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Unaffiliated component auditors and audit fee models: The case of lowballing

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ABSTRACT

Disclosure rules in many countries require public companies to report fees paid to the principal audit firm and its affiliates, but not to unaffiliated component auditors (UCAs). Reported fees thus depend on component auditor affiliation. We show that UCA involvement is significant in many countries. Using Italian private companies' public filings, we find that UCA involvement is a statistically and economically significant source of bias in audit fee models. This bias is particularly relevant around principal auditor changes, when some subsidiaries temporarily retain UCAs before switching to auditors affiliated with the new principal auditor. The exclusion of fees paid to temporary UCAs explains the initial-year audit fee discount (lowballing) previously documented, which disappears once these omitted fees are accounted for. Our results suggest that lowballing reflects measurement bias rather than systematic strategic pricing. Because UCAs are common internationally and disclosure rules similarly exclude these fees, this bias extends beyond Italy.

1. Introduction

Principal auditors of corporate groups often rely on component audits conducted by both affiliated component auditors (hereafter ACA) and unaffiliated component auditors (hereafter UCA). However, in many jurisdictions, including the United States, reported audit fees include fees paid to the principal audit firm and its affiliates, but exclude fees paid to UCAs.,[1] [2] Hence, reported audit fees are lower than the total audit fees paid by a corporate group when UCAs earn fees for audit work. Conventional audit fee models in the literature that explain reported audit fees by company-level characteristics, including financial statement numbers, ignore this measurement property. The resulting bias in model estimates depends on UCA use and its variation across the sample. Our initial empirical tests show that reported audit fees depend negatively on variables capturing use of UCAs. The estimation bias inherent in an audit fee model that does not control for UCA use is especially relevant if a variable of interest to the researcher is correlated with UCA

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[1] In the United States, audit fee disclosure requirements are in Schedule14A (SEC). In Italy, the disclosure requirements are in art. 149-duodecies (Regolamento emittenti n.11971/1999), available at https://www.consob.it/documents/1912911/1950567/reg_consob_1999_11971.pdf/94a0c046-c12c-fdfd-1331-8d0b91e29007.

[2] A notable exception is Australia, where companies must disclose total audit fees including the principal auditor and both affiliated and unaffiliated component auditors.

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use. We demonstrate this by showing that changes in UCA involvement around principal auditor rotation explain the widely reported initial year audit fee discount – also known as lowballing.

There is limited evidence in the literature documenting the involvement of UCAs in corporate group audits. However, in a recent paper Carson et al. (2022) report that, on average, UCAs account for 14.4 percent of total fees in their sample of Australian multinationals. In our own exploratory analysis of parent and subsidiary company auditors for a broad sample of global public companies in 2024, we confirm that UCA use is extensive across a number of countries. For example, the average percentage of subsidiaries using unaffiliated auditors (*UCA%*) ranges from 2.3 percent in Canada to 7.8 percent in the Netherlands. The corresponding subsidiary asset-weighted percentage of unaffiliated auditor involvement (*UCA_SIZE*) ranges from 1.7 percent in Japan to 21.5 percent in the Netherlands. In section 6 we report descriptive evidence from subsidiary-level data that UCA use is common across many global companies, including companies in the United States.[3]

In our main tests we use hand-collected granular data on the subsidiaries and their auditors in Italian listed corporate groups from 2007 to 2017. The Italian setting facilitates study of the relation between reported audit fees, UCA use and the initial audit fee discount due to data advantages discussed in detail in section 3. We estimate *UCA%* and *UCA_SIZE* for each corporate group-year. Through manual inspection of audit reports we observe auditor identities for 32 percent of identified subsidiaries and confirm audit exemptions for a further 14 percent. For the remaining 54 percent, audit information is unavailable, mostly due to financial disclosure exemptions in the country of subsidiaries' domicile. Of the 32 percent of subsidiaries with known auditors, 27 percent have affiliated component auditors and 5 percent have unaffiliated component auditors. On a subsidiary asset-weighted basis, affiliated component auditors are responsible for the audit of 84 percent of group total assets on average, while unaffiliated component auditors are responsible for the audit of 9 percent of group total assets. There is, however, considerable cross-sectional and time-series variation in the degree of UCA use.

We provide initial evidence that the use of unaffiliated component auditors is a source of bias in audit fee models by showing that reported audit fees are negatively related to *UCA%* and *UCA_SIZE*, after controlling for standard audit fee determinants identified in the prior literature (see, e.g., Hay et al., 2006). This is consistent with unaffiliated component auditors contributing positively to overall audit effort inputs that the principal auditor or its affiliates would otherwise provide.

Next, we demonstrate the importance of controlling for UCA use in audit fee models by reexamining the evidence of an initial audit fee discount. Prior research has produced extensive evidence that audit fees in the initial years of audit engagements are on average lower than in other engagement years, a finding that Barua et al. (2020) describes as one of the most robust results in the empirical audit pricing literature. We confirm the existence of an initial year discount for our sample. Descriptive analysis shows that reported audit fees are, on average, 5.8 percent lower in the initial engagement year, while multivariate analysis that controls for standard audit fee determinants reveals an initial year discount of 8 percent. We also find that the percentage of subsidiaries with unaffiliated component auditors is 2.12 percentage points higher in the initial engagement year. Analysis across engagement years shows that the increase in UCA use in initial engagement years is due to non-synchronous rotation of principal and subsidiary auditors. Subsidiaries that rotate from unaffiliated to affiliated auditors may do so slowly, sometimes several years after the initial engagement year of the principal auditor. Multivariate results confirm that unaffiliated component auditor (*UCA%* and *UCA_SIZE*) dynamics explain the initial year discount.

We expect use of UCAs to change within a firm over time for several reasons. First, principal auditor rotation will affect UCA use if subsidiary auditor appointments are not perfectly synchronized with principal auditor rotation. Second, when subsidiaries change their auditors in years different from that of the principal auditor switch, they may choose to switch from UCA to ACA or from ACA to UCA. Third, companies create new subsidiaries and eliminate existing subsidiaries through corporate restructuring, acquisitions and spinoffs. Similarly, subsidiaries can appear or disappear from the data because exemptions from mandatory audit vary over time due to the size- or ownership-based audit exemptions that apply in some jurisdictions. In cases of newly appearing or disappearing subsidiaries, the extent of UCA use can change. In our main tests we predict that UCA use explains reported audit fees. In validation tests we confirm that the negative effect of UCA use on reported audit fees and its role in explaining the initial year discount is consistent across three components of UCAs: those that were ACA in the previous year, those that were UCA in the previous year and new UCAs. We also conduct a placebo test using three components of ACA subsidiaries constructed in analogous fashion based on their status in the previous year. Our results confirm that UCA effects in the main tests remain consistent across UCA components, while ACA components do not help explain reported audit fees.

To further corroborate the unaffiliated component auditor hypothesis, we also examine whether transitory reclassifications from ACA to UCA contribute to the initial fee discount. Such reclassifications reduce reported audit fees. If ACA to UCA reclassifications subsequently reverse because UCA subsidiaries appoint affiliated auditors with a delay, future reclassifications from UCA to ACA will contribute to growth in future reported audit fees. In this case, the initial engagement year audit fees will be lower, but not because the incoming principal auditor discounts its audit fees. We show that subsidiaries classified as UCA in the principal auditor's initial year are often reclassified as ACA in later years. We denote subsidiaries that reclassify from UCA to ACA after the principal auditor's initial engagement year as *LATE_ACA* subsidiaries. Then, using hand-collected subsidiary audit fee data, we adjust reported group audit fees by adding back the audit fees paid by *LATE_ACA* subsidiaries for each year before they switch from UCA to ACA. The initial year discount disappears when we use this adjusted group audit fee measure. This evidence confirms that lack of synchronicity between

[3] Online Appendix OA1 describes the international evidence selection strategy and data availability for a sample of corporate groups with publicly listed parents in developed countries. Table OA1 reports additional characteristics of the sample used to compute the average percentage (*UCA%*) and the average asset-weighted percentage (*UCA_SIZE*) of UCA use shown in Fig. 1.

principal auditor and subsidiary auditor rotation results in a transitory UCA effect that explains the lower audit fees in the initial principal auditor engagement year.

In additional tests, first we complement the group-level tests by testing whether there is an initial year audit fee discount at the subsidiary level. Component auditors' disclosure bias is less important in subsidiary audits because the disclosure requirement on component audit fees applies only to parent companies of business groups.[4] Accordingly, if UCA use drives the initial year discount, we are less likely to observe a discount in subsidiary-level analysis. Using hand-collected data on subsidiary-level audit fees and audit fee drivers, we find no evidence that subsidiary audit fees are lower in the initial engagement year; nor are they related to changes in unaffiliated component auditors.

Our paper contributes to three strands of audit research. First, we contribute to the extensive literature identifying audit price determinants – see DeFond and Zhang (2014) and Hay et al. (2006) for reviews. We identify the extent of UCA use as an incrementally significant determinant of reported principal auditor fees, especially in settings where the use of unaffiliated component auditors is significant and where the audit regulation does not require the disclosure of fees paid to unaffiliated component auditors - this is the case for European Union listed companies following Directive 2013/34/EU, Article 18.1(b) and for US listed companies, following SEC Regulations and Guidance on audit fee information. Researchers interested in modelling total audit fees can attempt to deal with UCA-related measurement bias in reported audit fees by adjusting reported fees and adding fees paid to unaffiliated component auditors. However, identification of audit fees paid to unaffiliated component auditors appears extremely difficult in most countries, apart from Australia where there is mandatory disclosure of total audit fees, including UCA fees. The researcher interested in modelling reported audit fees paid to the principal auditor (and its affiliates) faces the challenge of potential model misspecification due to the involvement of unaffiliated component auditors. If the use of unaffiliated component auditors is correlated with other (treatment) variables of interest, neglecting to control for UCA use may result in false inferences, as our results demonstrate.

Second, we contribute to the nascent literature on the role of UCA use in determining audit fees (e.g., Choi et al., 2018; Burke et al., 2020). In a recent paper Carson et al. (2022) find that the total audit fees paid by Australian multinational companies increase with component auditor involvement, while audit quality depends non-linearly on the component auditor and principal auditor involvement. They also find that component auditor involvement increases with the multinational's complexity and degree of internationalization, both potentially important audit risk determinants relevant in audit pricing. In contrast, we follow the prior literature in modelling audit fees paid to the principal audit firm and its affiliates and analyze audit pricing for the broad cross-section of firms within a single country, including both domestic and multinational firms. Our finding that UCA use is associated with lower reported audit fees in a standard audit fee model suggests that unaffiliated component audit effort substitutes for principal auditor effort, on average. As in Carson et al. (2022) we cannot, however, observe counterfactual evidence that would allow us to examine whether UCA use reflects efficient audit planning.

Finally, we contribute to the extensive literature on lowballing. Researchers commonly interpret the initial year discount as evidence of strategic audit pricing by the incoming principal auditor. Barua et al. (2020) is the first study to challenge this interpretation. Barua et al. (2020) suggest that the initial discount is due to audit fee measurement error resulting from outgoing and incoming principal auditors sharing group audit and assurance work in principal auditor switch years. We contribute a new complementary explanation based on a different source of measurement bias related to UCA use. The explanation we offer is not mutually exclusive to the Barua et al. (2020) explanation. However, the UCA bias applies to all engagement years and is likely to be applicable across countries, including those where audit fee disclosure regulations do not produce the source of bias identified by Barua et al. (2020). This is the case for the EU, where Directive 2013/34/EU (Article 18.1(b)) requires listed companies to report the total fees paid to each statutory auditor (predecessor or incoming). Further, in our sample shared audit and assurance work is unimportant because shared audit work in initial engagement years is rare, and when it does occur reported audit fees include the fees paid to the outgoing principal auditor.[5]

Overall, our results show that the allocation of subsidiary component audit work between the outgoing principal audit firm and its affiliates, the incoming principal audit firm and other audit firms is important for explaining principal auditor fees. Changes in audit work allocations are especially important for explaining changes in audit fees over the principal auditor engagement cycle. Our analysis establishes UCA use as a relevant determinant of reported audit fees and suggests a credible explanation for the audit fee discount in initial audit engagement years.

We organize the paper as follows. In Section 2, we review the existing literature and develop our hypotheses. In Section 3, we describe the institutional setting. In Section 4, we describe the sample selection and research design. In Section 5, we discuss our results. In Section 6 we present descriptive evidence that UCA use is common in other developed countries, including the United States, which suggest that our results should be generalizable. Finally, we discuss the empirical implications of our results and present our conclusions in Section 7.

[4] Art. 149-duodecies, Par. 2. (Regolamento emittenti n.11971/1999).

