Tenure \\ & + \beta_5 NewAuditor + \beta_6 Big4 + \beta_7 HHI + \beta_8 UnempRate \\ & + \beta_9 MaterialWeakness + \beta_{10} DecYE + \beta_{11} ROA + \beta_{12} ClientSize \\ & + \beta_{13} BTM + \beta_{14} CFO + \beta_{15} CFOVolatility + \beta_{16} Leverage + \beta_{17} Loss \\ & + \beta_{18} LitRisk + \beta_{19} Sales + \beta_{20} SalesGrowth + Industry\ FE + Year\ FE + e. \end{aligned} \quad (1)$$

In audit quality tests, the dependent variable *AuditOutcome* is one of *ABS_DA*, *Restatement*, *AAER, or GoingConcern*. In auditor-client relationship tests, *AuditOutcome* is one of *AuditFees*, *AbnAuditFees*, *AuditLength*, or *AuditorSwitch.* We estimate the model via OLS for *ABS_DA*,

[14] We institute this requirement to exclude artificial extreme variation in turnover rates due to small denominators. Our results are robust to changing the minimum number of audit employee profiles in an office to 20 (untabulated).

AuditFees, *AbnAuditFees*, and *AuditLength*, and we use logistic regressions for *Restatement*, *AAER*, *GoingConcern*, and *AuditorSwitch*.

Turnover is our main variable of interest, implemented as either *Turnover* or *ΔTurnover* for each regression. As per H1, we predict β_1 will be positive when modeling *ABS_DA*, *Restatement*, and *AAER*; we predict β_1 will be negative when modeling *GoingConcern*. As per H2, we predict that β_1 will be positive when modeling *AuditorSwitch*.

We include numerous controls used in prior studies to control for auditor characteristics.[15] *Specialist* is coded one if the auditor has the largest annual audit fee revenues in the client's industry (by two-digit SIC code) in a particular MSA, and zero otherwise. *OfficeSize* is the natural log of annual audit fees collected by the auditor in the particular MSA. *Tenure* is the natural log of the consecutive number of years the auditor is employed by the client. *NewAuditor* is coded one if auditor tenure is three years or less, and zero otherwise. *Big4* is coded one if the client employs a Big 4 auditor, and zero otherwise.

At the MSA level, we control for the competitiveness of the audit market and for the unemployment rate. *HHI* is the Herfindahl index, a measure of audit-market competition based on audit fees. *UnempRate* is the unemployment rate in the counties of the MSA.

We also control for many client characteristics that may relate to audit quality and/or the auditor-client relationship. *MaterialWeakness* is coded one if the auditor communicated a material weakness in internal controls over financial reporting, and zero otherwise. *DecYE* is coded one for December year-end clients, and zero otherwise. We also control for the client's size (*ClientSize*), financial performance (*ROA, CFO, Loss, Sales*), book-to-market ratio (*BTM),*

[15] This includes other studies at the office level that investigate audit outcomes, including Reynolds and Francis (2001); Frankel et al. (2002); Ashbaugh et al. (2003); Reichelt and Wang (2010); Francis et al. (2013); Lennox and Li (2014); Bills et al. (2016); Xu and Kalelkar (2020); and Beardsley et al. (2021).

leverage *(Leverage)*, litigation risk (*LitRisk*), growth *(SalesGrowth)*, and volatility (*CFOVolatily*). We include two-digit SIC (*Industry FE*) and year (*Year FE*) fixed effects and cluster all errors by client.

4. Results

4.1 Descriptive Statistics

Table 2 contains descriptive statistics. All dependent and control variables are winsorized at the 1 percent and 99 percent levels. The mean 12-month audit-employee turnover (*Turnover*) for our sample is 23.6 percent, indicating that more than one out of every five audit employees leave their accounting firm each year, on average.[16] Abnormal turnover (*ΔTurnover*) is near zero, but slightly positive, indicating that the year-over-year change in turnover slightly increased over our sample period. This is consistent with the moderate growth in turnover rates seen in Figure 3. The high turnover rates, especially for the Big 4 accounting firms, support claims that turnover in the industry is high.

On average, the clients in our sample report 0.123 in absolute discretionary accruals (*ABS_DA*), 9.3 percent of annual financials are restated at least once in the future (*Restatement*), 0.4 percent of client-years prior to 2017 receive an accounting and auditing enforcement release (*AAER*), and 3.1 (9.2) percent of (distressed) client observations receive a going concern opinion from the auditor (*GoingConcern*).[17] Additionally, mean audit fees (*AuditFees*) are $1.2 million or a natural log of 14.0, the average length of the period between the fiscal year end and the audit report (*AuditLength*) is 61.4 days or a natural log of 4.1, and 4.8 percent of our sample experiences an auditor change in the following year (*AuditorSwitch*).

[16] The turnover rate for our sample is similar to the 19 percent rate found by Nouri (2017) when using proprietary employment data from a Big 4 firm from 1992 – 2001.
[17] AAERs obtained from Dechow et al. (2011) are reported through 2016; we remove 2017 from our AAER tests.

4.2 Audit Quality Analysis

Table 3 contains the regression results for our tests of the association between audit-employee turnover and audit quality as framed by H1. Our tests are a combination of measuring turnover (*Turnover*) and abnormal turnover (*ΔTurnover*) and our four audit quality proxies: absolute discretionary accruals (*ABS_DA*), restatements (*Restatement*), receipt of accounting and auditing enforcement releases (*AAER*), and the propensity that an auditor issues a going concern opinion (*GoingConcern*).[18]

We focus first on *Turnover* in Panel A. The results in column 1 reveal that audit-employee turnover is associated with higher absolute discretionary accruals (*ABS_DA*), as per the positive significant coefficient on *Turnover* ($p < 0.01$). Column 2 shows that audit-employee turnover is associated with greater incidence of financial restatements for clients ($p < 0.01$). Using marginal effects and holding variables at their means, a one standard deviation increase in *Turnover* is associated with a 9.2 percent increase in the probability of a restatement (from 7.6 to 8.3 percent), an economically significant amount.[19] Column 4 reports on the likelihood of an auditor issuing a going concern opinion to a financially-distressed client. As predicted, the coefficient on *Turnover* is negative and significant ($p < 0.10$). In economic terms, when using marginal effects and holding variables at their means, a one standard deviation increase in audit-employee turnover is associated with an economically significant 9.7 percent reduction in the auditor's propensity to issue a going concern opinion to a distressed client (from 2.7 to 2.4 percent). We do not find an association between turnover rates and AAERs (column 3).

[18] Inferences are unchanged when we control for audit fees and audit lag to proxy for audit effort (untabulated).
[19] Similar results are obtained when we define restatements as only those that negatively affect net income (untabulated).

In Panel B, we test for the association between abnormal turnover, measured as changes in turnover, and audit quality. We find that the coefficient on abnormal turnover (*ΔTurnover*) is statistically significant with respect to *ABS_DA* ($p < 0.05$) and *Restatement* ($p < 0.01$) (columns 1 and 2, respectively). The effect is economically significant for restatements—a one standard deviation increase in *ΔTurnover* is associated with a 5.3 percent increase in the probability of a restatement (from 7.7 to 8.1 percent). Additionally, in column 3, we find that *ΔTurnover* is positively associated with *AAER* ($p < 0.05$), suggesting that higher abnormal turnover at the audit office increases the client's likelihood of receiving an AAER from the SEC for the applicable fiscal year. In economic terms, a one standard deviation increase in *ΔTurnover* is associated with a 19.1 percent increase in propensity to receive an AAER from the SEC (from 0.16 to 0.19 percent). However, abnormal turnover is not significantly associated with *GoingConcern* (column 4).

The combined results from the tests summarized in Table 3 are consistent with H1. We find that audit-employee turnover is associated with lower audit quality.[20] In six of the eight tests performed, we find evidence of this association when examining both turnover and abnormal turnover across multiple proxies for audit quality.

4.3 Auditor-Client Relationship Analysis

In addition to affecting audit quality, turnover potentially affects the relationship between the auditor and client as described in the discussion leading to H2. We present the results of tests related to this hypothesis in Table 4.

As shown in Panel A of Table 4, we find a strong association between *Turnover* and each of the four measures of the auditor-client relationship. We first examine how turnover affects the

[20] Inferences are unchanged if we split the sample between Big 4 and non-Big 4 firms (untabulated). We find evidence that turnover is associated with lower audit quality for both groups.

audit fees charged by auditors to their clients. Accounting firms experiencing high employee turnover often incur high costs associated with recruitment and training.[21] Lost knowledge caused by employee turnover may also result in the remaining and new audit employees performing tests less efficiently and/or incurring additional startup costs when performing testing procedures that are new to them. Columns 1 and 2 provide evidence of a positive association between *Turnover* and audit fees ($p < 0.01$) and abnormal audit fees ($p < 0.01$), respectively. [22] This indicates that higher audit-employee turnover during the 12 months prior to the conclusion of an audit is associated with higher audit fees charged to clients. When focusing on the test of audit fees in column 1, a one standard deviation increase in *Turnover* is associated with a 1.8 percent increase in audit fees. Additionally, the positive coefficients on *Specialist*, *Big4*, and *MaterialWeakness* are consistent with past studies reporting that clients pay more in audit fees when they hire an industry specialist or Big 4 firm and when they have weak internal controls, respectively (Doogar et al. 2015; Riccardi et al. 2018).

We next examine how turnover affects the length of time spent on the audit, or the speed at which the audit report is issued. Higher turnover may lead to the loss of professional knowledge gained by auditor experience and to understaffing (Becker 1993; Dess and Shaw 2001; Persellin et al. 2019). Intuitively, understaffed auditors are more likely to provide a "check the box" audit and spend less time on client audits, ignoring their client's specific needs. The negative coefficient on *Turnover* ($p < 0.01$) in column 3 provides evidence that the auditor spends less time on the audit, as measured by the number of days between the fiscal year end and

[21] Conservative estimates of staff turnover at accounting firms exceed $30,000 per employee (Telberg 2010).
[22] When we model audit fees, we remove *OfficeSize* as a control variable because it is a measure of total fees charged by the office, including fees charged to the particular client being tested.

audit report date, when audit-employee turnover is high.[23] This result suggests that offices with higher employee turnover devote less effort to the audit, which is consistent with the lower audit quality findings in Table 3.[24]

Our main examination of the auditor-client relationship tests how turnover affects the continuation of the auditor-client relationship—whether the same auditor completes the audit in the following year. [25] High audit-employee attrition rates are likely to require that clients spend more time and incur additional costs to educate new audit engagement staff about the business (GAO 2003) and strain the auditor-client relationship as a result. Bearing these costs reduces the client's benefit to staying with the current auditor and reduces the differential costs of switching auditors (Blouin et al. 2007). Indeed, some auditors recognize that high turnover results in frustrated clients as it leads to "auditors who are not familiar with clients" (Persellin et al. 2019). In column 4, we find evidence of the positive association between turnover and non-recurrence of the auditor. The coefficient on *Turnover* is positive and significant ($p < 0.01$), and a one standard deviation increase in *Turnover* is associated with an 11.6 percent increase in the propensity for non-recurrence of the auditor.

In Panel B, we test for the association between abnormal turnover and the auditor-client relationship. We continue to find an association between abnormal turnover (*ΔTurnover*), and *AuditFees* ($p < 0.05$), *AbnAuditFees* ($p < 0.05$) and *AuditorSwitch* ($p < 0.01$). Although the association with *AuditLength* in column 3 loses statistical significance under the two-tailed test, it remains negatively signed and it retains significance under a one-tailed test ($p < 0.10$).

