

How Do Various Forms of Audit Rotation Affect Audit Effectiveness?

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SUMMARY

Audit rotation has resurfaced as an issue of debates in recent years. Prior research findings from empirical studies on audit rotation have been mixed. Using practicing auditors, this study adopted a two-period experimental design to examine the effects of three forms of audit rotation – audit staff, audit partner and audit firm rotation on audit effectiveness. Audit effectiveness is defined as the absolute difference between the risk assessments made by the auditors and those made by the audit partners on our expert panel. We find that partner rotation leads to a greater audit effectiveness. However, the effect of staff rotation on audit effectiveness depends on whether there is a partner rotation. Specifically, we find that staff rotation leads to a greater audit effectiveness when there is a partner rotation. We also find that audit firm rotation leads to a decrease in audit effectiveness. The results of this study provide interesting insights to the audit rotation debates and make an important contribution to the audit research on rotation.

Keywords: Staff rotation; partner rotation; firm rotation; risk assessments; prior working papers

Data availability: Data from this study may be obtained from the authors upon request.

INTRODUCTION

In the wake of numerous accounting and auditing scandals, the proposal that public companies be required to periodically rotate auditors has resurfaced in both academic and political debates. There are two forms of audit rotation that had been frequently discussed – within-firm rotation (e.g., partner rotation) and between-firm rotation (i.e., firm rotation). Proponents argue that rotation prevents auditors from losing the objectivity and professional skepticism that result from long-term relationships with clients. Even though the Sarbanes-Oxley Act (2002) does not mandate between-firm rotation, it does require within-firm rotation of the top two partners on an audit team after five years (section 203). As required by section 207 of the Sarbanes-Oxley Act (2002), the Government Accountability Office (GAO) conducted a study to examine whether mandatory firm rotation should apply. The results of the GAO study show that that benefits of mandatory firm rotation was not immediately apparent and that a greater time lapse with the effects of the Sarbanes-Oxley Act’s requirement is necessary before more definitive conclusions could be made (GAO 2003).

However, besides audit partner rotation (as required by section 203 of the Sarbanes-Oxley Act) and firm rotation, considerations should also be made on the involvement of the staff performing the actual field work (hereafter, “audit staff rotation”). They are the ones who are making the judgments upon which the reviewing audit manager/ partner assess the reasonableness. Hence, whether they are involved in prior years’ audits may also affect the objectivity of their judgments as well as their sensitivity to any changes in the client’s business risk. Even though audit staff are normally changed through promotion and attrition, it is not uncommon to have the same

audit staff performing the same fieldwork for at least two consecutive years. This is a cause of concern as their objectivity and risk sensitivity may be impaired in the second (or more) year. This form of rotation has not been sufficiently examined in the accounting literature and little consideration is given to audit staff rotation in regulatory debates on audit rotation. Additionally, there could be a potential interaction effect arising from the dynamics between the audit staff performing the fieldwork and the engagement partner. A new engagement partner may bring about a different form of work dynamics for staff performing the fieldwork. We explore this issue in the current study.

In this study, we examine the effects of audit staff rotation, audit partner rotation and audit firm rotation on audit effectiveness. We also want to compare the differential effects of these three forms of rotations so as to provide insights to the issue of how the various forms of audit rotation can have an impact on audit effectiveness. In our study, audit effectiveness is defined as the absolute difference between the judgments made by the auditors and those made by a panel of audit experts consisting of Big 4 audit partners.

This study is important because it examines an important practical question that is of interest to accounting researchers, practitioners and regulators. Our results provide interesting insights to accounting regulators and researchers as to the environmental and task variables that may affect audit staff judgments. This may help shed some lights to the ongoing debates on the benefits of audit rotation.

This study also makes a contribution to existing accounting research on partner rotation. Prior research has examined audit staff rotation (Tan 1995), audit partner rotation (Carey and Simnet 2006), and audit firm rotation (Johnson, Khurana and

Reynolds 2002; Knapp 1991). However, there is no study which examines how a combination of different forms of audit rotation would affect audit effectiveness.

Additionally, most of the current research on audit rotation has been done using archival data (Ghosh and Moon 2005; Mansi, Maxwell, and Miller 2004; Carey and Simnett 2006; Johnson et al. 2002 etc). By using an experimental design and controlling for contemporaneous environmental factors, this study provides a more direct test for how the different forms of rotation affect audit effectiveness.

Using a two-period experimental design, we vary whether the current year auditor is involved in prior year's audit, whether the current year engagement partner is the same as last year and whether the prior year audit was done by the same firm or by a different firm. For those firms in the "audit firm rotation" condition, we also compare the differential effects between audit effectiveness of newly-appointed firms with access to prior working papers and those who do not have such access. Audit effectiveness is measured by the absolute difference between the auditors' risk assessments and the average risk assessments made by an audit expert panel comprising four audit partners. The smaller the absolute difference, the greater the audit effectiveness.

When comparing the effectiveness of audit staff and audit partner rotation, our results show that partner rotation leads to greater audit effectiveness. However, staff rotation leads to lower audit effectiveness. Additionally, the effect of staff rotation on audit effectiveness depends on whether there is a partner rotation. Specifically, we find that partner rotation, coupled with no staff rotation, leads to greater audit effectiveness. When we compare the relative audit effectiveness of combined staff and partner rotation

and firm rotation, we find that firm rotation leads to lower audit effectiveness than a combination of staff and partner rotation.

