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# Essays in audit quality and earnings quality in business groups

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## ABSTRACT

The aim of this thesis is to fill some of the gaps in the audit quality/pricing and financial reporting quality literatures by showing how group audit composition and parent-subsidiary relationships can explain group-level outcomes. Empirical proxies we observe for constructs such as audit risk, audit quality and earnings quality depend on the regulatory setting, and on the management/auditor decisions and incentives in both the parent company and group subsidiaries. Yet, the majority of accounting and auditing research has focused on group-level outcomes largely due to the non-availability of granular financial reporting or audit data at the subsidiary level, especially in the United States. In this thesis, I exploit the availability of private company subsidiary data in Europe to answer three main research questions that can be of interest to both regulators and financial statements' users. In the first chapter, I investigate whether and how unaudited subsidiaries affect the overall group audit quality. I find that unaudited subsidiaries impair group audit quality and that this result is likely driven by group auditors underestimating audit risks when selecting the subsidiaries to be audited in a group. In the second chapter (co-authored), we try to understand whether group fee disclosure requirements and the misalignment between the parent auditor and subsidiary auditors can explain one of the most robust findings in the audit pricing literature, i.e., the audit fee low balling. We show that the first-year audit fee discount (low balling) is an artifact of a higher subsidiary auditor misalignment in the first year of the parent auditor's appointment, with the fees paid to misaligned subsidiary auditors not being included and reported in group audit fees. In the last chapter, I show how the parent companies of listed domestic groups can conveniently locate earnings management in their domestic subsidiaries in order to manage group earnings, and I model the factors determining the location choice. I find that the earnings management location in the subsidiaries of domestic groups depends on the opportunities and risks of earnings management detection that subsidiaries have compared to the parent company.


## THESIS CONTENTS

# "Unaudited subsidiaries and group audit quality"

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## Abstract

Using a sample of UK listed non-financial groups and their subsidiaries, I investigate the effects of unaudited subsidiaries on group audit quality. Unaudited subsidiaries are usually not significant individually but might hide material misstatements for the group in the aggregate. I find that group auditors are not timely in discovering, communicating, and adjusting for material misstatements associated with unaudited subsidiaries. I also find evidence suggesting that the audit failures associated with unaudited subsidiaries could be the result of auditors underestimating audit risks when selecting the subsidiaries to be audited in a group. The results of additional group-level analyses reveal that group auditors, which according to survey studies mostly use subjective and unstructured *size-based* selection methodologies, do not foresee changes in audit risk associated with unaudited subsidiaries. They rather adjust the level of unaudited subsidiaries ex-post when an increase in audit risk has eventually occurred. Subsidiary-level analyses furtherly show that misstatement activity in unaudited subsidiaries can translate to the group, and that group auditors might not capture such risks in their selection choices. The results of my paper shed light on the effects of unaudited subsidiaries on group audit quality and provide initial support to the calls for more structured and *risk-based* audit selection methodologies recently expressed by regulators and practitioners in the auditing field.

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## 1. INTRODUCTION

In this paper I investigate the impact of unaudited subsidiaries on group audit quality. The *group auditor*, i.e., the audit firm appointed by the parent company and responsible for the audit of the parent and of the group consolidated financial statements, faces an audit risk from potential *material* misstatements remaining undetected at the parent and/or at the subsidiaries' level. The risk of non-detection of material misstatements stems from the trade-off between resource and cost of audit which renders the audit of all the subsidiaries in a group often infeasible for the group auditor or excessively costly for the client company. In practice, this trade-off leads to some subsidiaries being audited by external auditors (different from the group auditor and its network) and other subsidiaries remaining unaudited if audit exemptions are allowed by the regulation and if the client and auditor agree on taking an exemption.[1]

Under the International Standards on Auditing - ISA 600, Para. 28 (IAASB, 2007), unaudited subsidiaries are only reviewed through analytical procedures at the aggregate group level. Compared to full audit scope procedures applied to audited subsidiaries, analytical procedures are often inadequate in discovering misstatements and might lead group auditors to overlook, or to discover with delay, material misstatements originating from unaudited subsidiaries (Graham et al., 2018).

Using a sample of UK listed non-financial groups and their subsidiaries, I investigate whether unaudited subsidiaries negatively affect group audit quality proxied by future modified audit opinions and restatements of group financial statements. Modified opinions capture the ability to communicate the detection (or just presumption) of material misstatements in the group financial statements (ISA 700). Restatements capture the failure of auditors to identify and adjust for material errors in the financial statements in a timely manner. Accounting errors

[1] When a subsidiary is not required to be audited by the regulation, the decision about a voluntary audit belongs to both the subsidiary/parent management and to the group auditor. On the one hand, appointing an auditor is a voluntary choice by the otherwise exempted subsidiary (or by the parent company which controls the subsidiary). On the other hand, it can be the group auditor to deem an audit necessary for a particular subsidiary and to contract with the parent company for auditing the subsidiary.

are retroactively corrected in future periods when eventually discovered. I first investigate whether unaudited subsidiaries affect the probability that the group auditor will issue a modified audit opinion on the group financial statements with delay (representing an audit failure).[2] I find a positive relationship between the percentage of unaudited subsidiaries in a group and the probability of future modified opinions, while no relationship is found with current modified opinions. Unaudited subsidiaries also have different effects on the probability of issuing future modified opinions depending on their potential materiality to the group. I find that unaudited subsidiaries that can be considered immaterial to the group (according to practitioners' commonly used materiality criteria) have a short-term effect on the probability of issuing future modified opinions, while subsidiaries that might be considered material have longer-term effects. Then, I investigate the relationship between unaudited subsidiaries and the probability of group financial statement restatements. I find that unaudited subsidiaries positively affect the probability of restatements. As expected, the effect principally stems from material unaudited subsidiaries.

As pointed out by Graham et al. (2018), audit sampling methodologies advanced by extant literature and regulation (Elliot and Roger, 1972; Dutta and Graham, 1998; Glover et al, 2008; Stewart and Kinney, 2013, ISA 530), as well as methods used in practice by auditors, often vary and do not address the risk of undetected material misstatements in unaudited subsidiaries. Survey studies provide further evidence of variation in the sampling strategies adopted by auditors, which are often based on non-statistical and *size-based* approaches which tend to emphasize larger items at the expense of smaller items, and which sometimes lead to incorrect or no errors projections (Hall et al., 2002; Elder et al., 2013; Christensen et al., 2015; FRC, 2017). Yet, unaudited subsidiaries may account for a large proportion of the group assets in the aggregate (even up to 60% according to Sunderland and Trompeter, 2017). Thus, their

[2] The issuance of an incorrect unmodified opinion represents an audit failure (Cunningham, 2007).

misstatements, if any, have the potential to add up to material amounts for the group and still be ignored if sampling procedures and/or group audit procedures fail to account for specific risks and aggregation risks in unaudited subsidiaries (Graham et al., 2018).

In response to the potential pitfalls in current sampling and auditing practices, the academic and professional debate has focused on the possibility to develop and use more structured and *risk-based* selection methodologies in place of, or alongside with, the auditors' professional judgement (Glover et al, 2008; Stewart and Kinney, 2013; Asare et al, 2013; Sunderland and Trompeter, 2017; Graham et al., 2018). The ISA 600 itself, which guides and regulates the group audit process, is now under revision, with the aim of strengthening the auditor's approach to planning and performing a group audit by moving towards more *risk-based* selection methodologies (IAASB, 2020).[3] Are these concerns justified and would more structured *risk-based* methodologies improve audit quality? To answer this question and to understand the implications of my results, I run follow-up analyses to examine the nature of the relationship between unaudited subsidiaries and audit failures. I try to understand whether the relationship is explained by an inadequate selection of subsidiaries to be audited or, conversely, by a conscious selection which already trades-off the risk and cost of audit and which incorporates the potential audit failures associated with a specific selection choice. Only in the first case the use of more structured *risk-based* selection methodologies may improve audit quality. By exploiting a change in the UK audit exemption rules around 2012 and by trying to directly model the choice of unaudited subsidiaries at the group level, I find evidence suggesting that group auditors might underestimate audit risks when taking their selection decisions, which in turn gives initial support to the potential benefits of using more structured *risk-based* selection methodologies.

[3] The final approval of the revised version of ISA-600 is expected by December 2021.

Alongside with the group-level analyses, I take advantage of subsidiary-level data to directly inspect the characteristics of unaudited subsidiaries, their propensity to misstate accounting numbers and the factors determining the choice of audit. I find that unaudited subsidiaries generally misstate accounting numbers more than audited subsidiaries. This result is peculiar to the within-group auditor estimation which, while controlling for specific group auditor characteristics and quality, suggests a potential problem related to the choice of unaudited subsidiaries by auditors. I do not find such result in the within-group estimation, which should alleviate concerns about audit failures being driven by potential strategic earnings management location in the unaudited subsidiaries of the group rather than by a prejudice in the group auditor selection choices. I also find that the misstatement contribution of unaudited subsidiaries to the overall group misstatement activity is positive and generally greater than that of audited subsidiaries. This evidence reinforces the concerns about the ability of misstatements in unaudited subsidiaries to translate at the group level and, consequently, about their impact on audit failures, especially if audit procedures in unaudited subsidiaries are not substantive. Lastly, I model the choice to audit a subsidiary on several proxies of size and audit risk. I find that size, as expected, is an important determinant, but also other audit risks matter, with greater risks leading to a higher probability of being audited. However, some of the proxies of audit risk used show no effect or show an opposite sign compared to the expectations, which either means that auditors do not weight or underestimate some risks. On this regard, auditor resources and competence might play an important role. I find that Big 4 audit firms, on average, weight audit risks more than non-Big 4 audit firms. Collectively, these additional subsidiary-level analyses give more nuances to the group-level findings and shed light on some of the potential mechanisms behind the relationship between unaudited subsidiaries and group audit failures.

To the best of my knowledge, my paper is the first to document the impact of unaudited subsidiaries on group audit quality and offers several contributions. It contributes to the ongoing debate on group audit issues and quality (Doty, 2011; PCAOB, 2016, 2020; AICPA, 2013;

IAASB 2013, 2015; IFIAR, 2019). There is an active and thriving literature on the audited portion of groups and on the potential coordination problems between parent and subsidiaries' auditors (Barret et al., 2005; Hanes, 2013; Carson et al., 2021; Sunderland and Trompeter, 2017; Gunn and Michas, 2018; Downey and Bedard, 2019; Burke et al.,2020; Downey and Westermann, 2020; Docimo et al., 2021; Doxey et al., 2021). Alongside, another stream of literature has concentrated on how to set appropriate component materiality thresholds in the audited subsidiaries of the group to reduce aggregation risk (Turner, 1997; Dutta and Graham, 1998; Messier et al., 2005; Glover et al., 2008; Stewart, 2012; Stewart and Kinney, 2013; Eilifsen and Messier, 2015; Choudhary et al., 2019). My paper contributes to both streams of literature by looking at unaudited subsidiaries and by complementing the inquiry on group audit composition, aggregation risk, and related effects on group audit quality.

My paper can also have implications for the literature on earnings management location in multinational groups (Dyreng et al., 2012; Durnev et al., 2017; Beuselinck et al., 2019). Whereas this literature has looked at strategic earnings management location in the subsidiaries of the group, especially in foreign subsidiaries where the parent auditor's oversight can be difficult, my paper adds another dimension that might be worth to consider: the quality of auditors' selection choices alongside or on top of group-specific earnings management location drivers.

Finally, my paper is also the first to empirically contribute to the debate on audit sampling methodologies and to shed light on the potential usefulness of more structured and *risk-based* audit sampling methodologies, especially in the context of the current process of revision of the ISA 600 on group audits (Glover et al, 2008; Stewart and Kinney, 2013; Asare et al, 2013; AICPA, 2014; Sunderland and Trompeter, 2017; Graham et al., 2018, IAASB, 2020).

Given the wide application of the ISA 600 in the European Union[4] (which allows subjectivity of judgement and prescribes only group-level analytical procedures on unaudited subsidiaries), and given its similarities with the U.S. generally accepted auditing standards (GAAS),[5] the findings of this paper could be informative not only for the UK, where this study is carried, but also for other countries.

The remainder of the paper is organized as follows. In the next section, I review the existing literature and develop my hypotheses. In Section 3, I describe the sample selection and research design. In Section 4, I discuss the main results. In Section 5, I perform and discuss follow-up analyses. In Section 6, I discuss robustness checks. Finally, I conclude the paper in Section 7.

## 2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

### 2.1 Theoretical background on group audit risk and related literature

There are no rules to date that mandate the audit of all the companies in a group. The reasons for this are twofold. First, audit resources are limited and the audit of all the subsidiaries of the group is often infeasible for the group auditor and too costly for the client company. Second, the audit risk faced by the group auditor is heterogeneous among the subsidiaries of the group.

While a misstatement in a big subsidiary is more likely to be material for the group, a misstatement in a small subsidiary is less likely to be material for the group and can justify an audit exemption (non-full audit), even if this implies a high risk of non-detection should a misstatement occur.

[4] Directive 2006/43/EC of the European Parliament and of the Council of 17 May 2006 on statutory audits of annual account and consolidated accounts.
[5] AU-C Section 600 (AICPA-ASB, 2011).

Ideally, risk assessments and selection methodologies should lead auditors to minimize as much as possible the possibility of undetected misstatements in unaudited subsidiaries. In practice, there are several aspects of the audit process involving unaudited subsidiaries which raise concerns, both in terms of audit procedures and selection methodologies.

The ISA-600 asks auditors to perform different audit procedures depending on the "individual" significance of subsidiaries to the group. *Significance* is a concept based on subjective judgement and the standard itself gives an example of significance to be something around 15% of a chosen benchmark (group assets, revenues, profits etc.). This *size-based* threshold, although being indicative, is already far higher than the materiality thresholds commonly used by auditors in practice (usually 5% of group profit before taxes). This can potentially lead to either: 1) groups consisting only of insignificant subsidiaries; 2) material but insignificant (for the ISA's definition) subsidiaries being unaudited; 3) misstatement in individually insignificant subsidiaries (either material or immaterial) being potentially material for the group in the aggregate (Turner, 1997).[6]

The possibility for misstatements taking place at the subsidiary-level to turn to material amounts in the aggregate, known as aggregation risk, is common to both audited and unaudited subsidiaries, but unaudited subsidiaries are subject to analytical procedures at the aggregate group level, which are less likely to detect misstatements compared to full-scope audit procedures (ISA 600; IAASB, 2008; Sunderland and Trompeter, 2017, Graham et al., 2018).[7]Aggregation risk is mainly addressed through the reduction of subsidiary materiality thresholds to a sufficiently low level compared to the overall group materiality threshold (which

[6] ISA 600-A13 and ISA 600-A53: *"a group may consist only of subsidiaries that are not significant subsidiaries [….]. It is unlikely that the group engagement team will obtain sufficient appropriate audit evidence on which to base the group audit opinion if the group engagement team, or a subsidiary auditor, only tests group-wide controls and performs analytical procedures on the financial information of the subsidiaries".*

[7] Analytical procedures can indicate possible problems with the financial records of a client, which can then be investigated more thoroughly. They involve comparisons of different sets of financial and operational information, to see if historical relationships are continuing forward into the period under review. In most cases, these relationships should remain consistent over time. If not, it can imply that the client's financial records are incorrect, possibly due to errors or fraudulent reporting activity.

is the threshold above which an uncorrected misstatement usually triggers the issuance of a modified opinion and the restatement of group financial statements). However, the use of materiality thresholds is a residual practice in unaudited subsidiaries, where materiality thresholds start playing a role only when analytical procedures have been insufficient in providing adequate evidence to form an opinion or if they have called for further investigation on the subsidiaries' transactions.[8]

Given that audit procedures and reduction of aggregation risk differ between audited and unaudited subsidiaries and given that current selection approaches are largely based on professional judgement and on mostly unstructured *size-based* selection methodologies (Glover et al, 2008; Stewart and Kinney, 2013; PCAOB 2015; FRC 2017; IFIAR 2019), understanding the impact of unaudited subsidiaries on group audit quality is crucial.

