The use and characteristics of component auditors: Implications from U.S. Form AP filings

ABSTRACT

This paper investigates the common, yet previously opaque, practice of using non-U.S. audit firms (commonly referred to as component auditors) to conduct portions of audit work for U.S. public companies. Since the U.S. lead auditor ultimately accepts full responsibility for the resulting audit opinion, regulators have expressed concern for the transparency and quality of audits using component auditors. Employing data disclosed in the newly-mandated PCAOB Form AP, we find that this practice is most common amongst large clients with complex international operations. Consistent with regulator concern, we find that the percentage of audit hours conducted by component auditors is associated with lower audit quality (i.e., material weakness disclosures and restatements), longer audit delay, and higher audit fees. Interestingly, we find that not all component auditors are created equal, and that work performed by component auditors that are less competent (based on number of CPAs employed and experience leading U.S. audits and in the client's industry) and facing greater coordination and communication challenges (based on the country's rule of law, English language proficiency, and time zone differences from the lead auditor) drive the association with adverse audit outcomes. Overall, these findings suggest that the use of component auditors is not uniformly detrimental and that Form AP disclosures can help interested parties better assess the potential for adverse audit outcomes.

Keywords: PCAOB, Form AP, component auditor, group audit, audit quality, audit fees, audit delay

JEL Classification Codes: M42, G18, G28, F00

INTRODUCTION

This paper explores the use of non-U.S. audit firms, commonly referred to as component auditors, on the audits of U.S. public companies.[1] Lead U.S. auditors, who ultimately accept full responsibility for the resulting audit opinion, often utilize component auditors to conduct audit work in countries where clients have significant operations (e.g., Hanes 2013). The Public Company Accounting Oversight Board (PCAOB), which is tasked with monitoring auditors of U.S. listed companies, now requires details of this common practice to be disclosed in Form AP for each public company audit report issued after June 30, 2017. Combined, our data suggests that component auditors are responsible for auditing approximately six trillion dollars of U.S. public company assets.[2] Yet before this disclosure requirement, investors and other interested parties were largely unaware of the extent to which component auditors were involved in an audit. This information is indicative of potential coordination and communication challenges faced in the audit process (e.g., Downey and Bedard 2018; Hanes 2013; Sunderland and Trompeter 2017), which may adversely impact audit outcomes.

Since lead auditors often use component auditors located in countries where their clients have significant operations, component auditor use is increasingly prevalent amidst the globalization of U.S. public companies. For example, Monsanto, an agricultural biotechnology company that sells its products in over 100 countries, is audited by Deloitte's St. Louis, Missouri office. To gather sufficient evidence to support the audit opinion, Deloitte employs five component

[1] PCAOB standards use the term "other accounting firm" to refer to public accounting firms that participate in the audit other than the firm signing the audit report. To maintain consistency with prior literature (e.g., Carson et al. 2016; Czerney et al. 2014; Downey and Bedard 2018) and for expositional reasons, we refer to these firms as "component auditors" throughout this paper.

[2] The total assets audited by component auditors is an approximation based on the percentage of total audit hours conducted by component auditors. When reporting this percentage in Form AP, the lead auditor can report either an exact percentage or a predefined range (e.g., "5 percent to less than 10 percent of total audit hours, "10 percent to less than 20 percent of total audit hours," etc.). Nearly 97 percent of Form AP filings report this information as a range.

auditors, including, amongst others, its affiliates in Argentina, Brazil, and Mexico to conduct 20 to 45 percent of the total audit hours. While these affiliates operate under the Deloitte global brand, they have varied professional standards, familiarity with U.S. audits and the client's industry, and are located in countries with vastly different characteristics than the U.S., including cultural, language, and time zone differences. Motivated by examples like this and using Form AP disclosures for a broad sample of U.S. public companies, we examine factors associated with component auditor use and investigate whether the use, extent of use, and characteristics of these component auditors and their location are associated with variations in audit outcomes.

In our sample of 3,880 unique U.S. public companies, 37.0 percent use at least one component auditor. This suggests that component auditor use is a prevalent phenomenon, which prior literature has been unable to explore.[3] Therefore, we first examine factors associated with the use of component auditors. We find that client size, foreign operations, foreign subsidiaries, geographic and business segments, and accounting reporting complexity are positively associated with the likelihood of component auditor use. Interestingly, we do not find company performance or auditor type (i.e., Big 4 vs. non-Big 4) to be significant. These results illustrate that the use of component auditors is often unavoidable for clients with complex international operations.

Next, we consider the impact of component auditor use on audit outcomes. When proposing Form AP, the PCAOB cited inspection findings that highlight the coordination and communication challenges associated with managing diverse teams of auditors in multiple countries (PCAOB 2017; Doty 2017). For instance, the U.S. lead auditor and component auditors may operate in environments with different business practices, languages, cultural norms, market

[3] Before this mandatory disclosure requirement, prior literature was not able to focus on U.S. component auditor use and instead creatively focused on the *disclosure* of component auditor use (Dee et al. 2015; Mao et al. 2018). However, limited disclosure requirements could have resulted in as much as 95 percent of engagements using component auditors not being identified.

conditions, quality control systems, and professional training and certifications (e.g., Hanes 2013; Franzel 2017; Sunderland and Trompeter 2017). While there are also advantages to using component auditors (e.g., overcoming jurisdictional hindrances, reducing labor costs, leveraging local expertise, etc.), we predict that component auditor use is associated with adverse audit outcomes – namely, negatively associated with audit quality and positively associated with audit delay and audit fees.[4] Although we recognize that the predicted audit outcomes are jointly impacted by innate client characteristics and the audit process, PCAOB inspections strongly suggest that audit quality issues on component auditor engagements are incremental to the financial reporting issues at these companies. For example, in several instances the PCAOB reported that component auditors failed to perform appropriate audit procedures and misrepresented their work to the lead engagement partner (PCAOB 2018). Results generally support our prediction and are consistent with complex multinational engagements that require component auditor use having lower audit quality and higher audit delay and audit fees.

Recognizing that complex multinational engagements that involve component auditors are fundamentally different, moving forward we conduct analysis within a more homogenous sample of 1,435 engagements that use at least one component auditor. On average, an audit engagement involving component auditors employs 3.6 different component auditors who conduct 18.0 percent of total audit hours. Using this information, we are able to distinguish Monsanto's use of five component auditors conducting 20 to 45 percent of audit hours from Chipotle's use of only one component auditor (i.e., different number), and from Microsoft's use of five component auditors that together conduct less than 10 percent of the audit (i.e., different percentage). These newly

[4] While higher audit fees can be indicative of greater effort, which may have a positive impact on the audit, we label higher audit fees as an inefficient and adverse audit outcome in combination with our prediction of lower audit quality. Higher audit fees may also arise from a risk premium related to the management of component auditor work.

available data points, which have not been examined by prior literature, allow us to proxy for expected coordination and communication challenges and their potential to impact the audit. Surprisingly, we generally do not find significant associations between the number of component auditors and audit outcomes. In contrast, we find that the percentage of audit hours conducted by component auditors is associated with a higher likelihood of material weakness disclosures and restatements, higher audit fees, and longer audit delays. Taken together, these results highlight that the expected adverse outcomes are generally driven by the percentage of work conducted by component auditors, rather than the number of components auditors used.

Importantly, we explore whether certain characteristics of component auditors used exacerbate or mitigate the adverse audit outcomes observed. Working with component auditors in certain locations can generate undue coordination and communication challenges, which may exacerbate the potential for adverse audit outcomes. Conversely, when managing these engagements, the lead auditor is expected to ensure that component auditors possess the appropriate independence, competence, and capabilities to serve on the engagement (PCAOB 2010). This suggests that work performed by competent component auditors may not result in adverse audit outcomes.

For component auditors conducting more than five percent of the audit, which are identified by name in Form AP, we construct several proxies for their coordination and communication challenges and competence. We proxy for coordination and communication challenges using the country's rule of law, English language proficiency, and time zone difference from the lead auditor. We find that adverse audit outcomes are limited to audit hours conducted by component auditors with greater coordination and communication challenges. We proxy for competence using manually collected data on the number of CPAs employed, experience leading

U.S. audits, and experience in the client's industry. Across all three competence proxies, we again find that significant associations with adverse audit outcomes are limited to audit hours conducted by less competent component auditors. These results demonstrate that characteristics of the component auditor and their location are important for predicting variations in audit outcomes.

Since the need to use component auditors appears structural, it is unlikely that lead auditors can avoid engaging component auditors in countries with the aforementioned coordination and communication challenges. In additional analyses, we identify a potential alleviating factor whereby employing competent component auditors in countries with these challenges can mitigate adverse audit implications. Combined, our results suggest that lead auditors can overcome challenges associated with these environments by ensuring component auditor teams are sufficiently competent. Overall, these findings suggest that the use of certain component auditors can overcome financial reporting quality and efficiency issues inherent to complex multinational engagements, and that managers, investors, and researchers should consider which component auditors are conducting the work when assessing potential risks.

We address alternative explanations for our results in several ways. First, because client characteristics determine the likelihood of component auditor use, we perform most of our analyses within a more homogenous sample of firms that use at least one component auditor. To further control for innate client characteristics, we employ propensity score matched samples and find consistent results. Another alternative explanation is that management in certain countries, captured by our coordination and communication proxies, are more likely to engage in earnings management irrespective of audit quality (e.g., Dyreng, Hanlon, and Maydew 2012). The aforementioned additional analysis shows that the competence of component auditors continues to matter even within these countries, suggesting that at least part of our results can be attributed to

component auditor influence on audit quality. To reduce the concern that client complexity drives our results, we control for multiple measures of firm complexity throughout our analysis. We also examine whether our auditor competence results are driven by complexity (i.e., that more competent component auditors are assigned to clients with less financial reporting issues). We do not find this to be the case, which again demonstrates that competence results are due to component auditor characteristics and not innate client characteristics.

Our study contributes to auditing research in several important ways. We use new Form AP data to comprehensively examine the use of component auditors by U.S. lead auditors, which was not previously possible. To the best of our knowledge, we are the first to use this novel data to describe the prevalence and magnitude of component auditor use. This new data also provides interesting descriptive information on component auditors, their characteristics and location, and the extent of their involvement by country. This new disclosure also importantly allows insight into the audit team's judgment of the materiality of foreign operations to the financial statements and resulting audit, which measures such as the existence of foreign operations or the number of foreign subsidiaries are unable to capture. Indeed, within a sample of firms that use component auditors, foreign operations and subsidiaries are generally not associated with audit outcomes.

We are also the first to examine the determinants of component auditor use and find that structural characteristics of the client such as size and complexity, rather than client performance or auditor type, explain most of the variation in the use of component auditors. We further document that component auditor use, and specifically the amount of work conducted by component auditors, is associated with adverse audit outcomes. Notably, our findings on U.S. component auditor use differ from prior literature that examines the Australian audit market (Carson et al. 2016), U.S. component auditor disclosure using a limited sample (Dee et al. 2015),

and survey data (Downey and Bedard 2018). These contrasting findings underscore the importance of understanding component auditor use in the new Form AP information environment. We are also able to collect other information on component auditors, including their competence and coordination and communication challenges faced. As a result, we document that the use of component auditors is not uniformly detrimental to the resulting audit, and that work performed by competent component auditors can alleviate coordination and communication challenges.

Overall, we conclude that component auditor information provided in new Form AP disclosures is informative and can help interested parties better assess the potential for adverse audit outcomes, which may influence their decisions. This supports the PCAOB's objective to increase transparency as to who is conducting U.S. audits and extends a recent literature stream which explores the efficacy of PCAOB oversight and standard setting (e.g., Aobdia and Shroff 2017; Burke, Hoitash and Hoitash 2018; Cunningham, Li, Stein, and Wright 2018; DeFond and Lennox 2017; Krishnan, Krishnan, and Song 2017).

The remainder of the paper is organized as follows. Section 2 reviews related PCAOB standards and prior literature and proposes testable research questions and hypotheses. Section 3 describes the Form AP data and our empirical methodology. Section 4 presents our results, and Section 5 is devoted to a discussion of our findings and their implications for research and practice.

BACKGROUND AND HYPOTHESES DEVELOPMENT

Use of Component Auditors on U.S. Audit Engagements

Recent reports suggest that 43.2 percent of S&P 500 sales revenue comes from non-U.S. countries (S&P Dow Jones Indices 2017). This globalization of U.S. public companies has led to geographically distributed audit work, and specifically, the expanded use of other non-U.S. auditors in public company audits. When auditing a multinational company, the lead auditor, who

ultimately bears responsibility for the entire audit (PCAOB 2010), must engage other auditors to gather evidence and perform work on material foreign operations (Hanes 2013).[5] With the exception of six countries, U.S. auditors are not allowed to perform audit work within foreign jurisdictions.[6] In addition to component auditors' proximity to foreign operations, most countries require accounting firms to have separate local licenses and professionals in order to practice (Carson 2009). For example, the audit of a company such as Monsanto, which sells its products in over 100 countries, demands the use of several component auditors in countries with significant operations. These other auditors are commonly referred to as "component auditors" in the extant literature.

The type and extent of work conducted by component auditors can vary considerably and may include testing an inventory listing or specified account balance in that location, performing high-level review procedures, or conducting a full scope audit of a foreign subsidiary that prepares standalone financial statements (Barrett et al. 2005; Gunn and Michas 2018). In aggregate, the work performed by component auditors can represent a significant portion of the audit (Hanes 2013). Regardless of the extent of work performed by component auditors, the lead auditor is responsible for directing and supervising all work pertaining to the financial statement audit opinion (AICPA 2017). However, the lead auditor's review is often legally restricted to summary documentation of the work performed and conclusions reached (AICPA 2017; Downey and Bedard 2018; Sunderland and Trompeter 2017).