In the next section we review the extant research on audit rotation and develop the study hypotheses. This is followed by a description of our research methodology. In the last two sections, we present the results and discuss the implications of our findings and the limitations of our study.

THEORY AND HYPOTHESES DEVELOPMENT

Forms of Audit Rotation

We investigate three forms of audit rotation in this study – audit firm rotation, audit partner rotation and audit staff rotation. Audit staff rotation refers to whether the audit staff performing the audit fieldwork is the same as last year's. Audit partner rotation refers to whether the current year's engagement partner is the same as last year's engagement and audit firm rotation refers to whether the audit firm who is performing the current year's audit is the same as last year's audit.

Prior research has largely examined the separate impacts of the various forms of audit rotation. In an experimental study, Hatfield, Jackson and Vandervelde (2006) examine the differential effects of firm rotation and partner rotation on the magnitude of current year's audit adjustment. They find that there is no difference between the amount of audit adjustments proposed by those in the firm rotation and partner rotation condition. The authors conclude that audit partner rotation is just as effective as audit firm rotation, and that partner rotation does not have the widely discussed negative consequences that typically accompany firm rotation. However, the authors do not examine the effects of

audit staff rotation and its interaction with audit partner rotation. Our study extends the extant research on audit rotation by examining all three forms of audit rotation.

Additionally, we use a two-period experimental design to better capture the ramifications of two consecutive years of financial statement audits.

Audit Staff Rotation

In audit staff rotation, two opposing forces could potentially be at work. On one hand, if the same auditors work on both the prior year's and the current year's audit, they may be less inclined to deviate from the prior year's audit conclusions, particularly if those audit conclusions are made by the auditors. They may anchor on the prior year's audit conclusions and fail to adequately adjust their current year's audit conclusions to the client's current circumstances. Mock and Wright (1993) find that there is little variation in year-to-year audit programs. For example, they find that auditors repeat about 94.8 percent of the accounts receivable tests, adding or deleting only about one test on average. The authors offer two possible explanations for this lack of variation – the prior year audit program may inhibit creativity in adapting the program for current year, or the manager or partner who developed the program may be susceptible to sunk-cost behavior, resisting program changes (Mock and Wright 1993).

Tan (1995) finds that staff auditors who are involved with the audit in the prior year paid more attention to consistent facts than inconsistent ones, compared to those who are not involved in the prior year's audit. Tan (1995) defines auditors with prior audit involvement as those who generated audit conclusions previously. He also finds that the current year's judgments of those who are involved in the prior audit have a

smaller deviation from the prior year's judgments. The operationalization of audit staff rotation in our study is consistent with Tan's (1995) operationalization of prior audit involvement—the un-rotated audit staff is involved in generating audit conclusions in the prior year's audit. Therefore, in the context of our current study, auditors who are involved in the prior year's audit work may be less likely to make an audit judgment that deviates greatly from the prior year's judgments despite of changes in the audit client's current circumstances.

On the other hand, involvement in the prior year's audit helps audit staff to develop a more in-depth knowledge of the client's business and the associated audit risks. Consequently, these auditors would be more sensitive to any changes in the client's current audit risks. Their knowledge base about the client is hence more comprehensive than someone who is not involved in the prior year's audit, *ceteris paribus*. As a result, auditors involved in the prior year's audit might perform a more effective audit in the current year. The integration process is the underlying psychological process which allows for a better audit judgment.¹ When an individual has prior experience with some concepts or events, it is easier for him to integrate new information with their existing information (Collins and Loftus 1975; Gibbins 1984). Prior experience with the same client allows for “accumulative learning” which helps build the knowledge structure concerning a particular client (Gibbins 1984).

Bonner and Lewis (1990) find that auditors with task-specific experience generally perform better in the audit tasks. Therefore, in the context of our study, auditors who have specific prior experience with a particular client could potentially be more

¹ Integration is the process of making connections between separate pieces of information.

sensitive to changes in client's business and audit risks and as a result, they would make better judgment concerning the current year audit.

Based on the above potential opposing forces at work, our hypothesis for audit staff rotation is non-directional and is stated as follows:

H1: There is a difference in the effectiveness of audit judgments made by auditors who are involved in the prior year's audit and those made by auditors who are not involved in the prior year's audit.

Audit Partner Rotation

Currently, the Sarbanes-Oxley Act (2002) requires a mandatory partner rotation every five years. Two basic arguments made for mandatory audit partner rotation are: (1) long term personal relationship of the audit partner with the client management could impair the independence of the audit partner and (2) the quality and competence of the audit partner may decline over the partner's tenure as the partner loses the capacity to critically appraise the client's financial statements. This lack of independence and objectivity may lead to an increased tendency for the partner to yield to client pressure in a negotiation (e.g., of audit adjustments) setting and a decline in the rigor of the audit procedures as the auditor may become lax in their work when the same client is audited year after year (Hoyle 1978). In an empirical study, Carey and Simnet (2006) find that audit quality does deteriorate with an increase in the length of audit partner tenure.

