

Auditors' National Office Consultations

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Abstract

We study national office consultations (NOCs) using a mixed-methods approach. Our review of large audit firms' NOC methodologies covers detailed internal guidelines, including a list of required consultation topics, and finds that NOCs can be classified as mandatory, voluntary, formal, or informal. Our structured interviews reveal that audit engagement leaders perceive NOCs as part of quality control, a source of domain-specific expertise, and a means of securing their firm's backing. Most public company engagements will have at least one NOC, but an NOC is not always required. However, the NOC process is increasingly perceived as formulaic due to regulatory oversight and sometimes as a frustrating compliance exercise that limits partners' and engagement teams' professional judgment. Analyzing PCAOB inspection data, we find that 73 percent of inspected engagements have formal NOCs and that engagement characteristics can predict consultations and variation in national office hours. Additional analyses reveal that engagements with more extensive NOCs are less likely to receive a Part I inspection finding. Overall, audit firms rely extensively on NOCs, but this practice faces limitations as a monitoring mechanism.

Keywords: national office consultations, auditor expertise, audit specialists, audit quality, PCAOB, quality control standards

JEL Classification: M4

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I. INTRODUCTION

Each of the large international public accounting firms has an internal unit commonly referred to as a “national office,” “professional practice,” or “national practice” (hereafter, national office) that is in charge of technical accounting, auditing, independence, and risk management matters.¹ The national office serves as a consultation resource for audit teams on complex accounting and auditing issues (e.g., Deloitte 2017; EY 2017). In this study, we conducted a mixed-methods examination of the national office consultation (NOC) process using large audit firms’ internal methodologies, structured interviews with senior managers, directors, and partners with NOC experience, and PCAOB inspection data.² Our approach recognizes the importance of combining evidence from the field, document analysis, and archival data analyses to understand complex issues (e.g., Donelson, Ege, Imdieke, and Maksymov 2020; Downar, Ernstberger, and Koch 2021; Lisic, Pittman, Seidel, and Zimmerman 2022).³ We address three broad research questions: (1) What are the salient aspects of large audit firms’ NOC methodologies? (2) What do audit teams perceive as the benefits, challenges, and primary determinants of engaging in formal and informal NOCs? (3) For complex engagements inspected by the PCAOB, how often do NOCs occur, what are common topics of NOCs, and what engagement characteristics can predict formal NOCs? In addition, we provide initial evidence on the association between formal NOCs and audit quality.

¹ We use the term national office to refer to a collective of technical accounting, auditing, independence, and risk management (client acceptance and continuance, personnel assignment to engagements, and audit profitability) experts (typically partners, directors, and senior managers) within the firm (as opposed to the firm’s operational headquarters). These individuals have been identified as resources to assist engagement teams, via consultation, on significant or complex matters connected with the financial statement audit. The audit firm’s national office personnel may or may not be located at a single central site. The national office may also be referred to as technical department, the accounting consultation unit, professional practice department, or professional standards group, among other names (Salterio and Denham 1997).

² We obtained our institutions’ IRB approvals, for the authors conducting interviews, prior to commencing our interviews. The study was marked exempt by our IRB. The interview process was independent from the PCAOB’s approval for review of the NOCs methodology and analysis of the inspections data.

³ Other papers with PCAOB data also use a mixed-method research design (interviews and data analysis), for example, Aobdia (2018).

NOCs are intended to enhance financial reporting and audit quality (Aghazadeh, Dodgson, Kang, and Peytcheva 2021). They prioritize guiding teams on technical accounting or auditing matters rather than performing audits.⁴ Large audit firms invest in their national offices so that they can support the local offices through knowledge-sharing practices (Reichelt and Wang 2010). Prior research viewed audit firms as a collection of independent local offices with varied incentives and access to resources (e.g., Francis and Yu 2009; Reynolds and Francis 2000). Although this stream of research provides valuable insights, it overlooks the extent to which audit teams in individual offices can seek the help of centralized national office resources.⁵ Beck, Gunn, and Hallman (2019) argue that it is difficult to maintain homogenous audit quality in a decentralized structure. They document not only that large offices perform higher quality audits than small offices do but also that audit quality is higher when a small office is in closer geographic proximity to a large office of the same firm. Moreover, differences between offices are mitigated by centralized monitoring by regional and national managing partners as well as the national office, which includes local, regional, and national experts.⁶

Despite the potential benefits of NOCs, there is limited research on engagement teams' interactions with the national office in the contemporaneous U.S. environment, except for the interview-based studies by Aghazadeh, Dodgson, Kang, and Peytcheva (2021, 2023). Although informative, these studies do not provide insight into NOC methodologies or compare methodologies with practice. Furthermore, we lack a solid understanding of the perceived cost-benefit of an NOC and archival evidence on NOCs and their impact on audit quality. To address these gaps in the

⁴ While conceptually similar, NOCs may differ from the use of non-core audit team specialists. While specialists typically perform procedures or provide evidence that audit teams use in forming their opinions, NOCs typically focus on guiding the audit engagement leadership team without performing audit tests or providing audit evidence.

⁵ Anecdotally, although the COVID-19 pandemic and remote work may have decreased the importance of local offices, the local office structure still remains salient in most large audit firms.

⁶ Although outside the scope of providing consultations, national offices also develop training programs and customizable audit processes and procedures (audit methodology) to support high-quality audits and implement new auditing standards (EY 2019; PwC 2019).

literature and to answer our research questions, we first reviewed the six largest public accounting firms' proprietary NOC policies, which we refer to as NOC methodologies. We obtained these methodologies through the PCAOB's research fellowship program. Next, we conducted 15 semi-structured interviews with audit engagement leaders from the largest firms (12 audit partners and three audit directors/senior managers). Our NOC methodology review and interviews were guided by behavioral research on audit teams' use of specialists and other experts (e.g., Griffith, Hammersley, and Kadous 2015; Griffith, Hammersley, Kadous, and Young 2015). Finally, we analyzed proprietary data on NOCs obtained from the PCAOB for inspection years 2006 to 2018 in combination with Audit Analytics and Compustat data. Our archival analysis is informed by our NOC methodology reviews, practitioner interviews, and prior work on auditors' use of specialists (e.g., Cannon and Bedard 2017; Zimmerman Barr-Pulliam, Lee, and Minutti-Meza 2023).

Our review of NOC methodologies highlights the salient aspects of the NOC process and commonalities across large audit firms. It also explores how prescriptive the guidance is and whether audit teams have limited or substantial room for judgment in seeking NOCs. Although this type of review is somewhat uncommon in audit research, we believe it provides necessary background information and updates the findings in Salterio and Denham (1997). We observe that firms have detailed NOC guidelines, which include a firm-specific list of accounting and auditing topics that require formal NOCs.⁷ However, NOC methodologies also allow auditors to engage in formal or informal NOCs on any topic voluntarily. Formal consultations must be documented as part of the audit's evidence, but audit teams are prohibited from referencing informal consultations to support the audit opinion. The NOC process is highly standardized and prescriptive, and NOCs may unify

⁷ While each firm's NOC methodology has a set of required consultation topics, the lists are not identical or fully overlap. For instance, Firm 1 might require teams to consult on Topic A, but Firm 2 might not, while Firm 2 might require teams to consult on Topic B, while Firm 1 does not. Providing an exhaustive list of required NOC topics is beyond the scope of this study. However, our analysis of inspected engagements provides insights into the typical NOC accounting and auditing topics.

judgment for many complex accounting and auditing issues.

Our interviews with audit engagement leaders document how NOCs are conducted in practice, and they extend prior behavioral research on the determinants of NOCs. These interviews are important because they provide an understanding of what audit engagement leaders perceive as the benefits and challenges of NOCs. On the one hand, engagement leaders view NOCs as an element of quality control, a mechanism to share expertise, a source of training, and a way to secure the firm's backing on complex issues. On the other hand, they view NOCs as increasingly formulaic due to regulatory oversight, and they sometimes find NOCs lacking rationale or hijacking judgment from the audit team. They sometimes also perceive the NOC process to be frustrating, time-consuming, costly for the engagement's budget, and intimidating. These issues are common in other situations in which the audit team uses specialists and other experts (Griffith et al. 2015a, 2015b; Zimmerman et al. 2023). Interviewees also note that the list of required consultation topics keeps growing, which may lead to inefficiencies in the NOC process and frustration for audit teams. Although interviewees could not furnish direct observable indicators that an NOC occurred in an engagement, they did share some indirect indicators, including client complexity, use of fair value estimates, and audit risk. Finally, participants noted that in contrast to assumptions made in some concurrent research (e.g., Amin, Pittman, Yang, and Zhu 2021; Chen and Choudhary 2020), most audit firms no longer house their national office experts in a central location. Instead, they have networks of experts at the office and regional levels, supporting the suggestion of Francis and Yu (2009) that in-house knowledge sharing might be at least partly responsible for large audit offices' association with high audit quality.

Our analysis of engagement data starts by providing novel descriptive data on NOCs for 3,098 inspected engagements in the period from 2006 to 2018. We find that 73 percent of the engagements in our sample had formal NOCs, and national office personnel charged, on average, 32 hours to these engagements. Next, for a subset of engagements with granular data on consultations, we manually

code and separate consultation topics into three categories: 38 percent of these engagements consulted only on audit-related topics (including independence and risk management issues), 26 percent consulted only on technical accounting-issues, and 36 percent consulted on both audit and accounting related issues. We continue by examining the predictability of formal NOCs. We compile a list of 37 variables that may predict that a consultation occurred and use machine learning to identify the subset with the strongest predictive ability. Despite our interviewees' reservations, NOCs are somewhat predictable with the use of a subset of 21 variables that comprise a model with an area under receiver operating curve (ROC) of 0.689 in the training sample. As expected, the primary predictors of NOCs are proxies for auditors' use of specialists, auditor size, client complexity, client business risk, and client use of fair value estimates.

While our primary focus is determining the factors influencing the occurrence of NOCs, we also examine the potential determinants of the number of hours spent by national office personnel (NOC hours). We find that 22 variables have predictive power, 18 of which are also present in the model of occurrence of NOCs. Hence, the factors influencing NOC occurrences and hours have substantial overlap; however, they are not identical, which indicates that certain aspects are unique to these decisions. Finally, we also conduct supplementary exploratory analyses of audit quality outcomes (i.e., restatements and PCAOB Part 1 findings). After controlling for the determinants of NOCs, we only find only some evidence of an association between Part 1 findings and NOC hours. These last findings suggest a tenuous relation between NOCs and broad audit-quality proxies. Nevertheless, we caution that addressing this issue is an area for future research.