[23] In an untabulated related analysis we find that clients are less likely to file their financials late when their auditor experiences high employee turnover.

[24] Knenchel and Payne (2001) and Knechel et al. (2009) find support for using the timing of the audit report, also known as the audit report lag, to proxy for audit effort.

[25] We also control for *GoingConcern*, since clients receiving a going concern opinion are more likely to switch auditors (Chow and Rice 1982; Smith 1986; Krishnan 1994).

In combination, we find strong evidence of an association between turnover and a deterioration of the auditor-client relationship. Our results suggest that the turnover costs incurred by audit firms are at least partially passed on to clients in the form higher audit fees, and that audits are completed more quickly when turnover is higher. More importantly, consistent with H2, we find that clients are more likely to switch auditors in the subsequent audit year. These findings support regulator concerns of high audit-employee turnover. The costs of turnover go beyond direct costs incurred by auditors and the fees charged to clients and include lower audit quality and strained relationships with clients.

5. Cross-Sectional Tests

We provide additional support for and analysis of the initial evidence on turnover's impact on audit quality and the auditor-client relationship by examining how additional factors interact with turnover. We do so by examining specific instances where the effects of turnover are expected to be either more pronounced or muted.

5.2 Audit Quality in the Cross Section

In Table 5 we examine how staffing-related considerations exacerbate or ameliorate turnover's negative effects on audit quality. We expect the deleterious effects of turnover on audit quality to be exacerbated when an audit office's resources become constrained. Bills et al. (2016) report that clients of audit offices that experience resource constraints due to growing audit workloads, as measured by the annual percentage change in audit fees, are more likely to restate their financials. As such, we expect clients who employ a more constrained audit office to experience more restatements due to audit-employee turnover. We test this notion by estimating a modified equation (1) that includes *ConstrainedOffice*, an indicator variable that takes the value of 1 if an audit office's annual percentage change in total audit fees is in the top third of the

sample, and 0 otherwise, and its interaction with our turnover measure (*Turnover*ConstrainedOffice*).[26] Indeed, the positive and significant coefficient ($p < 0.05$) on the *Turnover*ConstrainedOffice* interaction term reported in column 1 of Table 5 suggests that the negative effects of audit-employee turnover on restatements are more pronounced for audit offices experiencing resource constraints.

Conversely, we also expect the effects of turnover to be less pronounced when the audit office has access to a larger recruitment pool of quality candidates and can thus potentially replace the departing employees. For example, Lee, Naiker, and Stewart (2021) find that an audit office's proximity to more universities with accounting programs is associated with less restatements for their clients. As such, we expect the effects of turnover on restatements to be attenuated for clients whose auditors are in MSAs with more schools that can serve as recruitment pools for new accounting staff. We interact *Turnover* with *HiStaffSupply*, an indicator coded 1 for audit office MSAs with the top third of the number of schools that have an accounting program, and 0 otherwise, and report results in column 2 of Table 5. The negative significant coefficient ($p < 0.05$) on the interaction term suggests that audit offices with access to larger recruitment pools of accounting staff can mitigate the negative effects of turnover by replacing the departing audit staff with new high-quality recruits.

In column 3 of Table 5, we examine the incremental effects of state adoption of CPA mobility provisions, which should dampen the effects of turnover by making it easier to replace departing staff. The CPA mobility provisions remove licensing-induced geographic barriers for accountants across states and can potentially increase the service supply of qualified accountants for the state adopting the provision (Cascino et al. 2021). We exclude states that have adopted

[26] All equations in this section are estimated via OLS to ease the interpretation of the interaction terms. Results (untabulated) are unchanged when estimating via Logit.

the CPA mobility provision more than one year before our sample begins. We estimate equation (1) after including a policy indicator that is switched on for states that adopt CPA Mobility provisions in the year following the adoption and thereafter (*CPAMobility),* and its interaction with *Turnover*.[27] The results in column 3 of Table 5 suggest that the adoption of CPA mobility attenuates the negative effects of turnover on financial restatements.

5.2 Auditor-Client Relationship in the Cross Section

Table 6 provides deeper insights into how client characteristics and changes in the local demand for audit services further explain the link between turnover and the auditor-client relationship initially reported in Table 4. The table contains results from estimating three versions of equation (1), each including an indicator variable and its interaction with *Turnover*.

Panel A reports the moderating effects of client importance on the link between turnover and the auditor-client relationship. We expect the accounts of large clients, defined as those whose size is in the top third of the sample, to be considered important by auditors (*ImportantClient*). Whereas the coefficients on *Turnover* reported in Panel A of Table 6 are signed in the same direction as those in Table 4, the coefficients on the interaction term *Turnover*ImportantClient* are all significant and signed in the opposite direction. Specifically, important clients experience muted increases in audit fees (columns 1 and 2) and muted decreases in audit length (column 3) when the auditor experiences high turnover. These results support the intuition that auditors are more likely to insulate their most important clients from the effects of turnover. Furthermore, the negative coefficient on the interaction term in column 4 suggests that large clients, who experience lower fee increases and lower decreases in effort, are

[27] We follow Cascino, Tamayo, and Vetter (2021) and lag the CPA Mobility policy indicator by one year to allow adequate time for the policy effects to materialize.

less likely to switch auditors when audit-employee turnover is high. One explanation is that as client size increases, so do the switching costs (Hennes et al. 2014).

Panel B examines if and how client complexity explains the link between turnover and client relationships. We measure client complexity using XBRL tags (Hoitash and Hoitash 2018), and define clients whose XBRL tags scaled by total assets are in the top third as complex (*ComplexClient*). The significant loadings on the *Turnover*ComplexClient* interaction term suggest that the effects of turnover on audit fees (columns 1 and 2) and audit effort (column 3) are concentrated in complex audits. Column 4 also provides evidence that the link between turnover and non-recurrence of the auditor is more pronounced for complex clients, who intuitively require more attention from the auditor. This suggests that the auditor's loss of client-specific knowledge and experience (Persellin et al. 2019) and inability to devote proper attention to the client (Fontaine et al. 2013) due to high turnover are especially apparent and frustrating to complex clients, leading to a breakdown in the auditor-client relationship.

Panel C examines how increased demand for audit services influences the link between turnover and client relations. We expect that new increases in demand for audit services facilitate audit firms to pass down their turnover costs to clients. We consider an MSA with the top third of IPOs during the last three years to be experiencing increase in demand for new audit services (*NewAuditDemand*). The significant coefficients on *Turnover*NewAuditDemand* indicate that auditors charge clients more audit fees (columns 1 and 2), spend less time on the audit (column 3), but are not less likely to recur for the client (column 4). These results suggest that auditors

can pass down more of their turnover costs to clients without losing the client's business when local demand for audit services increases.[28]

6. Additional Analysis

In this section, we perform additional analysis to provide expanded insights on the link between turnover and audit quality and the auditor-client relationship. Separately, we first disaggregate turnover between managers and non-managers and then between turnover occurring earlier versus later in the audit cycle. Our goal is to provide a more granular understanding of the effects of turnover by splitting turnover by employee rank and also temporally.

6.1 Turnover of Managers versus Non-Managers

We separate turnover of staff and seniors as non-manager turnover (*TurnoverNonManager* and *ΔTurnoverNonManager*) and turnover of managers, senior managers, directors, and partners as manager turnover (*TurnoverManager* and *ΔTurnoverManager*). Although Hausknecht and Holwerda (2013) and Hale et al. (2016) posit that turnover is more damaging when it is distributed across positions, Persellin et al. (2019) suggest that junior-level auditors ("troops on the ground") are perceived to have a greater impact on audit quality than senior staff responsible for monitoring and supervision. Typically, non-managers perform the majority of testing, charge the most hours on the audit, and are highly visible because of their presence on the audits. Managers are responsible for the supervision and review of the audit, for maintaining client relations, and possess advanced knowledge about more technical or specialized issues (Han et al. 2011). Additionally, auditors attain relevant knowledge for specific audit tasks at different career stages (Bonner 1990; Bonner and Lewis

[28] In untabulated tests, we find no evidence that turnover has any incremental effects on audit quality for large or complex clients (i.e., *ImportantClient* or *ComplexClient*), or for clients located in an MSA experiencing growing demand for audit services (*NewAuditDemand*).

1990; Tan and Libby 1997). Because of these differences, turnover within each group may differentially impact audit quality and the auditor-client relationship.

Table 2 presents the descriptive statistics for turnover for these two groups. Non-managers have a turnover rate (31.7 percent) that is 2.5 times greater than that of managers (12.6 percent). This is consistent with prior studies and anecdotal evidence that junior-level staff are more likely to leave the accounting firm than are senior-level staff (e.g., managers, partners) (Gaertner et al. 1987; Nouri 2017; PwC 2018, p. 11).[29] Both groups experience a slight growth in turnover rates over our sample period.[30]

We first examine the association between audit quality and turnover (abnormal turnover) in Table 7, Panel A (Panel B). Therein, we find a consistent association between non-manager turnover (rates and changes in rates) and audit quality. The only exception to this is the nonassociation of *ΔTurnoverNonManager* with *GoingConcern*. We do not find an association with manager turnover in any of the eight regressions performed. These findings suggest that non-manager turnover, relative to manager turnover, has the stronger association with audit quality. However, we note that differences between the coefficients on the non-manager and manager variables are generally not statistically different at conventional levels.

We next examine the association between turnover (abnormal turnover) in Panel C (Panel D) and our measures of the auditor-client relationship. When examining total and abnormal audit fees, we find a stronger association with manager turnover than with non-manager turnover. However, when measuring abnormal turnover, the association is only present in non-manager turnover. When examining the association with the timing of the audit report in column 3 of

[29] Nouri (2017) reports that the average total voluntary turnover is 19 percent for all employees, 14 percent for "Sr. Managers" and 31 percent for "Seniors" (non-managers).

[30] In untabulated results, we find that the correlation between TurnoverNonManager and TurnoverManager is 0.271 ($p < 0.01$) and that correlation between ΔTurnoverNonManager and ΔTurnoverManager is 0.087 ($p < 0.01$).

Panel C, we find that both non-manager and manager turnover have an association with *AuditLength*. The association is limited to managers when measuring abnormal turnover in Panel D. Lastly, we find that both turnover and abnormal turnover for non-managers are associated with non-recurrence of the auditor. When examining the auditor-client relationship, the association with turnover is not limited to only one of the employee-rank groups. The results provide insights on how each audit-employee group affects client relations.

Overall, the results speak to the importance of non-manager turnover, which has the more consistent association with audit quality and many significant associations with aspects of the auditor-client relationship. The lack of an association between manager turnover and audit quality is somewhat striking given the role that managers, senior managers, and partners play in the audit. Our tests cannot differentiate if this is due to the roles managers have with respect to audit quality, the possibility that audit firms better manage the turnover of managers, or some other reason. However, it is consistent with the notion that firms more closely manage the presence of partners and senior managers as found in Gipper et al. (2021). When examining the association between manager turnover and the auditor-client relationship, the importance of manager turnover to audit fees and the timing of the audit report becomes apparent.

6.2 Timing of Turnover

We next split the annual measures of turnover between the first six months (*Turnover_First6*) and the second six months (*Turnover_Last6*) of the twelve-month audit cycle as shown in Figure 1. As posited by Hausknecht and Holwerda (2013), turnover is expected to be more damaging to performance when it occurs earlier in the operating cycle.