Based on the above, we expect that audit partners who are new to a particular engagement would critically appraise the client's financial position and the integrity of the internal control. They would also be more careful in assessing the risk of the client. As a result, staff auditors who are performing the audit work are predicted to be more careful in their work when they are working for an engagement partner who is new to the

audit job. This is based on the rationale that staff auditors would expect a new engagement partner to more closely scrutinize the audit team's work. In other words, staff auditors foresee a greater degree of accountability to a new engagement partner than to one who is involved in the prior year's audit and hence, is more familiar with the audit client's background and business.² Accountability pressure generally leads to greater task efforts and hence, to better performance (Tetlock 1983). Individuals who expect to be held accountable for their judgments will process information more thoroughly and vigilantly than individuals who are not held accountable (Tetlock 1985). Prior accounting research has shown that accountability increases accuracy (Ashton 1992), consensus (Johnson and Kaplan 1991), cognitive effort (Gibbins and Newton 1994) and self-insight (Johnson and Kaplan 1991).

Consistent with prior research on accountability, we expect the auditors who are working with a new engagement partner (and whose preferences are unknown) to exert a greater level of effort in their work and to process information more vigilantly than auditors who are working for a recurrent engagement partner. Compared to a new engagement partner, the auditors know that a recurrent engagement partner is already familiar with the audit client business and hence, the level of scrutiny, and the degree of accountability faced by them would be lower. As a result, they may not exert as much effort in their work, and hence may not be as thorough in processing information. Based on the above, we hypothesize the following:

² Our definition of accountability is consistent with Lerner and Tetlock's (1999, 255) definition of accountability, which refers to "the implicit and explicit expectation that one may be called on to justify one's beliefs, feelings and actions to other." Negative (positive) consequences are expected to accompany a unsatisfactory (satisfactory) justification.

H2: Auditors working with an audit partner who is new to the engagement make more effective audit judgments than auditors working with an audit partner who is involved in the prior year's engagement.

Joint Effects of Audit Staff and Audit Partner Rotation

Based on the theoretical exposition for the previous two hypotheses, we predict an interactive effect of audit staff and audit partner rotation on audit effectiveness. Given our non-directional alternative hypothesis on audit staff rotation, there are two possible patterns of interaction.

When there is an audit partner rotation (i.e., the current year's engagement partner is different from the prior year's), an audit staff rotation will bring about the highest level of audit effectiveness than when there is no such staff rotation. This is due to the objectivity that a new audit staff brings to the engagement. New staff auditors have lesser tendency to remain consistent with the prior year's conclusions. At the same time, they are also more vigilant as they expect their audit work to be more closely scrutinized by a new audit partner. Hence, audit judgments are most effective when both the staff auditors and the audit partner are new to the engagement.

Alternatively, it is also conceivable that audit judgments are most effective when there is a partner rotation but *not* audit staff rotation. This is because the greater accountability to a new audit partner, coupled with a more in-depth knowledge of the audit client gained from prior involvement with the client causes the audit staff to be more careful in their work and more sensitized to changes in the client's audit risk. As a result, when working with a new engagement partner, auditors who are involved in the

prior year's audit make more effective audit judgments than auditors who have no prior involvement. Therefore, we propose the following hypothesis in alternative form:

H3: The effect of an audit partner rotation on audit effectiveness depends on whether the staff auditors are involved in the prior year's audit (i.e., staff rotation).

Audit Firm Rotation versus Joint Staff and Partner Rotation

The arguments against a mandatory audit firm rotation include the newly-appointed auditors' lack of familiarity with the client's business, operations, controls, risks and systems. However, some regulators are also concerned with the threats to auditors' objectivity and independence as the tenure of the audit firm-client relationship increases.

Imhoff (2003) proposes that mandatory rotation of CPA firms every three years could potentially be the most effective measure to enhance auditors' independence. He argues that any increase in audit costs arising from greater audit work performed by new auditors, could be borne by shareholders who will be willing to pay a premium for a *more independent* audit opinion on the financial statements. Furthermore, he argues that mandatory audit firm rotation could also increase audit quality as the newly rotated auditors would have a greater incentive to "find and report errors and omissions overlooked by another CPA firm" (Imhoff 2003).

Empirical research on audit tenure has been mixed and inconclusive. For instance, several studies have found that longer audit tenure leads to lower audit quality (DeAngelo 1981; Deis and Giroux 1992; O'Keefe, King and Gaver 1994; Raghunandan, Lewis, and Evans 1994). Knapp (1991) finds that the length of audit firm tenure affects audit committee members' perception of audit quality. The longer the audit firm has been

retained as a firm's auditor, the lower the perceived quality of audit service provided. Carcello and Nagy (2004) find that audit quality is lower in the first three years of the auditor-client relationship and that longer audit firm tenure is not associated with an increase in the occurrence of fraudulent financial reporting.

Some researchers have also found positive associations between audit tenure and audit quality. Specifically, these studies find that longer auditor tenure is associated with fewer earnings management tools in the form of discretionary accruals and special items (Ghosh and Moon 2005), less dispersion in distributions of discretionary and current accruals (Myers, Myers and Omer 2003) and a smaller proportion of audit failures (Berton 1991; Petty and Cuganesan 1996; Geiger and Raghunandan 2002). Litigation risk for auditors is also higher in the early years of an engagement (Palmrose 1986, 1991).