First, the selection/exclusion of significant/insignificant subsidiaries to be audited preludes the allocation of the overall materiality, and concurrently influences the materiality thresholds applied to the selected subsidiaries to reduce the aggregation risk. Thus, if the selection of the subsidiaries to be audited is based on inadequate assumptions and/or risk evaluations, even the application of theoretically sound materiality thresholds in audited subsidiaries can lead to audit failures stemming from unaudited subsidiaries. Second, the recent selection methodologies proposed in the literature (Glover et al., 2008; Steward and Kinney, 2013) do not consider any allocation of materiality to unaudited subsidiaries and any risk associated to them (Graham et al., 2018). They generally assume that all subsidiaries that are significant, individually or in the aggregate, are audited but anecdotal and survey evidence shows that auditors tend to underestimate the impact of aggregating individually insignificant subsidiaries (AICPA, 2012; Hall et al., 2012; Elder, et al., 2013; Christensen et al., 2015; Sunderland and Trompeter, 2017; Graham et al., 2018; PCAOB, 2020). Very often, "*auditors*

[8] ISA 600-A53 and Para. 29.

*select the largest subsidiaries and a few others under the premise that, when sufficient evidence regarding a large portion of the dollars has been obtained, the risks associated with items at unexamined subsidiaries or locations would be mitigated*" (Graham et al., 2018, p.42-43). This underestimation of the aggregation risk together with analytical procedures which might not be effective in promptly detecting misstatements, puts upfront the need to investigate the effects of unaudited subsidiaries on group audit quality.

## 2.2 Hypotheses development

### *2.2.1 Future modified opinions*

Analytical procedures involve the comparison of different sets of financial and operational information and consistency of relationships over time, with the industry peers and with the auditor's believes and expectations. There is no application of substantive tests on transactions or inspections of documentation, unless relationships start to be inconsistent with one or more of the selected benchmarks and analytical procedures provide "red flags" to the auditor. This means that, if misstatements are made consistently with one or more of the selected benchmarks, this might lead group auditors to issue "inappropriate" clean opinions on the group financial statements at time "t" when misstatements, if any, occur but do not produce red flags. However, the accumulation of undetected and uncorrected misstatements in future periods might produce inconsistent and more erratic relationships in the aggregate of financial information, eventually leading to red flags and to group auditors issuing a modified opinion at time "t+j".[9] This aggregation risk is expected to increase with the number of unaudited subsidiaries. Then, the first hypothesis is formulated as follows:

[9] There is also the possibility that repeated "immaterial" misstatements accumulate to material amounts in future periods. ISA 450 - A16 provides some examples of misstatements that have immaterial effects on the current period and that likely have a material impact in future periods (for example, the incorrect application of an accounting policy). Under such circumstances, one might argue that the issuance of future modified opinions and current unmodified opinions would not represent an audit failure since immaterial misstatements become material only in the future. However, the standard also highlights that the auditor might (and probably should) issue a modified opinion if anticipates a potential material impact in the future coming from the accumulation of immaterial misstatements.

***H1a: There is a positive association between the percentage of unaudited subsidiaries in a group and the probability of issuing "future" modified audit opinions on group financial statements.***

Related to the above hypothesis, if it is true that the aggregation risk increases with the number of unaudited subsidiaries, it is also true that the effect of an undetected aggregated misstatement on the group financial statements depends on its "materiality" to the group. In this regard, the concept of overall materiality is key as it sets the line, for the group auditor, between issuing a clean opinion (stating that the group financial statements are free from material misstatements) or not. The effect of unaudited subsidiaries on group audit opinions should depend on whether the undetected and uncorrected misstatements will exceed the overall materiality threshold of the group. It is difficult to form expectations about the probability that a misstatement will take place in a particular unaudited subsidiary or about the materiality of an unobservable (from the researcher point of view) subsidiary misstatement for the group. However, the more "material" an unaudited subsidiary in its entirety (e.g., in terms of size, turnover, or other relevant dimensions), the higher the probability that an undetected misstatement of any magnitude will be material for the group, triggering the issuance of a modified opinion. This leads to the following extension of the first hypothesis:

***H1b: The positive association between the percentage of unaudited subsidiaries and the probability of issuing "future" modified audit opinions is stronger for "material" subsidiaries than for "immaterial" ones.***

*2.2.2 Restatements*

Normally, litigation risk should lead auditors to act in response to a discovered material misstatement in a timely manner and to promote corrections, where possible, before the

preparation and filing of group financial statements. However, the potential delay of analytical procedures in detecting material misstatements in unaudited subsidiaries should also lead to untimely adjustments of errors i.e., to future restatements. This leads to the formulation of my second hypothesis:

***H2a: There is a positive association between the percentage of unaudited subsidiaries in a group and the probability of future restatements of group financial statements.***

Even if litigation risk should push group auditors to promote adjustments as soon as misstatements are detected, restatements remain a costly signal for the client company and for the group auditor. Restatements have bad consequences in terms of shareholder litigation (Palmrose and Scholz, 2004), cost of financing (Hribar and Jenkins, 2004), auditor dismissals (Hennes et al., 2014), short selling activities (Drake et al., 2015) and director and executive turnover (Desai et al., 2006; Collins et al., 2009). Therefore, financial statements' figures are normally restated only when uncorrected errors have a material impact on the group. In line with H1b, I expect material unaudited subsidiaries to have a greater impact on the probability of future restatements compared to immaterial ones. This because, at the margin, the likelihood of the aggregate of undetected misstatements to become material and trigger a restatement should be more sensitive to additional misstatements from material subsidiaries than from immaterial ones. This leads to the following extension of the second hypothesis:

***H2b: The positive association between the percentage of unaudited subsidiaries and the probability of future restatements of group financial statements is stronger for "material" subsidiaries than for "immaterial" ones.***

## 3. SAMPLE SELECTION AND RESEARCH DESIGN

### 3.1 The setting and sample selection

I use the UK setting to test my predictions. Unlike other European countries or the US, the UK publicly discloses financial statements for all companies incorporated in the country, both public and private. Moreover, parent and subsidiaries' auditor information are accessible through the Orbis – Bureau Van Dijk database. The high coverage of UK groups facilitates the comprehensive investigation of group audit dynamics more than would be possible for most other countries.

A baseline assumption of this paper is that group auditors select and negotiate which subsidiaries to audit by trying to optimally balance the risk of undetected misstatements and the cost of audit (Carson et al., 2021). This assumption should hold especially in settings where there are long-term relationships and deeper knowledge of the client and where there is a high visibility of the groups' structure and of the output of audit work (opinions and restatements) for most of the companies of the group. The UK setting meets such prerequisites.[10]

To select my sample, I use the "historical" versions of the Orbis database and map listed, non-financial, UK groups at each year-end, from 2007 to 2017. Table 1 summarizes the search strategy.

[Insert Table 1 around here]

For each year-end, I collect the sample of UK listed companies available in Orbis that fall under the category of Global Ultimate Owners (GUOs) at the 50.01% threshold.[11]

[10] Both the 2012 change to the Corporate Governance Code (for the FTSE-350 listed companies) and the EU Audit Reform in 2014 (applicable to all Public Interest Entities) have introduced, for all listed companies, the mandatory tendering after ten years of engagement by the current auditor, for a maximum tenure of 20 years (subject to transitional rules). Nonetheless, the intention of the Financial Reporting Council (FRC) on the 2012 change, but also in 2014, was not to introduce mandatory firm rotation, or mandatory tendering after a fixed period, since the FRC stressed that are the company and its shareholders which should make the decision on which auditor to appoint and when to make a change (https://www.pwc.co.uk/assets/pdf/audit-tendering.pdf, p. 1).

[11] The 50.01% threshold means that the Ultimate Owner has no corporate shareholder with more than 50.01% of ownership and ensures that the parent company itself is not consolidated by other entities. Moreover, a company is defined as the GUO of another company if and only if it holds at least 50.01% of voting rights at each path or "level" along the chain of control. This avoids potential misclassification of subsidiaries as majority-owned when they are not.

Together with the sample of listed UK parent companies (GUOs) I collect the sample of majority-owned subsidiaries (both national and foreign subsidiaries). Of these subsidiaries, I collect auditor information data from Orbis (audit firms name and appointment/resignation dates). For those companies without auditor information and for which I had all the financial statements' information needed, I used exemption thresholds applied in the different EU countries to discern unaudited subsidiaries.[12] The final sample, after removing observations with missing auditor information not reconcilable with exemption thresholds and missing values in other key variables of interest, comprises 1,404 unique UK parents/groups (and 43,296 unique subsidiaries) corresponding to 7,911 parent/group-year observations (and 185,374 subsidiary-year observations).[13]

### 3.2 Empirical models and variables description

To test H1a and H1b, I estimate the following probit regression (with standard errors clustered by group):

$$Pr(M\_OP=1)_{it} = \beta_0 + \boldsymbol{\beta_x X_{i,(t-j)}} + \sum \beta_y Controls_{it} + \sum \beta_k Fixed\ effects\ (Year\ and\ Industry) + \varepsilon_{it} \quad \textbf{(1)}$$

Where *M_OP* is an indicator variable equal to 1 when the group auditor issues a modified opinion over the group financial statements and 0 otherwise and *X* is the vector of my test variables. I estimate the model separately for each lag of *"X"* up to two years (j=0,1,2).[14] When testing H1a, *"X"* is replaced by the independent variable of interest *UNAUD*, which is the decile rank of the percentage of unaudited subsidiaries in a group (re-scaled to take values

[12] I used EU exemption thresholds provided by Europe Accountancy in their 2016 survey. The survey also reports changes compared to previous years from which previous thresholds can be inferred. Survey available at: https://www.accountancyeurope.eu/wp-content/uploads/1605_Audit_exemption_thresholds_update.pdf

[13] These numbers are based on the restatement analysis (the more comprehensive analysis in terms of non-missing values). They can slightly vary in the opinion and additional analyses due to additional missing values in the key variables of interest.

[14] I could have run the model also with the simultaneous inclusion of lagged versions of "X". However, current and lagged versions of *"X"* (UNAUD, UNAUD_MAT and UNAUD_IMMAT) are all highly correlated (correlations all above 0.7) and might induce serious multicollinearity issues which would impair the reliability of the results.

from 0 to 1).[15] When testing H1b, *"X"* is replaced by the two variables of interest *UNAUD_MAT* and *UNAUD_IMMAT*. *UNAUD_MAT* is the decile rank of the percentage of unaudited material subsidiaries in a group (re-scaled to take values from 0 to 1) and *UNAUD_IMMAT* is the decile rank of the percentage of unaudited immaterial subsidiaries (re-scaled to take values from 0 to 1). I consider material those subsidiaries whose total assets are equal or exceed five percent of group's profit before taxes.[16]

To support H1a, I expect the coefficient of $UNAUD_{it}$ to be insignificant, and at least one of the coefficients of $UNAUD_{i,t-j}$ (with j=1,2) to be positive and statistically significant (I do not have elements to make ex-ante predictions about the accumulation properties of undetected misstatements and about the "speed" of detection in future periods).[17] To support H2a, I expect the coefficient of $UNAUD\_MAT_{it}$ and $UNAUD\_IMMAT_{it}$ to be insignificant, and at least one of the coefficients of $UNAUD\_MAT_{i,t-j}$ and $UNAUD\_IMMAT_{i,t-j}$ (with j=1,2) to be positive and statistically significant, with the coefficients of $UNAUD\_MAT_{i,t-j}$ being greater than the coefficients of $UNAUD\_IMMAT_{i,t-j}$.

To test H2a and H2b, I estimate the following probit regression (with standard errors clustered by group):

$$Pr(REST=1)_{it} = \beta_0 + \boldsymbol{\beta_x X_{it}} + \sum \beta_y \, Controls_{it} + \sum \beta_k \, Fixed\ effects\ (Year\ and\ Industry) + \varepsilon_{it} \qquad \textbf{(2)}$$

Where *REST* is an indicator variable equal to 1 when the group financial statements of a particular year have been restated in future periods and 0 otherwise. In this model, I do not

[15] Using decile ranks is advisable when the relationship between the dependent and independent variable might not be linear (as it is likely the case here). The probability to "pass" the threshold of materiality of aggregated misstatements, and so to issue a modified opinion, should be higher for unit increases in unaudited subsidiaries when a group already has a high portion of unaudited subsidiaries compared to a group which has a small portion of unaudited subsidiaries. Moreover, decile ranks re-scaled from 0 to 1 help in the interpretation of the coefficients and avoids distorting effects of potential outliers (Francis et al., 2005).

[16] FRC (2017): 5% of group PBT is the most widely used overall materiality threshold among the eight major audit firms in UK.

[17] I decide to stop at lag=t-2 for two reasons. First, the sample size dramatically decreases if I add further lags. Second, both theoretically and practically speaking, the possibility that an uncorrected material misstatement remains undetected for more than 3 periods (the current and the next two years) seems quite extreme.

use lagged versions of my test variables (vector *X*) since *REST* is a variable that already captures the retroactive restatement of time "t" group financial statements taking place at some point in time "t+j". To test H2a, *"X"* is replaced by *UNAUD*, and to support the hypothesis, I expect the coefficient of $UNAUD_{it}$ to be positive and statistically significant. To test H2b, *"X"* is replaced by *UNAUD_MAT* and *UNAUD_IMMAT* and, to support the hypothesis, I expect the coefficient of $UNAUD\_MAT_{it}$ to be positive and statistically significant. I also expect the coefficient of $UNAUD\_IMMAT_{it}$ to be positive, but I do not form expectations on its significance. Given that restatements are triggered by material misstatements, whether immaterial subsidiaries will trigger future restatements depends on the materiality of the "sum" of their misstatements for the group. It is reasonable to expect that the effect of immaterial subsidiaries is positive but weaker compared to material subsidiaries.[18]

In all models, I draw from previous literature on audit quality and add a battery of control variables. I control for the re-scaled (from 0 to 1) decile rank of the percentage of subsidiaries that are audited by an external auditor different from the group auditor and its network (*DIFF_AUD*). On the one hand, an external auditor might create coordination problems and impair group audit quality. On the other hand, it might enhance independence and the ability to control the group if the resources of the group auditor are limited (Carson et al., 2021; Sunderland and Trompeter, 2017). I also control for the group *SIZE*, *ROA*, and *QUICK* ratio since these attributes usually correlate negatively with the probability of misstating accounting numbers (Chan et al. 2006). I include leverage (*LEV*) to control for the financial structure of the firm. I also control for the probability of bankruptcy (*PBANK*), for whether the group reports a loss in the period (*LOSS*) and for whether the group shows a negative equity (*NEG_EQ*). These variables proxy for financial distress (Zmijewski, 1984; Carson et al., 2021), a condition that may provide incentives to manipulate accounting numbers

[18] At least, unless the number of immaterial subsidiaries considerably exceeds the number of material subsidiaries in a group.

