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“Partner Rotation and PCAOB Inspections:  
Effects on End-of-Term Audit Quality”

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# **Partner Rotation and PCAOB Inspections: Effects on End-of-Term Audit Quality**

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**Abstract:** I respond to the Public Company Accounting Oversight Board's (PCAOB) call for research about the likely effects of mandatory rotation on auditors' effort. I also respond to Congress's call for research about the effects of the 2002 Sarbanes-Oxley Act's reforms (such as PCAOB inspections) on audit quality. Currently required PCAOB inspections may perform the same external review function as the "fresh eyes" of mandatory firm rotation. Therefore, it is important to understand how current regulations affect audit quality before regulators consider additional costly reforms such as mandatory firm rotation. In an experiment using experienced professional auditors, I find that audit partners are more likely to decrease effort on a rotating client than on a continuing client and that a high risk of PCAOB inspection reduces the likelihood of a decrease in effort. Additionally, I find that partner rotation causes partners to reduce time spent on activities likely to enhance audit quality in favor of documentation, whereas PCAOB inspection risk increases time spent on documentation with no impact on other audit-related activities. I find no evidence that these regulations affect auditors' independence, as measured by the magnitude of proposed audit adjustments.

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## 1. Introduction

I use an experiment to test the joint effects of two current audit regulations in the United States: mandatory audit partner rotation and Public Company Accounting Oversight Board (PCAOB) inspections. Specifically, I test whether mandatory partner rotation increases or decreases audit quality in the final year of auditor-client tenure, and whether an anticipated PCAOB inspection mitigates any decrease in audit quality. I examine two components of audit quality, effort and independence, which are measured using experienced professional U.S. auditors' effort allocation decisions and proposed audit adjustments.<sup>1</sup>

In 2011, the PCAOB issued a Concept Release to seek comments on the suggestion to require audit firm rotation (PCAOB 2011). The idea of mandatory firm rotation has been proposed several times since the 1970s, but was never implemented in the United States.<sup>2</sup> Instead, the United States currently requires audit *partner* rotation for lead and concurring partners after five consecutive years working on a client engagement. The PCAOB revisited the idea of firm rotation after its inspectors reviewed portions of 2,800 engagements and found deficiencies caused by an apparent failure to apply an appropriate level of professional skepticism (PCAOB 2008(b)).

The House of Representatives passed the Audit Integrity and Job Protection Act in July 2013, which, if passed into law, would amend the Sarbanes-Oxley Act of 2002 and ban the PCAOB from being able to require mandatory firm rotation (U.S. House 2013). If this act passes the Senate and is signed into law, mandatory firm rotation will not become a reality in the U.S. in

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<sup>1</sup> I rely on DeAngelo's (1981) definition of audit quality: the joint probability that an auditor will both discover and report a breach in the client's accounting system. For brevity within this paper, I refer to the discovery component of audit quality as "effort" and the reporting component as "independence."

<sup>2</sup> To the best of my knowledge, the following countries have some form of mandatory firm rotation: Brazil, India, Italy, Singapore, and South Korea. Austria, Canada, and Spain have also introduced and subsequently eliminated mandatory firm rotation.

the near future. However, the discussion around the PCAOB's proposal has highlighted the lack of empirical evidence available regarding the effects of existing regulations. Indeed, the Audit Integrity and Job Protection Act includes a requirement for further study on "what affect [*sic*] the Sarbanes-Oxley Act of 2002 has had on registered public accounting firms' independence and whether additional independence reforms are needed" (U.S. House 2013, Sec. 3).

To aid in its consideration of mandatory firm rotation, the PCAOB also asked for research and responses to several key questions, including "Would auditors become more or less diligent towards the end of their term?"<sup>3</sup> and "Would [mandatory] audit firm rotation enhance auditor independence, objectivity, and professional skepticism?" (PCAOB 2011). Although these questions were posed in order to inform the audit *firm* rotation debate, they are also open questions with respect to understanding the current effects of audit *partner* rotation. U.S. audit partners are not required to sign their audit reports, so partner rotation is not publicly observable.

Proponents of mandatory rotation espouse the belief that having a new auditor take a fresh look at a company's financial statements will enhance audit quality in the prior period, via the outgoing auditor's increase in effort. This argument follows from (1) the knowledge that the incoming partner will have access to the outgoing partner's work papers in the following year, and (2) the assumption that any perceived increase in threats to one's reputation is enough to motivate an outgoing audit partner to expend more effort. *Ceteris paribus*, an increase in effort implies an increase in audit quality. Audit quality could also increase in the final year of tenure due to an increased willingness to challenge management, a measure of independence (Seidman 2001; Biggs 2002; Public Oversight Board 2002).

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<sup>3</sup> The PCAOB notes immediately prior to this question, "Some have also suggested that, in addition to being less effective at the beginning of an engagement, an auditor may be less diligent toward the end of the allowable term. On the other hand, others have suggested that auditors would be more diligent towards the end of the allowable term out of concern about what the replacement auditor might find" (p. 20).

However, in interviews with Canadian Audit Committee members, a former audit partner suggested that effort actually *decreases* in the last known year of an audit (Kinney, Palmrose, and Winn 2012). From his point of view, it is natural to look ahead towards planning for the next client, rather than spending time on a client you have no ability to continue a relationship with in the future. Former Securities and Exchange Commission (SEC) Chairman Pitt echoed this opinion, testifying:

“So if you think about it this way, let’s say I am an auditor and I am going to assume the worst about auditors now, even though I do not as a practical proposition. In my first 2 years, I am not smart enough to know where all the problems are. And in my last year or two, I know I am losing this client, so I do not really care, even if I am now smart. Now if you have a 5 year rotation, you have knocked off four-fifths of the period” (Pitt 2012).

Thus, arguments exist for mandatory rotation to either increase or decrease audit quality in the final year of tenure. I test these competing predictions with respect to partner rotation in the United States.

I next investigate whether an existing reform from the Sarbanes-Oxley Act, PCAOB inspections, helps to mitigate any decrease in audit quality. Proponents of mandatory *firm* rotation argue that anticipation of an outside reviewer (i.e., the incoming audit firm) would cause the outgoing audit partners to increase audit quality, similar to the arguments made in support of mandatory *partner* rotation. However, the Sarbanes-Oxley Act already requires this outside review via the mechanism of PCAOB inspections (U.S. Congress 2002, Sec. 104). DeFond (2010) argues that existing PCAOB inspections could create incentives for auditors to increase audit quality *ex ante*, because the PCAOB has the authority to impose sanctions and fines for uncorrected audit deficiencies. It is important to understand how current partner rotation and outside PCAOB review requirements affect audit quality before considering additional, possibly redundant, measures such as mandatory firm rotation.

Because archival data are not available to answer my research questions – that is, neither audit partner rotation nor the audit clients inspected by the PCAOB are publicly disclosed in the U.S., I use an experiment in which experienced professional auditors make two judgments: (1) how to allocate their time across different clients; and (2) for a discovered audit difference, how much to propose as an audit adjustment. The first judgment is my proxy for effort, and the second judgment is my proxy for independence, where effort and independence together comprise the two components of audit quality (DeAngelo 1981). For one of the auditor’s clients, I manipulate between participants whether the client is continuing or subject to mandatory rotation in the next period, and I manipulate between participants whether the likelihood of a PCAOB inspection on that client is low or high.

I predict that auditors will either decrease or increase their effort in the anticipated final year of a client’s audit, relative to other years; I find that auditors are more likely to decrease their effort in the final year. Interestingly, this result is inconsistent with participants’ reported beliefs about partners’ effort; in a follow-up questionnaire, participants indicate that they believe outgoing partners would exert slightly more effort in the year prior to partner rotation than in other years. I also predict and find that a decrease in effort is less likely when the auditor has a high likelihood of being inspected by the PCAOB, when concerns about reputation or litigation costs are expected to be high.

I next examine the second component of audit quality: auditors’ willingness to require client firms to adjust their financial statements. I predict that auditors will propose adjustments of larger magnitude when they are in the final year with a client, consistent with auditors’ increased willingness to stand up to management when that relationship is ending. I further predict that this effect will be larger when a PCAOB inspection is likely, consistent with auditors’

desire to enhance their apparent professional skepticism. Results do not support these predictions; I find no differences in proposed adjustments across my experimental conditions.