Turnover is higher in the first six months than in the second six months of the twelve-month audit cycle—*Turnover_First6* has a mean of 0.142 while *Turnover_Last6* has a mean of

0.094 (see Table 2). This indicates that 60.2 percent of turnover takes place during the first half of the audit cycle, with the remaining 39.8 percent occurring during the second half of the audit cycle, on average. Moreover, the correlation (untabulated) between the two measures is negative (-0.193; $p < 0.01$), indicating that higher turnover earlier in the audit cycle is followed by lower turnover later in the cycle.

The two periods are also distinct with respect to the audit procedures typically performed. In the first six months of the audit cycle, auditors typically review the 10-Q filings for the first and second quarters, perform the bulk of audit planning, and perform initial audit fee negotiations. In the second six months of the audit cycle, auditors typically review the third quarter10-Q filing, perform the majority of the interim and final testing for the financial reporting and internal control audits, complete engagement reporting, and potentially negotiate changes to initially determined audit fees. By splitting our turnover measure by when in the audit cycle the turnover occurs, we test how turnover from each period within the audit cycle is associated with our measures of audit quality and the auditor-client relationship, and gain insight into the potentially distinct effects of turnover from each period.

We present the results of our tests that examine *Turnover_First6* and *Turnover_Last6* in Table 8. In Panel A, we test for the association with audit quality and find that *Turnover_First6* has the more consistent association with the various audit quality proxies. We find that *Turnover_First6* has a significant positive association with *ABS_DA* ($p < 0.05$) and *Restatement* ($p < 0.01$) and a significant negative association with *GoingConcern* ($p < 0.05$). Turnover from the second half of the audit cycle (*Turnover_Last6*) is only associated with higher absolute discretionary accruals ($p < 0.01$). These results indicate that turnover during the first half of the audit cycle, when turnover is higher and planning is performed, has the more pervasive

association with audit quality and that the lower levels of turnover occurring closer to the audit report date have a weaker association with audit quality, even though this is when the bulk of testing procedures typically occur.

In Panel B, we examine the auditor-client relationship and find that the association with our various proxies is split amongst turnover occurring earlier and later in the audit cycle. *Turnover_First6* has a significant positive association with *AuditFees* ($p < 0.01$) and *AbnAuditFees* ($p < 0.01$) and a significant negative association with *AuditLength* ($p < 0.01$). When examining later turnover, *Turnover_Last6* has a significant negative association with *AuditLength* ($p < 0.01$) and a significant positive association with *AuditorSwitch* ($p < 0.01$). With regard to audit fees, the association is limited to turnover occurring during the first six months of the audit cycle, when initial audit fees are negotiated and when turnover is highest. With regard to non-recurrence of the auditor, the association is limited to turnover occurring during the last six months of the audit cycle, when auditors have the most contact with client personnel because the majority of audit procedures are being performed. This turnover is particularly visible to clients. Lastly, with respect to the timing of the audit report, turnover in both periods is associated with audit completion timing.

The collection of evidence contained in Table 8 indicates that turnover occurring earlier in the audit cycle, when turnover rates are typically higher, is particularly problematic for audit quality. This is consistent with predictions from Hausknecht and Holwerda (2013) because more of the audit stands to suffer from the earlier loss of knowledge and expertise if more auditors depart the office earlier in the audit cycle. The timing of turnover is also important to the auditor-client relationship and corresponds to when important audit milestones typically occur for clients.

5.3 Robustness Tests

We perform a series of robustness tests to further validate the findings from our main analysis. First, we re-run our main tests from Tables 3 and 4 while controlling for turnover of non-audit employees of the accounting firms, which serves as a falsification test. To do so, we calculate and include employee turnover and abnormal turnover for tax (*TurnoverTax* and *ΔTurnoverTax*) and consulting (*TurnoverConsult* and *ΔTurnoverConsult*) personnel separately, which we would not expect to have an association with audit quality or the auditor-client relationship.[31] Additionally, by including the contemporaneous turnover of within-office tax and consulting employees, we are controlling for potentially omitted general turnover levels experienced by the firm, office, and MSA. However, we are also concerned that these measures potentially control for some of the effects of interest.[32] For that reason, we include these variables in separate tests and present the results in Table 9.

In Panels A and B, we present our audit quality test results. With the exception of the association between *Turnover* and *GoingConcern*, we find that our results on *Turnover* (*ΔTurnover*) are robust to the inclusion of *TurnoverTax* (*ΔTurnoverTax*) and *TurnoverConsult* (*ΔTurnoverConsult*). Otherwise, the coefficients on *Turnover* and *ΔTurnover* remain positive and statistically significant on *ABS_DA*, *Restatement*, and *AAER* when they were found to be previously statistically significant in Table 3.

When re-examining our measures of the auditor-client relationship, we again find similar results to those in Table 4 with the inclusion of the tax- and consulting-employee turnover

[31] Turnover metrics are constructed for employees in tax using turnover data for profiles that contain the word "tax" and for employees in consulting using data based on profiles with the word "consult" in their job titles.
[32] The correlation (untabulated) between *Turnover* and *TurnoverTax* is 0.21 ($p < 0.01$) and *TurnoverConsult* is 0.10 ($p < 0.01$), while the correlation between *ΔTurnover* and *ΔTurnoverTax* is 0.08 ($p < 0.01$) and *ΔTurnoverConsult* is 0.05 ($p < 0.01$).

variables. In Panel C, we find that all associations with turnover rates remain statistically significant in the same directions. In Panel D, we note a drop in statistical significance from conventional thresholds in the association between *ΔTurnover* and *AuditFees* (p = 0.133) and *AbnAuditFees* (p = 0.184).

Importantly, we note that turnover of tax and consulting employees does not have a consistent association with audit quality or our measures of the auditor-client relationship. Our inferences from our tests on audit quality and the auditor-client relationship remain largely unchanged with the inclusion of tax- and consulting-employee turnover variables.

We conduct an additional robustness check by including MSA fixed effects, which is on par with the office-level testing approach used by Beardsley et al. (2021). When we include MSA fixed effects in each of the regressions originally performed in Tables 3 and 4, we only find minor changes to the coefficients on *Turnover* and *ΔTurnover* (untabulated). Specifically, and similar to the inclusions of tax- and consulting-employee turnover variables, the coefficient on *Turnover* becomes insignificant in the test of *GoingConcern* and the coefficient on *ΔTurnover* becomes insignificant in the tests of *AuditFees* and *AbnAuditFees*.

6. Conclusion

In this study, we examine how audit-employee turnover is linked with audit-office outputs and various aspects of the auditor-client relationship. Specifically, we study how turnover at accounting firm offices is related to audit quality, audit costs and effort, and the likelihood of auditor's recurrence on the following audit. Because data on audit-employee turnover is not made publicly available by audit firms, we use proprietary data compiled from online job profiles of audit employees from 20 large U.S. accounting firms to conduct our tests.

During our sample period of 2010 through 2017 fiscal years, we find that, on average, high turnover of audit employees is associated with lower audit quality and has a damaging association with many aspects of the auditor-client relationship. We also disaggregate turnover by employee rank and timing to add greater granularity to our investigation. We find that the association with audit quality is limited to non-manager turnover; we find no associations between manager turnover and audit quality. With regard to the auditor-client relationship, we find associations between our proxies for the auditor-client relationship and the turnover rates of managers and non-managers. However, when examining abnormal turnover rates, the association is more consistent with non-manager turnover. When we split turnover between that occurring during the first versus the second half of a twelve-month audit cycle, turnover during the first six months of the audit cycle has the more consistent association with audit quality and the auditor-client relationship. However, turnover over the later months has a significant association with the timing of the audit report and auditor non-recurrence.

Our findings must be interpreted with caution as they are subject to limitations. Although our study relies on association tests supported by existing theories and arguments from extant studies, we cannot establish a causal link between audit-employee turnover and the outcomes we examine. Despite this limitation, however, we believe our study offers unique insights into the consequences of employee turnover at auditor firms, an opaque but important issue that concerns regulators, audit clients, and other external-audit stakeholders.

Separately, we rely on data based on online job profiles that may not be representative of the entire population of accounting-firm employees. However, there are mitigating factors. First, our study focuses on audit firm employees (i.e., white-collar employees) who are among the most likely employees to have online job profiles as they use career-oriented social media

platforms to make professional network connections (Bramwell 2013; Economist 2014). Second, we have no reason to expect that auditors with or without online job profiles will have a stronger or weaker effect on audit quality or the auditor-client relationship. Third, to the extent that there is selection bias, our results are nonetheless interesting because they show how the *variation* in employee turnover within this self-selected group is associated with audit quality and the auditor-client relationship.

We contribute to the literature by providing the first large-sample empirical evidence that audit-employee turnover is negatively linked with audit quality and client relations. This contribution is particularly important considering (a) the lack of empirical evidence in the archival literature regarding how turnover impacts audit-firm outputs and (b) the concerns voiced by regulators and others about reducing employee turnover and retaining adequate staff.

References

Addams, L., and B. Davis. 1994. Privately held companies report reasons for selecting and switching auditors. *The CPA Journal* 64 (8): 38–41.

Addams, L., B. Davis, and R. Mano. 1996. Publicly and privately held companies report reasons for selecting and switching auditors. *The CPA Journal* 66 (4): 74–75.

Almer, E., and S. Kaplan. 2002. The effects of flexible work arrangements on stressors, burnout, and behavioral job outcomes in public accounting. *Behavioral Research in Accounting* 14 (1): 1–34.

American Institute of Certified Public Accountants (AICPA). 2004. *AICPA Work/Life and Women's Initiatives 2004 Research—Decade of Changes in the Accounting Profession: Workforce Trends and Human Capital Practices*. New York, NY: AICPA. Available at: https://egrove.olemiss.edu/aicpa_assoc/339

AICPA. 2013. *PCPS CPA Firm Top Issues Survey Commentary*. New York, NY: AICPA.

AICPA. 2015. *PCPS CPA Firm Top Issues Survey Commentary*. New York, NY: AICPA.

AICPA. 2017. *PCPS CPA Firm Top Issues Survey Commentary*. New York, NY: AICPA.

AICPA. 2019. *PCPS CPA Firm Top Issues Survey Commentary*. New York, NY: AICPA.

Ashbaugh, H., R. LaFond, and B. W. Mayhew. 2003. Do nonaudit services compromise auditor independence? Further evidence. *The Accounting Review* 78 (3): 611–639.

Batt, R. 2002. Managing customer services: Human resources practices, quit rates, and sales growth. *Academy of Management Journal* 45: 587–597.

Beardsley, E., N. Goldman, and T. Omer. 2020. Audit office industry diversity and audit quality. *Journal of Accounting, Auditing & Finance* (forthcoming).

Beardsley, E., A. Imdieke, and T. Omer. 2021. The distraction effect of non-audit services on audit quality. *Journal of Accounting and Economics* 71 (2-3): 101380.

Becker, G. 1993. Human capital: A theoretical and empirical analysis, with special reference to education. Chicago: Chicago University Press.

Bills, K., Q. Swanquist, and R. Whited. 2016. Growing pains: Audit quality and office growth. *Contemporary Accounting Research* 33 (1): 288–313.

Blouin, J., B. Grein, and B. Rountree. 2007. An analysis of forced auditor change: The case of former Arthur Andersen clients. *The Accounting Review* 82 (3): 621–650.