[5] We conduct informal interviews with senior managers involved on audits of multinational corporations, which reveal that lead auditors use both quantitative (e.g., revenue by country) and qualitative (e.g., potential to impact risk of material misstatement) materiality assessments to determine whether foreign operations should be scoped into the overall audit, and thus whether a component auditor should be engaged. Importantly, anecdotes suggest the U.S. lead auditor cannot perform remote audit work on foreign transactions, which implies that component auditor use is unavoidable for multinational entities with significant foreign operations.

[6] Even within these six countries (Australia, Canada, Hong Kong, Ireland, Mexico, and New Zealand) there are significant certifications and training requirements which often prevent U.S. auditors from participating in the audit (NASBA 2018).

In 2016, the PCAOB and SEC passed Rule 3211, which requires disclosure of information on the use of component auditors in Form AP for audit reports issued on or after June 30, 2017. This disclosure was motivated by a desire for increased transparency regarding who is conducting audits. Prior to this disclosure requirement, investors were largely unaware of the extent to which component auditors were involved in an audit.[7] For example, in recent disclosures Deloitte reports that between 20 and 45 percent of Monsanto's audit is conducted by five different component auditors, with a majority conducted by their affiliates in Argentina, Brazil, and Mexico.[8] Despite the magnitude of audit work conducted by these affiliates, Deloitte's Missouri office ultimately bears full responsibility for the audit opinion and was previously the only firm name disclosed.

Prior to the Form AP disclosure requirement, it was not possible to segment U.S. audits into those where component auditors were used and those where they were not used. However, three studies used various methods to identify certain subsets of audits involving component auditors. First, using a sample of Australian listed companies, Carson et al. (2016) examine different work arrangements for engagements with foreign subsidiaries (e.g., lead auditor conducts all audit work, uses affiliated component auditors, or uses unaffiliated component auditors). Second, within a sample of U.S. audits where component auditor use is disclosed, Mao et al. (2018) examine both when the lead auditor accepts and divides responsibility.[9] Lastly, Dee et al. (2015) focus on the disclosure of component auditor use and compare engagements where U.S. lead auditors accept responsibility for the work of other auditors to similar engagements (e.g., same

[7] Recent experimental research suggests this new information may impact investor behavior. Specifically, Hux (2018) finds that non-professional investors invest less in companies when component auditors are involved in an audit versus not involved, and that this is more apparent when misstatement risk is higher.

[8] Affiliates operate within a global network of member firms, which operate under a global brand but are separate legal entities and are separately licensed in their country of operation (Hanes 2013). The use of affiliate firms is a well-known and prevalent phenomenon amongst audits of larger companies and those performed by large accounting firms, but is also common amongst small firms who become members of affiliate associations (Bills et al. 2015).

[9] In our study, we focus on engagements where the lead auditor accepts responsibility for the entire audit opinion.

lead auditor and similar in percentage of foreign revenue) where component auditors are not disclosed. Due to data limitations at the time, the authors were not able to determine whether component auditors were not used or merely not disclosed. Specifically, Dee et al. (2015) identify a sample of 149 issuers that disclose the use of component auditors using the requirement that PCAOB registered audit firms who *do not serve as lead auditors on a SEC issuer* list the audits in which they substantially participate in their Form 2 annual report.[10] Therefore, any component auditor who also serves as a lead auditor either would not appear in the sample, or could even be classified in the no disclosure group. This is a significant difference, because according to the new Form AP data, nearly half of component auditors also serve as a lead auditor of a SEC issuer. For instance, major audit firms in Canada, China, and Israel often conduct component work and serve as lead auditors for SEC issuers such as IMAX, Lululemon, and Stantec.[11]

Now that Form AP requires disclosure of component auditor use for all U.S. issuers, we can ensure that the group of audits where component auditors are not disclosed truly do not use component auditors. We thus are able to focus on the underlying use, and not merely the disclosure, of these component auditors, which was not previously possible. Using this data, we first empirically examine factors associated with the use of component auditors. While these have been discussed in practitioner and regulator statements, they were not empirically investigated due to data limitations.

[10] Specifically, when audit firms that are PCAOB registered but are not lead auditors on a SEC issuer file their Form 2, they are required to list audit reports for which they played a substantial role in Item 4.2. A substantial role includes performing 20 percent or more of the issuer's total audit hours or fees. This data, in addition to this information for those that do serve as a lead auditor and for those performing any percentage of the audit, is now directly supplied by the lead auditor in Form AP.

[11] This limitation is not expected to impact the results of market reaction to the disclosure of information as examined by Dee et al. (2015) and for conducting certain analyses within the disclosure group (e.g., Mao et al. 2018). However, using this data to compare firms that use component auditors with those that do not is not possible and would result in biased samples.

Use of Component Auditors and Audit Outcomes

Recent PCAOB oversight activities have identified significant audit deficiencies relating to component auditor work and the lead auditor's oversight of this work (PCAOB 2016; Doty 2016). For instance, PCAOB inspections have attributed restatements to component auditors not performing procedures requested by the lead auditor or required under PCAOB standards, as well as failing to communicate significant issues to the lead auditor (Harris 2016; PCAOB 2018). These inspection findings suggest that there are quality concerns for audits using component auditors. In 2017, the PCAOB also proposed amendments to strengthen auditing standards that govern the planning and supervision of audits that involve component auditors (PCAOB 2017). [12] The need for this standard is evidence that the PCAOB believes there is varied audit quality, beyond financial reporting quality issues that may be inherent to these companies, when lead auditors engage component auditors.

Within limited samples in the pre-disclosure era, prior literature has generally validated this regulator concern. For instance, Dee et al. (2015) find that firms that disclose the use of component auditors have lower audit quality, as measured by discretionary accruals, than firms that do not disclose the use of component auditors.[13] Similarly, Carson et al. (2016) find that involvement of affiliated component auditors is associated with lower audit quality and higher audit fees within a sample of Australian companies.[14]

[12] The referenced proposed standards are expected to improve audit quality across all audit firms and component auditors, which biases against finding a cross-sectional association between component auditor use and adverse audit outcomes.

[13] Importantly, we expect component audit firms that do not serve as lead auditors for SEC issuers (i.e., the Dee et al. 2015 sample) to be fundamentally different from those that do. Specifically, these component auditors are small non-U.S. firms with limited experience on U.S. audits (Dee et al. 2015), which may explain the finding that the disclosure of component auditors is associated with adverse audit outcomes.

[14] While Australia has a similar institutional setting to the U.S., a higher cost of living and extensive fee disclosures make it difficult to generalize audit fee findings. In a U.S. setting, Dee et al. (2015) do not find differences in audit fees between firms that disclose and do not disclose the use of component auditors.

Combined, inspection findings and prior literature suggest that component auditor use is likely to impact audit outcomes across a broad sample. Advantages of component auditor use include overcoming jurisdictional hindrances inherent to multinational companies, as well as reduction of labor costs and knowledge sharing via access to personnel who have specific expertise and familiarity with the company's operating environment in that country (e.g., Hanes 2013). Former PCAOB member Lewis Ferguson summarized these benefits:

> *The use by the lead auditor of such other auditors in an audit, often located in a different country, and at times in several different countries, can provide a number of benefits, including competitive and efficiency benefits, by allowing lead auditors to leverage the use of locally-licensed auditors. The locally licensed auditors may have language skills and knowledge of local culture and business practices that can be a great benefit to the lead auditor if properly used and supervised. The use of other auditors in a multinational environment, however, also introduces a number of challenges that can lead to inadequate audit performance* (Ferguson 2016).

This quote also highlights the significant challenges a lead auditor can face when using component auditors. While the component auditors' local presence is an advantage, it also results in differences between the U.S. lead audit firm and various component auditors, which can cause coordination and communication problems (e.g., Hanes 2013, Franzel 2016, Sunderland and Trompeter 2017). These differences are compounded by legal restrictions on work sharing and the inherent risks of a geographically dispersed work design, which make it difficult for audit teams to observe cues, informally interact, and ultimately understand the interdependence of their work (Downey and Bedard 2018; Hanes 2013). Further, constrained resources during audit busy season limit the lead auditors' ability to provide timely feedback to component auditors, as well as travel for in-person visits to conduct supervision and coaching. Lastly, component auditors also face constrained resources as they are often tasked both with completing component work and serving local clients (Sunderland and Trompeter 2017).

Since the use of component auditors by U.S. auditors was not previously known, it is not immediately clear whether and in what direction it will influence audit outcomes across a broad

sample. If component auditors are properly used and supervised, the advantages of their use could result in competitive and efficiency benefits for the lead audit firm (i.e., increased audit quality and decreased audit delay and audit fees). Conversely, without adequate supervision or perhaps even with a diligent effort by the lead auditor, deficiencies in the work of component auditors arising from coordination and communication challenges can result in deficient audits. Prior literature as well as regulator comments, inspection findings, and proposed standards have supported this prediction. Specifically, the challenges associated with component auditor use are thought to decrease audit quality and efficiencies (i.e., increase audit delay and audit fees). We therefore predict the following in our first hypothesis:

> **Hypothesis 1:** The use of component auditors is negatively associated with audit quality and positively associated with audit delay and audit fees.

Characteristics of Component Auditors Used

Since component auditor identities are now known, we next consider whether component auditors operating in locations with varying coordination and communication challenges and possessing varying levels of competence differentially impact audit outcomes.

Component Auditor Coordination and Communication Challenges

Component auditors operate in many different countries, from the Cayman Islands to Belgium, China, Egypt, Greece, Italy, Switzerland, Vietnam, and many more. As mentioned previously, differences between the U.S. lead audit firm and component auditors operating in these various countries can result in coordination and communication challenges. This was highlighted in a recent PCAOB speech:

> *When a lead auditor engages other auditors in (sometimes many) different countries, new challenges are injected into the audit. These challenges can be associated with different languages, business practices, cultural norms, and market conditions in different countries, as well as different quality control systems and professional training of staff in different audit firms. Meanwhile, the evolution of auditing standards and auditing practices that address the auditor's performance*

> *requirements and expectations under such circumstances has varied, increasing the risk of variability in audit quality* (Franzel 2016).

While operating in diverse and remote environments, it can be difficult for the lead and component auditor teams to overcome challenges and establish norms and a shared understanding (e.g., Barrett et al. 2005; Hanes 2013).

For instance, when evaluating component auditors, the lead auditor is expected to understand their compliance with ethics and whether they operate in a regulatory environment that actively oversees auditors (AICPA 2017). Cultural differences such as these can reflect team members' attitudes, namely obedience and trust, towards authority (Berry et al. 2010), and therefore may lead certain component auditors to cut corners when following lead auditor instruction as well as adhering to professional standards. This concern was highlighted in recent sanctions against Deloitte's Mexico affiliate, which are summarized by PCAOB Acting Director of Enforcement and Investigations: *"the three Deloitte Mexico partners sanctioned today not only failed to perform appropriate procedures in a critical audit area, but also compounded their failures by telling the principal auditor that they had done work that they, in fact, had not done"* (PCAOB 2018). Instances like this can be detrimental to audit outcomes if lead auditors put undue trust in audit work performed by component auditors, which may contain errors or not be performed in accordance with auditing standards.

Additionally, the effectiveness of audit work using component auditors depends crucially on communication between the lead and component auditors (e.g., Barrett et al. 2015; Hanes 2013; Sunderland and Trompeter 2017). The lead auditor may often work with component auditors in countries with different native languages and varied levels of English proficiency. Component auditor teams with low English proficiency may have difficulty following the lead auditor's direction and miss information and salience cues, causing information relevant to the audit opinion

to not be conveyed to the lead auditor (Downey and Bedard 2018; Hanes 2013). PCAOB oversight activities have found lead auditor failures in supervising component auditor work when there were language barriers (PCAOB 2013). Further, the lead auditor and component auditor teams may experience vast time differences. Timely communication amongst these teams is important for effective resolution of issues that arise throughout the audit process (AICPA 2017), and significant time differences may hinder this communication.

Of course, coordination and communication problems may not heterogeneously arise across all countries in which component auditors are used. For example, certain countries such as the United Kingdom or Australia are more similar to the U.S. in cultural norms and communication preferences. We therefore expect that work performed by component auditors facing greater coordination and communication challenges will drive the negative association with audit quality and positive association with audit fees and audit delay predicted in Hypothesis 1.[15]

> **Hypothesis 2**: The predicted association with adverse audit outcomes is more pronounced when there are more, relative to less, coordination and communication challenges.

Component Auditor Competence

In addition to coordination and communication challenges, the competence of component auditors employed may vary. When selecting and retaining component auditors, the lead auditor must ensure that component auditors are independent and possess the appropriate competence and capabilities. Specifically, the lead auditor is permitted to express an opinion on the financial statements as a whole if they are able to satisfy themselves as to the ethics, independence, and professional reputation (including their knowledge of the professional standards, skill, and ability) of component auditors used (PCAOB 2010; PCAOB 2016).

[15] For expositional reasons, we refer to these associations as "adverse audit outcomes" in Hypotheses 2 and 3.

PCAOB standards suggest the lead auditor confirm component auditor familiarity with U.S. GAAP, generally accepted auditing standards (GAAS), and relevant SEC requirements in their evaluation of competence.[16] For example, familiarity may be indicated by their experience conducting U.S. audit work (i.e., applying the referenced standards, rules, and regulations) or their relevant professional certifications, such as a CPA or equivalent (Dee et al. 2015; Nagy et al. 2018).[17] Regulators have also expressed concern over component auditors lacking the industry experience necessary to perform work requested by the lead auditor (AICPA 2017; PCAOB 2016). In sum, the competence of component auditors is clearly an important factor when managing a complex multinational audit, a notion confirmed by respondents to the Downey and Bedard (2018) questionnaire. We therefore predict the following:

> **Hypothesis 3:** The predicted association with adverse audit outcomes is more pronounced when less, relative to more, competent component auditors are used.