In this study, we examine the the effect of audit firm rotation by comparing the judgments made by auditors in the rotated firm setting with the judgments made by auditors in the joint staff and partner rotation setting. In both settings, there is a change in audit partner and audit staff as a newly appointed audit firm would invariably involve new audit partners and audit staff. The only difference is that one involves a change of audit firm while the other does not. Theoretically speaking, from the view point of the audit staff who are performing the fieldwork, it should not make any difference in their performance. In both cases, the audit staff are new to the job, and they are working for a new partner. However, being an audit staff from a newly appointed firm may cause the audit staff to be overly cautious and conservative in their audit work and conclusions. This may actually lower the audit effectiveness. Alternatively, it is also conceivable that a newly appointed audit firm may provide fresh insights to the audit that may not have

been possible even to a new audit team (consisting of new audit staff and a new engagement partner) from the incumbent audit firm.

Hatfield, Jackson and Vandervelde (2006) find that there is no significant difference in the amount of auditors' proposed audit adjustments between the firm rotation and partner rotation conditions. In our study, besides testing for the effect of audit firm and partner rotations, we also examine the effect of staff rotation and the combination of staff rotation with partner rotation on audit effectiveness.

We propose the following non-directional hypothesis in the alternative form as we seek to understand the difference in audit effectiveness between the two settings.

H4: There is a difference between the effectiveness of the audit judgments made by auditors from a newly-appointed audit firm and auditors from an incumbent audit firm but who, like their current engagement partner, have no prior involvement.

Access to Prior Year Working Paper

Statement of Auditing Standards (SAS) No. 84 requires, in the case of a change in auditors, that the incumbent auditors should make the prior year working papers, including "documentation of planning, internal control, audit results, and other matter of continuing accounting and auditing significance, such as the working paper analysis of balance sheet accounts, and those relating to contingencies," available for review by the newly-appointed auditors (AICPA 1998, para. 11). However, such access to prior working papers may have a negative impact on the audit effectiveness of the newly-appointed auditors as they become fixated and overly rely on the findings of the prior audits, causing them to overlook new risks that have arisen.

We understand that consulting prior working paper can be beneficial in highlighting any potential risks, errors and problems to newly-appointed auditors,

resulting in greater efficiency and effectiveness. However, there is a danger in an over reliance on prior year working papers. For instance, Wright (1988) finds that auditors who are provided with prior working papers are less efficient in their current year planning. Prior research (e.g., Joyce and Biddle 1981, Butler 1986, Kinney and Uecker 1982) has shown that having access to prior assessments made whether by oneself or by other auditors have an impact on the subsequent judgments made, potentially leading to under or over-auditing.

Therefore, when audit staff are given prior working papers, the judgments and/or audit conclusions made in these working papers may affect their objectivity. For instance, if the judgments made in the prior year working papers indicated that the client has a low audit risk, and that there is no material misstatement in the prior year, this may lead to under-auditing by the current year audit staff. This could lead to serious consequences especially if the nature of information in the prior year is no longer reflective of the current year.

Based on the above, we propose the following hypothesis:

H5: Audit judgments are more effective when newly-appointed auditors do not have access to the preceding auditors' working papers rather than when they have access to those working papers.

RESEARCH METHOD

Experimental Design

The experiment comprises two sessions representing two consecutive external audits of the same company. We manipulated audit staff rotation (whether audit staff are involved in the prior year's audit), audit partner rotation (whether there is any change in

the engagement partner), and audit firm rotation (whether the audit firm is involved in the prior year's audit). This results in a 2 (audit staff rotation) x 2 (audit partner rotation) plus 1 (audit firm rotation) design. We do not have an experimental condition where there is an audit firm rotation with no audit partner rotation and/or no staff rotation as this condition is rarely seen in practice. For the audit firm rotation condition, we further manipulated whether the newly appointed audit firm (i.e., no involvement in prior year audit) has any access to the preceding auditors' working papers. The final design consists of six experimental conditions as shown in Figure 1.

Insert Figure 1 about here

Experimental Procedures

We randomly assigned the participants to one of the six experimental conditions. The study comprised two sessions (representing two consecutive years of audit) conducted on different days. The participants assumed the role of an audit senior who had been assigned to audit the doubtful debt allowance of a manufacturing company. In the first session (i.e., Year 1 audit), we provided the participants with background client information (consisting of the client's principal activities, industry overview, sales and credit policy, internal controls and past audit findings). They were also provided with the accounts receivable schedule prepared by the client, an extract of main financial results as well as some background audit information (consisting of audit partner information, partnership's concern, audit responsibility, audit risk assessment, audit procedure and the tolerable error). In addition, to ensure that the participants take the experimental tasks seriously, they were told that a summary of their responses would be given to their firm's

audit training manager/partner for review. We subsequently provided the participating firms with a performance summary of their firm's participants.