Bonner, S. 1990. Experience effects in auditing: The role of task-specific knowledge. *The Accounting Review* 65 (January): 72–92

Bonner, S., and B. Lewis. 1990. Determinants of auditor expertise. *Journal of Accounting Research* 28 (Supplement): 1–20.

Bramwell, J. 2013. Accountants' social media use focus of SocialCPAs survey. Available at: https://www.accountingweb.com/practice/growth/accountants-social-media-use-focus-of-socialcpas-survey

Call, M., A. Nyberg, R. Ployhart, and J. Weekley. 2015. The dynamic nature of collective turnover and unit performance: The importance of time, quality, and replacements. *Academy of Management Journal* 58 (4): 1208–1232.

Carcello, J., R. Hermanson, and N. McGrath. 1992. Audit quality attributes: The perceptions of audit partners, preparers, and financial statement users. *Auditing: A Journal of Practice & Theory* 11 (1): 1–15.

Carson, E., N. Fargher, M. Geiger, C. Lennox, K. Raghunandan, and M. Willekens. 2013. Audit reporting for going-concern uncertainty: A research synthesis. *Auditing: A Journal of Practice & Theory* 32 (Supplement 1): 353–384.

Cascino, S., A. Tamayo, and F. Vetter. 2021. Labor market effects of spatial licensing requirements: Evidence from CPA mobility. *Journal of Accounting Research* 59 (1): 111–161.

Center for Audit Quality (CAQ) 2019. Audit quality disclosure framework. Available at: https://www.thecaq.org/audit-qualitydisclosure-framework/

Chow, C and S. Rice. 1982. Qualified audit opinions and auditor switching. *The Accounting Review*, 57 (4): 326–335.

Christensen, B., N. Newton, and M. Wilkins. 2021. How do team workloads and team staffing affect the audit? Archival evidence from U.S. Audits. *Accounting, Organizations and Society*, forthcoming.

Coleman, J. 1988. Social capital in creation of human capital. *American Journal of Sociology* 94 (supplement): 95–120.

Conway, R. 2015. Robert Conway's Supplemental Response to the PCAOB's Request for Public Comment on the PCAOB's Concept Release on Audit Quality Indicators. Available at: https://pcaobus.org/Rulemaking/Docket%20041/050_Conway.pdf

Cunningham, L., C. Li, S. Stein, and N. Wright. 2019. What's in a name? Initial evidence of US audit partner identification using difference-in-differences analyses. *The Accounting Review 94* (5): 139–163.

Dassen, R. (1995). Audit quality: An Empirical Study of the Attributes and Determinants of Audit Quality Perceptions. Doctoral Thesis. Landgraaf: Groenevelt.

de Ruyter, K., and M. Wetzels. 1999. Commitment in auditor-client relationships: Antecedents and consequences. *Accounting, Organizations and Society* 24 (1): 57–75.

Dechow, P., W. Ge, C. Larson, and R. Sloan. 2011. Predicting material accounting misstatements. *Contemporary Accounting Research* 28(1): 17–82.

DeFond, M., K. Raghunandan, and K. Subramanyam. 2002. Do non-audit service fees impair auditor independence? Evidence from going concern audit opinions. *Journal of Accounting Research* 40 (4): 1247–1274.

DeFond, M., and J. Zhang. 2014. A review of archival auditing research. *Journal of Accounting and Economics* 58 (2): 275–326.

Dess, G., and J. Shaw. 2001. Voluntary turnover, social capital and organizational performance. *Academy of Management Review* 26 (3): 446–456.

Doogar, R., P. Sivadasan, and I. Solomon. 2015. Audit fee residuals: Cost or rents? *Review of Accounting Studies* 20 (4): 1247–1286.

Economist. 2014. *Workers of the world, log in*. Available at: https://www.economist.com/business/2014/08/18/workers-of-the-world-log-in

EY. 2021. *Global review 2020: Facts and figures*. Available at: https://www.ey.com/en_us/global-review/2020/facts-and-figures#People

Fogarty, T., J. Singh, G. Rhoads, and R. Moore. 2000. Antecedents and consequences of burnout in accounting: Beyond the role stress model. *Behavioral Research in Accounting* 12: 31–67.

Fontaine, R., and C. Pilote. 2011. An empirical study of Canadian companies to determine clients' preferred relationship approach with their financial auditor. *Journal of Marketing Trends* 1 (September): 61–69.

Fontaine, R., and C. Pilote. 2012. Clients' preferred relationship approach with their financial statement auditor. *Current Issues in Auditing* 6 (1): 1–6.

Fontaine, R., S. Letaifa, and D. Herda. 2013. An interview study to understand the reasons clients change audit firms and the client's perceived value of the audit service. *Current Issues in Auditing 7* (1): A1–A14.

Frankel, R., M. Johnson, and K. Nelson. 2002. The relation between auditors' fees for nonaudit services and earnings management. *The Accounting Review* 77 (Supplement): 71–105.

Francis, J., and M. Yu. 2009. Big 4 office size and audit quality. *The Accounting Review* 84 (5): 1521–1552.

Francis, J., P. Michas, and M. Yu. 2013. Office size of Big 4 auditors and client restatements. *Contemporary Accounting Research* 30 (4): 1626–1661.

Gaertner, J., P. Hemmeter, and M. Pitman. 1987. Employee Turnover in Public Accounting: A New Perspective. *The CPA Journal* 57 (8) 30–37.

Gipper, B., L. Hail, and C. Leuz. 2021. On the economics of mandatory audit partner rotation and tenure: Evidence from PCAOB data. *The Accounting Review* 96 (2): 303–331.

Hale, D., R. Ployhart, and W. Shepherd. 2016. A two-phase longitudinal model of a turnover event: Disruption, recovery rates, and moderators of collective performance. *Academy of Management Journal* 59 (3): 906–929.

Hall, M., and D. Smith. 2009. Mentoring and turnover intentions in public accounting firms: A research note. *Accounting, Organizations and Society*, *34* (6-7): 695–704.

Han, J., K. Jamal, and H.-T. Tan. 2011. Auditors' overconfidence in predicting the technical knowledge of superiors and subordinates. *Auditing: A Journal of Practice & Theory* 30 (1): 101–119.

Hancock, J., D. Allen, F. Bosco, K. McDaniel, and C. Pierce. 2013. Meta-analytic review of employee turnover as a predictor of firm performance. *Journal of Management* 39 (3): 573–603.

Hausknecht, J., and C. Trevor. 2011. Collective turnover at the group, unit and organizational levels: Evidence, issues, and implications. *Journal of Management* 37 (1): 352–388.

Hausknecht, J., and J. Holwerda. 2013, When does employee turnover matter? Dynamic Member configurations, productive capacity, and collective performance. *Organization Science* 24 (1): 210–225.

Heavey, A., J. Holwerda, and J. Hausknecht. 2013. Causes and consequences of collective turnover: A meta-analytic review. *Journal of Applied Psychology* 98 (3): 412–453.

Hendricks, B., W. Landsman, and F. Peña-Romera. 2021. The revolving door between large audit firms and the PCAOB: Implications for future inspection reports and audit quality. *The Accounting Review* (forthcoming).

Hennes, K., A. Leone, and B. Miller. 2014. Determinants and market consequences of auditor dismissal after accounting restatements. *The Accounting Review* 89 (3): 1051–1082.

Herda, D., and J. Lavelle. 2012. The auditor-audit firm relationship and its effect on burnout and turnover intention. *Accounting Horizons* 26 (4): 707–723.

Hermanson, D., R. Houston, C. Stefaniak, and A. Wilkins. 2016. The work environment in large audit firms: Current perceptions and possible improvements. *Current Issues in Auditing* 10 (2): A38–A61.

Hoitash, U., and R. Hoitash. 2018. Measuring accounting reporting complexity with XBRL. *The Accounting Review* 93 (1): 259–287.

International Auditing and Assurance Standards Board (IAASB). 2014. *A Framework for Audit Quality Key Elements that Create an Environment for Audit Quality*. Available at: https://www.iaasb.org/system/files/publications/files/A-Framework-for-Audit-Quality-Key-Elements-that-Create-an-Environment-for-Audit-Quality-2.pdf

Jones, A. III, C. Norman, and B. Wier. 2010. Healthy lifestyle as a coping mechanism for role stress in public accounting. *Behavioral Research in Accounting* 22 (1): 21–41.

Kacmar, K., M. Andrews, D. Van Rooy, C. Steilberg, and S. Cerrone. 2006. Sure everyone can be replaced… but at what cost? Turnover as a predictor of unit-level performance. *Academy of Management Journal* 49: 133–144.

Knechel, W., and J. Payne. 2001. Research notes: Additional evidence on audit report lag. *Auditing: A Journal of Practice & Theory* 20 (1): 137–146.

Knechel, W., P. Rouse, and C. Schelleman. 2009. A modified audit production framework: Evaluating the relative efficiency of audit engagements. *The Accounting Review* 84 (5): 1607–1638.

Khavis, J., and J. Krishnan. 2021. Employee satisfaction in accounting firms, work-life balance, and audit quality. *Auditing: A Journal of Practice & Theory* 40 (2): 162–192.

Kothari, S., A. Leone, and C., Wasley. 2005. Performance matched discretionary accrual measures. *Journal of Accounting and Economics* 39 (1): 163–197.

Koys, D. 2001. The effects of employee satisfaction, organizational citizenship behavior, and turnover on organizational effectiveness: A unit-level, longitudinal study. *Personnel Psychology* 54: 101–114.

Krishnan, J. 1994. Auditor switching and conservatism. *The Accounting Review* 69: 200–215.

Krishnan, J, J. Krishnan, and S. Maex. 2020. The PCAOB Revolving Door and Audit Quality. Available at: https://ssrn.com/abstract=3648214

Lee, G., V. Naiker, and C. R. Stewart. 2021. Office labor market proximity and audit quality. *The Accounting Review*, forthcoming.

Lennox, C., and B. Li. 2014. Accounting misstatements following lawsuits against auditors. *Journal of Accounting and Economics* 57 (1): 58–75.

Li, Q., B. Lourie, A. Nekrasov, and T. Shevlin. 2021. Employee turnover and firm performance: Large-sample archival evidence. *Management Science*, forthcoming.

Libby, R., and J. Luft. 1993. Determinants of judgment performance in accounting settings: Ability, knowledge, motivation, and environment. *Accounting, Organizations and Society* 18 (5): 425–450.

Magri, M., and P. Baldacchino. 2004. Factors contributing to auditor-change decisions in Malta. *Managerial Auditing Journal* 19 (7): 956–968.

Monga, V. 2017. As Regulations Change, Companies Grapple with Accountant Shortage. Available at: https://www.wsj.com/articles/as-regulations-change-companies-grapple-with-accountant-shortage-1488812401

Nouri, H. 2017. Turnover in public accounting firms: The effect of position, service line, ethnicity, and gender. *Review of Business* 37 (2): 14–27.

Nouri, H., and R. Parker. 2020. Turnover in public accounting firms: a literature review. *Managerial Auditing Journal*. 35 (2): 294–321.

Nyberg, A., and R. Ployhart. 2013. Context-emergent turnover (CET) theory: A theory of collective turnover. *Academy of Management Review* 38 (1): 109–131.

Park, T., and J. Shaw. 2013. Turnover rates and organizational performance: A meta-analysis. *Journal of Applied Psychology* 98 (2): 268–309.