I perform four supplemental analyses with respect to effort. First, I examine the effects of partner rotation and high risk of PCAOB inspection on audit hours for the client of interest. The pattern of results suggests that the impact of PCAOB inspection risk on audit hours is larger than the impact of partner rotation, and that anticipated partner rotation only decreases audit hours when PCAOB inspection risk is low. Second, I examine total audit hours. I find that auditors are generally unlikely to decrease total audit hours, and that no one decreases total audit hours when the risk of PCAOB inspection is high. Third, I find that an increase in effort on one client (e.g., due to an anticipated PCAOB inspection) is accompanied by an associated decrease in effort on the partner's other clients, indicating a trade-off in audit quality on the client with a high risk of inspection for audit quality on a client with a lower risk of inspection. Finally, I test *how* auditors allocate their time to various audit activities. The previous analyses assume that, *ceteris paribus*, more audit effort will improve audit quality. This final analysis relaxes that assumption and acknowledges that some audit-related activities are more likely to increase audit quality than others. I find that both anticipated partner rotation and anticipated PCAOB inspections increase partner time spent on documentation; in the case of partner rotation, this increase is at the expense of other, likely more audit quality-enhancing activities (for example, reviews of substantive tests).

Although I am not the first to examine the effect of mandatory partner rotation on audit quality, I believe I am the first in this setting to separately examine the theoretical components of audit quality: effort and independence.<sup>4</sup> In doing so, I hope to accomplish the following primary goals: (1) to shed light on possible reasons why prior literature has reached opposing conclusions

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<sup>4</sup> I describe the existing literature on mandatory partner rotation in section 3.1.

about final-year audit quality in different settings; (2) to respond to the PCAOB's call for research regarding the effect of mandatory firm rotation on auditors' "diligence [effort] towards the end of their term" (PCAOB 2011); and (3) to respond to Bamber and Bamber's (2009) call for research attempting to separately identify the costs and benefits of rotation, rather than focusing on the net effects. Additionally, I believe I am the first to test whether PCAOB inspections provide an *ex ante* benefit to audit quality, as suggested by DeFond (2010); this research will partially address the U.S. Congress's demand for information about the effects of the Sarbanes-Oxley Act's reforms and provide evidence on the question of whether additional reforms might be warranted (U.S. House 2013).

Using an experiment allows me to observe the individual judgments of professional auditors and create data where none is publicly available. Creating my own dataset also allows me to gain a better understanding of how regulations affect audit quality across clients by observing how auditors address the tradeoffs across their entire client portfolio given their time constraints. Prior papers have focused solely on the direct effects of mandatory rotation on the rotating client's audit quality. My study contributes to this literature on the direct effects of mandatory rotation, and additionally provides a more complete view of the indirect effects of rotation and inspections on non-rotating and non-inspected clients. In the next section, I provide background on the regulations of interest: mandatory partner rotation and PCAOB inspections.

## **2. Regulatory Background**

### *2.1 Mandatory Rotation: Proposed Firm Rotation and Implemented Partner Rotation<sup>5</sup>*

The idea of limiting audit firm tenure was first proposed in 1977 in what is called the "Metcalf Report." After corporate scandals at Penn Central, Equity Funding, and others, Senator

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<sup>5</sup> This discussion is largely taken from the PCAOB Concept Release No. 2011-006 (PCAOB 2011).



Lee Metcalf published a study on the “accounting establishment,” detailing his concerns about a lack of independence shown by the large accounting firms. In his view, “long association between a corporation and an accounting firm may lead to such a close identification of the accounting firm with the interests of its client’s management that truly independent action by the accounting firm becomes difficult.” The report therefore noted, “one alternative is mandatory change of accountants after a given period of years.”

The American Institute of Certified Public Accountants (AICPA) established the Commission on Auditor’s Responsibilities, better known as the Cohen Commission, to develop recommendations about the mandatory audit firm rotation, among other goals. The Cohen Commission ultimately recommended against mandatory firm rotation, expressing the view that the more frequent start-up and learning costs would outweigh the potential benefits of a fresh viewpoint and an increased ability for the auditor to resist pressure from management. The Commission also asserted that the possible advantages from audit firm rotation could be achieved if the accounting firm rotated its engagement personnel. As a result, partner rotation has been part of the profession’s self-imposed quality control processes since 1978, for firms that audit SEC registrants (AICPA 1978(a)).

The SEC revisited the discussion on mandatory firm rotation in 1994 in the course of compiling a report on auditor independence. At the time, the SEC staff concluded that the accounting profession’s requirements to periodically rotate the engagement partner in charge and to have a concurring partner review were sufficient to allow for a fresh view on the audit. Therefore, the costs associated with further regulation were deemed unnecessary.

In 2002, the U.S. Congress held hearings leading up to the Sarbanes-Oxley Act of 2002, with witnesses testifying for and against the mandatory firm rotation proposal. Ultimately, the

Sarbanes-Oxley Act included the less costly partner rotation requirement, which enhanced the audit profession's self-imposed partner rotation rules. Specifically, Section 203(j) of the Sarbanes-Oxley Act declared that it is illegal for a lead or concurring audit partner to audit an issuer longer than five consecutive years (U.S. Congress 2002), based on the assumption that partners' independence becomes impaired after that amount of time. The SEC established a rule in accordance with this law, stating that for the audits of SEC registrants, audit firms must rotate the lead and concurring partners after five consecutive years on an audit, with a five-year "time out" period before they are allowed to return to the audit (SEC 2003). The SEC also ruled that other audit partners with substantial decision-making responsibility are subject to mandatory rotation after seven years and a two-year time out period. Previously, the accounting profession required only the lead partner to rotate off the audit of SEC registrants after seven years on the engagement, with a two-year time out period (SEC 2003).

The mandatory audit firm rotation issue recently resurfaced in conjunction with an analysis of factors contributing to the recent financial crisis. On March 16, 2011, the PCAOB's Investor Advisory Group (IAG) recommended that the PCAOB "undertake a project to establish periodic mandatory rotation of the auditor, for example every ten years." This suggestion was based partially on the observation that many of the large companies involved in the financial crisis had long-standing relationships with their audit firms. In July 2013, the House of Representatives passed the Audit Integrity and Job Protection Act. This act would amend the Sarbanes-Oxley Act to limit the PCAOB's authority such that it cannot require mandatory audit firm rotation, and it would require further study of existing Sarbanes-Oxley reforms (U.S. House 2013). I next provide background information regarding one such Sarbanes-Oxley reform: the creation of the PCAOB and its required inspections of audit firms.

## *2.2 PCAOB Inspections*

The Sarbanes-Oxley Act of 2002 established the Public Company Accounting Oversight Board (PCAOB) to “oversee the audit of public companies... in order to protect the interests of investors” (U.S. Congress 2002, Sec. 101 (a)). The Sarbanes-Oxley Act thus removed the accounting profession’s ability to regulate itself with respect to audits of public companies. The Sarbanes-Oxley Act gave the PCAOB the power to establish and adopt auditing standards, to conduct inspections of registered public accounting firms, and to conduct investigations and disciplinary proceedings when needed.

The PCAOB conducts annual inspections for public accounting firms that regularly audit more than 100 issuers, and inspects public accounting firms every three years for those that regularly audit 100 or fewer issuers (U.S. Congress 2002, Sec. 104 (b)). In the course of its accounting firm inspections, the PCAOB selects audit and review engagements and assesses the sufficiency of the accounting firm’s quality control system, its documentation, and its compliance with professional standards (PCAOB 2012). The PCAOB describes its audit engagement selection strategy as “risk-based” rather than random and states that the areas of focus “often involve audit work on the most difficult or inherently uncertain areas of financial statements” (PCAOB 2012).

For every accounting firm inspection, the PCAOB prepares a written report and allows the audit firm to respond to any identified deficiencies. Each written report contains a public portion, Part I, and may contain a nonpublic portion, Part II. Part I describes any discovered audit deficiencies, such as failures to perform required audit procedures, which are significant enough to cause the PCAOB to believe that the audit firm did not have sufficient evidence to support its opinion on the financial statements at the time it issued its audit report (CAQ 2012).