The collective evidence in this study indicates that audit engagements at large firms rely extensively on NOCs, but this practice has limitations as a monitoring mechanism. The role of NOCs in the audit process seems to be a complement to the effort and expertise of the audit team and not a substantial incremental factor that determines audit outcomes. This study is among the first to provide

a multi-method examination of NOCs. Its findings contribute to research and practice by shedding light on what the NOC process entails, whether the perceived benefits and challenges of NOCs might bear on practice and regulation, and what factors drive auditors to seek the national office's advice. Specifically, this study joins a small group of studies on NOCs (Gibbins and Emby 1987; Danos, Eichenseher, and Holt 1989; Salterio and Denham 1997; Ng and Shankar 2010; Aghazadeh et al. 2021, 2023; Kohler, Pochet, and Gendron 2021), and complements a larger literature on audit teams' use of in-house experts and specialists (e.g., Griffith et al. 2015a, 2015b; Cannon and Bedard 2017; Hux 2017; Zimmerman et al. 2023). Lastly, this study relates to the PCAOB's regulatory agenda and projects regarding firms' quality control systems (PCAOB 2019; QC Section 20; Aobdia 2020). For instance, the 2015 PCAOB Concept Release on Audit Quality Indicators included an indicator related to NOC.

II. BACKGROUND AND RESEARCH QUESTIONS

Literature Review

There is a dearth of evidence about auditors' use of NOCs. Overall, despite some progress in this area, fundamental gaps are present in the understanding of (1) the NOC process in the contemporaneous U.S. environment, including the perceived benefits and challenges, and (2) the drivers of NOCs. Existing research suggests that national offices provide expert advice to audit engagement teams (Gibbins and Emby 1987; Danos et al. 1989; Salterio and Denham 1997; Bedard, Johnson, and Smith 2010; Ng and Shankar 2010; Aghazadeh et al. 2021, 2023; Kohler et al. 2021). National offices also help firms coordinate scarce resources and develop centralized knowledge that alleviates gaps in expertise (EY 2019; PwC 2019).

Salterio and Denham (1997) examine the consultation units (i.e., national offices) of five sizeable Canadian accounting firms during the mid-1990s. They find that consultation units differ in their ability to serve as organizational memory sources for their firms. In an experimental setting, Ng

and Shankar (2010) find that audit firms' technical departments (i.e., their national offices) enhance the quality of auditors' decisions. More recently, Aghazadeh et al. (2023) interviewed 22 highly experienced Big 4 audit partners in the U.S. to investigate "how key actors engage in institutional work that creates, maintains, and disrupts the influence of professionalism and commercialism in national office consultation practices." Based on these interviews, the authors find that audit firms' national offices took on an authoritative identity immediately following the passage of the Sarbanes-Oxley Act of 2002 (SOX). However, in recent years, national offices have taken on more of a commercial identity. Finally, Kohler et al. (2021) find that the national office aims to act as an expert mediator between lead engagement partners and the firm's administration and to serve as an audit control device that constrains partners' proclivity for commercialism-based decisions.

A related and growing body of research examines auditors' use of non-accounting experts and specialists. A specialist is "a person (or firm) possessing special skill or knowledge in a particular field other than accounting or auditing" (AS 1210.01). Auditors may use specialists for various audit procedures, such as evaluating the reasonableness of fair value measurements for assets and liabilities; determining the quantity on hand or condition of an asset; determining other complex estimates; and interpreting technical requirements, regulations, or agreements (e.g., Griffith et al. 2015a, 2015b; Cannon and Bedard 2017; Hux 2017; Zimmerman et al. 2023). A tangential relationship exists between NOCs and the use of non-core audit team specialists, as both represent audit teams' interactions with non-core team members. However, while the specialist focuses primarily on the execution of audit tests or evidence gathering, such as complex valuations (e.g., derivatives and insurance claims) or testing the client's information technology system (including controls), NOCs focus on providing audit teams with guidance on technical accounting and auditing issues.

Research Questions

The PCAOB requires registered firms to establish policies and procedures for audit partners

to seek input and assistance outside of the engagement team when encountering complex, unusual, or difficult circumstances during an engagement. More specifically, registered firms must establish policies and procedures “to provide reasonable assurance that personnel refer to authoritative literature or other sources and consult, on a timely basis, with individuals within or outside the firm, when appropriate (for example, when dealing with complex, unusual or unfamiliar issues).” (PCAOB QC 20.19). However, while the PCAOB’s quality control standards require audit firms to establish these policies and procedures, they are not prescriptive on how audit firms should deploy these quality control resources. In recent years, large audit firms have begun to voluntarily issue transparency reports that provide information on their structure, operating units, and strategic vision. However, they do not disclose information about the structure of their national offices and their national office methodologies. Despite the recent increase in disclosures and information sharing, we know little about how large firms are addressing the requirements around the national office function. The importance of the national office function and NOC processes, alongside a lack of transparency on this topic, prompts our first research question, which we plan to answer initially with a review of firms’ internal methodology documents:

RQ1: What are the salient aspects of large audit firms’ NOC methodologies?

Audit firms’ NOC methodologies and academic research are somewhat vague about the practical benefits and unintended challenges associated with NOCs in the contemporaneous U.S. environment. The PCAOB QC standard states that “Because of the public interest in the services provided by and the reliance placed on the objectivity and integrity of CPAs, ... a CPA firm shall have a system of quality control for its accounting and auditing practice.” While not required by the standard, the national office is generally considered to be part of a CPA firm’s Q.C. system. Prior research provides limited evidence of the perceived benefits of the NOC process, particularly from the perspective of the audit engagement team. This research presumes that NOCs will benefit audit

teams, but it is unclear whether audit engagement leaders see it that way. Moreover, as with any audit standard, there is the potential for unintended consequences. For instance, firms might require an engagement team to initiate an NOC when encountering a specific circumstance or topic, even if the audit team does not think it is necessary. Prior research is limited in outlining the challenges that external standards and internal guidelines might present to audit teams. We seek to address these limitations by asking a second broad research question in semi-structured interviews:

RQ2: What do audit teams perceive as the benefits, challenges, and primary determinants of engaging in NOCs?

As noted above, the PCAOB's Q.C. standard requires registered firms to establish policies and procedures that provide reasonable assurance that auditors refer to authoritative literature and consult with experts when appropriate.⁸ Interestingly, the standard defines "appropriate" as "when dealing with complex, unusual, or unfamiliar issues." Thus, firms must identify the circumstances and situations in which they want audit teams to engage in NOCs. Presumably, when not governed by a firm's methodology, the decision to consult is the responsibility of the engagement team, with oversight from partners in charge. Given the differences in partner experiences and knowledge, audit teams use their judgment to decide when a matter is complex, unusual, or unfamiliar enough to require a formal NOC. This discussion leads to our third set of research questions, which we answer by using proprietary PCAOB data from inspected engagements.

RQ3a: How often do formal NOCs occur?

RQ3b: What are the common topics of formal NOCs?

RQ3c: What engagement characteristics can predict formal NOCs?

III. REVIEW OF NOC METHODOLOGIES

Our review of NOC methodologies seeks to document a general understanding of audit firms'

⁸ The PCAOB is currently revising its QC standard. The proposed QC standard largely retains this requirement so this aspect of the current QC standard will continue to be relevant when the new QC standard is adopted and takes effect.

guidance on this issue and to extend the observations by Salterio and Denham (1997) of Canadian audit firms and the insights from interviews with U.S. auditors by Agazadeh et al. (2021, 2023). The firms in our sample provide their NOC policies to the PCAOB as part of the annual inspection process.⁹ We focus on the circumstances and procedures under which audit teams are expected to seek guidance from the national office during their engagements.¹⁰ Our review of NOC methodologies and interviews with audit engagement leaders uses a theoretical lens constructed from prior research on audit teams' use of specialists and other experts (e.g., Griffith et al. 2015a, 2015b) and on the national office (e.g., Agazadeh et al. 2021, 2023).

The Role of the Audit Engagement Partner

The PCAOB standards establish that the engagement partner is responsible for the audit engagement and must supervise the audit team's work (PCAOB AS 1201.03 and 1201.05). In the context of NOCs, audit firms require the lead engagement partner to identify difficult, complex, or contentious matters that arise during the engagement and to oversee the consultation process. The lead engagement partner must be satisfied that the team presents all relevant facts to the national office and that the audit team and national office agree on the conclusions resulting from the consultation. Finally, the lead engagement partner must also ensure that the conclusions from an NOC are appropriately understood by the audit team, implemented into the audit, and documented in the audit working papers.

Mandatory versus Voluntary Consultations

The PCAOB standards do not prescribe consultations with the national office on specific topics, situations, or scenarios. Rather, AS 1015.01 requires auditors to exercise due professional care in the planning and performance of the audit. Large audit firms have identified certain topics and

⁹ We do not provide details of the policy of any one firm; instead, we amalgamate the policies and present a stylized overview of a generalized NOC policy.

¹⁰ The authors were provided access to these policies as part of the Fellowship Program of the PCAOB's Office of Economic and Risk Analysis (OERA).

situations that require NOCs and refer to these cases as “mandatory” or “required” consultations.¹¹ However, audit teams can consult the national office for other complex topics as needed; such cases are referred to as “voluntary” consultations. In collaboration with the quality review partner (EQR), the lead engagement partner determines if a voluntary consultation is warranted. When assessing the need for a voluntary consultation, partners consider the collective experience and expertise of the audit team and its ability to draw an appropriate conclusion on the matter.

Five key characteristics audit partners consider when evaluating the need to undertake a voluntary consultation: (1) complexity, when an issue is complicated, intricate, hard to understand, or poses “substance over form” questions; (2) contentious nature, when an issue is controversial with the client, among the engagement team members, or in the local environment generally; (3) subjectivity, when an issue requires a relatively high degree of subjectivity or judgment; (4) materiality, when an issue is quantitatively or qualitatively material; and, (5) unfamiliarity when the engagement team has limited expertise and experience on an issue, especially one for which there is limited professional literature or guidance. Next, audit partners consider the individual and cumulative effects of these characteristics when deciding if a voluntary consultation is necessary. For example, an audit partner might decide to consult on a non-complex issue if there is disagreement with the client about it and the engagement team is unfamiliar with it.

Formal versus Informal Consultations

Although PCAOB standards do not prescribe the contents of CPA firms’ required Q.C. policies and procedures, large audit firms distinguish between formal and informal consultations. There are three primary differences between these two categories. First, the objective of a formal consultation is for the audit team and the national office to reach a consensus on the firm’s stated position regarding the topic. In contrast, the objective of an informal consultation is for the

¹¹ While an exhaustive list of mandatory consultation topics is beyond the scope of this paper, see Figure 1 for examples of topics on which audit teams typically are required to consult with the national office when encountered.

engagement team to gain general insights and guidance on a topic, which the engagement team will use to conclude on the matter. Second, the engagement team must provide the national office with a written memorandum of facts or insights about the matter when engaging in a formal consultation. In contrast, the engagement team is not required to provide such documentation when consulting informally. Third, audit teams must document formal consultations in their audit evidence, obtain sign-off within the working papers from the national office, and reference the consultation as support for their audit opinion or report. At the same time, audit teams are prohibited from referencing informal consultations in their working papers or as support for the report or opinion. By definition, required consultations are formal. Therefore, the objective of any required consultation must be to include the national office in the decision-making process.