Parker, R., and J. Kohlmeyer. 2005. Organizational justice and turnover in public accounting firms: A research note. *Accounting, Organizations and Society* 30 (4): 357–369.

Persellin, J., J. Schmidt, S. Vandervelde, and M. Wilkins. 2019. Auditor perceptions of audit workloads, audit quality, and job satisfaction. *Accounting Horizons* 33 (4): 95–117.

Public Company Accounting Oversight Board (PCAOB). 2013. *Audit Quality Indicators – Discussion*. Available at:
http://pcaobus.org/news/events/documents/05152013_sagmeeting/audit_quality_indicators.pdf

Public Company Accounting Oversight Board (PCAOB). 2015. *Concept Release On Audit Quality Indicators.* Available at: https://pcaobus.org/Rulemaking/Docket%20041/Release_2015_005.pdf

PwC. 2018. Our focus on Audit Quality. Available at: https://www.pwc.com/us/en/audit-assurance-services/assets/pwc-our-focus-on-audit-quality-2018.pdf

Reichelt, K., and D. Wang. 2010. National and office-specific measures of auditor industry expertise and effects on audit quality. *Journal of Accounting Research* 48 (3): 647–686.

Reynolds, J., and J. Francis. 2001. Does size matter? The influence of large clients on office-level auditor reporting decisions. *Journal of Accounting and Economics* 30 (3): 375–400.

Riccardi, W., D. Rama, and K. Raghunandan. 2018. Reporting quality and global specialist auditor fee premiums. *Auditing: A Journal of Practice and Theory* 37 (3): 19–210.

Schroeder, M., I. Solomon, and D. Vickery. 1986. Audit quality: The perceptions of audit-committee chairpersons and audit partners. *Auditing: A Journal of Practice & Theory* 5 (2): 86–94.

Shaw, J., N. Gupta, and J. Delery. 2005. Alternative conceptualizations of the relationship between voluntary turnover and organization performance. *Academy of Management Journal* 45: 5–68.

Smith, D. 1986. Auditor 'subject to' opinions, disclaimers and auditor changes. *Auditing: A Journal of Practice and Theory* 6 (1): 95–108.

Tan, H., and R. Libby. 1997. Tacit managerial versus technical knowledge as determinants of audit expertise in the field. *Journal of Accounting Research* 35 (1): 97–114.

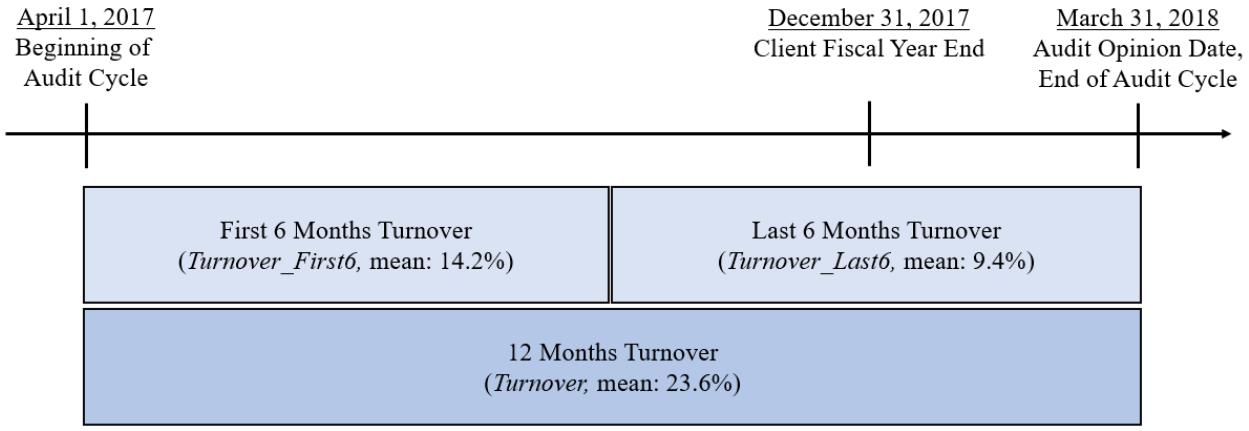
Telberg, R. 2010. The Cost of Staff turnover. Available at: https://cpatrendlines.com/2010/07/19/the-cost-of-staff-turnover/

U.S. Department of the Treasury Advisory Committee on the Auditing Profession (ACAP). 2008. Final Report. *October 6, 2008*. Available at: http://www.treasury.gov/about/organizational-structure/offices/Documents/final-report.pdf

U.S. General Accounting Office (GAO). 2003. *Public Accounting Firms Required Study on the Potential Effects of Mandatory Audit Firm Rotation*. Washington, D.C.: Government Printing Office.

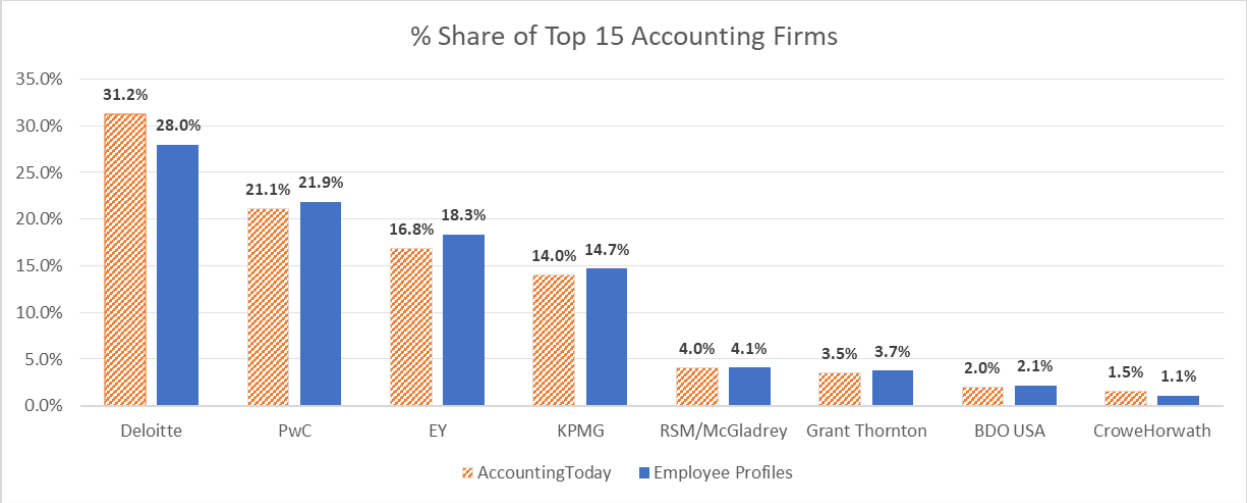
Xu, Q., and R. Kalelkar. 2020. Consequences of going-concern opinion inaccuracy at the audit office level. *Auditing: A Journal of Practice & Theory* 39 (3): 185–208.

Figure 1. Measuring Turnover throughout the Audit Cycle



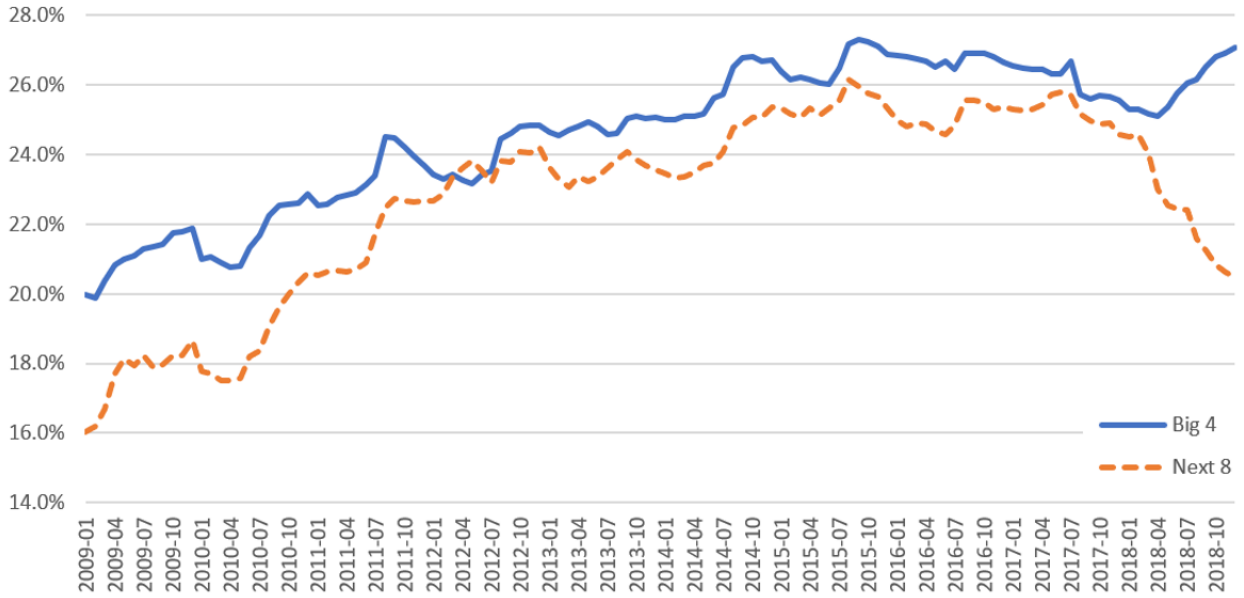
This figure illustrates how turnover is measured for a client's twelve-month "audit cycle" of a particular fiscal year. In this example, the client has a fiscal year ending on December 31, 2017 and the auditor dates the audit opinion on March 31, 2018. The audit cycle is the twelve months including and ending in the month of the audit report date. In this example, the audit cycle would measure from April 1, 2017 to March 31, 2018. The cutoff date between the first and second six-month periods of the audit cycle would be September 30 / October 1, 2017. Mean values in parentheses represent turnover for the entire sample (from Table 2).

Figure 2. Percent Share of Employee Profiles



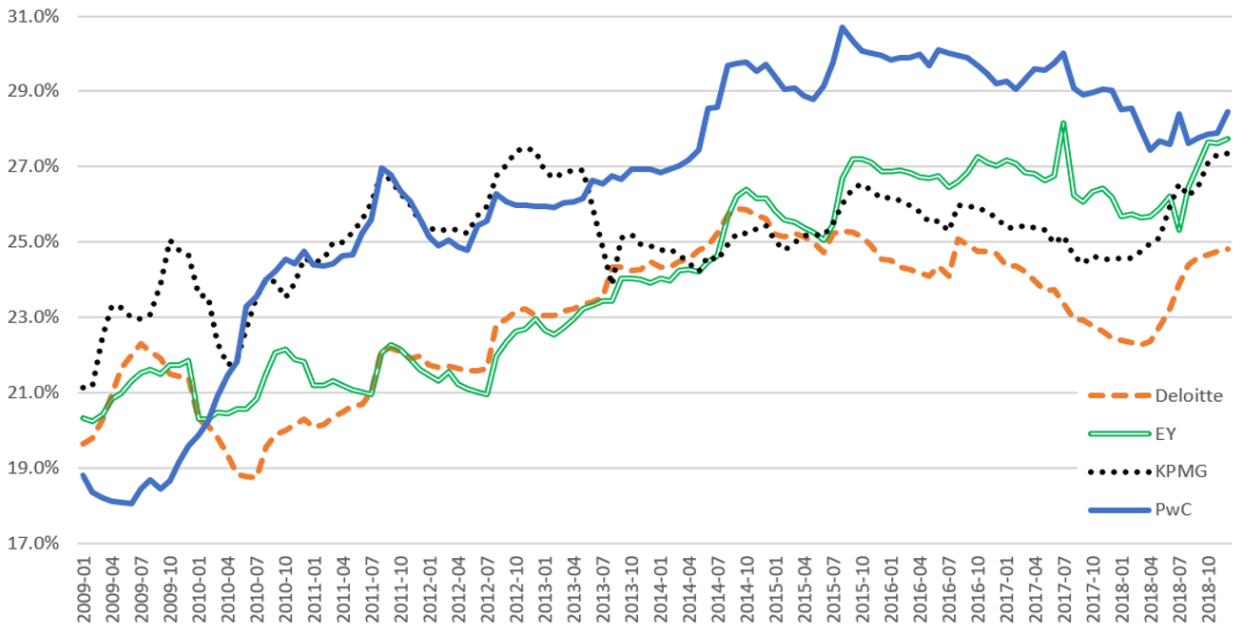
This figure compares the share of total number of employee profiles for an accounting firm to its share of total number of employees as reported in *Top 100 Firms* annual reports published by *Accounting Today* from 2009 to 2017. *AccountingToday (Employee Profiles)* is calculated as the total number of employees (employee online profiles) for an accounting firm divided by the total for the 15 largest accounting firms in our sample.