(Hopwood et al. 1989; Carson et al., 2021; Fang et al., 2018). I control for additional sources of audit risk and for the effect of potentially accumulated earnings management by adding the ratio of inventory to total assets (*INV*) and the ratio of account receivables to total assets (*REC*) (Chan et al, 2006). Group complexity increases the burden of the group auditor in monitoring and discovering misstatements. I control for the number of subsidiaries (*LN_SUB*) to account for group complexity in general, and for the number of business segments (*LN_SEGMENTS*), the percentage of foreign subsidiaries (*FOR_SUBS*) and the percentage of subsidiaries in financial and regulated industries (*FIN_REG_SUBS*). The latter two account for more specific sources of complexity and for frictions due to the diversity of audit requirements and accounting/auditing standards in different locations and industries. I also control for group auditors' characteristics. I add a dummy for the group auditor identity (*BIG4*) and a proxy for the specialization of the group auditor in the specific industry of the group (*AUD_SPEC*). I also control for switches of the group auditors (*SWITCH*) to account for the effect of discontinuities in audit procedures, skills, and reputational concerns, and I add the natural logarithm of group audit fees (*LN_FEES*) to account for the impact of audit risk and effort (Chan et al., 2006; Chan et al., 2011; Cameran et al., 2015; Fang et al., 2018).[19] Audit opinions and restatements may tend to be persistent (Fang et al., 2018). To account for persistence and unobserved within group source of heterogeneity, I include lagged versions of the dependent variables in the models, $M\_OP_{t-1}$ and $REST_{t-1}$.[20] Finally, the inability to cover all the subsidiaries of the group inevitably introduces noise in the estimates. Thus, I control for the coverage of groups (*COVERAGE*). Year and industry fixed effects are also included.[21] See Appendix-A1 for a detailed description of variables.

[19] I can also add the audit tenure as a proxy of auditors' knowledge of the client. However, tenure is highly correlated with *SWITCH*. I have re-estimated all the models by including audit tenure in place of *SWITCH* and the results hold (but tenure is usually insignificant). That is why I prefer to control for *SWITCH*, which is significant in most of the models.

[20] I employ probit models since the dependent variables are dichotomous. However, probit models do not allow group fixed effect estimation. The inclusion of the lagged dependent variable on the right-end side helps in accounting for within group unobserved heterogeneity which usually characterizes panel data.

[21] For the industry classification, I use the Fama & French (1997) 12 industry classification.

## 4. EMPIRICAL RESULTS

### 4.1 Descriptive statistics

Table 2 reports descriptive statistics on the composition and coverage of groups.[22]

[Insert Table 2 around here]

Groups are not small, with an average of 41 subsidiaries.[23] Of these, on average, I cover almost 60% percent of the entire group. In line with the regulatory concerns and the anecdotal evidence, the percentage of unaudited subsidiaries is not trivial (on average, 37%). In terms of size, unaudited subsidiaries account for 35% of group assets.[24] Looking at the composition of unaudited subsidiaries, there is a higher percentage of immaterial subsidiaries (27%) than material ones (10%). This is not surprising since size is one of the main dimensions that group auditors consider in the selection of subsidiaries to audit. Finally, around 3% of the subsidiaries of the group are audited by an external auditor different from the group auditor or its network.

Table 3 reports descriptive statistics on the variables of interest used in the analyses.[25]

[Insert Table 3 around here]

Almost 4% of the sample receives a modified opinion during the period of interest, and 27% of the sample restates retroactively the group financial statements in future periods. Groups are almost normally distributed with respect to the percentage of unaudited subsidiaries and immaterial unaudited subsidiaries (mean UNAUD and mean UNAUD_IMMAT are 0.489 and 0.503, respectively), while having a high percentage of material unaudited subsidiaries is less frequent than having a low percentage (mean UNAUD_MAT is 0.395).

[22] Table 2 and 3 report summary statistics starting from 2008 instead of 2007. This is to be consistent with the observations used in the regressions (the use of lagged variables leads to the loss of first-year observations).
[23] The (unreported) average group assets and group revenues are £2 billion and £1,7 billion, respectively.
[24] The % of unaudited subsidiaries over the group assets is estimated by dividing the sum of total assets of unaudited subsidiaries over the sum of total assets of all the sampled subsidiaries. This because: 1) I cannot observe the elision of intragroup assets/liabilities upon consolidation; 2) I cannot observe all the subsidiaries of the group, with most of the unobserved ones being likely unaudited and insignificant. Using the sum of assets of all the sampled subsidiaries instead of the group total assets provides a conservative (less noisy) measure of the weight of unaudited subsidiaries over the group (both the numerator and denominator are affected by unobserved subsidiaries).
[25] SIZE, ROA, QUICK, LEV, INV and REC are all winsorized at the 1% level.

## 4.2 Multivariate results

### *4.2.1 Results on Modified Opinions*

Table 4 reports the results of estimating Model 1 to test H1a (columns 1 to 3) and H1b (columns 4 to 6).

[Insert Table 4 around here]

H1a is supported. Unaudited subsidiaries are positively associated with the probability of issuing a modified opinion in the next year (column 2) but not in the current year (column 1). In terms of estimated marginal effects, groups in the top decile of the distribution of unaudited subsidiaries have a probability of issuing a modified opinion in the next year that is 1.71 percentage points higher than that of groups in the bottom decile (p-value<0.01).

When distinguishing the type of subsidiaries, I find that material unaudited subsidiaries show no effect on the issuance of current modified opinions (column 4), while they show an increasing effect on the issuance of future modified opinions (columns 5 and 6). Specifically, in terms of estimated marginal effects, material unaudited subsidiaries increase the probability of issuing a modified opinion by 1 percentage point in the next year (p-value <0.05) and by 1.47 percentage points in the next two years (p-value <0.01). Immaterial unaudited subsidiaries, which also have no effect on the issuance of current modified opinions, increase the probability of issuing a modified opinion in the next year (estimated marginal effect of 1.21 percentage points, p-value <0.05) but not in the next two years. Compared to the expectations formulated in H1b, I find that the difference between material and immaterial unaudited subsidiaries is not in terms of magnitude, but rather in terms of "persistence" of the effect, with material unaudited subsidiaries showing greater persistence. Bearing in mind that group auditors face resource constraints not only in the selection stage, but also in the audit phase, I interpret these results as

follows.[26] When analytical procedures produce red flags, auditors are asked to perform additional and substantive tests on a sample of transactions to find where the error is. Immaterial subsidiaries are smaller and potentially have fewer key transactions that the auditor might deem worth to check, plus they should require less additional audit resources. Then, misstatements in immaterial subsidiaries might be easier to detect and correct in the short-term, exhausting their effect on future modified opinions quickly. Material subsidiaries, instead, are bigger and might have more key transactions to check in detail. Under resource constraints, the auditor can take more time to fully detect the source of the misstatement, possibly explaining why material subsidiaries are associated with more persistent modified opinions.

*4.2.2 Results on Restatements*

Table 5 reports the results of estimating Model 2 to test H2a and H2b.

[Insert Table 5 around here]

H2a is supported (column 1). Unaudited subsidiaries increase the probability of future restatements of current group financial statements by an estimated marginal effect of 5.17 percentage points (p-value <0.05). As expected, the effect principally stems from material unaudited subsidiaries (column 2). Consistent with H2b, material unaudited subsidiaries show a positive and highly significant coefficient, increasing the probability of observing future restatements by an estimated marginal effect of 5.68 percentage points (p-value<0.01). Immaterial unaudited subsidiaries, although showing a positive sign, have no significant effect on restatements. The reason may lay in the different effect, at the margin, that a misstatement in an immaterial subsidiary might have on the aggregate of misstatements compared to a misstatement in a material subsidiary. All things being equal, the probability that an additional

[26] The renegotiation of fees and additional resources is possible, but it requires the agreement of the audit committee (which, depending on the reasons, may not approve) and/or might be subject to some fee cap agreed with the client in the engagement letter.

misstatement in a small immaterial subsidiary will make the aggregate of misstatements material is reasonably lower than that of a misstatement in a bigger material subsidiary.

## 5. FOLLOW-UP ANALYSES

### 5.1 Analysis on group auditors' selection choices.

To assess the implications of the above results for regulators and practitioners in the auditing field, I run some follow-up analyses to understand the nature of the choice of unaudited subsidiaries by group auditors. As mentioned earlier, group auditors, which work under resource constraints, should trade-off the risk and cost of audit when leaving a portion of the group unaudited. Thus, the association between unaudited subsidiaries and audit failures may simply be the result of a negotiated trade-off, and of an acceptable expected level of audit failures given a specific negotiated level of unaudited subsidiaries. Under such scenario, my results may be of little interest, and there might be no room for improvements in audit quality even with the use of more structured and *risk-based* selection methodologies. At the same time, regardless from the type of selection methodologies applied by auditors, the audit objectives of the auditor should be: 1) to obtain enough evidence to assure that the financial statements are free from material misstatements; 2) to convey a high quality of audit while keeping the cost of audit low.

In order to assess the ability to meet the audit objectives of current *size-based* selection methodologies, I first exploit a change in the UK audit exemption rules around 2012, which has allowed more flexibility in audit selection choices by broadening the portfolio of potentially unaudited subsidiaries and by allowing audit cost reductions. Secondly, I try to directly assess the ability of current selection methodologies to foresee the audit risk implications of selection choices.

*5.1.1. Change in UK audit exemption rules*

Prior to 2012, subsidiaries of UK listed groups could only be exempted from audit if they were: a) foreign subsidiaries (provided that local requirements allowed exemptions), b) UK dormant subsidiaries. UK non-dormant subsidiaries, instead, have always been mandated to be audited (size-based exemptions were not applicable to them).[27] The 2012 Regulation on Companies and Limited Liability Partnership has introduced some changes in the exemption rules. Regardless of size-based criteria, unlisted UK subsidiaries with a fiscal year ending on or after October 2012 have now the audit exemption option under some circumstances and if the group provides some guarantees.[28]

This regulatory change helps in refining the identification strategy and can be used as a preliminary test to assess the ability of current selection methodologies in meeting the audit objectives. The foreseeable effects of the regulatory change, in fact, should be more exemptions taken (clients will likely push to avoid previously imposed audits), a consequent reduction in audit costs, but what about audit quality? If the regulatory change has not changed the desired level of audit quality of group auditors compared to before, and if current unstructured *size-based* selection methodologies allow auditors to meet the audit objectives, i.e., to keep the desired level of audit quality while minimizing audit costs, I should not observe a change in the relationship between unaudited subsidiaries and audit failures after the passage of the new regulation.

I first investigate whether the new regulation has produced an increase in unaudited subsidiaries. The trend in the percentage of unaudited subsidiaries reported in Table 2 seems to point to the opposite direction (the percentage of unaudited subsidiaries decreases after 2012). However, the percentage of observed unaudited subsidiaries critically depends on data coverage, and a deeper inspection of the data reveals that the reduction may be an artifact of a

[27] Companies Act 2006, Sections 477 and 479.
[28] Companies Act 2006, Sections 479A.

shrink in data availability. Audit exemptions go often along with reporting exemptions, and the "observed" lower percentage of unaudited subsidiaries after the regulatory change might be driven by subsidiaries becoming eligible to both audit and reporting exemptions and with databases ceasing to provide financial information on them.[29] I find evidence consistent with this insight by inspecting the observations I removed from the sample due to data unavailability. In Appendix-A3.1, I plot the number of observations removed due to a lack of auditor information by year. Of these, I look at the portion which also has no information on total assets and revenues. These are the observations for which I deem it more plausible that an audit and reporting exemption is causing data unavailability. Interestingly, I find a sharp increase of these subsidiaries in 2012, which is consistent with an increase in unaudited subsidiaries after the regulatory change.[30] In Appendix-A3.2, I also inspect, for the subsidiaries for which I have data throughout the whole period of analysis, the frequency of those that switch from being audited to be unaudited, and I observe a sharp increase around 2012.

Secondly, I investigate the effects of the new regulation on audit fees, to see whether it has produced the foreseeable audit cost reductions. I use the following audit fee model (with standard errors clustered by group):

$$Ln\_FEES_{it} = \beta_0 + \boldsymbol{\beta_x X_{it}} + \boldsymbol{\beta_z NEW\_REG_{it}} + \boldsymbol{\beta_w X_{i,t} x NEW\_REG_{it}} + \sum \beta_y \ Controls_{it} + \sum \beta_k \ Fixed\ effects\ (Year\ and\ Group) + \varepsilon_{it} \quad \textbf{(3)}$$

Where the dependent variable is the natural logarithm of group audit fees. *NEW_REG* takes the value of 1 after the new regulation is in place and zero otherwise. For the interaction term, *"X"* is again replaced by my independent variables of interest *UNAUD, UNAUD_MAT*

[29] Consistent with this possibility, one of the objectives of the regulatory change was to align audit and accounting exemptions for small companies. Moreover, under the Companies Act 2006, dormant subsidiaries with fiscal year ending on or after October 2012 can be exempted from preparing and filing their accounts, which can explain the shrink in data availability around 2012. In 2017 there is another discontinuity in the percentage of unaudited subsidiaries. Again, this can likely be explained by audit and reporting exemptions being furtherly relaxed in UK around 2017, allowing more subsidiaries to claim audit and reporting exemptions, which in turn increase data unavailability.

[30] More importantly, around 2012, there have been no changes in the reporting exemption thresholds in UK.

and *UNAUD_IMMAT* depending on the specifications. As controls, I use the same controls as in Model 1 and 2. Table 6 reports the results.

[Insert Table 6 around here]

I find that the new regulation has reduced audit fees, especially related with unaudited subsidiaries. Interestingly, when I distinguish between the type of subsidiaries, I find that the effect principally stems from immaterial unaudited subsidiaries. This is consistent with current mostly *size-based* selection methodologies which might prefer to direct new exemptions towards smaller subsidiaries first. This is confirmed by looking at the composition of unaudited subsidiaries before and after the regulatory change. The average size and average sales over the group of unaudited subsidiaries are significantly lower (at the 1 percent level) in the post-regulatory change period compared to the pre-regulatory change period, suggesting a change in the composition of unaudited subsidiaries towards smaller subsidiaries.[31]

Finally, to investigate the effects of the new regulation on the relationship between unaudited subsidiaries and group audit quality, I augment the models used in the main analyses (Model 1 and Model 2) as follows:

$$Pr(M\_OP=1)_{it} = \beta_0 + \boldsymbol{\beta_x X_{i,(t-j)}} + \boldsymbol{\beta_z NEW\_REG_{it}} + \boldsymbol{\beta_w X_{i,(t-j)} x NEW\_REG_{i,(t-j)}} + \sum \beta_y \, Controls_{it} + \sum \beta_k \, Fixed\ effects\ (Year\ and\ Industry) + \varepsilon_{it} \quad \textbf{(4)}$$

$$Pr(REST=1)_{it} = \beta_0 + \boldsymbol{\beta_x X_{it}} + \boldsymbol{\beta_z NEW\_REG_{it}} + \boldsymbol{\beta_w X_{i,t} x NEW\_REG_{it}} + \sum \beta_y \, Controls_{it} + \sum \beta_k \, Fixed\ effects\ (Year\ and\ Industry) + \varepsilon_{it} \quad \textbf{(5)}$$

Table 7 reports the results on the modified opinion analysis, while Table 8 the results on restatements.

[31] The average size(sales) of unaudited subsidiaries in the pre-regulation period is 18.40% (24.20%) and in the post-regulation period is 10.60% (8.95%).

[Insert Table 7 and 8 around here]

With regards to modified opinions, there are no remarkable changes induced by the new regulation when looking at the effect of unaudited subsidiaries per-se (UNAUD variable). However, when looking at the effect of the new regulation depending on the type of the subsidiaries, I find that the new regulation has fostered the impact of immaterial unaudited subsidiaries. This is consistent with the fee analysis and possibly already suggests that *size-based* selection methodologies might miss to capture the aggregate risk of individually small unaudited subsidiaries which, in the aggregate, can eventually lead to more audit failures.

When looking at restatements, I find that the new regulation has fostered the impact of unaudited subsidiaries, but the result continues to be primarily driven by material unaudited subsidiaries (the main and interaction coefficients of UNAUD_MAT are both positive and significant at the 5 percent level).