Documentation of NOCs

The PCAOB standard AS 1215.12 requires audit teams to document significant findings or issues, how the team addressed each of them, and the basis for the conclusions on them. Large audit firms define any issue requiring formal NOCs as significant, and thus, the working papers of the audit engagement must include a memorandum of facts as formal documentation. In general, the audit team's consultation memorandum documents the following: (1) the matter or issue on which they sought consultation; (2) the accounting, auditing, or professional literature referenced by the national office in concluding on the matter or issue (3) the client-specific facts and circumstances that the engagement team and national office considered during the consultation process; (4) the conclusion(s) reached and the rationale and other supporting evidence for the conclusion(s); (5) alternative views or positions on the matter discussed with the national office, including disagreements among engagement team members or between the engagement team and national office about the agreed-upon conclusions reached; and (6) the consultation documentation should contain the name(s) and title(s) of the national office individual(s) involved in the consultation. Conversely, consultation

memorandums do not include unnecessary data or facts, nor are they to be prepared for matters on which the audit team undertook an informal consultation.

IV. INTERVIEWS WITH ENGAGEMENT TEAM LEADERS

Interview Methodology

Our interviews with audit partners and senior managers seek to enrich our understanding of the NOC process, the perceptions of NOCs in practice, and the drivers of NOCs. We conducted 15 semi-structured interviews between May and June 2022 with audit senior managers, directors, and partners. We identified interview participants through university and personal connections. In Table 1, we report information about the participants. Eight (seven) participants are from Big 4 (Next 4) public accounting firms, representing seven of the top eight U.S. public accounting firms. All participants, except one, are male. Notably, five participants had previously worked in a national office role, rotating into and out of the national office from the audit practice. Three participants currently serve in national office roles while working on audit engagements.¹² The participants work in a mix of offices in terms of size and location. Most participants are currently lead audit engagement partners.

Approximately 80 percent of the interviews were jointly conducted by two coauthors, with the remaining 20 percent conducted by a single coauthor. The interviews were led by one coauthor, who attended all the interviews. We emailed prospective interviewees our interview questions (see Appendix A) with our interview request so they could think about their responses in advance and thus shorten our interview times. The interviews ranged from 31 to 60 minutes, averaging 46 minutes. All interviews were held virtually using video conferencing technology and recorded and transcribed for accuracy. We determined that we had reached saturation at the tenth interview because no new themes emerged in subsequent interviews (Guest, Bunce, and Johnson, 2006).

¹² The interviewees currently splitting time between audit engagements and national office roles were asked to frame their responses from the assurance engagement perspective and not the national office role perspective.

We asked the participants open-ended questions about why audit teams engage in NOCs, what the NOC process entails, how the process has evolved throughout their careers, and what benefits and challenges they have experienced in NOCs. We also asked the participants to provide examples and probed further on specific questions to elicit deeper responses. After a few interviews, we developed an initial version of the coding scheme, which included categories for responses to each question. Based on an initial test coding of the interviews, we enhanced the coding scheme by combining or adding response categories. Two authors coded the responses independently and then reconciled all remaining differences.¹³ The initial inter-coder agreement for the coding of all interviews before the reconciliation was 83 percent, and Cohen's Simple Kappa was 0.65, implying an acceptable level of reliability (Landis and Koch 1977). Table 2 summarizes our first- and second-order themes and the frequency of each in our interview data (among participants). Due to space constraints, in the sections that follow, we focus on summarizing the themes discussed by our interviewees and use direct quotations only sparingly to illustrate key observations.

The Purpose and Process of NOCs

When we asked interviewees why auditors engage in NOCs, the following themes emerged: interviewees view (1) NOCs as required by the PCAOB standards and, therefore, by their firm's audit methodology; (2) NOCs serve as a quality control mechanism; and (3) NOCs result in audit team knowledge acquisition from accounting and auditing subject matter experts.

Next, we asked participants about their audit firm's NOC process. Every participant mentioned that the topics on which they consulted with the national office fall into auditing,

¹³ After conducting the first few interviews, we developed an initial first-order (broad) and second-order (more detailed) coding scheme by reading, reflecting on, and discussing the interview data. We then independently coded the interviews and refined the coding scheme during our reconciliation process. We independently coded and reconciled our codes after coding in sets of three interviewees to ensure that we were properly coding the data and reconciling differences before coding the rest of the interviews. Consistent with the approach taken by most qualitative accounting researchers, we reconciled code presence by interviewee, rather than by specific sentences or paragraphs of each interview transcript.

accounting, and other engagement management issues (e.g., independence, risk management, client acceptance). Consistent with the firms' NOCs methodologies, interviewees noted that their firms allow formal and informal consultations. They also indicated that they only document formal consultations via a memo in the audit file, which contains the national office partner's sign-off on the conclusion(s) of the consultation.¹⁴

Consistent with the NOC policies we reviewed, interviewees stated that their firms have a list of required consultation topics but also allow voluntary consultations. The list of required consultation topics is embedded in each firm's methodology and audit tools. In voluntary consultations, the lead engagement partner and quality review partner decide whether to consult based on their experience and expertise. Managers or directors, with partner oversight, typically lead the interaction with the national office and handle NOC documentation, but the process occasionally involves senior associates. Audit firms' internal inspections and concurring partner reviews ensure that engagement teams consult with the national office when required by the audit firm's audit methodology. Although it is not addressed in the NOC methodologies, the interviewees suggested that involving the client in the consultation can be helpful, as it makes the process more transparent and improves the auditor-client relationship. Finally, audit firms have internal oversight processes, including internal inspections, to ensure that engagements conduct required NOCs.

The firms employ various methods for assigning national office subject-matter experts in NOCs. Some firms have a list/directory of subject-matter experts, and audit teams identify and contact experts directly. Other firms use a centralized system (e.g., SharePoint or internally developed software) into which auditors enter details about the requested NOC. The automated system reviews the request and routes it to a member of the national office with relevant subject-matter expertise. Regarding the types of issues and their relation to required or voluntary NOCs, most required topics

¹⁴ The national office sign-off is typically done by the most senior member of the national office team. This is typically a partner but might be a director or senior manager.

are related to auditing issues, while most accounting issues are voluntary. Voluntary accounting-related NOCs are usually client-specific and transaction-driven. The required auditing and accounting topics are similar across the firms, and interviewees lamented that the list of required NOCs has increased significantly in recent years. Finally, national office professionals (e.g., senior managers, directors, and partners) now typically remain in their home audit office and do not necessarily move to a central office location.

While NOC expert assignments vary among firms, after a formal NOC begins, each of our interviewees' firms has an automated process within their audit software to track the NOC and ensure that it is documented in the working papers. Most public company audits will have at least one NOC, but an NOC is not always required. Many private companies will also have NOCs based on the client's circumstance, but similarly, having an NOC is not always required. Regarding how long NOCs typically take, interviewees reported anywhere from a day or two to a couple of weeks or even a month, depending on the matter's complexity. Hours devoted to NOCs, including both the audit team and national office personnel, range from 10 to over 40 hours for formal consultations. Based on our interview analysis, the NOC process appears more collaborative in non-Big 4 than in Big 4 firms. This finding does not mean that the process is combative in Big 4 firms; it simply means that a comparatively stronger sense of unity exists between the rank-and-file audit teams and national office experts of the smaller firms in our sample. Across all firms, our interviewees suggested that prior experience at the national office, typically via a one- to three-year rotation, earlier in an auditor's career in navigating the process more efficiently and effectively, which suggests an unintended benefit of national office rotation programs.

We also asked participants about changes in the NOC process during their careers. Interviewees' answers fall into the following themes: (1) the NOC process has become more formalized, disciplined, and structured over the past five to ten years, partly due to PCAOB inspection

feedback; (2) the firms have pushed to plan and conduct NOCs earlier in the audit, and they attempt to identify NOCs during engagement planning when possible; and (3) despite numerous additions to the list of required consultations, few, if any, required consultations have been removed from the required list, suggesting an ever-increasing role of the national office. Table 2 provides more details on the frequency of NOC themes in our interview data.

Perceived Benefits of Engaging in NOCs

Understanding how audit engagement leaders view NOCs, including both benefits and challenges, is important for identifying gaps between firm policies and practice. The following themes emerged from interviews with the participants when we asked about the benefits they have experienced from NOCs. The participants view NOCs as a way of getting their firm's support and backing on complex issues in case those issues result in a subsequent restatement or PCAOB inspection finding. For example, Interviewee 6 noted:

I don't want to be inspected and [have it] determined that I didn't do a consultation when I was required to, and I know my team doesn't want that, so there is a compliance aspect to it, which is what the firm wants; that's risk management.

The firm cannot hold the audit partner solely responsible if the national office agrees on how a topic should be addressed and the partner follows their recommendation. Relatedly, documentation of an NOC, particularly the sign-off by national office team members, helps the engagement team support their position during PCAOB and internal inspections. From a broader point of view, the interviewees see NOCs as beneficial because they “help get to the right answer” in complex or unique circumstances. For example, Interviewee 1 noted:

We've got people that do nothing but whatever you're dealing with, being a partner in the practice, there's so much to be aware of. You can't specialize in everything, and so you're a generalist, and you're specialist in some, but you want to make sure that in those areas that maybe you haven't spent a lot of time with over your career but your new client who's dealing with it, you want to go to the person that's dealt with [something] a thousand times and sees it every single day, and so it's getting another perspective, it's understanding the latest views on certain topics. It's things like cyber and ESG [environmental, social and governance] and all these emerging trends. We've got people that are sitting there that are in the national office, that know kind of what everyone's thinking or what you know where things are moving and so just getting the firm's view and a specialist view on things that

maybe you're not as good at you leverage a national office to help you with that.

From the firm's point of view, another benefit of NOCs, which aligns with why they exist, is that they provide the audit firm with a mechanism for quality control and risk management that helps the audit firm oversee audit teams and ensure that audit engagement teams across the firm apply U.S. GAAP and IFRS consistently, especially in grey areas. In addition, NOCs are beneficial because they result in knowledge transfer from the national office to audit teams and help engagement partners and audit teams communicate and articulate the firm's point of view to the audit committee and client executives. Finally, the national office helps audit teams with new or controversial accounting guidance (e.g., the Ukraine war or climate risk disclosures).

Perceived Challenges and Drawbacks of Engaging in NOCs

The following themes emerged from the participants when we asked about any challenges, obstacles, or risks they have experienced from NOCs. Despite an overall positive sentiment for NOCs, interviewees reported that NOCs could be challenging and frustrating experiences. NOCs take time to complete, and lead engagement partners must manage client expectations on timing, which can be difficult, particularly when NOCs occur near the client's filing date. Thus, lead engagement team partners may not want to voluntarily consult because of time pressure or concerns about straining the auditor-client relationship. For example, Interviewee 1 noted:

Where the challenge comes in is that it could slow down the path to completion, and our clients don't always love that, so you've got to manage the process right. Could it result in an error that wasn't previously identified? ... The firm is going to make sure it's dealt with the right way ... So, oftentimes there's tension on the timing of when consultations happen, but it's again for the right reasons, so you get to the right answer, but you've got to manage it the right way to get it up there early enough with enough information that you can conclude upon it, and not disrupt whatever timeline that the client is on so I mean clients don't love that right. Then sometimes the viewpoint of the client is if you've got to consult with anything, then why do I need you? What's the purpose of the engagement team if you're consulting with everything at the national office. So, just managing your client to help them understand there are things that I have to go to them for or these highly complex areas it benefits both of us to go up there for, so just helping clients understand that sometimes as a challenge.