The PCAOB does not identify which companies were inspected, but rather refers to them as “Issuer A,” “Issuer B,” etc. Part I also includes the portion, if any, of the inspected accounting firm’s written response that the firm chooses to make public. Part II, the nonpublic portion of the inspection report, identifies any overall quality control issues that the PCAOB discovered, and provides the PCAOB’s views on how the accounting firm should improve those controls.

Prior to the creation of the PCAOB, the accounting profession required firms enrolled in the AICPA Peer Review Program to have a peer review once every three years (AICPA 1978(b)). The PCAOB inspection requirements now supersede the AICPA peer review requirement for audits of public companies, but the auditing profession continues to monitor its non-public company audits through the use of peer reviews. The results of peer reviews are not publicized. Therefore, relative to peer reviews, PCAOB inspections are more frequent and more public. PCAOB inspections also carry the threat of sanctions and large penalties; the PCAOB has the authority to notify the SEC of auditor transgressions, to notify the Justice Department of possible criminal violations, and to initiate disciplinary proceedings on its own (PCAOB 2008(a)). In the next section, I describe existing literature and theory related to these regulations and my research questions, and I develop hypotheses.

### **3. Prior Literature, Theory, and Hypotheses**

My overarching research question is how mandatory partner rotation in the United States affects audit quality (decomposed into its effort and independence components) in the final year of the auditor-client relationship. In light of my findings, I also consider whether any observed “problem” is mitigated by another currently implemented regulation, PCAOB inspections, or if instead further consideration of mandatory firm rotation is warranted.

### 3.1 Prior Literature: Mandatory Partner Rotation and Audit Quality

Many countries require periodic audit partner rotation without also requiring periodic audit firm rotation, including Argentina, Australia, Belgium, China, Denmark, France, Germany, Hong Kong, Mexico, Netherlands, New Zealand, Norway, Russia, Taiwan, the United Kingdom, and the United States. Despite the prevalence of mandatory partner rotation, little direct evidence exists on its effects because partner rotation is typically not observable by researchers. Only Australia, China, Germany, and Taiwan require audit firms to disclose engagement partners' names in the audit reports.

Much of the existing literature on the effects of mandatory partner rotation addresses this research question indirectly, by testing in a voluntary rotation setting whether long audit partner tenure decreases audit quality.<sup>6</sup> If yes, mandatory partner rotation would seem to be warranted; if no, it would not. The evidence is mixed. Chi and Huang (2005) and Carey and Simnett (2006) find evidence consistent with long partner tenure eroding audit quality. Chi and Huang (2005) find that audit quality initially increases with partner tenure and begins to decrease after five years in China. In Australia, Carey and Simnett (2006) find that partners with tenure longer than seven years are less likely to issue going-concern opinions, and their audit clients are more likely to meet or beat earnings targets. On the other hand, Chen et al. (2008) and Manry et al. (2008) find evidence consistent with long partner tenure enhancing audit quality. Chen et al. (2008) find that partner tenure is associated with decreased absolute discretionary accruals in Taiwan, and

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<sup>6</sup> This approach is also common in the mandatory *firm* rotation literature, in which many researchers design tests to determine whether long firm tenure erodes audit quality. The bulk of the evidence finds that long firm tenure is not associated with lower audit quality. In these studies, audit quality is measured using abnormal accruals (Johnson et al. 2002; Myers et al. 2003), accounting restatements (Stanley and DeZoort 2007), fraudulent accounting (AICPA 1992; Carcello and Nagy 2004), lawsuits against auditors (Palmrose 1986; Palmrose 1991; Stice 1991), earnings response coefficients (Ghosh and Moon 2005), and the cost of debt financing (Mansi et al. 2004).

Manry et al. (2008) find that partner tenure is negatively associated with abnormal accruals in a sample of U.S. audit firm offices, but only for small clients with tenure greater than seven years.

I am aware of only one published study that directly examines the consequences of mandatory partner rotation. Chi et al. (2009) test whether mandatory partner rotation increases audit quality in Taiwan and find that abnormal accruals do not appear to be significantly affected by rotation. Bamber and Bamber (2009) discuss Chi et al. (2009) and classify it as a “no results” paper, and they highlight the concern that abnormal accruals are likely a noisy measure for audit quality. In a concurrent working paper, Lennox, Xi, and Zhang (2013) use a creative measure to combat this issue: a proprietary dataset of audit adjustments in China. These authors find a higher frequency of audit adjustments during the outgoing partner’s final year and the incoming partner’s first year, which they consider to be evidence of higher audit quality in those years.

Lennox et al. (2013) provide interesting insights into mandatory partner rotation in China, but some details of that institutional setting preclude their inferences from automatically generalizing to the United States. First, Chinese audit partners are required to sign their names on the audit report. This fact makes the quality of their work more transparent and may provide them with incentives to increase their efforts, especially around a partner change when their work may be more heavily scrutinized. Second, China requires a two-year cooling off period before a former partner can rotate back on to a client, whereas the U.S. requires a five-year cooling off period. Up to 46.4 percent of former partners in China rotate back onto their clients (Li, Xu, and Zhang 2013), raising questions about how much distance is actually achieved during partner rotation. Third, and most importantly, Chinese audit firms are required to report their clients’ pre-audit and post-audit annual profits to the Ministry of Finance; Lennox et al. (2013) calculate audit adjustments as the difference between these amounts. The Ministry of Finance

obtains this information in order to determine which audit engagements to target during its inspections, similar to the PCAOB's "risk-based" selection approach (Lennox et al. 2013). If audit partners perceive that the Ministry of Finance is more likely to inspect engagements in years before or after a change in partner, then the observed increase in audit adjustment frequency during those years could be driven by partners' desire for the inspections to go smoothly, rather than by the direct effects of mandatory rotation. I complement Lennox et al. (2013) by using an experiment to disentangle these two explanations (in a U.S. setting). I next clarify my working definition of audit quality, as it has been framed by prior literature.

### *3.2 Audit Quality and its Components*

Audit quality is defined as the joint probability that an auditor will both discover and report a breach in the client's accounting system (DeAngelo 1981). The likelihood that an auditor will *discover* a breach in the client's accounting system can be considered in relation to Libby and Luft's (1993) model of performance. Libby and Luft (1993) model performance as a function of experience, knowledge, and ability; the application of these items is affected by effort and the task environment. In this model, effort "determines the degree to which available knowledge and abilities are brought to bear on the task" (p. 433). Environmental factors can change either the "ability, knowledge, and/or effort that the decision maker must bring to the task to achieve a given level of performance" or "the amount or allocation of effort that decision makers are willing to employ to fulfill those requirements" (p. 435).

In this study, the environmental factors of interest are existing regulations: mandatory partner rotation and PCAOB inspection requirements. With respect to their effect on audit quality in the last year of the auditor-client relationship, I maintain the assumption that neither regulation will directly affect auditors' experience, knowledge, and ability to perform the final-

year audit of a client in the short run. Therefore, I choose to focus on the effort component of performance in this paper, because I expect that these regulations are most likely to affect audit quality (if at all) through this mechanism. For simplification throughout the rest of this discussion, I refer to DeAngelo's discovery component of audit quality as "auditor effort."

The second piece of DeAngelo's audit quality definition is the *reporting* component. The accounting literature often uses this portion as its definition of auditor independence: "the conditional probability that, given a breach [in the accounting system] has been discovered, the auditor will report the breach" (DeAngelo 1981). For brevity and consistency with the prior literature, I refer to this reporting component of audit quality as "auditor independence." Note, however, that auditors are required to comply with strict rules regarding their economic independence from client firms. Thus, this component reflects variation in willingness to challenge management within a group of audit professionals who are already technically economically independent from their clients.

I examine both components of DeAngelo's (1981) definition because they comprise audit quality as a whole. These mechanisms are difficult to disentangle in archival settings, because auditor effort is unobservable in readily available data and variation in observable reporting choices is typically limited to the type of audit report issued. The typical dependent variables examined instead include accruals measures (e.g., Chi et al. 2009) and are a function of both the likelihood of finding existing errors (auditor effort) and auditor willingness to report those errors and constrain management (auditor independence). My experiment contributes to this line of research by examining separately the effects of mandatory rotation on effort and independence. Doing so is important, because mandatory audit partner rotation and PCAOB inspections are theorized to have different effects on effort and independence. Therefore, separating the effects



can inform academics and regulators about the mechanism, if any, through which current regulations affect audit quality. I first consider the possible effects of mandatory rotation and PCAOB inspections on auditor effort, followed by the effects on auditor independence.