Provided that the regulatory change has not changed the desired level of audit quality conveyed by group auditors, and in the absence of other negotiation frictions with the client, these results seem to suggest that current selection methodologies might not effectively meet the audit objectives.

*5.1.2. Modeling auditors' selection choices.*

As already discussed, group auditors work under resource and cost constraints. This should translate into selecting and negotiating a level of unaudited subsidiaries which balances the cost of audit with an "acceptable" expected level of audit failures. If current selection methodologies allow auditors to correctly assess the implications of their selection choices on audit failures and to negotiate their acceptable level, I should not observe adjustments in the level of unaudited subsidiaries in response to realized changes in audit risk, as those changes should have already been foreseen and implied in previous selection decisions.

Thus, I try to investigate the responsiveness of audit selection decisions to changes in audit risk where, for change in audit risk, I consider the change in the frequency of modified opinions (DeFond et al., 1999; Gul et. al, 2008).[32] I estimate the following regression (with standard errors clustered by group):

$$PERC\_UNAUD_{i,t+1} = \beta_0 + \boldsymbol{\beta_1 X_{it}} + \sum \beta_y Controls_{it} + \sum \beta_k Fixed\ effects\ (Group\ and\ Year) + \varepsilon_{it} \quad \textbf{(6)}$$

Where "*X"* is alternatively replaced by two proxies of realized change in audit risk based on the change in the issuance of Modified Opinions (see Appendix A4. for the specific computation of both proxies). Specifically:

$A\_ChRisk_{it}$ = *short-term change in the issuance of Modified Opinions (1-year period)*

$B\_ChRisk_{it}$ = *long-term change in the issuance of Modified Opinions (2-years period)*

Remembering that *M_OP* takes the value of 1 when a modified opinion is issued and 0 otherwise, version A and B proxies can range from -1 to 1. A change in the interval [-1,0) means a reduction in audit risk. A value of zero means no change in audit risk. A change in the interval (0;1] means an increase in audit risk. If auditors correctly assess and imply audit failures in their past selection choices, I expect the coefficient $\beta_1$ to be insignificant, i.e. I expect no ex-post adjustments in the level of unaudited subsidiaries. [33]

As controls, I use the same variables of the main analyses.[34] In addition, I include the change in the percentage of unaudited subsidiaries, *chPERC_UNAUD*, over the current period

[32] An increase in audit risk leads to higher auditor independence and audit quality. This drives an increase in the proportion of firms that receive a modified audit opinion.

[33] Without a theory that informs me about the "frequency" of audit risk reassessments and renegotiation with the client, I find it reasonable to use a maximum of 2 years' time length to measure changes in audit risk. I assume that auditors would not heavily rely on longer time horizons to observe realized changes in audit risk and to take corrective actions.

[34] There is no developed theory behind the choice of the percentage of unaudited subsidiaries in a group. Thus, I can only speculate that it should relate to the relative size of the subsidiaries (as ISA 600 also highlights), with the complexity of the group and audit resource constraints (number of subsidiaries, foreign subsidiaries, subsidiaries in particular industries, fees), with other characteristics of the groups (dimension, profitability, liquidity) and other audit risk proxies (for example overstated assets). That's why I use the same controls of the main analyses.

(time t). This is necessary to avoid an omitted factor bias in the relationship between the change in audit risk and future levels of unaudited subsidiaries as it absorbs the effect of previous selection decisions on both the change in modified opinions and the next-year level of unaudited subsidiaries. I also include the average relative size of subsidiaries to the group (*AV_SIZE_SUBS*), as the relative size of subsidiaries should be one of the key dimensions used by auditors when sampling the subsidiaries to be audited.

Results on Model 6 are reported in Table 9.

[Insert Table 9 around here]

I find that the percentage of unaudited subsidiaries is sensitive to realized changes in audit risk when measured over a 2-years' time horizon (column 2: coeff. -0.023, p-value<0.05), but not over the 1-year horizon (column 1: coeff. -0.004, p-value>0.1). This is somehow reasonable, as a renegotiation with the client on the level of subsidiaries to be audited is costly and may require evidence of a permanent (or at least non temporary) deterioration in audit risk before being implemented. In any case, the above evidence suggests that group auditors do not fully incorporate audit risk in their selection decisions, as they enact corrective actions ex-post. On the one hand, this means that group auditors are not completely unaware, or insensitive, to the link between unaudited subsidiaries and group audit failures. On the other hand, this means that their subjective and largely unstructured *size-based* selection methodologies might not allow them to select (and negotiate) their ex-ante desired level of audit quality. To the extent that unstructured and *size-based* selection choices are the major responsible of audit failures stemming from unaudited subsidiaries, the above results collectively give initial support to the calls for more structured and *risk-based* audit selection methodologies to improve audit quality.

## 5.2. Subsidiary-level analyses

In this section, I take advantage of subsidiary-level data to directly inspect the characteristics of unaudited subsidiaries, their propensity to misstate accounting numbers, their contribution to group misstatements and the factors determining the choice of audit. This with the aim to furtherly assess auditors' selection choices but also to dig into some of the mechanisms behind the relationship between unaudited subsidiaries and audit failures.

### *5.2.1. Subsidiaries' misstatement activity*

First, I try to assess potential differences in the misstatement activity of unaudited subsidiaries compared to audited ones. I cannot observe audit opinions on unaudited subsidiaries (they are, by definition, not audited). I cannot either observe restatements at the subsidiary level (subsidiaries are mostly private companies for which restatement data are not traced by public databases). What I can do, given the availability of financial data, is looking at the subsidiaries' absolute value of abnormal working capital accruals scaled by lagged total assets, *absAWCA*, a proxy of earnings management (DeFond and Park, 2001). I look at the absolute value since I am interested in the magnitude, rather than the sign, of earnings management in the subsidiaries of the group. I do not have ex-ante predictions on the misstatement activity of unaudited subsidiaries. In fact, the general idea of this paper is not that unaudited subsidiaries are, per-se, more likely or prone to misstate numbers, but simply that their misstatement activity, of any kind and magnitude, may not be well captured, ex-ante, by unstructured and mostly *size-based* selection methodologies and may also be difficult to detect ex-post given the type of audit procedures applied to unaudited subsidiaries. Nevertheless, being unaudited might create incentive distortions in a subsidiary or simply give more opportunities to misstate numbers, ceteris paribus.

Cross sectional t-tests (Table 10) show that unaudited subsidiaries misstate accounting numbers more than audited subsidiaries (Panel A, diff=0.2137, p-value<0.01), but that the weight of the misstatement activity of unaudited subsidiaries over the group assets is generally lower than that of audited subsidiaries (Panel B, diff=-0.0162, p-value <0.01).[35]

[Insert Table 10 around here]

This is reasonable, since audited subsidiaries are generally bigger than unaudited subsidiaries. Still, the fact that unaudited subsidiaries, on average, show a higher misstatement activity, provides a warning signal whose nature is worth to inspect. Thus, I run a multivariate analysis by estimating the following subsidiary-level regression (with standard errors clustered by subsidiary):

$$AbsAWCA_{it} = \beta_0 + \boldsymbol{\beta_1}\, \mathbf{NoAud_{it}} + \sum \beta_y\, Controls_{it} + \sum \beta_k\, Fixed\ effects\ (Year\ and\ Group\ or\ Year, Industry\ and\ Group\ Auditor\ ) + \varepsilon_{it} \quad \textbf{(7)}$$

Where *AbsAWCA* is defined as mentioned earlier and *NoAud* is an indicator variable equal to 1 if the subsidiary is unaudited and zero otherwise. I draw from prior literature on earnings management and control for the subsidiary size, profitability, leverage, growth, cash flows, loss, as well as for other subsidiary and group characteristics which can affect the misstatement propensity of the subsidiary. I control for whether the subsidiary is located in a foreign country, is in a regulated industry, or is located in a tax-haven country. I also control for the group-level absolute value of abnormal working capital accruals (*GroupAbsAwca*) to account for the effect of group-level misstatement propensity on the subsidiary's earnings

[35] The numerosity of the sample of subsidiaries for which is possible to calculate AWCA is reduced compared to the total sample over which the percentage of audited and unaudited subsidiaries are computed. Unfortunately, data on cash and cash equivalents, for example, are often not reported in Orbis for private companies. Moreover, data on sales are often missing if subsidiaries are small and file abbreviated accounts.

management (see Appendix-A1 for a detailed description of variables). Table 11 reports the results of Model 7.

[Insert Table 11 around here]

I estimate the model with both group fixed effects (column 1) and group auditor fixed effects (column 2). The two specifications allow for different lines of inquiry. The within-group estimation allows to assess whether, while controlling for group-specific characteristics, unaudited subsidiaries misstate accounting numbers more than audited subsidiaries within the group. Under such scenario, the audit failures associated with unaudited subsidiaries might be the result of group-strategic location of earnings management in the unaudited subsidiaries of the group ex-post, and not of an ex-ante prejudice in the selection methodologies applied by the group auditor. The within-group auditor estimation, instead, allows to assess whether, while controlling for group-auditor specific characteristics, unaudited subsidiaries misstate accounting numbers more than audited subsidiaries within the group-auditor choice portfolio, regardless from the specific group. This evidence would be more consistent with a prejudice in the selection choices of subsidiaries to audit, which are currently mostly based on size rather than risk.

I find no differences in the level of misstatement activity between audited and unaudited subsidiaries within the group (column 1). The coefficient of *NoAud* is insignificant. [36] However, when I estimate the model using group-auditor fixed effects (column 2), I find the coefficient of *NoAud* to be positive and statistically significant at the five percent level, which reinforces the concerns over group-auditor current selection methodologies.[37]

[36] I also run the model using subsidiary fixed effects, to control for subsidiary characteristics and potential ex-post earning management incentives. The coefficient of *NoAud* remains insignificant.

[37] This analysis exploits subsidiary-level data. However, subsidiary-level observations used are far lower than those reported in the sample selection table (Table 1) and used in the group-level analyses to compute the percentage of unaudited subsidiaries. In fact, whereas the data on auditors' identity are available for most subsidiaries, financial reporting data might be unavailable due to small size of the subsidiaries and reporting exemptions.

*5.2.2. Subsidiaries' contribution to the group misstatement activity*

The above results are indeed of interest, but do not allow to assess the mechanisms behind the link between unaudited subsidiaries and group audit failures. In fact, they speak for the average subsidiary and do not furnish insights on if and how the misstatement activity in the subsidiaries of the group translates to the group in the aggregate. To better gauge the contribution of unaudited and audited subsidiaries to the group misstatement activity, I first look at the correlation between the sum of abnormal working capital accruals of unaudited and audited subsidiaries, scaled by lagged group total assets and then transformed in absolute values (*AbsSumAWCA_Unaud* and *AbsSumAWCA_Aud*), with the absolute value of group AWCA, *GroupAbsAWCA*.[38] Table 10, Panel C, shows that both unaudited and audited subsidiaries' misstatement activity are positively correlated with the group misstatement activity, with unaudited subsidiaries showing a greater coefficient. This result suggests that the misstatement activity in the subsidiaries of the group is not a zero-sum game but, most importantly, that the misstatement activity in unaudited subsidiaries have a greater potential to translate at the group level, shedding light on one of the potential mechanisms behind the audit failures associated with unaudited subsidiaries. I also employ a regression model to assess the contribution of unaudited and audited subsidiaries to the group misstatement activity, while controlling for other determinants of group AWCA. Specifically, I employ the following group-level regression (with standard errors clustered by group):

$$GroupAbsAWCA_{it} = \beta_0 + \boldsymbol{\beta_1\ AbsSumAWCA\_Unaud_{it}} + \boldsymbol{\beta_2\ AbsSumAWCA\_Aud_{it}} + \sum \beta_y\ Controls_{it} + \sum \beta_k\ Fixed\ effects\ (Year\ and\ Group\ or\ Year,\ Industry\ and\ Group\ Auditor) + \varepsilon_{it} \quad \textbf{(8)}$$

[38] Majority owned subsidiaries are fully consolidated at the group level. Under perfect coverage of groups, if the subsidiaries' misstatement activity is not a zero-sum game for the group, the sum of the subsidiaries' misstatement should translate 1 to 1 at the group level.

I draw from prior literature on earnings management and control for the group size, profitability, leverage, growth, cash flows, loss, as well as for some group and auditor characteristics (see Appendix-A1 for a detailed description of variables). Results are shown in Table 12.

[Insert Table 12 around here]

Regression results are consistent with the univariate correlation analysis, with the sum of unaudited subsidiaries' misstatements showing a greater coefficient compared to audited subsidiaries. The results are insensitive to whether the model is estimated with group or group auditor fixed effects.

*5.2.3. Subsidiaries' audit selection choice*

The above evidence reinforces the main analyses at the group level and suggests that unaudited subsidiaries might be risky for the group. In fact, their misstatement activity translates at the group level, and it does so more than audited subsidiaries. The aim of this section is then to close the inquiry on unaudited subsidiaries by assessing whether and how subsidiaries' size and other risk factors are incorporated in the choice to audit a subsidiary. For this purpose, I run the following subsidiary-level probit model for the choice to audit a subsidiary in the next year (with standard errors clustered by subsidiary):

$$Pr(NoAud=1)_{i,t+1} = \beta_0 + \sum \boldsymbol{\beta_x X\_Sub_{it}} + \sum \boldsymbol{\beta_y X\_Group_{it}} + \sum \boldsymbol{\beta_j X\_Sub_{it} \, x \, BIG4_{it}} + \sum \boldsymbol{\beta_k X\_Group_{it} \, x \, BIG4_{it}} + \sum \beta_z \, Fixed\ effects\ (Year\ and\ Industry) + \varepsilon_{it} \quad \textbf{(9)}$$

Where *NoAud* is defined as before, *"X_Sub"* is a vector of subsidiary's size and other risk factors and *"X_Group"* is a vector of group's size and other risk factors. Both vectors of size and other risk proxies are then interacted with *BIG4*, a indicator variable equal to 1 if the

group auditor is a Big 4 audit firm and zero otherwise. This with the aim to understand whether and how differences in audit methodologies and resources can affect audit selection choices. I look at both subsidiary and group-level characteristics since it is reasonable to expect that both factors affect the choice of audit. For the vector of subsidiary-level characteristics, I look at: the subsidiary's size (*subSIZE)*, relative size to the group (*subRelSIZE)*, profitability *(subROA)*, leverage (*subLEV)*, growth (*subGROWTH)*, cash flows (*subCFO)*, loss (*SubLOSS)*, inventory and receivables to total assets (*subINV* and *subREC)*, misstatement activity relative to the subsidiary total assets (*absAWCA*), misstatement activity relative to the group total assets (*absAWCAtoGroup*), whether the subsidiary is located in a foreign country (*FOR_SUB_dummy)*, is in a financial and regulated industry *(FIN_REG_dummy)*, is in the same 2 digit SIC-code industry of the parent (*subSameInd)*, is located in a tax-haven country *(SUB_HAVEN_dummy)*. For the vector of group-level characteristics I look at: the group size (*SIZE)*, number of subsidiaries *(LN_SUB)*, number of business segments *(LN_SEGMENTS)* misstatement activity *(GroupAbsAWCA)*, group fees *(LN_FEES)*, modified opinion expressed over the group financial statements *(M_OP)*. The results on Model 9 are reported in Table 13.