For the participants assigned to the With Prior Involvement conditions (i.e., cells A1 and B1 in Figure 1), they were told that their firm was preparing for the current year's (Year 1) audit. They were provided with a preliminary audit assessment made by a colleague. The participants then proceeded to make their own final audit assessment. For the participants assigned to the No Prior Involvement conditions (i.e., cells A2 and B2 in Figure 1), they were told that the firm *had just completed* the current year's (Year 1) audit and that they would be assigned the following year's audit (Year 2). Their current task was to familiarize themselves with the audit client. These participants were also provided with the same audit assessment by a colleague that was provided to the participants in the With Prior Involvement conditions except that the audit assessment was described as a final rather than preliminary assessment. This ensured that the information content was the same for the participants in both No and With Prior Involvement conditions. For participants assigned to the New Audit Firm conditions (i.e., cells C2 and C3 in Figure 1), they were informed that their firm had just been appointed as the new auditors and that they would be assigned to the audit. Their current task was to familiarize themselves with the audit client. For the participants assigned to the New Firm With Access condition (i.e. cell C2 in Figure 1), they were provided with the preceding auditors' assessment but the participants assigned to the New Firm Without Access condition (i.e. cell C3 in Figure 1) were not provided with the preceding auditors' assessment. Otherwise, the information provided to the participants in both of these cells was identical.

In the second session (representing Year 2 audit), all participants were given new updates on the client's business operations and industry and tasked to assess the audit risk of inadequate allowance for doubtful debts by the client. The new facts about the client actually suggest an increased risk in the client's allowance for doubtful debts. At the end of both sessions, the participants completed a short questionnaire that included some manipulation check questions, post-experimental questions and background questions.

Prior to our data collection, an audit partner from a Big 4 accounting firm reviewed our case materials to ensure realism and clarity. We also pilot tested our case with accounting faculty with prior audit experience. We revised our case based on the comments and suggestions that we received.

Dependent variable

Our primary dependent variable is the participants' Year 2 audit assessment of the risk of inadequate allowance for doubtful debts by the client. The participants made their audit assessment on an 11-point Likert scale where "0 to 3.5" is marked as "Low Risk," "3.5 to 6.5" is marked as "Moderate Risk" and "6.5 to 10" is marked as "High Risk." For participants assigned to the With Prior Involvement conditions, they also made similar audit assessments in Year 1 but these are not used in our hypothesis tests. To provide a benchmark for assessing the appropriateness of the participants' Year 2 audit risk assessments, four audit partners from two of the Big 4 accounting firms (the same firms that provided the participants for our study) assessed the audit risk of inadequate allowance for doubtful debts in our experimental case. Thus, our final dependent variable

is the absolute difference between the participants' risk assessment and the audit partners' mean risk assessment for Year 2.

RESULTS

Participants

Two hundred and sixty-eight auditors from two of the Big 4 accounting firms participated in our study. The first session of the study is administered during an in-house training session. For one of the audit firms, the second session of the study is administered two days later during the same in-house training session. For the other audit firm, we give the participants the materials for the second session of the study to complete on their own time.³ Fifty-seven percent of the participants who completed the second session at their own time returned the materials, resulting in a sample size of two hundred and two participants who successfully completed both sessions of the study. As a token for their participation, each participant receives two movie ticket vouchers. Of the two hundred and two responses, we eliminate forty participants from the sample because of incomplete response or the participants fail the manipulation check questions for either of the study sessions.⁴ The final sample for our statistical analyses consists of one hundred and sixty-four practicing auditors.

The participants have an average of two years of audit experience. On an 11-point Likert scale ("0" being Not at all familiar and "10" being Extremely familiar), our participants rated their familiarity with the business depicted in our case materials as 4.5

³ We would have preferred to administer the second session during the in-house training session but unfortunately, the participating firm's training schedule could not accommodate our request.

⁴ Besides the issue of reducing the power of our tests, we also do not exclude participants who only failed two or less manipulation check questions because some of the questions failed are minor questions which are not critical to the study.

(s.d.= 2.4). The participants' average completion time is 30 minutes for the first session and 40 minutes for the second session conducted onsite . The participants' self-reported effort rating is 6.7 (s.d.=1.2) on an 11-point scale (“0” for “Very low effort level” and “10” for “Very high effort level”).

Main Hypotheses Testing

Audit Staff Rotation and Audit Partner Rotation

To test the first three hypotheses, we perform a 2 x 2 ANCOVA with audit staff rotation and audit partner rotation as independent variables and the absolute difference between the participants' audit risk assessment and the audit partners' mean risk assessment as dependent variable. The five covariates include in the analysis are “consistent with self⁵,” “consistent with team⁶,” “partner preference⁷,” “prior year work⁸,” and “prior year conclusion⁹.” Table 1 shows the mean absolute difference between the participants' risk assessments and the audit partners' mean risk assessments for Year 2. Table 2 shows the ANCOVA results.

⁵ Participants are asked to assess the importance for an auditor to avoid contradicting his own audit work and judgments made in the past (e.g., the nature of audit work performed, planned sample size, etc.) when performing the current year's audit on an 11-point Likert scale with end points anchored as “Not at all important” and “Extremely important” and the midpoint labeled as “Moderately important”.