### *3.3 Auditor Effort*

In general, auditors can be expected to weigh the costs of putting forth effort, such as the decreased profitability of an engagement, with the benefits of putting forth effort, such as providing a higher level of assurance and decreasing the risk of legal or reputation costs. There are arguments for either an increase in auditor effort or a decrease in auditor effort at the mandatory end of a term. First, consider the evidence and arguments for a decrease in effort on the rotating client. Bae, Kallapur, and Rho (2013) investigate mandatory [firm] rotation in Korea, where data on audit hours are publicly available, providing a valid proxy for auditor effort. Bae et al. (2013) find that audit hours decrease as the mandatory rotation year approaches, consistent with a decrease in auditor effort. However, in addition to having a mandatory firm rotation rule after six years of audit firm tenure, Korea also has a mandatory *retention* rule. Specifically, once a client hires an audit firm, they cannot fire that audit firm for three years. Therefore, an alternative explanation to the one provided by Bae et al. (2013), that Korean auditors are responding to impending rotation, is that auditors are reducing their effort because they cannot be fired during this period and thus have decreased incentives to produce high quality audits.

With respect to mandatory rotation, a decrease in effort on the rotating client's audit could be observed if: (1) the auditor reallocates their limited time to other clients, from which they hope to collect future revenues, or (2) the auditor decides to shirk and exert less effort in total. The former argument is consistent with Kahneman's (1973) "capacity model of

attention.”<sup>7</sup> Kahneman’s theory assumes a limit on one’s capacity to perform mental work. He writes that an activity can fail “because the allocation policy channels available capacity to other activities” (p. 9 – 10).<sup>8</sup> Intuitively, when people know that their employment is near an end, as when they have given their notice to their employer, their motivation and effort are likely to wane as their attention gets refocused to their next engagement. The latter argument is consistent with Elitzur and Falk (1996), who show in an analytical model that planned audit quality and auditor effort will decrease over time when the engagement period is finite with a known end date. However, their model assumes a finite game, in which the audit firm does not suffer reputation or litigation losses in the event of an audit failure. This distinction is important because concerns about exposure to reputational damage are precisely the mechanisms through which proponents believe that mandatory rotation will lead to an increase in audit quality.

These proponents of mandatory rotation suggest that outgoing auditors will be motivated to *increase* their effort at the end of an engagement’s tenure due to the knowledge that the incoming partner will review their work in the following period (Seidman 2001; Biggs 2002; Public Oversight Board 2002). In auditing, the review process adds accountability to auditors’ judgment and decision-making processes. There is a large literature in accounting showing that imposing accountability increases effort, relative to no accountability (see DeZoort, Harrison, and Taylor 2006 for a review). DeZoort et al. (2006) also find that effort is increasing in the strength of the accountability type, where justification and feedback are theorized to be stronger types of accountability than review.

However, auditors’ work is already heavily reviewed. For example, a concurring partner within the firm must also sign every audit report, and audit firms conduct their own internal

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<sup>7</sup> Kahneman (1973) uses the terms “effort” and “capacity” as synonyms for “attention” in his text (see p. 8, 9).

<sup>8</sup> The theory of limited attention has subsequently been applied and developed in other accounting settings, as in Hirshleifer and Teoh (1993).

inspections for the purposes of quality control and performance evaluations. Therefore, the relevant question is whether auditors will respond to the additional pressure of having a new, incoming, audit partner review their work. Mandatory rotation involves adding an extra internal review on top of existing reviews, rather than increasing the strength of the accountability type (i.e. from review to justification or feedback as in DeZoort et al. [2006]); thus, it is unclear theoretically whether simply adding this extra layer of accountability of the same type will increase effort. If audit partners perceive a sufficient increase in the likelihood of reputational damage from having their work reviewed by a new person, these audit partners may be willing to expend more effort to increase the quality of their audit.

Whereas mandatory partner rotation adds an additional review by a person internal to the firm, PCAOB inspections add a level of external review resulting in a public report. Thus, PCAOB inspection reports give audit committees one way to assess the quality of their auditors. For triennially inspected audit firms, PCAOB deficiency reports are associated with auditors being involuntarily dismissed by their clients (Daugherty, Dickins, and Tervo 2011; Abbott, Gunny, and Zhang 2012), suggesting that there are real costs of performing poorly on PCAOB inspections (at least for small audit firms). Auditors are likely to be concerned about the effects of the review on their reputation in the case of either mandatory partner rotation or PCAOB inspections, but PCAOB inspections also impose the threat of sanctions and large penalties (PCAOB, 2008(a)). DeFond (2010) argues that if the PCAOB develops a reputation for being tough reviewers, this reputation plus the threat of sanctions could provide firms with incentives to increase audit quality *ex ante*. Based on the preceding discussion, mandatory partner rotation could either decrease or increase auditor effort in the final period prior to rotation, and the threat

of a PCAOB inspection is likely to either mitigate this decrease in effort or exacerbate the increase in effort. I formalize these hypotheses below.

**H1:** In a mandatory partner rotation regime, the likelihood of auditors decreasing their effort is different for outgoing clients and continuing clients.

**H2:** In a mandatory partner rotation regime, the likelihood of auditors decreasing their effort is lower when auditors expect a PCAOB inspection.

### *3.4 Auditor Independence*

Auditors are required to comply with strict rules regarding their economic independence from clients, and they also may take steps to improve the appearance of independence to outsiders (e.g., by choosing not to provide non-audit services to an audit client). This study assumes that auditors meet those requirements and instead uses the term “independence” to refer to an independent mindset, or the application of professional skepticism (for example, by showing a willingness to challenge the client’s management).

Proponents of mandatory partner rotation argue that, regardless of the economic independence rules, personal affiliation with a client firm threatens auditors’ ability to maintain an independent mindset. Some accounting researchers echo this point. Harris and Whisenant (2012) describe how a “familiarity threat” can erode professional skepticism, citing the anecdotal example of Arthur Andersen employees at Enron headquarters. Arthur Andersen employees had permanent office space at Enron, participated in company events, and went on Enron employees’ ski trips, blurring the lines between Enron employees and the outside audit firm. Similar to Harris and Whisenant (2012), Moore, Tetlock, Tanlu, and Bazerman (2006) characterize the “gradual accumulation of pressures on [professionals] to slant their conclusions” as “moral seduction.”

Although the preceding discussion implies that auditors may knowingly succumb to client pressures, auditors do not have to be consciously biased in order for affiliation with the client to affect their reasoning or judgments. Rather, having “directional goals” (relative to “accuracy goals”) can affect judgments and reasoning processes in subtle ways (Kadous, Kennedy, and Peecher 2003; Kunda 1990). In the context of an audit, an example of a “directional goal” is to please the client firm’s management by issuing an unqualified opinion, whereas an example of an “accuracy goal” is to issue the audit opinion most supported by the audit evidence.

Mandatory rotation could reduce auditors’ desire to please a client firm as knowing that the auditor-client tenure is limited reduces auditors’ incentive to develop a long-term, personal relationship with the client. Thus, auditors’ personal affiliation with the client firm may be reduced, making auditors less concerned about pleasing the client’s management and more willing to challenge them. In motivated reasoning terminology, mandatory rotation would thus decrease directional goals relative to accuracy goals. Dopuch, King, and Schwartz (2001) find results consistent with this theory in an experiment, in which rotation requirements decreased auditors’ willingness to issue biased reports.<sup>9</sup>

Results from the game theory literature are also consistent with the idea that having an end date for a relationship affects behavior. Normann and Wallace (2012) test the effect of different termination rules (finite and known horizon, unknown horizon, and random-stopping rule) on cooperation in prisoners’ dilemma games. Although termination rules do not affect participants’ average cooperation rates, cooperation rates decrease in the last period of the

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<sup>9</sup> Dopuch et al. (2001) held auditor effort constant and focused only on a reporting decision, whereas my experiment examines both effort and reporting decisions. Further, Dopuch et al. (2001) examine mandatory firm rotation rather than partner rotation and include a strong economic incentive to bias reports in favor of the client. Given that this incentive is unlikely to exist in a mandatory partner rotation setting, it is an open question whether I will find similar results in my study.

experiment for those with a known finite horizon relative to those with an unknown horizon. In the audit setting, a known finite horizon represents the maximum tenure possible under mandatory rotation. Based on motivated reasoning theory and these findings from the literature, I expect mandatory rotation to increase auditors' independent mindset in the last year with a client. However, it is also possible that mandatory rotation reduces auditors' affiliation with their clients not just in the last period of the relationship, but throughout the relationship. In that case, within a mandatory partner rotation regime, auditors' independence would not differ across years.