[Insert Table 13 around here]

I find that the selection is indeed dependent on the size of the subsidiary, with bigger subsidiaries being less likely to be unaudited, although it is size per-se which plays a role and not its relative importance to the group. Other risk factors load with the expected sign. The probability to be unaudited decreases with the subsidiary's leverage, cash flows, inventory, and receivables. Subsidiaries located in tax-haven countries, and which belong to a regulated or financial industry are also less likely to be unaudited. At the same time, some risk factors load positively in the choice, such as loss-making subsidiaries and foreign subsidiaries. These are warning signals since, as the literature on earnings management suggests, loss-making companies can be incentivized to manage earnings, and foreign subsidiaries can be

conveniently used by parent companies to strategically locate earnings management far from the group auditor's oversight (Dyreng et al., 2012; Beuselinck et al., 2019). Finally, other risk factors, which prior analyses in Sections 5.2.1 and 5.2.2 show to be potentially important at the group-level, are not weighted in the choice, such as the subsidiary misstatement activity proxied by abnormal working capital accruals. Group-level factors also play an important role, with bigger groups and groups with more subsidiaries positively affecting the likelihood that a subsidiary will be unaudited, ceteris paribus, while riskier groups in terms of complexity of businesses, misstatement activity proxied by group abnormal working capital accruals, audit fees and modified opinions affect negatively the likelihood that a subsidiary will be unaudited. In the selection, group auditor's competence and resources seem to play an important role. I find that, when a group is audited by a Big 4 audit firm, the size of the subsidiary furtherly decreases the likelihood to be unaudited. Moreover, although the main effects of the number of subsidiaries and loss are positive, the likelihood that a subsidiary will be unaudited decreases in the presence of a Big 4 audit firm. Big 4 audit firms also furtherly decrease the likelihood that a subsidiary will be unaudited when it is located in a tax-haven country and when the group has received a modified opinion in the previous year. These results suggest that Big 4 auditors have either more resources to cover the group or simply account for risk more than non-Big 4 auditors. However, for several of the other risk proxies employed, there are no remarkable differences between types of auditors. Big 4 auditors, for example, although having theoretically more resources and offices in various locations, do not discount the positive foreign factor, nor take into account the potential misstatement activity of subsidiaries as proxied by abnormal working capital accruals.

Collectively, this evidence suggests that auditors weight not only size, but also risk in their selection choices, such as operational and financial risks, complexity factors and tax-haven risks. However, some risks, such as location and misstatement risks seem rather underestimated or not considered at all, and this is common to both Big and non-Big 4 audit firms.

Then, the recent move of the International Auditing and Assurance Standards Board (IAASB, 2020) to revise the ISA 600 towards more *risk-based* methodologies, especially in light of the relationship between unaudited subsidiaries and audit failures, seems warranted. The enhancements of the revised ISA600, as stated in the draft, are in fact to: "***Focus on identifying and assessing risk of material misstatements*** *of group financial statements and determining that the planned scope of work appropriately responds to those assessed risks,* ***rather than the current approach*** *whereby the scope of the work is* ***driven primarily by the identification of components and determination of their significance***" (IAASB, 2020, p.21)

## 6. ROBUSTNESS CHECKS

I use total assets to measure the potential materiality of unaudited subsidiaries. I choose this dimension for several reasons: a) it expresses the whole spectrum of resources owned by the group in a subsidiary which might be misstated, b) it is one of the most used dimensions in practice (FRC, 2017) and one of the most cited by auditing standards for selection decisions (ISA 600, ICAEW, 2014); c) it is available for most of the sampled subsidiaries. However, other dimensions can capture the impact of subsidiaries over the group, such as the subsidiary's revenues or profit before taxes (FRC, 2017). I test the robustness of my results on H1b and H2b to the use of these alternative dimensions of subsidiaries' materiality. I find that the results (un-tabulated) are qualitatively similar in both the modified opinion and restatement analyses when using the revenue dimension, while I find significant and consistent results only for the restatement analysis when using the profit before taxes dimension. Of notice, both subsidiaries' revenues and profit before taxes present several missing values. This happens because micro and small subsidiaries, which are eligible to file abbreviated accounts, are not required to report the Profit and Loss account. Yet, they still have to file the balance sheet accounts, making total assets the most available and comprehensive dimension to measure the potential materiality of unaudited subsidiaries to the group.

When modeling the auditors' selection choice over the next-year level of unaudited subsidiaries, I use the change in modified opinions as a proxy for realized change in audit risk. I test the robustness of my results to the use of the change in group audit fees as alternative proxy for realized change in audit risk. I again consider changes over a year and two-years periods. The results (untabulated) are robust to this alternative version.

## 7. CONCLUSIONS

Concerns have been raised by regulators and practitioners in the auditing field about the risks associated with having only a limited number of subsidiaries audited and about the potential limitations of current sampling approaches, which are based on auditors' professional judgement and mostly *size-based* methodologies. These concerns are not groundless. First, auditing standards address audit risk in unaudited subsidiaries only by use of analytical procedures at the aggregate group level, which might be ineffective in timely discovering material misstatements. Second, within the subjectivity left to auditors in sampling the subsidiaries to be audited, anecdotal evidence suggests that auditors tend to underestimate the impact of aggregating individually insignificant subsidiaries and might rely on *size-based* heuristics rather than *risk-based* assessments. This creates all the premises for unaudited subsidiaries to impair the auditor's oversight ability over the group. Yet, to the best of my knowledge, there are no studies that have addressed or provided empirical evidence on these concerns. The doubts about unaudited subsidiaries and unstructured *size-based* selection methodologies remain largely hypothetical and confined to the dialectical level.

In this paper, I try to fill this empirical gap and furnish evidence on the effects of unaudited subsidiaries on group audit quality. On a sample of UK listed groups in the period 2007-2017, I find that unaudited subsidiaries impair audit quality. Specifically, unaudited subsidiaries are associated with future modified opinions and future restatements of group

financial statements, consistent with a delay in the discovery, communication, and adjustment of material misstatements.

Given the resource and cost constraints that auditors face in auditing business groups (which often render the audit of all the subsidiaries infeasible), it might be argued that the audit failures associated with unaudited subsidiaries are somehow physiological and inevitable. The key question then shifts on whether the selection of subsidiaries to be audited is, at least, carried in a way to reduce audit risk. I find evidence suggesting that current selection methodologies might lead auditors to underestimate audit risk, which can explain why unaudited subsidiaries may lead to more audit failures. I also find some initial evidence of a difference in the selection choices carried out by Big 4 and non-Big 4 audit firms, with the latter suffering more from the potential pitfalls of current mostly unstructured and *size-based* selection methodologies.

The results of this paper respond to a longstanding concern over the audits of business groups, which has culminated with a process of revision of the auditing standard ISA 600 on group audits. The process is still ongoing, and the final approval of the revised ISA 600 is expected by December 2021. The final outcome, however, is uncertain. The revised standard, although moving towards *risk-based* selection methodologies, which the evidence of this paper supports overall, has also removed any indication of requirements for full-scope audit in the subsidiaries of the group (IAASB, 2020, p.25). Commentors to the draft have raised concerns on this aspect. One of the most recent comments received by the IAASB, for example, although recognizing the merits of *risk-based* methodologies in helping to address the risks of material misstatements of components that are not significant individually but are so collectively, has stated the following: "*We believe that* ***eliminating the concept of significant components*** *due to their financial size, together* ***with the elimination of the concomitant requirement to have the entire financial information of those significant components subject to a full-scope audit,***

***will increase the risk that material misstatements*** *[…] of the group financial statements at component level* ***will not be detected and will therefore reduce audit quality*****".**[39]

In light of such a vibrant debate, this paper furnishes useful and, most importantly, timely evidence which can help in moving forward our understanding of group audits and of the importance of considering audit complexity, audit composition and subsidiaries' selection choices when assessing the quality of group audits.

[39] Comments by the Institute Der Wirtschaftsprüfer (Germany) on October 2, 2020. Available at: https://www.idw.de/blob/126282/fbdbfe9d439005c53215c95d24baed57/down-iaasb-ed-isa-600-data.pdf

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# TABLES

**Table 1: Sample Selection**

| | Unique GUOs | GUO-years | Unique Subs | Sub-years |
|---|---|---|---|---|
| Initial Orbis sample 2007-2017 | 2,414 | 15,324 | 99,242 | 440,689 |
| Observations without auditor information | *(409)* | *(2,894)* | *(53,278)* | *(242,832)* |
| Observations without key variables for the analyses | *(601)* | *(4,519)* | *(2,668)* | *(12,483)* |
| **Final sample** | **1,404** | **7,911** | 43,296 | 185,374 |

**Table 2: Group composition**

| Year | Average subs by group | Group Coverage | % Unaudited subs | % of Unaudited subs in terms of Group Assets | % Unaudited material subs | % Unaudited immaterial subs | % External subdidiary auditors |
|---|---|---|---|---|---|---|---|
| 2008 | 34 | 0.62 | 0.50 | 0.65 | 0.16 | 0.34 | 0.02 |
| 2009 | 36 | 0.59 | 0.46 | 0.60 | 0.15 | 0.31 | 0.02 |
| 2010 | 37 | 0.59 | 0.44 | 0.56 | 0.13 | 0.30 | 0.03 |
| 2011 | 35 | 0.61 | 0.43 | 0.45 | 0.13 | 0.30 | 0.03 |
| 2012 | 39 | 0.60 | 0.36 | 0.25 | 0.09 | 0.27 | 0.03 |
| 2013 | 41 | 0.60 | 0.34 | 0.25 | 0.09 | 0.26 | 0.03 |
| 2014 | 43 | 0.61 | 0.34 | 0.22 | 0.08 | 0.26 | 0.03 |
| 2015 | 47 | 0.57 | 0.30 | 0.20 | 0.07 | 0.23 | 0.03 |
| 2016 | 47 | 0.57 | 0.28 | 0.18 | 0.06 | 0.22 | 0.03 |
| 2017 | 57 | 0.48 | 0.22 | 0.25 | 0.04 | 0.17 | 0.03 |
| Average | 41 | 0.59 | 0.37 | 0.35 | 0.10 | 0.27 | 0.03 |

**Table 3: Variables Descriptives**

| Variables | Obs | Mean | Std. Dev. | q25 | Median | q75 |
|---|---|---|---|---|---|---|
| M_OP | 7,911 | 0.038 | 0.193 | 0 | 0 | 0 |
| REST | 7,911 | 0.274 | 0.446 | 0 | 0 | 1 |
| UNAUD | 7,911 | 0.489 | 0.313 | 0.222 | 0.444 | 0.778 |
| UNAUD_MAT | 7,911 | 0.395 | 0.392 | 0 | 0.556 | 0.778 |
| UNAUD_IMMAT | 7,911 | 0.503 | 0.333 | 0.333 | 0.556 | 0.778 |
| DIFF_AUD | 7,911 | 0.25 | 0.405 | 0 | 0 | 0.778 |
| SIZE | 7,911 | 18.36 | 2.402 | 16.636 | 18.169 | 19.926 |
| ROA | 7,911 | -0.022 | 0.274 | -0.045 | 0.049 | 0.101 |
| QUICK | 7,911 | 1.046 | 2.369 | 0.132 | 0.327 | 0.828 |
| LEV | 7,911 | 0.534 | 0.389 | 0.319 | 0.486 | 0.676 |
| PBANK | 7,911 | 0.187 | 0.390 | 0 | 0 | 0 |
| LOSS | 7,911 | 0.349 | 0.477 | 0 | 0 | 1 |
| NEG_EQ | 7,911 | 0.049 | 0.216 | 0 | 0 | 0 |
| INV | 7,911 | 0.082 | 0.124 | 0.001 | 0.023 | 0.123 |
| REC | 7,911 | 0.145 | 0.135 | 0.035 | 0.115 | 0.211 |
| LN_SUB | 7,911 | 2.718 | 1.389 | 1.792 | 2.639 | 3.638 |
| LN_SEGMENTS | 7,911 | 1.217 | 0.843 | 0.639 | 1.099 | 1.792 |
| FOR_SUB | 7,911 | 0.058 | 0.112 | 0 | 0 | 0.083 |
| FIN_REG_SUB | 7,911 | 0.076 | 0.141 | 0 | 0.006 | 0.093 |
| BIG4 | 7,911 | 0.398 | 0.489 | 0 | 0 | 1 |
| AUD_SPEC | 7,911 | 0.185 | 0.388 | 0 | 0 | 0 |
| SWITCH | 7,911 | 0.071 | 0.256 | 0 | 0 | 0 |
| LN_FEES | 7,911 | 5.074 | 1.578 | 3.912 | 4.828 | 6.001 |
| COVERAGE | 7,911 | 0.586 | 0.266 | 0.371 | 0.575 | 0.80 |

## Table 4: Test H1a and H1b - Modified Opinions and unaudited subsidiaries

*Model 1: $Pr(M\_OP=1)_{it} = \beta_0 + \beta_x X_{i,(t-j)} + \sum \beta_y Controls_{it} + \sum \beta_k Fixed\ effects\ (Year\ and\ Industry) + \varepsilon_{it}$*

| | ***Test H1a:*** *X=UNAUD* | | | ***Test H1b:*** *X=UNAUD_MAT and UNAUD_IMMAT* | | |
|---|---|---|---|---|---|---|
| | **(1) j=0** | **(2) j=1** | **(3) j=2** | **(4) j=0** | **(5) j=1** | **(6) j=2** |
| **$UNAUD_{t-j}$** | **0.197** | **0.349*** ** | **0.165** | | | |
| | **(0.136)** | **(0.125)** | **(0.146)** | | | |
| **$UNAUD\_MAT_{t-j}$** | | | | **0.142** | **0.208** ** | **0.345*** ** |
| | | | | **(0.092)** | **(0.088)** | **(0.110)** |
| **$UNAUD\_IMMAT_{t-j}$** | | | | **0.142** | **0.246** ** | **0.076** |
| | | | | **(0.121)** | **(0.118)** | **(0.133)** |
| DIFF_AUD | 0.027 | 0.034 | 0.062 | 0.037 | 0.041 | 0.088 |
| | (0.108) | (0.106) | (0.117) | (0.108) | (0.105) | (0.118) |
| SIZE | -0.136*** | -0.136*** | -0.194*** | -0.132*** | -0.130*** | -0.181*** |
| | (0.034) | (0.035) | (0.041) | (0.035) | (0.035) | (0.042) |
| ROA | -0.142 | -0.144 | -0.102 | -0.157 | -0.159 | -0.141 |
| | (0.122) | (0.122) | (0.138) | (0.122) | (0.122) | (0.141) |
| QUICK | -0.018 | -0.018 | -0.018 | -0.017 | -0.016 | -0.014 |
| | (0.017) | (0.017) | (0.023) | (0.017) | (0.017) | (0.022) |
| LEV | -0.045 | -0.045 | -0.036 | -0.045 | -0.041 | -0.007 |
| | (0.092) | (0.091) | (0.120) | (0.092) | (0.091) | (0.119) |
| PBANK | 0.141 | 0.136 | 0.055 | 0.144 | 0.136 | 0.040 |
| | (0.091) | (0.091) | (0.104) | (0.091) | (0.091) | (0.104) |
| LOSS | 0.473*** | 0.476*** | 0.464*** | 0.471*** | 0.475*** | 0.454*** |
| | (0.086) | (0.087) | (0.098) | (0.086) | (0.086) | (0.098) |
| NEG_EQ | 0.135 | 0.143 | 0.213 | 0.137 | 0.137 | 0.193 |
| | (0.175) | (0.175) | (0.213) | (0.175) | (0.174) | (0.215) |
| INV | 0.158 | 0.136 | 0.592* | 0.167 | 0.146 | 0.592* |
| | (0.299) | (0.298) | (0.323) | (0.301) | (0.301) | (0.323) |
| REC | -0.572* | -0.605* | -0.324 | -0.592* | -0.621* | -0.381 |
| | (0.314) | (0.318) | (0.355) | (0.313) | (0.320) | (0.361) |
| LN_SUB | -0.024 | -0.039 | 0.052 | -0.036 | -0.058 | 0.032 |
| | (0.058) | (0.058) | (0.066) | (0.059) | (0.060) | (0.069) |
| LN_SEGMENTS | -0.027 | -0.014 | -0.076 | -0.041 | -0.031 | -0.099 |
| | (0.073) | (0.074) | (0.078) | (0.074) | (0.074) | (0.079) |
| FOR_SUB | -0.149 | -0.148 | -0.106 | -0.160 | -0.145 | -0.205 |
| | (0.263) | (0.262) | (0.317) | (0.274) | (0.272) | (0.328) |
| FIN_REG_SUB | 0.129 | 0.169 | 0.079 | 0.121 | 0.147 | 0.125 |
| | (0.220) | (0.220) | (0.291) | (0.219) | (0.219) | (0.286) |
| BIG4 | -0.059 | -0.068 | -0.121 | -0.059 | -0.060 | -0.117 |
| | (0.082) | (0.082) | (0.094) | (0.082) | (0.082) | (0.093) |
| AUD_SPEC | 0.103 | 0.100 | 0.126 | 0.102 | 0.099 | 0.113 |
| | (0.098) | (0.098) | (0.109) | (0.098) | (0.098) | (0.109) |
| SWITCH | 0.162 | 0.157 | 0.310** | 0.161 | 0.157 | 0.323** |
| | (0.124) | (0.124) | (0.137) | (0.124) | (0.123) | (0.136) |
| LN_FEES | 0.125*** | 0.134*** | 0.198*** | 0.127*** | 0.134*** | 0.207*** |
| | (0.046) | (0.046) | (0.055) | (0.046) | (0.046) | (0.055) |
| $M\_OP_{t-1}$ | 1.934*** | 1.944*** | 1.969*** | 1.938*** | 1.944*** | 1.983*** |
| | (0.100) | (0.100) | (0.115) | (0.100) | (0.101) | (0.116) |
| COVERAGE | -0.419** | -0.454*** | -0.269 | -0.384** | -0.397** | -0.233 |
| | (0.188) | (0.167) | (0.187) | (0.178) | (0.162) | (0.184) |
| Constant | 0.294 | 0.192 | 0.699 | 0.192 | 0.078 | 0.344 |
| | (0.523) | (0.532) | (0.648) | (0.528) | (0.540) | (0.675) |
| YEAR FE | YES | YES | YES | YES | YES | YES |
| INDUSTRY FE | YES | YES | YES | YES | YES | YES |
| Unique GUOs | 1,404 | 1,404 | 1,228 | 1,404 | 1,404 | 1,228 |
| Observations | 7,909 | 7,909 | 6,542 | 7,909 | 7,909 | 6,542 |
| Pseudo R2 | 0.4191 | 0.4213 | 0.4476 | 0.4195 | 0.4216 | 0.4521 |