[5] Early termination of audit engagements and mid-year appointments are technically possible in Italy but are extremely rare. Article 13 of Legislative Decree 39/2010 allows mid-year auditor changes only under specific circumstances and involves a significant bureaucratic burden, including obtaining approvals from designated bodies and notifying the Ministry of Economy and Finance. Nevertheless, we manually opened the audit reports of all parent companies in switch years to check whether a mid-year change occurred. In any such cases, we ensure that the total of the audit fees paid to both principal auditors (incoming and outgoing) is included in our empirical analyses.

2. Literature review and hypothesis development

2.1. Empirical evidence on component auditors and audit fees

There is limited evidence in the literature on the relevance of component auditors in determining audit fees, and it is based on selected samples, different definitions of audit fees and provides mixed evidence. Mao et al. (2020) examines audit pricing for an international sample of SEC registrants, finding that audit fees are economically and statistically higher when the lead auditor accepts responsibility for component audits conducted by "other" unaffiliated auditors, often located outside the United States. Choi et al. (2018) studies the audit fees paid by Korean parent companies in the years before and after IFRS adoption, finding that principal auditor fees depend negatively on UCA use in the period before IFRS adoption, but not afterwards. Burke et al. (2020) study a sample of multinational firms based in the United States that disclose the use of foreign component auditors during 2017-2019, finding that audit fees paid to the principal audit firm and its affiliates are higher when foreign component auditors are involved. Similarly, Carson et al. (2022) study a sample of multinational firms domiciled in Australia with foreign subsidiaries. They find that Consumer Price Index-adjusted total audit fees paid to the principal audit firm and component auditors, both affiliated and unaffiliated, increase with foreign component auditor use. These studies establish important evidence on the effects of component auditors on audit fees in settings where it is more likely that component auditors are involved. However, they do not provide insights into the role of component auditors in more general modelling of audit fees and their dynamics over the engagement cycle. This is the issue we address in this paper.

2.2. Unaffiliated component auditors and audit fee models

The auditing literature adopts the perspective that, in equilibrium, auditors earn fees in return for audit effort and for bearing engagement risk. Prior research has identified three components of engagement risk: client business risk, related to client profitability and survival; auditor business risk, due to potential reputational and litigation costs associated with audit failure; and audit risk due to potential undetected misstatements (Hay et al., 2006; Florou et al., 2020). This perspective underpins most empirical audit fee models and justifies explaining audit fees using observable client characteristics intended to capture both audit effort and engagement risk. However, this theoretical perspective does not consider the allocation of audit effort between the principal auditor and component auditors as a potential determinant of risk or the possible implications for audit fees.

Use of UCAs can result from the group audit planning process involving the company board and the principal auditor (Carson et al., 2022; Lennox et al., 2026). UCAs might offer attractive cost savings to the company, or specialist and local knowledge. They might also represent sources of auditor business risk and audit risk for the principal auditor who does not control the component audit process but may bear the costs if there is an audit failure. UCA use is therefore the result of a trade-off between these costs and benefits, the outcome having consequences for the principal auditor effort and audit fees. Reported principal auditor fees should therefore also reflect trade-offs between cost efficiencies and risk premia attributable to UCAs (Carson et al., 2022, p.1426). UCA effort will reduce reported audit fees. However, the cost of monitoring and assuring the quality of unaffiliated component audit work incurred by the principal auditor, or any risk premium demanded, will increase reported audit fees. In equilibrium we expect the cost savings from using UCAs to exceed any incremental audit fee demanded by the principal auditor, and therefore for UCA use to reduce reported audit fees.

We can also consider the effects of UCA use on audit fee modelling from a measurement error perspective. When identifying client characteristics that capture audit effort and risk, researchers rely on measures of size, complexity and risk derived from consolidated financial statements and related disclosures. However, since reported audit fees normally include fees paid to the principal auditor and its ACAs, but not those paid to UCAs, the use of consolidated financial statement data ignores the allocation of component audit work to different audit firms. For example, audit fee models commonly include total assets to capture the effects of company size on the audit effort and/or audit risk. Using consolidated total assets will overstate the relevant size measure if UCAs share the audit effort. In contrast, audit effort associated with ACA subsidiaries is already captured through consolidated total assets. We predict that group-level characteristics included in audit fee models will yield upward biased estimates of principal auditor fees when unaffiliated component auditors share the audit work. Including a measure of UCA use will mitigate this bias. More generally, since our baseline model explains reported audit fees using consolidated corporate group level characteristics, measures of ACA and their components should not explain fees incrementally (see Appendix A). Accordingly, based on UCA use reducing principal auditor involvement, and the need to control for UCA-induced bias in estimated audit fees, we state our first hypothesis as:

H1. Principal auditor fees are negatively related to unaffiliated component auditor use.

2.3. Initial engagement year audit fees

An extensive empirical literature documents lower initial engagement year audit fees. In their review of thirty-four more recent U.S. audit fee studies published between 2011 and 2018, Barua et al. (2020) report estimates of initial year discounts ranging from 0.3 percent (Doogar et al., 2015) to 54.8 percent (Numan and Willekens, 2012). Contrary to expectations, the initial year discount appears to persist after the enactment of the Sarbanes Oxley Act 2002 mandating greater transparency of audit fees (Desir et al., 2014; Cho et al., 2021). International studies also report evidence of fee discounting in the initial year. In their meta-analysis of international audit fee studies over the period 1976-2003, Hay et al. (2006) find that eight out of 23 studies report significant initial year discounts,

while another four report a positive first year premium. Of specific relevance to our paper, Cameran et al. (2015) find an average initial year fee discount of approximately 16 percent for the sample period 2006-2009 in Italy. In contrast, empirical evidence of lowballing in Australian data is more limited (Carson et al., 2014; Francis, 1984; Butterworth and Houghton, 1995; Ferguson and Scott, 2014).

The most common explanation for the initial audit fee discount is strategic pricing - or lowballing - by incoming principal auditors who allegedly discount initial year fees to gain new clients. DeAngelo (1981) presents a theoretical model predicting lowballing, suggesting that initial strategic underpricing by incoming auditors compensated by higher audit fees in later engagement can occur in equilibrium because it is costly for audit clients to switch auditors. Perhaps influenced by academic evidence, regulators around the world have expressed concern that lowballing might lead to auditors being susceptible to management pressure, resulting in lower quality audits (SEC, 1978; AICPA, 1978; NASBA, 2010; PCAOB, 2011; IESBA, 2018).

Barua et al. (2020) provide a different explanation for the initial engagement year discount that does not involve strategic pricing by auditors.[6] They report empirical evidence for the U.S. suggesting that the initial year discount can arise from audit fee measurement bias. Their starting point is the requirement to disclose only the fees paid to the principal auditor that issues the final group audit opinion. Barua et al. (2020) observe that outgoing auditors can be involved in reviews of interim group financial statements issued early in the switch year. The sharing of initial year audit effort creates a downward bias in reported audit fees if they reflect only the fees paid to the incoming principal auditor. Barua et al. (2020) control for this bias in observed principal auditor fees in two ways: first, by aggregating audit fees paid to both outgoing and incoming auditors where both are observable; and second by using estimates of the audit fee bias based on the appointment date of the incoming auditor. Their results based on a U.S. sample suggest that adjusting for estimated or actual fees paid to the outgoing principal auditor corrects the measurement bias and can explain the initial year discount.

The role of UCAs in explaining reported audit fees proposed in hypothesis H1 also suggests a different measurement error-based explanation for the initial audit fee discount. Consistent with H1, a transitory increase in UCA use coinciding with principal auditor rotation will lead to lower reported audit fees, i.e., an initial year audit fee discount. A transitory increase will occur if a subsidiary with an auditor affiliated with the outgoing principal auditor is slow to appoint an auditor affiliated with the incoming auditor. Interestingly, Carson et al. (2022) reports an increase in UCA use when principal auditors change. Delays in subsidiary-level auditor rotation may reflect opportunities for the incoming principal auditor to learn from outgoing component auditors, or group audit planning decisions aimed at smoothing adjustment costs associated with component auditor rotation over more than one year. The parent and subsidiary companies may also consider existing contractual arrangements with the current subsidiary auditors and potential associated costs of synchronous switching. Accordingly, we state our second hypothesis as follows:

H2. Lower reported audit fees in the initial engagement year are due to abnormally high unaffiliated component auditor use.

In summary, when reported audit fees consolidate fees paid to the principal auditor and its affiliates for all audit work performed within a group, we predict that the level of UCA use will be an important determinant of reported audit fees (H1); and when subsidiaries are slow to switch to the incoming principal auditor, audit fees will appear to be discounted in the initial year due to higher than normal UCA use (H2).

3. Institutional background

We empirically test our predictions using data for Italian public companies. The Italian setting offers three data-related advantages for studying the role of component auditors in audit pricing. First, all public and most private companies in Italy file publicly available financial statements containing auditor identities and audit fees.[7] We can therefore observe the auditors of private subsidiaries in corporate groups, facilitating annual estimates of UCA proxies. Similar information is not observable to researchers studying the audit market in the United States.[8] Second, audit fee disclosure regulation requires Italian companies to report the fees earned by the principal audit firm and its affiliates for all audit work, including the audits of subsidiaries, but excluding audit fees paid to unaffiliated

[6] In a study based on a sample of proprietary engagement data from three regional audit firms in the period 2010-2015, Novak and Knechel (2022) also report evidence inconsistent with "loss-leading" lowballing pricing in initial engagement years. By disentangling audit fees, actual costs, and contribution margins, they find that fee discounts are usually associated with positive contribution margins in new engagements, suggesting that fee discounts do not reflect lowballing.

[7] Article 2427(1), No. 16-bis of the Italian Civil Code requires Italian private capital companies (S.p.A., S.r.l., and S.a.p.a) preparing ordinary financial statements to disclose total audit and non-audit fees in the notes to the financial statements. Subsidiaries included in the consolidation perimeter may be exempt from this disclosure if the information is provided in the consolidated financial statements of the parent company. In practice, consolidated disclosure is often reported in aggregated form for all subsidiaries. Therefore, audit fee disclosure at the subsidiary level remains common in practice.

[8] Financial statements of private subsidiaries and auditor identities are also publicly available in other countries, e.g., the United Kingdom. However, unlike Italy and the United States, audit fee disclosures by UK firms are relatively opaque and it is often difficult to clearly differentiate between the fees earned by the principal auditor and its network of affiliates for audit work and the fees earned for non-audit services. See, Questions 22 and 23 in https://www.icaew.com/-/mia/corporate/files/technical/technical-releases/financial-reporting/auditor-remuneration-technical-release---updated-19.ashx (accessed November 2024).

component audit firms.[9] This regulation therefore closely resembles disclosure regulations in the United States, from where a majority of the evidence on the initial year audit fee discount originates.[10] These regulations are also in line with overarching European regulation under EU Directive 2013/34/EU, lending support to the generalizability of our study to other EU countries.[11] Third, the audit fee disclosure regulation requires Italian companies to disclose the total audit fees paid for principal audit work to *both* outgoing and incoming auditors if the principal auditor changes during the year.[12] This requirement, together with the normal practice of assigning the audit mandate for the entire fiscal year to the appointed incoming auditor, suggests that the audit fee measurement bias identified by Barua et al. (2020) should be unimportant in the Italian setting.[13]

Italy is also an interesting empirical setting for studying the audit fee lowballing phenomenon. In line with the international literature, prior research confirms the existence of a substantial initial audit fee discount in Italy (e.g., Cameran et al., 2015), a finding that we confirm below. More importantly, from the research design perspective, principal auditor rotation has been mandatory for Italian public companies since 1975. This institutional feature helps to alleviate concerns about the endogeneity of auditor rotation decisions.

4. Research design and data

4.1. Principal auditor switches and unaffiliated component auditor use

We base our audit pricing tests on Equation (1):

$$LN_AF = \beta_0 + \beta_1 UCA\% + \beta_2 SWITCH + \beta_3 UCA\% \; x \; SWITCH + \beta_4 COVERAGE + \sum \beta_j CONTROLS + \sum \beta_k FIXED\ EFFECTS(Year\ and\ Firm) + \varepsilon \quad (1)$$

where *LN_AF* is the natural logarithm of the reported audit fee (*AUD_FEE*). Our test variables of interest are as follows: *UCA%* is the percentage of subsidiaries using UCAs; and *SWITCH* is an indicator variable with the value of one in the initial year of a principal auditor's engagement, and zero otherwise. Including both *UCA%* and *UCA% x SWITCH* allows for possible different UCA effects in the initial engagement year. Different UCA effects may arise in initial engagement years if subsidiary auditor rotation decisions depend on unmodelled subsidiary or principal auditor characteristics affecting the timing of subsidiary auditor rotation decisions. In alternative specifications of Equation (1) we replace *UCA%* with *UCA_SIZE*, the asset-weighted percentage of subsidiaries with UCAs.