RESEARCH DESIGN

Sample Selection

We begin our data collection by identifying a sample of U.S. public companies subject to the Form AP component auditor disclosure requirement. Specifically, we identify Form AP filings for audit reports issued after June 30, 2017, which includes fiscal year ends between April 2017 and March 2018.[18] We then restrict our sample to 3,880 U.S. issuers with a U.S. lead auditor and necessary data in Compustat and Audit Analytics.

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[16] This is consistent with responses to the Downey and Bedard (2018) questionnaire, where component auditor knowledge, measured using their understanding of GAAP, GAAS, the regulatory environment, and the client's industry, is thought to reduce coordination and communication challenges on multinational audits.

[17] While Dee et al. (2015) do not find this to be a significant characteristic in their subset of firms that disclose component auditor use, recent studies find local education levels and professional certifications of relevant individuals to be informative characteristics (e.g., Beck et al. 2017; Hoitash et al. 2016; Ge et al. 2011; Prawitt et al. 2009). Nagy et al. (2018) find that the number of CPAs in U.S. audit firm offices is positively associated with audit quality, measured by the likelihood of restatements and discretionary accruals.

[18] Form AP filings are collected from the AuditorSearch database made available by the PCAOB (https://pcaobus.org/Pages/AuditorSearch.aspx).

The lead auditors of all companies in this initial sample are required to report information on component auditor use (if any) in Items 4.1 and 4.2 of engagement-specific Form AP filings. Specifically, in Item 4.1 lead auditors report the legal name, extent of participation[19], city, state, and country for each component auditor that individually contributes five percent or more of total audit hours. In Item 4.2 lead auditors report the number and aggregate percentage of component auditors that individually contribute less than five percent of total audit hours.[20] These filings indicate that 1,435 (37.0 percent) of the 3,880 engagements use at least one component auditor and 906 use at least one component auditor that contributes five percent or more of total audit hours. Since the latter sample identifies component auditors by name, it is used in our characteristics analyses (H2 and H3). The derivations of our samples are reported in Table 1.

[Insert Table 1]

Component Auditor Variables

The first test variable used in analysis for H1 is *COMPONENT-USE*, which is an indicator variable equal to one if at least one component auditor participated on the engagement, and zero otherwise. For engagements where component auditors are used, we create two additional variables. *COMPONENT-NUMBER* is a count variable for the total number of component auditors that participated on the audit. *COMPONENT-PCT* is the total percentage of audit hours conducted by component auditors.

To test H2, we use three proxies for coordination and communication challenges. To capture cultural and regulatory differences between U.S. and component auditor locations, we

[19] Lead auditors have the option to report the extent of participation as either an exact percentage or a range of the percentage of audit hours (e.g., "5 percent to less than 10 percent of total audit hours," "10 percent to less than 20 percent of total audit hours," etc.). When the range is reported, we use the midpoint in our calculations. For example "10 percent to less than 20 percent of total audit hours" becomes 15 percent.

[20] Appendix A provides an example of Items 4.1 and 4.2 from Monsanto's 2017 Form AP filing.

collect the country's rule of law.[21] Language barriers are measured by the English language proficiency[22] of the component auditor's country of operation and additional communication issues by the time zone difference between the lead and component auditor offices.[23] To capture the amount of work done by component auditors with more or less challenges, we split the percentage of audit hours conducted by separately listed component auditors in two mutually exclusive variables capturing the percentage of audit hours performed by component auditors scoring high and low based on these three proxies.[24] We consider component auditors with coordination and communication challenges to be those with below average rule of law (*LOW-RULEOFLAW*) and English language proficiency (*LOW-ENGLISH*) and above average time zone differences (*HIGH-TIMEDIFF*). The counterparts to these variables are *HIGH-RULEOFLAW*, *HIGH-ENGLISH*, and *LOW-TIMEDIFF*. Since one engagement could use several different component auditors, these sets of measures allow us to split the percentage of work conducted by component auditors with and without each characteristics. For example, if 40 percent of audit hours are conducted by component auditors, 15 percent could be classified as low (e.g., *LOW-TIMEDIFF*) and 25 percent as high (e.g., *HIGH-TIMEDIFF*).

To test H3, we similarly create variables capturing the percentage of audit hours performed by component auditors scoring high and low on three proxies for competence. Motivated by

[21] This country-specific measure of cultural differences is collected from the Worldwide Governance Indicators (WGI) project (Kaufman et al. 2010). The rule of law metric "reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence" (WGI 2016). The 2016 rule of law metric ranges from -2.5 to 2.5 and is available for all countries in our sample. We assume that this metric is relevant to the component auditors' 2017 culture and business practices in their country.

[22] We measure English language proficiency by collecting data on the percentage of the country's population that speaks English from several sources (e.g., EF 2017).

[23] Time zone data is obtained from a flight and airport location database available at https://openflights.org. While we consider an above average time zone difference to represent a coordination and communication challenge, it is conversely possible that a large time difference increases productivity because work is being conducted continuously.

[24] Since component auditors that individually conduct less than five percent of the audit are reported in aggregate in Item 4.2 of Form AP, we cannot identify their characteristics and therefore cannot incorporate them in these cross-sectional analysis.

PCAOB standards, which suggest the lead auditor confirm component auditor professional reputation and familiarity with U.S. GAAP and GAAS, we measure competence using the number of personnel with a CPA or comparable license[25], experience leading U.S. audits (based on aggregate U.S. assets as lead auditor), and experience conducting audit work in the client's industry (i.e., either a lead or component auditor on at least one additional client). For each measure, we consider less competent (more competent) component auditors to be those with below (above) average values within the sample and refer to these variables as *LOW-CPAS (HIGH-CPAS), LOW-USASSETS (HIGH-USASSETS),* and *NO-INDEXPERIENCE (IND-EXPERIENCE)*, respectively.

Dependent Variables

As recommended by DeFond and Zhang (2014), we employ five different dependent variables throughout our analyses, including three measures of audit quality as well as audit delay and audit fees. Using multiple dependent variables in our analyses allows for the triangulation of results and the potential to provide a consistent and comprehensive story.

The first measure is an indicator variable that equals one for firms that report a material weakness in their internal controls (*MW*), and zero otherwise. Second, *RESTATEMENT* is an indicator variable equal to one for firms that have subsequently restated their annual or quarterly filings, and zero otherwise.[26] Third, we employ the absolute value of discretionary accruals (*DISC-ACC*). We follow Kothari, Leone, and Wasley (2005) and calculate *DISC-ACC* controlling for firm performance. A higher value of any of these measures is indicative of lower financial

[25] We manually collect this data for each component auditor registered with the PCAOB from their annual Form 2 filing (Item 6.1). Since this data is not available for component auditors that are not registered with the PCAOB, we assume they fall in the below average number of CPAs group.

[26] Because restatements are often detected and disclosed in future years, it is likely that our measure is significantly underestimated, which should bias against finding results.

reporting and audit quality. *AUDIT-DELAY* is the number of days between the fiscal year end and the audit report date minus the SEC's filing deadline (60, 75, and 90 days for large accelerated, accelerated, and non-accelerated, respectively). Lower *AUDIT-DELAY* is often indicative of a more efficient audit. Lastly, *AUDIT-FEES* is the natural log of audit fees, which serves as a proxy for audit cost and audit effort.

Control Variables

We employ a common set of control variables across all of our models, which includes controls for size, complexity, financial performance, and several other common variables (e.g. Hay, Knechel, and Wong 2006; Hoitash and Hoitash 2018). We control for company size (*SIZE*) and firm complexity with several variables, including the number of business segments (*BUS-SEG*), the number of geographic segments (*GEO-SEG*)[27], an indicator for foreign operations (*FOREIGN-OPERATIONS*), the number of foreign subsidiaries (*FOREIGN-SUBSIDIARIES*), and the number of U.S. subsidiaries (*US-SUBSIDIARIES*).[28] We also control for accounting reporting complexity (*ARC*) which captures the amount of accounting disclosures in annual filings. Additional control variables and their definitions are provided in Appendix B. All continuous variables are winsorized at the 1st and 99th percentiles and all models also include two-digit SIC industry fixed effects.

RESULTS

Descriptive Statistics

Before the Form AP requirement, the use, extent of use, and characteristics of component auditors were not publicly known. Our sample includes 3,880 companies, of which 37.0 percent use

[27] It is not possible to map geographic segments to component auditor data. Specifically, data on geographic segments is typically more aggregated. For example, one company can list Asia as one of its geographic segments, while another can separately report information on Japan and China. Our component auditor data is unique as it reveals the auditors perception of the materiality and risk of certain geographic locations.

[28] We collect subsidiary information using SeekEdgar. While companies are required to report the number of foreign subsidiaries and this is important to control for in our context, they do not report the extent of operations in these countries. Because many firms report more than 20 foreign subsidiaries, it is unlikely that all are materially significant.

component auditors. Table 2, Panel A presents descriptive statistics within the sample of 1,435 engagements that use at least one component auditor. We observe that the mean (median) number of components used on an audit engagement is 3.6 (2.0), ranging from one to 19. The mean (median) percentage of audit hours conducted by component auditors is 18.0 (15.0), ranging from one to 70 percent. To proxy for the materiality of audit hours conducted by these component auditors, we multiply the percentage each component auditor is responsible for on a given engagement by total assets of that engagement. Combined, component auditors are responsible for auditing approximately six trillion dollars of assets in our sample, which is economically meaningful.

[Insert Table 2]

906 engagements, or 63.1 percent of those using component auditors, have at least one component auditor individually responsible for more than five percent of the audit, and thus separately disclosed. Within this sample, an average of 1.7 separately listed component auditors are used to conduct 21.6 percent of audit hours. Table 2, Panel B presents descriptive statistics for the 303 unique component auditors identified. The mean (median) number of engagements that these component auditors are involved with is 5.0 (2.0), and ranges from 1 to 48. Of these component auditors, 92.7 percent are part of an affiliate network, 62.0 percent are affiliates of a Big 4 auditor, and 45.2 percent also serve as lead auditors on a U.S. issuer. The latter group did not previously disclose their component auditor work and would be excluded from the Dee et al. (2015) and Mao et al. (2018) treatment samples. Further, the mean number of years that component auditors have been registered with the PCAOB is 11.5.[29]

[29] We also recognize that the PCAOB is not allowed to inspect audit firms in certain countries. Our results are robust to controlling for engagements where more than 20 percent of audit hours are conducted by component auditors located in countries

Panel B also shows that 60.4 (47.5) percent of unique component auditors operate in countries with high rule of law (English language proficiency) and 38.9 percent have an above average time difference from the lead auditor's office. 22.1 percent of unique component auditors have an above average number of CPAs, 10.9 percent serve as the lead auditor on an above average amount of U.S. assets, and 22.1 percent have experience as either a component or lead auditor in the client's industry. Variables used to test H2 and H3, which disaggregate the percentage of audit hours into those conducted by component auditors with more or less coordination and communication challenges and by more and less competent component auditors are built from these cutoffs. Table 2, Panel A presents descriptives for these variables.

Table 2, Panel C presents descriptive statistics of unique component auditors by the country in which they operate.[30] For ease of presentation, we separately display countries with three or more unique components and aggregate countries with less. We observe that the U.K. is most represented, with 13 component auditors involved in 226 engagements. This is followed by Germany and China. Countries like Belarus, Egypt and Vietnam have only one component auditor, and each is involved in only one audit engagement. Using the percentage of audit hours conducted as a proxy for percentage of assets audited, we observe that component auditors in the U.K. are responsible for auditing 1.16 trillion dollars, followed by almost 400 billion in Japan and 237 billion in Mexico. Germany and China's component auditors, although involved in more engagements than Japan or Mexico, are responsible for auditing less in assets (109 and 115 billion dollars, respectively). Overall, these descriptives illustrate that component auditors are involved in auditing a significant amount of assets, which could have a consequential effect on the audit.

[30] While PCAOB standards and prior literature focus on the use of non-U.S. component auditors, there are nine engagements in our sample that use a U.S.-based component auditor. Our results are consistent if these engagements are removed from the sample.

Lastly, Table 2, Panel D presents descriptives of our dependent and control variables. Of the 3,880 companies in our sample, 13.6 and 3.4 percent disclose an internal controls material weakness or had a restatement of their financials, respectively. According to sample means, the level of discretionary accruals is 0.082[31], companies report their financials seven days before their deadline, and audit fees are 2.5 million dollars. Descriptives for control variables are also displayed and are consistent with prior literature.[32]

Multivariate Results

Factors Associated with Component Auditor Use

Our first set of models examine factors associated with the use of component auditors, which was not previously possible before the Form AP disclosure requirement. Column 1 of Table 3 shows results of a logistic regression model where the dependent variable is an indicator for *COMPONENT-USE*.[33] Results show that the likelihood of using a component auditor increases with *SIZE, LOSS, LEVERAGE, INV-REC, BIG4*, and *AGE*.

[Insert Table 3]

In Column 2 we add six different measures of firm complexity to the model and find that each is significantly associated with the likelihood of using a component auditor. Specifically, we find that *BUS-SEG*, *GEO-SEG*, *FOREIGN-OPERATIONS*, *FOREIGN-SUBSIDIARIES*, and *ARC* are each associated with an increased likelihood that a component auditor is involved ($p<.05$ or less). The number of *US-SUBSIDIARIES* is inversely associated with the use of component auditors, likely because it captures firms with more operations in the U.S. Interestingly, all

[31] The sample of discretionary accruals is smaller because we do not include firms in financial industries or industries with less than 20 engagements.
[32] The variance inflation factors (VIFs) are below 10 in all of our models, with the highest VIF being 4.71. We therefore conclude that mulicollinearity does not substantially impact the interpretation of our results (Cohen et al. 2003).
[33] The number of observations will differ across logit models because observations are automatically dropped when any independent variable perfectly predicts (success or failure) the dependent variable.

variables from Column 1 other than *SIZE* and *INV-REC* are no longer significant when the complexity variables are included in Column 2.[34] This suggests that the structure of firms, rather than their financial performance or auditor choice, is the primary determinant of component auditor use.[35] This is consistent with practitioner statements that component auditor use is unavoidable for companies with significant foreign operations.