**H3:** In a mandatory partner rotation regime, auditors exhibit a more independent mindset on the audits of outgoing clients than on the audits of continuing clients.

Exhibiting an independent mindset and challenging a client's management has costs and benefits to the auditor, which auditors can be expected to weigh when making judgments about the client's financial statements and audit findings. Although auditors are prevented from having financial interests in their clients, the audit firm still benefits and earns revenue from being able to retain a client firm's business. If the audit firm views the auditor-client relationship as a long-term contract, audit engagement members may perceive that standing up to the client jeopardizes their relationship and the associated future stream of revenues (Harris and Whisenant 2012; Cassell et al. 2012; Nelson 2006). Therefore, in order to avoid being dismissed by a client, auditors may be unwilling to challenge the client's management. To mitigate this behavior, auditors are actually hired and fired by the clients' audit committees, which ties the business relationship to audit committee members rather than management.

An expected PCAOB inspection provides auditors with an economic incentive to challenge a client's management, specifically, the desire to avoid sanctions and penalties.

Accountants know that the PCAOB is concerned with professional skepticism, based on its reports (PCAOB 2008(b)). Therefore, in order to ward off criticisms by the PCAOB inspectors, auditors likely want to appear to exhibit professional skepticism by being more willing to challenge their clients' management. However, opponents of additional regulation and accounting researchers point out that audit firms already have economic incentives designed to counteract client pressures. Auditors face the threat of legal action and associated penalties, regulatory sanctions, and reputational damage if they fail to adhere to professional rules and standards (Nelson 2006). Therefore, I test the following hypothesis:

**H4:** For outgoing clients, auditors expecting a PCAOB inspection exhibit a larger increase in independent mindset than auditors who are not expecting a PCAOB inspection.

#### **4. Research Design**

##### *4.1 Design Overview and Participants*

To test my predictions, I conducted an experiment with a 2 x 2 between subjects design, with anticipated partner rotation (yes vs. no) and risk of PCAOB inspection (low vs. high) as manipulated independent factors. Participants assumed the role of an audit partner and were assigned to two clients, Client X and Client Y. I manipulated partner rotation by informing participants whether they would be required to rotate off of Client Y next year (yes or no); Client X was a continuing client for all participants. I manipulated the risk of PCAOB inspection by informing participants that their firm's assessed likelihood of inspection for Client Y was either high or low; Client X had a low likelihood of inspection for all participants. All other information was constant across conditions.

Participants were 86 professional auditors from three accounting firms. Two accounting firms were Big 4 firms, and the third accounting firm was a smaller, regional firm. The sample is comprised of 67.4 percent audit partners, 11.6 percent audit senior managers, 14.0 percent audit managers, 5.8 percent audit seniors, and 1.2 percent audit staff members. Thus, 93.0 percent of participants were auditors at the manager level or higher. All participants indicated significant experience with budgeting time for engagements, and 68.6 percent indicated personal experience with PCAOB inspections, i.e., one or more of their clients had been inspected.

#### *4.2 Experimental Procedures and Materials*

I administered the experiment using one of two methods. For one participating Big 4 firm and the regional firm, a firm contact sent potential participants an anonymous survey link that I generated using Qualtrics software, which randomly assigned participants to experimental conditions. Response rates under this approach were approximately 57.8 percent for the Big 4 firm and 52.9 percent for the regional firm.<sup>10</sup> The other Big 4 firm does not participate in online research due to concerns from its legal department. Accordingly, I worked with a contact at the national office of this firm to distribute the experimental materials to auditors at one office. She randomly distributed one of the four experimental conditions to potential participants via e-mail, distributing equal numbers of each condition. Participants received and filled out the materials in Word format and then e-mailed their saved responses back to the contact. The contact then printed and mailed the responses to me to ensure that responses were anonymous.

Participants assumed the role of an audit partner and in all conditions received instructions indicating that participants would make two primary judgments: (1) how much time

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<sup>10</sup> All responses were completely anonymous using the online software, and participants were not asked to indicate their firm. However, the participating firms targeted different levels of auditors (partners only for the Big 4 firm and managers for the regional firm). Because participants indicated their level in their responses, I was able to infer approximate response rates by firm.



to spend on their clients' audits, and (2) for a discovered audit difference, how much (if any) to propose as an audit adjustment. After reading instructions, all participants read and reviewed the following: a brief description of their two current year clients, Clients X and Y; summary financial data, audit fees, and prior year audit hours for Clients X and Y, presented side-by-side; a brief description of Client Z, another client audited by their firm; an overview of the review process for each client; and a vignette describing a discovered audit difference for Client Y.

Both current year clients were described as public manufacturing firms for which assessed management integrity is high and assessed risk of fraud is low. The firms are thus designed to be reasonably similar, because I wanted the participants to attend primarily to the experimental manipulations and the main difference between the two clients: size. Summary financial information for the two clients indicated that Client Y was much larger than Client X, with Client Y (Client X) having current year revenue of \$280 million (\$50 million) and assets of \$2 billion (\$300 million). Current year audit fees varied in accordance with this size difference; fees for Client Y (Client X) were \$5 million (\$1 million). As I explain in the next two sections, my experimental manipulations affect only Client Y, the relatively larger client.

#### *4.3 Rotation Manipulation*

The rotation manipulation was embedded within the description of the current year clients. For all participants, Client X was presented as a continuing client, while Client Y was either a continuing client or a rotating client, manipulated between subjects. Accordingly, in the "no rotation" condition, participants read identical language for Clients X and Y: "You WILL NOT be required to rotate off of this client next year. Therefore, you plan to continue working with this client in the future." In the "rotation" condition, participants read the "no rotation" statement for Client X and the following "rotation" statement for Client Y: "You WILL be

required to rotate off of this client next year. Therefore, this will be your last year working with this client.”

#### *4.4 PCAOB Inspection Risk Manipulation*

The PCAOB inspection risk manipulation was presented in the “review process” section of the experimental materials. Participants read a brief description of the possible PCAOB inspection, indicating that audits are selected for inspection on a “strategic rather than random” basis. The materials asked participants to assume that their accounting firm estimates whether the risk of inspection is low or high for each client. For all participants, the “firm’s assessed likelihood of your current period work being inspected by the PCAOB” was “low” for Clients X and Z, and I manipulated between subjects whether the risk for Client Y was “low” or “high.” Also within this “review process” section of the experimental materials, participants read that all audits are subject to concurring partner review, reminding participants of the high-accountability environment in which auditors operate. Additionally, participants were reminded that an incoming audit partner would review their work in the event of partner rotation. This reminder was included to make the “fresh eyes” argument of rotation’s proponents salient to participants.

After reading the information described above, participants responded to a number of dependent measures and post-task questions.

#### *4.5 Dependent Variable: Effort Hypothesis Tests*

My primary dependent variable for the “effort” hypotheses (H1 and H2) is whether participants decreased their time allocated to Client Y, relative to the prior year amount provided within the experimental materials. Participants are asked to allocate their time across Clients X, Y, and Z, where the total time spent must be between 1,700 and 1,900 hours. Recent research supports that people react similarly to operationalizations of effort as costly choices or as real-

effort tasks (Brüggen and Strobel, 2007).<sup>11</sup> I use the former type of operationalization because it is more straightforward and requires less auditor time than a “real-effort” task. Additionally, measures of effort on a real-effort task are likely to be affected by factors outside of the experiment, such as a preference for completing the task quickly, or differences in ability and experience (Christ, Sedatole, and Towry, 2012).

I provide both a range of prior year hours allocated to Clients X and Y and a point estimate of the hours spent on Clients X (352) and Y (1,440) last year. I allow participants’ responses to fall within a range rather than summing to a point total, so either a decrease or increase in total hours from the prior year is possible. Additionally, this range allows participants to change hours on one client without then being forced to change hours on their other client. In other words, this design choice allows the data to show whether any decrease in effort is due to shirking or reallocated effort (examined in Section 5.4.2).