⁶ Participants are asked to assess the importance for an auditor to avoid contradicting his audit team's audit work and judgments made in the past (e.g., the nature of audit work performed, planned sample size, etc.) when performing the current year's audit on an 11-point Likert scale with end points anchored as “Not at all important” and “Extremely important” and the midpoint labeled as “Moderately important”.

⁷ Participants are asked to assess the importance of ensuring that audit work performed addresses the lead audit partner's concerns and preferences on an 11-point Likert scale with end points anchored as “Not at all important” and “Extremely important” and the midpoint labeled as “Moderately important”.

⁸ Participants are asked to assess the appropriateness of considering a prior year's audit work performed when planning current year's audit work on an 11-point Likert scale with end points anchored as “Not at all appropriate” and “Extremely appropriate” and the midpoint labeled “Moderately appropriate”.

⁹ Participants are asked to assess the appropriateness of considering a prior year's audit conclusion or judgment when forming current year's audit conclusion or judgment on an 11-point Likert scale with end points anchored as “Not at all appropriate” and “Extremely appropriate” and the midpoint labeled as “Moderately appropriate”.

Insert Tables 1 and 2 here

We find significant results for Audit Staff Rotation ($F=4.169$, two-tailed $p=0.05$). Thus, H1 is supported. The results imply that auditors with prior involvement perform better than those without prior involvement. More specifically, the mean absolute difference in the participants' risk assessments and the audit partners' mean risk assessment is larger for the participants with no prior involvement than those with prior involvement (1.23 vs. 1.03 respectively). This suggests that audit staff rotation is detrimental to audit effectiveness. Prior involvement enables staff auditors to develop a more in-depth appreciation of the client's circumstances and thereby enable them to better identify changes in the client's risk profile.

For partner rotation, we also find a significant difference in audit effectiveness between those who are working with a new engagement partner and those who are working with the same engagement partner from the previous audit ($F=4.014$, one-tailed $p=0.025$). More specifically, the mean absolute difference in the participants' risk assessments and the audit partners' mean risk assessment is larger for the participants working with the same audit partner than those working with a new engagement partner (1.25 vs. 1.01 respectively). Therefore, H2 is also supported.

We do not find a significant interaction between Audit Staff Rotation and Audit Partner Rotation ($F=1.993$, two-tailed $p=0.16$). This lack of a significant result is due to the fact that we propose a non-directional interaction hypothesis. Notwithstanding that, the pattern of the results (depicted in Figure 2) could potentially give us some insights about the joint effects of the two forms of rotation. In Figure 2, we see that those who are in the staff rotation and no audit partner rotation (combined) condition have the highest

mean absolute difference between their risk assessments and the audit partners' mean risk assessment, compared to the other three conditions. In other words, it has the lowest audit effectiveness. There are no significant differences between the risk assessments given by participants in the other three experimental conditions (i.e., audit staff rotation only, audit partner rotation only, and audit staff and audit partner rotation).

Insert Figure 2 about here.

Audit Firm Rotation

We do not have a full factorial design of Audit Firm Rotation by Audit Staff/ Partner Rotation as we do not have a condition where there is an audit firm rotation but the audit partner and /or the audit staff are involved in the prior year's audit. As a result, we could not use ANOVA to test H4 and H5. Instead, we perform a planned contrast test to evaluate the impact of audit firm rotation on the audit judgments of newly appointed auditors.

To examine the effect due purely to audit firm rotation, we contrast the judgment effectiveness between auditors from a newly-appointed firm with access to the preceding auditors' working papers (i.e., cell C2 in Figure 1) and auditors with no prior involvement working with a new engagement partner (i.e., cell B2 in Figure 1). Thus, other than the change in audit firm, everything else in the two experimental conditions is the same. Results of the planned contrast show a significant difference in the mean absolute difference in the risk assessments between the participants in these two conditions ($t=-2.200$, two-tailed $p=0.032$).¹⁰ The results of the planned contrast support H4. More specifically, audit firm rotation results in lower audit effectiveness (1.55 vs.

¹⁰ For the planned contrast test, we do not assume equal variances between the two groups since the Levene Statistic of 2.216 is marginally significant at 0.07.

1.06). We obtain similar results when we contrast the audit effectiveness of participants in the no audit firm rotation conditions (i.e., cells A1, A2, B1 and B2 in Figure 1) with that of participants in the audit firm rotation condition (i.e., cell C2 in Figure 1) ($t=2.248$, two-tailed p -value = 0.029).¹¹

Our above results differ from those of Hatfield, Jackson and Vandervelde (2006) who find no significant difference in auditors' proposed audit adjustments between the firm rotation and partner rotation conditions. The difference in findings could be attributed to the fact that we examine the judgments of a new audit staff working a new engagement partner on a new versus an incumbent audit client whereas Hatfield et al. (2006) examine the judgment of a new engagement partner on a new versus an incumbent audit client. Our results suggest that audit partner and audit staff rotations lead to greater audit effectiveness than audit firm rotation.

Access to Prior Working Papers

To test the effect of a newly appointed audit firm's access to the preceding auditors' working papers (H5), we perform a t-test on the audit judgments of newly appointed auditors who have access versus no access to the preceding auditors' working papers (i.e., cells C2 and C3 in Figure 1). We find no significant difference ($F = 0.574$, one-tailed $p = 0.23$) in the mean absolute difference in the risk assessments between the two groups of auditors. Therefore, H5 is not supported.