Figure 3. Employee Turnover at Accounting Firms



This figure illustrates the 12-month rolling average employee turnover for the largest four accounting firms (Big 4) and the eight next largest accounting firms (Next 8) in our sample.

Figure 4. Employee Turnover at the Big 4



This figure illustrates the 12-month rolling average employee turnover for the largest four accounting firms (Big 4).

Table 1. Sample Description

Sample Selection

	Client-Years
Clients with U.S. Auditor identified from COMPUSTAT / Audit Analytics Intersection for fiscal years 2010 - 2017	39,252
Less: Missing turnover metrics for Auditor/MSA	(8,892)
Less: Missing Control Variables	(4,047)
Less: Offices with fewer than 30 employees	(996)
Main Sample (4,825 unique clients; 20 unique auditors; 412 offices)	25,317
Less: Non-distressed firms	(17,070)
Going Concern Sample (2,903 unique clients; 20 unique auditors; 369 offices)	8,247

Panel B. Main Sample Distribution

Auditor	Client-Year Obs.	% of Total Client-Years	Turnover (Mean)
EY	6,413	25.3%	23.1%
PwC	4,521	17.9%	26.1%
KPMG	4,413	17.4%	24.5%
Deloitte	4,167	16.5%	21.1%
Grant Thornton	1,470	5.8%	27.3%
BDO USA	1,326	5.2%	22.9%
RSM / McGladrey	664	2.6%	22.7%
Crowe Horwath	503	2.0%	23.1%
Moss Adams	296	1.2%	20.9%
Marcum	278	1.1%	17.4%
Baker Tilly	208	0.8%	20.6%
BKD	207	0.8%	19.7%
Other (8 Auditors)	851	3.4%	19.9%
TOTAL	25,317	100.00%	23.6%

Table 2. Summary Statistics

	Mean	Median	S.D.	Q1	Q3	Obs.
Test Variables						
Turnover	0.236	0.233	0.058	0.200	0.269	25,317
ΔTurnover	0.006	0.007	0.057	-0.020	0.033	25,317
TurnoverNonManagers	0.317	0.316	0.074	0.277	0.356	25,317
TurnoverManagers	0.126	0.122	0.050	0.100	0.150	25,317
ΔTurnoverNonManagers	0.005	0.007	0.085	-0.033	0.044	25,317
ΔTurnoverManagers	0.004	0.004	0.060	-0.022	0.030	25,317
Turnover_First6	0.142	0.140	0.050	0.109	0.174	25,317
Turnover_Last6	0.094	0.085	0.041	0.069	0.110	25,317
Measures of Audit Quality						
ABS_DA	0.123	0.060	0.180	0.022	0.140	23,809
Restatement	0.093	0.000	0.290	0.000	0.000	25,317
AAER	0.004	0.000	0.060	0.000	0.000	22,342
GoingConcern (full sample)	0.031	0.000	0.174	0.000	0.000	25,317
GoingConcern (distressed)	0.092	0.000	0.289	0.000	0.000	8,247
Measures of the Auditor-Client Relationship						
AuditFees	14.013	13.990	1.177	13.240	14.759	24,607
AbnAuditFees	0.001	-0.003	0.439	-0.289	0.283	24,371
AuditLength	4.117	4.078	0.207	3.989	4.277	25,308
AuditorSwitch	0.048	0.000	0.213	0.000	0.000	20,690
Control Variables						
Specialist	0.245	0.000	0.430	0.000	0.000	25,317
OfficeSize	17.396	17.709	1.641	16.229	18.650	25,317
AuditorTenure	1.788	2.079	0.890	1.099	2.485	25,317
NewAuditor	0.261	0.000	0.439	0.000	1.000	25,317
Big4	0.771	1.000	0.420	1.000	1.000	25,317
MaterialWeakness	0.033	0.000	0.178	0.000	0.000	25,317
DecYE	0.769	1.000	0.421	1.000	1.000	25,317
HHI	0.288	0.258	0.096	0.234	0.298	25,317
UnempRate	0.065	0.062	0.021	0.048	0.081	25,317
ROA	-0.023	0.022	0.218	-0.011	0.061	25,317
ClientSize	7.051	7.116	2.064	5.723	8.413	25,317
BTM	0.535	0.472	0.660	0.239	0.792	25,317
CFO	0.041	0.064	0.165	0.015	0.114	25,317
CFOVolatility	0.054	0.026	0.087	0.011	0.058	25,317
Leverage	0.212	0.152	0.222	0.011	0.342	25,317
Loss	0.289	0.000	0.453	0.000	1.000	25,317
LitRisk	0.226	0.000	0.418	0.000	0.000	25,317
Sales	0.819	0.639	0.759	0.234	1.155	25,317
SalesGrowth	0.037	0.000	0.347	-0.082	0.090	25,317
GoingConcernLag	0.026	0.000	0.159	0.000	0.000	24,211

Table 3. Audit-Employee Turnover and Audit Quality

Panel A. Turnover

	(1) *ABS_DA*	(2) *Restatement*	(3) *AAER*	(4) *GoingConcern*
Turnover	0.067***	1.657***	1.952	-1.701*
	(3.365)	(3.131)	(0.968)	(-1.806)
Specialist	-0.003	0.127*	-0.233	-0.065
	(-1.193)	(1.673)	(-0.592)	(-0.372)
OfficeSize	0.001	0.053	-0.169	-0.002
	(0.516)	(1.611)	(-0.998)	(-0.030)
AuditorTenure	-0.000	0.023	-0.118	-0.173
	(-0.041)	(0.339)	(-0.411)	(-1.294)
NewAuditor	0.012**	0.137	0.309	-0.283
	(2.383)	(1.129)	(0.574)	(-1.169)
Big4	-0.005	-0.032	-0.232	0.053
	(-1.170)	(-0.223)	(-0.314)	(0.244)
MaterialWeakness	0.008	0.918***	2.063***	0.207
	(1.249)	(9.308)	(6.155)	(0.649)
DecYE	-0.003	-0.057	-0.305	-0.223
	(-0.947)	(-0.641)	(-0.781)	(-1.376)
HHI	-0.003	-0.118	-0.361	-0.523
	(-0.288)	(-0.271)	(-0.205)	(-0.574)
UnempRate	0.035	0.112	5.529	7.510
	(0.372)	(0.039)	(0.550)	(1.320)
ROA	-0.138***	0.095	0.757	-2.202***
	(-6.628)	(0.346)	(0.961)	(-8.482)
ClientSize	-0.006***	0.025	0.426***	-0.369***
	(-6.093)	(1.034)	(4.857)	(-6.276)
BTM	-0.014***	0.192***	0.556**	-0.411***
	(-5.841)	(3.678)	(2.520)	(-5.135)
CFO	0.030	0.424	-1.799	-0.944**
	(1.193)	(1.323)	(-1.403)	(-2.473)
CFOVolatility	0.412***	-0.811*	2.927	-0.522
	(14.068)	(-1.676)	(1.364)	(-0.926)
Leverage	0.000	0.712***	0.550	-1.090***
	(0.030)	(4.066)	(0.623)	(-3.839)
Loss	0.006*	0.157*	0.317	0.823***
	(1.735)	(1.939)	(0.897)	(2.676)
LitRisk	0.012**	-0.213	-0.183	-0.744***
	(2.298)	(-1.538)	(-0.261)	(-2.654)
Sales	0.004	-0.112*	0.428	0.088
	(1.484)	(-1.715)	(1.413)	(0.905)
SalesGrowth	-0.005	-0.023	-0.172	0.083
	(-1.041)	(-0.315)	(-0.551)	(0.946)
GoingConcernLag				3.202***
				(18.607)
Industry F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
Obs.	23,809	25,254	16,198	7,374

ROC Curve	N/A	0.68	0.86	0.95
Adj. / Pseudo R^2	0.245	0.062	0.168	0.534

Panel B. Abnormal Turnover

	(1) *ABS_DA*	(2) *Restatement*	(3) *AAER*	(4) *GoingConcern*
ΔTurnover	0.037**	0.997***	3.095**	-0.263
	(2.050)	(2.988)	(2.090)	(-0.297)
Controls	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
Obs.	23,809	25,254	16,198	7,374
Adj. / Pseudo R^2	0.245	0.061	0.169	0.533

This table presents the results of estimating equation (1) when using absolute discretionary accruals (OLS), restatements (logit), accounting and auditing enforcement releases from the Securities and Exchange Commission (logit) and going concern opinion paragraphs (logit) as the dependent variables in columns 1, 2, 3, and 4, respectively. All variables are defined in Appendix A. Estimated coefficients are presented above t- and z-statistics in parentheses. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels (two-tailed), respectively. Standard errors are clustered by the client. For models with dichotomous variables, we asses model discrimination by calculating the area under the ROC curve. For dichotomous models with an ROC below 0.70, we perform the Hosmer–Lemeshow goodness-of-fit test using deciles and find no evidence to reject the models.