#### *4.6 Dependent Variable: Independent Mindset Hypothesis Tests*

My primary dependent variable for the “independent mindset” hypotheses (H3 and H4) is the magnitude of auditors’ proposed audit adjustments for Client Y, where a larger proposed audit adjustment reflects a more independent mindset. Due to my experimental manipulations, Client Y is either an outgoing or continuing client, with either a low or high risk of PCAOB inspection. This auditor judgment is made based on a scenario adapted from Hatfield, Jackson, and Vandervelde (2011). Participants learn that this client’s materiality threshold is \$440,000 and that the audit team believes that the Allowance for Doubtful Accounts may be understated by \$500,000, with the appropriate adjustment likely ranging between \$400,000 and \$600,000.

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<sup>11</sup> In my experiment, auditors must allocate their time across multiple clients, where the total time spent falls between the minimum and maximum allowed. Spending effort on one client decreases the profitability of that engagement and carries an opportunity cost: the auditor has less time to spend on other clients.

The Client's CFO believes that the difference falls below the materiality threshold and is opposed to making an adjustment.

Participants are first asked, "Would you propose an audit adjustment to the client's financial statements?" If the answer is yes, participants are then asked to "write the amount of the audit adjustment you would propose" to the client. The magnitude of the proposed adjustment is my proxy for auditors' willingness to challenge management (independent mindset). Next, reflecting the negotiation process encountered during an audit, participants are asked, "What amount of adjustment do you expect would ultimately be made to the financial statements after discussing your proposed adjustment with the client?" The magnitude of the expected adjustment allows for perceived differences in negotiating power for clients that are outgoing vs. continuing. Finally, I ask participants a few follow-up questions designed to check whether they attended to my manipulations and to collect key demographic variables.

## **5. Analysis and Results**

### *5.1 Manipulation Checks*

To assess the effectiveness of the rotation manipulation, I asked participants whether they were told to expect to continue working on the audit of Client Y next year, or whether they would be rotating off of Client Y. In order to assess the effectiveness of the PCAOB inspection risk manipulation, I asked participants whether the likelihood of Client Y being inspected by the PCAOB was low or high. 96.5 percent of participants correctly answered each question, indicating successful manipulations of partner rotation and risk of inspection. My analyses include all participants, but results are robust to including only those who passed both manipulation checks, including only audit partners, or including only those with personal PCAOB inspection experience. There were no statistically significant differences across

conditions with respect to participants' demographics (level at the audit firm, years of experience, personal experience with PCAOB inspections, or experience budgeting hours), indicating that random assignment to conditions was successful.

### 5.2 Tests of Audit Effort Hypotheses

H1 predicts that the likelihood of a decrease in effort will be different (more or less likely) for a continuing vs. an outgoing client, while H2 predicts that a decrease in effort will be less likely (or an increase in effort will be more likely) when partners anticipate a PCAOB inspection. Table 1, Panel A presents cell sizes, means and standard deviations for the dependent variable of interest: a dichotomous variable capturing whether participants decreased the time allocated to Client Y, relative to the prior period. For this variable, 0 represents no decrease in hours and 1 represents a decrease in hours. Table 1, Panel B presents a logistic regression testing the effects of (1) partner rotation, (2) high risk of PCAOB inspection, and (3) their interaction on the change in effort associated with Client Y. Results reveal a significant main effect of partner rotation (two-tailed  $p = 0.02$ ), supporting H1 – partners are more likely to *decrease* audit effort on an outgoing client than on a continuing client, which is consistent with the arguments of partner rotation's critics.

[Insert Table 1 here]

Interestingly, this behavior is inconsistent with participants' reported beliefs about partners' predicted behavior in the year prior to rotation. In a follow-up questionnaire I ask participants whether, for real audits, they believe the outgoing partner would exert less effort, more effort, or no change in effort relative to prior years' effort level. The mean response is 0.21 on a seven-point Likert scale, for which zero represents no change. This mean is positive and significantly different from zero, ( $t = 2.97$ , two-tailed  $p = 0.00$ , result untabulated). Therefore,

participants either believe that partners will increase their effort prior to rotation, or they are unwilling to say otherwise when directly asked.

The Results in Table 1, Panel B also reveal a significant main effect of PCAOB inspection risk (one-tailed  $p = 0.00$ ), providing support for H2.<sup>12</sup> A high risk of PCAOB inspection makes partners *less* likely to decrease audit effort. The interaction between rotation and risk of inspection is not significant; however, tests of the simple differences between conditions indicate that key differences in behavior are found between the “no rotation / high inspection risk” and “rotation / low inspection risk” cells. Specifically, only 20.8 percent of partners (5 of 24) in the “no rotation / high inspection risk” condition decrease audit effort allocated to Client Y, compared to the 82.4 percent of partners (14 of 17) who decrease audit effort allocated to Client Y in the “rotation / low inspection risk” condition. This difference is statistically significant ( $\chi^2 = 15.15$ , one-tailed  $p = 0.00$ ). Participants in the other two conditions exhibit tendencies between these extremes. 68.2 percent of partners (15 of 22) in the “no rotation / low inspection risk” condition and 43.5 percent of partners (10 of 23) in the “rotation / high inspection risk” condition decreased audit effort allocated to Client Y; this difference is not statistically significant ( $\chi^2 = 2.78$ , one-tailed  $p = 0.10$ ).

In summary: (1) auditors are most likely to decrease their effort on an outgoing client with a low risk of PCAOB inspection; (2) either eliminating an expected rotation or increasing the risk of PCAOB inspection mitigates the decrease in effort to some degree; (3) auditors are least likely to decrease their effort when they expect a PCAOB inspection on a continuing client. Therefore, in terms of their effect on the choice of whether to decrease effort on a client, continuity on a client (no expected partner rotation) and an expected PCAOB inspection appear

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<sup>12</sup> I discuss here the two-tailed p-value for H1 and the one-tailed p-value for H2, respectively, because I do not have a directional prediction for the former, but I do have a directional prediction for the latter. Table 1 Panel B presents all p-values as two-tailed for consistency.

to be complements. The implication of these findings is that if regulators want to avoid a decrease in auditor effort, they could either eliminate partner rotation, increase the risk of PCAOB inspection, or pursue both actions for added impact.

### *5.3 Tests of Independent Mindset Hypotheses*

H3 predicts that auditors will exhibit a more independent mindset (by requiring a larger audit adjustment) for outgoing clients than continuing clients, and H4 predicts that this effect will be larger when there is a high risk of PCAOB inspection. Table 2, Panel A presents cell sizes, means and standard deviations for the dependent variable of interest: auditors' proposed audit adjustment for Client Y.<sup>13</sup> Table 2, Panel B presents an analysis of variance testing the effects of rotation, high risk of PCAOB inspection, and their interaction on the proposed adjustment for Client Y. Results reveal no significant main or interaction effects, providing no support for H3 or H4.

[Insert Table 2 here]

A closer inspection of the data reveals that there is little variation in proposed adjustment amounts; the participants appeared to anchor heavily on the midpoint of the suggested range, \$500,000, which was also described as the estimate most likely to be correct. Therefore, the lack of significant results regarding independent mindset could indicate that neither partner rotation nor anticipated PCAOB inspections affect auditors' independence, or that auditors were generally too conservative to deviate from the anchor in my experiment. I am in negotiations with a fourth (Big 4) accounting firm to collect data at a later date. If I am granted a sufficient number of participants for separate analysis, I plan to run a new experiment with this group in

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<sup>13</sup> Note that the scenario was designed to encourage the vast majority of partners to recommend some amount of adjustment; accordingly, at least 91 percent of participants in each condition proposed an adjustment, and there are no significant differences in this proportion across conditions. For purposes of this analysis, I code observations with no proposed adjustment as a proposed adjustment of \$0. The results are the same if I only include participants who propose some non-zero adjustment.

which the anchor is removed.<sup>14</sup> Doing so will allow me to eliminate this alternative explanation for my results.