DISCUSSION AND CONCLUSION

Using a two-stage experimental study, we examine how the different forms of audit rotation (i.e., audit staff, audit partner and audit firm rotation) affect the quality of

¹¹ The planned contrasts are tested at a corrected error rate of 0.025.

staff auditors' judgments. We defined judgment quality in terms of the absolute difference between the risk assessments of the staff auditors and the average risk assessment of an expert panel (comprising audit partners).

We find that audit staff rotation leads to less effective judgments by staff auditors. The result suggests that prior audit involvement allows auditors to develop a better understanding of the client's business. This engagement specific knowledge enables the auditors to better identify and assess changes in the client's business risks in subsequent years. On the other hand, we find that audit partner rotation has a positive impact on staff auditors' judgment quality. Staff auditors' perception of greater accountability demand from a new engagement partner motivates them to be more effortful and vigilant in understanding and assessing their audit client's business risks, and thereby, resulting in better audit judgments.

We also observe that staff auditors' judgment quality is the highest when there is a change in engagement partner and when the staff auditors are involved in the prior year's audit. It appears that greater accountability to a new engagement partner, coupled with the staff auditors' greater understanding of the client's business gained from their prior audit involvement help them to make better audit risk assessments. This suggests that besides introducing a fresh perspective to an audit, a new engagement partner can cause the existing audit team to exert greater audit effort and vigilance. Our findings provide some support for the Sarbanes-Oxley Act in requiring mandatory audit partner rotation.

Many opponents have argued against audit firm rotation because of the (potential) high costs involved in such a rotation (Dunham 2002) and questioned whether audit

partner rotation is an equally effective but less costly alternative to audit firm rotation. Hatfield, Jackson and Vandervelde (2006) provide some evidence that audit partner rotation might be just as effective as audit firm rotation *when the audit partner is the only new member of an audit team*. On the other hand, our findings suggest that audit firm rotation leads to poorer audit judgments when compared to audit partner rotation *when both staff auditors and audit partner are new to an audit engagement*. Furthermore, the positive impact of audit partner rotation on audit judgment quality is stronger when a new engagement partner is assigned to work with an audit team that is involved (rather than not involved) in the prior year's audit.

Limitations

One limitation of our study is the difference in administration of the second session of our experiment. Due to a tight training schedule, one of the participating firms could not accommodate our request to administer the second session of our experiment during its training session. This weakens the control that we have over the completion of the second session for some of our participants. However, comparison of the participants' responses to the second session reveals no significant difference between the participants who completed the second session on their own and those who completed the second session during a training session. Therefore, this implies that the different form of administration does not have any significant impact on our study results.

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Figure 1

Experimental Design

Audit staff rotation	Audit partner rotation		Audit firm rotation
	Same partner in 2 nd year's audit	New partner in 2 nd year's audit	New audit firm in 2 nd year's audit
Involved in 1st year's audit	A1	B1	-
Not involved in 1st year's audit	A2	B2	C2 (access to 1st year's working papers)
			C3 (no access to 1st year's working papers)

Figure 2
Graphical Depiction of the Effects of Staff Rotation and Partner Rotation on Audit Effectiveness