Engagement economics can be another challenge for audit teams engaging in consultations. Although NOC hours may be few relative to the overall audit budget, national office team members

charge their time to the audit engagements' charge codes. If the engagement is over budget or the engagement partner is unlikely to pass consultation costs to the client, the NOC can hurt the engagement's profitability.¹⁵

As the quote from Interviewee 1 suggests, another challenge arises if the conclusions from the national office do not align with an answer preferred by the client. In such situations, the audit partner must walk a fine line between following the national office's suggested course of action and maintaining a working relationship with the client. Some participants also mentioned that because national office professionals typically do not serve clients, they may develop an "Ivory Tower mentality," which could result in audit teams having difficulty communicating with national office consultants and the client. If the audit team views consulting with the national office as a cryptic process to obtain answers from an "Ivory Tower," it could divide the audit team and the national office. Furthermore, some participants also mentioned that the national office might seem intimidating and "a black box" to clients.

Audit partners may also hesitate to initiate an NOC because, in some cases, doing so might be seen as a sign of weakness, an admission that the team lacks expertise, or an intimidating process. Specifically, audit partners may fear that the national office could lose confidence in the audit team if they cannot answer probing questions. These observations are consistent with the interviews conducted by Agazadeh et al. (2021). Lastly, some partners might be skeptical of the national office because they have experienced "scope creep," wherein the NOC goes astray if the audit partner does not have their arms around the issue when they request an NOC.

We also asked participants to discuss best practices for overcoming these challenges and making the most of their NOC experience. One participant with prior national office experience stressed that it is imperative that the audit partner owns all interactions with the national office and

¹⁵ Interviewees generally noted that auditing NOC topics typically have more of a negative effect of engagement economics than do accounting NOC topics.

controls the consultation process. At the same time, other partners see the NOC process as an opportunity for training and growth for their senior managers and managers. All interviewees agreed that the partner must adopt the national office's view as their view. Only by taking ownership and responsibility can the partner articulate the reasoning to the client while conveying to their leadership that they are being heard. As aforementioned, the themes we identified and the frequency with which the themes appear in our interview data are summarized in Table 2.

Potential Determinants of NOCs

Finally, we asked participants to list publicly observable factors that could be linked with the occurrence of NOCs. We also asked for examples of any of these factors within their clients' publicly available financial information. The participants revealed that they evaluate several factors when assessing if an NOC is necessary, and these factors are consistent with those that we identified in NOC methodologies. More complex and riskier engagements are more likely to have an NOC. Complex estimates and asset valuations are more likely to require an NOC. In addition, an engagement team might be more likely to initiate an NOC when the client's recent economic performance is poor, and a going concern explanatory paragraph might need to be added to the audit opinion. The interviewees also noted that engagement teams with more experience might be better able to handle challenging or unfamiliar situations than less experienced teams, thus reducing the likelihood of an NOC. Most participants struggled to name direct indicators in their client's SEC filings that could suggest an NOC occurred. Among the few interviewees who thought SEC filings might be informative about NOCs, the most common items mentioned were the implementation of critical audit matter requirements under AS 3101 (the standard requiring audit reports to include critical audit matters) and the presence of a material weakness within the internal controls over financial reporting.¹⁶

¹⁶ We have ended our sample as of 2018 to avoid including the first year of the AS 3101 requirement in our analysis.

V. ANALYSIS OF ENGAGEMENT DATA

Data

Section 104 of the Sarbanes-Oxley Act of 2002 requires the PCAOB to inspect registered firms that issue PCAOB audit reports and review a selection of their SEC issuer audits for compliance with PCAOB standards.¹⁷ The PCAOB collects information from audit firms in connection with their inspections. In this study, we use PCAOB proprietary data collected during the inspections of the largest U.S. audit firms conducted between 2006 and 2018 and data from public sources.¹⁸ PCAOB inspected engagement data includes information about (1) the identity of reviewed engagements for the audit firms, (2) the engagement team's composition, (3) the engagement team's experience with the engagement client and in the client's industry, (4) the job title of engagement team members, tax and I.T. audit experts, consultants, and specialists used in the audit, (5) the hours worked in all phases of the audit (i.e., quarterly review, planning, interim, final fieldwork, and after report issuance), (6) if a NOC occurred during the audit, and (7) whether the inspection resulted in Part I Findings.¹⁹ For a subset of our sample, we have qualitative information on the nature of the conducted NOCs. We manually coded NOC descriptions available in this subset of data into accounting or auditing topical categories. While unique, the raw data required significant hand collection and coding. Finally, we combine the proprietary data with Compustat and Audit Analytics data. Table 3 summarizes the sample construction process, resulting in a base sample of 3,098 observations from inspected engagements between 2006 and 2018.

¹⁷ The PCAOB also inspects audits of broker-dealers under a temporary inspection program but those inspections and audits are outside the scope of our study.

¹⁸ To obtain permission to access the PCAOB proprietary data, we submitted a research proposal to the PCAOB describing the nature of our study, the data necessary, related research, and proposed research questions. As a condition of data access, the PCAOB reviewed our research to ensure we did not disclose any non-public issuer-identifying information.

¹⁹ In the timeframe of our data, there were only Part 1 inspection findings shown in public PCAOB inspection reports. In 2020, the PCAOB changed the format of these reports to Part 1A and Part 1B. Our data on Part 1 findings correspond to Part 1A of the current report.

Empirical Model

Our primary variable of interest is *NOC_USE*, an indicator variable equal to one if the audit engagement team conducted at least one national office consultation and zero otherwise. Our secondary variable of interest is the number of hours that national office team personnel charged to an engagement (*NOC_HRS*) when *NOC_USE* = 1.²⁰ These hours do not include the time spent on the NOC by the core audit team because, typically, these hours are not separate from other audit tasks. We employ the adaptive logit lasso machine-learning technique for predicting *NOC_USE* (James, Witten, Hastie, and Tibshirani 2021). Lasso regression, initially known as “Least Absolute Shrinkage and Selection Operator,” is a regression type developed to perform variable selection and identify parsimonious regression models. Lasso selects covariates and fits linear, logistic, probit, and Poisson models. In lasso regression, the objective is to minimize the sum of squared residuals subject to a constraint that the sum of the absolute values of the coefficients is less than or equal to a constant. This constraint shrinks the coefficients of some variables towards zero, effectively removing them from the model. This variable selection helps to reduce overfitting and improves the model’s predictive accuracy. Lasso regression is instrumental when identifying and removing irrelevant or redundant variables from a model. Furthermore, an adaptive lasso is a sequence of cross-validation lassos, each at least as parsimonious as the previous.

We begin by identifying a broad set of engagement variables that could predict the occurrence of NOCs, informed by our review of the NOCs methodologies, interviews, and previous research on the use of specialists. Typical accounting topics that might lead to an NOC include business combinations, complex debt and equity transactions, fair value estimates, pensions, legal or other contingencies, and revenue recognition. Typical audit topics that might lead to an NOC include

²⁰ Most engagements with NOCs have more than one NOC. However, the PCAOB data we had access to did not clearly indicate the number of different topics consulted on for the entire sample period. We only have limited data on the nature and quantity of NOCs for a small subsample of more recent audit engagements.

materiality determination, internal control deficiencies, use of other auditors, prior fraud or illegal activities by the audit client, going concern close calls, and critical audit matters in audit reports.²¹ SEC comment letters are also relevant topics, and they may have accounting and auditing implications, depending on the nature of the comment. Other topics include independence and risk management activities such as client acceptance and continuance. Figure 1 provides a summary of these topics. While some topics may be evident from publicly available financial reports, others, particularly audit-related topics, are typically not. For the benefit of generalizability and future research, we attempt to model the determinants of NOC using mostly publicly available data.

We provide descriptive evidence about the association between national office use and the 37 proposed engagement characteristics that are likely to predict NOCs, including univariate differences between engagements with and without NOCs. Next, we estimate a logit adaptive lasso model that predicts *NOC_USE* and includes the 37 proposed characteristics as determinants. To perform our machine learning analyses, we divide our sample into a training and a validation (i.e., testing the proposed model) set as recommended by Krupa and Minutti-Meza (2022). We randomly assign 2,324 observations (i.e., 75%) as our training sample. We retain the remaining 744 (25%) observations as our hold-out (i.e., validation) sample. We estimate the adaptive lasso using the training sample to identify the variables for inclusion in a parsimonious model of NOC determinants. Finally, we use the validation sample to test the proposed model.

To facilitate the exposition of the 37 proposed engagement characteristics, we group them into factors associated with (1) client complexity and business risk (13 variables); (2) client profitability and growth (5 variables); (3) use of fair value estimates in the client's financial statements (6 variables); and, (4) other client and auditor characteristics (13 variables). For brevity, the full list of

²¹ Since we reviewed audit firm methodologies in 2022, we include critical audit matters in describing the topics here. However, critical audit matters were not in effect in our sample period because they were not required until 2019 in the U.S.

variables is presented by category in Appendix B.

Descriptive Statistics

We document the time trend and industry groupings for auditors' use of NOCs in Table 4. We find that 73 percent of all inspected engagements in our sample (N=3,098) involve NOCs. Next, the average involvement of NOCs ranges from 64 percent of the engagements in 2006 to 82 percent in 2014. Finally, there is a relatively high incidence of NOCs across all the Fama-French 12 industry classifications, with some expected variation. On average, the lowest incidence of NOCs is in the Shops, Wholesale, and Retail industries. In contrast, the industry with the highest incidence is Utilities, with 69 and 85 percent of the engagements in our sample, respectively. We show descriptive statistics for our dependent and independent variables in Table 5. The mean and median number of hours the national office team member(s) bill to the audit engagement is 32 and 12, respectively, with an interquartile range of 0 to 37 hours. However, some engagements have over 100 hours of national office staff time. The size of the average audit engagement in our sample is 5,218 hours (untabulated), suggesting that, on average, NOC hours account for 0.6 percent of all audit hours.

We show differences in engagement characteristics between the groups with and without NOCs in Table 6. For instance, on a univariate basis, audit engagements with NOC use have significantly higher audit hours and receive higher audit fees. Also, audits of riskier and more complex clients are more likely to have NOCs. For example, clients whose audits have NOCs are larger, with more segments, higher leverage, weaker internal controls, lower profitability, higher fair value Level 3 asset and liability balances, higher specialist use, and shorter audit tenure. These findings suggest differences between engagements that do and do not engage in a NOC. We also compare the mean values of the variable in our training set to those in our validation set and report the results in Table 7. We find, as expected, very few significant differences, suggesting that fundamental differences between the training and validation sets are unlikely to influence our inferences.