Table 4. Audit-Employee Turnover and the Auditor-Client Relationship

Panel A. Turnover

	(1) *AuditFees*	(2) *AbnAuditFees*	(3) *AuditLength*	(4) *AuditorSwitch*
Turnover	0.307***	0.385***	-0.132***	1.972***
	(3.455)	(4.722)	(-4.895)	(3.527)
Specialist	0.031**	0.018	0.006	-0.104
	(2.078)	(1.394)	(1.298)	(-1.081)
OfficeSize			0.001	-0.037
			(0.765)	(-1.096)
AuditorTenure	-0.008	-0.032***	-0.008**	0.297***
	(-0.650)	(-3.188)	(-2.351)	(3.612)
NewAuditor	-0.010	-0.043***	0.022***	0.471***
	(-0.611)	(-2.815)	(4.219)	(3.030)
Big4	0.424***	0.005	-0.042***	-0.233*
	(21.519)	(0.284)	(-5.603)	(-1.840)
MaterialWeakness	0.355***	0.081***	0.169***	1.418***
	(14.252)	(3.848)	(22.759)	(11.547)
DecYE	0.016	-0.004	0.012**	0.065
	(0.949)	(-0.255)	(2.312)	(0.756)
HHI	-0.466***	-0.458***	-0.002	-0.254
	(-7.449)	(-7.783)	(-0.073)	(-0.565)
UnempRate	3.933***	3.446***	0.499***	3.832
	(7.438)	(7.301)	(3.165)	(1.292)
ROA	-0.169***	-0.070**	-0.041***	-0.065
	(-4.546)	(-2.017)	(-3.704)	(-0.228)
ClientSize	0.508***	0.018***	-0.056***	-0.348***
	(87.980)	(3.618)	(-37.186)	(-11.560)
BTM	-0.046***	-0.032***	0.024***	0.203***
	(-4.533)	(-3.490)	(6.946)	(3.546)
CFO	-0.149***	-0.151***	-0.068***	0.352
	(-2.720)	(-3.146)	(-4.436)	(0.991)
CFOVolatility	0.296***	0.275***	-0.043*	-0.397
	(3.591)	(3.676)	(-1.878)	(-0.868)
Leverage	0.052	-0.028	0.046***	0.092
	(1.375)	(-0.863)	(4.779)	(0.479)
Loss	0.167***	-0.032***	0.034***	0.212**
	(12.731)	(-2.714)	(8.351)	(2.262)
LitRisk	-0.047*	-0.024	-0.024***	-0.065
	(-1.813)	(-1.050)	(-3.004)	(-0.535)
Sales	0.198***	0.129***	-0.002	-0.046
	(14.273)	(10.126)	(-0.475)	(-0.736)
SalesGrowth	-0.018*	-0.015*	-0.004	0.176**
	(-1.862)	(-1.696)	(-1.513)	(2.127)
GoingConcernLag				0.280
				(1.553)
Industry F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
Obs.	24,607	24,371	25,308	20,579
ROC Curve	N/A	N/A	N/A	0.76

Adj. / Pseudo R^2	0.839	0.055	0.487	0.103

Panel B. Abnormal Turnover

	(1) *AuditFees*	(2) *AbnAuditFees*	(3) *AuditLength*	(4) *AuditorSwitch*
ΔTurnover	0.070**	0.085**	-0.017	1.553***
	(2.104)	(2.523)	(-1.364)	(2.946)
Controls	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
Obs.	24,607	24,371	25,308	20,579
Adj. / Pseudo R^2	0.839	0.052	0.486	0.102

This table presents the results of estimating equation (1) when using audit fees (OLS), abnormal audit fees (OLS), audit length (OLS), and non-recurrence of the auditor (logit) as the dependent variables in columns 1, 2, 3, and 4, respectively. All variables are defined in Appendix A. Estimated coefficients are presented above t- and z-statistics in parentheses. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels (two-tailed), respectively. Standard errors are clustered by the client. For models with dichotomous variables, we asses model discrimination by calculating the area under the ROC curve.

Table 5. Audit Quality in the Cross Section

	(1)	(2)	(3)
	Restatement	*Restatement*	*Restatement*
Turnover	0.061	0.184***	0.297***
	(1.267)	(3.531)	(2.942)
ConstrainedOffice	-0.032**		
	(-2.068)		
*Turnover*ConstrainedOffice*	0.147**		
	(2.302)		
HiStaffSupply		0.037*	
		(1.797)	
*Turnover*HiStaffSupply*		-0.183**	
		(-2.228)	
CPAMobility			0.050*
			(1.880)
*Turnover*CPAMobility*			-0.261**
			(-2.302)
Controls	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes
Obs.	25,317	25,317	13,999
Adj. R^2	0.033	0.033	0.041

This table presents the results of estimating a modified equation (1) using restatements (OLS) as the dependent variables in columns 1, 2, and 3, respectively. All variables are defined in Appendix A. Estimated coefficients are presented above t-statistics in parentheses. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels (two-tailed), respectively. Standard errors are clustered by the client.

Table 6. Auditor-Client Relationships in the Cross Section

Panel A. Important Clients

	(1) *AuditFees*	(2) *AbnAuditFees*	(3) *AuditLength*	(4) *AuditorSwitch*
Turnover	0.450***	0.505***	-0.163***	0.146***
	(4.735)	(5.639)	(-5.183)	(3.672)
ImportantClient	0.133***	0.101**	-0.018	0.054***
	(2.693)	(2.289)	(-1.299)	(4.389)
*Turnover*ImportantClient*	-0.530***	-0.442***	0.117**	-0.205***
	(-2.788)	(-2.620)	(2.207)	(-4.185)
Controls	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
Obs.	24,607	24,371	25,308	20,690
Adj. R^2	0.839	0.055	0.488	0.039

Panel B. Complex Audit Client

	(1) *AuditFees*	(2) *AbnAuditFees*	(3) *AuditLength*	(4) *AuditorSwitch*
Turnover	0.080	0.157	-0.098***	0.059
	(0.652)	(1.429)	(-2.813)	(1.641)
ComplexClient	0.025	-0.045	0.084***	-0.012
	(0.568)	(-1.092)	(6.032)	(-0.702)
*Turnover*ComplexClient*	0.621***	0.638***	-0.109**	0.131*
	(3.808)	(4.148)	(-2.071)	(1.933)
Controls	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
Obs.	21,986	21,812	22,646	18,296
Adj. R^2	0.842	0.061	0.495	0.042

Panel C. New Local Demand for Audit Service

	(1) *AuditFees*	(2) *AbnAuditFees*	(3) *AuditLength*	(4) *AuditorSwitch*
Turnover	0.217**	0.275***	-0.098***	0.108***
	(2.337)	(3.228)	(-3.160)	(3.139)
NewAuditDemand	-0.001	-0.028	0.043***	0.027
	(-0.013)	(-0.662)	(3.112)	(1.636)
*Turnover*NewAuditDemand*	0.551***	0.611***	-0.122**	-0.055
	(2.961)	(3.537)	(-2.226)	(-0.797)
Controls	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
Obs.	24,607	24,371	25,308	20,690
Adj. R^2	0.841	0.069	0.488	0.039

This table presents the results of estimating a modified equation (1) via OLS when using audit fees, abnormal audit fees, audit length, and non-recurrence of the auditor as the dependent variables in columns 1, 2, 3, and 4, respectively. All variables are defined in Appendix A. Estimated coefficients are presented above t-statistics in parentheses. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels (two-tailed), respectively.

Table 7. Managers versus Non-Managers

Panel A. Turnover and Audit Quality

	(1) *ABS_DA*	(2) *Restatement*	(3) *AAER*	(4) *GoingConcern*
TurnoverNonManagers	0.040***	0.790**	3.321***	-1.288*
	(2.710)	(2.157)	(2.927)	(-1.706)
TurnoverManagers	0.016	0.046	-2.860	-0.533
	(0.674)	(0.085)	(-1.049)	(-0.434)
Controls	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
Obs.	23,809	25,254	16,198	7,374
Adj. / Pseudo R^2	0.245	0.061	0.173	0.534
Coefficient Test: *TurnoverNonManagers = TurnoverManagers*				
F-stat / Chi^2	0.64	1.20	4.21	0.21
P-value	0.425	0.273	0.040	0.644

Panel B. Abnormal Turnover and Audit Quality

	(1) *ABS_DA*	(2) *Restatement*	(3) *AAER*	(4) *GoingConcern*
ΔTurnoverNonManagers	0.024**	0.521**	1.880***	-0.504
	(2.031)	(2.345)	(2.720)	(-0.844)
ΔTurnoverManagers	-0.001	0.394	0.763	0.626
	(-0.053)	(1.290)	(0.464)	(0.634)
Controls	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
Obs.	23,809	25,254	16,198	7,374
Adj. / Pseudo R^2	0.245	0.061	0.169	0.533
Coefficient Test: *ΔTurnoverNonManagers = ΔTurnoverManagers*				
F-stat / Chi^2	1.25	0.11	0.49	0.86
P-value	0.263	0.746	0.482	0.355

Panel C. Turnover and the Auditor-Client Relationship

	(1) *AuditFees*	(2) *AbnAuditFees*	(3) *AuditLength*	(4) *AuditorSwitch*
TurnoverNonManagers	0.083	0.149***	-0.063***	1.430***
	(1.370)	(2.684)	(-3.418)	(3.261)
TurnoverManagers	0.403***	0.377***	-0.069***	-0.026
	(5.086)	(5.076)	(-2.797)	(-0.040)
Controls	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
Obs.	24,607	24,371	25,308	20,579
Adj. / Pseudo R^2	0.839	0.055	0.487	0.103
Coefficient Test: *TurnoverNonManagers = TurnoverManagers*				
F-stat / Chi^2	9.72	5.64	0.04	2.68
P-value	0.002	0.018	0.845	0.102

Panel D. Abnormal Turnover and the Auditor-Client Relationship

	(1) *AuditFees*	(2) *AbnAuditFees*	(3) *AuditLength*	(4) *AuditorSwitch*
ΔTurnoverNonManagers	0.052**	0.067***	-0.004	1.211***
	(2.284)	(2.967)	(-0.464)	(3.296)
ΔTurnoverManagers	0.023	0.004	-0.020*	-0.298
	(0.712)	(0.139)	(-1.704)	(-0.579)
Controls	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
Obs.	24,607	24,371	25,308	20,579
Adj. / Pseudo R^2	0.839	0.052	0.486	0.103
Coefficient Test: *ΔTurnoverNonManagers = ΔTurnoverManagers*				
F-stat / Chi^2	0.47	2.44	1.09	4.96
P-value	0.493	0.118	0.296	0.026

Panels A and B present the results of estimating equation (1) when using absolute discretionary accruals (OLS), restatements (logit), accounting and auditing enforcement releases from the Securities and Exchange Commission (logit), and going concern opinion paragraphs (logit) as the dependent variables in columns 1, 2, 3, and 4, respectively. Panels C and D present the results of estimating equation (1) when using audit fees (OLS), abnormal audit fees (OLS), audit length (OLS), and non-recurrence of the auditor (logit) as the dependent variables in columns 1, 2, 3, and 4, respectively. All variables are defined in Appendix A. Estimated coefficients are presented above t- and z-statistics in parentheses. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels (two-tailed), respectively. Standard errors are clustered by the client.

Table 8. Timing of Turnover

Panel A. Turnover and Audit Quality

	(1) *ABS_DA*	(2) *Restatement*	(3) *AAER*	(4) *GoingConcern*
Turnover_First6	0.059**	2.713***	2.565	-2.587**
	(2.375)	(4.077)	(0.939)	(-2.066)
Turnover_Last6	0.076***	0.056	1.190	-0.802
	(2.592)	(0.069)	(0.381)	(-0.541)
Controls	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
Obs.	23,809	25,254	16,198	7,374
Adj. / Pseudo R^2	0.245	0.062	0.168	0.534
Coefficient Test: *Turnover_First6 = Turnover_Last6*				
F-stat / Chi^2	0.22	7.12	0.11	0.83
P-value	0.638	0.008	0.744	0.362

Panel B. Turnover and the Auditor-Client Relationship

	(1) *AuditFees*	(2) *AbnAuditFees*	(3) *AuditLength*	(4) *AuditorSwitch*
Turnover_First6	0.468***	0.526***	-0.091***	-0.165
	(4.089)	(5.077)	(-2.623)	(-0.227)
Turnover_Last6	0.081	0.196	-0.206***	4.721***
	(0.612)	(1.581)	(-4.601)	(5.691)
Controls	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
Obs.	24,607	24,371	25,308	20,579
Adj. / Pseudo R^2	0.839	0.055	0.487	0.106
Coefficient Test: *Turnover_First6 = Turnover_Last6*				
F-stat / Chi^2	5.26	4.42	4.11	19.77
P-value	0.022	0.036	0.043	<0.000

Panels A and C present the results of estimating equation (1) when using absolute discretionary accruals (OLS), restatements (logit), accounting and auditing enforcement releases from the Securities and Exchange Commission (logit), and going concern opinion paragraphs (logit) as the dependent variables in columns 1, 2, 3, and 4, respectively. Panels B and D present the results of estimating equation (1) when using audit fees (OLS), abnormal audit fees (OLS), audit length (OLS), and non-recurrence of the auditor (logit) as the dependent variables in columns 1, 2, 3, and 4, respectively. All variables are defined in Appendix A. Estimated coefficients are presented above t- and z-statistics in parentheses. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels (two-tailed), respectively. Standard errors are clustered by the client.