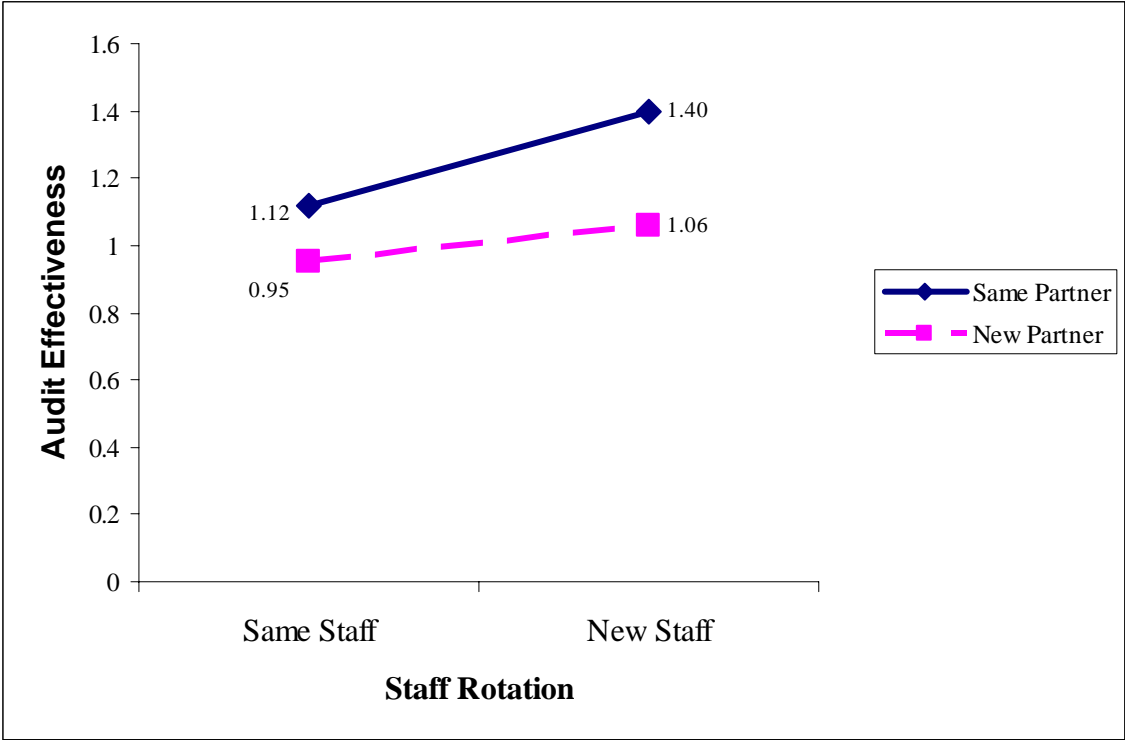


Table 1
Descriptive Statistics of All Six Experimental Conditions

**Dependent Variable: Absolute Difference between Participants' Risk Assessments
and Average of Expert Panels' Assessment**

Conditions [#]	A1 (n= 30)	A2 (n= 26)	B1 (n= 28)	B2 (n= 27)	C2 (n= 27)	C3 (n= 26)	Total (n= 164)
Mean	1.12	1.40	0.95	1.06	1.55	1.69	1.29
Std deviation	0.73	0.82	0.69	0.77	1.17	1.30	0.96
	A1 & A2 (Same partner) (n = 56)		B1 & B2 (New partner) (n = 55)		C2 & C3 (New audit firm) (n= 53)		
Mean	1.25		1.01		1.62		
Std deviation	0.79		0.72		1.23		
	A1 & B1 (Same staff) (n = 58)		A2 & B2 (New staff) (n = 53)				
Mean	1.03		1.23				
Std deviation	0.71		0.80				

[#]The six experimental conditions are:

- A1: Prior involvement, same audit partner (i.e., same firm)
- A2: No prior involvement, same audit partner (i.e., same firm)
- B1: Prior involvement, different audit partner (i.e., same firm)
- B2: No prior involvement, different audit partner (i.e., same firm)
- C2: No prior involvement, different audit partner, access to working paper (i.e. different firm)
- C3: No prior involvement, different audit partner, no access to working paper (i.e. different firm)

Table 2
Test of the Effects of Staff and Partner Rotation on Audit Effectiveness

Analysis of Covariance (n= 110)[#]

**Dependent Variable: Absolute Difference between Participants' Risk Assessments
and Average of Expert Panels' Assessment**

Source of variation	Sum of Squares	df	Mean Square	F	p-value (two-tailed)
Partner Rotation	2.089	1	2.089	4.014	0.05
Staff Rotation	2.169	1	2.169	4.169	0.04
Staff x Partner Rotation	1.037	1	1.037	1.993	0.16
Covariates:					
Consistent with Self	2.147	1	2.147	4.126	0.05
Consistent with Team	0.125	1	0.125	0.241	0.63
Partner Preference	0.349	1	0.349	0.672	0.41
Prior Year Work	3.503	1	3.503	6.733	0.11
Prior Year Conclusion	0.058	1	0.058	0.111	0.74
Model	10.835	8	1.354	2.603	0.01
Error	52.548	101	0.520		

[#]For this analysis, we only include participants who are in the A1, A2, B1, B2 experimental conditions (see below) and did not include those in C1 and C2 conditions. This is because our design is not a full-factorial design. Additionally, one participant did not provide an answer to this question.

- A1: Prior involvement, same audit partner (i.e., same firm)
- A2: No prior involvement, same audit partner (i.e., same firm)
- B1: Prior involvement, different audit partner (i.e., same firm)
- B2: No prior involvement, different audit partner (i.e., same firm)

Table 3
Test of the Effects of Work Paper Access on Effectiveness

Analysis of Covariance (n= 52)[#]

**Dependent Variable: Absolute Difference between Participants' Risk Assessments
and Average of Expert Panels' Assessment**

Source of variation	Sum of Squares	df	Mean Square	F	p-value (two-tailed)
Work paper Access	2.073	1	2.073	1.264	0.27
Covariates:					
Consistent with Self	0.392	1	0.392	0.239	0.63
Consistent with Team	0.341	1	0.341	0.208	0.65
Partner Preference	0.775	1	0.775	0.473	0.50
Prior Year Work	0.497	1	0.497	0.303	0.59
Prior Year Conclusion	0.733	1	0.733	0.447	0.51
First Year	3.179	1	3.179	1.939	0.17
Recurring	0.018	1	0.018	0.011	0.92
No Power	0.902	1	0.902	0.550	0.46
Model	9.19	9	1.021	0.623	0.77
Error	68.847	42	1.639		

[#]For this analysis, we only include participants who are in the C1 and C2 experimental conditions (see below) and did not include those in A1, A2, B1 and B2 conditions. This is because our design is not a full-factorial design. Additionally, one participant did not provide an answer to this question.

- C2: No prior involvement, different audit partner, access to working paper (i.e. different firm)
- C3: No prior involvement, different audit partner, no access to working paper (i.e. different firm)