We cannot always observe the audit status and auditor identity for every subsidiary we know to exist in a corporate group. This represents a source of noise in our measures of UCA use. To help mitigate this problem, in models based on Equation (1) where we include UCA variables, we also include *COVERAGE*, defined as the percentage of group subsidiaries for which we can unambiguously determine auditor identities or exemptions from mandatory audit requirements. We also include a set of common control variables identified by the prior literature as drivers of audit fees (e.g., Hay et al., 2006; Kim et al., 2012; Carcello and Li, 2013; Cameran et al., 2015; DeFond et al., 2016). We include principal auditor tenure, *TENURE*, because reported audit fees tend to increase with tenure; *SIZE*, *ROA*, and *LEVERAGE* control for scale, profitability and capital structure; *INV* and *REC* control for operational risk; *QUICK* controls for liquidity; *N_SUB* and *FOR_SUB* capture corporate group complexity; *CFO* and *LAG_LOSS* control for recent financial performance; *BIG4* controls for auditor type and quality; *IND_SPEC* controls for auditor industry specialization; and the indicator variable *Q_OPINION* is set equal to one if the auditor issues a qualified opinion. When we estimate Equation (1) we also include fiscal year- and firm-fixed effects, and we cluster standard errors at the firm level.[14] Appendix B contains detailed descriptions of all variables.

To establish evidence of an audit fee discount in the initial engagement year we first estimate a baseline version of Equation (1) excluding UCA variables and *COVERAGE* in order to replicate a representative audit fee model with lowballing and using company characteristics studied in the prior literature. We exclude *COVERAGE* because it is not a determinant of audit fees found in the prior literature. A negative coefficient on *SWITCH* in the baseline regression is consistent with an audit fee discount in the initial engagement year. To investigate whether UCA use is a statistically and economically significant source of bias in the standard audit fee model, i.e., hypothesis H1, we expect the coefficient on *UCA%* or *UCA_SIZE* (β_1) will be negative when we exclude *SWITCH*. To investigate whether changes in UCA account for the initial year fee discount (H2), we focus on whether the coefficients on *SWITCH* (β_2) and *UCA% x SWITCH* (β_3) are insignificant after we control for UCA use.

[9] Regolamento Emittenti n.11971/1999, art. 149-duodecies, Par. 2.

[10] In the United States, under Schedule14A, the SEC clarifies that only the fees paid to the principal auditor and its network should be disclosed. See https://viewpoint.pwc.com/dt/us/en/sec/sec_faqs/sec_faqs_US/auditor_independence_US/M-Disclosure-required-in-proxy-statements.html#pwc-topic.dita_48ec6da4-a4c4-422e-a366-4633fa3f2bba (accessed November 2024).

[11] Article 18.1(b).

[12] Regolamento Emittenti n.11971/1999, art. 149-duodecies, Par. 1.

[13] We collect detailed data on each of the 110 principal auditor switches in our sample. Although the formal appointment typically occurs at the shareholders' general meeting approving the annual financial statements (around April for firms with a December fiscal year-end), the mandate is assigned for the entire fiscal year (January–December), rather than from the appointment date. Thus, auditors are effectively engaged for the full reporting period, and reported audit fees relate to the full 12-month year.

[14] Comparable studies (e.g., Burke et al., 2020) use industry fixed effects, while others (e.g., Barua et al., 2020) use firm fixed effects. We include firm fixed effects as a more demanding and robust specification, which subsumes industry fixed effects. Firm fixed effects also better capture within-firm variation in audit fees and UCA use, while controlling for unobserved, time-invariant heterogeneity across audit clients.

When estimating Equation (1) we must observe a subsidiary and its auditor in year t for an unaffiliated auditor to be included in the numerators of the *UCA%* and *UCA_SIZE* measures. In a world where group structure is constant, we would be able to identify subsidiaries and their auditors in both year t and year t-1 and perfectly decompose UCA subsidiaries in year t into those that are also UCA in year t-1 (respectively *UCA_TO_UCA%* and *UCA_TO_UCA_SIZE*) and those that are ACA in year t-1 (respectively *ACA_TO_UCA%* and *ACA_TO_UCA_SIZE*). However, in practice, group structure is not constant, and new subsidiaries appear in the data for the first time in year t for several reasons, primarily because they are newly formed in corporate restructuring decisions or acquired in corporate combinations.[15] Additionally, a subsidiary might exist but have no observable auditor in year t-1 because it is exempt from mandatory audit. For this reason, a full decomposition of UCA in year t involves a third "plug" component for newly observed UCA subsidiaries (respectively *NEW_UCA%* and *NEW_UCA_SIZE*). In subsequent tests we examine the robustness of the UCA effect in our main tests across UCA subsidiaries with different histories and origins in our dataset, replacing *UCA%* by *UCA_TO_UCA%, ACA_TO_UCA%* and *NEW_UCA%*. Similarly, we replace *UCA_SIZE* with the three asset-weighted UCA component measures *UCA_TO_UCA_SIZE, ACA_TO_UCA_SIZE* and *NEW_UCA_SIZE*. We predict negative coefficients on all three components of UCA.

As we discuss in Section 2, in audit fee models including UCA use and other audit fee determinants measured at the corporate group-level, we do not expect measures of ACA use to be incrementally informative in explaining reported audit fees. Therefore, as a placebo test, we also modify Equation (1) by including ACA components constructed in a similar way, i.e., *ACA_TO_ACA%*, *UCA_TO_ACA%* and *NEW_ACA%* or, with asset-weighted equivalent measures *ACA_TO_ACA_SIZE*, *UCA_TO_ACA_SIZE* and *NEW_ACA_SIZE*. We predict these ACA components will be incrementally insignificant.

4.2. Tests exploiting the timing of changes in unaffiliated component auditors

In regression tests based on Equation (1), we estimate the initial fee discount relative to audit fees in the non-switch years of audit engagements. Changes in reported audit fees between the initial switch year ($FEES_1$) and other engagement years ($FEES_\tau$) reflect changes in firm-level audit fee drivers included as control variables in regression tests, and other systematic factors, e.g., audit firm input price inflation, also accounted for in our regression analysis through year fixed effects. They also reflect changes in UCA use. In further tests we examine trends in audit fees within principal auditor engagements using an event study approach.

We focus on the extent to which subsidiaries making *UCA_TO_ACA* switches can explain growth in reported audit fees in the years following the principal auditor's initial year of engagement. We refer to these cases as LATE_ACA subsidiaries. We expect that audit fee growth attributable to LATE_ACA switches will partially explain the initial fee discount. Audit fees in engagement year τ ($FEES_\tau$) are related to audit fees in the initial engagement year ($FEES_1$) as follows (ignoring firm subscripts):

$$FEES_\tau = FEES_1 + LATE_ACA_FEES_\tau + Other\ Factors_\tau \tag{2}$$

where $LATE_ACA_FEES_\tau$ is the audit fee paid in year τ by LATE_ACA subsidiaries which switch to an affiliated component auditor between years 2 and τ, and $Other\ Factors_\tau$ is the component of growth in audit fees between year 1 and year τ due to other factors. *Other Factors* may include systematic factors such as price inflation or company-specific factors such as the acquisition or disposal of a subsidiary with an ACA auditor. Building on Equation (2), we conduct two additional tests to validate the role of LATE_ACA subsidiaries in explaining audit fee growth in post-switch years. First, we examine whether reversal of UCA use by LATE_ACA subsidiaries explains the initial year fee discount. We do so by replacing the natural logarithm of reported audit fees as the dependent variable in Equation (1) by the natural logarithm of adjusted audit fees (*LN_AF_ADJ*), defined as reported audit fees plus the fees paid by LATE_ACA subsidiaries in the years where they still have a UCA. In this test, we expect the coefficient on *SWITCH* to be insignificant if audit fees paid by LATE_ACA subsidiaries during the period of UCA use explain the initial fee discount.[16]

We also report descriptive evidence on LATE_ACA subsidiary dynamics and the extent to which their audit fees can account for the initial fee discount. Rearranging Equation (2), the discount expressed as fraction of $FEES_\tau$ can be written as:

$$\frac{FEES_\tau - FEES_1}{FEES_\tau} = \frac{LATE_ACA_FEES_\tau}{FEES_\tau} + \frac{Other\ Factors_\tau}{FEES_\tau}. \tag{3}$$

Equation (3) quantifies the *LATE_ACA_FEES* component of the initial discount relative to year τ group fees and requires only knowledge of LATE_ACA subsidiary auditor switches and associated fees, and reported group audit fees in year τ. Alternatively, for the subset of principal auditor switches with LATE_ACA subsidiaries with complete data for engagement years 1 to τ we can also assess the economic importance of LATE_ACA subsidiaries in explaining the growth in reported group audit fees over years 1 to τ by dividing both sides of Equation (2) by $FEES_1$ as follows:

$$\frac{FEES_\tau - FEES_1}{FEES_1} = \frac{LATE_ACA_FEES_\tau}{FEES_1} + \frac{Other\ Factors_\tau}{FEES_1}. \tag{4}$$

In Equation (4) *LATE_ACA_FEES* in year τ are expressed as a percentage of group audit fees in the initial engagement year. In contrast to Equation (3), scaling by $FEES_1$ means that the *LATE_ACA_FEES* component is independent of *Other Factors* affecting $FEES_\tau$.

[15] Data is also missing in year t-1 if year t is the first year that a group appears in the dataset.

[16] We adjust group audit fees in the years in which UCAs audit LATE_ACA subsidiaries. Fees paid to ACAs in the years they are appointed are already included in reported audit fees.

4.3. Subsidiary-level analysis of the initial fee discount

To further corroborate the role of UCAs in explaining the initial audit fee discount, we also examine whether there is an initial fee discount at the subsidiary level when subsidiaries change their own auditors. Unlike principal audit fees reported by the parent company, the reported fees at the subsidiary level should not depend on the involvement of UCAs since regulations require only parent companies to disclose the fees paid to affiliated component auditors. Subsidiaries will only report the fees paid to their auditor (if any). Therefore, audit switches at the subsidiary level provide an opportunity to look for evidence of strategic audit pricing in the absence of UCA-related measurement bias. We take advantage of our hand-collected annual report data for the subsample of Italian subsidiaries, and we estimate the following subsidiary-level panel regression (with standard errors clustered at the subsidiary level):

$$SUB_LN_AF = \beta_0 + \beta_1 SUB_SWITCH + \sum \beta_j SUB_CONTROLS + \sum \beta_k FIXED\ EFFECTS(Year\ and\ Subsidiary) + \varepsilon, \quad (5)$$

where *SUB_LN_AF* is the natural logarithm of the subsidiary audit fees, *SUB_SWITCH* is an indicator variable that takes the value of 1 when a subsidiary switches its auditor and zero otherwise. Since audit pricing strategies might depend on the "type" of switch, we also discriminate among four possible switching scenarios and re-estimate the model by substituting *SUB_SWITCH* with four indicator variables: an indicator for subsidiaries that were audited by an affiliated component auditor of the outgoing principal auditor and switch to the incoming principal auditor's network of affiliates (*ACA_TO_ACA_SWITCH*); an indicator for subsidiaries that were audited by an affiliated component auditor and switch to an unaffiliated component auditor (*ACA_TO_UCA_SWITCH*); an indicator for subsidiaries that were audited by an UCA and then switch to the principal auditor's network of affiliates (*UCA_TO_ACA_SWITCH*); and an indicator for subsidiaries that were audited by an UCA and switch to another unaffiliated component auditor (*UCA_TO_UCA_SWITCH*). *SUB_CONTROLS* are subsidiary level control variables analogous to those used in group level regressions, described in Appendix B.

4.4. Sample and descriptive statistics

We summarize the sample construction in Panel A of Table 1. We establish an initial sample of 246 listed non-financial companies quoted on the Milan Stock Exchange during the period 2007-2017 from Compustat Global.[17] Then, we use historical versions of the Orbis database from Bureau van Dijk to identify the subset of 187 companies that are at the apex of corporate groups, defined in Orbis as corporate Global Ultimate Owners (GUOs), i.e., they are not controlled by other companies. For each company-year from 2007 to 2017, we identify in Orbis the names and identities of all subsidiaries (foreign and national) owned either directly or indirectly with at least 50.01 percent of the voting rights. This corporate control criterion is conservative – it defines a set of subsidiaries where control is unambiguous and hence where the subsidiary is relevant to the principal auditor. The application of this criterion may exclude some subsidiaries controlled with less than 50 percent voting rights, adding noise to our measures of UCA use and biasing results against rejecting the null hypotheses.