Robust standard errors (clustered by group) in parentheses - *** p<0.01, ** p<0.05, * p<0.1

## Table 5: Test H2a and H2b - Restatement and unaudited subsidiaries

*Model 2: $Pr(REST=1)_{it} = \beta_0 + \beta_1 X_{it} + \sum \beta_y Controls_{it} + \sum \beta_k Fixed\ effects\ (Year\ and\ Industry) + \varepsilon_{it}$*

| | ***(1) Test H2a*** | ***(2 )Test H2b*** |
|---|---|---|
| | *X=UNAUD* | *X=UNAUD_MAT and UNAUD_IMMAT* |
| **UNAUD** | **0.169**** | |
| | **(0.075)** | |
| **UNAUD_MAT** | | **0.186***** |
| | | **(0.045)** |
| **UNAUD_IMMAT** | | **0.078** |
| | | **(0.067)** |
| DIFF_AUD | 0.016 | 0.024 |
| | (0.045) | (0.045) |
| SIZE | -0.003 | 0.007 |
| | (0.018) | (0.019) |
| ROA | 0.097 | 0.075 |
| | (0.088) | (0.088) |
| QUICK | -0.018** | -0.017** |
| | (0.008) | (0.008) |
| LEV | -0.042 | -0.042 |
| | (0.064) | (0.064) |
| PBANK | 0.143*** | 0.149*** |
| | (0.053) | (0.053) |
| LOSS | 0.205*** | 0.200*** |
| | (0.045) | (0.045) |
| NEG_EQ | -0.140 | -0.137 |
| | (0.106) | (0.106) |
| INV | -0.110 | -0.096 |
| | (0.141) | (0.140) |
| REC | -0.183 | -0.212 |
| | (0.149) | (0.152) |
| LN_SUB | -0.014 | -0.023 |
| | (0.030) | (0.030) |
| LN_SEGMENTS | 0.140*** | 0.122*** |
| | (0.037) | (0.037) |
| FOR_SUB | 0.213 | 0.141 |
| | (0.165) | (0.172) |
| FIN_REG_SUB | -0.161 | -0.168 |
| | (0.119) | (0.119) |
| BIG4 | 0.033 | 0.032 |
| | (0.038) | (0.037) |
| AUD_SPEC | 0.023 | 0.022 |
| | (0.042) | (0.042) |
| SWITCH | 0.158*** | 0.159*** |
| | (0.060) | (0.060) |
| LN_FEES | 0.053** | 0.056** |
| | (0.027) | (0.027) |
| COVERAGE | -0.349*** | -0.296*** |
| | (0.101) | (0.094) |
| M_OP | 0.135 | 0.137 |
| | (0.087) | (0.087) |
| $REST_{t-1}$ | 0.236*** | 0.233*** |
| | (0.036) | (0.036) |
| Constant | -1.295*** | -1.514*** |
| | (0.272) | (0.280) |
| YEAR FE | YES | YES |
| INDUSTRY FE | YES | YES |
| Unique GUOs | 1,404 | 1,404 |
| Observations | 7,911 | 7,911 |
| Pseudo R2 | 0.0759 | 0.0771 |

Robust standard errors (clustered by group) in parentheses
*** p<0.01, ** p<0.05, * p<0.1

**Table 6: Effects of the new regulation - Group Fees**

*Model 3:* $ln\_FEES_{it} = \beta_0 + \beta_x X_{it} + \beta_z NEW\_REG_{it} + \beta_w X_{it} \times NEW\_REG_{it} + \sum \beta_y Controls_{it} + \sum \beta_k$ *Fixed effects (Year and Group)* $+ \varepsilon_{it}$

| | *X=UNAUD* | *X=UNAUD_MAT and UNAUD_IMMAT* |
|---|---|---|
| **UNAUD** | **0.027** | |
| | **(0.040)** | |
| **UNAUD_MAT** | | **-0.013** |
| | | **(0.028)** |
| **UNAUD_IMMAT** | | **-0.015** |
| | | **(0.035)** |
| NEW_REG | -0.069* | -0.075* |
| | (0.039) | (0.041) |
| **UNAUD x NEW_REG** | **-0.094**** | |
| | **(0.045)** | |
| **UNAUD_MAT x NEW_REG** | | **0.040** |
| | | **(0.031)** |
| **UNAUD_IMMAT x NEW_REG** | | **-0.123***** |
| | | **(0.044)** |
| Controls | YES | YES |
| YEARE FE | YES | YES |
| GROUP FE | YES | YES |
| Unique GUOs | 1,603 | 1,603 |
| Observations | 9,492 | 9,492 |
| Adj R2 | 0.3299 | 0.3310 |

Robust standard errors (clustered by group) in parentheses
*** p<0.01, ** p<0.05, * p<0.1

**Table 7: Effects of the new regulation -Modified opinions and unaudited subsidiaries**

*Model 4: $Pr(M\_OP=1)_{it} = \beta_0 + \beta_x X_{i,(t-j)} + \beta_z NEW\_REG_{it} + \beta_w X_{i,(t-j)} \times NEW\_REG_{i,(t-j)} + \sum \beta_y Controls_{it} + \sum \beta_k$ Fixed effects (Year and Industry) + $\varepsilon_{it}$*

| | (1) j=0 | (2) j=1 | (3) j=2 | (4) j=0 | (5) j=1 | (6) j=2 |
|---|---|---|---|---|---|---|
| **$UNAUD_{t-j}$** | **0.200** | **0.288**** | **0.134** | | | |
| | **(0.142)** | **(0.133)** | **(0.150)** | | | |
| **$UNAUD\_MAT_{t-j}$** | | | | **0.160** | **0.182*** | **0.338***** |
| | | | | **(0.100)** | **(0.097)** | **(0.111)** |
| **$UNAUD\_IMMAT_{t-j}$** | | | | **0.119** | **0.156** | **0.002** |
| | | | | **(0.127)** | **(0.124)** | **(0.142)** |
| $NEW\_REG_t$ | -0.687*** | -0.887*** | -1.043*** | -0.694*** | -1.105*** | -1.339*** |
| | (0.218) | (0.252) | (0.262) | (0.224) | (0.277) | (0.296) |
| **$UNAUD_{t-j}$ x $NEW\_REG_{t-j}$** | **-0.016** | **0.419** | **0.484** | | | |
| | **(0.299)** | **(0.310)** | **(0.316)** | | | |
| **$UNAUD\_MAT_{t-j}$ x $NEW\_REG_{t-j}$** | | | | **-0.118** | **0.171** | **0.079** |
| | | | | **(0.245)** | **(0.244)** | **(0.377)** |
| **$UNAUD\_IMMAT_{t-j}$ x $NEW\_REG_{t-j}$** | | | | **0.133** | **0.661**** | **0.922***** |
| | | | | **(0.272)** | **(0.285)** | **(0.269)** |
| Controls | YES | YES | YES | YES | YES | YES |
| YEAR FE | YES | YES | YES | YES | YES | YES |
| INDUSTRY FE | YES | YES | YES | YES | YES | YES |
| Unique GUOs | 1,404 | 1,404 | 1,228 | 1,404 | 1,404 | 1,228 |
| Observations | 7,909 | 7,909 | 6,542 | 7,909 | 7,909 | 6,542 |
| Pseudo R2 | 0.4191 | 0.4219 | 0.4481 | 0.4197 | 0.4235 | 0.4541 |

Robust standard errors (clustered by group) in parentheses

*** p<0.01, ** p<0.05, * p<0.1

**Table 8: Effects of the new regulation - Restatements and unaudited subsidiaries**

*Model 5: $Pr(REST=1)_{it} = \beta_0 + \beta_x X_{it} + \beta_z NEW\_REG_{it} + \beta_w X_{it} x\ NEW\_REG_{it} + \sum \beta_y Controls_{it} + \sum \beta_k$ Fixed effects (Year and Industry) + $\varepsilon_{it}$*

| | *X=UNAUD* | *X=UNAUD_MAT and UNAUD_IMMAT* |
|---|---|---|
| **UNAUD** | **0.093** | |
| | **(0.081)** | |
| **UNAUD_MAT** | | **0.119**** |
| | | **(0.053)** |
| **UNAUD_IMMAT** | | **0.070** |
| | | **(0.075)** |
| NEW_REG | 0.406*** | 0.443*** |
| | (0.094) | (0.100) |
| **UNAUD x NEW_REG** | **0.201*** | |
| | **(0.110)** | |
| **UNAUD_MAT x NEW_REG** | | **0.185**** |
| | | **(0.085)** |
| **UNAUD_IMMAT x NEW_REG** | | **0.003** |
| | | **(0.103)** |
| Controls | YES | YES |
| YEAR FE | YES | YES |
| INDUSTRY FE | YES | YES |
| Unique GUOs | 1,404 | 1,404 |
| Observations | 7,911 | 7,911 |
| Pseudo R2 | 0.0762 | 0,0776 |

Robust standard errors (clustered by group) in parentheses

*** p<0.01, ** p<0.05, * p<0.1

## Table 9: Next-year percentage of unaudited subsidiaries and change in audit risk

*Model 6: $PERC\_UNAUD_{i,t+1} = \beta_0 + \beta_1 X_{it} + \sum \beta_y Controls_{it} + \sum \beta_k Fixed\ effects\ (Group\ and\ Year) + \varepsilon_{it}$*

| | (1)<br>X = A_ChRisk | (2)<br>X = B_Ex_ChRisk |
|---|---|---|
| **X** | **-0.004** | **-0.023**** |
| | **(0.010)** | **(0.012)** |
| Ch_PERC_UNAUD | 0.146*** | 0.151*** |
| | (0.019) | (0.021) |
| SIZE | -0.012 | -0.012 |
| | (0.008) | (0.009) |
| ROA | -0.003 | 0.003 |
| | (0.018) | (0.020) |
| QUICK | 0.004** | 0.003* |
| | (0.002) | (0.002) |
| LEV | -0.016 | -0.006 |
| | (0.021) | (0.025) |
| PBANK | 0.004 | 0.005 |
| | (0.009) | (0.010) |
| LOSS | -0.006 | -0.005 |
| | (0.007) | (0.008) |
| NEG_EQ | 0.005 | -0.009 |
| | (0.022) | (0.026) |
| INV | -0.012 | -0.025 |
| | (0.082) | (0.080) |
| REC | 0.027 | 0.005 |
| | (0.055) | (0.056) |
| LN_SUB | 0.044*** | 0.058*** |
| | (0.012) | (0.014) |
| LN_SEGMENTS | -0.042*** | -0.052*** |
| | (0.012) | (0.014) |
| AV_SIZE_SUBS | -0.080*** | -0.078** |
| | (0.030) | (0.034) |
| DIFF_AUD_B | -0.060* | -0.027 |
| | (0.032) | (0.034) |
| FOR_SUB | 0.054 | 0.099 |
| | (0.057) | (0.069) |
| FIN_REG_SUB | -0.028 | -0.085 |
| | (0.052) | (0.054) |
| SWITCH | -0.002 | 0.003 |
| | (0.008) | (0.008) |
| LN_FEES | -0.008 | -0.013** |
| | (0.006) | (0.006) |
| BIG4 | 0.013 | 0.023 |
| | (0.014) | (0.015) |
| AUD_SPEC | -0.002 | -0.005 |
| | (0.007) | (0.007) |
| COVERAGE | 0.162*** | 0.154*** |
| | (0.031) | (0.034) |
| Constant | 0.542*** | 0.539*** |
| | (0.156) | (0.171) |
| YEAR FE | YES | YES |
| GROUP FE | YES | YES |
| Unique GUOs | 1,257 | 1,087 |
| Observations | 6,730 | 5,541 |
| Adjusted R-square | 0.1991 | 0.1944 |

Robust standard errors (clustered by group) in parentheses
*** p<0.01, ** p<0.05, *
p<0.1

**Table 10: Subsidiaries' misstatement activity**

| ***Panel A: absAWCA difference between unaudited and audited subsidiaries*** | | | |
|---|---|---|---|
| | NoAud==1 | NoAud==0 | Difference |
| **Mean** | 0.5210 | 0.3073 | **0.2137*** ** |
| **n** | 12,401 | 22,378 | |
| ***Panel B: absAWCA over the group difference between unaudited and audited subsidiaries*** | | | |
| | NoAud==1 | NoAud==0 | Difference |
| **Mean** | 0.0125 | 0.0287 | **-0.0162*** ** |
| **n** | 12,401 | 22,378 | |
| ***Panel C: pairwise correlation subsidiaries and group absAWCA*** | | | |
| | GroupAbsAWCA | AbsSumAWCA_Unaud | AbsSumAWCA_Aud |
| Group absAWCA | 1 | | |
| AbsSumAWCA_Unaud | 0.2281*** | 1 | |
| AbsSumAWCA_Aud | 0.1571*** | -0.0473*** | 1 |