Finally, for a subsample of engagements with available data (N=533), we manually code and analyze the category of topics that are the subject of NOC, separating consultation topics into three categories: audit, accounting, or both. As shown in Figure 2, 38 percent of the engagements consulted only on audit-related topics, 26 percent consulted only on accounting topics, and 36 percent had consultations on both audit and accounting topics. These findings suggest that national offices provide insights and guidance on financial and audit topics, and NOCs may play a critical role in helping engagement teams perform their audit in compliance with PCAOB standards.

Results of Predictive Modeling

We show the *NOC_USE* adaptive lasso model's findings as the first set of results in Table 8. The first column ("Variable Name") reports the subset of determinants in the parsimonious machine-learning model. The second column ("Direction") indicates whether the variable increases (+) or decreases (-) the likelihood of NOC occurrence. The final column ("Rank Order") reports the order of the variables based on impact on the outcome, with 1 being the most impactful, then 2, and so on.

Of the 37 proposed predictor variables, 21 are included in the final model's output, with 16 increasing the likelihood of *NOC_USE* and five reducing it. Among the client complex and business risk variables group, six of the thirteen variables are included in the lasso output model as increasing the likelihood of an NOC. They are *ISSUANCE*, *RSANNOUNCEMENTS*, *SEGMENTS*, *COMMENTLETTER*, *CONVERTABLEDEBT*, and *WEAKNESS*. Among the five profitability and growth variables, *SGROW* and *B.M.* reduce NOC likelihood, while *LOSS* increases it. Of the six fair value estimates, *STOCKCOMP*, *FVLIABILITIES*, and *FV3ASSETS* are included, with each increasing NOC likelihood. Audit engagement characteristics have the largest number of significant variables, with nine out of thirteen included. Of those, the following six increase NOC likelihood: *SPEC_USE*, *PCTHRSINTERIM*, *SHORTTENURE*, *PCTHRSUS*, *SWITCH*, and *HQDISTANCE*, while *BIG4*, *H_TEAM_IND_EXP* and *H_TEAM_CL_EXP* decrease NOC likelihood. Finally, in most large audit

firms, national office personnel are no longer co-located in a single office; instead, they are distributed across firm offices. As a result, the distance between the audit office and the national headquarters office is unlikely to deter teams from consulting with the national office.

We compare the deviance, the deviance ratio, and the ROC area of the lasso outputs between the training and validation samples to test the out-of-sample validity of our model. In untabled results, we find the deviance, the deviance ratio, and the ROC area when using the training sample (2,324 observations) to be 1.062, 0.032, and 0.6895, respectively.²² These statistics show similar magnitudes using the validation sample (774 observations), where the deviance, the deviance ratio, and the ROC area are 1.119, 0.0619, and 0.6648, respectively. Overall, these results suggest that the machine-learning inferences derived from our training sample hold when we use our validation sample and are not an artifact of the observations that comprise our training dataset.

While our primary focus is determining the factors influencing the occurrence of NOCs, we also analyze the determinants of the number of hours spent by national office personnel. The second set of results in Table 8 report the adaptive linear lasso regression model results. We find that 22 of the 37 proposed determinant variables are included in the parsimonious machine-learning *NOC_HRS* model, 18 of which are also present in the parsimonious logit lasso model. *SIZE*, *FOREIGN*, *FVIASSETS*, and *CAPITALLEASEOBLIG* are included as positive determinants of *NOC_HOURS* but are not included in the *NOC_USE* model. Alternatively, *PCTHRSINTERIM*, *HQDISTANCE*, and *PCTHRSUS*, which are included in the *NOC_USE* model, are not included in the *NOC_HOURS* model. In untabled results, for the training sample, the mean squared error (MSE) is 2.491, and the adjusted R-squared is 0.151. Similarly, the validation sample shows an MSE of 2.639 and an adjusted

²² Deviance is a statistical measure used to evaluate the goodness of fit of a logistic regression model. In a logistic Lasso regression model, the deviance measures the difference between the log-likelihood of the model and the log-likelihood of a saturated model, which is a model that perfectly fits the data. A lower deviance indicates a better fit of the model to the data, which means the model is closer to the saturated model. The Deviance Ratio measures the proportion of the reduction in deviance due to the reduction in the number of predictor variables

R-squared of 0.1267. Consistent with the *NOC_USE* results, these statistics suggest that the output using the training sample does not appear to be the result of sample-specific characteristics, as the training and validation sample outcomes are comparable.

In summary, 18 out of the 37 variables identified as potential NOC determinants are included in both the parsimonious *NOC_USE* and *NOC_HOURS*, with their directions of influence being consistent across models. This result suggests a significant overlap between the factors influencing NOC occurrences and the extent of NOC involvement. However, the models are not identical, indicating that certain aspects are unique to the occurrence and extent of NOCs.

Exploratory Analyses of Audit Outcomes

Next, we perform a supplementary exploratory analysis of the relationship between audit outcomes and *NOC_USE* and *NOC_HOURS*. First, we examine the association between *NOC_USE* and the likelihood that audited financial statements are subsequently restated or the inspected audit engagement receives a Part 1 finding. We estimate logit regressions using the determinants of NOCs in the main analyses as control variables. We cluster standard errors by company and entropy balance the sample based on NOC use. As shown in Panel A of Table 9, we do not find a statistically significant relation between an audit engagement having a NOC and the likelihood of a material misstatement or a Part 1 finding. Next, we examine the association between these outcomes and *NOC_HOURS* using OLS regression and the same set of controls. Again, we cluster by company and entropy balance based on NOC use. As shown in Panel B of Table 9, we only find some evidence of a negative and statistically significant ($p < 0.10$) relation between *NOC_HOURS* and the likelihood of a Part 1 inspection finding. As Panel C reports, when we limit our sample to engagements with an NOC and examine an indicator variable for high NOC hours, we also only find evidence of a negative and statistically significant ($p < 0.10$) relation between *HIGHNOCHOURS* and the likelihood of a Part 1 inspection finding. These findings suggest that while increased hours by the national office do not

appear to influence financial reporting quality, they reduce the likelihood of process quality deficiencies identified during PCAOB inspections. This finding is consistent with some of the claims of our interviewees that NOCs help reduce the likelihood of PCAOB inspection deficiencies but do not necessarily reduce restatement risk. In additional untabulated analyses, we break out NOC use into accounting and auditing consultations in the audit quality regressions and find that audit-related NOCs drive our findings. However, the combined evidence suggests a tenuous relation between audit quality and the incidence of NOCs and total national office hours spent in NOCs.

Other Analyses

We acknowledge that it may not be possible to generalize the results of our analyses beyond the sample of inspected engagements we use for our analyses because the PCAOB chooses engagements to inspect on a combination of a risk-based and random approach. Some of the engagements are chosen using PCAOB risk-based criteria, and some are random selections. The ratio between the two changes over time. Nevertheless, following Aobdia (2019), to check the sensitivity of our results to the PCAOB's inspection selection process, we conducted tests suggested by Altonji, Elder, and Taber (2005) and Zimmerman et al. (2023). We found that our results are unlikely to be driven by selection issues. Specifically, using the same assumptions about bias and re-estimating our models, we find that the coefficients on the variables of interest yield the same inferences as those tabulated in Tables 8 and 9.

VI. CONCLUSION

This study is among the first to comprehensively analyze and document large audit firms' NOC policies, perceived benefits and challenges of NOCs, and descriptive information on the frequency, nature, determinants, and consequences of NOCs. Our review of NOC methodologies observes detailed guidelines, including a list of required consultation topics, and NOCs can be classified as mandatory, voluntary, formal, or informal. Our structured interviews reveal that audit

engagement leaders perceive NOCs as part of quality control, a source of domain-specific expertise, and securing their firm's backing. However, the NOC process is increasingly perceived as formulaic due to regulatory oversight and sometimes a frustrating compliance exercise that may take away individual judgment. Our analyses of PCAOB data find that 73 percent of inspected engagements have formal NOCs and that consultations and hours spent by national office personnel are predictable by engagement characteristics. As expected, the primary predictors are proxies for auditors' use of specialists, auditor size, client complexity and business risk, and client use of fair value estimates. Finally, supplementary analyses reveal a tenuous relation between NOCs and broad audit-quality proxies.

We recognize that our study faces inherent limitations. Our data analysis is limited to engagements inspected by the PCAOB, which might not represent the average engagement. Our sample only includes large audit firms, so our findings might not generalize to smaller firms with less robust national offices. Our data provides insights into NOC use, total hours, and a list of consultation topics, but it does not provide a breakdown into hours by topic nor which national office personnel were involved. We only have data on national office personnel's time spent on an engagement's NOCs, not the amount of time spent by audit team members. Our interviewees suggest that audit teams spend time gathering information from the client, doing their research, and documenting issues; therefore, the national office hours represent only a proxy for the effort involved in NOCs. Lastly, our data only provides limited insight into whether NOC use and NOC hours were formal or informal and required or voluntary. We can speak primarily about the factors associated with formal NOCs. Despite these limitations, this paper provides new insights into the NOC process.

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Appendix A: Outline of the Interview Protocol

1. What is the structure of your firm's NO? Is it centralized or decentralized?
2. In general, why do audit teams consult with the national office?
3. On an annual basis, approximately how often would you say you consult with the national office? How many or what percentage of your engagements?
4. Which client, audit team, and auditor office characteristics seem to be associated with national office consultations? For example, client size, complexity, etc.
5. What types of topics do audit teams consult about that are required vs. voluntary?
6. What is the process for consulting the national office at your firm? Who initiates the consultation (someone on the audit team, like an audit partner)? Is it formal or informal? Do you consult locally or with national office headquarters? How long do the consultations generally take? How many iterations with the consultant do you have? What is the audit client's involvement in the process?
7. How has the national office consultation process changed, if at all, at your firm in the last 5 to 10 years?
8. How do you track/report hours spent by the national office on consultations? Do the costs of national office consultations typically get passed on to the client?
9. What are the benefits of consulting with the national office for an immediate, specific engagement and, in the long run, for the audit team, audit office, audit firm, and future engagements? For example, knowledge sharing, learning and development, audit quality, etc.
10. What are the obstacles, challenges, or risks of consulting with the national office?
11. Have your national office consultations generally been positive or negative? Please explain.
12. Please describe the most recent couple of national office consultation experiences you had. Include why, when, what, how, who, how long, and whether it was a positive or challenging experience.
13. How does your firm staff its national office? (Permanent senior personnel in long-term roles, rotations, or both)
14. Looking at a publicly traded company's financial statements, what items or disclosures in the 10-K or 10-Q would you say could indicate that this company's audit had an NOC?
15. How has regulation affected the NO structure and NOC process?
16. At which staff level do auditors at your firm start participating in and leading NOCs?
17. If you have worked at different offices, was your experience with NOCs different across the different offices?
18. Are there any other important issues relating to consultations that you believe are important to our understanding but still need to be discussed?