Component Auditor Use and Audit Outcomes

Our first hypothesis predicts that the use of component auditors will be associated with lower audit quality, longer audit delays, and higher audit fees. We first test this hypothesis using an indicator for component auditor use (*COMPONENT-USE*) in Table 4. Results in Column 1 of Panel A show that *COMPONENT-USE* is associated with increased likelihood to disclose a *MW* ($p<0.01$). Columns 2 and 3 show no significant association between *COMPONENT-USE* and *RESTATEMENT* or *DISC-ACC*. However, we do find that *COMPONENT-USE* is associated with longer *AUDIT-DELAY* and higher *AUDIT-FEES* ($p<0.10$ and $p<0.01$, respectively).[36]

[Insert Table 4]

Overall, results indicate some adverse consequences, primarily for audit pricing and efficiency, for engagements that use component auditors compared to those where component

[34] It is not surprising that *SIZE* remains significant because it also captures firm and audit complexity. Further, the positive sign on *INV-REC* is likely attributed to the fact that many component auditors are responsible for performing audits of inventory listings in their location (e.g., Barrett et al. 2005; Gunn and Michas 2018).

[35] The explanatory power of the model in Column 2 is 41.0 percent, which is not trivial. We also estimate the two models without industry fixed effects (not tabled) and observe that the explanatory power in columns 1 and 2 are 8.6 and 37.4 percent respectively, further underscoring that the likelihood of component auditor use is mostly explained by the six complexity variables and not by company performance or by industry.

[36] Results are also economically significant. For Column 1, we calculate the economic significance as the change in the likelihood of *MW* when *COMPONENT-USE* moves from zero to one, with all other variables are measured at their sample means. An audit engagement involving at least one component auditor is associated with a 39.97 percent increase in the likelihood of material weakness disclosure. We calculate economic significance by dividing the increased likelihood to disclose a MW when using a component auditor (3.79 percent) by the unconditional likelihood of MW in our sample (9.49 percent). Further, engagements using component auditor's experience 11.17 percent longer audit delay and $134,879 higher audit fees relative to the sample means.

auditors are not used. These results are similar to Carson et al. (2016) which finds higher audit fees for Australian engagements using component auditors, but in contrast to Dee et al. (2015) which finds that firms disclosing the use of component auditors had higher discretionary accruals and no difference in audit fees when compared to those that did not disclose. This illustrates that audit firms that were previously required to disclose their work as component auditors (i.e., small non-U.S. firms with limited experience on U.S. audits) are fundamentally different than the broader sample of component auditors.

Although our model includes controls for firm size and complexity, it is possible that the observed results are nonetheless attributed to the client's innate characteristics (e.g., complexity, foreign operations, financial reporting quality) and not to the use of component auditors. This is of particular concern since the determinants analysis in Table 3 suggests that component auditor use is structural. To further explore whether component auditor use has an impact on these audit outcomes incremental to the client characteristics, we employ a propensity score matched sample. To create the matched sample, we identify engagements with a similar likelihood to use a component auditor, resulting in 639 treatment and 639 control engagements.[37] Results using this matched sample are reported in Table 4, Panel B and are consistent with Panel A.

Number of component auditors used. While propensity score matching alleviates some concern, in remaining analysis we limit our sample to a more homogenous sample of firms that use at least one component auditor. Table 5 presents results examining the association between *COMPONENT-NUMBER* and audit outcomes. Surprisingly, the only significant association we

[37] We use a caliper distance of 0.01 without replacement to identify matches. The covariance balance affirms the success of the matching procedures, indicating that none of the control variables are statistically different between the treatment and control engagements. In order to retain a balanced sample throughout analyses, we do not include industry fixed effects in the logit models (Columns 1 and 2). Results are consistent if industry fixed effects are included in these models.

observe is with audit fees, where the number of components is associated with higher audit fees ($p<0.01$). The lack of audit quality and delay findings are unexpected given that respondents to the Downey and Bedard (2018) experiential questionnaire perceived that a greater number of component auditors increased coordination and communication issues. When triangulated with our findings, albeit recognizing the constraints of our different samples and research methods, this suggests that issues generated from a greater number of component auditors either do not generalize to a broader sample or are remediated before they adversely impact audit quality and efficiency.

[Insert Table 5]

Percentage of audit hours conducted by component auditors. In Table 6 we investigate the association between the percentage of audit hours conducted by component auditors and audit outcomes. This table generally indicates support for the hypothesis, with Panel A showing that *COMPONENT-PCT* is significant and positively associated with *MW*, *RESTATEMENT*, *AUDIT-DELAY*, and *AUDIT-FEES* ($p<0.01$; $p<0.05$; $p<0.01$; $p<0.01$, respectively). These results are also economically significant. For Columns 1 and 2 we calculate economic significance as the change in the likelihood of *MW* (*RESTATEMENT*) when *COMPONENT-PCT* moves from the 25th percentile to the 75th percentile. Holding all other variables at their sample mean, we observe a 40.04 (65.43) percent increase in the likelihood of *MW* (*RESTATEMENT*). Further, audit delay is 17.6 percent longer and audit fees are 7.48 percent higher when moving from the 25th to 75th percentile of *COMPONENT-PCT*.

[Insert Table 6]

In Table 6, Panel B we use a second propensity score matched sample to further control for client characteristics. Specifically, we create a matched sample of firms with high and low

percentages of work conducted by component auditors (i.e., *COMPONENT-PCT* above and below the median, respectively). The matching procedure, which uses the same criteria as described earlier, results in a sample of 403 treatment and 403 control engagements. None of the control variables are significantly different across the treatment and control sample. Results in Panel B show that *MW*, *RESTATEMENT*, *AUDIT-DELAY*, and *AUDIT-FEES* all increase with *COMPONENT-PCT* ($p<0.01$; $p<0.05$; $p<0.01$; $p<0.01$). This analysis provides further assurance that even within a sample of engagements that are equally complex, the percentage of audit hours conducted by component auditors impacts audit outcomes.

Overall, we conclude that results, using multiple test variables, show substantial support for H1. Taken together, results in Tables 5 and 6 document that while the number of components is only informative for audit pricing, the percentage of audit hours conducted by component auditors better captures the extent of challenges faced in audits that involve diverse teams of auditors.

Component Auditor Coordination and Communication Challenges

In H2, we predict that not all component auditors are created equal, and that those facing greater coordination and communication challenges can result in more pronounced adverse audit outcomes. This analysis is conducted within the sample of 906 engagements where at least one component auditor is separately listed on Form AP, and thus its identity is publicly available.[38]

[38] Within this sample, the percentage conducted by separately listed component auditors is positively associated with *MW*, *RESTATEMENT* and *AUDIT-DELAY*. Separately listed component auditors by definition contribute more audit hours to the engagement, and these results suggest that their coordination and communication challenges have negative impacts on audit quality and audit efficiency. This percentage is not associated with audit fees, which is also true throughout our results for H2 and H3. This suggests that engagements with separately listed components are not costlier than audits with component auditors that are not separately listed, which are captured by the intercept. The interpretation of the audit fee results for the percentage not separately listed are similar to findings for *COMPONENT-NUMBER* in H1.

Results in Table 7, Panel A show that the *LOW-RULEOFLAW* is associated with greater *MW* and *RESTATEMENT* likelihood and longer *AUDIT-DELAY* ($p<0.01$; $p<0.10$; $p<0.01$).[39] *HIGH-RULEOFLAW* is insignificant throughout, thus lending support for H2 that the predicted negative effects of using component auditors are more pronounced when audit hours are conducted by components in low rule of law countries. This finding supports the notion that cultural differences between the U.S. lead audit firm and component auditors operating in various countries can result in adverse audit outcomes.

[Insert Table 7]

In Panel B, we find that *LOW-ENGLISH* is positively associated with *MW, RESTATEMENT,* and *AUDIT-DELAY* ($p<0.01$; $p<0.10$; $p<0.01$, respectively), while *HIGH-ENGLISH* is not significant in any of the models. These results suggest that communication with component auditors operating in countries with low English proficiency generates adverse audit implications, while employing component auditors in countries with high English proficiency is not significantly different from the lead auditor performing all of the audit work. Findings of this analysis support predictions that language differences can cause communication difficulties (e.g., Barrett et al. 2015; Hanes 2013; Sunderland and Trompeter 2017), and are in contrast to responses to the Downey and Bedard (2018) experiential questionnaire, where language barriers were not perceived to be influential in engagements.[40]

[39] We do not find a significant association between *LOW-RULEOFLAW* and discretionary accruals. This is in contrast to Dyreng, Hanlon, and Maydew (2012) who find that countries with low rule of law have a higher likelihood of earnings management. One major difference in these tests is that we capture the significance of foreign operations, via the percentage of audit work conducted in these countries, whereas they measure whether a foreign subsidiary is located in these countries. Nevertheless, we control for the number of foreign subsidiaries in all of our models.

[40] There are several possible explanations for our different findings, including that the respondents in Downey and Bedard (2018) are U.S. senior managers who likely only communicate with component auditor management and are less likely to notice language barriers. Further, we employ different samples (147 versus 906), dependent variables (communication and coordination issues versus audit outcomes), and research methods (experiential questionnaire versus archival).

In Panel C, we again find consistent results. Specifically, *HIGH-TIMEDIFF* is again positively associated with *MW*, *RESTATEMENT*, and *AUDIT-DELAY* ($p<0.10$; $p<0.05$; $p<0.01$, respectively). This suggests that challenges arising from delayed communication ultimately prevent the resolution of audit issues. Surprisingly, *LOW-TIMEDIFF* is also significantly associated with *AUDIT-DELAY* ($p<0.10$). In combination with a lack of audit quality findings, this suggests that certain efficiencies are lost when a majority of work is conducted in the same workday.

Component Auditor Competence

In Table 8 we focus on variations in component auditor competence. Results in Panel A show that *LOW-CPAS* is associated with higher likelihood to disclose a *MW*, greater propensity for *RESTATEMENT*, and longer *AUDIT-DELAY* ($p<0.05$; $p<0.05$; $p<0.01$, respectively). *HIGH-CPAS* is not significantly associated with any of the dependent variables. Panel B displays results using *LOW-USASSETS* and *HIGH-USASSETS*, which mimic Panel A, and suggest that work performed by those with less experience auditing U.S. clients drive the higher likelihood to disclose a *MW*, greater propensity for *RESTATEMENT*, and longer *AUDIT-DELAY* ($p<0.05$; $p<0.10$; $p<0.05$, respectively). Interestingly, *HIGH-USASSETS* is also positively associated with *AUDIT-DELAY* ($p<0.05$), which suggests that conducting both component and lead auditor work constrains resources. Results for *NO-INDEXPERIENCE* and *INDEXPERIENCE* are displayed in Panel C and are again consistent, suggesting that a lack of experience in the client's industry is associated with lower audit quality and longer audit delay.

[Insert Table 8]

Overall, using all three measurements of competence, results suggest that work performed by more competent component auditors is not statistically different from work performed by the

lead audit firm. In contrast, work performed by less competent component auditors is driving the association with adverse audit outcomes. This auditor-level analysis addresses the concern that results are explained by innate characteristics and financial reporting issues of firms with multinational operations that require component auditor use. Specifically, by focusing on lead auditor characteristics which influence the audit process, rather than those of the component auditor which may reflect innate characteristics of the client and the location of its operations, we can attribute our results to audit quality rather than financial reporting quality.

Additional Analysis and Robustness

Employing Competent Component Auditors to Mitigate Challenges

Findings of Table 7 suggest that employing component auditors in countries with coordination and communication challenges is associated with adverse audit outcomes. However, as documented in Table 3, component auditor use is driven by firm size, complexity, and the existence and diversity of foreign operations. Therefore, lead auditors may not have a choice of where to employ component auditors. In this additional analysis, we explore whether employing competent component auditors can remediate the challenges associated with operating in countries with low rule of law, low English language proficiency, and large time differences from the lead auditor.

In Table 9, we disaggregate the percentage of work performed by component auditors with each challenge into the percentage conducted by competent component auditors and conducted by less competent component auditors. We determine this split based on whether the component auditor meets at least two of the three competence criteria used to test H3 (i.e., employs above average number of CPAs, is the lead auditor on an above average amount of assets of U.S. issuers, and has experience as either a lead or component auditor on at least one additional client in the same industry).

[Insert Table 9]

We find that work performed by less competent component auditors in countries with low rule of law, low English language proficiency, and large time differences (Panels A, B, and C, respectively) is generally associated with adverse audit outcomes. Surprisingly, these variables are all negatively associated with *AUDIT-FEES*, perhaps suggesting less effort is exerted in challenging locations when the component auditor lacks competence, which explains the adverse audit outcomes. Importantly, adverse outcomes are generally not observed in challenging locations when the auditor is more competent. The one exception is positive associations with *AUDIT-FEES*, which compared to the finding for less competence, suggests that more effort is exerted and audit quality issues are mitigated when a competent component auditor is employed in challenging locations. Therefore, we conclude that using more competent component auditors can help to overcome certain country-specific challenges, which are determined by the materiality of client foreign operations. These results also alleviate the concern that financial reporting issues inherent to complex multinational engagements, and specifically to those with operations in countries with low rule of law or English proficiency, drive our main results. If that were the case, we would not find that competent component auditors alleviate challenges in these countries.