## 5.4 Supplemental Analyses

### 5.4.1 The Magnitude of the Change in Effort

In the course of testing my hypotheses, I find that auditors are more likely to decrease their effort for an outgoing client than for a continuing client. I used directional changes in behavior as my primary dependent variable, because the theory I cite suggests directional changes but is not specific on the relative magnitudes of these predicted changes. I next explore the magnitude of changes in behavior, by calculating a second dependent variable: the change in Client Y hours from the prior year. Table 3, Panel A presents cell sizes, means and standard deviations for the Change in Y hours. Table 3, Panel B presents an analysis of variance testing the effects of rotation, high risk of PCAOB inspection, and their interaction on the magnitude of this change. I find that only the effect of PCAOB inspection risk has a statistically significant impact on the magnitude of the change in effort ( $F = 3.79$ , two-tailed  $p = 0.06$ ).<sup>15</sup> In post-hoc untabulated analysis, I use contrast coding to explore the apparent pattern of results, where *No Rotation / Low Inspection Risk* = -1, *Rotation / Low Inspection Risk* = -3, and both *High Inspection Risk* conditions = 2. This contrast is statistically significant, providing some evidence that partner rotation does affect the magnitude of the decrease in auditor effort, but only when PCAOB inspection risk is low ( $t = 2.10$ , two-tailed  $p = 0.04$ ).

[Insert Table 3 here]

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<sup>14</sup> In this scenario, I will still combine the effort data with prior firms for analysis, because the effort task within the experiment is unchanged and occurs before the independence task.

<sup>15</sup> I present these results to provide a more complete picture of the collected data, but I caution that the findings are sensitive to my data inclusion decisions. To remove the impact of outliers on this dependent variable, I omit participants who failed manipulation checks, participants who spent only a few minutes on the experiment (the average time spent was approximately 15 minutes), and participants who allocated the same amount of time to Clients X and Y.



#### 5.4.2 Changes in Total Effort

I next explore the following question: Do auditors with a rotating client decrease their effort in total, or do they reallocate that effort? Although tests of my hypotheses focus on Client Y, participants also allocate their time to another current-year client, Client X, and, if desired, to a future client called Client Z.<sup>16</sup> Including these other clients in the design allows me to examine auditors' choices in the context of their entire client portfolio.

In untabulated analysis, the data show that auditors are generally unlikely to decrease their total audit hours from the prior year; only 10.5 percent of auditors across conditions decrease their total hours, indicating that shirking is not a big issue in this setting. The largest differences in shirking behavior occur between the low and high PCAOB inspection risk conditions. *No one* who anticipated a high risk of PCAOB inspection on one client decreased his or her total audit hours from the prior year, while 23.1 percent of auditors decrease total audit hours when the risk of PCAOB inspection is low on both clients. This difference is statistically significant ( $\chi^2 = 12.11$ , one-tailed  $p = 0.00$ ). For auditors in the “low PCAOB inspection risk” conditions, a decrease in total hours was more common for auditors experiencing partner rotation (35.3 percent) than for auditors with no partner rotation (13.6 percent), but this difference is not statistically significant ( $\chi^2 = 2.53$ , one-tailed  $p = 0.11$ ).

#### 5.4.3 Changes in Effort for Other Clients

I next examine whether any observed increase in effort affects other clients in the auditor's portfolio. For example, in my test of H2, I find that anticipating a PCAOB inspection

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<sup>16</sup> Client Z is described as a continuing client for the audit firm, on which the participant will be the incoming partner when they are next required to rotate. (For those with no currently rotating clients, they will join the audit of Client Z at some unspecified point later than next year, while those for whom Client Y is currently rotating will join the audit of Client Z next year.) Client Z is another public manufacturing firm whose primary products include large-scale farming equipment. For brevity, participants do not receive financial statement information for Client Z. However, they learn that Client Z's expected audit billings for the next year are more than those for Client X and less than those for Client Y. The materials indicate that participants have the option to allocate some of their current period hours to Client Z, “in an effort to learn more about Client Z and prepare to lead the audit team.”

causes auditors to be less likely to decrease time spent on that client. In supplemental analysis, I explore whether auditors who increase their time on Client Y appear to decrease their time spent on other clients in order to maintain their overall profitability. I find that the choice to increase time spent on Client Y is negatively associated with hours spent on both Client X (Spearman  $r = -0.46$ , two-tailed  $p = 0.00$ ) and Client Z (Spearman  $r = -0.52$ , two-tailed  $p = 0.00$ ), consistent with an increase in time spent on one client resulting in an offsetting decrease in time spent on other clients. Partners who increase their time spent on Client Y spend a mean of 334.23 hours on Client X and 46.15 hours on Client Z, while partners who do not increase time spent on Client Y spend a mean of 413.81 hours on Client X and 132.17 hours on Client Z. These differences are statistically significant (for Client X,  $t = 4.12$ , two-tailed  $p = 0.00$ ; and for Client Z,  $t = 4.46$ , two-tailed  $p = 0.00$ , respectively). Thus, it appears that although regulations such as PCAOB inspections may improve audit quality on the inspected client by increasing partner time on that client, this shift appears to take partner time from other clients, which could compromise audit quality on those clients.

#### *5.4.4 Changes in the Allocation of Time to Audit-Related Activities*

Finally, I investigate whether partner rotation or PCAOB inspections change how audit partners expect to allocate their time *within* the audit. For Client Y, I asked auditors to allocate percentages of their time to the following audit-related activities: planning the audit, reviewing tests of controls, reviewing substantive tests, reporting and financial statement review, documenting work and conclusions, engagement management (internal communication and meetings), communicating with the client's management, and communicating with the client's Audit Committee. For each activity, I provided participants with a prior year percentage; I selected both the activities and prior year percentages after discussions with the participating

firms about how partner time is typically spent. This additional data allows me to explore whether any observed increase in audit effort is allocated to activities more likely to enhance audit quality, such as reviewing substantive tests or the financial statements, or instead allocated to activities less directly related to audit quality, such as documentation.

I perform a MANOVA with a Bonferroni adjustment, where the dependent variables are the percentage of time allocated to the activities listed above, and the independent variables are rotation (yes or no) and PCAOB inspection risk (low or high).<sup>17</sup> The MANOVA results reveal significant effects of rotation ( $F = 2.23$ , two-tailed  $p = 0.04$ ) and the interaction between rotation and high risk of PCAOB inspection ( $F = 2.41$ , two-tailed  $p = 0.03$ ). Further analysis of each dependent variable (untabulated) shows that these significant effects are driven primarily by differences in documentation. Specifically, audit partners who have a rotating client allocate 11.4 percent of their time to documentation, while audit partners with only continuing clients allocate 9.3 percent of their time to documentation. This difference is statistically significant ( $F = 8.84$ , two-tailed  $p = 0.00$ ). Thus, mandatory partner rotation is associated with a higher percentage of time spent on documentation.

One possible implication of this finding is that mandatory partner rotation may harm audit quality and/or audit efficiency.<sup>18</sup> To explore this possibility, I examine total hours allocated to documentation and other audit-related activities rather than percentages allocated to these activities.<sup>19</sup> Inferences about the effects of partner rotation are identical whether I examine percentages or hours. Participants who are rotating off of a client spend more time on

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<sup>17</sup> The Bonferroni adjustment divides the alpha level by the number of dependent variables to reduce the likelihood of making a Type 1 error (i.e., when testing multiple dependent variables, some univariate tests could appear to be significant due to chance alone).

<sup>18</sup> I maintain the assumption that documentation is detrimental to audit efficiency and less likely to enhance audit quality than other audit-related activities. Discussions with Big 4 audit partners have provided anecdotal evidence in support of this assertion.

<sup>19</sup> I calculate total hours spent on each activity for Client Y by multiplying the percent allocated to each activity by the participant's total hours allocated to Client Y.

documentation (156.34 hours) and less time on all other audit-related activities (1,696.16 hours) than those not rotating off of a client (130.88 hours on documentation, 1,725.86 hours on all other audit-related activities). These differences are statistically significant (documentation:  $t = 2.41$ , two-tailed  $p = 0.02$ ; all other audit-related activities:  $t = 2.17$ , two-tailed  $p = 0.03$ ). Therefore, mandatory partner rotation appears to be detrimental to both audit quality and audit efficiency, by decreasing time spent on an audit overall and increasing the proportion of time on that audit spent on documentation.