We obtain parent and subsidiary financial statement data and auditor names and identifiers from Orbis. We also cross-validate auditor's identities of both parent companies and Italian subsidiaries by manually opening their annual reports to collect audit fee data. Our initial sample comprises 1104 parent company-year observations and 34,637 subsidiary-year observations. After dropping observations with missing auditor or financial data, our final sample comprises 96 unique listed parents and 668 company-year observations, covering 2551 unique subsidiaries and 9097 subsidiary-year observations. Auditor identity information is not available for all companies, especially those located in countries without mandatory public filings by private companies; data are also sometimes missing because companies might be exempt from mandatory filing or audit due to their size, ownership or materiality criteria.[18] Hence, we are unable to achieve a complete mapping of subsidiaries and their auditors for every corporate group.[19] Panel B of Table 1 reports detailed descriptive statistics on the number of covered subsidiaries and whether they are audited by affiliated or unaffiliated component auditors, or remain unaudited. On average, groups in our sample report 44 subsidiaries. On average, auditor identity data is available for 14 subsidiaries, of which two are audited by UCAs and eight by ACAs, while the remaining four are unaudited. The whole sample of covered subsidiaries present a rich environment of 79 distinct component auditors. Of these, 10 classify as either UCA or ACA, two as always ACA and 67 as always UCA, depending on the client engagement and principal auditor identity.

Table 2 provides descriptive statistics for the variables included in our regression models. The mean principal auditor fee disclosed by listed parents for the audit of the group is 1.5 million Euros. The parent audit fee paid to the principal auditor (*PARENT_FEE*) relative to total reported group audit fees is on average 39 percent of total reported group audit fees; for the subsample of ACA subsidiaries where we can observe audit fees, the average value of fees paid by subsidiaries to affiliated component auditors, *ACA_FEE,* is 28 percent

[17] This sample represents approximately 70 percent of total Italian market capitalization during the period examined. We start from 2007 since the historical versions of Orbis Bureau Van Dijk, our primary source to identify the group's consolidation perimeter, are available from 2007 onwards.

[18] Italian or foreign subsidiaries, even if included in the consolidated financial statements, are not considered to be of significant relevance and thus can be exempted from audit if their total assets are less than two percent of the consolidated total assets and their revenues are less than five percent of consolidated revenues, provided that the combined total assets and revenues of such subsidiaries do not exceed, respectively, ten percent and fifteen percent of the consolidated total assets and revenues. Regolamento Emittenti CONSOB – Delibera n. 11971 del 14 maggio 1999. Art. 151 – Criteri di esenzione per le società controllate. Link: Regolamento Emittenti.

[19] We control for subsidiaries with unobservable auditor status data using the *COVERAGE* variable.

Table 1
Sample selection.

Panel A: Sample construction.

	Unique corporate groups	Firm-years	Unique subsidiaries	Subsidiary-years
Companies listed in Milan, 2007-2017 *(Source: Compustat)*	246			
Less listed subsidiaries (non-GUO companies) *(Source: BvD-Bureau VanDijk)*	(59)			
Initial sample	187	1104	13,336	34,637
of which:				
Italian	187	1104	3086	10,064
Foreign	-	-	10,250	24,573
Less subsidiaries without auditor information	19	152	10,247	20,225
Less GUO and subsidiary observations with missing values in other key variables	72	284	1288	5315
Final Sample	96	668	2551	9097

Panel B: Use of component auditors in the selected sample.

	Observations	Mean	Std. Dev.	Q1	Median	Q3
No. of reported subsidiaries in the group	668	44	86.65	8	17	37
No. of observed (covered) subsidiaries	668	14	18.56	3	7	15
#UCA	668	2	3.20	0	1	2
#ACA	668	8	13.34	2	3	8
#No AUD	668	4	5.88	1	2	5

Orbis defines Global Ultimate Owners (GUOs) as firms that control other companies and are not themselves controlled by other companies, based on an ownership threshold of 50.01% of voting rights held directly or indirectly. #UCA is the number of observed subsidiaries in a group that use an unaffiliated component auditor. #ACA is the number of observed subsidiaries in a group that use an affiliated component auditor. #No AUD is the number of observed subsidiaries in a group that are unaudited. The sum of #UCA, #ACA and #No AUD reconciles with the number of observed subsidiaries.

Table 2
Descriptive statistics for group-level analysis.

Variables	N	Mean	Std. Dev.	Q1	Median	Q3
AUD_FEE (EUR million)	668	1.50	3.87	0.16	0.36	0.96
LN_AF	668	6.09	1.39	5.11	5.89	6.87
PARENT_FEE	668	0.39	0.22	0.21	0.37	0.53
ACA_FEE	668	0.28	0.24	0.11	0.22	0.37
SWITCH	668	0.16	0.37	0	0	0
UCA%	668	0.05	0.09	0.00	0.01	0.08
UCA_SIZE	668	0.09	0.20	0.00	0.0003	0.06
TENURE	668	4.83	2.92	2	5	7
SIZE	668	20.29	2.17	18.64	19.84	21.53
ROA	668	0.02	0.10	−0.004	0.04	0.07
LEVERAGE	668	0.68	0.28	0.55	0.68	0.77
INV	668	0.12	0.11	0.02	0.09	0.20
REC	668	0.21	0.13	0.12	0.19	0.28
QUICK	668	0.27	0.41	0.07	0.16	0.32
NSUB	668	2.94	1.23	2.08	2.83	3.61
FOR_SUB	668	0.08	0.09	0	0.05	0.13
CFO	668	0.08	0.10	0.04	0.09	0.13
LAG_LOSS	668	0.34	0.47	0	0	1
BIG 4	668	0.85	0.35	1	1	1
IND_SPEC	668	0.38	0.49	0	0	1
Q_OPINION	668	0.02	0.12	0	0	0
COVERAGE	668	0.46	0.25	0.25	0.42	0.64

See Appendix B for variable definitions.

of total group audit fees. This implies that we cover, on average, approximately 67 percent of group audit fees paid to the principal auditor through the detailed fee disclosures at the parent and subsidiary levels. The remaining 33 percent thus relates to ACA subsidiaries that we cannot observe, or that we observe but which do not disclose fees. As discussed in Section 2, this unobservable group of subsidiaries should not be important for interpretation of our results related to UCA.

The frequency of principal auditor switching during the sample period is around 16 percent and most companies switch just once in our sample period and auditor tenure averages 4.8 years. The data are consistent with the mandatory rotation period in Italy being 12 years up to 2007 and 9 years from 2008 (with companies being allowed to maintain existing audit engagements to the end of the

original contractual term).[20] The mean value of *NSUB* is 2.94, implying that on average there are 19 subsidiaries in a corporate group. *COVERAGE* indicates that on average we can observe auditor identities or can manually identify audit-exempt subsidiaries in 46 percent of cases, while the remaining 54 percent are either cases of audit exemption that we cannot verify by manually inspecting annual reports or subsidiaries with auditors whose identities cannot be traced in our data sources.[21] Of the subsidiaries with identifiable auditors, on average 5 percent have unaffiliated component auditors (*UCA%*), representing on average 9 percent of group assets (*UCA_SIZE*). In contrast, subsidiaries audited by affiliated component auditors account for 27 percent of covered subsidiaries and, on average, represent 84 percent of group assets.[22] This descriptive evidence suggests that audit fees for subsidiaries with UCAs are an economically significant component of total principal audit fees and that changes in UCA use could be important in understanding the dynamics of reported principal auditor fees.

5. Empirical results

5.1. Initial fee discounts and unaffiliated component auditor involvement

Table 3 reports the patterns of change in audit fees and UCA use arranged in event time around auditor switch dates. On average, reported audit fees fall by 5.78 percent in principal auditor switch years, consistent with prior studies revealing an initial year fee discount. Note that in calculating this univariate change we do not control for changes in other audit fee determinants, and the change in audit fees is calculated relative to the pre-switch year (while lowballing is usually estimated relative to all non-switch years). Table 3 also contains preliminary evidence of an abnormal increase in UCA use around principal auditor switches. The percentage of subsidiaries with identifiable unaffiliated auditors (*UCA%*) reaches a maximum of 7.23 percent in the auditor switch year, an average increase of 2.12 percentage points compared to the pre-switch year. By the second year of audit engagements the *UCA%* falls to 4.52 percent. When focusing on subsidiaries reclassified as *ACA_TO_UCA* (i.e., the cases that result in a reduction in reported audit fees compared to the pre-switch year), the increase is even sharper. The percentage of *ACA_TO_UCA* subsidiaries reaches a maximum of 2.95 percent in the switch year, translating into an average 2.73 percentage point increase compared to the pre-switch year.[23]

Table 4 contains the results of our main analysis based on Equation (1). Column (1) presents the baseline model which excludes the UCA measures and *COVERAGE*. Results confirm that there is a statistically and economically significant initial year discount in our data. The coefficient on *SWITCH* equal to 0.08 indicates that reported audit fees decline by 8 percent in principal auditor switch years after controlling for changes in the audit fee drivers. In Columns (2) and (3) of Table 4 we test for H1 and investigate the incremental effect of UCA use as a determinant of reported audit fees, measured alternatively as the percentage of subsidiaries with an unaffiliated component auditor (*UCA%*) or as the asset-weighted average of unaffiliated component auditor use (*UCA_SIZE*), while controlling for *COVERAGE*. Whereas *UCA%* captures the raw proportion of subsidiary audits performed by UCAs in a group audit, the size-based measure *UCA_SIZE* captures the audit complexity associated with the allocation of audit work to UCAs, which may serve as a more meaningful determinant of audit effort and audit fees. Both the coefficients on *UCA%* and *UCA_SIZE* are consistently negative and statistically significant at the one percent level respectively, consistent with hypothesis H1. The coefficient on *UCA%* indicates that for a one percentage point increase in UCA use, principal audit fees fall by around 1.2 percent. For a firm with the sample average nineteen subsidiaries, the effect of the reclassification of one subsidiary from ACA to UCA is equivalent to an increase in *UCA%* of 5.2 percentage points, translating into an estimated decrease in reported fees of around 6.4 percent. In terms of the asset-weighted measure of UCA use, the results indicate that for a one percentage point increase in the weighted assets of subsidiaries audited by unaffiliated auditors, principal audit fees fall by around 0.6 percent. These results highlight that the level of UCA use is incrementally important in explaining reported audit fees beyond other audit fee determinants, including the number of subsidiaries. The negative signs on the UCA use proxies indicate that the standard audit fee model would overestimate expected audit fees for companies using UCAs.

Columns (4) and (5) of Table 4 contain our main test results for H2. They show that UCA use explains lowballing by adding our measures of UCA use together with an interaction term *SWITCH x UCA* that allows the marginal effect of UCA use on principal audit fees to vary in auditor switch years (and controlling again for the *COVERAGE* term). Consistent with H2, we find that the coefficients on *SWITCH* are statistically insignificant once we control for either *UCA%* (Column 4) or *UCA_SIZE* (Column 5), while the main effects of both UCA use proxies remain negative and statistically significant. [24] Taken together, these results confirm hypothesis H2 and suggest that, in the year of principal auditor rotation, the initial fee discount observed in our sample is explained by the lower level of component audit work performed by the incoming principal auditor and its affiliates compared to the outgoing principal auditor and

[20] D.lgs 303/2006, art.8 co. 6 and 7. Link: https://www.gazzettaufficiale.it/eli/id/2007/01/10/007G0004/sg.

[21] 14 percent of covered subsidiaries are exempt from audit (accounting for 7 percent of group assets on average).

[22] In their study of U.S. multinational companies subject to Form AP component disclosure requirements, Burke et al. (2020) find comparable results. They report that unaffiliated (affiliated) component auditors conduct, on average, 9.8% (90.2%) of audit work (measured by audit hours). Provided that subsidiary size is a good proxy for audit work, our *UCA_SIZE* measure as defined in Appendix B is more comparable to the Burke et al. (2020) measure.

[23] To have a complete overview of how UCA use changes over time, Table OA4 in the Online Appendix reports the average values of *UCA%* and *ACA_TO_UCA%* over the entire 9 years of the tenure stream according to the maximum engagement duration following Italian Law. The table shows that *UCA%* and *ACA_TO_UCA%* are both at their maximum levels in the switch year compared to the remaining years of the principal auditor engagement.

[24] Results are qualitatively identical if we estimate equation (1) after excluding *SWITCH x UCA* terms.

Table 3
Change in audit fees and unaffiliated component auditors around principal auditor switches.

Year	Change in fees (%)	Sign of change in fees	*UCA%*	Sign of change in *UCA%*	*ACA_TO_UCA%*	Sign of change in *ACA_TO_UCA%*
−3	9.09%	+	4.53%	-	0.51%	-
−2	9.43%	+	3.49%	-	0.31%	-
−1	1.80%	+	5.11%	+	0.22%	-
0	**−5.78%**	-	**7.23%**	+	**2.95%**	+
+1	10.98%	+	4.52%	-	0.00%	-
+2	9.89%	+	4.42%	-	0.04%	+

Table 3 reports the patterns of change in audit fees and subsidiary unaffiliated component auditor use (*UCA%*) and *ACA_TO_UCA%* dynamics arranged in event time around principal auditor switch dates (from year – 3 to year +2, where year 0 is the switch year). See Appendix B for variable definitions.

its affiliates.