Appendix B: Variable Definitions

<i>Variable Name</i>	<i>Definition</i>	<i>Source</i>
<i>Dependent Variables</i>		
<i>NOC_USE</i>	An indicator variable equal to 1 if the audit engagement team consulted with the National Office during the audit engagement and 0 otherwise.	PCAOB
<i>NOC_HRS</i>	The raw number of National Office consultation hours on the audit engagement.	PCAOB
<i>HIGHNOCHOURS</i>	1 if the number of National Office consultation hours on the audit engagement is above the median NOC hours and 0 otherwise.	PCAOB
<i>REAL_RATE</i>	The engagement-level mean realization rate.	PCAOB
<i>AUDIT_HRS</i>	Total hours charged to the audit engagement.	PCAOB
<i>MISSTATE</i>	1 if the client's issued financial statements contain a material misstatement that results in a subsequent restatement.	Public data
<i>PART1</i>	1 if the inspected audit engagement receives a Part 1 finding.	PCAOB
<i>Client Complexity and Business Risk</i>		
<i>SIZE</i>	Natural log of total assets.	Public data
<i>SEGMENTS</i>	Natural log of 1 + the number of geographic plus business segments from Compustat Historical Segments.	Public data
<i>FOREIGN</i>	The absolute value of pretax income from foreign operations (PIFO) divided by the absolute value of pretax income.	Public data
<i>LEVERAGE</i>	Total debt divided by debt plus stockholder's equity.	Public data
<i>WEAKNESS</i>	1 if the client reports a material weakness.	Public data
<i>LIT</i>	1 if the client operates in a highly litigious industry. (SIC code between 2833 and 2836, 8731 and 8734, 3570 and 3577, 7370 and 7374, 3600 and 3674, or 5200 and 5961).	Public data
<i>ISSUANCE</i>	Natural log of the debt issued during the fiscal year.	Public data
<i>CONVERTABLEDEBT</i>	Natural log of the client firm's convertible debt as of year-end.	Public data
<i>CAPITALLEASEOBLIG</i>	Natural log of the client firm's capital lease obligations at year-end.	Public data
<i>EQUITYTRANSACTIONS</i>	Natural log of the client firm's equity transactions during the fiscal year.	Public data
<i>GOODWILL</i>	Natural log of the client firm's goodwill balance as of year-end.	Public data
<i>RSANNOUNCEMENT</i>	1 if the client firm announces a restatement during the fiscal year.	Public data
<i>COMMENTLETTER</i>	1 if the client firm receives a comment letter from the SEC during the fiscal year.	Public data
<i>Client Profitability and Growth</i>		
<i>ROA</i>	Return on assets defined as net income before extraordinary items divided by lagged total assets.	Public data
<i>LOSS</i>	1 if income before extraordinary items is negative.	Public data
<i>B.M.</i>	Shareholder's equity (book value) deflated by fiscal year-end market capitalization.	Public data
<i>SGROW</i>	Year-on-year sales growth.	Public data
<i>MA_RESTR</i>	1 if the client had a merger or acquisition or had restructuring charges during the fiscal year.	Public data
<i>Client Fair Value Estimates</i>		
<i>STOCKCOMP</i>	Stock-based compensation expense scaled by total assets.	Public data
<i>PENSION</i>	Pension accumulated benefit obligation scaled by total assets.	Public data

<i>FV1ASSETS</i>	Natural log of the fair value of type 1 asset balance.	Public data
<i>FV2ASSETS</i>	Natural log of the fair value of type 2 asset balance.	Public data
<i>FV3ASSETS</i>	Natural log of the fair value of type 3 asset balance.	Public data
<i>FVLIABILITIES</i>	Natural log of the fair value of company's liability balance.	Public data
<i>Other Engagement Characteristics</i>		
<i>BIG4</i>	1 if a Big 4 auditor performs the audit.	Public data
<i>SPEC_USE</i>	1 if the audit team used a subject matter specialist during the engagement.	PCAOB
<i>SWITCH</i>	1 if the issuer's auditor has changed from the prior year.	Public data
<i>GOINGCONCERN</i>	1 if the auditor's report includes a going concern modification.	Public data
<i>BUSY</i>	1 if the fiscal year ends in December.	Public data
<i>NASFEES</i>	Natural log of 1+non-audit fees from Audit Analytics.	Public data
<i>H_TEAM_CL_EXP</i>	1 if the average number of years of client experience of the managers and higher-level audit team members (including lead audit engagement partner) is greater than the median in the sample and 0 otherwise.	PCAOB
<i>H_TEAM_IND_EXP</i>	1 if the average number of years of industry experience of the managers and higher-level audit team members (including lead audit engagement partner) is greater than the median in the sample and 0 otherwise.	PCAOB
<i>HQDISTANCE</i>	Natural log of the distance in miles between the client's audit office (per the audit report) and the audit firm's national headquarters.	Public data
<i>OFFICESIZE</i>	Natural log of total audit fees of the client's lead audit office in the fiscal year.	Public data
<i>SHORTTENURE</i>	1 if the audit firm's tenure is three years or less.	Public data
<i>PCTHRUS</i>	Percentage of total audit hours charged by members of the U.S. audit team.	PCAOB
<i>PCTHRINTERIM</i>	Percentage of audit hours performed during the interim audit engagement period.	PCAOB

Figure 1: Common NOC topics

NOC topic	Determinants Model Variable
Accounting	
Business combinations	<i>MA RESTR</i>
Complex debt and equity transactions	<i>STOCKCOMP</i> <i>LEVERAGE</i> <i>ISSUANCE</i> <i>EQUITYTRANSACTIONS</i>
SEC comment letters	<i>COMMENTLETTER</i>
Fair value	<i>FVIASSETS</i> <i>FVIASSETS</i> <i>FVIASSETS</i> <i>FVLIABILITIES</i>
Pensions	<i>PENSION</i>
Legal issues	<i>LIT</i>
Revenue recognition	<i>SGROW</i>
Audit	
Materiality	<i>SIZE</i> <i>ROA</i> <i>LOSS</i>
ICFR material weakness	<i>WEAKNESS</i>
Prior period misstatement - announcement	<i>RSANNOUNCEMENT</i>
Group and component audits	<i>SEGMENTS</i> <i>FOREIGN</i>
Fraud, illegal activities, FCPA violations	
Going concern	<i>G.C.</i>
CAMs	Not required during our sample period
Other	
Auditor independence, client acceptance, and continuance	<i>SHORTTENURE</i> <i>SWITCH</i>

Figure 2: Breakdown of NOC broad topics

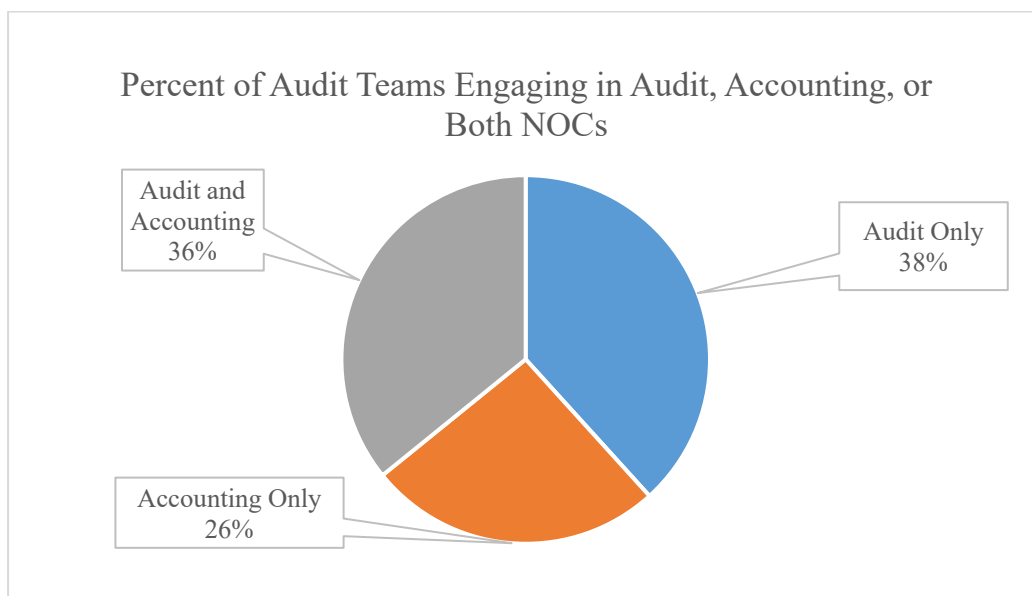


Table 1: Interviewee Demographics

This table presents demographic information about our 15 interviewees and our interview calls. NO = national office. Y = Yes, N = No. Interviewees who were not with Big 4 firms were with large international non-Big 4 firms. Office size is small, medium, or large relative to other offices of that particular audit firm.

I.D.	Job Title	Big 4	Office Size	Currently in NO	Prior NO Rotation	Male	Duration (minutes)
1	Partner	Y	Large	N	Y	Y	45
2	Partner	Y	Small	N	N	Y	47
3	Partner	Y	Large	N	N	Y	58
4	Partner	N	Medium	Y	N	Y	52
5	Partner	N	Large	Y	Y	Y	55
6	Partner	Y	Medium	N	N	Y	45
7	Senior Manager	N	Medium	N	N	Y	42
8	Senior Manager	N	Large	N	N	Y	42
9	Partner	Y	Large	N	N	Y	43
10	Partner	N	Small	N	Local technical role & client service	Y	42
11	Partner	N	Large	N	N	Y	36
12	Partner	Y	Large	N	Y	Y	60
13	Director	N	Small	Y-20% of time	N	N	35
14	Partner	Y	Small	N	Y	Y	31
15	Partner	N	Large	N	N	Y	55
Total (Average)		46.7%		20%	33.3%	93%	46 minutes

Table 2: Interview Results Summary (N=15)

This table presents our full interview coding scheme (interview data structure) and the frequency (%) of code (theme) appearance in our 15 interviews. Within each broad (first-order) theme, the sub-themes are presented in descending order of appearance (frequency) in the interview data.