With respect to PCAOB inspections, participants plan to spend more hours on documentation when there is a high risk of inspection (154.81 hours) than when there is a low risk of inspection (128.16 hours,  $t = 2.53$ , two-tailed  $p = 0.01$ ). However, the difference between time spent on other audit-related activities is not significant; participants facing a low (high) risk of inspection spend 1,700.17 hours (1,721.90 hours,  $t = 1.57$ , two-tailed  $p = 0.12$ ). Thus, PCAOB inspections appear to decrease audit efficiency by adding to time spent on documentation but not to harm audit quality, because the total time spent on substantive work is not reduced when partners face a high risk of PCAOB inspection. My results indicate that partner rotation is associated with a decrease in audit effort in the year prior to rotation, and within the effort that *is* expended, partners expect to spend more time on documentation and less time on other audit-related activities. A high risk of PCAOB inspections mitigates the decrease of audit effort in rotation years and increases audit effort in continuing years, but partners expect to increase their time spent on documentation.

## **6. Conclusion**

Proponents of mandatory rotation focus on arguments supporting increased independence in a mandatory rotation regime, while opponents suggest that mandatory rotation will lead to a

decrease in auditor effort in the final year of tenure with a client. Archival literature tests for the net of these possible effects in different settings, with somewhat mixed results. My results contribute to this line of research by separately examining the effects of independence and effort on audit quality. My results show that U.S. auditors plan to decrease audit effort on a client in their last year with that client, consistent with the concerns of mandatory rotation's opponents. Thus, I infer that the disincentive to exert effort in this period outweighs any additional incentive to respond to review pressure from the "fresh eyes" of the incoming partner.

However, I also find that audit partners do respond strongly to a certain type of review pressure: a high risk of PCAOB inspection. My results show that partners anticipating a high risk of PCAOB inspection decrease their effort on a client less frequently, regardless of whether that client is a continuing client or an outgoing client. The combined implication of these findings is that, if regulators are concerned about audit effort, they could eliminate partner rotation, increase the risk of a PCAOB inspection, or pursue both measures for additional impact on audit effort. However, increasing the risk of PCAOB inspections is not without its costs. I find that planning to spend more time on a client with a high risk of inspection is associated with planning to spend less time on clients with a lower risk of inspection, indicating that higher audit quality on one client is likely at the expense of other clients. Furthermore, I find that both partner rotation and a high risk of PCAOB inspection are associated with increased partner time spent on documentation, which reveals that increased audit effort is not necessarily related to activities likely to enhance audit quality. Thus, my findings do not reveal any benefits to audit quality of audit partner rotation, and I find limited *ex ante* benefits to audit quality of anticipating PCAOB inspections.

My study is subject to certain limitations. First, I do not observe firm-wide resource allocation decisions. Thus, it is possible that any decrease in time spent on a client by the outgoing partner would be offset by an increase in time spent by the incoming partner. Second, I only examine audit quality in the year prior to rotation; it is an open question whether the benefits of partner rotation outweigh the costs in other years. Third, I assume that audit firms attempt to anticipate the risk of PCAOB inspection on clients. Based on my conversations with the participating firms and a current PCAOB inspector, this assumption appears to be reasonable. However, to the extent that partners do not have priors about the likelihood of PCAOB inspection, the results that I obtain in this experimental setting may not be present in practice. Over time, however, the accounting firms are likely to improve in their ability to anticipate which clients will be inspected, with the likely effects being those observed in this study. In general, my study can inform academics and regulators about how the current regulatory requirements in the United States affect audit quality. Importantly, my results show determinants of variation in audit effort *within* the current regulations, highlighting paths to increasing audit quality that do not require additional regulations.

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**TABLE 1**  
**The Effect of Partner Rotation and PCAOB Inspections on End-of-Term Audit Effort**

Panel A: Means by Condition

*Dependent Variable: Decrease in Audit Effort*

Risk of PCAOB Inspection	Rotation		Row Means
	No	Yes	
Low	<b>0.68</b> (0.48) n=22	<b>0.82</b> (0.39) n=17	<b>0.74</b> (0.44) n=39
High	<b>0.21</b> (0.41) n=24	<b>0.43</b> (0.51) n=23	<b>0.32</b> (0.47) n=47
<u>Column Means</u>	<b>0.43</b> (0.50) n=46	<b>0.60</b> (0.50) n=40	

Panel B: Logistic Regression

*Dependent Variable: Decrease in Audit Effort*

Source	df	B	Exp(B)	S.E.	Wald	
					Chi-Sq	p-value
Rotation (R)	1	1.54	4.67	0.64	5.86	0.02 **
High Risk of PCAOB Inspection (I)	1	-1.34	0.26	0.50	7.06	0.01 ***
R x I	1	-0.47	0.63	0.91	0.26	0.61

Notes: Decrease in audit effort is 1 if the participant decreased the amount of audit hours allocated to Client Y; 0 otherwise. Means, standard deviations (in parentheses), and number of participants are provided in Panel A. Panel B presents the results of a logistic regression where the independent variables are Rotation (no or yes) and Risk of PCAOB Inspection (low or high). \*\*\*, \*\*, and \* denote two-tailed statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

**TABLE 2**  
**The Effect of Partner Rotation and PCAOB Inspections on Independent Mindset**

Panel A: Means by Condition

*Dependent Variable: Magnitude of Proposed Audit Adjustment*

Risk of PCAOB Inspection	Rotation		Row Means
	No	Yes	
Low	<b>400,000</b> (185,164) n=22	<b>458,824</b> (100,367) n=17	<b>425,641</b> (155,120) n=39
High	<b>462,500</b> (105,552) n=24	<b>448,182</b> (133,902) n=22	<b>455,652</b> (118,802) n=46
Column Means	<b>432,609</b> (150,635) n=46	<b>452,821</b> (119,074) n=39	

Panel B: Analysis of Variance (ANOVA)

*Dependent Variable: Magnitude of Proposed Audit Adjustment*

Source	df	MS	F-Stat	p-value
Rotation (R)	1	1.04E+10	0.55	0.46
Risk of PCAOB Inspection (I)	1	1.41E+10	0.75	0.39
R x I	1	2.80E+10	1.50	0.23
Residual	81	1.87E+10		

Notes: The magnitude of proposed audit adjustment is the amount auditors stated that they would propose as an audit adjustment to Client Y's financial statements. If an auditor indicated that they would not propose an adjustment, their proposed adjustment is coded as zero. Means, standard deviations (in parentheses), and number of participants are provided in Panel A. (In the Rotation / High Inspection Risk condition, the n differs from the n in Table 1 because one participant left the magnitude of his or her proposed adjustment blank.) Panel B presents the results of an analysis of variance (ANOVA) where the independent variables are Rotation (no or yes) and Risk of PCAOB Inspection (low or high). \*\*\*, \*\*, and \* denote two-tailed statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

**TABLE 3**  
**The Effect of Partner Rotation and PCAOB Inspections on**  
**the Magnitude of Change in Effort**

Panel A: Means by Condition

*Dependent Variable: Magnitude of Change in Effort on Client Y*

Risk of PCAOB Inspection	Rotation		Row Means
	No	Yes	
Low	<b>-29.17</b> (45.06) n=18	<b>-61.88</b> (84.10) n=16	<b>-44.56</b> (67.35) n=34
High	<b>11.82</b> (162.27) n=22	<b>-5.75</b> (87.56) n=20	<b>3.45</b> (130.84) n=42
<u>Column Means</u>	<b>-6.63</b> (124.46) n=40	<b>-30.69</b> (89.40) n=36	

Panel B: Analysis of Variance (ANOVA)

*Dependent Variable: Magnitude of Change in Effort on Client Y*

Source	df	MS	F-Stat	p-value
Rotation (R)	1	1.18E+04	1.02	0.32
Risk of PCAOB Inspection (I)	1	4.42E+04	3.79	0.06*
R x I	1	1.07E+03	0.09	0.76
Residual	72	1.17E+04		

Notes: The magnitude of change in effort on Client Y is calculated as Current Year Y hours – Prior Year Y Hours (which was constant across conditions in the experimental materials). Means, standard deviations (in parentheses), and number of participants are provided in Panel A. This analysis excludes outliers and participants who failed manipulation checks; therefore, ns differ from those presented in Table 1. Panel B presents the results of an analysis of variance (ANOVA) where the independent variables are Rotation (no or yes) and Risk of PCAOB Inspection (low or high). \*\*\*, \*\*, and \* denote two-tailed statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively.