Do Foreign Component Auditors Harm Financial Reporting Quality? A Subsidiary-Level Analysis of Foreign Component Auditor Use*

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ABSTRACT

We hypothesize and find that financial reporting quality at the foreign subsidiaries of US multinational companies (MNCs) is higher when the MNC's principal auditor engages a component auditor to audit the foreign subsidiary on its behalf. An important innovation of this study is that we focus on comparing the financial reporting quality of equivalent subsidiaries with and without component auditor work. Our approach contrasts with extant studies that examine the consequences of variation in the total amount of component auditor work at the MNC level. Our results are important for two reasons. First, we provide an alternative view on the consequences of component auditor use compared to the emerging literature in this area, which typically finds a negative association between the extent of component auditor use and financial reporting quality at the MNC level. Thus, we show that a different research design, conducted at the level at which component auditors actually perform their work, yields different inferences. Second, we demonstrate that using component auditors on US MNC group audits is an avenue through which US auditing institutions can affect financial reporting quality in foreign locations. We also reconcile our subsidiary-level results to the MNC level by introducing a new MNC-level component auditor "coverage" variable. Overall, we highlight that the best way to audit a foreign subsidiary is likely to be with a component auditor in the local country, which informs the debate surrounding recently proposed PCAOB guidance.

Keywords: audit quality, component auditor, financial reporting quality, group audit, multinational corporation, Public Company Accounting Oversight Board

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Les auditeurs des composantes situés à l'étranger nuisent-ils à la qualité des rapports financiers? Analyse à l'échelle des filiales du recours aux auditeurs des composantes situés à l'étranger

RÉSUMÉ

Nous postulons et établissons que la qualité des rapports financiers dans les filiales étrangères des multinationales des États-Unis est plus élevée lorsque l'auditeur principal de la multinationale fait appel à un auditeur des composantes pour auditer la filiale étrangère en son nom. La présente étude innove de façon importante en comparant la qualité des rapports financiers de filiales équivalentes avec et sans le recours à des auditeurs des composantes. Notre approche diffère de celle des études antérieures qui examinent les conséquences des variations de la quantité totale de travail réalisé par les auditeurs des composantes à l'échelle des multinationales. Nos résultats sont importants pour deux raisons. D'abord, nous proposons une perspective des conséquences du recours aux auditeurs des composantes différente de celles figurant dans la littérature émergente dans ce domaine, qui fait habituellement état d'une association négative entre le recours accru aux auditeurs des composantes et la qualité des rapports financiers au niveau de la multinationale. Ainsi, nous montrons qu'un modèle de recherche différent, appliqué au niveau où les auditeurs des composantes accomplissent réellement leur travail, aboutit à des conclusions divergentes. Ensuite, nous démontrons que le recours à des auditeurs des composantes dans le cadre d'audits de groupe de multinationales américaines permet aux institutions d'audit des États-Unis d'influencer la qualité des rapports financiers à l'étranger. Nous faisons également le rapprochement de nos résultats concernant les filiales à ceux de la multinationale en faisant appel à une nouvelle variable qui tient compte du travail effectué par des auditeurs des composantes au niveau de la multinationale. Dans l'ensemble, nous montrons que la meilleure façon d'auditer une filiale située dans un autre pays consiste probablement à faire appel à un auditeur de ce pays, et notre conclusion éclaire le débat touchant les orientations récemment proposées par le PCAOB.

Mots-clés : qualité de l'audit, auditeur des composantes, qualité des rapports financiers, audit de groupe, multinationale, Public Company Accounting Oversight Board

1. Introduction

In this study, we investigate the association between financial reporting quality at the foreign subsidiaries of US multinational companies (MNCs) and the use of component auditors. On the audits of MNCs, principal auditors often engage component auditors to audit significant foreign subsidiaries (foreign companies consolidated within the MNC's US-based financial statements) on their behalf. Almost all component auditors are foreign "affiliates" of the principal auditor. Thus, they are part of the audit firm's global network, frequently operating under the same brand name. Nonetheless, they are separate legal entities subject to the laws, regulations, and cultural norms of their own countries, where auditing standards differ from those of the PCAOB (Doty 2011a).[1]

Understanding how component auditors affect financial reporting quality is important for two reasons. First, component auditors play an important role in audit production for many of the largest and most important public companies, and PCAOB inspections raise concerns about the quality of component auditor work (Doty 2011b, 2013, 2016). For example, our data show that component auditors are used on over 30% of US company audits, and these companies represent over 60% of US market capitalization. Nonetheless, the PCAOB expressly cautions against extrapolating its inspection findings to the broader population of uninspected audit engagements

1. Virtually all (over 99% in our data) of component auditors identified individually in the PCAOB's Form AP are outside the United States. Accordingly, all the component auditors discussed in this study are foreign component auditors.

because of the risk-based nature of the selection process (PCAOB 2012). In this respect, academic research can play an important role by investigating financial reporting quality and component auditor use for a much broader population of audit engagements. Second, component auditors potentially provide an avenue for US auditing standards to affect financial reporting outside the United States. Many foreign subsidiaries file local audited statutory financial statements, and the auditor who serves as the component auditor for the US group audit typically also serves as the statutory auditor.[2] Extant research argues that audit quality improves when foreign auditors are subject to generally stricter US auditing institutions and standards (Lamoreaux 2016; Krishnan et al. 2017; Shroff 2020). Since US principal auditors are required to monitor component auditors' work and ensure compliance with the US auditing regime (PCAOB n.d., AS 1205), scoping the foreign subsidiary into a US group audit could "bond" (e.g., Coffee 2002; Doidge et al. 2004) the local auditor to US standards, providing an avenue for US audit institutions to affect foreign statutory financial reporting and auditing.

Extant studies focus their analyses at the MNC level by examining the consequences of variation in the amount of component auditor work (e.g., the percentage of total hours or fees) (Burke et al. 2020; Carson et al. 2021). The innovation of our study is to compare the financial reporting quality of equivalent *subsidiaries* with and without component auditor work. In other words, we conduct our analyses at the only level at which component auditors can plausibly affect the client MNC's financial reporting—the subsidiary level.

There are two interconnected reasons why we argue subsidiary-level analyses are necessary to fully understand component auditors' effect on financial reporting quality. First, aggregate MNC-level measures of financial reporting quality incorporate information from the entire MNC, including information from domestic operations and foreign operations where no component auditors are present. Thus, these measures include information about financial reporting quality that component auditors cannot plausibly influence, which introduces noise and potentially biases results. Second, there is likely a strong selection effect of component auditors onto clients with riskier foreign operations because auditing guidelines require more audit work to be performed on foreign subsidiaries that pose higher audit risk. We can better control for this selection effect in subsidiary-level analyses because we can identify and measure the determinants of component auditor use with individual subsidiary characteristics. MNC-level analyses can only control for the selection effect using aggregate measures of subsidiary characteristics as controls.[3]

We predict that component auditor use will be *positively* associated with financial reporting quality at the subsidiary level, which is the opposite of the conclusions in extant research (e.g., Burke et al. 2020). The presence of a component auditor indicates that the principal auditor has included the foreign subsidiary into the group audit scope and thus has decided that more extensive audit procedures are required at the foreign subsidiary than the principal auditor can successfully conduct remotely.[4] The best way to conduct these procedures is likely to be with a component auditor in the local country. Moreover, component auditors are required to conduct the audit in accordance with stricter US auditing standards (as opposed to statutory-only audits conducted under local audit standards). As a result, audit effort likely increases when a component auditor is used compared to not used, leading to higher financial reporting quality.

We build a unique subsidiary-level data set by combining detailed information about US MNCs' foreign subsidiaries from Bureau van Dijk's (BvD) Orbis database with detailed information about the extent and location of component auditor use from the PCAOB's Form AP. Orbis

2. Local statutory audit requirements vary by country and are typically dependent upon the subsidiary company's size, number of employees, or other characteristics.
3. Aggregate measures are necessarily noisier proxies for individual, disaggregated measures (Barth et al. 2001).
4. As we discuss in section 2, principal auditors rarely travel to foreign countries to conduct audit work themselves. Thus, when a component auditor is *not* used on an MNC's foreign subsidiary, the principal auditor has likely decided to rely on less-extensive procedures, such as a limited analytical review, that can be conducted without traveling to the foreign subsidiary's location (Barrett et al. 2005; AICPA 2019).

provides detailed financial and ownership data for a large number of public and private companies around the world, allowing us to identify foreign companies that are subsidiaries consolidated within a US MNC's financial statements. Using these two data sources, we are able to link over 90% of the component auditors individually identified on the PCAOB's Form AP to a foreign subsidiary in the same country, providing us with a comprehensive data set linking individual component auditors with the foreign subsidiaries they audit.

Because ours is the first study to investigate component auditor use at the subsidiary level, we begin our empirical analysis with the determinants of component auditor use. Consistent with the requirements of auditing standards (AICPA 2019), we find that component auditor use is positively associated with measures of foreign subsidiary size and risk. Foreign subsidiary size is by far the most important determinant of component auditor use. Component auditors are also more likely to be used when foreign subsidiaries are more profitable, exhibit larger amounts of inventory and receivables, and report a prior period internal control material weakness. They are also more likely to be used in countries with low rule of law, with high English proficiency, and without mandatory adoption of IFRS.

Next, we show that component auditor use is positively associated with financial reporting quality at the subsidiary level, consistent with our prediction. Our preferred measure of financial reporting quality is the absolute value of abnormal accruals because research finds MNCs manage earnings through the accruals of their foreign subsidiaries (Dyreng et al. 2012; Beuselinck et al. 2019). We also use absolute total accruals, following Chen et al. (2018), and we separately analyze income-increasing positive accruals and income-decreasing negative accruals. In additional analyses, we also find consistent evidence using two different measures of benchmark beating as alternative proxies for financial reporting quality (Burgstahler and Dichev 1997; Aobdia 2019).[5]

Selection bias is a particular concern in this literature because professional standards dictate, and our determinants analysis confirms, that the decision to use a component auditor is a function of foreign subsidiary size and risk. We address this concern in three ways. First, our determinants analysis suggests size is the most important determinant of component auditor use and that the relationship is likely nonlinear, which raises concerns about functional form misspecification. Therefore, we include nonlinear, higher-order size controls in our financial reporting quality models. Second, we employ entropy balancing so that the treatment and control samples exhibit similar mean, variance, and skewness values for all control variables (McMullin and Schonberger 2020). Third, we find the results are robust in a variety of different propensity score matched (PSM) samples. While these procedures do not address selection issues on unobservable variables, they do alleviate concerns about functional form misspecification arising from selection on observable variables (Minutti-Meza 2013; Shipman et al. 2017).

In our final analyses, we seek to reconcile our subsidiary-level results with extant research on component auditor use conducted at the MNC level (Burke et al. 2020; Carson et al. 2021). As discussed above, the decision to use a component auditor is strongly related to audit risk. Consequently, the higher inherent risk of audits with more aggregate component auditor work relative to domestic audit work (the measure typically used in these extant studies) leads directly to an expectation of lower-quality financial information overall.[6] Furthermore, it is difficult to control for the selection effect at the MNC level because aggregated measures from Form AP or other

5. Other commonly used measures of financial reporting and audit quality, such as restatements and going-concern opinions, are not available in our subsidiary-level data set.

6. The extent of component auditor use is positively associated with audit fees, consistent with this variable capturing client financial reporting risk at the MNC level (Burke et al. 2020; Carson et al. 2021). As noted above, this selection effect also operates at the subsidiary level in that some subsidiaries are audited by a foreign component auditor, and some are not. However, we find that component auditor use is positively associated with subsidiary-level financial reporting quality. Thus, the selection of component auditors onto riskier foreign subsidiaries does not appear to be an alternative explanation for our subsidiary-level results.

public company disclosures may not accurately identify the size and location of all an MNC's foreign subsidiaries. Nonetheless, we introduce two new measures of component auditor use at the MNC level that are constructed using our individual, subsidiary-level data. These measures are intended to identify MNC audit engagements where a higher proportion of total foreign subsidiary activity is audited by component auditors compared to MNCs where a lower proportion of total foreign subsidiary activity is audited by component auditors. Thus, these variables create a counterfactual comparison that is more closely related to our subsidiary-level analyses than the variables used in extant research. Consistent with our subsidiary results, we find that the MNC's consolidated financial statements are less likely to be subsequently restated when component auditors are used to audit a greater proportion of an MNC's foreign subsidiaries.[7]

We contribute to the emerging literature on component auditor use by analyzing its determinants and consequences at the subsidiary level. While the emerging research in this area provides important initial conclusions, we describe a more nuanced relationship that may appear counterintuitive at first glance: MNC-level audits with higher component auditor use may exhibit lower financial reporting quality on average (because of the higher overall financial statement risk when companies have more extensive foreign operations), but this does not imply that *less* component auditor use will *improve* financial reporting outcomes. It is important for stakeholders and regulators to understand this distinction and consider which level of analysis is more informative to their specific concerns.

Reassuringly, we provide new evidence that the use of component auditors is associated with *higher* financial reporting quality at the foreign subsidiary level—the only level at which component auditors can plausibly influence the financial information prepared by client management. Consequently, our results inform the PCAOB's ongoing standard-setting agenda by illuminating the underlying relationship in a way that is difficult, or perhaps impossible, to detect in analyses conducted only at the MNC level. For example, PCAOB Release No. 2016-002 (PCAOB 2016) proposes amendments to existing standards that could intentionally or unintentionally shift the amount of work performed by component auditors.[8] Holding MNC foreign activity constant, our results illuminate how the PCAOB's revised standard might harm overall financial reporting quality if it reduces component auditor use.

In addition, we find that component auditor use is positively associated with subsidiary-level financial reporting quality even when the subsidiary is subject to a statutory audit. Thus, we contribute to the literature that argues the stricter US auditing regime can affect financial reporting and auditing outside the United States (Lamoreaux 2016; Krishnan et al. 2017; Shroff 2020).

Finally, and more broadly, we illustrate how investigating an accounting phenomenon at different levels of analyses can yield different inferences.[9] We demonstrate this phenomenon within an important and emerging area of audit-related research.

7. We also replicate the main result in Burke et al. (2020) and show that the percentage of audit hours used by component auditors, as a proportion of overall audit hours, is positively associated with the likelihood of a financial restatement at the MNC level. This is consistent with component auditors being used to a greater extent when companies exhibit riskier and more complex foreign operations.

8. For example, to comply with the proposed changes to AS 1205 *Part of the Audit Performed by Other Independent Auditors*, the principal auditor "*may decrease the share of work performed by other auditors and increase the share of its own work*" (PCAOB 2016, 38–39, emphasis added). In other words, the proposed amendments could directly reduce the amount of work performed by component auditors. The PCAOB requested additional comments in Release No. 2017-005 (PCAOB 2017).

9. This issue is sometimes referred to as the "ecological fallacy," which is the error of drawing inferences about individuals from group-level data. Robinson (1950) provides a commonly cited example using immigrant literacy rates. The percentage of a US state's population who are immigrants is positively correlated with the percentage of a state's population who are literate. However, there is a negative correlation between foreign birth and literacy at the individual level. The different results are because immigrants are more likely to settle in states where the native-born population is more literate.

2. Background, literature review, and hypothesis development

Global group audits: Background and literature review

Much of the financial information used to compile an MNC's consolidated financial statements is prepared by its foreign subsidiaries because these subsidiaries are often required to prepare their own stand-alone financial statements to comply with local regulations. Accordingly, audit firms must be able to match the global scope of their MNC client base. The international "Big 6" audit firms (the Big 4 plus Grant Thornton and BDO) have accomplished this by forming networks of affiliates that operate in most countries around the world.[10] The Big 6 firms typically have exclusivity agreements that require any audit work performed in a particular country to be performed by the local affiliate firm (Downey and Westermann 2021). These affiliated audit firms typically operate under the same brand name as the US firm (e.g., Deloitte, PwC, E&Y, KPMG), but they are separate legal entities subject to "different, and potentially conflicting, legal and regulatory requirements" across countries (Doty 2011b).

This arrangement has a number of advantages specific to conducting MNC audits. It is rarely a viable alternative for a principal auditor to travel to the foreign countries in which an MNC client operates to conduct audit work themselves. Besides the obvious travel costs, there are significant regulatory hurdles to conducting audit work across international borders (Downey and Westermann 2021).[11] In this regard, component auditors can provide a valuable service to the principal auditor by overcoming regulatory hurdles and providing local knowledge.

Despite the advantages of using component auditors, managing multiple engagement teams across legally different audit firms and international borders, all while under tight reporting deadlines, remains a "considerable management achievement" (Barrett et al. 2005, 2). Downey and Bedard (2019) interview practitioners about the coordination challenges on global group audits and discuss ways auditors can overcome these challenges. Citing these challenges, a handful of recent studies attempt to provide evidence on the overall quality of audits that use foreign component auditors compared to those that do not. For example, Dee et al. (2015) find investors perceive lower audit quality when principal auditors use component auditors. Importantly, Dee et al. (2015) note their results may not generalize beyond their sample because their data are limited to component auditors that are not registered with the PCAOB. Consistent with the limitation in Dee et al.'s (2015) setting, Doxey et al. (2020) find no evidence of a market reaction to the disclosure of component auditor involvement reported on the PCAOB's Form AP (a more complete list of component auditors). In an experimental setting, Demek et al. (2020) find investors perceive audit quality to be lower when principal auditors use component auditors to a greater than average extent but only disclose this use on Form AP (and not voluntarily in the audit report).

In a concurrent working paper, Carson et al. (2021) find evidence of a nonlinear relationship between the extent of component auditor use and financial reporting quality using a sample of Australian MNCs. They find financial reporting quality is higher when at least one component auditor is used compared to no component auditor use, but they also find financial reporting quality

10. In our sample, all subsidiaries of clients audited by a Big 6 audit firm are located in countries where the principal auditor has a foreign affiliate audit firm. Smaller audit firms expand their geographic scope by forming looser affiliated networks that may not operate under the same brand name (Ai et al. 2021). Non-Big 6 affiliates represent less than 2% of our sample.

11. For example, only six countries (Australia, Canada, Hong Kong, Ireland, Mexico, and New Zealand) have audit license reciprocity agreements with the United States, and even these countries require additional certification before they will honor US public accounting licenses (NASBA 2020). By separating into different legal entities within an affiliated network, each individual audit firm can ensure its compliance with local regulations and certification requirements. Anecdotally, principal auditors we spoke to expressed skepticism they would perform foreign audit work themselves even if they were allowed to. While principal auditors rarely conduct actual audit work at the foreign subsidiary themselves, discussions with practitioners suggest it is not uncommon for principal auditors to travel to the foreign country to conduct site visits, speak with the component auditors and the subsidiary's management, and sometimes review component auditor work papers.

decreases with the increasing extent of component auditor involvement, which they proxy with fees paid to component auditors as a percentage of total fees. Furthermore, they find no change in financial reporting quality when a revision of international auditing standards led to a reduction in component auditor involvement. Burke et al. (2020) provide the analysis most closely related to our study as they also analyze US MNCs with component auditor use reported on Form AP. They find a positive association between restatements and audit hours contributed by component auditors as a percentage of total audit hours, suggesting a negative association with financial reporting quality.

Research question: What are the determinants of component auditor use?

When scoping the global group audit of an MNC client, principal auditors do not typically require full-scope audits to be performed at 100% of the MNC's foreign subsidiaries. Rather, professional standards require principal auditors to scope group audits based on the risk of material misstatement that a foreign subsidiary poses to the consolidated financial statements (PCAOB n.d., AS 2201; AICPA 2019). Thus, there is variation in the amount of actual audit work conducted at an MNC's foreign subsidiaries (also referred to as "coverage") within a group audit, with the potential range of procedures including a fully scoped audit, an audit of specified account balances or transactions, or relatively simple analytical review procedures (AICPA 2019, AU-C Section 600).

Since more extensive audit procedures require more time in the field, component auditors are more likely to be used for larger and riskier foreign subsidiaries. For example, discussions with practitioners suggest a common approach to scoping a group audit is to first identify subsidiaries that are "significant based on size" (SBOS). Compared to smaller subsidiaries, SBOS subsidiaries represent a larger share of the MNC's financial statements. Therefore, a financial statement error at an SBOS subsidiary is more likely to cause a material error at the MNC level. After the principal auditor identifies SBOS subsidiaries, a common second step is to determine which non-SBOS subsidiaries need to be included in the group audit scope to reduce audit risk and ensure adequate coverage of the consolidated financial statements. There are a number of specific foreign subsidiary characteristics that could potentially be associated with component auditor use, and it is challenging to predict which specific characteristics will be the most important ex ante. Therefore, we introduce a number of variables in section 3 that capture different subsidiary characteristics and ask the following research question:

RESEARCH QUESTION 1. *Which foreign subsidiary characteristics are associated with component auditor use?*

Hypothesis: Component auditor use and subsidiary-level financial reporting quality

The preceding discussion highlights that component auditors are more likely to be used when more extensive audit work is performed on the foreign subsidiary's financial information. Therefore, we predict that component auditor use will be positively associated with financial reporting quality at the *subsidiary* level because greater audit effort should lead to higher-quality client financial reporting (Francis 2011; DeFond and Zhang 2014). This is compared to not using a component auditor, which indicates that less extensive group audit work is being performed, such as analytical review procedures. Accordingly, we state the following hypothesis (alternative form):

HYPOTHESIS 1. *Component auditor use is positively associated with financial reporting quality at the subsidiary level.*

There are two reasons why we may not observe the predicted association. First, principal-agent conflicts exist in group audits because component auditors perform a portion of the audit

work, but the principal auditor takes full responsibility for the quality of the group audit (PCAOB n.d., AS 1205; Downey and Bedard 2019). Given that monitoring costs increase with geographic distance (Coval and Moskowitz 1999; Malloy 2005; Ayers et al. 2011; Kedia and Rajgopal 2011; DeFond et al. 2018; Beck et al. 2019), principal auditors likely monitor component auditor work imperfectly (Doty 2013). Second, communication and coordination challenges arise because of the different cultural, regulatory, accounting, and legal environments in which principal and component auditors operate (Downey and Bedard 2019). If these issues are severe enough, component auditor use may not improve subsidiary financial reporting quality.

3. Subsidiary-level analyses

Research design: Determinants of component auditor use at the subsidiary level

We examine the determinants of foreign component auditor use (Research Question 1) at the subsidiary level with the following logistic regression model:

$$Prob.(Component\ Auditor) = \alpha + \omega\,(Subsidiary\ Audit\ Risk\ Characteristics) + \varphi(Controls) + \varepsilon. \quad (1)$$

The dependent variable, *Component Auditor*, is an indicator equal to one if a component auditor is identified individually on Form AP in the same country as the subsidiary company, and zero otherwise.[12] Form AP, our source for component auditor information, identifies the name and the country location of individual component auditors only if they contribute over 5% of total audit hours.[13] Thus, one limitation of the data is that we can only estimate the probability of using a component auditor that contributes 5% or more of total auditor hours. As a result, our subsidiary-level analyses may underestimate the actual extent of component auditor use as well as component auditors' overall effect on subsidiary financial reporting quality.[14]

Subsidiary Audit Risk Characteristics is a vector of subsidiary characteristics which might be related to component auditor use. Since practitioners inform us that the subsidiary's size is the first element they consider when scoping the group audit, we expect *Subsidiary Size*, the natural logarithm of the subsidiary's total assets, to be the most important ex ante determinant of component auditor use. In addition, we include ROA (*ROA*) because more profitable subsidiaries contribute more to MNC-level income, a common metric for calculating materiality (Acito et al. 2009). We also include *Subsidiary Sales-%*, to measure the subsidiary's contribution to top-line revenue, and *MNC Size*. We predict a negative coefficient on *MNC Size* since we expect each subsidiary will represent a smaller proportion of larger MNCs, on average.

We next include the following subsidiary-level characteristics which capture different elements of audit risk: revenue growth (*Revenue Growth*), sales volatility (*Sales Volatility*), debt as a

12. For example, MyCityDeal Limited is a company in the United Kingdom that is ultimately owned by Groupon, Inc., which is audited by Deloitte. On Groupon's Form AP filing, Deloitte identifies a component auditor in the United Kingdom. Therefore, we assign a value of one to *Component Auditor* for MyCityDeal Limited.

13. Form AP does not identify individual component auditors that contribute less than 5% of total audit hours, but it does disclose the total number of these "minor" component auditors, along with the total percentage of audit hours they collectively contribute. We focus on component auditors identified individually in our discussion since these are the only ones we can link to specific subsidiary observations.

14. For example, a component auditor that comprises 4% of total audit hours will not be identified individually on Form AP, making it look as though no component auditor was present at a particular foreign subsidiary when, in fact, one was. This underestimation of component auditor use statistically biases against the results we ultimately find that component auditor use is associated with higher subsidiary-level financial reporting quality since we measure a smaller amount of component auditor use than actually exists.

percentage of total assets (*Leverage*), an indicator for net losses (*Loss*), inventory and accounts receivable intensity (*Inv-Rec*), and internal control weaknesses (*Prior MW*).[15]

We also include additional control variables. *Statutory Auditor* equals one if the subsidiary's financial statements are legally subject to an external audit in the country in which it is located. We expect component auditor use to be positively associated with *Statutory Auditor* since principal auditors are likely to attempt to leverage statutory audit work for the group audit when possible. For MNC characteristics, we include the number of foreign geographic segments reported by the MNC (*MNC For. Segments*) and *Big 6*.[16] Finally, we include country, industry, and year fixed effects as additional controls.

We also examine specific country-level variables in some analyses. We include *Rule of Law* as research argues that earnings management is more likely to occur in low rule of law countries (Dyreng et al. 2012; Beuselinck et al. 2019). Furthermore, Barth et al. (2012) conclude that IFRS (*IFRS*) are more comparable to US GAAP than non-IFRS country-specific accounting standards. Therefore, the principal auditor may view subsidiaries in countries that require IFRS for local reporting as less risky since the client's accounting personnel in those countries will be more familiar with high-quality accounting standards, and thus potentially more technically competent. Additional country-level control variables include *English*, a measure of English language proficiency in the country. Ex ante, the variable *English* could be positively or negatively associated with component auditor use. On the one hand, principal auditors might prioritize the communication and coordination benefits of working with component auditors with high English proficiency as there will likely be fewer problems when communicating the audit plan or discussing technical issues. On the other hand, principal auditors may view subsidiaries in countries with low English use as riskier because it will be harder for company management to monitor and implement controls in these countries. Thus, we do not make an ex ante prediction regarding *English* because it is unclear whether principal auditors will prioritize the communication and coordination benefits of working with auditors in countries with high English proficiency, or whether they will view low English proficiency as a source of audit risk. Finally, *Tax Haven* identifies countries where local laws make it relatively easy to avoid taxes. We exclude country fixed effects when examining these country-level factors as they do not vary within countries across time during our sample period. See the Appendix for variable definitions. We winsorize all continuous variables at the top and bottom 1%.

15. We only consider control weaknesses that can be traced directly to the individual foreign subsidiary. More specifically, we obtain Sarbanes-Oxley Act (SOX) 302 and 404(a) management internal control reports for all MNCs in our sample period that disclose ineffective internal controls. We then search the 302/404(a) disclosure text for keywords that indicate the control weakness is due to accounting processes at a foreign subsidiary ("segment," "foreign," or "sub"). We read each of the reports with these keywords to determine whether management identifies a specific country or subsidiary as the cause of the MW. For example, Mevis Medical Solutions AG is a German company and a subsidiary of Varex Imaging Corp, a US issuer. In 2018, Varex made the following statement in Management's Assessment of Disclosure Controls: "We did not design and maintain effective controls related to accounting for our operations in Germany" (https://www.sec.gov/Archives/edgar/data/1681622/000168162218000045/varex10k2018.htm, p. 52). Because we can identify the specific country to which Varex's material weakness relates, and Mevis Medical Solutions is the largest German subsidiary of Varex, we assign a value of one to *Prior MW* for Mevis Medical Solutions in 2019. We identify 19 such MWs that we can attribute to a specific country and year in our determinants sample.

16. We also consider whether the presence of an affiliated audit firm (vs. one that is not affiliated with the principal audit firm) affects component auditor use. However, over 94% of all component auditors identified on Form AP are affiliates of the principal audit firm, a figure that rises to over 99% when the principal auditor is a Big 6 firm. Therefore, we exclude auditor affiliation from our analyses. Furthermore, we include an indicator variable indicating whether the PCAOB has performed inspections in the component auditor's country in an untabulated analysis and find that it is not statistically significant ($p = 0.41$).

Research design: Individual component auditor use and subsidiary-level financial reporting quality

We test financial reporting quality at the subsidiary level using the following OLS model:

$$FRQ = \alpha + \beta Component\ Auditor + \omega(Subsidiary\ Characteristics) + \varphi(MNC\ Characteristics) + \gamma(Country,\ industry,\ and\ year\ fixed\ effects) + \varepsilon. \quad (2)$$

Our test variable of interest is *Component Auditor*, as defined above. Beuselinck et al. (2019) and Dyreng et al. (2012) find that MNCs manage earnings through their consolidated subsidiaries using accruals. Therefore, we use accruals to measure financial reporting quality (*FRQ*) at the subsidiary level. Specifically, *Abs. Abnormal Accruals* is the absolute value of the residual from the Jones (1991) model, controlling for company performance (Kothari et al. 2005) and estimated in the subsidiary sample within year and 2-digit SIC code groups, controlling for country fixed effects.[17] In addition, we perform tests using the absolute value of total accruals as the dependent variable (*Abs. Total Accruals*), following Chen et al. (2018). Finally, we examine signed accruals by splitting the sample into observations with positive income-increasing versus negative income-decreasing abnormal accruals.[18]

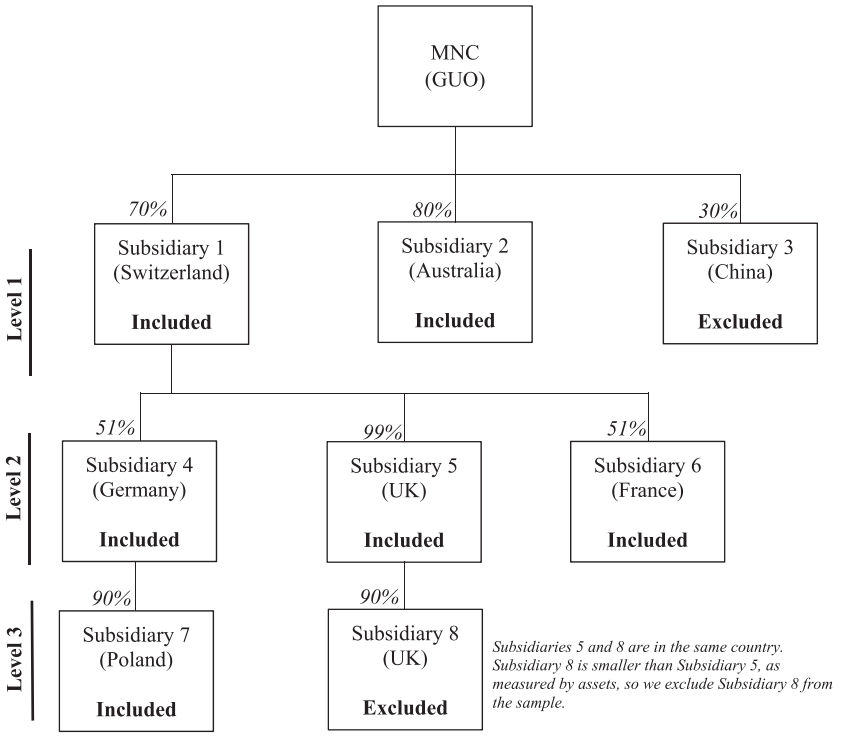
We control for subsidiary size, profitability, and MNC size (*Subsidiary Size*, *Abs. ROA*, *Subsidiary Sales-%*, *MNC Size*), *Revenue Growth*, *Sales Volatility, Leverage*, and *Loss*. We also control for *Statutory Auditor*, *MNC For. Segments*, and *Big 6* and include country, industry, and year fixed effects, as well as polynomials of our *Subsidiary Size* variable.[19] Finally, we cluster standard errors for each unique MNC (Petersen 2009).[20]

Subsidiary sample construction

Figure 1 illustrates the sample construction for our subsidiary-level empirical analyses ("Subsidiary Sample") using a hypothetical MNC as an example. Orbis provides financial and ownership data for both public and private companies around the world.[21] These ownership data allow us to identify privately owned companies that are subsidiaries of US public companies, either directly or indirectly, through their ownership of other companies. We first identify all non-US companies in the Orbis database with a "Global Ultimate Owner" (GUO) headquartered in the United States. Following Beuselinck et al. (2019) and BvD's default data definitions, we define GUOs as publicly owned companies with no other public company owning 25% or more of their outstanding

17. In untabulated analyses, we calculate *Abs. Abnormal Accruals* using alternate methods, with inferentially similar results. Specifically, we estimate abnormal accruals controlling for GDP growth and inflation instead of including country fixed effects (following the approach in Beuselinck et al. 2019); we estimate within industry, year, and country; and we estimate using an alternate regression model which includes changes in receivables instead of revenue growth and *PPE*. When we estimate within country, we use Fama-French 12 industry classifications in our calculation of abnormal accruals in order to maintain sample size. In each of these specifications, the coefficient on *Component Auditor* is negative and statistically significant ($p < 0.10$, two-tailed). We discuss below additional analyses that use two alternative measures of *FRQ* based on benchmark beating (Burgstahler and Dichev 1997).
18. Since the tests of positive versus negative accruals truncate these dependent variables at zero, we also use truncated regression as an untabulated sensitivity analysis and find similar results (Chen et al. 2008; Greene 2003). However, we are forced to drop fixed effects in the truncated regressions as these models fail to converge. Because of this, we choose to present our tabulated results using OLS while including industry, year, and country fixed effects.
19. In untabulated determinants analyses, we find the coefficients on size polynomials, *(Subsidiary Size*^{2}*)* and *(Subsidiary Size*^{3}*)*, are statistically significant, suggesting a nonlinear relationship between subsidiary size and the use of component auditors. See Table 2 and the related discussion in the next section for more details.
20. Results are robust to clustering by each unique subsidiary company.
21. See https://www.bvdinfo.com/en-us/our-products/data/international/Orbis for more details on the Orbis database.

Figure 1 Subsidiary sample construction: Hypothetical illustration



Notes: This figure provides a hypothetical example of which subsidiaries of a GUO are included in our Subsidiary Sample. Each box represents a different company in the Orbis database with the ownership percentages provided in italics. On Level 1, there are the three subsidiaries the GUO directly owns in Switzerland, Australia, and China. Subsidiaries 1 and 2 (Subsidiary 3) are included in (is excluded from) our sample because the GUO has an ownership stake greater than (less than) 50%. There are three subsidiaries within "Level 2" directly owned by the GUO's subsidiary in Switzerland. All three of these are included because the ownership percentage is greater than 50% at both Level 1 and Level 2. Note that Subsidiary 6 in France is still included even though the GUO's direct ownership percentage is less than 50% ($0.7 \times 0.51 = 0.36$). The GUO exercises control over Subsidiary 6 through its control of Subsidiary 1, so Subsidiary 6 will be consolidated under US GAAP. Subsidiary 7 in Poland, in Level 3, is included for the same reason. The GUO exercises control over Subsidiary 8, so it is likely consolidated in the group financial statements. However, we exclude it because Subsidiary 5 is also in the UK and is larger than Subsidiary 8. We only include the largest subsidiary in each country because Form AP identifies component auditors only by country. We stop at Level 3 for the purposes of this illustration, but our data includes 10 levels of ownership.

shares.[22] We consider subsidiaries up to 10 "levels" down, which is the maximum the Orbis data allow. As illustrated in Figure 1, we classify companies as subsidiaries if the ownership percentage is at least 50.01% at each level because this indicates the GUO can control the company

22. Requiring GUOs to be public companies allows us to identify audits disclosed on Form AP. For example, if we allowed private firms to be considered GUOs, Walmart and all its subsidiaries would drop out of our sample because the Walton Family (a private entity) owns more than 25% of Walmart's shares. In this example, the Walton Family would be identified as the GUO of both Walmart and all of its subsidiaries. Since the Walton Family is a private entity, it does not file Form AP with the PCAOB, but Walmart does.

either directly or indirectly through its other subsidiaries. Therefore, there is a high likelihood these companies are subsidiaries of the MNC that must be consolidated as components within the group financial statements.[23] We exclude companies for which ownership data are incomplete at any point in the chain between the individual subsidiary and the GUO.

In addition, we retain only the largest individual subsidiary in each country and year based on total subsidiary assets. We make this choice because Form AP (discussed below) identifies component auditors individually only at the foreign country level, not at the specific subsidiary level within a country. Since we cannot observe which specific subsidiaries the component auditor is auditing, we make the conservative assumption it is auditing the largest subsidiary (at the very least). This approach reduces the noise associated with assuming that the component auditor performs group audit procedures on smaller subsidiaries when it does not.[24] Finally, we require the auditor of each MNC GUO to have filed a Form AP for an audit report issued on or after June 30, 2017, as Form AP is our data source for identifying component auditors.[25]

Table 1 summarizes the construction process for our subsidiary sample. We identify 149,710 unique foreign subsidiaries of US MNC GUOs within the Orbis database. We drop 73,461 unique subsidiaries where the auditor of the US GUO did not file Form AP for an audit report issued on or after June 30, 2017, for fiscal year-ends between March 31, 2017, and December 31, 2019 (inclusive). These subsidiaries are not relevant to our study since we cannot observe component auditor use for them. We are able to match the countries of the remaining relevant subsidiaries to 3,350 component auditors identified individually on Form AP. This represents 93% of all component auditors identified on Form AP for the MNCs in our sample. Of these subsidiaries, 22,169 have assets and sales data available for at least one year during our sample period (based on Form AP filings), and which show assets greater than $1 million in total.

We then expand these unique subsidiaries into 39,401 subsidiary-year observations with both assets and sales data (panel B).[26] After retaining only the largest subsidiary within each MNC

23. While we cannot observe the actual consolidation schedules of MNCs, requiring greater than 50% ownership at each level ensures the subsidiaries we identify are highly likely to be consolidated in their respective MNC's financial statements. This approach may exclude some companies that are consolidated into the MNC's financial statements with less than 50% ownership (e.g., variable interest entities (FASB n.d., ASC 810)). However, since we are able to identify subsidiaries for a large majority of the component auditors identified on Form AP (approximately 93%), we opt for the more conservative approach that avoids including companies that might not be consolidated into group financial statements.

24. This approach is also consistent with our discussions with practitioners who informed us that scoping and component auditor decisions are made on a subsidiary-by-subsidiary basis; that is, it is rare for a component auditor to be assigned to multiple subsidiaries in a country without considering the size and risk characteristics discussed in section 2. However, we relax this assumption in untabulated analyses and instead perform our subsidiary-level analyses using all available subsidiary observations, which necessarily assumes that the component auditor performs procedures over every subsidiary in a country. Our audit quality results are similar in these analyses with respect to *Abs. Abnormal Accruals* and *Abs. Total Accruals* (both $p < 0.10$ in the full sample of subsidiaries and both $p < 0.05$ when applying entropy balancing). In further untabulated analyses, we restrict the sample to observations located in countries in which the MNC has only one subsidiary. The total sample size decreases by approximately 40%, and the number of observations with a component auditor decreases by over 50%. We find similar, albeit weaker, financial reporting quality results in this alternate sample.

25. Effective for all audit reports of US public companies issued on or after June 30, 2017, Rule 3211 requires principal auditors to submit Form AP within 35 days of the audit report date. Form AP data are obtained via the "Auditor Search" page of the PCAOB website (https://pcaobus.org/Pages/AuditorSearch.aspx). Our most recent download of the data occurred on May 1, 2020. We exclude duplicate entries listed in the Form AP, opting to keep the most recent submission if multiple forms were filed for the same issuer and audit report date. Less than 2% of Form AP filings for audits of issuers in our date range include multiple submissions. This occurs when the original submission requires an amendment, such as a correction of basic audit firm or issuer data, audit report dates, and foreign component auditor detail. In each case, we assume that the latest filing contains the correct foreign component auditor data for each engagement.

26. There are two primary causes for the missing assets and sales data: (i) some statutory financial statements for fiscal year 2019 have not been filed yet (or at least, have not been captured by Orbis yet), and (ii) Orbis obtains and

TABLE 1
Subsidiary sample construction

Panel A: Unique Orbis subsidiaries with available data

	Orbis subsidiary observations	Component auditors
Unique non-US companies identified in Orbis with a US GUO, hereafter termed "subsidiaries"	149,170	
Less: GUO's auditor did not file Form AP during the sample period (audit report dates after June 30, 2017)	(73,461)	
Unique non-US companies with a US GUO whose auditor filed at least one Form AP during the sample period	75,709	3,350
Less: Subsidiaries or GUO MNCs with no assets or sales data during the sample period, or with assets less than $1M for all years during the sample period	(53,540)	
Unique Orbis subsidiaries with sales and assets data for at least one year during sample period	**22,169**	

Panel B: Subsidiary determinants samples

	Orbis subsidiary observations	Component auditors
Subsidiary-year observations with non-missing assets and sales data (from the 22,169 unique subsidiaries in panel A)	39,401	
Less: Subsidiary-years deleted after retaining only the largest subsidiary within each GUO MNC, country, and year	(21,685)	
Less: Subsidiary-years in countries with no variation in component auditor use	(918)	
Subsidiary observations with assets and sales data (Subsidiary Full Sample)	**16,798**	1,596
Less: Subsidiary-years missing required control variables	(5,463)	
Subsidiary Determinants Sample	**11,335**	1,131

Panel C: Subsidiary financial reporting quality sample

	Orbis subsidiary observations	Component auditors
Subsidiary Determinants Sample (from panel B)	11,335	
Less: Financial and utilities industries	(918)	
Less: Observations missing variables for the financial reporting quality analyses	(2,178)	
Subsidiary Financial Reporting Quality Sample	**8,239**	771

Notes: This table presents the sample selection process for the subsidiary-level determinants and audit quality models. See section 3 for discussion of the sample selection process. Lines in bold represent samples used in our empirical analyses presented in Tables 4 and 5.

provides only ownership data, not financial data, for some subsidiaries. Such observations allow us to match subsidiaries with component auditors on Form AP but that do not have the data necessary to calculate variables used in our determinants and financial reporting quality analyses.

and country and dropping 918 observations in countries with no variation in component auditor use, we are left with 16,798 observations included in our component auditor determinants analysis that controls for only subsidiary size and country fixed effects (panel B, "Subsidiary Full Sample"). We then drop 5,463 observations missing data on additional subsidiary- and MNC-level control variables, leaving us with 11,335 observations in our determinants analysis, including these additional controls (panel B, "Subsidiary Determinants Sample"). The sample used for our financial reporting quality analyses is reduced by an additional 3,096 observations in the financial and utilities industries or missing data on variables required to perform these analyses, yielding 8,239 observations (panel C, "Subsidiary Financial Reporting Quality Sample").[27]

Descriptive statistics: Subsidiary sample

We present descriptive statistics for our subsidiary samples in Table 2. Panel A presents a breakdown of the Subsidiary Full Sample by country. Our 16,798 subsidiary-year observations are located across 46 countries. The largest proportion of observations is in the United Kingdom, representing 11% of the total sample. Overall, component auditors are used to audit 9.5% of the subsidiaries in the sample. The English proficiency index ranges from 48.5 to 100, with a mean of 68.6. IFRS is used in the local country for 84% of observations, the average rule of law measure is 1.09, and 13% of subsidiaries are located in tax haven countries.

Table 2, panel B, presents the percentage of subsidiaries with a component auditor for each quintile of subsidiary size, as measured using total assets. The percentage that is audited by a component auditor increases monotonically across the five quintiles, with only 2.0% in the smallest quintile of subsidiary size and 23.3% in the largest quintile. We control for this nonlinear relationship between subsidiary size and component auditor use by including polynomials of our *Subsidiary Size* variable in our financial reporting quality regressions.

Table 2, panel C, presents descriptive statistics for our subsidiary financial reporting quality sample. We present descriptive statistics separately for subsidiaries with and without a component auditor.[28] There are significant differences between the mean and median values of many variables across the two groups, consistent with principal auditors incorporating these characteristics into their scoping decisions. We address these differences by controlling for these variables and validating the robustness of our results to both entropy balancing and PSM.

Table 2, panel D, presents descriptive statistics after entropy balancing. Entropy balancing reweights observations in the control sample in order to match observable characteristics between control and treatment observations on three distribution moments (mean, variance, and skewness). Recent literature demonstrates the advantages of entropy balancing over other matching methods by focusing on covariate balance directly, avoiding the pitfalls of respecifying models and matching methods until balance is achieved (e.g., Hainmueller 2012; DeFond et al. 2016; Bonsall and Miller 2017; Shroff et al. 2017; McMullin and Schonberger 2020). We balance our sample using all control variables identified in equation (2), including fixed effects, across all three moments.[29] In

27. The most common reason we drop observations in this step is because of missing values for variables required to calculate *Abs. Total Accruals* and *Abs. Abnormal Accruals*. This lack of data affects observations from nearly all of the countries in our sample, and the country composition in the accruals sample is similar to that of the determinants sample. However, we note that almost all observations from two countries, China and Russia, are deleted in this step. Neither of these countries represents a large portion of the determinants sample (3.7% and 2.9%, respectively). In addition, there are a small number of observations in our financial reporting quality analyses that are not in our determinants regressions. This is because some industries do not exhibit variation in component auditor use. These observations are dropped from our determinant regressions, which use logit, but are included in our financial reporting quality regressions, which use OLS. Results are robust to dropping these observations.
28. Despite the decrease in sample size, the rate of component auditor use is consistent across our subsidiary full sample (9.5%) and our subsidiary financial reporting quality sample (9.4%).
29. We exclude size polynomials in entropy balancing since this method already addresses functional form misspecification. Results are inferentially similar if we include size polynomials in these tests.

TABLE 2
Subsidiary sample descriptive statistics

Panel A: Observations by country—Subsidiary full sample

Country	*N*	Percent of sample	Percent with component auditor	*Rule of Law*	*IFRS*	*English*	*Tax Haven*
United Kingdom	1,853	11.0	24.5	1.68	1	100.0	0
France	1,116	6.6	9.1	1.44	1	55.5	0
Singapore	1,049	6.2	4.1	1.82	0	68.6	1
Italy	983	5.9	5.3	0.32	1	55.8	0
India	880	5.2	7.8	0.00	0	57.1	0
Australia	841	5.0	9.5	1.68	1	100.0	0
Germany	771	4.6	24.1	1.61	1	63.7	0
Spain	729	4.3	3.3	1.01	1	55.9	0
Sweden	666	4.0	4.1	1.94	1	70.7	0
Belgium	632	3.8	7.4	1.34	1	63.5	0
Ireland	570	3.4	11.2	1.43	1	100.0	1
China	529	3.1	21.0	−0.26	0	51.9	0
Poland	522	3.1	6.7	0.47	1	62.5	0
Netherlands	460	2.7	16.7	1.83	1	70.3	0
Czech Republic	433	2.6	3.2	1.12	1	60.0	0
Luxembourg	342	2.0	1.2	1.74	1	66.3	1
Russia	342	2.0	5.3	−0.79	1	53.0	0
South Korea	333	2.0	6.0	1.16	1	56.3	0
Thailand	325	1.9	5.2	0.04	1	48.5	0
New Zealand	303	1.8	2.3	1.92	1	100.0	0
Norway	303	1.8	4.3	2.02	1	68.4	0
Colombia	292	1.7	1.7	−0.36	1	48.9	0
Portugal	289	1.7	1.4	1.13	1	60.0	0
Hungary	274	1.6	4.4	0.53	1	59.5	0
Austria	263	1.6	1.9	1.81	1	63.1	0
Romania	260	1.5	2.3		1	60.3	0
Denmark	228	1.4	3.9	1.86	1	67.3	0
Slovakia	219	1.3	3.7	0.57	1	58.1	0
Malaysia	190	1.1	3.7	0.41	0	59.3	1
17 countries individually comprising <1% of final sample	801	4.8	9.6	0.25	0.85	57.4	0.04
Total/weighted average	16,798	100	9.5	1.09	84%	68.6	13%

Panel B: Component auditor use by subsidiary size quintile

Quintile of subsidiary size (median total assets)	Number of observations	Percent with component auditor
1 ($3.14M)	3,359	2.0
2 ($12.44M)	3,360	3.7
3 ($34.55M)	3,359	6.4
4 ($101.76M)	3,360	12.1
5 ($620.69M)	3,360	23.3
Total	16,798	9.5

(The table is continued on the next page.)

TABLE 2 (continued)

Panel C: Subsidiary-level descriptive statistics—Subsidiary audit quality sample

	Component Auditor = 1 (N = 771)			*Component Auditor* = 0 (N = 7,468)		
Variable	Mean	Median	SD	Mean	Median	SD
Abs. Abnormal Accruals	0.108	0.070	0.124	0.137***	0.086***	0.154
Abs. Total Accruals	0.126	0.074	0.162	0.177***	0.100***	0.216
Subsidiary Size	5.163	5.203	1.785	3.550***	3.447***	1.699
Abs. ROA	0.106	0.066	0.124	0.103	0.066	0.130
Subsidiary Sales-%	0.138	0.078	0.175	0.026***	0.008***	0.071
MNC Size	8.125	8.174	1.833	8.917***	8.881***	1.629
Revenue Growth	0.126	0.074	0.347	0.162**	0.090*	0.472
Sales Volatility	0.198	0.111	0.271	0.269***	0.154***	0.384
Leverage	0.191	0.072	0.303	0.113***	0.000***	0.276
Loss	0.233	0.000	0.423	0.196**	0.000	0.397
Statutory Auditor	0.877	1.000	0.329	0.720***	1.000	0.449
MNC For. Segments	1.172	1.099	0.671	1.149	1.099	0.632
Big 6	0.940	1.000	0.237	0.984***	1.000	0.126

Panel D: Subsidiary-level descriptive statistics—Entropy-balanced sample

	Component Auditor = 1 (N = 771)			*Component Auditor* = 0 (N = 7,468)		
Variable	Mean	Median	SD	Mean	Median	SD
Abs. Abnormal Accruals	0.108	0.070	0.124	0.128***	0.071	0.153
Abs. Total Accruals	0.126	0.074	0.162	0.147**	0.077	0.191
Subsidiary Size	5.163	5.203	1.785	5.162	5.062	1.784
Abs. ROA	0.106	0.066	0.124	0.106	0.073	0.124
Subsidiary Sales-%	0.138	0.078	0.175	0.138	0.073	0.175
MNC Size	8.125	8.174	1.833	8.124	8.080	1.833
Revenue Growth	0.126	0.074	0.347	0.126	0.079	0.347
Sales Volatility	0.198	0.111	0.271	0.198	0.117	0.271
Leverage	0.191	0.072	0.303	0.191	0.060	0.303
Loss	0.233	0.000	0.423	0.234	0.000	0.423
Statutory Auditor	0.877	1.000	0.329	0.877	1.000	0.329
MNC For. Segments	1.172	1.099	0.671	1.171	1.099	0.671
Big 6	0.940	1.000	0.237	0.940	1.000	0.237

Notes: This table provides descriptive statistics for our Subsidiary Samples. Panel A presents the Subsidiary Full Sample by country along with descriptive statistics for country-level variables. Panel B presents the percentage of subsidiary observations with a component auditor by quintile of subsidiary size, as measured by total assets. The median total assets within each quintile are presented in parentheses in the first column. Panel C provides descriptive statistics for the variables used in our subsidiary-level audit quality regressions. We present means, medians, and standard deviations separately for observations with and without a component auditor. Panel D provides the same information as panel C after conducting entropy balancing, which reweights treatment and control observations so that the first three moments (mean, variance, and skewness) for all variables are virtually the same across the two samples. We report mean, median, and standard deviation values in panel D so it is consistent with panel C. See Table 1 and the related text in section 3 for sample construction. All variables are defined in the Appendix. All continuous variables are winsorized at the 1st and 99th percentile. In panels C and D, *, **, and *** denote the difference in means or medians is statistically different from zero at the 10%, 5%, and 1% levels (two-tailed), respectively. We do not perform a rank sum test of the difference in medians for indicator variables.

contrast to panel C, the mean, median, and standard deviation of all control variables are nearly identical, with no statistically significant differences in means across the control and treatment groups ($p > 0.987$ or higher in all cases).[30] However, there is still a statistically significant difference in mean values for *Abs. Abnormal Accruals* and *Abs. Total Accruals*, providing preliminary univariate evidence in support of Hypothesis 1.[31]

Empirical results: Determinants of component auditor use: Subsidiary-level analysis

We present our determinants model (Research Question 1) of component auditor use in Table 3. The dependent variable in all columns is *Component Auditor*. As expected, the coefficient on *Subsidiary Size* is positive and significant ($p < 0.01$, two-tailed) in all columns and shows considerable explanatory power.[32] In column (1) of Table 3, the model includes only *Subsidiary Size* and country fixed effects and shows an area under the ROC curve (AUC) of 0.809 and a pseudo R^2 of 0.179. In column (2), we include additional subsidiary and MNC-level variables meant to capture audit risk factors (Research Question 1). *ROA* and *Subsidiary Sales-%* are positive ($p < 0.05$ and $p < 0.01$, respectively), while *MNC Size* is negative ($p < 0.01$). The negative coefficient on *MNC Size* provides an illustration of how subsidiary- and MNC-level analyses can yield different inferences. At the MNC level, *MNC Size* is *positively* associated with aggregate component auditor use (result untabulated), which is the opposite of the association shown here at the subsidiary level. This is the case because larger MNCs are more likely to have larger or more foreign subsidiaries, not because component auditor use increases with MNC size per se.

In addition, *Inv-Rec* and *Prior MW* are positively associated with the use of component auditors ($p < 0.01$ and $p < 0.10$, respectively), suggesting principal auditors consider subsidiary inherent and control risk during the scoping process. *Revenue Growth* is negatively associated with the use of component auditors ($p < 0.10$), and *Statutory Auditor* is positively associated with the use of component auditors, consistent with principal auditors attempting to leverage statutory audit work for the group audit. Finally, the AUC (pseudo R^2) increases to 0.885 (0.330) in column (2), indicating these additional variables increase the explanatory power of the model.

In column (3), we drop the country fixed effects and add specific country-level variables. Both *Rule of Law* and *IFRS* are negative and statistically significant ($p < 0.01$ and $p < 0.10$, respectively), indicating principal auditors view country-level rule of law and financial reporting standards as audit risk factors (Barth et al. 2012; Dyreng et al. 2012; Beuselinck et al. 2019). Thus, they are less likely to scope the subsidiary into group audit procedures when these risks are lower, all else equal. *Tax Haven* is also negative ($p < 0.01$), suggesting that subsidiaries in tax havens are more likely to be holding companies that use transfer pricing and intercompany transactions within the group to avoid income taxes and have relatively few third-party business transactions to audit. Finally, *English* is positive and statistically significant ($p < 0.01$). We interpret the positive coefficient on *English* as an indication there are fewer communication problems between principal auditors (located in the United States) and component auditors in countries with high English proficiency, reducing the monitoring costs for the principal auditor to employ component auditors in these countries. This also suggests that principal auditors do not view subsidiaries in countries with low English proficiency as posing significant additional audit risk. Overall, column (3) provides evidence regarding the specific country characteristics that matter to component auditor use at the margin. Furthermore, the pseudo R^2 and AUC statistics are similar across columns (2) and (3), indicating these variables capture most of the country-level variation in component auditor use.

30. Variance and skewness are also visibly identical in the entropy balanced sample (untabulated).

31. The unconditional mean value (before entropy balancing) of *Abs. Abnormal Accruals* is 0.134 (untabulated) and is comparable to the mean value of 0.130 reported by Beuselinck et al. (2019), who also use Orbis data to calculate abnormal accruals.

32. All significance levels presented in the tables and discussed in the study are two-tailed unless specifically noted otherwise.

TABLE 3
Determinants of component auditor use: Subsidiary-level analysis

DV =	(1) *Component Auditor*	(2) *Component Auditor*	(3) *Component Auditor*
Subsidiary Size	0.428	0.983	0.980
	(16.071)***	(14.264)***	(15.662)***
ROA		0.807	0.871
		(2.004)**	(2.220)**
Subsidiary Sales-%		1.543	1.608
		(2.683)***	(2.897)***
MNC Size		−0.843	−0.851
		(−12.936)***	(−13.868)***
Revenue Growth		−0.201	−0.173
		(−1.679)*	(−1.418)
Sales Volatility		−0.143	−0.099
		(−0.821)	(−0.582)
Leverage		0.052	0.044
		(0.263)	(0.239)
Loss		0.112	0.089
		(0.995)	(0.819)
Inv-Rec		0.764	0.538
		(3.428)***	(2.535)**
Prior MW		1.335	1.421
		(1.800)*	(1.911)*
Statutory Auditor		0.432	0.303
		(1.818)*	(1.928)*
MNC For. Segments		0.062	0.057
		(0.668)	(0.628)
Big 6		−0.215	−0.112
		(−0.651)	(−0.366)
Rule of Law			−0.365
			(−3.658)***
IFRS			−0.294
			(−1.652)*
English			0.015
			(4.496)***
Tax Haven			−1.502
			(−5.829)***
Fixed effects	Country	Industry, year, country	Industry, year
Observations	16,798	11,335	11,239
Pseudo R^2	0.179	0.330	0.311
AUC	0.809	0.885	0.875

Notes: This table presents analyses of the determinants of component auditor use. Fixed effects are included as indicated but suppressed for brevity. All variables are defined in the Appendix. All continuous variables are winsorized at the 1st and 99th percentile. We cluster robust standard errors by each unique MNC. *z*-statistics are presented in parentheses below coefficient estimates. *, **, and *** denote significance levels of 10%, 5%, and 1% (two-tailed), respectively.

Results: Component auditor use and subsidiary-level financial reporting quality

Table 4, panel A, presents the results of equation (2) testing financial reporting quality at the subsidiary level. Consistent with Hypothesis 1, we find that component auditor use is *negatively* associated with both *Abs. Abnormal Accruals* and *Abs. Total Accruals* ($p < 0.01$ and $p < 0.10$,

respectively, in columns (1) and (2)), indicating the use of component auditors at foreign subsidiaries is *positively* associated with financial reporting quality at the subsidiary level. This result is different from extant studies, which show a negative association or no association between component auditor use and financial reporting quality at the *MNC level*. We further extend our accruals analysis to examine positive income-increasing and negative income-decreasing abnormal accruals in columns (3) and (4). We find that component auditor use is significantly negatively associated with income-increasing abnormal accruals and significantly positively associated with income-decreasing abnormal accruals.[33]

Table 4, panel B, presents the results using the sample that is reweighted for entropy balancing. Results are almost identical to those presented in panel A. Thus, we do not find evidence that our main results are sensitive to functional form misspecification or selection on observable characteristics.[34]

Alternative measures of financial reporting quality: Benchmark beating

We use accruals as our primary measure of financial reporting quality because Dyreng et al. (2012) and Beuselinck et al. (2019) show that MNCs manage earnings through the accruals of their subsidiaries. In untabulated analyses, we also consider two alternative measures based on benchmark beating (Burgstahler and Dichev 1997; Aobdia 2019): *Small Profit* is an indicator variable equal to one if the subsidiary's *ROA* is between zero and 4%, and *Meet ROA* is an indicator variable equals to one if the subsidiary's annual change in ROA is between zero and 0.02. In these analyses, *Component Auditor* is negatively associated with both variables ($p < 0.10$) in the full sample. In the entropy-balanced sample, *Meet ROA* is negatively associated with *Component Auditor* ($p < 0.10$), but *Small Profit* is not significant at conventional levels.

Component auditors and statutory audits

One interesting observation from Table 2, panel D, is that the majority of our subsidiary-level observations (approximately 74%, untabulated) come from foreign locations where their financial statements are subject to local statutory audits. To the extent that statutory auditing under local auditing standards is substantially equivalent to group auditing under US GAAS, we may not expect to observe an association between component auditor use and financial reporting quality at the subsidiary level for these observations. However, as noted previously, one of our motivations for investigating component auditor use is that there are reasons to believe that scoping a foreign subsidiary into the group audit of a US MNC will still increase audit effort even when a local statutory audit is already being performed. Several studies argue that the stricter regulatory and

33. Our determinants analysis suggests that component auditor use varies with certain country-level characteristics, such as rule of law, English use, and adoption of IFRS. In untabulated analyses, we find that the association between component auditor use and financial reporting quality does not vary significantly based on these country-level characteristics. These null results are not surprising if principal auditors adjust audit procedures in response to these country characteristics. For example, if principal auditors recognize low country-level rule of law as a risk factor (as our determinants analysis suggests), we expect them to adjust the audit plan to account for this additional risk as required by professional standards. For example, principal auditors might appropriately set lower component materiality thresholds for riskier foreign subsidiaries or monitor the component auditor's work in these countries more closely. These types of adjustments to the audit plan can offset the higher risk, likely leading to insignificant interactions with these variables.

34. With regard to unobserved selection issues, the largest concern is that there may be unobserved audit risk factors that cause principal auditors to use component auditors on riskier subsidiaries. We expect the threat of this leading to erroneous conclusions is small given the high explanatory power of the observable variables we include in Table 3. Furthermore, if unobservable risk characteristics are driving component auditor use, we expect this to bias against our findings since preaudited financial reporting quality is likely lower for riskier subsidiaries. We also find that our results are robust in 20 different PSM samples which we create by varying caliper distance, matching methods, and first-stage selection models (DeFond et al. 2016; Shipman et al. 2017). The PSM results are available from the authors on request.

TABLE 4
Component auditor use and subsidiary-level financial reporting quality

Panel A: Subsidiary financial reporting quality sample

DV =	(1) *Abs. Abnormal Accruals*	(2) *Abs. Total Accruals*	(3) *Income-Increasing Abnormal Accruals*	(4) *Income-Decreasing Abnormal Accruals*
Component Auditor	**−0.016**	**−0.013**	**−0.015**	**0.019**
	(−2.733)* **	**(−1.825)***	**(−2.066)** **	**(2.384)** **
Subsidiary Size	−0.110	−0.337	−0.116	0.107
	(−10.949)***	(−18.027)***	(−11.099)***	(5.808)***
Abs. ROA	0.151	0.301	0.141	−0.148
	(7.854)***	(8.615)***	(5.690)***	(−6.603)***
Subsidiary Sales-%	0.042	0.057	0.039	−0.038
	(1.527)	(1.670)*	(1.251)	(−1.125)
MNC Size	0.000	0.002	0.001	0.000
	(0.244)	(0.764)	(0.268)	(0.105)
Revenue Growth	−0.001	0.006	0.005	0.005
	(−0.220)	(0.893)	(0.855)	(0.721)
Sales Volatility	0.042	0.047	0.025	−0.061
	(6.238)***	(4.838)***	(3.573)***	(−5.881)***
Leverage	0.049	0.080	0.044	−0.045
	(5.232)***	(5.226)***	(3.219)***	(−4.192)***
Loss	0.015	0.018	0.015	−0.012
	(3.267)***	(2.959)***	(2.490)**	(−1.896)*
Statutory Auditor	−0.009	−0.001	−0.002	0.015
	(−1.471)	(−0.067)	(−0.210)	(1.937)*
MNC For. Segments	0.001	0.008	−0.005	−0.006
	(0.409)	(1.819)*	(−1.274)	(−1.322)
Big 6	0.011	0.004	0.030	0.017
	(0.955)	(0.272)	(1.963)**	(1.058)
(Subsidiary Size)^2	0.022	0.069	0.023	−0.022
	(8.611)***	(15.166)***	(8.355)***	(−4.914)***
(Subsidiary Size)^3	−0.001	−0.004	−0.001	0.001
	(−7.317)***	(−13.329)***	(−6.866)***	(4.308)***
Fixed effects	Industry, year, country	Industry, year, country	Industry, year, country	Industry, year, country
Observations	8,239	8,239	4,274	3,965
R^2	0.161	0.316	0.189	0.168

(The table is continued on the next page.)

legal regime of the United States improves audit quality, and hence client financial reporting quality. For example, audit quality improves when foreign auditors are subjected to regulatory inspections from the PCAOB (Lamoreaux 2016; Krishnan et al. 2017), and their clients are better able to access external financing (Shroff 2020). Furthermore, the US principal auditor, which is subject to the legal and regulatory regime in the United States, is required to monitor component auditors' work and ensure its compliance with US auditing standards. In effect, scoping the foreign subsidiary into a US group audit could "bond" (e.g., Coffee 2002; Doidge et al. 2004) the local auditor to the stricter regulatory regime of the US principal auditor because the local auditor's

TABLE 4 (continued)

Panel B: Entropy-balanced sample

DV =	(1) *Abs. Abnormal Accruals*	(2) *Abs. Total Accruals*	(3) *Income-Increasing Abnormal Accruals*	(4) *Income-Decreasing Abnormal Accruals*
Component Auditor	**−0.020**	**−0.022**	**−0.022**	**0.018**
	(−2.607)* **	**(−2.414)** **	**(−2.165)** **	**(1.945)***
Subsidiary Size	−0.007	−0.013	−0.015	−0.003
	(−1.892)*	(−2.535)**	(−3.245)***	(−0.641)
Abs. ROA	0.192	0.382	0.092	−0.273
	(4.851)***	(5.839)***	(1.614)	(−6.047)***
Subsidiary Sales-%	0.055	0.051	0.096	0.031
	(1.501)	(1.357)	(2.322)**	(0.730)
MNC Size	−0.012	−0.003	−0.007	0.013
	(−1.292)	(−0.315)	(−0.686)	(1.055)
Revenue Growth	0.007	0.015	0.007	−0.012
	(0.811)	(1.109)	(0.616)	(−0.890)
Sales Volatility	0.035	0.064	0.024	−0.046
	(1.626)	(2.100)**	(1.396)	(−1.385)
Leverage	0.037	0.074	0.044	−0.014
	(2.090)**	(3.585)***	(1.835)*	(−0.743)
Loss	0.033	0.060	0.023	−0.034
	(2.985)***	(4.535)***	(1.621)	(−2.404)**
Statutory Auditor	0.003	0.003	0.010	0.006
	(0.915)	(0.551)	(2.110)**	(1.288)
MNC For. Segments	−0.023	−0.038	−0.027	0.027
	(−1.796)*	(−2.297)**	(−1.456)	(2.182)**
Big 6	0.025	0.024	0.042	−0.004
	(1.387)	(1.170)	(1.600)	(−0.180)
Fixed effects	Industry, year, country	Industry, year, country	Industry, year, country	Industry, year, country
Observations	8,239	8,239	4,274	3,965
R^2	0.186	0.263	0.194	0.257

Notes: Panels A and B present analyses of the relationship between component auditor use and subsidiary financial reporting quality. Panel A presents our main tests, performed in the Subsidiary Financial Reporting Quality Sample. In each column, we regress the indicated dependent variable on our test variable, *Component Auditor*, and control variables. Coefficients on *Component Auditor* are presented in bold. Fixed effects are included as indicated but suppressed for brevity. Panel B presents the same tests using weighted regression and an entropy-balanced sample. For both panels, all variables are defined in the Appendix. All continuous variables are winsorized at the 1st and 99th percentile. We cluster robust standard errors by each unique MNC. *t*-Statistics are presented in parentheses below coefficient estimates. *, **, and *** denote significance levels of 10%, 5%, and 1% (two-tailed), respectively.

work must be conducted in a way that complies with both US and local country audit standards. To the extent this bonding increases the component auditor's effort beyond what would be required when only a statutory audit is performed, we should still observe our predicted association.

To investigate this issue further, we reperform the analyses in Table 4 using only the 74% of observations subject to a statutory audit (untabulated). We find that our results hold in this

Figure 2 Hypothetical illustration of difference in component auditor "coverage" decisions

	MNC A		MNC B	
	Sales	Component auditor?	Sales	Component auditor?
Foreign Subsidiary 1	$ 200	Yes	$ 200	Yes
Foreign Subsidiary 2	140	Yes	140	No
Foreign Subsidiary 3	60	No	60	No
Total foreign sales	$ 400		$ 400	
Domestic sales	600		600	
Total sales	$ 1,000		$ 1,000	

Notes: This figure presents two hypothetical MNCs that are identical in all respects. Both report total sales of $1,000, and both have three foreign subsidiaries that combine to contribute $400 of total foreign sales. However, the two MNCs' auditors make different scoping decisions with respect to the group audit. MNC A's principal auditor uses a component auditor to "cover" both Foreign Subsidiaries 1 and 2. In contrast, MNC B's principal auditor uses a component auditor to cover only Foreign Subsidiary 1, and therefore relies on less extensive analytical procedures for the remaining two foreign subsidiaries. Thus, MNC A's auditor covers a larger proportion of the MNC's foreign activity with component auditors, and because of this we expect audit quality will be higher for MNC A compared to MNC B.

subsample, which is consistent with component auditor use improving the quality of foreign subsidiary financial information even when they are already subject to local statutory audits.[35]

4. Component auditor coverage and MNC-level financial reporting quality

As discussed above, extant studies conducted at the MNC level find lower financial reporting quality when component auditors conduct a larger proportion of the overall audit (Burke et al. 2020; Carson et al. 2021). In this section, we reconcile our above subsidiary-level results to the MNC level and the findings of these other studies. From a conceptual standpoint, Figure 2 illustrates the reasons we expect component auditor use is *positively* associated with financial reporting quality at the MNC level. The figure shows two MNCs that are identical in all respects—they are both the same overall size ($1,000 in total sales), and each has three identical foreign subsidiaries that comprise $400 in foreign sales. However, these MNCs' auditors make different choices with regard to auditing the foreign subsidiaries. MNC A's auditor decides to use component auditors on Foreign Subsidiaries 1 and 2, whereas MNC B's auditor uses a component auditor only on Foreign Subsidiary 1. Assuming that all underlying client characteristics are held constant, we expect financial reporting quality will be higher for MNC A, where component auditor use is higher than MNC B. This is because MNC A's principal auditor is exerting more effort by using local component auditors to audit a higher proportion of the MNC's foreign subsidiaries, which should reduce the likelihood of financial reporting errors.

The figure helps to explain why our analysis creates a different counterfactual comparison compared to extant research. Extant research generally compares foreign component auditor work relative to domestic audit work (i.e., component auditor hours as a percentage of total audit hours). In our view, the measures in prior studies likely capture MNCs with relatively larger amounts of operational activity in foreign locations compared to domestic locations. For example, if we were to alter MNC B in Figure 2 to show $600 in foreign sales, component audit hours as a proportion of total audit hours will be higher simply because a larger proportion of the MNC's operations are located in foreign locations ($600 vs. $400). Notice here the client's characteristics

35. This result also shows that our findings are not driven by whether a subsidiary is subject to a statutory audit or not, as all of the firms in this 74% subsample are subject to such an audit.

must fundamentally change to justify significantly higher component auditor hours as a percentage of total hours, and they must change in a way that creates additional financial reporting risk from foreign subsidiaries. However, this association *does not* reflect component auditors *reducing* financial reporting quality. Rather, it reflects the fact this is a riskier and more challenging client to audit. The best way to audit a foreign subsidiary is still likely to be with a component auditor in the local country rather than avoiding the use of a component auditor altogether.

To demonstrate this empirically, we introduce two new variables of component auditor use at the MNC level. Importantly, we calculate these variables using our subsidiary-level data, which allow us to observe and measure specific subsidiary characteristics rather than relying on aggregate MNC-level data that can introduce other fundamental client characteristics into the measures. "Coverage" is a term often used by practitioners when scoping group audits to refer to the percentage of the MNC's consolidated accounts that are "covered" (i.e., audited). We borrow the term here to highlight the difference between our two new variables and the component auditor measures used in extant studies.

Our first variable is *Any Coverage*, an indicator equal to one if the MNC owns at least one foreign subsidiary and Form AP indicates that at least one component auditor is used on the audit engagement, and zero otherwise. For the purposes of this analysis, we restrict the sample to only those MNC observations that have significant foreign operations, which we define as MNCs with foreign subsidiaries that contribute at least 10% of total sales. We use our Subsidiary Sample (described in section 3) to identify foreign subsidiaries' contribution to total sales. Thus, *Any Coverage* identifies audit engagements that could, and do, have at least one component auditor, and we compare these to audit engagements that could, but do *not*, use any component auditors. Using Figure 2 as an example, we expect financial reporting quality to be higher on both MNC A and MNC B compared to an alternative example where no component auditor is used.

Our second variable is *Foreign Sales Coverage*, defined as the percentage of the MNC's total foreign subsidiary sales (across all subsidiaries) audited by a component auditor. We calculate *Foreign Sales Coverage* using all of the subsidiaries in our Subsidiary Sample. Using Figure 2 as an example, *Foreign Sales Coverage* is equal to 0.85 for MNC A [(200 + 140)/400 = 0.85] and is equal to 0.50 for MNC B [200/400 = 0.50]. As discussed above, we expect financial reporting quality to be higher for MNC A, where a higher proportion of foreign activity is subject to audit by component auditors. Furthermore, notice that *Foreign Sales Coverage* does not include any amount of domestic sales in the denominator. Therefore, it does not introduce any information about the relative proportion of the client's operating activities located in foreign versus domestic locations. By directly comparing audited foreign subsidiaries to unaudited foreign subsidiaries, our coverage variables more directly measure the extent of component auditor use over a client's foreign components as opposed to comparing the relative proportion of foreign audit work to domestic audit work as other studies do.

We test the relationship between component auditor coverage and MNC-level financial reporting quality using the following logistic regression model:

$$\begin{aligned} MNC\ Restate = {} & \alpha + \beta COVERAGE + \omega(Component\ Auditor\ Hours\text{-}\%) \\ & + \gamma(Control\ Variables) + (Industry\ and\ year\ fixed\ effects) + \varepsilon. \end{aligned} \tag{3}$$

The dependent variable, *MNC Restate*, is an indicator variable equal to one if the MNC subsequently restates its annual financial statements after they were initially released, and zero otherwise. We use restatements at the MNC level because restatements are a direct indicator that an audit failure occurred (DeFond and Zhang 2014). In addition, Burke et al. (2020) find that restatements are positively associated with aggregate component auditor use (*Component Auditor Hours-%*). However, Burke et al. (2020) do not find that MNC accruals are associated with component auditor use. *COVERAGE* refers to one of the two new coverage variables we describe

above, *Any Coverage* or *Foreign Sales Coverage*. A negative coefficient on either coverage variable indicates a positive association with MNC financial reporting quality.

We control for overall component auditor work relative to domestic principal auditor work at the MNC level with *Component Auditor Hours-%*, calculated as the percentage of total audit hours booked by component auditors compared to total hours on the overall audit engagement as in Burke et al. (2020).[36] We also control for the extent of MNC foreign operations with the natural log of the number of the MNC's subsidiaries in our Orbis subsidiary sample (*MNC Ln Subsidiaries*), the natural log of the MNC's foreign sales (*MNC Foreign Sales*), the number of the MNC's geographic segments disclosed on the 10-K (*MNC Geographic Segments*), and an indicator variable for nonzero foreign pre-tax income (*Foreign Operations*). The remaining control variables closely follow the Burke et al. (2020) model. See the Appendix for a full list and detailed definitions of all variables. We also include 1-digit SIC industry and year fixed effects.

We construct our "MNC Sample" beginning with 13,494 unique Form AP filings for audit reports issued on or after June 30, 2017, for fiscal year-ends between March 31, 2017, and December 31, 2018, inclusive. After removing principal auditors not located in the United States, firms with less than $1 million in total assets, and observations that do not merge with Compustat, we are left with 8,352 observations.[37] As noted above, component auditor use is only relevant for MNC audit engagements because almost all component auditors identified on Form AP are outside the United States. Accordingly, we further restrict the sample to include only MNCs with significant foreign operations. We classify companies as having significant foreign operations if they have foreign subsidiaries (identified through Orbis in our Subsidiary Sample) that account for at least 10% of total sales.[38] This results in 1,321 MNC observations. After dropping observations missing required control variables and observations that perfectly predict restatements within industries, our final MNC sample comprises 1,239 observations. We refer to this as our "MNC Sample."

As an alternate method of identifying observations with foreign operations, we follow Burke et al. (2020) and restrict our sample to those observations for which at least one component auditor is identified on Form AP. This method results in a sample of 2,533 observations, and we refer to this as our "MNCs with a Component Auditor Sample" in Table 6.[39] The disadvantage to this approach of identifying MNCs is that we cannot test *Any Coverage* in this sample because MNCs without component auditors are eliminated, resulting in no variation in *Any Coverage*.

We present descriptive statistics for our MNC Sample in Table 5. We find the average engagement in our sample uses component auditors for 21.8% of total engagement audit hours. We find that 88.7% of the observations in our sample use at least one component auditor (*Any Coverage*). In other words, despite restricting our sample to those observations with significant

36. We calculate *Component Auditor Hours-%* based on data in Form AP using all component auditors whether or not they are identified individually by country since we do not need to link it to specific foreign subsidiaries. Burke et al. (2020) investigate other definitions of aggregate component auditor use but do not find that they are associated with financial reporting quality.

37. Restricting our sample to US-located MNCs (i.e., excluding cross-listed companies headquartered outside the United States) results in a more uniform sample of MNCs. We include observations for which US component auditors are used and observations with divided audit opinions, in which the responsibility for the audit opinion is split between the principal auditor and at least one other auditor. These observations represent less than 0.5% of our sample. Results are robust to excluding these observations.

38. Our results are similar if we instead restrict the sample to those observations for which subsidiaries contribute 5% of sales, 5% of assets, 10% of assets, or 5% of net income. We also consider alternative sample definitions, including a sample of all observations with a single Orbis subsidiary regardless of materiality, requiring at least two Orbis subsidiaries, and relaxing all restrictions and running our tests on all available observations (MNCs and non-MNCs). Our results are robust to each specification.

39. This sample contains observations for which we have no Orbis subsidiary data. We assume *Foreign Sales Coverage* is equal to zero for these observations. Thus, our findings potentially understate the effect of coverage in the Component Auditor Sample.

TABLE 5
Descriptive statistics: MNC Sample

	N	Mean	Median	SD	25th percentile	75th percentile
MNC Restate	1,239	0.061	0.000	0.239	0.000	0.000
Any Coverage	1,239	0.887	1.000	0.317	1.000	1.000
Foreign Sales Coverage	1,239	0.334	0.204	0.361	0.000	0.668
Component Auditor Hours-%	1,239	21.829	17.500	17.339	7.500	32.500
MNC Ln Subsidiaries	1,239	2.083	2.079	0.813	1.386	2.773
MNC Size	1,239	7.786	7.774	1.822	6.634	9.010
MNC Business Segments	1,239	2.292	1.000	1.814	1.000	4.000
MNC Geographic Segments	1,239	4.141	4.000	2.230	3.000	5.000
MNC Foreign Operations	1,239	1.000	1.000	0.000	1.000	1.000
MNC Foreign Sales	1,239	6.233	6.596	2.330	5.214	7.837
MNC ARC	1,239	5.957	5.964	0.313	5.746	6.180
MNC Negative Income	1,239	0.257	0.000	0.437	0.000	1.000
MNC Leverage	1,239	0.287	0.269	0.242	0.129	0.386
MNC External Financing	1,239	0.093	0.000	0.290	0.000	0.000
MNC Extreme Growth	1,239	0.155	0.000	0.362	0.000	0.000
MNC Capital Intensity	1,239	0.176	0.121	0.163	0.063	0.233
MNC Inv-Rec	1,239	0.254	0.235	0.148	0.138	0.345
MNC Accelerated	1,239	0.899	1.000	0.301	1.000	1.000
MNC Big 4	1,239	0.860	1.000	0.348	1.000	1.000
MNC Industry Expert	1,239	0.458	0.000	0.498	0.000	1.000
MNC Firm Age	1,239	3.217	3.219	0.736	2.833	3.871

Notes: This table provides descriptive statistics for the MNC Sample. See the related text in section 4 for sample construction. All variables are defined in the Appendix. All continuous variables are winsorized at the 1st and 99th percentile.

foreign operations, we still find over 11% of the observations in our sample use no component auditors. The average MNC in our sample owns foreign subsidiaries in approximately 10 different countries (untabulated). On average, component auditors are used to audit 33.4% of the MNC's foreign subsidiary sales (*Foreign Sales Coverage*).[40]

The restatement rate of 6.1% is lower compared to most studies using restatements (e.g., Lennox and Li 2014). There are likely two reasons for this. First, Form AP only recently became available, limiting our sample years to 2017 and 2018, and it has historically taken two to three years for all restatements to be reported. Second, both the annual average restatement rate and the average restatement period have decreased since 2014 (Coleman et al. 2020). We caveat that results could change as more restatements are reported.

Results: Component auditor coverage and audit quality

We present the results for component auditor coverage and MNC-level financial reporting quality in Table 6. Columns (1) and (2) present our results for tests of *Any Coverage* and *Foreign Sales Coverage*, respectively, in the MNC Sample. Column (3) reports the tests of *Foreign Sales Coverage* in the Component Auditor Sample.

40. *MNC Foreign Operations* is equal to one for all observations in our MNC Sample by definition. We exclude this variable from our models using this sample but include it in our models analyzing the Component Auditor Sample, following Burke et al. (2020).

TABLE 6
Aggregate component auditor coverage and MNC-level financial reporting quality

	MNC Sample		MNCs with a Component Auditor Sample
DV =	(1) *MNC Restate*	(2) *MNC Restate*	(3) *MNC Restate*
Any Coverage	**−0.862**		
	(−2.09)**		
Foreign Sales Coverage		**−1.505**	**−0.816**
		(−3.42)***	**(−2.50)****
Component Auditor Hours-%	0.011	0.020	0.019
	(1.14)	(1.97)**	(2.84)***
MNC Ln Subsidiaries	−0.249	−0.568	−0.057
	(−0.89)	(−1.80)*	(−0.40)
MNC Size	−0.143	−0.108	−0.251
	(−0.75)	(−0.57)	(−2.34)**
MNC Business Segments	−0.223	−0.230	−0.162
	(−2.33)**	(−2.41)**	(−2.47)**
MNC Geographic Segments	−0.049	−0.040	0.032
	(−0.63)	(−0.52)	(0.54)
MNC Foreign Operations			0.332
			(0.88)
MNC Foreign Sales	0.101	0.085	0.033
	(0.92)	(0.79)	(0.54)
MNC ARC	2.016	2.090	1.636
	(3.22)***	(3.28)***	(3.72)***
MNC Negative Income	0.474	0.493	0.158
	(1.43)	(1.53)	(0.59)
MNC Leverage	−0.477	−0.566	−0.071
	(−0.87)	(−1.06)	(−0.21)
MNC External Financing	−0.365	−0.382	−0.405
	(−0.74)	(−0.78)	(−1.25)
MNC Extreme Growth	0.015	0.056	0.152
	(0.04)	(0.15)	(0.60)
MNC Capital Intensity	0.359	0.284	−0.443
	(0.34)	(0.28)	(−0.67)
MNC Inv-Rec	0.465	0.722	−0.021
	(0.38)	(0.55)	(−0.03)
MNC Accelerated	0.009	−0.055	−0.495
	(0.02)	(−0.12)	(−1.51)
MNC Big 4	−0.428	−0.443	0.009
	(−0.95)	(−1.05)	(0.03)
MNC Industry Expert	0.254	0.277	0.518
	(0.90)	(0.98)	(2.49)**
MNC Firm Age	−0.158	−0.155	−0.060
	(−0.74)	(−0.74)	(−0.41)
Fixed effects	Industry and year	Industry and year	Industry and year
Observations	1,239	1,239	2,533
Pseudo R^2	0.079	0.094	0.075

Notes: This table presents analyses of the relationship between component auditor coverage and financial reporting quality at the MNC level. Columns (1) and (2) present results in the MNC Sample, and column (3) presents results in the MNCs with a Component Auditor Sample. Column (1) presents results for tests of *Any Coverage*, an indicator which measures observations with foreign operations and at least one component auditor, and columns (2) and (3) present results for tests of component auditor coverage of subsidiary sales (*Foreign Sales Coverage*). Coefficients on *Any Coverageand Foreign Sales Coverage* are presented in bold. *MNC Foreign Operations* is excluded from regressions in columns (1) and (2) because it is equal to one for all observations. All variables are defined in the Appendix. All continuous variables are winsorized at the 1st and 99th percentile. We cluster robust standard errors by each unique MNC. *z*-statistics are presented in parentheses below coefficient estimates. *, **, and *** denote significance levels of 10%, 5%, and 1% (two-tailed), respectively.

As expected, the coefficients on both *Any Coverage* and *Foreign Sales Coverage* are negative and statistically significant in all three columns ($p < 0.05$, $p < 0.01$, and $p < 0.05$, respectively). These results are consistent with our prediction above and indicate that financial reporting quality is higher on engagements that cover more of an MNC's foreign operations with component auditors. We also find the coefficient on *Component Auditor Hours-%* is positive and significant in columns (2) and (3), consistent with the result in Burke et al. (2020). The coefficient on *Component Auditor Hours-%* is positive but not significant at conventional levels in column (1).

5. Conclusion

We argue for and present robust evidence that component auditor use is positively associated with the financial reporting quality of clients' foreign subsidiaries. This is a new and important conclusion in the component auditor literature, which generally finds that component auditor use is negatively associated with overall MNC financial reporting quality. Furthermore, we are able to reconcile our subsidiary-level result to the MNC level by introducing two new variables of component auditor "coverage." We find these coverage variables are negatively associated with the likelihood of a financial statement restatement. Given the significant concerns about component auditor quality expressed by the PCAOB and other concurrent research, our results should be of interest to researchers, regulators, and practitioners. Finally, we demonstrate how investigating accounting phenomena with individual, disaggregated data can yield different inferences compared to similar analyses conducted using aggregated data.

An important caveat to our results is that our data collection is limited by the fact that the required disclosure of component auditor use on Form AP is relatively recent. Results could change when additional data become available. In this respect, our findings should be considered preliminary in the same vein as recent studies using Form AP data, such as Cunningham et al. (2019) and Burke et al. (2020). However, given the active and ongoing discussions within the research and regulatory communities on this issue, early and timely findings are warranted. Our inferences, which run counter to some existing research because of our unique level of analysis, reinforce the need for regulators and stakeholders to understand the complex and nuanced issues that we highlight when making regulatory and investing decisions.

A second important caveat to our results (and to the results of most if not all research in this area) is they are based on associations of observational data only, limiting our ability to draw causal inferences. Because client financial statements are the joint product of both management and the auditor, a basic challenge in this line of research is to separate auditor effects from client effects. We ask readers to keep these limitations in mind when reviewing our results, as well as the results of similar studies.

Appendix 1: Variable definitions

Variable	Definition
Subsidiary sample variables	
Component Auditor	An indicator variable equal to one if a component auditor is identified on Form AP for the same MNC, country, and year as the subsidiary observation, and zero otherwise. Source: Orbis, Form AP
Abs. Abnormal Accruals	The absolute value of the residual from the Jones (1991) model, controlling for company performance (Kothari et al. 2005), estimated in the Subsidiary Sample across countries by 2-digit SIC code and year, following Beuselinck et al. (2019). Source: Orbis Specifically, we calculate *Abs. Abnormal Accruals* as the absolute value of the residual of the following performance-adjusted Jones model (Jones 1991; Kothari et al. 2005): $Accruals = \beta_1\left(\frac{1}{at}\right) + \beta_2\left(\frac{sales_t - sales_{t-1}}{avgat}\right) + \beta_3\left(\frac{ppe}{avgat}\right) + \beta_4 ROA + Country\ fixed\ effects + \varepsilon,$ where *Accruals* is total subsidiary accruals (defined below). We estimate abnormal accruals using all subsidiary observations with at least $1 million in assets that merge with Form AP, within each year and 2-digit SIC industry code. Beuselinck et al. (2019) control for prior year inflation and prior year change in GDP per capita at the country level. Because we estimate within each year, our country fixed effects control for these country characteristics. Our results are unchanged if we instead estimate abnormal accruals with these controls instead of country fixed effects
Abs. Total Accruals	The absolute value of total subsidiary accruals. Source: Orbis Specifically, total subsidiary accruals are calculated as $Accruals = \frac{((\Delta CA - \Delta CASH) - (\Delta CL - \Delta STD) - DEPR)}{avgat},$ where ΔCA is the annual change in total current assets, $\Delta CASH$ is the annual change in cash and cash equivalents, ΔCL is the annual change in current liabilities, ΔSTD is the annual change in short-term debt, *DEPR* is depreciation and amortization expense, and *avgat* is the average of beginning and ending total assets at the subsidiary
Subsidiary Size	The natural logarithm of the subsidiary company's total assets. Source: Orbis [*log (Total assets)*]
ROA	Subsidiary earnings before extraordinary items, divided by average subsidiary total assets. Source: Orbis [*(P L after tax)/avg(Total assets)*]
Abs. ROA	The absolute value of *ROA*
Subsidiary Sales-%	Subsidiary sales as a percentage of MNC sales. Source: Orbis, Compustat [*Operating Revenue (sub)/sale (MNC)*]
MNC Size	The natural logarithm of total assets for the subsidiary's GUO MNC. Source: Compustat [*log(at)*]
Revenue Growth	Subsidiary sales growth, calculated as the change in sales over one year, scaled by average assets. Source: Orbis [*(Operating Revenue – lag(Operating Revenue))/avg (Total assets)*]
Sales Volatility	The volatility in subsidiary sales, measured as the standard deviation of the previous three years' sales, weighted by total assets. Given data restrictions within Orbis, we calculate *Sales Volatility* for all observations with at least two years of sales data. Source: Orbis
Leverage	The sum of subsidiary debt in current liabilities and subsidiary long-term debt, scaled by subsidiary total assets. Source: Orbis [*(Long term debt + Loans)/Total assets)*]
Loss	An indicator variable equal to one if the subsidiary's net income is negative, and zero otherwise. Source: Orbis
Inv-Rec	The subsidiary's total inventory plus accounts receivable, scaled by total assets. Source: Orbis [(*Debtors + Stock*)/*Total Assets*]

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(continued)

Variable	Definition
Prior MW	An indicator variable equal to one if the subsidiary's GUO MNC disclosed a Section 302 or Section 404(a) material weakness in the prior year that can be traced back to the subsidiary's country, and zero otherwise. Source: Audit Analytics
Statutory Auditor	An indicator variable equal to one if the subsidiary company engages an external auditor, and zero otherwise. Source: Orbis
MNC For. Segments	The natural logarithm of the number of foreign geographic segments for the subsidiary's GUO MNC as disclosed in the Compustat Segments Database. Source: Compustat [count of observations with *stype* = "GEOSEG" and *geotp* = 3 (foreign)]
Big 6	An indicator variable equal to one if the principal auditor of the MNC is a Big 6 accounting firm, and zero otherwise. Source: Compustat
Country characteristics	
Rule of Law	The rule of law index in the country and year, intended to capture "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" (https://datacatalog.worldbank.org/rule-law-estimate). We use the most recent available index for observation years for which the index has not yet been published. Source: World Governance Indicators (World Bank 2019)
	Low Rule of Law is an indicator variable equal to one if *Rule of Law* falls below the sample median of observations with a component auditor, and zero otherwise
IFRS	An indicator variable equal to one if IFRS use is required for public companies in the country, and zero otherwise. Source: IFRS Foundation (2019)
	No IFRS is an indicator variable equal to one if *IFRS* is equal to zero, and zero otherwise
English	The country's score on the English Proficiency Index (1–100 scale), as compiled by Education First (EF). Countries with missing values are assigned a regional average, and countries in which English is the primary language spoken are assigned an Index of 100 (e.g., the United Kingdom). Source: EF (2019)
	Low English is an indicator variable equal to one if *English* falls below the sample median of observations with a component auditor, and zero otherwise
Tax Haven	An indicator variable equal to one if the country is a tax haven country, and zero otherwise. We identify tax havens according to Dyreng and Lindsey (2009)
MNC sample variables	
MNC Restate	An indicator variable equal to one if the MNC's annual financial statements are subsequently restated, and zero otherwise. Source: Audit Analytics
Any Coverage	An indicator variable equal to one if the MNC observation owns at least one Orbis subsidiary in the Subsidiary Sample and Form AP indicates the use of at least one component auditor, and zero otherwise. Source: Orbis, Form AP
Foreign Sales Coverage	The proportion of total subsidiary sales (the sum of sales from all Orbis subsidiaries attributable to the MNC observation) audited by component auditors. We match component auditors to Orbis subsidiaries as described in section 3, and we consider the component auditor to audit 100% of that subsidiary's sales. Source: Orbis, Form AP
Component Auditor Hours-%	The percentage of total audit hours contributed by all foreign component auditors. Hours are typically reported in 5% or 10% ranges for individually identified component auditors. In these cases, we use the midpoint of the range for calculating the total percentage contribution. Source: Form AP
MNC Ln Subsidiaries	The natural log of one plus the total number of Orbis subsidiaries in the subsidiary-level sample that are attributable to the MNC observation. Source: Orbis

(The table is continued on the next page.)

(continued)

Variable	Definition
MNC Size	The natural logarithm of the MNC's total assets. Source: Compustat [*log(at)*]
MNC Business Segments	The total number of the MNC's business segments as disclosed in the Compustat Segments Database. Source: Compustat [count of observations with *stype* = "BUSSEG"]
MNC Geographic Segments	The total number of the MNC's foreign geographic segments as disclosed in the Compustat Segments Database. Source: Compustat [count of observations with stype = "GEOSEG" and geotp = 3 (foreign)]
MNC Foreign Operations	An indicator variable equal to one if the MNC has a nonmissing value for foreign pre-tax income, and zero otherwise. Source: Compustat [*pifo*]
MNC Foreign Sales	The natural logarithm of the sum of non-US sales for geographic segments disclosed in the Compustat Segments database. Source: Compustat [sum of *sales* for *stype* = "GEOSEG" and *geotp* = 3 (foreign)]
MNC ARC	The natural logarithm of the total unique monetary XBRL tags per financial statement disclosure in the 10-K filings (Hoitash and Hoitash 2018). Source: www.xbrlresearch.com
MNC Negative Income	An indicator variable equal to one if a client's net income [*ni*] is below 0, and zero otherwise. Source: Compustat
MNC Leverage	The MNC's total debt, scaled by total assets. Source: Compustat [*(dltt + dlc)/at*]
MNC External Financing	An indicator variable equal to one if the number of the MNC's shares outstanding has increased by more than 10% year over year, and zero otherwise. Source: Compustat [*csho*]
MNC Extreme Growth	An indicator variable equal to one if the MNC's industry-adjusted sales growth is in the top quintile, and zero otherwise (Doyle et al. 2007). Source: Compustat [*sale*, 2-digit SIC code]
MNC Capital Intensity	The MNC's total net property, plant, and equipment, scaled by total assets. Source: Compustat [*ppent/at*]
MNC Inv-Rec	The MNC's total inventory plus accounts receivable, scaled by total assets. Source: Compustat [*(invt + rect)/at*]
MNC Accelerated	An indicator variable equal to one if the MNC is an accelerated filer, and zero otherwise. Source: Audit Analytics
MNC Big 4	An indicator variable equal to one if the MNC's principal auditor is a Big 4 firm, and zero otherwise. Source: Form AP [*Firm ID*]
MNC Industry Expert	An indicator variable equal to one if the MNC's principal auditor accounts for more than 50% of audit fees within industry (2-digit SIC) and audit office MSA, and zero otherwise. Source: Audit Analytics
MNC Firm Age	The natural logarithm of the total number of years that the MNC appears on Compustat. Source: Compustat

Data Availability Statement

All data used in the study are publicly or commercially available as indicated in the text.

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