Table 9. Audit versus Tax and Consulting

Panel A. Turnover and Audit Quality

	(1) *ABS_DA*	(2) *Restatement*	(3) *AAER*	(4) *GoingConcern*
Turnover	0.076***	1.738***	1.901	-1.125
	(3.696)	(3.184)	(0.908)	(-1.029)
TurnoverTax	-0.007	0.033	0.555	-1.110**
	(-1.107)	(0.169)	(0.687)	(-2.061)
TurnoverConsult	0.007**	0.058	-0.207	-0.219
	(2.445)	(0.817)	(-0.467)	(-1.317)
Controls	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
Obs.	23,463	24,852	15,956	7,164
Adj. / Pseudo R^2	0.239	0.061	0.168	0.507

Panel B. Abnormal Turnover and Audit Quality

	(1) *ABS_DA*	(2) *Restatement*	(3) *AAER*	(4) *GoingConcern*
ΔTurnover	0.043**	0.960***	2.706*	0.155
	(2.346)	(2.729)	(1.891)	(0.151)
ΔTurnoverTax	-0.011**	-0.023	1.054**	-0.261
	(-1.975)	(-0.185)	(2.363)	(-0.656)
ΔTurnoverConsult	0.004*	-0.011	0.118	-0.039
	(1.858)	(-0.233)	(0.916)	(-0.531)
Controls	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
Obs.	23,394	24,781	15,915	7,143
Adj. / Pseudo R^2	0.239	0.061	0.172	0.504

Panel C. Turnover and the Auditor-Client Relationship

	(1) *AuditFees*	(2) *AbnAuditFees*	(3) *AuditLength*	(4) *AuditorSwitch*
Turnover	0.351***	0.420***	-0.130***	1.962***
	(3.821)	(5.016)	(-4.652)	(3.326)
TurnoverTax	-0.045	-0.029	-0.020**	0.458*
	(-1.605)	(-1.143)	(-2.387)	(1.676)
TurnoverConsult	-0.005	0.000	0.003	-0.171
	(-0.344)	(0.034)	(0.680)	(-1.601)
Controls	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
Obs.	24,216	23,992	24,906	20,262
Adj. / Pseudo R^2	0.834	0.059	0.476	0.108

Panel D. Abnormal Turnover and the Auditor-Client Relationship

	(1) *AuditFees*	(2) *AbnAuditFees*	(3) *AuditLength*	(4) *AuditorSwitch*
ΔTurnover	0.052	0.044	-0.005	1.348**
	(1.502)	(1.328)	(-0.366)	(2.317)
ΔTurnoverTax	-0.009	-0.008	-0.007	0.466**
	(-0.778)	(-0.680)	(-1.538)	(2.079)
ΔTurnoverConsult	-0.008	-0.004	0.001	-0.138**
	(-1.000)	(-0.674)	(0.355)	(-2.374)
Controls	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
Obs.	24,148	23,926	24,835	20,204
Adj. / Pseudo R^2	0.833	0.056	0.473	0.107

This table presents results for audit quality and auditor-client relationship tests that control for *TurnoverTax*, *TurnoverConsult*, *ΔTurnoverTax*, and *ΔTurnoverConsult*. Panels A and B present the results of estimating equation (1) when using absolute discretionary accruals (OLS), restatements (logit), accounting and auditing enforcement releases from the Securities and Exchange Commission (logit), and going opinion paragraphs (logit) as the dependent variables in columns 1, 2, 3, and 4, respectively. Panels C and B present the results of estimating equation (1) when using audit fees (OLS), abnormal audit fees (OLS), audit length (OLS), and non-recurrence of the auditor (logit) as the dependent variables in columns 1, 2, 3, and 4, respectively. All variables are defined in Appendix A. Estimated coefficients are presented above t- and z-statistics in parentheses. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels (two-tailed), respectively. Standard errors are clustered by the client.

Appendix A: Variable Definitions

Variables	Description
Turnover	
Turnover	The office's audit-employee turnover rate for the twelve-month period including and ending in the month in which the audit report is dated: the number of people in the office leaving the frim during the twelve-month period divided by the average number of people working in the office during those twelve months.
TurnoverTax	As calculated with *Turnover*, but with departure and number of employee totals limited to tax employees.
TurnoverConsult	As calculated with *Turnover*, but with departure and number of employee totals limited to consulting employees.
TurnoverManager	As calculated with *Turnover*, but with departure and number of employee totals limited to managers, senior managers, directors, and partners.
TurnoverNonManagers	As calculated with *Turnover*, but with departure and number of employee totals limited to those who are not managers, senior managers, directors, or partners.
Turnover_Last6 *(Turnover_First6)*	Audit-employee turnover for the second (first) half of the 12-month audit cycle—the six-month period including and ending in the month in which the audit report is dated (the six-month period that begins twelve months prior to the month in which the audit report is dated).
ΔTurnover	Abnormal turnover, calculated as the change in the audit-employee turnover rate for the last twelve months prior to the audit report date less the audit-employee turnover rate for the last twelve months prior to the audit report date for the previous year: $Turnover_t$ - $Turnover_{t-1}$
ΔTurnoverTax	As calculated with *ΔTurnover*, but with departure and number of employee totals limited to tax employees.
ΔTurnoverConsult	As calculated with *ΔTurnover*, but with departure and number of employee totals limited to consulting employees.
ΔTurnoverManager	As calculated with *ΔTurnover*, but with departure and number of employee totals limited to managers, senior managers, directors, and partners.
ΔTurnoverNonManagers	As calculated with *ΔTurnover*, but with departure and number of employee totals limited to those who are not managers, senior managers, directors, or partners.

Audit Quality and the Auditor-Client Relationship

AAER — Coded 1 if the client-year was subject to an AAER, and 0 otherwise.

AbnAuditFees — The residual from the regression:

$$AuditFees = ClientSize + Loss + ROA + Leverage + InvRec + ForOps + \sqrt{Employees} + Nsegments + ExtDist + GCO + MaterialWeakness + Busy + AuditLength + Year\ Indicators + Afiler + LAfiler + Industry\ Indicators + \varepsilon.$$

This regression is based the Doogar et al. (2015) model but with some modifications. Variables are as defined in this appendix. Variables specific to this regression:

InvRec: The sum of inventory and receivables scaled by total assets.

ForOps: Coded 1 if the client reports foreign earnings, and 0 otherwise.

Employees: The square root of the number of employees (measured in thousands).

Nsegments: The number of business segments.

ExtDist: takes a value of one if the absolute value of extraordinary items or discontinued operations exceeds $10,000; zero otherwise.

Afiler: Coded 1 if the client is an accelerated filer, and 0 otherwise.

LAfiler: Coded 1 if the client is a large accelerated filer, and 0 otherwise.

ABS_DA — Absolute discretionary accruals. Discretionary accruals are the residuals obtained from the modified Jones Model estimated for each industry year with at least 10 observations and then differenced with those of matched observations with the closest ROA from the same industry year (Kothari et al. 2005).

AuditFees — The natural log of audit fees charged to client.

AuditLength — The length of the client audit, calculated as the natural log of the number of days from the client's year end to the date an audit opinion is issued.

AuditorSwitch — Coded 1 if client experiences an auditor change in the following year, and 0 otherwise.

GoingConcern — Coded 1 if the auditor communicated a going concern paragraph within its auditor's report, and 0 otherwise.

Restatement — Coded 1 if the 10-K was restated for any reason, and 0 otherwise.

Controls

Big4	Coded 1 if auditor is a Big 4 firm, and 0 otherwise.
BTM	Book-to-Market ratio (CEQ / MCAP).
DecYE	Coded 1 if client's fiscal year end is in December, and 0 otherwise.
CFO	Client's Cash Flows from Operations scaled by total assets (OANCF / AT).
CFOVolatility	Standard deviation of operating cashflows (CFO). We use a rolling window and require three years of data (Francis & Yu 2009).
ClientSize	Natural log of client's total assets (AT).
HHI	Herfindahl index calculated using sum of squared market shares based on audit fees for each metropolitan statistical area. The calculated value is scaled by 10,000 giving the variable a range from 0.0001 (high competition) to 1 (monopoly).
Leverage	Client's debt leverage (DLTT / AT).
LitRisk	Litigation risk indicator coded 1 if client operates in the following SIC: 2833-2836, 3570-3577, 3600-3674, 5200-5961, 7370-7370, and 0 otherwise (Reichelt and Wang 2010).
Loss	Coded 1 if client reports a loss for the year, and 0 otherwise (IB < 0).
MaterialWeakness	Indicator variable coded 1 if the auditor communicated a material weakness in internal controls over financial reporting, and 0 otherwise.
NewAuditor	Coded 1 if auditor has been auditing client for three years or less, and 0 otherwise.
OfficeSize	Size of the audit office calculated as the log of audit fees collected for the MSA in a given year.
ROA	Income scaled by assets (IB / AT).
Sales	Client's sales revenues scaled by assets (SALE / AT)
SalesGrowth	Annual change in *Sales* (*Sales* – *Sales_lag*) / *Sales_lag*.
Specialist	1 if auditor is an industry specialist in MSA, and 0 otherwise (Reichelt and Wang 2010).
UnempRate	Annual combined unemployment rate for the counties comprising the metropolitan statistical area. Data from the U.S. Bureau of Labor Statistics.
Cross-Sectional Tests	
ConstrainedOffice	Coded 1 if an audit office's percentage change in total audit fees is in the top tertile of the sample, and 0 otherwise.
HiStaffSupply	Coded 1 if the number of schools offering accounting programs/majors in the audit office's MSA is in the top tertile of the sample, and 0 otherwise. A list of

	U.S. universities with accounting programs/majors is obtained from the National Center for Education Statistics (NCES) website (https://nces.ed.gov/collegenavigator/).
CPAMobility	Coded 1 if the client-year observation pertains to a state which adopts CPA Mobility provisions at least one year ago, and 0 otherwise (Cascino, Tamayo, and Vetter 2021).
ImportantClient	Coded 1 if a client's total assets (AT) are in the top tertile of the sample, and 0 otherwise.
ComplexClient	Coded 1 if a client's count of unique XBRL tags in the 10K, scaled by total assets, is in the top tertile of the sample, and 0 otherwise. XBRL tags data is obtained from: http://www.xbrlresearch.com/
NewAuditDemand	Coded 1 if the number of IPOs during the last three years in an MSA is in the top tertile of the sample, and 0 otherwise.