5.2. Changes in unaffiliated component auditor use

In Panel A of Table 5 we first report the descriptive statistics for the components of the percentage and asset-weighted UCA and ACA measures. They indicate that *NEW_UCA* subsidiaries account for approximately half of the UCA subsidiaries across the sample, while *NEW_ACA* subsidiaries account for approximately 25 percent of ACA subsidiaries across the sample. Panel A also confirms that the higher values of *UCA%* and *UCA_SIZE* in principal auditor switch years are attributable to subsidiaries classified as ACA in the pre-switch year. In contrast, while the slight reductions in *ACA%* and *ACA_SIZE* in switch years are insignificant, there are large reductions in the *ACA_TO_ACA* measures, indicating that a substantial proportion of ACA subsidiaries in the principal auditor pre-switch year do not switch synchronously. Large increases in the *NEW_ACA* component in switch years offsets the reductions in *ACA_TO_ACA* components. Overall, these results suggest that principal auditor switches coincide with significant revisions in audit planning and allocation of component audit work within groups, and potentially with significant restructuring of corporate groups.

Panel B of Table 5 reports the results of the regression analyses based on Equation (1) including the components of UCA and ACA. Columns (2) and (3) introduce the components of UCA and ACA using, respectively, the percentage and *SIZE*-weighted measures, alongside *COVERAGE*. The coefficients on *ACA_TO_UCA*, and *NEW_UCA* are consistently negative and statistically significant in Columns (2) and (3) and the coefficient on *UCA_TO_UCA* is also negative and statistically significant when using the asset-weighted measure in Column (3), although the magnitude of the effect is considerably smaller than for the *ACA_TO_UCA* measure. These results reinforce the evidence supporting H1 in Table 4. The coefficients on the *ACA_TO_UCA* measures are also higher in magnitude than the coefficients on the main UCA use proxies in Table 4, reinforcing the evidence that reported principal auditor fees fall when a subsidiary changes status from ACA to UCA. In contrast, the placebo test coefficients on all three ACA components are insignificant in Columns (2) and (3), as predicted.

Columns (4) and (5) report estimates of the full model including *SWITCH*, UCA and ACA components and their interactions with *SWITCH* (controlling again for *COVERAGE*). They reveal that all coefficients on *SWITCH* are insignificant, consistent with H2. The evidence provides further confirmation that transitory UCA component dynamics explain the initial year discount, with the audit work performed by unaffiliated component auditors increasing temporarily in principal auditor initial engagement years. Consistent with theoretical predictions and their role as a placebo test, we find no evidence that ACA components play a role in explaining audit fees.

5.3. Late ACA subsidiaries and the initial fee discount

If higher-than-normal levels of UCA use can explain the audit fee discount in the initial engagement year, then the audit fee discount generated by LATE_ACA subsidiaries should disappear once their fees are added back to reported audit fees in the years in which they are temporary UCAs. Table 6, Panel A, confirms this intuition. When we adjust reported audit fees by adding the fees paid by LATE_ACA subsidiaries in the years before they appoint an affiliated component auditor, estimates of Equation (1) excluding UCA terms (comparable to Columns (1) in Tables 4 and 5) indicate that the *SWITCH* variable is no longer statistically significant. This finding is consistent with transitory increases in UCA use around principal auditor switches explaining the initial year discount.[25]

Panels B and C of Table 6 report validation tests based on Equations (3) and (4) respectively. They provide further evidence supporting the importance of LATE_ACA auditor switches in explaining the initial fee discount and audit fee growth in the years after principal auditor switches. In both Panels B and C, we exclude the initial engagement year because initial audit fee discount and growth are calculated relative to year 1. In our dataset there are 110 principal auditor switch-year observations and 558 non-switch

[25] We acknowledge that we are unable to fully adjust reported principal auditor fees for all the potential LATE_ACA subsidiaries in years in which they remain audited by a UCA because we do not observe auditors and fees for all subsidiaries. Specifically, we can adjust fees in 64 firm-year observations. For the observed LATE_ACA subsidiaries, we observe fee data in 55 percent of the cases, with the availability of data skewed towards the years in which they finally appoint an ACA rather than whey they are still audited by a UCA (it is possible that the transparency of subsidiaries' fee disclosure increases after they appoint an affiliated component auditor). These restrictions prevent us from fully adjusting reported group auditor fees.

Table 4
Unaffiliated component auditors and the initial fee discount.

Dep. variable: *LN_AF*	Baseline Model	Baseline Model		Equation (1)	
	Switch	UCA use			
	(1)	(2)	(3)	(4)	(5)
		UCA%	*UCA_SIZE*	*UCA%*	*UCA_SIZE*
UCA		−0.012***	−0.006***	−0.009**	−0.006***
		(0.003)	(0.002)	(0.004)	(0.002)
SWITCH	−0.080**			−0.016	−0.028
	(0.039)			(0.037)	(0.038)
UCA x SWITCH				−0.006	−0.002
				(0.004)	(0.002)
TENURE	0.028***	0.033***	0.034***	0.029***	0.030***
	(0.005)	(0.004)	(0.005)	(0.005)	(0.005)
SIZE	0.354***	0.361***	0.354***	0.367***	0.359***
	(0.072)	(0.071)	(0.061)	(0.071)	(0.063)
ROA	0.000	0.001	0.001	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
LEVERAGE	0.002	0.002*	0.002**	0.002	0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
INV	−0.003	−0.004	−0.005	−0.004	−0.005
	(0.004)	(0.004)	(0.003)	(0.004)	(0.003)
REC	−0.001	−0.001	−0.002	−0.001	−0.002
	(0.004)	(0.003)	(0.003)	(0.004)	(0.003)
QUICK	−0.001*	−0.001	−0.001**	−0.001	−0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
NSUB	0.086	0.104	0.114*	0.098	0.108*
	(0.063)	(0.066)	(0.062)	(0.067)	(0.063)
FOR_SUB	−0.001	−0.000	−0.001	−0.001	−0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
CFO	−0.001	−0.001	−0.001	−0.001	−0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
LAG_LOSS	0.033	0.040	0.033	0.041	0.035
	(0.036)	(0.034)	(0.033)	(0.034)	(0.033)
BIG 4	0.510**	0.536***	0.572***	0.521***	0.560***
	(0.200)	(0.176)	(0.182)	(0.172)	(0.179)
IND_SPEC	0.056	0.045	0.051	0.045	0.051
	(0.050)	(0.048)	(0.050)	(0.048)	(0.050)
Q_OPINION	−0.029	−0.012	−0.023	−0.029	−0.039
	(0.077)	(0.069)	(0.048)	(0.066)	(0.049)
COVERAGE		0.002	0.001	0.002	0.001
		(0.001)	(0.001)	(0.001)	(0.001)
Year FE	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES
Observations	668	668	668	668	668
Adjusted R^2	0.754	0.764	0.752	0.756	0.748
Number of Firms	96	96	96	96	96

Table 4 presents results obtained from estimating Equation (1).
In Columns (1) we exclude variables *UCA*, *UCA* x *SWITCH* and *COVERAGE*. In Columns (2) and (3) we exclude variable *SWITCH* and *UCA* x *SWITCH*. Columns (4) and (5) report full specification in Equation (1). In Columns (2) and (4) we use the percentage version of unaffiliated component auditor use (*UCA%*). In Columns (3) and (5) we use the asset-weighted version of unaffiliated component auditor use (*UCA_SIZE*). Robust standard errors (clustered at the firm level) are in parentheses. ***, ** and * represent $p < 0.01$, 0.05 and 0.1, respectively. See Appendix B for variable definitions.

year observations. Of these post-switch-year observations, 283 (i.e., 51%) have LATE_ACA subsidiary auditor switches.

First, we examine the subset of 283 LATE_ACA observations based on Equation (3). For each engagement year in our dataset, we report in Panel B the number of companies with LATE_ACA subsidiaries, the median percentage and the asset-weighted percentage of covered subsidiaries in the corporate group classified as LATE_ACA, and the proportion of audit fees in the year attributable to LATE_ACA subsidiaries. The results confirm that delayed introduction of affiliated auditors through LATE_ACA subsidiaries occurs in a significant proportion of audit engagements in our sample. For example, Panel B shows that in the seventh engagement year, 41 companies have LATE ACA subsidiaries, representing 14.29 percent of covered subsidiaries with an asset-weighted median of 39.74 percent of group assets. Consistent with the finding in Table 4 that *SIZE* (i.e., the natural log of total assets) is an important driver of principal audit fees, Panel B also reveals that LATE_ACA subsidiaries account for economically significant proportions of reported auditor fees in the same engagement year. For example, in the seventh engagement year the median value of *LATE_ACA_FEES* is 12.17 percent of reported group audit fees.

Table 5
Analysis of unaffiliated and affiliated component auditor classification dynamics.

Panel A: UCA and ACA components descriptive statistics.

Variables	Mean (n = 668)	Std. Dev.	SWITCH = 1 Mean (n = 110)	SWITCH = 0 Mean (n = 558)	p-value
UCA%	0.053	0.092	0.072	0.049	0.016
ACA TO UCA%	0.006	0.052	0.029	0.002	0.000
UCA_TO_UCA%	0.024	0.056	0.020	0.025	0.399
NEW_ UCA%	0.022	0.056	0.023	0.022	0.928
UCA_SIZE	0.089	0.203	0.135	0.080	0.009
ACA_TO_UCA_SIZE	0.012	0.080	0.050	0.004	0.000
UCA_TO_UCA_SIZE	0.038	0.134	0.040	0.038	0.858
NEW_UCA SIZE	0.039	0.138	0.050	0.038	0.616
ACA%	0.266	0.211	0.255	0.268	0.543
UCA_TO_ACA%	0.007	0.038	0.015	0.005	0.007
ACA_TO_ACA%	0.187	0.204	0.138	0.197	0.006
NEW_ ACA%	0.072	0.126	0.101	0.067	0.008
ACA_SIZE	0.837	0.260	0.816	0.841	0.350
UCA_TO_ACA_SIZE	0.012	0.077	0.018	0.010	0.322
ACA_TO_ACA_SIZE	0.595	0.394	0.484	0.617	0.001
NEW ACA SIZE	0.231	0.346	0.314	0.215	0.006

Panel B: UCA and ACA components and the initial fee discount.

Dep. variable: *LN_AF*	Baseline Model	Baseline Model		Equation (1)	
	Switch	with UCA and ACA components		with UCA and ACA components	
	(1)	(2) *%*	(3) *SIZE*	(4) *%*	(5) *SIZE*
ACA_TO_UCA		−0.015**	−0.012***	−0.012**	−0.007***
		(0.006)	(0.002)	(0.006)	(0.003)
UCA_TO_UCA		−0.005	−0.005***	−0.004	−0.005***
		(0.004)	(0.002)	(0.004)	(0.002)
NEW_UCA		−0.008*	−0.006**	−0.008*	−0.006**
		(0.005)	(0.002)	(0.005)	(0.002)
UCA_TO_ACA		−0.001	−0.003	0.000	−0.002
		(0.005)	(0.002)	(0.004)	(0.002)
ACA_TO_ACA		0.003	−0.001	0.002	−0.001
		(0.003)	(0.001)	(0.003)	(0.001)
NEW_ACA		0.003	−0.001	0.003	−0.001
		(0.003)	(0.001)	(0.003)	(0.001)
SWITCH	−0.080**			−0.044	0.050
	(0.039)			(0.057)	(0.074)
ACA_TO_UCA x SWITCH				−0.003	−0.006*
				(0.007)	(0.003)
UCA_TO_UCA x SWITCH				−0.005	−0.004
				(0.007)	(0.003)
UCA_TO_ACA x SWITCH				−0.002	−0.005
				(0.008)	(0.009)
ACA_TO_ACA x SWITCH				0.001	−0.001
				(0.003)	(0.001)
Controls	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES
Observations	668	668	668	668	668
Adjusted R^2	0.754	0.756	0.746	0.745	0.737
Number of Firms	96	96	96	96	96

Panel A presents the descriptive statistics of UCA and ACA components in percentage (%) and asset-weighted (*_SIZE*) versions, for the full sample and comparing switch and non-switch years.

Panel B presents the results obtained from estimating Equation (1) with the four possible decompositions of year-t UCA and ACA: *ACA_TO_UCA, UCA_TO_UCA, UCA_TO_ACA, ACA_TO_ACA*.

In Column (1) we exclude the four UCA and ACA classification terms, *COVERAGE*, *NEW_UCA* and *NEW_ACA*. In Columns (2) and (3) we exclude variable *SWITCH*. Columns (4) and (5) report full specification of modified Equation (1). In Columns (2) and (4) we use the percentage (%) versions of UCA and ACA measures. In Columns (3) and (5) we use the asset-weighted (*_SIZE*) versions of UCA and ACA measures. Robust standard errors (clustered at the firm level) are in parentheses. ***, ** and * represent $p < 0.01$, 0.05 and 0.1, respectively. See Appendix B for variable definitions.