Further Controlling for Client Complexity

In H3, we conclude that work performed by less competent component auditors is driving the association with adverse audit outcomes. An alternative explanation for this result is that these component auditors are more likely to work on complex firms, which are also more likely to experience adverse audit outcomes. To explore this omitted correlated variable, we correlate the aggregate competence measure with six firm complexity measures (i.e, *BUS-SEG, GEO-SEG, FOREIGN-OPERATIONS, FOREIGN-SUBSIDIARIES, US-SUBSIDIARIES, ARC*). We observe

that the percentage of work performed by competent (less competent) component auditors is positively (negatively) associated with all (four out of the six) complexity measures. Since complexity is associated with adverse audit outcomes, this biases against our competence finding and partially alleviates concern that results are driven by innate firm characteristics rather than auditor characteristics.[41]

Alternative Component Auditor Characteristics

In untabulted analyses, we consider two additional component auditor characteristics. First, we consider an additional coordination and communication challenge by calculating the distance in miles between the nearest airports to lead auditor and component auditors, which is a factor that may impact in-person supervision and coaching (PCAOB 2016). For brevity, we do not include this characteristic in main analyses as it shares similar predictions to time zone differences. In untabulated analyses, we similarly find that adverse audit outcomes are driven by work performed by component auditors with above average distance from the lead auditor. Second, in addition to measuring experience on U.S. audits using aggregate assets as a lead auditor (Table 8, Panel B), we consider whether the component auditor conducts component work on an above average amount of assets. Untabulated results using this alternative competence measure are consistent.

CONCLUSION

In 2017, the PCAOB's Form AP requirement introduced new data to auditing research and the capital markets. Specifically, lead auditors on U.S. issuers are now required to disclose the use, extent of use, and identity of component auditors, which the PCAOB refers to as "other accounting firms." Recent PCAOB inspections identify significant audit deficiencies relating to component

[41] We note that within this more homogenous sample of firms that use at least one component, the number of geographic segments and foreign subsidiaries do not exhibit significant and consistent association with audit outcomes. This suggests that the percentage of work performed by components better captures the materiality of these operations to the audit.

auditor work and the lead auditors' oversight of this work (PCAOB 2016; Doty 2016; Harris 2016). Therefore, these new disclosures could be informative when assessing audit outcomes.

Prompted by this regulator concern and the new Form AP disclosure requirements, we examine factors associated with component auditor use, and whether this use is associated with audit outcomes. At the outset, we find that the likelihood of using a component auditor is associated with company structural properties, such as size, complexity, and foreign operations. Audit engagements that involve significant component auditor work are associated with a higher likelihood of material weakness disclosure, longer audit delays, and higher audit fees. This information was not available prior to the new disclosure requirement and can be informative to interested parties when assessing the audit.

To further explore this finding, we collect information on component auditors named in Form AP. We use this information to explore whether all component auditors are created equal. We find that the percentage of audit hours conducted by less competent component auditors and those with significant coordination and communication challenges exhibit significant associations with adverse outcomes. This implies that auditors can reduce the potential for adverse audit outcomes by employing more competent component auditors. However, since our results show that component auditor use is structural and driven by client operations, lead auditors likely cannot control the countries in which they employ component auditors, and thus the coordination and communication challenges faced. Therefore, we conduct further analysis which finds that hiring competent component auditors in locations that are more prone to challenges can mitigate adverse outcomes. Overall, these findings can contribute to both practice (e.g., lead and component auditors, client management, investors) and future research using the new Form AP data to make decisions.

Although data made available by Form AP enhances the information environment, limitations still remain. For instance, we are unable to determine the identity or individual percentage of audit hours conducted by component auditors who conduct less than five percent of the audit hours. Further, for those that do conduct more than five percent of audit hours, very little information is available other than their required reporting with the PCAOB, which we use to create competence measures. Since we largely do not have information on the identities of employees at these component auditors, we must make the assumption that characteristics (e.g., experience auditing U.S. clients, rule of law, English language proficiency, etc.) of the firm and the country it operates in apply to the audit team.

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Appendix A: Example of Items 4.1 and 4.2 in Form AP

Italicized terms are defined in PCAOB Rule 1001, except for the definition of "other accounting firm" which appears in the general instructions to Form AP. The Firm must apply those definitions in completing the Form.

PART IV - RESPONSIBILITY FOR THE *AUDIT* IS NOT DIVIDED

In responding to Part IV, total *audit* hours in the most recent period's *audit* should be comprised of hours attributable to: (1) the financial statement *audit*; (2) reviews pursuant to AS 4105, *Reviews of Interim Financial Information*; and (3) the *audit* of internal control over financial reporting pursuant to AS 2201, *An Audit of Internal Control Over Financial Reporting That Is Integrated with An Audit of Financial Statements*. Excluded from disclosure and from total *audit* hours in the most recent period's *audit* are, respectively, the identity and hours incurred by: (1) the engagement quality reviewer; (2) the person who performed the review pursuant to SEC Practice Section 1000.45 Appendix K; (3) specialists engaged, not employed, by the Firm; (4) an accounting firm performing the audit of the entities in which the *issuer* has an investment that is accounted for using the equity method; (5) internal auditors, other company personnel, or third parties working under the direction of management or the audit committee who provided direct assistance in the *audit* of internal control over financial reporting; and (6) internal auditors who provided direct assistance in the *audit* of the financial statements. Hours incurred in the *audit* by entities other than *other accounting firms* are included in the calculation of total *audit* hours and should be allocated among the Firm and the *other accounting firms* participating in the *audit* on the basis of which accounting firm commissioned and directed the applicable work.

In responding to Part IV, if the financial statements for the most recent period and one or more other periods covered by the *audit report* identified in Item 3.1.a.4 were audited during a single *audit* engagement (for example, in a reaudit of a prior period(s)), the calculation should be based on the percentage of *audit* hours attributed to such firms in relation to the total *audit* hours for the periods identified in Item 3.1.c.

Actual audit hours should be used if available. If actual audit hours are unavailable, the Firm may use a reasonable method to estimate the components of this calculation. The Firm should document in its files the method used to estimate hours when actual audit hours are unavailable and the computation of total audit hours on a basis consistent with AS 1215, *Audit Documentation*. Under AS 1215, the documentation should be in sufficient detail to enable an experienced auditor, having no previous connection with the engagement, to understand the computation of total audit hours and the method used to estimate hours when actual hours were unavailable.

Indicate, by checking the box, if the percentage of total *audit* hours will be presented within ranges in Part IV.	☑

ITEM 4.1 - *OTHER ACCOUNTING FIRM*(S) INDIVIDUALLY 5% OR GREATER OF TOTAL *AUDIT* HOURS

Firm ID	01153	Check here if no Firm ID is available ☐	Percentage of participation	%	or range 5% to less than 10%
Legal name	Galaz, Yamazaki, Ruiz, Urquiza, S.C.				
Headquarters' office location:					
Country	Mexico				
City	Ciudad de México		State		

Firm ID	01088	Check here if no Firm ID is available ☐	Percentage of participation	%	or range 5% to less than 10%
Legal name	Deloitte & Co. S.A. (Deloitte & Co. Sociedad Anónima)				
Headquarters' office location:					
Country	Argentina				
City	Ciudad Autonoma de Buenos Aires		State		

Firm ID	01045	Check here if no Firm ID is available ☐	Percentage of participation	%	or range 10% to less than 20%
Legal name	Deloitte Touche Tohmatsu Auditores Independentes				
Headquarters' office location:					
Country	Brazil				
City	São Paulo		State		

Note 1: In responding to Items 4.1 and 4.2, the percentage of hours attributable to *other accounting firms* should be calculated individually for each firm. If the individual participation of one or more *other accounting firm(s)* is less than 5%, the Firm should complete Item 4.2.

Note 2: In responding to Item 4.1, the Firm ID represents a unique five-digit identifier for firms that have a publicly available PCAOB-assigned number.

ITEM 4.2 - *OTHER ACCOUNTING FIRM*(S) INDIVIDUALLY LESS THAN 5% OF TOTAL *AUDIT* HOURS

a. State the number of *other accounting firm(s)* individually representing less than 5% of total *audit* hours.

2

b. Indicate the aggregate percentage of participation of the *other accounting firm(s)* that individually represented less than 5% of total *audit* hours by filling in a single number or by selecting the appropriate range as follows:

Aggregate percentage of participation % or range Less than 5%

Appendix B: Variable definitions

Test Variables	**Variable Definition**
COMPONENT-USE	=1 if the lead auditor indicates in Form AP that at least one component auditor participated on the engagement, zero otherwise [Form AP]
COMPONENT-NUMBER	The number of component auditors that participated on the audit [Form AP]
COMPONENT-PCT	The percentage of audit hours conducted by component auditors [Form AP]
LOW-CPAS	The percentage of audit hours conducted by component auditors with number of CPAs below the sample mean [Item 6.1 of PCAOB Form 2]
HIGH-CPAS	The percentage of audit hours conducted by component auditors with number of CPAs above the sample mean [Item 6.1 of PCAOB Form 2]
LOW-USASSETS	The percentage of audit hours conducted by component auditors with aggregate assets audited as a lead auditor on U.S. issuers below the sample mean
HIGH-USASSETS	The percentage of audit hours conducted by component auditors with aggregate assets audited as lead auditor on U.S. issuers above the sample mean
NO-INDEXPERIENCE	The percentage of audit hours conducted by component auditors with no other experience (as a lead or component auditor) in the client's industry
INDEXPERIENCE	The percentage of audit hours conducted by component auditors with experience (as a lead or component auditor) in the client's industry
LOW-RULEOFLAW	The percentage of audit hours conducted by component auditors operating in countries with rule of law below the sample mean [Worldwide Governance Indicators]
HIGH-RULEOFLAW	The percentage of audit hours conducted by component auditors operating in countries with rule of law above the sample mean [Worldwide Governance Indicators]
LOW-ENGLISH	The percentage of audit hours conducted by component auditors operating in countries with English proficiency below the sample mean [EF 2017]
HIGH-ENGLISH	The percentage of audit hours conducted by component auditors operating in countries with English proficiency above the sample mean [EF 2017]
HIGH-TIMEDIFF	The percentage of audit hours conducted by component auditors with time zone difference from the lead auditor's office above the sample mean
LOW-TIMEDIFF	The percentage of audit hours conducted by component auditors with time zone difference from the lead auditor's office below the sample mean
Dependent Variables	
MW	=1 for companies disclosing a material weakness in their SOX section 302/404, zero otherwise [Audit Analytics]
RESTATEMENT	=1 for companies that misstated their financial reports, zero otherwise [Audit Analytics]
DISC-ACC	The absolute value of abnormal accruals derived from the difference between expected accruals estimated with the modified Jones model augmented with lag ROA [Compustat]
AUDIT-DELAY	The number of days between the fiscal year end date and the audit report date minus the SEC's filing deadline requirement (60, 75, and 90 days for large accelerated, accelerated, and non-accelerated, respectively) [Audit Analytics]
AUDIT-FEES	The natural log of audit fees [Audit Analytics]
Control Variables	
SIZE	Natural log of total assets [Compustat data]
BUS-SEG	The sum of reported business segments [Compustat Segment file]
GEO-SEG	The sum of reported geographic segments [Compustat Segment file]
FOREIGN-OPERATIONS	= 1 if the company has nonzero foreign pretax income, zero otherwise [Compustat data]
FOREIGN-SUBSIDIARIES	Number of foreign subsidiaries [SeekEdgar]

US-SUBSIDIARIES	Number of U.S. subsidiaries [SeekEdgar]
ARC	The natural log of the total number of distinct monetary XBRL tags in Item 8 of the 10-K flings [http://www.xbrlresearch.com]]
LOSS	= 1 if the company reported a net loss in the current or prior year, zero otherwise [Compustat data NI]
LEVERAGE	The ratio of total liabilities to total assets DLC+ DLTT)/AT)[Compustat]
EXTREME-GROWTH	An indicator variable that equals one if the year-over-year industry adjusted sales growth falls in the top quintile, zero otherwise (Doyle et al. 2007) [Compustat]
INV-REC	The ratio of inventory + accounts receivable to total assets [Compustat]
BIG4	=1 for a Big 4 auditor, zero otherwise [Audit Analytics]
AGE	The natural log of number of years the firm has Compustat data [Compustat]

Table 1 – Derivation of balanced panel sample

U.S. public issuers with Form AP in PCAOB AuditorSearch with an audit report due date between June 2017 and June 2018	7,271
Less: Non-U.S. lead auditor	(956)
Less: Missing or duplicate CIK	(395)
Less: Missing Compustat or Audit Analytics coverage	(1,887)
Potential companies in sample	4,033
Less: Missing data in Compustat or Audit Analytics for audit fee model control variables	(153)
Companies in audit fee sample in Table 4 (H1)	**3,880**
Less: Engagements not using at least one component auditor	(2,445)
Companies in audit fee sample in Tables 5 and 6 (H1)	**1,435**
Less: Engagements not using at least one component auditor that individually contributes 5 percent of total audit hours	(529)
Companies in audit fee sample in Tables 7 and 8 (H2 and H3)	**906**

Table 2 – Descriptive statistics

Panel A – Test variables

Variable name	N	Mean	Median	Std. Dev.	25th percentile	75th percentile
COMPONENT-USE	3,880	0.370	0.000	0.483	0.000	1.000
COMPONENT-NUMBER	1,435	3.596	2.000	3.746	1.000	5.000
COMPONENT-PCT	1,435	17.997	15.000	16.409	2.500	28.000
Variables used in H2 and H3						
COMPONENT-PCT (separately listed)	906	21.624	15.000	13.383	7.500	30.00
HIGH-RULEOFLAW	906	14.559	15.000	11.457	7.500	22.500
LOW-RULEOFLAW	906	7.062	0.000	11.993	0.000	7.500
HIGH-ENGLISH	906	12.193	7.500	10.566	7.500	15.000
LOW-ENGLISH	906	9.428	7.500	12.733	0.000	15.000
LOW-TIMEDIFF	906	14.748	15.000	12.622	7.500	22.500
HIGH-TIMEDIFF	906	6.873	0.000	10.775	0.000	7.500
HIGH-CPAS	906	10.584	7.500	11.041	0.000	15.000
LOW-CPAS	906	11.036	7.500	12.377	0.000	15.000
HIGH-USASSETS	906	7.703	7.500	9.891	0.000	15.000
LOW-USASSETS	906	13.918	8.500	13.296	0.000	22.500
INDEXPERIENCE	906	10.450	7.500	11.285	0.000	15.000
NO-INDEXPERIENCE	906	11.171	7.500	13.102	0.000	15.000