Coding Scheme	Freq	%
1. Why does a national office exist, and why do auditors consult with it		
1.1. Required by PCAOB QC Standard or based on PCAOB inspection findings, quality control mechanism for consistent application of GAAP and GAAS across the firm	13	86.7%
1.2. Knowledge acquisition for complex, new areas from accounting and auditing subject matter experts (active request from teams)	11	73.3%
2. NOC Process		
2.1. Centralization vs. decentralization and formal vs. informal		
2.1.1. NOC people are located locally or regionally – not necessarily in one office	11	73.3%
2.1.2. More formalized system and documentation, has become more disciplined and structured over the last five to ten years	8	53.3%
2.1.3. Centralized NOC process	6	40.0%
2.2. Frequency and Timing of NOCs		
2.2.1. Timing is anywhere from a day or two to a couple weeks to one month, depending on complexity. Hours devoted to one NOC (including audit team and NO) range from 10 to 40 hours for formal consultations.	12	80.0%
2.2.2. Most public audits will have at least one NOC a year, consult more on publicly traded clients because higher risk and two opinions	9	60.0%
2.2.3. Recent push to plan and conduct NOCs earlier in the audit	8	53.3%
2.2.4. Not every client needs a consultation every year, issuer driven - not public/private client divide	7	46.7%
2.2.5. Many private companies will also have NOC	4	26.7%
2.3. NOC Topics		
2.3.1. Topics consulted on - accounting, auditing, independence/risk management, accounting more voluntary, auditing more required by firm policy	12	80.0%
2.3.2. The list of required consultations keeps getting longer, and not much is coming off it due to PCAOB inspection feedback	8	53.3%
2.4. Management of NOC Process and Client Involvement		
2.4.1. Lead engagement partner and EQR decide whether to consult in voluntary situations – the decision is based on their experience with the topic	12	80.0%
2.4.2. Don't usually involve clients, but it is helpful to do so with certain clients to open up the black box of the national office	11	73.3%
2.4.3. Managers and above on the audit team typically handle the NOC and documentation. Sometimes, senior associates may get involved.	10	66.7%
2.4.4. Experience at the NO (via rotation) earlier in one's career helps one navigate the process more efficiently and effectively	6	40.0%
2.5. Overall Attitude towards NOCs		
2.5.1. Positive attitude towards NOCs, collaborative process, more acceptable to ask for help now than before	7	46.7%
2.5.2. Negative attitude towards NOCs	2	13.3%

3. Benefits of National Office Consultations (NOCs)		
3.1. Helps get to the right answer	13	86.7%
3.2. Audit firm backing you up in case of a restatement or inspection issue, documentation of NOC helps prevent PCAOB and internal inspections, "security blanket"	12	80.0%
3.3. Apply GAAP and firm audit methodology consistently, especially grey areas, oversight of audit teams, improve audit quality and efficiency	12	80.0%
3.4. Risk management, protects the firm	7	46.7%
3.5. Knowledge transfer from NOC SMEs to audit teams, training, and learning	7	46.7%
3.6. Knowledge transfers to other clients	6	40.0%
3.7. Help with new or controversial accounting and auditing topics	5	33.3%
3.8. Help to communicate with audit committee and client – adds value to client	3	20.0%
3.9. Independent third-party view - unbiased by client	2	13.3%
4. Challenges, obstacles, risks of NOCs		
4.1. Takes time, managing client expectations on timing since it takes time	12	80.0%
4.2. Costs may not be able to be passed on to the client	10	66.7%
4.3. NO people don't serve clients, Ivory Tower mentality, seems like a black box to clients, could create divide between audit team and NO	8	53.3%
4.4. May not always get the answer the client likes	7	46.7%
4.5. Challenging and frustrating experience at times	6	40.0%
4.6. Can go bad or astray if one doesn't have arms around an issue when going to NO, lead partner needs to control process, some partners get reputation of scope creep	3	20.0%
4.7. NO loses confidence in audit team if they can't answer probing questions – intimidating process; have to be prepared	3	20.0%
4.8. Perceived as sign of weakness to ask for help from NO	2	13.3%

Table 3: PCAOB Data Analysis Sample Selection Process

This table presents the sample construction from the hand-collected dataset compiled from PCAOB and publicly available data.

	Observations
PCAOB inspected engagements (Inspection Years 2006-2018)	3,906
<i>Less:</i>	
PCAOB inspected engagements for which PCAOB proprietary data is missing	239
Missing Audit Analytics and Compustat audit fees or control variables	508
Missing engagement team experience information	61
<i>Sample (client-years)</i>	3,098
<i>Adaptive Lasso Regression Samples</i>	
Training Sample	2,324
Validation (i.e., Testing) Sample	774

Table 4: Sample Statistics

This table presents several sample-level statistics. Panel A breaks down the sample by inspection year, indicating the percentage of engagements with national office consultations and, amongst the subsample of engagements with national office use, the average proportion of national office consultation hours to total integrated audit hours. Panel B breaks down the sample by client firm Fama-French 12 industry group, indicating the percentage of engagements with national office consultations and the proportion of total engagement integrated audit hours spent by national office staff by industry group.

Panel A: Observations and % using NOC by Inspection Year

<i>Inspection Year</i>	<i>N</i>	<i>% with National Office Consultations</i>	<i>N with National Office Consultations</i>
2006	242	64%	155
2007	292	66%	193
2008	242	69%	167
2009	277	74%	205
2010	245	81%	199
2011	226	69%	155
2012	204	72%	146
2013	226	80%	180
2014	224	82%	183
2015	218	79%	173
2016	249	72%	180
2017	242	76%	183
2018	211	67%	142
<i>Total (Average)</i>	3,098	73%	2,261

Panel B: By Industry –Number and Percentage of Inspected Audit Engagements of the six largest U.S. Audit Firms Using the National Office

<i>Industry (Fama-French 12)</i>	<i>N</i>	<i>% Using National Office</i>	<i>N Using National Office</i>
Non-Durable Consumer Goods	145	74%	107
Consumer Durables	95	75%	71
Manufacturing	352	73%	257
Energy Oil, Gas, and Coal Extraction and Products	157	75%	117
Chemicals and Allied Products	74	73%	54
Business Equipment (Computers, Software, and Electronic Equ.)	595	70%	415
Telephone and Television Transmission	97	77%	75
Utilities	55	85%	47
Shops Wholesale, Retail, and Some Services	337	69%	231
Healthcare, Medical Equipment, and Drugs	269	78%	210
Money Finance	545	73%	396
Other (Mines, Constr, BldMt, Trans, Hotels, Bus Serv, Entment)	377	75%	281
<i>Total (Average)</i>	3,098	73%	2,261

Table 5: Variable Descriptive Statistics

This table presents overall descriptive statistics for the variables in this study. All continuous variables are winsorized at the 1 and 99% in the sample. Variable definitions are provided in Appendix B.

<i>Variable Name</i>	<i>Mean</i>	<i>SD</i>	<i>P25</i>	<i>Median</i>	<i>P75</i>
<i>NOC</i>					
<i>NOC_USE</i>	0.73	0.44	0.00	1.00	1.00
<i>NOC_HRS</i>	32.08	56.52	0.00	12.00	37.00
<i>Audit Quality Measures</i>					
<i>MISSTATE</i>	0.08	0.28	0.00	0.00	0.00
<i>PARTI</i>	0.28	0.45	0.00	0.00	1.00
<i>Client Complexity and Business Risk</i>					
<i>SIZE</i>	7.48	1.83	6.16	7.41	8.65
<i>SEGMENTS</i>	1.79	0.52	1.10	1.79	2.20
<i>FOREIGN</i>	0.31	0.58	0.00	0.02	0.40
<i>LEVERAGE</i>	0.26	0.28	0.06	0.22	0.39
<i>WEAKNESS</i>	0.07	0.25	0.00	0.00	0.00
<i>LIT</i>	0.21	0.41	0.00	0.00	0.00
<i>ISSUANCE</i>	3.46	3.19	0.00	3.81	6.23
<i>CONVERTABLEDEBT</i>	0.78	1.92	0.00	0.00	0.00
<i>CAPITALLEASEOBLIG</i>	0.68	1.44	0.00	0.00	0.36
<i>EQUITYTRANSACTIONS</i>	0.03	0.14	0.00	0.00	0.00
<i>GOODWILL</i>	0.14	0.28	0.00	0.00	0.00
<i>RSANNOUNCEMENT</i>	0.11	0.31	0.00	0.00	0.00
<i>COMMENTLETTER</i>	0.49	0.50	0.00	0.00	1.00
<i>Client Profitability and Growth</i>					
<i>ROA</i>	0.00	0.18	-0.01	0.03	0.07
<i>LOSS</i>	0.29	0.45	0.00	0.00	1.00
<i>BM</i>	0.57	0.91	0.27	0.48	0.81
<i>SGROW</i>	0.05	0.24	-0.01	0.04	0.12
<i>MA_RESTR</i>	0.45	0.50	0.00	0.00	1.00
<i>Client Complex Estimates</i>					
<i>STOCKCOMP</i>	0.01	1.46	0.00	0.00	0.01
<i>PENSION</i>	0.01	0.03	0.00	0.00	0.00
<i>FV1ASSETS</i>	0.01	2.40	0.00	0.00	3.18
<i>FV2ASSETS</i>	1.83	2.80	0.00	0.00	3.46
<i>FV3ASSETS</i>	0.67	1.69	0.00	0.00	0.00
<i>FVLIABILITIES</i>	0.02	0.06	0.00	0.00	0.01
<i>Other Engagement Characteristics</i>					
<i>BIG4</i>	0.77	0.42	1.00	1.00	1.00
<i>SPEC_USE</i>	0.79	0.41	1.00	1.00	1.00
<i>SWITCH</i>	0.09	0.28	0.00	0.00	0.00
<i>GOINGCONCERN</i>	0.01	0.12	0.00	0.00	0.00
<i>BUSY</i>	0.74	0.44	0.00	1.00	1.00
<i>NASFEES</i>	11.17	4.02	10.72	12.25	13.45
<i>H_TEAM_CL_EXP</i>	0.46	0.50	0.00	0.00	1.00
<i>H_TEAM_IND_EXP</i>	0.51	0.50	0.00	0.00	1.00
<i>HQDISTANCE</i>	6.06	2.13	5.73	6.63	7.32
<i>OFFICESIZE</i>	17.20	1.48	16.12	17.39	18.32
<i>SHORTTENURE</i>	0.28	0.45	0.00	0.00	1.00
<i>PCTHRSUS</i>	.088	0.18	0.82	1.00	1.00
<i>PCTHRSINTERIM</i>	0.26	0.13	0.18	0.27	0.35

Table 6: Univariate Tests Comparing Engagements with vs. without National Office Use

This table presents an independent sample t-test of mean differences in client and auditor characteristics. Variable definitions are provided in Appendix B. All continuous variables are winsorized at the 1 and 99% in the sample. Significance levels are * 10%, ** 5% and *** 1%.

<i>Variable Name</i>	<i>Mean No NOC Use</i>	<i>Mean NOC Use</i>	<i>Mean Difference</i>	<i>T-statistic No – Yes NOC Use</i>
<i>AU_HRS</i>	8.082	8.731	-0.649	-13.357***
<i>AU_FEES</i>	14.246	14.403	-0.157	-3.814***
<i>REAL_RATE</i>	46.930	47.178	-0.248	-0.208
<i>SIZE</i>	7.357	7.525	-0.168	-2.267**
<i>SEGMENTS</i>	1.755	1.802	-0.046	-2.204**
<i>FOREIGN</i>	0.287	0.313	-0.026	-1.087
<i>LEVERAGE</i>	0.228	0.275	-0.047	-4.132***
<i>WEAKNESS</i>	0.049	0.077	-0.028	-2.723***
<i>LIT</i>	0.234	0.205	0.029	1.748*
<i>ISSUANCE</i>	2.975	3.634	-0.659	-5.123***
<i>CONVERTABLEDEBT</i>	0.636	0.833	-0.197	-2.537**
<i>CAPITALLEASEOBLIG</i>	0.598	0.707	-0.109	-1.875*
<i>EQUITYTRANSACTIONS</i>	0.026	0.026	-0.000	-0.077
<i>GOODWILL</i>	0.113	0.146	-0.033	-2.941***
<i>RSANNOUNCEMENT</i>	0.084	0.120	-0.037	-2.895***
<i>COMMENTLETTER</i>	0.440	0.517	-0.077	-3.832***
<i>ROA</i>	0.021	-0.004	0.025	3.365***
<i>LOSS</i>	0.232	0.307	-0.076	-4.141***
<i>BM</i>	0.600	0.555	0.046	1.240
<i>SGROW</i>	0.078	0.037	0.042	4.333***
<i>MA_RESTR</i>	0.449	0.452	-0.003	-0.160
<i>STOCKCOMP</i>	-5.342	-5.340	-0.002	-0.034
<i>PENSION</i>	0.009	0.011	-0.002	-1.810*
<i>FV1ASSETS</i>	1.469	1.667	-0.198	-2.034**
<i>FV2ASSETS</i>	1.735	1.869	-0.134	-1.183
<i>FV3ASSETS</i>	0.508	0.732	-0.223	-3.265***
<i>FVLIABILITIES</i>	0.009	0.017	-0.008	-3.377***
<i>BIG4</i>	0.815	0.751	0.064	3.770***
<i>SPEC_USE</i>	0.648	0.840	-0.193	-11.924***
<i>SWITCH</i>	0.053	0.100	-0.047	-4.130***
<i>GOINGCONCERN</i>	0.013	0.015	-0.001	-0.303
<i>BUSY</i>	0.713	0.744	-0.031	-1.744*
<i>NASFEES</i>	11.192	11.159	0.033	0.205
<i>H_TEAM_CL_EXP</i>	0.486	0.454	0.032	1.610
<i>H_TEAM_IND_EXP</i>	0.524	0.499	0.026	1.265
<i>HQDISTANCE</i>	5.963	6.096	-0.134	-1.546
<i>OFFICESIZE</i>	17.250	17.184	0.066	1.098
<i>SHORTTENURE</i>	0.244	0.292	-0.049	-2.681***
<i>PCTHRSUS</i>	0.883	0.890	-0.007	-0.927
<i>PCTHRSINTERIM</i>	0.253	0.265	-0.012	-2.379**
<i>Obs.</i>	837	2,261		

Table 7: Univariate Analysis Validation versus Test Samples

This table presents an independent sample t-test of mean differences in client and auditor characteristics. Variable definitions are provided in Appendix B. All continuous variables are winsorized at the 1 and 99% in the sample. Significance levels are * 10%, ** 5% and *** 1%.

<i>Variable Name</i>	<i>Mean Training Sample</i>	<i>Mean Validation Sample</i>	<i>Mean Difference</i>	<i>T-statistic</i>
<i>SIZE</i>	7.461	7.535	-0.073	-0.966
<i>SEGMENTS</i>	1.791	1.785	0.005	0.243
<i>FOREIGN</i>	0.309	0.297	0.012	0.499
<i>LEVERAGE</i>	0.266	0.251	0.015	1.266
<i>WEAKNESS</i>	0.067	0.078	-0.011	-1.026
<i>LIT</i>	0.210	0.221	-0.011	-0.619
<i>ISSUANCE</i>	3.453	3.463	-0.010	-0.075
<i>CONVERTABLEDEBT</i>	0.784	0.769	0.015	0.190
<i>CAPITALLEASEOBLIG</i>	0.670	0.701	-0.032	-0.533
<i>EQUITYTRANSACTIONS</i>	0.027	0.024	0.003	0.499
<i>GOODWILL</i>	0.135	0.143	-0.007	-0.638
<i>RSANNOUNCEMENT</i>	0.109	0.114	-0.004	-0.338
<i>COMMENTLETTER</i>	0.495	0.500	-0.005	-0.249
<i>ROA</i>	-0.001	0.013	-0.014	-1.865*
<i>LOSS</i>	0.287	0.286	0.002	0.101
<i>BM</i>	0.561	0.585	-0.024	-0.622
<i>SGROW</i>	0.047	0.051	-0.005	-0.491
<i>MA_RESTR</i>	0.462	0.421	0.041	1.962**
<i>STOCKCOMP</i>	0.012	0.010	0.002	1.257
<i>PENSION</i>	0.010	0.012	-0.002	-1.232
<i>FV1ASSETS</i>	1.578	1.722	-0.144	-1.443
<i>FV2ASSETS</i>	1.736	2.125	-0.389	-3.340***
<i>FV3ASSETS</i>	0.641	0.762	-0.121	-1.715*
<i>FVLIABILITIES</i>	0.014	0.018	-0.004	-1.755*
<i>BIG4</i>	0.762	0.784	-0.022	-1.242
<i>SPEC_USE</i>	0.785	0.797	-0.012	-0.700
<i>SWITCH</i>	0.086	0.088	-0.001	-0.117
<i>GOINGCONCERN</i>	0.013	0.017	-0.003	-0.704
<i>BUSY</i>	0.743	0.716	0.027	1.472
<i>NASFEEES</i>	11.190	11.103	0.087	0.522
<i>H_TEAM_CL_EXP</i>	0.463	0.461	0.002	0.085
<i>H_TEAM_IND_EXP</i>	0.506	0.504	0.003	0.124
<i>HQDISTANCE</i>	6.028	6.157	-0.128	-1.450
<i>OFFICESIZE</i>	17.209	17.181	0.028	0.450
<i>SHORTTENURE</i>	0.275	0.291	-0.015	-0.822
<i>PCTHRUSUS</i>	0.888	0.886	0.002	0.322
<i>PCTHRISINTERIM</i>	0.261	0.264	-0.003	-0.570
<i>Obs.</i>	2,324	774		

Table 8 - Adaptive Lasso Results - Using Training Sample

Machine-Learning parsimonious NOC models

The first set of results below reports the output of the adaptive logit lasso model on NOC use, while the second reports the output of the adaptive lasso OLS model on NOC hours. For each model, the training sample comprises 75% of the sample population, while the testing model comprises 25%. See Appendix B for variable definitions. The variables reported represent the parsimonious NOC model from the machine-learning output. The direction columns indicate if the variable increases (+) or decreases (-) NOC likelihood or NOC hours. The “Rank Order” columns report the order of the variables based on the impact on the outcome, with 1 being the most impactful, then 2, etc.

Adaptive Logit Lasso			Adaptive OLS Lasso		
<i>DV = NOC Use</i>			<i>DV = NOC Hours</i>		
<i>Variable Name</i>	<i>Direction</i>	<i>Rank Order</i>	<i>Variable Name</i>	<i>Direction</i>	<i>Rank Order</i>
<i>SPEC_USE</i>	+	1	<i>SPEC_USE</i>	+	1
<i>BIG4</i>	-	2	<i>SIZE</i>	+	2
<i>STOCKCOMP</i>	+	3	<i>BIG4</i>	-	3
<i>ISSUANCE</i>	+	4	<i>LOSS</i>	+	4
<i>SGROW</i>	-	5	<i>WEAKNESS</i>	+	5
<i>RSANNOUNCEMENT</i>	+	6	<i>ISSUANCE</i>	+	6
<i>SEGMENTS</i>	+	7	<i>SEGMENTS</i>	+	5
<i>PCTHRSINTERIM</i>	+	8	<i>H_TEAM_CL_EXP</i>	-	8
<i>FVLIABILITIES</i>	+	9	<i>RSANNOUNCEMENT</i>	+	9
<i>SHORTTENURE</i>	+	10	<i>H_TEAM_IND_EXP</i>	-	10
<i>H_TEAM_IND_EXP</i>	-	11	<i>COMMENTLETTER</i>	+	11
<i>COMMENTLETTER</i>	+	12	<i>FVLIABILITIES</i>	+	12
<i>H_TEAM_CL_EXP</i>	-	13	<i>FOREIGN</i>	+	13
<i>PCTHRSUS</i>	+	14	<i>SGROW</i>	-	14
<i>FV3ASSETS</i>	+	15	<i>B.M.</i>	-	15
<i>LOSS</i>	+	16	<i>SWITCH</i>	+	16
<i>SWITCH</i>	+	17	<i>STOCKCOMP</i>	+	17
<i>CONVERTABLEDEBT</i>	+	18	<i>FVIASSETS</i>	+	18
<i>HQDISTANCE</i>	+	19	<i>SHORTTENURE</i>	+	19
<i>WEAKNESS</i>	+	20	<i>CONVERTABLEDEBT</i>	+	20
<i>B.M.</i>	-	21	<i>FV3ASSETS</i>	+	21
			<i>CAPITALLEASEOBLIG</i>	+	22
<i>Final adaptive step results</i>			<i>Final adaptive step results</i>		
	<i>Lambda</i>	0.0065		<i>Lambda</i>	0.0414
	<i>CV mean deviance</i>	1.0823		<i>CV mean deviance</i>	2.5521

Table 9: Association Between NOC And Audit Outcomes
Panel A: NOC Occurrence and Audit Outcomes

Test Variable	Column (A)		Column (B)	
	DV: Misstated Audited F/S		DV: PCAOB Inspection Part 1 Finding	
	Coef.	z-stat	Coef.	z-stat
<i>NOC_USE</i>	0.065	0.32	-.0243	-1.56
<i>CONTROLS</i>	YES		YES	
Entropy Balanced	YES		YES	
Industry & Year FE	YES		YES	
Total N	3,098		3,098	
Pseudo R ²	13.12%		15.53%	
ROC	0.706			

Panel B: NOC Hours and Audit Outcomes – Conditional on NOC Occurrence

	Column (A)		Column (B)	
	DV: Misstated Audited F/S		DV: PCAOB Inspection Part 1 Finding	
	Coef.	z-stat	Coef.	z-stat
<i>NOC_HOURS</i>	0.32	0.59	-0.69	-1.66*
<i>CONTROLS</i>	YES		YES	
Entropy Balanced	YES		YES	
Industry & Year FE	YES		YES	
Total N	3,098		3,098	
Pseudo R ²	13.15%		15.53%	
ROC				

Panel C: High versus Low NOC Hours and Audit Outcomes – Conditional on NOC Occurrence

	Column (A)		Column (B)	
	DV: Misstated Audited F/S		DV: PCAOB Inspection Part 1 Finding	
	Coef.	z-stat	Coef.	z-stat
<i>HIGHNOC_HOURS</i>	0.099	0.66	-0.204	-1.87*
<i>CONTROLS</i>	YES		YES	
Industry & Year FE	YES		YES	
Total N	2,261		2,261	
Pseudo R ²	9.61%		10.14%	
ROC	0.715		0.713	

Panels A and B of this table report the results of testing the association between NOC use, respectively, and hours and audit quality as measured using the frequency of material misstated financial statements that are later revealed in a restatement and the frequency of Part I (now called Part I.A) inspection findings. Panel C reports the association between audit engagements with high NOC hours and audit quality. The Panel C sample is limited to audit engagements that have an NOC; therefore, we are unable to use NOC_USE entropy balancing when testing high NOC hours. Variable definitions are provided in Appendix B. All continuous variables are winsorized at 1 and 99% in the sample. Significance levels are * 10%, ** 5% and *** 1%.