Table 6
Economic significance of audit fees attributable to LATE_ACA subsidiaries.

Panel A: Audit fee regression with adjustment for LATE_ACA subsidiaries.

Dependent variable: *LN_AF_ADJ*	(1)
SWITCH	−0.053
	(0.037)
Controls	YES
Year FE	YES
Firm FE	YES
Observations	668
Adjusted R^2	0.758
Number of Firms	96

Panel B: LATE_ACA subsidiary dynamics and LATE_ACA audit fees as a percentage of engagement year τ group audit fees (medians).

	(1)	(2)	(3)	(4)
Principal auditor engagement year τ	No. of observations with LATE_ACA subsidiaries in engagement year τ	$LATE_ACA_\tau$ %	$LATE_ACA_SIZE_\tau$ %	$\frac{LATE_ACA_FEES_\tau}{FEES_\tau}$ %
2	22	5.67	4.92	5.20
3	27	6.82	16.32	5,00
4	31	9.68	14.08	4.90
5	36	11.26	15.33	6.43
6	34	10.64	19.87	7.95
7	41	14.29	39.74	12.17
8	47	19.52	39.83	10.98
9	45	17.39	47.17	12.00
	283			

Panel C: LATE_ACA subsidiary dynamics and LATE_ACA audit fees as a percentage of principal auditor switch year (year 1) group audit fees (medians).

	(1)	(2)	(3)	(4)	(5)
Principal auditor engagement year τ	No. of observations with LATE_ACA subsidiaries in engagement year τ	*LATE_ACA* %	*LATE_ACA_SIZE* %	$\frac{FEES_\tau - FEES_1}{FEES_1}$ %	$\frac{LATE_ACA_FEES_\tau}{FEES_1}$ %
2	21	5.89	6.39	6.67	5.99
3	24	6.74	19.33	16.79	8.34
4	26	9.19	13.47	27.06	6.78
5	25	9.68	8.62	28.33	6.87
6	20	6.70	9.52	35.80	10.42
7	19	8.33	23.99	48.92	8.76
8	17	13.33	28.71	36.10	15.33
9	10	13.17	19.86	30.90	17.19
	162				

Panel A presents results obtained by estimating Equation (1) where we exclude variables *UCA* and *SWITCH* x *UCA* and adjust reported principal auditor fees by adding the fees paid by *LATE_ACA* subsidiaries in the years before they appoint an affiliated component auditor. We include but do not report coefficients for control variables to conserve space. Robust standard errors (clustered at the firm level) are in parentheses. ***, ** and * represent $p < 0.01$, 0.05, and 0.1, respectively. See Appendix B for variable definitions.

Panel B presents descriptive statistics based on Equation (3) for company-years with observable LATE_ACA subsidiaries and their audit fees in any year τ. Column (2) reports the median percentage of LATE_ACA subsidiaries relative to the number of subsidiaries in year τ. Column (3) reports the median asset-weighted percentage of LATE_ACA subsidiaries relative to total assets in year τ. Column (4) reports the median value of the percentage of LATE_ACA subsidiaries fees over group audit fees in year τ.

Panel C presents descriptive statistics based on Equation (4) for company-years with observable LATE_ACA subsidiaries and their audit fees in any year τ for which the corresponding "year 1"

principal auditor switch is also observable within our sample period. Column (2) reports the median percentage of LATE_ACA subsidiaries relative to the number of subsidiaries in year τ. Column (3) reports the median asset-weighted percentage of LATE_ACA subsidiaries relative to total assets in year τ. Column (4) reports the median growth in group audit fees between year 1 and any year τ. Column (5) reports the median portion of the growth in group audit fees between year 1 and any year τ that is attributable to audit fees paid by LATE_ACA subsidiaries in year τ. In Panels B and C, we exclude the principal auditor switch year (year 1) because it is the base year for the analysis.

The analysis in Panel C of Table 6 sheds more light on how LATE_ACA subsidiary audit fees contribute to growth in group audit fees relative to the initial engagement year. The analysis is based on the subset of 162 non-switch year observations with LATE_ACA switches for which Equation (4) decomposition of audit fee growth can be estimated.[26] Panel C indicates that for these companies LATE_ACA fees account for more than one quarter of group audit fee growth in most engagement years. For example, the median growth in fees due to *LATE_ACA_FEES* from the engagement year to the sixth year is 10.42 percent compared to the overall growth in group audit fees over the same period of 35.80 percent. The difference of 25.38 percent (i.e., 35.80 percent - 10.42 percent) is due to *Other Factors* such as inflation and is equivalent to a plausible annual compound growth rate of 3.8 percent per annum over six years.

Overall, the results reported in Table 6 are consistent with our interpretation that transitory shifts in the allocation of component audit work to UCAs in principal auditor switch years can explain the initial engagement year fee discount. Audit fees paid by LATE_ACA subsidiaries account for a substantial proportion of the growth in reported audit fees over post-switch years.

5.4. Subsidiary auditor switches

Table 7 reports the results for our subsidiary-level analysis. We find no evidence of an initial fee discount in this analysis. The coefficient on *SUB_SWITCH* is insignificant in Column (1). Moreover, we find no differences depending on the types of subsidiary classification change occurring during subsidiary auditor switch years (Column 2). Overall, the subsidiary level evidence does not suggest within-group strategic pricing behavior by principal auditors.

5.5. Robustness checks

We conduct the following checks on the robustness of our main principal audit fee tests. First, we exclude voluntary principal audit rotations from our sample. Even though Italy introduced mandatory audit firm rotation before our sample period in 1975, occasionally audit firms switch before the end of the mandatory period. We identify and remove four voluntary switches (out of 110 switches in total) because they could be a source of bias (voluntary changes might be endogenous). When we re-estimate the models based on mandatory switches only, we confirm all our main test results.

In a further robustness check we employ an alternative definition of UCA use that includes audit exempt subsidiaries. Like subsidiaries that switch from an UCA to an affiliated component auditor, subsidiaries that were initially exempt from audit which subsequently appoint an affiliated component auditor will cause an increase in group audit fees. In contrast, subsidiaries previously audited by an affiliated component auditor which subsequently apply an audit exemption will cause a decrease in group audit fees. When we define UCA to include subsidiaries that are exempt from audit, our results are qualitatively unchanged. Similarly, when we employ an alternatively constructed asset-weighted measure of UCA use, our results are unchanged.

To mitigate concerns that our results may depend critically on *COVERAGE* capturing correlated confounder effects or, alternatively, serving to control for noise in the UCA measures, we re-estimate all models that include UCA measures (Columns 2–5 of Tables 4 and 5) or that use LATE_ACA subsidiary audit fees to adjust reported group audit fees (Panel A of Table 6) after excluding *COVERAGE*. The results remain unchanged.

6. Is the unaffiliated component auditor bias generalizable to other countries?

To establish a case that our results are generalizable to other international settings, we first present evidence that unaffiliated component auditors are important internationally. We then analyze PCAOB Form AP disclosures to assess the generalizability of our findings to the United States setting.

6.1. International evidence of UCA use

Fig. 1 captures average UCA use for 16 developed countries with at least 30 listed corporate groups with a minimum of ten subsidiaries where at least 40 percent of group subsidiaries are tracked by Orbis at the date we accessed the database (April 2024).[27] The resulting sample properties are described in detail in Table OA1 of the Online Appendix. Based on this sample, we estimate *UCA%* and *UCA_SIZE* for each corporate group. Fig. 1 summarizes the analysis by country and shows that UCA use is extensive in most countries. For example, the average percentage of subsidiaries using unaffiliated auditors (*UCA%*) ranges from 2.3 percent in Canada to 7.8

[26] Equation (4) requires the associated group audit fees in the principal auditor switch year to be within our sample period, and hence reduces the sample size compared to Table 6, Panel B.

[27] Although not meeting these inclusion criteria, we also include data for Italy from the same Orbis source and date of collection (April 2024). Note that the Italian sample is different in our main analysis which uses hand-collected auditor identity and fee data for each year of the sample period.

Table 7
Subsidiary auditor switch analysis.

Dependent variable: *SUB_ LN_AF*	(1)	(2)
SUB_SWITCH	−0.015	
	(0.028)	
ACA_TO_ACA_SWITCH		−0.033
		(0.043)
ACA_TO_UCA_SWITCH		0.078
		(0.114)
UCA_TO_ACA_SWITCH		0.053
		(0.064)
UCA_TO_UCA_SWITCH		−0.185
		(0.163)
SUB_TENURE	0.043***	0.043***
	(0.006)	(0.006)
SUB_SIZE	0.162***	0.163***
	(0.034)	(0.034)
SUB_ROA	−0.002***	−0.002***
	(0.001)	(0.001)
SUB_LEVERAGE	0.001***	0.001***
	(0.000)	(0.000)
SUB_INV	−0.004**	−0.004**
	(0.001)	(0.001)
SUB_REC	0.001	0.001
	(0.001)	(0.001)
SUB_QUICK	−0.000	−0.000
	(0.000)	(0.000)
NSUB	0.013	0.015
	(0.036)	(0.036)
SUB_CFO	0.000***	0.000***
	(0.000)	(0.000)
SUB_LAG_LOSS	−0.020	−0.021
	(0.026)	(0.027)
SUB_BIG 4	0.196**	0.183*
	(0.093)	(0.095)
SUB_IND_SPEC	0.034	0.035
	(0.025)	(0.025)
SUB_Q_OPINION	−0.210**	−0.202**
	(0.086)	(0.083)
Year FE	YES	YES
Subsidiary FE	YES	YES
Observations	2998	2998
Adjusted R^2	0.479	0.478
Number of Subsidiaries	805	805

Table 7 reports the results for our subsidiary-level analysis (Equation (5)).
In Column (1) we do not discriminate between switch types. In Column (2) we discriminate switch types by substituting *SUB_SWITCH* with four indicator variables for the switch types. Robust standard errors (clustered at the subsidiary level) are in parentheses. ***, ** and * represent $p < 0.01$, 0.05, and 0.1, respectively. See Appendix B for variable definitions.

percent in the Netherlands. The corresponding subsidiary asset-weighted percentage of UCA use (*UCA_SIZE*) ranges from 1.7 percent in Japan to 21.5 percent in the Netherlands. This descriptive evidence suggests that UCA use and the resulting bias in audit fee models will be important in countries where disclosure rules exclude UCA fees.

6.2. Evidence of UCA use in the United States

Prior U.S. evidence suggests that unaffiliated component auditors (UCAs) constitute an economically meaningful share of audit activity. Using Form AP disclosures, Burke et al. (2020) report that UCAs perform, on average, 9.8 percent of total audit hours in their sample of U.S. multinationals, which is economically relevant. Although Burke et al. (2020) use the proportion of audit hours performed by component auditors as their UCA proxy while we use the proportion of UCA subsidiary and their assets, we conduct an exploratory analysis of PCAOB Form AP disclosures as in Burke et al. (2020) to further assess the extent to which our findings generalize beyond Italy, but with two important differences. First, we examine the full cross-section of Form AP filings covering audits of all public U.S. companies, not only multinational companies. Second, we specifically focus on within-firm variation in the use of UCAs. We report details of our analysis of Form AP filings for 2016-2023 in Online Appendix OA2. Table OA2.2 reports our estimates of UCA use. Initially, we follow Burke et al. (2020) by restricting our analysis to named component auditors individually responsible for