Panel B – Unique component auditors

N = 303	Mean	Median	Std. Dev.	25th percentile	75th percentile
Number of engagements	4.974	2.000	7.581	1.000	5.000
Amount of assets audited (in millions $)	11,662.995	1,006.455	37,225.048	108.500	5,963.079
Amount of sales audited (in millions $)	5,658.067	577.261	14,544.220	77.182	3,874.036
Lead auditor on U.S. issuer	0.452	0.000s	0.499	0.000	1.000
Number of U.S. issuers as lead auditors	5.122	0.000	13.442	0.000	4.000
Member of affiliated network	0.927	1.000	0.260	1.000	1.000
Big 4 affiliate	0.620	1.000	0.486	0.000	1.000
Number of years registered with PCAOB	11.478	13.000	3.242	12.000	13.000
Cut-offs used in H2 and H3					
Rule of law – above average	0.604	1.000	0.490	0.000	1.000
English language proficiency – above average	0.475	0.000	0.500	0.000	1.000
Time difference – above average	0.389	0.000	0.488	0.000	1.000
Number of CPAs – above average	0.221	0.000	0.416	0.000	0.000
Assets as lead on U.S. issuer – above average	0.109	0.000	0.312	0.000	0.000
Experience in client's industry	0.221	0.000	0.416	0.000	0.000

Panel C – Unique component auditors by country

	Number of unique components	Number of engagements	Dollar value of assets audited (in millions $)
Argentina	4	12	35,895.07
Australia	7	52	68,691.09
Belgium	6	31	55,661.23
Bermuda	3	7	22,740.26
Brazil	6	78	149,299.29
Canada	8	70	136,724.33
Chile	3	9	33,503.52

China	15	124	115,347.52
Costa Rica	3	5	22,833.94
Czech Republic	5	9	2,579.94
Denmark	4	6	4,043.68
France	7	66	89,046.24
Germany	13	137	109,260.59
Hong Kong	7	17	6,881.40
Hungary	5	10	35,774.09
India	14	44	104,657.41
Indonesia	3	3	24,838.95
Ireland	5	50	141,104.08
Israel	6	14	7,076.36
Italy	7	32	79,974.75
Japan	7	50	398,454.89
Korea	4	15	7,377.94
Luxembourg	4	5	7,292.12
Malaysia	4	16	36,636.92
Mexico	9	72	237,363.45
Netherlands	7	61	113,632.82
Norway	4	10	12,800.55
Pakistan	3	3	980.62
Philippines	4	16	28,943.48
Poland	5	26	13,461.62
Romania	4	5	4,004.28
Russia	5	16	11,703.82
Singapore	10	31	28,628.96
South Africa	7	9	3,179.75
Spain	5	16	12,147.47
Sweden	6	19	6,360.80
Switzerland	6	38	55,428.23
Taiwan	7	15	10,842.48
Thailand	4	9	51,388.90
United Arab Emirates	5	7	6,949.34
United Kingdom	13	226	1,157,226.70
United States	9	9	973.37
Countries with less than 3 unique component auditors[42]	40	57	82,175.37
Total	**303**	**1,507**	**3,533,887.59**

[42] Austria, Colombia, Dominican Republic, Latvia, Macao, New Zealand, Panama, Peru, Portugal, Slovakia, and Trinidad and Tobago all have two unique component auditors. Algeria, Bahamas, Bahrain, Barbados, Belarus, Cayman Islands, Egypt, Ghana, Greece, Iceland, Jamaica, Jersey, Lithuania, Malawi, Nigeria, Tanzania, Turkey, and Vietnam all have one unique component auditor. The total assets audited by component auditors is an approximation based on the percentage of audit hours.

Table 2 (continued)
Panel D – Dependent and control variables

	N	Mean	Median	Std. Dev.	25th percentile	75th percentile
MW	3,880	0.136	0.000	0.342	0.000	0.000
RESTATEMENT	3,880	0.034	0.000	0.180	0.000	0.000
DISC-ACC	2,601	0.082	0.047	0.102	0.020	0.098
AUDIT-DELAY	3,880	-7.010	-6.000	10.162	-13.000	-1.000
Audit fees (in thousands $)	3,880	2,526.386	1,136.640	4,065.459	417.250	2,735.430
AUDIT-FEES	3,880	13.879	13.944	1.369	12.941	14.822
Total assets (in millions $)	3,880	8,559.500	1,123.638	25,576.158	195.570	4,738.000
SIZE	3,880	6.819	7.024	2.400	5.276	8.463
BUS-SEG	3,880	1.777	1.000	1.371	1.000	3.000
GEO-SEG	3,880	1.799	1.000	2.025	0.000	3.000
FOREIGN-OPERATIONS	3,880	0.446	0.000	0.497	0.000	1.000
FOREIGN-SUBSIDIARIES	3,880	1.203	0.000	1.561	0.000	2.197
US-SUBSIDIARIES	3,880	1.807	1.792	1.580	0.000	2.890
ARC	3,880	5.811	5.829	0.413	5.521	6.118
LOSS	3,880	0.432	0.000	0.495	0.000	1.000
LEVERAGE	3,880	0.286	0.227	0.296	0.053	0.420
EXTREME-GROWTH	3,880	0.182	0.000	0.386	0.000	0.000
INV-REC	3,880	0.266	0.195	0.244	0.064	0.395
BIG4	3,880	0.637	1.000	0.481	0.000	1.000
AGE	3,880	22.473	19.000	16.998	9.000	30.000

Table 3 - Determinants of component auditor use

	(1) *COMPONENT-USE*	(2) *COMPONENT-USE*
SIZE	0.477***	0.133***
	(15.99)	(3.30)
LOSS	0.309***	0.101
	(3.11)	(0.88)
LEVERAGE	0.284*	0.257
	(1.86)	(1.48)
EXTREME-GROWTH	-0.090	0.015
	(-0.81)	(0.12)
INV-REC	1.126***	0.693**
	(4.14)	(2.32)
BIG4	0.317***	0.132
	(2.69)	(0.99)
AGE	0.177***	-0.056
	(2.92)	(-0.80)
BUS-SEG		0.083*
		(1.85)
GEO-SEG		0.213***
		(7.03)
FOREIGN-OPERATIONS		0.942***
		(8.04)
FOREIGN-SUBSIDIARIES		0.606***
		(12.45)
US-SUBSIDIARIES		-0.212***
		(-4.85)
ARC		0.838***
		(4.09)
Industry fixed effects	Included	Included
Constant	-5.605***	-7.869***
	(-15.97)	(-7.39)
Observations	3,854	3,854
Pseudo R^2	0.273	0.410

This table reports results of regressions of client characteristics on *COMPONENT-USE*. Variables are defined in Appendix B. Regressions include year and two-digit SIC code industry fixed effects and standard errors clustered by firms. Numbers in parentheses are *t*-statistics. Two-tailed statistical significance is indicated by ***, **, and * for 1%, 5%, and 10%, respectively.

Table 4 - H1: Component auditor use and audit outcomes

Panel A - Full sample

	(1) *MW*	(2) *RESTATEMENT*	(3) *DISC-ACC*	(4) *AUDIT-DELAY*	(5) *AUDIT-FEES*
COMPONENT-USE	0.421***	-0.288	0.000	0.783*	0.124***
	(2.98)	(-1.08)	(0.10)	(1.76)	(5.88)
SIZE	-0.396***	-0.246***	-0.017***	-1.490***	0.356***
	(-8.30)	(-3.06)	(-10.78)	(-10.67)	(53.59)
BUS-SEG	0.026	-0.062	0.001	0.107	0.021***
	(0.49)	(-0.68)	(0.47)	(0.69)	(2.87)
GEO-SEG	0.011	0.123**	-0.002**	-0.177*	0.017***
	(0.32)	(2.28)	(-2.30)	(-1.68)	(3.40)
FOREIGN-OPERATIONS	-0.441***	-0.325	-0.005	-0.630	0.105***
	(-3.01)	(-1.19)	(-1.06)	(-1.35)	(4.73)
FOREIGN-SUBSIDIARIES	0.097	0.153	0.001	0.433**	0.072***
	(1.64)	(1.58)	(0.72)	(2.48)	(8.66)
US-SUBSIDIARIES	-0.048	-0.105	0.000	0.342**	0.010
	(-0.94)	(-1.28)	(0.19)	(2.38)	(1.40)
ARC	1.552***	2.463***	0.036***	5.929***	0.525***
	(6.73)	(6.07)	(4.60)	(8.51)	(15.88)
LOSS	0.434***	0.135	0.017***	-0.514	0.164***
	(3.34)	(0.59)	(3.97)	(-1.27)	(8.59)
LEVERAGE	0.330**	-0.424	0.019***	1.590***	0.023
	(2.08)	(-1.22)	(3.02)	(2.65)	(0.82)
EXTREME-GROWTH	0.103	0.022	0.029***	0.534	-0.001
	(0.79)	(0.09)	(6.05)	(1.25)	(-0.05)
INV-REC	0.422	-0.334	-0.021*	0.467	0.062
	(1.33)	(-0.53)	(-1.68)	(0.44)	(1.24)
BIG4	-0.356**	-0.053	-0.005	-1.178**	0.585***
	(-2.47)	(-0.20)	(-1.04)	(-2.56)	(26.77)
AGE	-0.422***	-0.405***	-0.008***	-0.095	-0.016
	(-5.70)	(-2.99)	(-2.87)	(-0.40)	(-1.39)
Industry fixed effects	Included	Included	Included	Included	Included
Constant	-7.492***	-14.801***	0.000	-31.302***	7.586***
	(-6.33)	(-6.89)	(0.01)	(-8.77)	(44.75)
Observations	3,782	3,439	2,601	3,880	3,880
Pseudo/Adjusted R^2	0.162	0.113	0.222	0.071	0.884

Panel B - Propensity score matched sample

	(1) *MW*	(2) *RESTATEMENT*	(3) *DISC-ACC*	(4) *AUDIT-DELAY*	(5) *AUDIT-FEES*
COMPONENT-USE	0.466***	-0.232	0.002	1.013*	0.137***
	(2.64)	(-0.69)	(0.33)	(1.78)	(5.21)
Control variables	Included	Included	Included	Included	Included
Constant	-6.909***	-13.313***	-0.053	-30.200***	7.815***
	(-3.63)	(-4.05)	(-0.60)	(-4.55)	(25.55)
Observations	1,278	1,278	644	1,278	1,278
Pseudo/Adjusted R^2	0.179	0.119	0.165	0.045	0.843

This table tests H1 and reports results of regressions of *COMPONENT-USE* on several dependent variables, with Panel A using the full sample and Panel B using a propensity score matched sample. Variables are defined in Appendix B. Regressions include year and two-digit SIC code industry fixed effects and standard errors clustered by firms. Numbers in parentheses are *t*-statistics. Two-tailed statistical significance is indicated by ***, **, and * for 1%, 5%, and 10%, respectively.

Table 5 - H1: Number of component auditors involved in the audit and audit outcomes

	(1) *MW*	(2) *RESTATEMENT*	(3) *DISC-ACC*	(4) *AUDIT-DELAY*	(5) *AUDIT-FEES*
COMPONENT-NUMBER	0.047	0.027	0.001	0.050	0.042***
	(1.48)	(0.63)	(1.22)	(0.60)	(11.18)
SIZE	-0.460***	-0.102	-0.008***	-1.465***	0.366***
	(-5.40)	(-0.73)	(-4.04)	(-6.50)	(35.63)
BUS-SEG	0.024	-0.014	-0.002	0.252	0.026***
	(0.31)	(-0.11)	(-0.92)	(1.18)	(2.71)
GEO-SEG	0.029	0.160**	-0.001	-0.117	0.006
	(0.68)	(2.39)	(-1.28)	(-0.92)	(1.10)
FOREIGN-OPERATIONS	-0.036	0.220	-0.018**	0.238	0.101***
	(-0.14)	(0.41)	(-2.44)	(0.30)	(2.82)
FOREIGN-SUBSIDIARIES	0.003	-0.100	-0.000	0.386	0.057***
	(0.03)	(-0.67)	(-0.10)	(1.53)	(5.02)
US-SUBSIDIARIES	0.054	0.078	-0.000	0.235	-0.002
	(0.58)	(0.47)	(-0.18)	(0.90)	(-0.13)
ARC	1.477***	2.172***	0.010	4.984***	0.390***
	(3.68)	(3.07)	(0.99)	(4.45)	(7.66)
LOSS	0.316	0.297	0.027***	-1.358**	0.129***
	(1.57)	(0.84)	(5.35)	(-2.27)	(4.72)
LEVERAGE	0.496	-0.787	-0.006	0.806	-0.022
	(1.51)	(-1.07)	(-0.64)	(0.73)	(-0.44)
EXTREME-GROWTH	-0.014	-0.576	0.026***	0.257	-0.001
	(-0.06)	(-1.11)	(4.12)	(0.36)	(-0.02)
INV-REC	0.516	0.513	-0.063***	-0.560	0.235***
	(0.86)	(0.42)	(-3.58)	(-0.30)	(2.78)
BIG4	-0.274	-0.583	-0.004	-0.627	0.477***
	(-1.10)	(-1.15)	(-0.57)	(-0.77)	(12.89)
AGE	-0.640***	-0.142	-0.007**	-0.967**	-0.056***
	(-4.91)	(-0.59)	(-2.00)	(-2.42)	(-3.10)
Industry fixed effects	Included	Included	Included	Included	Included
Constant	-5.946***	-15.140***	0.112**	-24.722***	8.641***
	(-2.85)	(-3.93)	(2.14)	(-4.19)	(32.15)
Observations	1,340	1,054	1,151	1,435	1,435
Pseudo/Adjusted R^2	0.157	0.129	0.177	0.045	0.871

This table tests H1 and reports results of regressions of *COMPONENT-NUMBER* on several dependent variables. Variables are defined in Appendix B. Regressions include year and two-digit SIC code industry fixed effects and standard errors clustered by firms. Numbers in parentheses are *t*-statistics. Two-tailed statistical significance is indicated by ***, **, and * for 1%, 5%, and 10%, respectively.