**Table 11: Subsidiary AWCA analysis**

*Model 7: $AbsAWCA_{it} = \beta_0 + \beta_1 NoAud_{it} + \sum \beta_y Controls_{it} + \sum \beta_k$ Fixed effects (Year and Group or Year, Industry and Group Auditor) + $\varepsilon_{it}$*

| | *absAWCA* | *absAWCA* |
|---|---|---|
| **NoAud** | **0.018** | **0.031**** |
| | **(0.017)** | **(0.015)** |
| subSIZE | 0.199*** | 0.190*** |
| | (0.052) | (0.052) |
| subROA | 0.102*** | 0.099*** |
| | (0.018) | (0.016) |
| subLEV | -0.038*** | -0.032*** |
| | (0.005) | (0.004) |
| subGROWTH | 0.328*** | 0.328*** |
| | (0.013) | (0.013) |
| subCFO | -0.299*** | -0.294*** |
| | (0.036) | (0.036) |
| subLOSS | 0.006 | 0.001 |
| | (0.012) | (0.012) |
| FOR_SUB_dummy | -0.003 | 0.013 |
| | (0.017) | (0.014) |
| FIN_REG_SUB_dummy | 0.037 | 0.021 |
| | (0.051) | (0.024) |
| SUB_HAVEN_dummy | -0.062* | -0.064** |
| | (0.032) | (0.033) |
| GroupAbsAWCA | 0.138 | 0.119 |
| | (0.089) | (0.076) |
| Constant | 0.531*** | 1.094 |
| | (0.076) | (1.014) |
| GROUP FE | YES | NO |
| YEAR FE | YES | YES |
| INDUSTRY FE | NO | YES |
| GROUP AUDITOR FE | NO | YES |
| Unique ID | 8,025 | 8,025 |
| Observations | 26,387 | 26,387 |
| Adj R2 | 0.4591 | 0.4617 |

Robust standard errors (clustered by subsidiary) in parentheses

*** p<0.01, ** p<0.05, * p<0.1

**Table 12: Group AWCA contribution analysis**

*Model 8: $GroupAbsAWCA_{it} = \beta_0 + \beta_1 X_{it} + \sum \beta_y Controls_{it} + \sum \beta_k$ Fixed effects (Year and Group or Year, Industry and Group Auditor) + $\varepsilon_{it}$*

| | (1) | (2) |
|---|---|---|
| **AbsSumAWCA_Unaud** | **0.109*** ** | **0.112*** ** |
| | **(0.034)** | **(0.034)** |
| **AbsSumAWCA_Aud** | **0.032** ** | **0.036*** ** |
| | **(0.014)** | **(0.012)** |
| SIZE | -0.023*** | -0.011*** |
| | (0.008) | (0.004) |
| ROA | 0.053 | 0.044 |
| | (0.038) | (0.030) |
| LEV | -0.006 | 0.057*** |
| | (0.017) | (0.015) |
| GROWTH | 0.072*** | 0.071*** |
| | (0.009) | (0.008) |
| CFO | -0.114*** | -0.143*** |
| | (0.032) | (0.030) |
| LOSS | 0.009 | 0.002 |
| | (0.007) | (0.006) |
| LN_SUB | -0.001 | -0.006 |
| | (0.008) | (0.005) |
| LN_SEGMENTS | -0.001 | -0.005 |
| | (0.009) | (0.007) |
| FOR_SUB | 0.065 | 0.041 |
| | (0.066) | (0.046) |
| FIN_REG_SUB | -0.035 | -0.045 |
| | (0.049) | (0.031) |
| BIG4 | 0.001 | -0.664*** |
| | (0.007) | (0.043) |
| AUD_SPEC | -0.006* | -0.005 |
| | (0.004) | (0.003) |
| SWITCH | 0.004 | 0.005 |
| | (0.007) | (0.007) |
| LN_FEES | 0.008 | 0.008 |
| | (0.006) | (0.005) |
| COVERAGE | 0.037 | 0.018 |
| | (0.023) | (0.016) |
| Constant | 0.449*** | 0.888*** |
| | (0.131) | (0.070) |
| YEAR FE | YES | NO |
| GROUP FE | YES | YES |
| INDUSTRY FE | NO | YES |
| GROUP AUDITOR FE | NO | YES |
| Unique GUOs | 1,115 | 1,115 |
| Observations | 4,411 | 4,411 |
| Adj R2 | 0.2780 | 0.3146 |

Robust standard errors (clustered by group) in parentheses

*** p<0.01, ** p<0.05, * p<0.1

**Table 13: Subsidiary-level choice of audit**

*Model 9:* $Pr(NoAud=1)_{i,t+1} = \beta_0 + \sum \beta_x X\_Sub_{it} + \sum \beta_y X\_Group_{it} + \sum \beta_j X\_Sub_{it} \times BIG4_{it} + \sum \beta_k X\_Group_{it} \times BIG4_{it} + \sum \beta_z$ *Fixed effects (Year and Industry)* $+ \varepsilon_{it}$

| | *(1)* | *(2)* |
|---|---|---|
| subSIZE | -0.567*** | -0.485*** |
| | (0.022) | (0.028) |
| subRelSIZE | -0.172 | -0.182 |
| | (0.208) | (0.246) |
| subROA | 0.270*** | 0.339*** |
| | (0.072) | (0.085) |
| subLEV | -0.159*** | -0.101** |
| | (0.038) | (0.047) |
| subGROWTH | -0.008 | 0.005 |
| | (0.018) | (0.024) |
| subCFO | -0.148*** | -0.185*** |
| | (0.035) | (0.043) |
| subLOSS | 0.189*** | 0.266*** |
| | (0.044) | (0.059) |
| subINV | -1.028*** | -1.041*** |
| | (0.208) | (0.270) |
| subREC | -0.241** | -0.117 |
| | (0.098) | (0.132) |
| absAWCA | 0.031 | 0.008 |
| | (0.045) | (0.058) |
| absAWCAtoGroup | -0.233 | -0.132 |
| | (0.444) | (0.486) |
| FOR_SUB_dummy | 0.532*** | 0.503*** |
| | (0.056) | (0.088) |
| FIN_REG_SUB_dummy | -0.402*** | -0.394** |
| | (0.115) | (0.155) |
| subSameInd | -0.045 | -0.015 |
| | (0.050) | (0.066) |
| SUB_HAVEN_dummy | -1.416*** | -0.988*** |
| | (0.190) | (0.264) |
| SIZE | 0.071** | 0.080* |
| | (0.028) | (0.041) |
| LN_SUB | 0.150*** | 0.290*** |
| | (0.042) | (0.061) |
| LN_SEGMENTS | -0.221*** | -0.286*** |
| | (0.052) | (0.069) |
| GroupAbsAWCA | -0.325** | -0.219 |
| | (0.160) | (0.171) |
| LN_FEES | -0.087** | -0.119** |
| | (0.034) | (0.050) |
| M_OP | -0.271* | -0.106 |
| | (0.143) | (0.175) |
| BIG4 | 0.183*** | 5.479*** |
| | (0.048) | (0.878) |
| BIG4 x subSIZE | | **-0.226*** ** |
| | | **(0.041)** |
| BIG4 x subRelSIZE | | 0.576 |
| | | (0.408) |
| BIG4 x subROA | | -0.186 |
| | | (0.133) |

| | | |
|---|---|---|
| BIG4 x subLEV | | -0.123 |
| | | (0.075) |
| BIG4 x subGROWTH | | -0.027 |
| | | (0.033) |
| BIG4 x subCFO | | 0.062 |
| | | (0.069) |
| BIG4 x subLOSS | | **-0.174*** |
| | | **(0.090)** |
| BIG4 x subINV | | -0.103 |
| | | (0.382) |
| BIG4 x subREC | | -0.245 |
| | | (0.192) |
| BIG4 x absAWCA | | 0.053 |
| | | (0.075) |
| BIG4 x absAWCAtoGroup | | -0.193 |
| | | (0.892) |
| BIG4 x FOR_SUB_dummy | | 0.059 |
| | | (0.112) |
| BIG4 x FIN_REG_SUB_dummy | | 0.048 |
| | | (0.155) |
| BIG4 x subSameInd | | -0.013 |
| | | (0.092) |
| BIG4 x SUB_HAVEN_dummy | | **-1.091*** ** |
| | | **(0.405)** |
| BIG4 x SIZE | | -0.081 |
| | | (0.055) |
| BIG4 x LN_SUB | | **-0.208** ** |
| | | **(0.085)** |
| BIG4 x LN_SEGMENTS | | 0.108 |
| | | (0.101) |
| BIG4 x GroupAbsAWCA | | -0.199 |
| | | (0.363) |
| BIG4 x LN_FEES | | 0.071 |
| | | (0.066) |
| BIG4 x M_OP | | **-0.523*** |
| | | **(0.269)** |
| Constant | 7.480*** | 5.803*** |
| | (0.438) | (0.558) |
| YEAR FE | YES | YES |
| INDUSTRY FE | YES | YES |
| Unique ID | 5,925 | 5,925 |
| Observations | 19,036 | 19,036 |
| Pseudo R2 | 0.4369 | 0.4509 |

Robust standard errors (clustered by subsidiary) in parentheses

*** p<0.01, ** p<0.05, * p<0.1

# APPENDIX

**A1. Variables Description**

| Variables | Description |
|---|---|
| M_OP | Indicator variable equal to 1 if the group receives a modified opinion in the year and zero otherwise (Source: Compustat and Orbis BvD); |
| REST | Indicator variable equal to 1 if the group have restated accounting numbers at time "t" in future periods and zero otherwise (Source: Datastream); |
| UNAUD | Decile rank of the percentage of unaudited subsidiaries in a group, rescaled from zero to one (Source: Orbis BvD); |
| UNAUD_MAT | Decile rank of the percentage of unaudited material subsidiaries in a group, rescaled from zero to one. Material subsidiaries are subsidiaries whose total assets are equal or exceed five percent of group's profit before taxes (Source: Orbis BvD); |
| UNAUD_IMMAT | Decile rank of the percentage of unaudited immaterial subsidiaries in a group, rescaled from zero to one. Immaterial subsidiaries are subsidiaries whose total assets are below five percent of group's profit before taxes (Source: Orbis BvD); |
| DIFF_AUD | Decile rank of the percentage of subsidiaries audited by an external auditor different from the group auditor, rescaled from zero to one (Source: Orbis BvD); |
| SIZE | Natural log of group total assets (Source: Orbis BvD); |
| ROA | Group operating income before interest and taxes scaled by average group total assets (Source: Orbis BvD); |
| QUICK | Group cash and cash equivalents on group current liabilities (Source: Orbis BvD); |
| LEV | Group total liabilities on group total assets (Source: Orbis BvD); |
| GROWTH | Percentage change in group operating revenues (Source: Obris BvD); |
| CFO | Group Cash Flow from Operations calculated using the balance-sheet approach (Dechow et al., 1995; Burgstahler et al., 2006), where group $CFO_{it}$= Operating $income_{it} - TA_{it.}$ $TA_{it} = (\Delta CA_{it} - \Delta Cash_{it}) - (\Delta CL_{it} - \Delta D_{it}) - Dep_{it}$. CFO are then divided by lagged group total assets. (Source: Orbis BvD); |
| PBANK | Indicator variable equal to 1 if the Zmijewski (1984) score is > 0.5 and zero otherwise. Zmijewski probability of bankruptcy (score) calculated as: -4.336-4.513*(Group net income/Group total assets) + 5.679*(Group total liabilities/Group total assets) + 0.004*(Group current assets/Group current liabilities). Source: Orbis BvD; |
| LOSS | Indicator variable equal to 1 if the Group reports a loss in the year and 0 otherwise (Source: Orbis BvD); |
| NEG_EQ | Indicator variable equal to 1 if Group shareholders' equity < 0 and zero otherwise (Source: Orbis BvD); |
| INV | Group total amount of inventories scaled by group total assets (Source: Orbis BvD); |
| REC | Group total amount of receivables scaled by group total assets (Source: Orbis BvD); |
| LN_SUB | Natural log of the number of subsidiaries owned with more than 50.01 percent of voting rights (Source: Orbis BvD); |
| LN_SEGMENTS | Natural log of the number of subsidiaries' different 4-digit SIC Codes in a group (Source: Orbis BvD); |
| FOR_SUB | Percentage of foreign subsidiaries (Source: Orbis BvD); |
| FIN_REG_SUB | Percentage of subsidiaries in financial (4-digit SIC codes: 6000-6999) and regulated (4-digit SIC codes: 4000-4499 and 4800-4999) industries. (Source: Orbis BvD); |

| | |
|---|---|
| BIG4 | Indicator variable equal to 1 if the group is audited by BIG 4 audit firm (Ernst & Young, Deloitte, PwC or KPMG) and zero otherwise (Source: Orbis BvD and Compustat); |
| AUD_SPEC | Indicator variable equal to 1 if the group is audited by an industry specialist and 0 otherwise. An auditor is considered as an industry specialist if it earns the highest fees relative to the total fees paid in a particular year in the specific industry of the client group (Source: Compustat); |
| SWITCH | Indicator variable equal to 1 if there is a change of the group auditor in that year and 0 otherwise (Source: Orbis BvD and Compustat); |
| LN_FEES | Natural log of Group audit fees (Source: Compustat); |
| COVERAGE | Percentage of covered subsidiaries over the total number of majority-owned subsidiaries (Source: Orbis BvD); |
| NEW_REG | Indicator variable equal to 1 if the observation is in the post regulatory change period and zero otherwise; |
| PERC_UNAUD | Percentage of unaudited subsidiaries in a group (Source: Orbis BvD); |
| Ch_PERC_UNAUD | Change in the percentage of unaudited subsidiaries in a group; |
| AV_SIZE_SUBS | Within group and year average of the ratio of covered subsidaires' assets to Group total assets (Source: Orbis BvD); |
| A_ChRisk | Short-term change in the issuance of Modified Opinions (1-year period) - See Appendix A4; |
| B_ChRisk | Long-term change in the issuance of Modified Opinions (2-years period) - See Appendix A4; |
| TENURE | Number of years in which the group auditor has audited the group (Source: Orbis BvD); |
| GroupAbsAWCA | Absolute value of group AWCA, calculated using the DeFond and Park (2001) formula, scaled by lagged group total assets. $GroupAWCA_{it} = WC_{it} – (WC_{i,t-1} / REV_{i,t-1}) \times REV_{it}$ where $WC_{it}$ is the group working capital, calculated as group (current assets - cash and short-term investments) – (current liabilities – short-term debt) and $REV_{it}$ represents group sales (Source: Orbis BvD); |
| **Subsidiary level** | |
| NoAud | Indicator variable equal 1 if the subsidiary is unaudited and zero otherwise (Source: Orbis BvD); |
| absAWCA | Absolute value of subsidiary AWCA, calculated using the DeFond and Park (2001) formula, scaled by lagged subsidiary Total Assets. $subsidiary\ AWCA_{it} = subWC_{it} – (subWC_{i,t-1} / subREV_{i,t-1}) \times subREV_{it}$ where $subWC_{it}$ is the subsidiary working capital, calculated as subsidiary (current assets - cash and short-term investments) – (current liabilities – short-term debt) and $subREV_{it}$ represents subsidiary sales (Source: Orbis_ BvD); |
| absAWCAtoGroup | Absolute value of subsidiary AWCA, calculated using the DeFond and Park (2001) formula, scaled by lagged group total assets (Source: Orbis_ BvD); |
| AbsSumAWCA_Unaud | Absolute value of the sum of unaudited subsidiaries' AWCA scaled by group total assets (Source: Orbis BvD); |
| AbsSumAWCA_Aud | Absolute value of the sum of audited subsidiaries' AWCA scaled by group total assets (Source: Orbis BvD); |
| subSIZE | Natural log of subsidiary total assets (Source: Orbis BvD); |
| subrelSIZE | Subsidiary total assets divided by group total assets (Source: Orbis BvD); |
| subROA | Subsidiary operating income before interest and taxes scaled by average subsidiary total assets (Source: Orbis BvD); |
| subLEV | Subsidiary total liabilities on subsidiary total assets (Source: Orbis BvD); |
| subGROWTH | Percentage change in subsidiary operating revenues (Source: Obris BvD); |
| subCFO | Subsidiary Cash Flow from Operations calculated using the balance-sheet approach (Dechow et al., 1995; Burgstahler et al., 2006), where subsidiary $CFO_{it}$= Operating $income_{it} – TA_{it.}$ $TA_{it} = (\Delta CA_{it} - \Delta Cash_{it}) – (\Delta CL_{it} - \Delta D_{it}) - Dep_{it}$. CFO are then divided by lagged subsidiary total assets (Source: Orbis BvD); |

| | |
|---|---|
| subLOSS | Indicator variable equal to 1 if the subsidiary reports a loss in the year and 0 otherwise (Source: Orbis BvD); |
| subINV | Subsidiary total amount of inventories scaled by subsidiary total assets (Source: Orbis BvD); |
| subREC | Subsidiary total amount of receivables scaled by subsidiary total assets (Source: Orbis BvD); |
| FOR_SUB_dummy | Indicator variable equal to 1 if the subsidiary is not located in UK and 0 otherwise (Source: Orbis BvD); |
| FIN_REG_SUB_dummy | Indicator variable equal to 1 if the subsidiaries is in a financial (4-digit SIC codes: 6000-6999) or regulated (4-digit SIC codes: 4000-4499 and 4800-4999) industry and 0 otherwise (Source: Orbis BvD); |
| subSameInd | Indicator variable equal to 1 if the subsidiary is in the same 2-digit SIC Code of the parent company and 0 otherwise (Source: Orbis BvD); |
| SUB_HAVEN_dummy | Indicator variable equal to 1 if the subsidiary is located in a tax-haven country based on Dyreng and Linsay (2009) tax haven list and 0 otherwise (Source: Orbis BvD). |