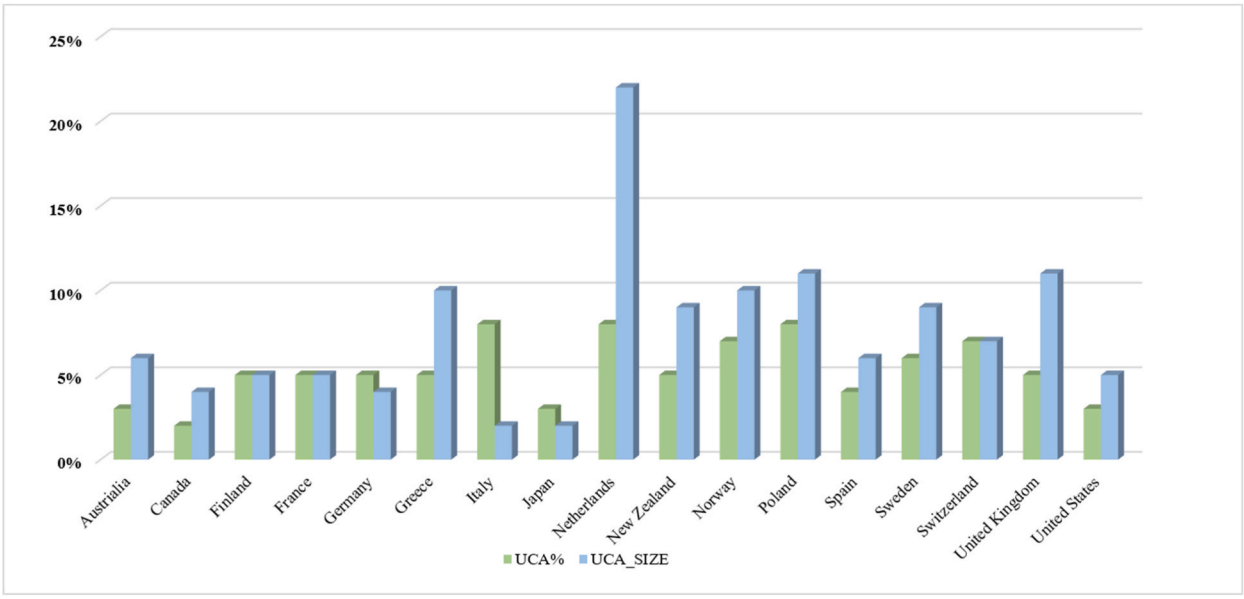


Fig. 1. International use of unaffiliated component auditors

Fig. 1 presents estimates of average UCA use for a sample of listed corporate groups across 16 developed countries identified using the online version of the Orbis Bureau van Dijk database, accessed in April 2024. Online Appendix OA1 provides details on the data collection strategy and sample characteristics. Note that the Italian sample used in this analysis differs from that used in our main analysis, which relies on hand-collected auditor identity and audit fee data for each year of the sample period. For each country, the figure reports average *UCA%* and *UCA_SIZE*, measured in accordance with the variable definitions used elsewhere in this paper (see Appendix B).

at least 5% of total audit hours. We find that among our sample of 12,610 company-year observations of public U.S. companies using component auditors, 18.60 percent used UCAs at least once during the sample period (2345 ÷ 12,610, in Table OA2.2). For these companies, the share of total audit hours performed by named UCAs ranges from 8.08 percent (reported as 0.081 in the table, using the minima of reported ranges) to 12.00 percent (using the maxima of reported ranges). Table OA2.3 also shows that these percentages of UCA use tend to decrease from the Switch year to subsequent years, consistent with transitory reallocation of audit work.

The Form AP database also contains data on the aggregate number of component auditors who individually contribute less than 5 percent of audit hours and the aggregate hours they perform as a group. Although the identities and affiliations of these "below-threshold" component auditors are not reported in Form AP, we expect they will include UCAs, especially when the principal auditor is not part of a large international network. Therefore, we expect the "true" extent of UCA work to be higher than estimates based on named component auditor data when below-threshold component audit work is significant. Our analysis reveals that the below-threshold category is economically important. As shown in Panel B of Table OA2.1, 2379 company-year observations (i.e., 18.87 percent of U.S. public companies using component auditors) are associated with below-threshold component audit work. For these companies, the average aggregate share of audit hours performed by these unnamed component auditors is between 6.25 percent (using the minima of reported ranges) to 11.16 percent (using the maxima of reported ranges). In the likely event that some of this audit work is performed by UCAs, total UCA use will be materially higher than the lower-bound estimates based solely on named above-threshold auditors. For example, if 50 percent of below-threshold work is performed by UCAs, the initial estimates using only named component auditors of 8.08 percent (using the minima of reported ranges) to 12.00 percent (using the maxima of reported ranges) increase to between 11.20 and 17.58 percent. This suggests that UCA use and the resulting bias in audit fee models could also be substantial in U.S. settings.

To illustrate the magnitude of potential bias in UCA estimates attributable to below-threshold component auditors, we examine the case of Pfizer Inc. over 2017–2022 (see Online Appendix OA3 for more details). The PCAOB AuditorSearch website identifies KPMG as the lead (principal) auditor, with between two and four named foreign KPMG affiliated component auditors. Importantly, no above-threshold unaffiliated component auditors are listed. The Form AP filings indicate that these affiliates contribute between 15 and 40 percent of total audit work during 2017-2022. This is consistent with Burke et al.'s (2020) findings for multinational firms audited by large networks. However, the Form AP filings also reveal between nine and 22 unnamed below-threshold component auditors across the six years. These component auditors collectively performed 40–50 percent of total audit hours in 2017 and never less than 10–20 percent in other years. This raises the question whether UCAs are important in Pfizer's below-threshold component auditors. Using Orbis to identify Pfizer Inc. subsidiary auditors using a similar approach to that in our international descriptive analysis, we identify individual auditors for 44 of the 684 majority-owned Pfizer subsidiaries. Of these, eight subsidiaries (18.18 percent) have seven unique unaffiliated auditors. Our measure of *UCA%* (*UCA_SIZE*) would therefore be 1.17 percent (1.19 percent). Since Orbis coverage of Pfizer Inc. subsidiaries is quite low we consider these estimates to be conservative.

The Pfizer case demonstrates that using only Form AP filings data on named component auditors will understate UCA use. Overall,

our analysis of PCAOB Form AP data suggests that UCA use in the U.S. setting is economically significant, lending further support for the generalizability of our findings beyond Italy.

7. Discussion and conclusions

We examine the effects on reported audit fees when the auditors of subsidiaries are unaffiliated with the group principal auditor. Most countries require companies to report audit fees only for the work performed by the principal audit firm and its affiliates. This requirement implies that reported audit fees are lower than total audit fees in groups using unaffiliated component auditors. However, standard audit fee models in the literature explain reported audit fees using client characteristics measured at the corporate group level, including consolidated financial statement information. They disregard the allocation of audit effort between affiliated and unaffiliated component auditors. We predict that standard audit fee models overestimate reported audit fees for corporate groups that use unaffiliated component auditors.

We conduct empirical analysis using Italy as the empirical setting because the audit fee disclosure regulation requires companies to report audit fees paid to the principal auditor and affiliated component auditors, but not those paid to unaffiliated component auditors, as is also the case in the United States and many other countries. However, in contrast to the U.S. setting, the auditors and audit fees of private subsidiaries are also observable in Italy. This allows us to identify affiliated and unaffiliated component auditor use in each company-year from archival and hand-collected data. Our findings reveal that reported audit fees depend negatively on unaffiliated component auditor use, after controlling for client characteristics designed to capture audit effort and audit risk together with principal auditor quality proxies. Our results suggest that standard audit fee models are misspecified and result in biased audit fee estimates when companies use unaffiliated component auditors and disclosure regulations do not require the reporting of fees paid to those auditors.

We demonstrate the audit fee model bias problem by re-examining the evidence on the initial year audit fee discount – or lowballing. We show that the use of unaffiliated component auditors increases when the principal audit firm changes. Subsidiaries are often slow to switch their auditors when there is a change in the group principal auditor.[28] Therefore, subsidiary auditors affiliated with the outgoing principal auditor who continue in their roles as component auditors will become unaffiliated in principal auditor switch years. We find that unaffiliated component auditor use is at its maximum in principal auditor switch years. This causes a reduction in reported audit fees in the initial engagement year of the (new) principal auditor, a phenomenon that has been interpreted as evidence of lowballing in most of the prior literature. We show that when we introduce controls for changes in unaffiliated auditor use, or when we adjust reported audit fees to include an estimate of unaffiliated component auditor fees, the initial year audit fee discount ceases to be statistically significant. In short, we show that the initial year audit fee discount is a direct result of more component audit work being allocated to unaffiliated auditors in principal auditor switch years.

Our study of the lowballing phenomenon suggests the importance for audit pricing studies to consider the potential estimation bias arising from unaffiliated auditor use. Our findings complement Barua et al. (2020), who demonstrate that a different form of audit fee measurement bias due to shared principal audit work can explain the audit fee lowballing phenomenon. This measurement bias originates in imperfect disclosure of fees for shared audit and assurance work and is relevant only in years when the principal auditor changes. The unaffiliated component audit channel that we identify is a generalization of the measurement bias problem identified by Barua et al. (2020) but it is relevant in any engagement year, not only in principal auditor switch years.[29] We expect bias due to unaffiliated component use will be important in any setting where the variable of research interest is correlated with the allocation of component audit work to unaffiliated auditors. For example, it could be important when there are changes in corporate group structure due to reorganization or acquisitions.

Our analysis provides a potential explanation for why the initial audit fee discount is not observed in all countries. For example, evidence of an initial fee discount in Australia is very limited, but the applicable disclosure rules require companies to report fees for *all* audit work within the corporate group, including fees paid to unaffiliated auditors (Carson et al., 2022). Hence, if Australian companies also allocate more audit work to unaffiliated component auditors in principal auditor switch years, we would not expect unaffiliated component auditor measurement bias or evidence of an initial year fee discount in that setting.

[28] While modelling the timing of subsidiary auditor switches is beyond the scope of this paper, we conducted an exploratory analysis of the decision to synchronously switch subsidiary auditors to an ACA during parent auditor switch years. Results indicate that synchronous subsidiary auditor switching depends on subsidiary characteristics in the pre-switch year that we expect to be relevant in capturing cost–benefit trade-offs and learning opportunities faced by the incoming principal auditor and company management. They also suggest that subsidiary contractual agreements with their auditors are relevant. Subsidiaries are more likely to switch to an ACA auditor in parent company switch years when they are larger and have higher liquidity and leverage; and for incoming Big 4 principal auditors. In contrast, foreign subsidiaries, subsidiaries receiving modified audit opinions, and those already audited by a Big 4 firm are less likely to switch synchronously with the parent. The likelihood of switching decreases when the incumbent subsidiary auditor is an industry specialist but increases when the incoming principal auditor is an industry specialist. Subsidiaries already audited by an affiliate of the outgoing principal auditor, and those with longer auditor tenure are more likely to switch synchronously, suggesting that companies may follow a coordinated auditor-change strategy when switching costs are relatively low. Details are available in Online Appendix OA5. Future research could conduct a more comprehensive analysis of the timing of unaffiliated component auditor appointments.

[29] Reported cases of involvement of two principal auditors are quite rare in our PCAOB analysis in Section 6. In the period we study there are 146 auditor changes where two principal auditors are identified (374 issuer-year observations in total). Of these Barua et al. (2020)-type cases, only 3 reported UCA use.

Our study contributes to the broader literature examining the determinants of audit fees. Our results suggest that the allocation of component audit work between affiliated and unaffiliated auditors is an omitted variable and source of bias in standard audit fee models. It will be especially important when unaffiliated auditor use is correlated with variables of interest to the researcher. However, we do not underestimate the challenge that unaffiliated component auditor use presents to the empirical researcher. Our descriptive cross-country evidence in Section 6 points to unaffiliated component auditor use being pervasive across developed countries. Unfortunately, in the United States and many other countries granular data on auditors, audit fees and financial statements of private subsidiaries are not publicly available. This constrains the ability of researchers to develop proxies for unaffiliated component auditor use similar to those we propose. Similarly, estimates of total group audit fees including fees paid to unaffiliated component auditors will often be elusive to the empirical researcher. In this context, our study suggests that mandated disclosure of the fees paid to unaffiliated component auditors would enhance the ability of financial statement users, including researchers, to interpret changes and trends in reported audit fees and differences in fees between companies. More generally, our study illustrates how mandated public disclosure of audited financial statements by private companies enables researchers to open the black boxes of complex corporate groups.

Finally, our findings have potential implications for regulators concerned that strategic audit pricing might compromise auditor independence (e.g., SEC, 1978; AICPA, 1978; NASBA, 2010; PCAOB, 2011; IESBA, 2018). The large body of academic research documenting lowballing and theoretical models predicting the phenomenon may have reinforced such concerns. Our study does not rule out strategically motivated lowballing in individual cases, but it does suggest that audit fee lowballing in the initial engagement year is not a systematic phenomenon in our empirical setting.

Declaration of generative AI and AI-assisted technologies in the manuscript preparation process

During the preparation of this work, the authors used ChatGPT to check citations to regulations and the grammar of selected sentences. After using this tool, the authors reviewed and edited the content as needed and they take full responsibility for the content of the article.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix C. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jacceco.2026.101956.

Appendix A. Bias in audit fee models with unaffiliated component auditors

Assume that the "true" corporate group-level audit fee model consistent with the prior literature is as follows:

$$Total\ Audit\ Fee_{it} = a + \boldsymbol{b_k X_{kit}} + u_{it}$$

where $Total\ Audit\ Fee_{it}$ is the total of all audit fees paid to the principal group auditor and all component auditors (ACAs and UCAs) for corporate group i in year t; $\boldsymbol{X_{kit}}$ is a vector of determinants of total audit fees measured at the corporate group level, with any accounting variables taken from consolidated financial statements. We ignore firm and time subscripts in the analysis that follows.