Table 6 - H1: Percentage of audit hours conducted by component auditors and audit outcomes

Panel A - Full sample

	(1) *MW*	(2) *RESTATEMENT*	(3) *DISC-ACC*	(4) *AUDIT-DELAY*	(5) *AUDIT-FEES*
COMPONENT-PCT	0.018***	0.025**	-0.000	0.050***	0.003***
	(3.09)	(2.57)	(-0.83)	(2.80)	(3.53)
SIZE	-0.447***	-0.116	-0.007***	-1.459***	0.393***
	(-5.32)	(-0.85)	(-3.79)	(-6.69)	(37.94)
BUS-SEG	0.019	-0.008	-0.001	0.232	0.030***
	(0.24)	(-0.06)	(-0.79)	(1.09)	(2.97)
GEO-SEG	0.010	0.124*	-0.001	-0.174	0.011*
	(0.23)	(1.78)	(-0.98)	(-1.35)	(1.83)
FOREIGN-OPERATIONS	-0.025	0.229	-0.018**	0.273	0.079**
	(-0.10)	(0.43)	(-2.53)	(0.35)	(2.14)
FOREIGN-SUBSIDIARIES	-0.037	-0.190	0.001	0.219	0.076***
	(-0.41)	(-1.24)	(0.41)	(0.86)	(6.26)
US-SUBSIDIARIES	0.092	0.161	-0.001	0.371	-0.016
	(0.97)	(0.94)	(-0.58)	(1.41)	(-1.26)
ARC	1.446***	2.046***	0.012	4.739***	0.408***
	(3.58)	(2.81)	(1.17)	(4.24)	(7.68)
LOSS	0.326	0.304	0.027***	-1.320**	0.125***
	(1.62)	(0.85)	(5.27)	(-2.21)	(4.41)
LEVERAGE	0.531	-0.710	-0.006	0.827	-0.008
	(1.60)	(-0.97)	(-0.63)	(0.75)	(-0.15)
EXTREME-GROWTH	-0.021	-0.563	0.026***	0.272	0.001
	(-0.09)	(-1.07)	(4.13)	(0.38)	(0.02)
INV-REC	0.397	0.116	-0.060***	-0.929	0.251***
	(0.65)	(0.09)	(-3.38)	(-0.50)	(2.84)
BIG4	-0.230	-0.516	-0.005	-0.512	0.462***
	(-0.92)	(-1.01)	(-0.72)	(-0.63)	(12.01)
AGE	-0.639***	-0.124	-0.007*	-0.961**	-0.043**
	(-4.88)	(-0.51)	(-1.90)	(-2.42)	(-2.26)
Industry fixed effects	Included	Included	Included	Included	Included
Constant	-5.913***	-14.510***	0.098*	-23.621***	8.350***
	(-2.84)	(-3.74)	(1.86)	(-4.03)	(29.97)
Observations	1,340	1,054	1,151	1,435	1,435
Pseudo/Adjusted R^2	0.163	0.144	0.176	0.050	0.860

Panel B - Propensity score matched sample

	(1) *MW*	(2) *RESTATEMENT*	(3) *DISC-ACC*	(4) *AUDIT-DELAY*	(5) *AUDIT-FEES*
COMPONENT-PCT	0.020***	0.026**	-0.000	0.073***	0.003***
	(3.04)	(2.41)	(-0.78)	(3.36)	(2.73)
Control variables	Included	Included	Included	Included	Included
Constant	-4.085*	-14.788***	0.191**	-24.374***	8.410***
	(-1.67)	(-3.27)	(2.44)	(-2.88)	(21.22)
Observations	806	806	564	806	806
Pseudo/Adjusted R^2	0.152	0.096	0.178	0.076	0.852

This table tests H1 and reports results of regressions of *COMPONENT-PCT* on several dependent variables, with Panel A using the full sample and Panel B using a propensity score matched sample. Variables are defined in Appendix B. Regressions include year and two-digit SIC code industry fixed effects and standard errors clustered by firms. Numbers in parentheses are *t*-statistics. Two-tailed statistical significance is indicated by ***, **, and * for 1%, 5%, and 10%, respectively.

Table 7 - H2: Percentage of audit hours conducted by component auditors with coordination and communication challenges

Panel A - Rule of Law

	(1) *MW*	(2) *RESTATEMENT*	(3) *DISC-ACC*	(4) *AUDIT-DELAY*	(5) *AUDIT-FEES*
HIGH-RULEOFLAW	-0.006	0.020	0.000	0.041	-0.001
	(-0.56)	(1.24)	(0.04)	(1.39)	(-0.62)
LOW-RULEOFLAW	0.028***	0.026*	-0.000	0.095***	-0.000
	(3.07)	(1.82)	(-0.80)	(3.18)	(-0.35)
SIZE	-0.425***	-0.205	-0.007***	-1.319***	0.402***
	(-3.79)	(-1.26)	(-3.07)	(-4.84)	(31.21)
BUS-SEG	0.086	0.027	-0.001	0.221	0.019
	(0.89)	(0.20)	(-0.51)	(0.87)	(1.61)
GEO-SEG	0.042	0.146*	-0.001	-0.115	0.019***
	(0.77)	(1.89)	(-0.79)	(-0.75)	(2.58)
FOREIGN-OPERATIONS	-0.146	-0.010	-0.026***	-2.261**	0.150***
	(-0.40)	(-0.02)	(-2.69)	(-1.97)	(2.77)
FOREIGN-SUBSIDIARIES	-0.014	-0.038	0.002	0.182	0.099***
	(-0.11)	(-0.21)	(0.67)	(0.55)	(6.37)
US-SUBSIDIARIES	0.069	-0.086	-0.002	0.273	-0.040**
	(0.50)	(-0.43)	(-0.74)	(0.78)	(-2.40)
ARC	0.813	1.957**	0.014	4.535***	0.389***
	(1.42)	(2.14)	(1.26)	(3.09)	(5.62)
LOSS	0.415	0.442	0.024***	-1.236*	0.111***
	(1.64)	(1.12)	(4.42)	(-1.71)	(3.24)
LEVERAGE	0.658	-0.469	-0.017	0.751	0.002
	(1.39)	(-0.55)	(-1.53)	(0.51)	(0.03)
EXTREME-GROWTH	-0.206	-0.781	0.027***	0.097	-0.034
	(-0.61)	(-1.27)	(3.78)	(0.10)	(-0.78)
INV-REC	0.908	-2.050	-0.027	-1.623	0.378***
	(1.12)	(-1.26)	(-1.42)	(-0.67)	(3.32)
BIG4	0.121	-0.259	-0.001	-0.324	0.449***
	(0.36)	(-0.45)	(-0.18)	(-0.31)	(9.10)
AGE	-0.680***	-0.038	-0.007*	-1.112**	-0.030
	(-4.06)	(-0.14)	(-1.77)	(-2.27)	(-1.28)
Industry fixed effects	Included	Included	Included	Included	Included
Constant	-3.406	-12.537***	0.061	-23.222***	8.539***
	(-1.14)	(-2.68)	(1.03)	(-3.01)	(23.43)
Observations	810	665	746	906	906
Pseudo/Adjusted R^2	0.194	0.150	0.167	0.085	0.867

Table 7 (continued)
Panel B - English language proficiency

	(1)	(2)	(3)	(4)	(5)
	MW	*RESTATEMENT*	*DISC-ACC*	*AUDIT-DELAY*	*AUDIT-FEES*
HIGH-ENGLISH	-0.004	0.021	-0.000	0.027	-0.001
	(-0.35)	(1.23)	(-0.91)	(0.84)	(-0.87)
LOW-ENGLISH	0.025***	0.026*	-0.000	0.093***	-0.000
	(2.76)	(1.77)	(-0.03)	(3.35)	(-0.22)
SIZE	-0.425***	-0.206	-0.007***	-1.325***	0.402***
	(-3.80)	(-1.26)	(-3.09)	(-4.86)	(31.21)
BUS-SEG	0.087	0.028	-0.001	0.224	0.019
	(0.92)	(0.20)	(-0.49)	(0.88)	(1.62)
GEO-SEG	0.039	0.146*	-0.001	-0.114	0.019***
	(0.73)	(1.89)	(-0.74)	(-0.74)	(2.59)
FOREIGN-OPERATIONS	-0.142	-0.001	-0.025***	-2.280**	0.150***
	(-0.39)	(-0.00)	(-2.67)	(-1.99)	(2.77)
FOREIGN-SUBSIDIARIES	-0.030	-0.037	0.002	0.174	0.099***
	(-0.24)	(-0.20)	(0.62)	(0.53)	(6.36)
US-SUBSIDIARIES	0.058	-0.089	-0.002	0.272	-0.040**
	(0.42)	(-0.45)	(-0.72)	(0.78)	(-2.40)
ARC	0.793	1.951**	0.014	4.519***	0.389***
	(1.38)	(2.14)	(1.24)	(3.08)	(5.62)
LOSS	0.436*	0.451	0.024***	-1.166	0.112***
	(1.73)	(1.14)	(4.48)	(-1.61)	(3.28)
LEVERAGE	0.640	-0.474	-0.017	0.740	0.001
	(1.36)	(-0.56)	(-1.52)	(0.50)	(0.02)
EXTREME-GROWTH	-0.202	-0.786	0.027***	0.127	-0.034
	(-0.60)	(-1.28)	(3.85)	(0.14)	(-0.76)
INV-REC	0.917	-2.046	-0.029	-1.635	0.376***
	(1.14)	(-1.26)	(-1.54)	(-0.68)	(3.31)
BIG4	0.105	-0.273	-0.000	-0.292	0.450***
	(0.31)	(-0.48)	(-0.02)	(-0.28)	(9.13)
AGE	-0.688***	-0.038	-0.006	-1.098**	-0.029
	(-4.11)	(-0.14)	(-1.64)	(-2.24)	(-1.25)
Industry fixed effects	Included	Included	Included	Included	Included
Constant	-3.264	-12.513***	0.060	-23.140***	8.535***
	(-1.09)	(-2.68)	(1.01)	(-3.01)	(23.43)
Observations	810	665	746	906	906
Pseudo/Adjusted R^2	0.189	0.150	0.167	0.086	0.867

Table 7 (continued)
Panel C - Time zone differences

	(1) *MW*	(2) *RESTATEMENT*	(3) *DISC-ACC*	(4) *AUDIT-DELAY*	(5) *AUDIT-FEES*
LOW-TIMEDIFF	0.013	0.011	-0.000	0.051*	-0.000
	(1.29)	(0.74)	(-0.78)	(1.83)	(-0.36)
HIGH-TIMEDIFF	0.020*	0.041**	0.000	0.096***	-0.001
	(1.94)	(2.47)	(0.13)	(2.91)	(-0.66)
SIZE	-0.416***	-0.208	-0.007***	-1.340***	0.402***
	(-3.76)	(-1.28)	(-3.13)	(-4.91)	(31.17)
BUS-SEG	0.089	0.027	-0.001	0.218	0.019
	(0.94)	(0.19)	(-0.49)	(0.86)	(1.62)
GEO-SEG	0.028	0.147*	-0.001	-0.125	0.019***
	(0.52)	(1.89)	(-0.79)	(-0.81)	(2.58)
FOREIGN-OPERATIONS	-0.120	0.047	-0.025***	-2.320**	0.150***
	(-0.33)	(0.07)	(-2.67)	(-2.03)	(2.76)
FOREIGN-SUBSIDIARIES	-0.027	-0.049	0.002	0.191	0.099***
	(-0.22)	(-0.27)	(0.66)	(0.58)	(6.38)
US-SUBSIDIARIES	0.055	-0.064	-0.002	0.268	-0.040**
	(0.41)	(-0.32)	(-0.70)	(0.76)	(-2.42)
ARC	0.818	2.093**	0.015	4.722***	0.386***
	(1.43)	(2.27)	(1.32)	(3.19)	(5.53)
LOSS	0.392	0.480	0.024***	-1.237*	0.111***
	(1.58)	(1.21)	(4.44)	(-1.71)	(3.23)
LEVERAGE	0.667	-0.298	-0.017	0.899	0.001
	(1.43)	(-0.36)	(-1.45)	(0.60)	(0.01)
EXTREME-GROWTH	-0.222	-0.815	0.027***	0.097	-0.035
	(-0.67)	(-1.31)	(3.85)	(0.10)	(-0.79)
INV-REC	1.029	-1.815	-0.028	-1.405	0.377***
	(1.29)	(-1.12)	(-1.46)	(-0.58)	(3.31)
BIG4	0.054	-0.169	0.000	-0.206	0.445***
	(0.16)	(-0.29)	(0.01)	(-0.19)	(8.92)
AGE	-0.723***	-0.034	-0.006*	-1.135**	-0.031
	(-4.34)	(-0.13)	(-1.67)	(-2.32)	(-1.32)
Industry fixed effects	Included	Included	Included	Included	Included
Constant	-3.268	-13.587***	0.054	-24.146***	8.563***
	(-1.09)	(-2.85)	(0.91)	(-3.10)	(23.23)
Observations	810	665	746	906	906
Pseudo/Adjusted R^2	0.180	0.158	0.167	0.084	0.867

This table tests H2 and reports results of regressions of several sets of variables that capture work conducted by those with more and less coordination and communication challenges on several dependent variables, with Panel A examining rule of law, Panel B English language proficiency, and Panel C time zone differences. Variables are defined in Appendix B. Regressions include year and two-digit SIC code industry fixed effects and standard errors clustered by firms. Numbers in parentheses are *t*-statistics. Two-tailed statistical significance is indicated by ***, **, and * for 1%, 5%, and 10%, respectively.