Assume also that a corporate group includes components audited by unaffiliated auditors (UCA) with all other audit work for the group and its components conducted by the principal auditor or its affiliates (ACAs). Hence

Total Audit Fee = Principal Auditor Fee + ACA Audit Fee + UCA Audit Fee,

and in our empirical setting where reported fees exclude unaffiliated auditor fees

Reported Audit Fee = Principal Auditor Fee + ACA Audit Fee.

Assume further that we can ignore consolidation adjustments for intra-group transactions such that

$$\boldsymbol{X_k} = \boldsymbol{X_k^{PA+ACA}} + \boldsymbol{X_k^{UCA}}$$

where $\boldsymbol{X_k^{PA+ACA}}$ is the vector of determinants of reported audit fees for the principal auditor together with the ACA components and $\boldsymbol{X_k^{UCA}}$ is the vector of audit fee determinants for UCA components.

Applying the true audit fee model to the UCA and ACA components separately

$$UCA\ Audit\ Fee = a + \boldsymbol{b_k X_k^{UCA}} + u_{UCA}$$

$$Reported\ Audit\ Fee = a + \boldsymbol{b_k X_k^{PA+ACA}} + u_{PA+ACA}$$

In the special case where affiliated component auditors (ACAs) perform all component audit work (i.e., there are no UCAs) then

$$Reported\ Audit\ Fee = Total\ Audit\ Fee = a + \boldsymbol{b_k X_k} + u_t$$

and there is no bias in the estimated audit fee model estimates because measures of audit fee determinants at the level of the corporate group are appropriate and capture the relevant audit fee drivers. However, when firms use UCAs, estimating the audit fee model using *Reported Audit Fee* as the dependent variable and including total audit fee determinants based on consolidated group-wide information as regressors, i.e.,

$$Reported\ Audit\ Fee = ACA\ Audit\ Fee_{it} = a + \boldsymbol{b_k X_k} + u$$

yields biased estimates, the bias depending on the characteristics of the UCA components, $\boldsymbol{X_k^{UCA}}$ and equal to

$$\boldsymbol{E}[UCA\ Audit\ Fee] = \boldsymbol{b_k}\left(\boldsymbol{X_k} - \boldsymbol{X_k^{PA+ACA}}\right) = \boldsymbol{b_k X_k^{UCA}}$$

This is the bias predicted in Hypothesis 1. If $\boldsymbol{X_{kt}^{UCA}}$ varies over time, the expected bias also varies with $\boldsymbol{X_{kt}^{UCA}}$ over time, consistent with Hypothesis 2. In our empirical tests, *UCA%* and *UCA_SIZE* serve as parsimonious proxies capturing the source of the estimation bias, $\boldsymbol{X_k^{UCA}}$.

Appendix B. Variable definitions

Group-level analysis

Variables	Description
AUD_FEE	Total principal audit fee (EUR million) (Source: hand collected from group annual reports);
LN_AF	Natural logarithm of AUD_FEE;
PARENT_FEE	The audit fee for parent financial statements audit as a proportion of total disclosed principal auditor fee (Source: hand collected from group annual reports);
ACA_FEE	The aggregate audit fees paid by subsidiaries audited by an affiliated component auditor as a proportion of total disclosed principal auditor fee; (Source: hand collected from group and subsidiary annual reports);
SWITCH	Indicator variable equal to one if there is a change in the principal auditor and zero otherwise (Source: hand collected from group annual reports);
UCA%	Percentage of subsidiaries audited by an unaffiliated component auditor, calculated as the sum of subsidiaries with an unaffiliated component auditor divided by the number of subsidiaries owned by parent company with at least 50.01% of voting rights (Source: hand collection of auditors from the Italian subsidiaries' annual reports and Orbis Bureau van Dijk for foreign subsidiaries);
ACA%	Percentage of subsidiaries audited by an affiliated component auditor, calculated as the sum of subsidiaries with an affiliated component auditor divided by the number of subsidiaries owned by parent company with at least 50.01% of voting rights (Source: hand collection of auditors from the Italian subsidiaries' annual reports and Orbis Bureau van Dijk for foreign subsidiaries);
UCA_SIZE	The sum of total assets of subsidiaries audited by an unaffiliated component auditor divided by the sum of all the covered subsidiaries' total assets (Source: Orbis Bureau van Dijk);
ACA_SIZE	The sum of total assets of subsidiaries audited by an affiliated component auditor divided by the sum of all the covered subsidiaries' total assets (Source: Orbis Bureau van Dijk);
ACA_TO_ACA%	Percentage of subsidiaries audited by an affiliated component auditor in both year t-1 and t (Source: hand collection of auditors from the Italian subsidiaries' annual reports and Orbis Bureau van Dijk for foreign subsidiaries);
ACA_TO_ACA_SIZE	Sum of total assets of subsidiaries audited by an affiliated component auditor in both year t-1 and t divided by the sum of all the covered subsidiaries' total assets (Source: Orbis Bureau van Dijk);
ACA_TO_UCA%	Percentage of subsidiaries audited by an affiliated component auditor in year t-1 and by an unaffiliated component auditor in year t (Source: hand collection of auditors from the Italian subsidiaries' annual reports and Orbis Bureau van Dijk for foreign subsidiaries);
ACA_TO_UCA_SIZE	The sum of total assets of subsidiaries audited by an affiliated component auditor in year t-1 and by an unaffiliated component auditor in year t divided by the sum of all the covered subsidiaries' total assets (Source: Orbis Bureau van Dijk);
UCA_TO_ACA%	Percentage of subsidiaries audited by an unaffiliated component auditor in year t-1 and by an affiliated component auditor in year t (Source: hand collection of auditors from the Italian subsidiaries' annual reports and Orbis Bureau van Dijk for foreign subsidiaries);
UCA_TO_ACA_SIZE	Sum of total assets of subsidiaries audited by an unaffiliated component auditor in year t-1 and by an affiliated component auditor in year t divided by the sum of all the covered subsidiaries' total assets (Source: Orbis Bureau van Dijk);
UCA_TO_UCA%	Percentage of subsidiaries audited by an unaffiliated component auditor in both year t-1 and t (Source: hand collection of auditors from the Italian subsidiaries' annual reports and Orbis Bureau van Dijk for foreign subsidiaries);
UCA_TO_UCA_SIZE	Sum of total assets of subsidiaries audited by an unaffiliated component auditor in both year t-1 and t divided by the sum of all the covered subsidiaries' total assets (Source: Orbis Bureau van Dijk);
TENURE	Total number of years the principal auditor has audited the group before a switch (Source: hand collected from the Group Annual Reports);
SIZE	Natural logarithm of group total assets (Source: Orbis Bureau van Dijk);
ROA	Group operating income before interest and taxes scaled by average group total assets (Source: Orbis Bureau van Dijk);
LEVERAGE	Group total debt divided by group total assets (Source: Orbis Bureau van Dijk);
INV	Group total amount of inventories scaled by group total assets (Source: Orbis Bureau van Dijk);
REC	Group total amount of receivables scaled by group total assets (Source: Orbis Bureau van Dijk);
QUICK	Group cash and cash equivalents divided by group current liabilities (Source: Orbis Bureau van Dijk);
NSUB	Natural logarithm of the number of subsidiaries owned with more than 50.01 percent of voting rights (Source: Orbis Bureau van Dijk);
FOR_SUB	Percentage of foreign subsidiaries (Source: Orbis Bureau van Dijk);
CFO	Group operating cash flows scaled by lagged group total assets (Source: Orbis Bureau van Dijk);

(*continued on next page*)

(*continued*)

Group-level analysis

Variables	Description
LAG_LOSS	Dummy variable equal to one if there is a loss in the previous year and zero otherwise (Source: Orbis Bureau van Dijk);
BIG 4	Indicator variable equal to one if the company has a Big 4 auditor (namely Ernst & Young, Deloitte, KPMG, or PwC) and zero otherwise (Source: hand collected from group annual reports);
IND_SPEC	Indicator variable equal to one if the company has an industry specialist auditor and zero otherwise. We classify an auditor as an industry specialist if it earns the highest audit fees within a given industry-year, based on the Fama and French 12-industry classification;
Q_OPINION	Indicator variable equal to one if the principal auditor issues a qualified opinion on the group financial statements and zero otherwise (Source: hand collected from group annual reports);
COVERAGE	Percentage of subsidiaries whose audit status is unambiguously determined (audit exempt or, if audited, by which audit firm) over total number of subsidiaries owned with more than 50.01 percent of voting rights (Source: Orbis Bureau Van Dijk);
NEW_UCA	Number of subsidiaries classified as UCA at time *t* that lack audit information for time *t–1*, divided by the total number of subsidiaries owned at time *t* by the parent company with at least 50.01% of voting rights.
NEW_ACA	Number of subsidiaries classified as ACA at time *t* that lack audit information for time *t–1*, divided by the total number of subsidiaries owned at time *t* by the parent company with at least 50.01% of voting rights.
NEW_UCA_SIZE	Sum of total assets of subsidiaries audited by a UCA at time *t* that lack audit information for time *t–1*, divided by the sum of all the covered subsidiaries' total assets at time *t* (Source: Orbis Bureau van Dijk);
NEW_ACA_SIZE	Sum of total assets of subsidiaries audited by an ACA at time *t* that lack audit information for time *t–1*, divided by the sum of all the covered subsidiaries' total assets at time *t* (Source: Orbis Bureau van Dijk);
LATE_ACA	An indicator for subsidiaries with affiliated component auditors appointed in the years after the parent company appoints the incoming principal auditor. LATE_ACA appointments are inferred when an affiliated component auditor's tenure is shorter than the principal auditor's tenure in a specific year.
LN_AF_ADJ	Natural logarithm of the sum of AUD_FEE and the fees paid by LATE_ACA subsidiaries in the years they still have a UCA.

Subsidiary-level analysis

Variables	Description
SUB_LN_AF	Natural logarithm of subsidiary audit fees (Source: hand collected from subsidiaries' annual reports);
SUB_SWITCH	Indicator variable equal to one if there is a change in the subsidiary auditor and zero otherwise (Source: hand collected from subsidiaries' annual reports);
ACA_TO_ACA_SWITCH	Indicator variable equal to one for subsidiaries that switch auditors in year t and are classified as ACA in both years t-1 and t, and zero otherwise (Source: hand collected from subsidiaries' annual reports);
ACA_TO_UCA_SWITCH	Indicator variable equal to one for subsidiaries that switch auditors in year t and are classified as ACA in year t-1 but as UCA in year t, and zero otherwise (Source: hand collected from subsidiaries' annual reports);
UCA_TO_ACA_SWITCH	Indicator variable equal to one for subsidiaries that switch auditors in year t and are classified as UCA in year t-1 but as ACA in year t, and zero otherwise (Source: hand collected from subsidiaries' annual reports);
UCA_TO_UCA_SWITCH	Indicator variable equal to one for subsidiaries that switch auditors in year t and are classified as UCA in both years t-1 and t, and zero (Source: hand collected from subsidiaries' annual reports);
SUB_TENURE	Total number of years the subsidiary auditor has audited the subsidiary before a switch (Source: hand collected from subsidiaries' annual reports);
SUB_SIZE	Natural logarithm of subsidiary total assets (Source: Orbis Bureau van Dijk);
SUB_ROA	Subsidiary operating income before interest and taxes scaled by average subsidiary total assets (Source: Orbis Bureau van Dijk);
SUB_LEVERAGE	Subsidiary total debt divided by subsidiary total assets (Source: Orbis Bureau van Dijk);
SUB_INV	Subsidiary total amount of inventories scaled by subsidiary total assets (Source: Orbis Bureau van Dijk);
SUB_REC	Subsidiary total amount of receivables scaled by subsidiary total assets (Source: Orbis Bureau van Dijk);
SUB_QUICK	Subsidiary cash and cash equivalents divided by subsidiary current liabilities (Source: Orbis Bureau van Dijk);
SUB_CFO	Subsidiary operating cash flows scaled by lagged subsidiary total assets (Source: Orbis Bureau van Dijk);
SUB_LAG_LOSS	Dummy variable equal to one if the subsidiary reports a loss in the previous year and zero otherwise (Source: Orbis Bureau van Dijk);
SUB_BIG 4	Indicator variable equal to one if the subsidiary has a Big 4 auditor (namely Ernst & Young, Deloitte, KPMG, or PwC) and zero otherwise (Source: hand collected from subsidiaries' annual reports);
SUB_IND_SPEC	Indicator variable equal to one if the subsidiary has an industry specialist auditor and zero otherwise. We classify an auditor as an industry specialist if it earns the highest audit fees within a given industry-year, based on the Fama and French 12-industry classification;
SUB_Q_OPINION	Indicator variable equal to one if the subsidiary auditor issues a qualified opinion on the subsidiary annual report and zero otherwise (Source: hand collected from subsidiaries' annual reports);

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