Table 8 - H3: Percentage of audit hours conducted by component auditors with high versus low competence and audit outcomes

Panel A - Number of CPAs

	(1) *MW*	(2) *RESTATEMENT*	(3) *DISC-ACC*	(4) *AUDIT-DELAY*	(5) *AUDIT-FEES*
HIGH-CPAS	0.009	0.009	-0.000	0.034	0.000
	(0.83)	(0.51)	(-0.18)	(1.06)	(0.31)
LOW-CPAS	0.020**	0.035**	-0.000	0.095***	-0.002
	(2.12)	(2.28)	(-0.56)	(3.28)	(-1.14)
SIZE	-0.414***	-0.198	-0.007***	-1.312***	0.402***
	(-3.74)	(-1.21)	(-3.08)	(-4.81)	(31.21)
BUS-SEG	0.089	0.042	-0.001	0.229	0.019
	(0.94)	(0.30)	(-0.51)	(0.90)	(1.60)
GEO-SEG	0.030	0.144*	-0.001	-0.117	0.019**
	(0.57)	(1.87)	(-0.76)	(-0.77)	(2.57)
FOREIGN-OPERATIONS	-0.123	0.034	-0.025***	-2.297**	0.149***
	(-0.34)	(0.05)	(-2.67)	(-2.01)	(2.75)
FOREIGN-SUBSIDIARIES	-0.028	-0.062	0.002	0.138	0.101***
	(-0.23)	(-0.34)	(0.68)	(0.42)	(6.46)
US-SUBSIDIARIES	0.052	-0.068	-0.002	0.281	-0.041**
	(0.38)	(-0.34)	(-0.74)	(0.80)	(-2.46)
ARC	0.774	2.006**	0.014	4.569***	0.386***
	(1.36)	(2.19)	(1.24)	(3.12)	(5.57)
LOSS	0.390	0.422	0.024***	-1.251*	0.111***
	(1.57)	(1.06)	(4.43)	(-1.73)	(3.23)
LEVERAGE	0.619	-0.518	-0.017	0.741	0.004
	(1.34)	(-0.61)	(-1.52)	(0.50)	(0.06)
EXTREME-GROWTH	-0.211	-0.785	0.027***	0.114	-0.036
	(-0.64)	(-1.26)	(3.78)	(0.12)	(-0.82)
INV-REC	0.957	-2.349	-0.028	-1.714	0.385***
	(1.20)	(-1.42)	(-1.45)	(-0.71)	(3.39)
BIG4	0.103	-0.117	-0.001	-0.009	0.434***
	(0.30)	(-0.20)	(-0.18)	(-0.01)	(8.59)
AGE	-0.730***	-0.022	-0.006*	-1.146**	-0.031
	(-4.40)	(-0.08)	(-1.72)	(-2.35)	(-1.34)
Industry fixed effects	Included	Included	Included	Included	Included
Constant	-3.033	-13.088***	0.062	-23.576***	8.576***
	(-1.02)	(-2.77)	(1.03)	(-3.05)	(23.51)
Observations	810	665	746	906	906
Pseudo/Adjusted R^2	0.181	0.155	0.166	0.086	0.867

Table 8 (continued)
Panel B - Assets as a lead on U.S. issuers

	(1) *MW*	(2) *RESTATEMENT*	(3) *DISC-ACC*	(4) *AUDIT-DELAY*	(5) *AUDIT-FEES*
HIGH-USASSETS	0.006	0.016	-0.000	0.080**	0.001
	(0.45)	(0.78)	(-0.88)	(2.19)	(0.44)
LOW-USASSETS	0.019**	0.027*	-0.000	0.063**	-0.001
	(2.17)	(1.93)	(-0.10)	(2.32)	(-1.03)
SIZE	-0.418***	-0.207	-0.007***	-1.318***	0.402***
	(-3.77)	(-1.27)	(-3.12)	(-4.83)	(31.25)
BUS-SEG	0.084	0.022	-0.001	0.227	0.020*
	(0.89)	(0.16)	(-0.52)	(0.89)	(1.65)
GEO-SEG	0.033	0.147*	-0.001	-0.122	0.018**
	(0.62)	(1.91)	(-0.74)	(-0.80)	(2.54)
FOREIGN-OPERATIONS	-0.158	-0.034	-0.026***	-2.290**	0.153***
	(-0.43)	(-0.05)	(-2.70)	(-1.99)	(2.82)
FOREIGN-SUBSIDIARIES	-0.020	-0.045	0.002	0.191	0.100***
	(-0.17)	(-0.25)	(0.63)	(0.58)	(6.40)
US-SUBSIDIARIES	0.057	-0.075	-0.002	0.247	-0.041**
	(0.42)	(-0.38)	(-0.65)	(0.70)	(-2.48)
ARC	0.773	1.989**	0.014	4.471***	0.387***
	(1.36)	(2.16)	(1.27)	(3.04)	(5.58)
LOSS	0.387	0.439	0.023***	-1.260*	0.111***
	(1.56)	(1.11)	(4.40)	(-1.74)	(3.25)
LEVERAGE	0.670	-0.446	-0.017	0.793	0.001
	(1.44)	(-0.52)	(-1.48)	(0.53)	(0.01)
EXTREME-GROWTH	-0.233	-0.786	0.027***	0.076	-0.033
	(-0.71)	(-1.28)	(3.81)	(0.08)	(-0.76)
INV-REC	0.979	-2.015	-0.029	-1.499	0.379***
	(1.23)	(-1.24)	(-1.50)	(-0.62)	(3.33)
BIG4	0.143	-0.173	0.001	-0.579	0.430***
	(0.40)	(-0.29)	(0.15)	(-0.53)	(8.32)
AGE	-0.727***	-0.043	-0.006*	-1.172**	-0.030
	(-4.37)	(-0.16)	(-1.69)	(-2.40)	(-1.32)
Industry fixed effects	Included	Included	Included	Included	Included
Constant	-3.060	-12.771***	0.058	-22.383***	8.571***
	(-1.03)	(-2.71)	(0.98)	(-2.90)	(23.51)
Observations	810	665	746	906	906
Pseudo/Adjusted R^2	0.181	0.151	0.167	0.083	0.867

Table 8 (continued)
Panel C - Industry experience

	(1) *MW*	(2) *RESTATEMENT*	(3) *DISC-ACC*	(4) *AUDIT-DELAY*	(5) *AUDIT-FEES*
INDEXPERIENCE	0.006	0.017	-0.000	0.056*	0.001
	(0.49)	(0.97)	(-0.00)	(1.71)	(0.34)
NO-INDEXPERIENCE	0.022**	0.028*	-0.000	0.077***	-0.002
	(2.33)	(1.93)	(-0.70)	(2.64)	(-1.13)
SIZE	-0.415***	-0.207	-0.007***	-1.317***	0.402***
	(-3.74)	(-1.27)	(-3.09)	(-4.83)	(31.21)
BUS-SEG	0.088	0.027	-0.001	0.218	0.020*
	(0.93)	(0.19)	(-0.50)	(0.86)	(1.65)
GEO-SEG	0.031	0.147*	-0.001	-0.120	0.019***
	(0.57)	(1.91)	(-0.77)	(-0.79)	(2.58)
FOREIGN-OPERATIONS	-0.109	0.007	-0.026***	-2.292**	0.147***
	(-0.30)	(0.01)	(-2.71)	(-2.00)	(2.72)
FOREIGN-SUBSIDIARIES	-0.022	-0.044	0.002	0.188	0.099***
	(-0.18)	(-0.24)	(0.68)	(0.57)	(6.39)
US-SUBSIDIARIES	0.059	-0.072	-0.002	0.264	-0.041**
	(0.43)	(-0.36)	(-0.75)	(0.75)	(-2.46)
ARC	0.808	1.994**	0.014	4.533***	0.384***
	(1.42)	(2.17)	(1.23)	(3.08)	(5.54)
LOSS	0.399	0.461	0.024***	-1.259*	0.111***
	(1.60)	(1.17)	(4.44)	(-1.74)	(3.23)
LEVERAGE	0.656	-0.436	-0.017	0.807	0.002
	(1.41)	(-0.52)	(-1.53)	(0.54)	(0.03)
EXTREME-GROWTH	-0.220	-0.780	0.027***	0.074	-0.035
	(-0.67)	(-1.27)	(3.81)	(0.08)	(-0.80)
INV-REC	1.134	-1.972	-0.029	-1.403	0.368***
	(1.41)	(-1.22)	(-1.49)	(-0.58)	(3.23)
BIG4	0.164	-0.177	-0.002	-0.268	0.431***
	(0.47)	(-0.30)	(-0.26)	(-0.25)	(8.42)
AGE	-0.735***	-0.048	-0.006*	-1.170**	-0.030
	(-4.44)	(-0.18)	(-1.71)	(-2.39)	(-1.30)
Industry fixed effects	Included	Included	Included	Included	Included
Constant	-3.353	-12.868***	0.064	-23.072***	8.591***
	(-1.12)	(-2.73)	(1.06)	(-2.97)	(23.47)
Observations	810	665	746	906	906
Pseudo/Adjusted R^2	0.182	0.151	0.166	0.083	0.867

This table tests H3 and reports results of regressions of several sets of variables that capture work conducted by more and less competent component auditors on several dependent variables, with Panel A examining the number of CPAs, Panel B experience on U.S. audits, and Panel C industry experience. Variables are defined in Appendix B. Regressions include year and two-digit SIC code industry fixed effects and standard errors clustered by firms. Numbers in parentheses are *t*-statistics. Two-tailed statistical significance is indicated by ***, **, and * for 1%, 5%, and 10%, respectively.

Table 9 - Additional analysis: Percentage of audit hours conducted by component auditors with high and low competence in countries with and without coordination and communication challenges

Panel A – Rule of law

	(1) *MW*	(2) *RESTATEMENT*	(3) *DISC-ACC*	(4) *AUDIT-DELAY*	(5) *AUDIT-FEES*
HIGH-RULEOFLAW	-0.006	0.020	-0.000	0.044	-0.001
	(-0.50)	(1.22)	(-0.04)	(1.48)	(-0.81)
LOW-RULEOFLAW-LOW-COMPETENCE	0.034***	0.026	-0.000*	0.125***	-0.003**
	(3.30)	(1.61)	(-1.65)	(3.68)	(-2.06)
LOW-RULEOFLAW-HIGH-COMPETENCE	0.002	0.030	0.001	-0.017	0.010***
	(0.09)	(0.88)	(1.23)	(-0.26)	(3.08)
Control variables	Included	Included	Included	Included	Included
Constant	-3.820	-12.493***	0.074	-25.012***	8.703***
	(-1.27)	(-2.66)	(1.24)	(-3.22)	(23.86)
Observations	810	665	746	906	906
Pseudo/Adjusted R^2	0.196	0.150	0.169	0.088	0.869

Panel B – English language proficiency

	(1) *MW*	(2) *RESTATEMENT*	(3) *DISC-ACC*	(4) *AUDIT-DELAY*	(5) *AUDIT-FEES*
HIGH-ENGLISH	-0.003	0.021	-0.000	0.030	-0.002
	(-0.29)	(1.25)	(-1.02)	(0.92)	(-1.04)
LOW-ENGLISH-LOW-COMPETENCE	0.034***	0.033**	-0.000	0.122***	-0.003**
	(3.31)	(2.02)	(-0.95)	(3.82)	(-2.06)
LOW-ENGLISH-HIGH-COMPETENCE	-0.005	0.003	0.001	0.010	0.008***
	(-0.25)	(0.11)	(1.46)	(0.20)	(3.07)
Control variables	Included	Included	Included	Included	Included
Constant	-3.788	-12.911***	0.072	-24.824***	8.697***
	(-1.26)	(-2.76)	(1.20)	(-3.21)	(23.89)
Observations	810	665	746	906	906
Pseudo/Adjusted R^2	0.194	0.153	0.169	0.089	0.869

Panel C – Time zone differences

	(1) *MW*	(2) *RESTATEMENT*	(3) *DISC-ACC*	(4) *AUDIT-DELAY*	(5) *AUDIT-FEES*
LOW-TIMEDIFF	0.013	0.011	-0.000	0.052*	-0.001
	(1.33)	(0.74)	(-0.81)	(1.86)	(-0.41)
HIGH-TIMEDIFF-LOW-COMPETENCE	0.031***	0.044**	-0.000	0.133***	-0.005***
	(2.61)	(2.33)	(-0.42)	(3.44)	(-2.68)
HIGH-TIMEDIFF-HIGH-COMPETENCE	-0.018	0.032	0.000	0.004	0.009***
	(-0.78)	(1.03)	(0.90)	(0.07)	(3.06)
Control variables	Included	Included	Included	Included	Included
Constant	-3.831	-13.756***	0.059	-25.591***	8.715***
	(-1.27)	(-2.87)	(0.98)	(-3.27)	(23.75)
Observations	810	665	746	906	906
Pseudo/Adjusted R^2	0.186	0.158	0.167	0.087	0.869

This table reports results of regressions of several sets of variables that capture work conducted by more and less competent component auditors in countries with and without coordination and communication challenges on several dependent variables, with Panel A examining rule of law, Panel B English language proficiency, and Panel C time zone differences. Competence is determined based on the component auditor meeting at least two of the three competence criteria (i.e., employs above average number of CPAs, is the lead auditor on an above average amount of assets of U.S. issuers, and has experience as either a lead or component auditor on at least one additional client in the same industry). Variables are defined in Appendix B. Regressions include year and two-digit SIC code industry fixed effects and standard errors clustered by firms. Numbers in parentheses are *t*-statistics. Two-tailed statistical significance is indicated by ***, **, and * for 1%, 5%, and 10%, respectively.