**Table A2. Year and industry composition**

| Year | N | % | Industry (FF12) | N | % |
|---|---|---|---|---|---|
| 2008 | 774 | 10% | 1) Consumer Nondurables) | 668 | 8% |
| 2009 | 757 | 10% | 2 (Consumer Durables) | 175 | 2% |
| 2010 | 725 | 9% | 3 (Manufacturing) | 753 | 9% |
| 2011 | 783 | 10% | 4 (Energy) | 417 | 5% |
| 2012 | 864 | 11% | 5 (Chemicals) | 220 | 3% |
| 2013 | 859 | 11% | 6 (Business Equip) | 1,284 | 16% |
| 2014 | 851 | 11% | 7 (Telephone) | 357 | 5% |
| 2015 | 848 | 11% | 8 (Utilities) | 125 | 2% |
| 2016 | 847 | 11% | 9 (Shops) | 860 | 11% |
| 2017 | 603 | 8% | 10 (Healthcare) | 517 | 7% |
| - | - | - | 12 (Others) | 2,535 | 32% |
| | 7,911 | 100% | | 7,911 | 100% |

**A3.1 - Data availability shrink**

| | (A) Observations without Auditor Info | (B) Of which without info on Total Assets and Sales | B/A | % Change in B/A |
|---|---|---|---|---|
| 2007 | 19,945 | 10,565 | 53% | - |
| 2008 | 20,527 | 10,840 | 53% | 0% |
| 2009 | 22,525 | 12,825 | 57% | 8% |
| 2010 | 20,617 | 11,324 | 55% | -4% |
| 2011 | 18,516 | 10,410 | 56% | 2% |
| **2012** | **20,739** | **13,111** | **63%** | **12%** |
| 2013 | 21,197 | 13,606 | 64% | 2% |
| 2014 | 21,279 | 14,180 | 67% | 4% |
| 2015 | 25,181 | 18,163 | 72% | 8% |
| 2016 | 24,831 | 18,588 | 75% | 4% |
| 2017 | 27,475 | 23,335 | 85% | 13% |
| | **242,832** | **157,088** | | |

**A3.2 - AUD_TO_UNAUD frequency**

| | N | % |
|---|---|---|
| 2007 | - | - |
| 2008 | 71 | 10% |
| 2009 | 45 | 6% |
| 2010 | 64 | 9% |
| 2011 | 33 | 4% |
| **2012** | **76** | **10%** |
| 2013 | 80 | 11% |
| 2014 | 93 | 13% |
| 2015 | 67 | 9% |
| 2016 | 79 | 11% |
| **2017** | **131** | **18%** |
| | **739** | 100% |

## A4 - Computation of change in audit risk proxies

In this section, I explain the logic behind the computation of the two change-in-risk's proxies used in section 5.1.2. For the **A_ChRisk** proxy, the logic is to look at changes in the issuance of modified opinions in the short-term, i.e. over a 1-year period. The following table shows the possible values of A_ChRisk.

| | t=1 | t=-1 | A_ChRisk |
|---|---|---|---|
| M_OP= | 1 | 0 | 1 |
| | 0 | 1 | -1 |
| | 0 | 0 | 0 |
| | 1 | 1 | 0 |

For the **B_ChRisk** proxy, the logic is to look at "more persistent" changes in the issuance of modified opinions in the long-term, i.e. over a 2-year period, with more persistent changes receiving a higher value compared to short-term changes. The following table shows the possible values of **B_ChRisk**.

| | t=1 | t=-1 | t=-2 | B_ChRisk |
|---|---|---|---|---|
| M_OP= | 1 | 1 | 0 | 1 |
| | 0 | 0 | 1 | -1 |
| | 1 | 1 | 1 | 0 |
| | 0 | 0 | 0 | 0 |
| | 1 | 0 | 0 | 0,5 |
| | 1 | 0 | 1 | 0,5 |
| | 0 | 1 | 0 | -0,5 |
| | 0 | 1 | 1 | -0,5 |

# Does Subsidiary Auditor Misalignment Explain Audit Fee Low-Balling?

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**Abstract**

Prior empirical research finds that reported audit fees in initial engagement years appear to be discounted. This "lowballing" phenomenon has been interpreted as evidence of strategic audit pricing by newly appointed audit firms. We provide a new explanation based on the requirement in many jurisdictions, including the United States, that reported audit fees include the fees paid to the group audit firm for component audits, but not the fees paid to other component auditors. Exploiting the ability to identify private company auditors in Italy, we show that component auditors and group auditors are frequently different, and that reported audit fees are negatively related to component auditor misalignment. We further predict and find that misalignment between group auditors and component auditors increases in the initial group auditor engagement year, and this abnormal misalignment explains the lower reported audit fee in initial engagement years. Our results indicate that component auditor appointment decisions are an important determinant of publicly disclosed group auditor fees.

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# Does Subsidiary Auditor Misalignment Explain Audit Fee Low-Balling?

## 1. Introduction

The finding that audit fees in the first year of a new audit engagement (auditor switch years) are lower than in other years is one of the most robust results in the empirical audit pricing literature (Barua, Lennox, and Raghunandan, 2020). Researchers and regulators often describe this phenomenon as audit fee *low-balling*, and interpret it as evidence of strategic audit pricing behavior by newly appointed audit firms. Barua et al. (2020) are the first to challenge this interpretation, suggesting that the initial discount is attributable to audit fee measurement error due to the sharing in auditor switch years of the group audit work between incoming and predecessor group (or principal) auditors. We propose another, non-mutually exclusive, explanation related to audit fee measurement. In many jurisdictions, including the United States and Italy, reported audit fees include fees earned by the group audit firm for all audit work, including the audit of group subsidiaries. In these jurisdictions, the reported audit fees observed by researchers in archival databases exclude the fees paid to other (component) auditors of group subsidiaries.[1] When component auditor changes are not synchronous with group auditor switches, misalignment between component auditor and group auditor will change over time. We predict and find that reported audit fees depend negatively on auditor misalignment. We also predict and find that higher than normal levels of auditor misalignment in group auditor switch years explains the initial engagement year discount.

Misalignment between group (principal) auditors and auditors of subsidiaries arises for two main reasons. First, group auditors often rely on audit and assurance work performed by other component

[1] In the United States, audit fee disclosure requirements are contained in Schedule14A (SEC). In Italy, disclosure requirements are described in art. 149-duodecies (Regolamento emittenti n.11971/1999), available at https://www.consob.it/documents/46180/ 46181/regemit11971.pdf/174a3693-2650-4d20-9cb1-7c9f2a40cc78).

auditor firms (ISAAB 2020; AICPA, 2011; Hanes, 2013; Carson, Simnett, Thürheimer, and Vanstraelen, 2021; Sunderland and Trompeter, 2017; Choi, Choi, and Kim, 2018; Downey and Bedard, 2019; Burke, Hoitash, and Hoitash, 2020). Second, in some jurisdictions the audit of subsidiaries is not mandatory, or exemptions from mandatory audit may be available based on size or ownership criteria. In these circumstances, some subsidiaries may be excluded from audit with transactions being subject to analytical review during the group audit process, while other subsidiaries are audited by the group auditor or by different audit firms.

Although empirical audit fee models usually include the number of subsidiaries as a determinant of audit fees to capture auditor effort due to complexity (Hay, Knechel, and Wond, 2006), the absence of subsidiary auditor data in many countries prevents researchers from differentiating between subsidiaries audited by the group auditor, those audited by other audit firms and those that are not audited at all. We address this challenge by using hand-collected granular data on the auditors of subsidiaries in Italian groups. We construct proxies for auditor misalignment based on the fraction (or alternatively the asset-weighted average) of subsidiaries that are audited by audit firms different from the group audit firm. We estimate misalignment at the corporate group-year level, finding that misalignment is higher in group auditor rotation years. To obtain richer insights on the dynamics of auditor misalignment and its relation to reported audit fees, we also track subsidiary auditor switches from predecessor group auditor to incoming group auditor, and vice versa.

We study the Italian setting for four main reasons. First, prior research (e.g., Cameran, Francis, Marra, and Pettinicchio, 2015) documents that initial fee discounts in the Italian setting can be substantial. Second, audit fee disclosure regulation for Italy requires companies to report the total audit fees earned by the group auditor for all audit work, including the audits of subsidiaries, but excluding audit fees paid to other (component) audit firms. In this respect Italian audit fee reporting

requirement are very similar to those in the United States, where most of the evidence on the initial year fee discount originates. Third, all companies in Italy, including the private subsidiaries of corporate groups, file publicly available financial statements containing auditor identities; such information is not generally observable to researchers studying the audit market in the United States.[2] Of note, financial statements of private subsidiaries and auditor identities are publicly available also in the UK setting. However, unlike Italy and the US, audit fee disclosure requirements for the UK are opaque and prevent us from clearly separating the fees earned by the group auditor for the audit of the parent and group subsidiaries from the fees earned for other audit and non-audit services. The availability of data on subsidiary auditor identities and the granularity of audit fees disclosure in Italy facilitate estimates of both auditor misalignment and group audit fees dynamics. Fourth, group auditor rotation has been mandatory for Italian public companies since 1975. This increases the number of group auditor switches and hence contributes to statistical power. Mandatory rotation also helps mitigate potential concerns that auditor switches are endogenous and a source of selection bias.

Using a dataset comprising non-financial Italian public companies reported to be global ultimate owners (GUO) of other companies over the period 2007-2017, we use archival data from the Bureau van Dijk Orbis database supplemented by hand-collected data from company filings to identify group and subsidiary audit firms and audit fees. We then estimate the misalignment between subsidiary auditors and group auditors for each corporate group-year. As expected, not all subsidiaries have auditors due to available exemptions from statutory audit. Based on the subsidiaries within each group for which auditors are identifiable, on average only 27% of subsidiaries have an auditor from the same audit firm as the group auditor. However, there is considerable cross-sectional variation in

[2] We could not conduct a similar study for the US because archival data on private subsidiaries is not available, to the best of our knowledge.

the degree of misalignment. We also observe variation in the degree of misalignment around auditor switch years. While incoming group auditors may have audited some subsidiaries in the years prior to being appointed as group auditor, and some subsidiary auditors switch from predecessor group audit firm to the incoming group audit firm in the group auditor switch year, many auditor switches aligning subsidiary auditor and the group auditor occur after the initial group auditor engagement year. Overall auditor misalignment is 2.43% higher in the initial group audit engagement year. The proportion of subsidiaries audited by group auditors on average increases from 25% in the initial year of audit engagements to 28% after 3 years; on an asset-weighted basis the proportion rises from 82% to 87% (from 42% to 46%) when weights are based on total assets of subsidiaries (group total assets).[3]

In audit fee regressions controlling for common determinants employed in the prior literature (see, e.g., Hay et al., 2006), we first find that audit fees are significantly negatively related to subsidiary auditor misalignment. Next, we confirm prior research findings that reported audit fees are, on average, lower by between 9.9% and 12.4% in the initial group auditor engagement year − such evidence has previously been interpreted as low-balling. However, we find that subsidiary auditor misalignment fully explains the initial engagement year audit fee discount. Further analysis exploiting subsidiary-level auditor switch data reveals that the misalignment effect on initial year audit fees is associated with aligned-to-misaligned subsidiaries, i.e., those with previously aligned auditors that do not immediately realign to the incoming group auditor. Our results suggest that when audit fees are reported as the consolidated fees earned by the group auditor, lower audit fees in group auditor switch year result from slower rotation of subsidiary auditors into the group auditor's

[3] Calculated as the sum of total assets of misaligned subsidiaries divided by the sum of total assets of all the covered subsidiaries (divided by consolidated group assets).

portfolio. Additional tests confirm that our results are insensitive to the definition of subsidiary auditor misalignment – using asset-weighted misalignment proxies leads to similar conclusions.

To further corroborate our findings, we use hand-collected subsidiary fee data and show that the initial fee discount is almost fully explained by the fees for audits of initially misaligned subsidiaries that subsequently align to the group auditor. Furthermore, the initial discount becomes insignificant when we adjust reported group audit fees by adding back the audit fees of initially misaligned subsidiaries that subsequently align to the group auditor. Finally, we test for evidence of strategic pricing at the subsidiary level, where component auditors are expected to be less important. We find no evidence that subsidiary audit fees are lower in the initial group audit year; nor are they related to group misalignment dynamics.

Our paper complements Barua et al. (2020) who suggest that measurement bias in initial year audit fees can explain the initial audit fee discount phenomenon. They observe that in the United States predecessor auditors can be involved in reviews of interim group financial statements issued early in the switch year. Hence there is downward bias in reported audit fees of the incoming auditor due, effectively, to fee sharing between the predecessor auditor and the incoming auditor in the switch year. In our setting, auditor switches are normally completed before interim review or audit occurs; hence sharing of group audit and assurance work is expected to be less significant than it could be in the United States. Moreover, reported audit fees in our setting are required to include fees for all group audit work, hence eliminating the potential bias identified by Barua et al. (2020). Studying Italian data therefore offers a clean setting capable of identifying the effects of component auditor misalignment on reported audit fees. While the findings of Barua et al. (2020) suggest the importance of understanding the measurement of reported audit fees studied in audit fee models, our results add to their insights by identifying the allocation of component audit work between predecessor auditor,

incoming auditor and other audit firms as an important additional channel affecting reported group auditor fees and their dynamics.

Our paper also contributes to the broader literature examining the determinants of reported audit fees when they are consolidated for the group auditor across subsidiaries. When observed audit fees are for the group auditor, our results suggest the potential importance of controlling for differences in subsidiary (or other component) auditor misalignment, especially when such differences are expected to be correlated with variables of interest to the researcher. While proxies for audit complexity in audit fee models frequently include the number of subsidiaries in a group, the number of foreign subsidiaries and the number of business segments, our results indicate that significant proportions of subsidiaries are often audited by other audit firms or perhaps are not audited at all. In these circumstances inherent audit risk and group auditor effort could be quite different and have implications for the modelling of audit fees. Carson et al. (2022) are the first to examine the role of component auditors in determining audit fees, using the Australian setting where reported audit fees are the aggregate fees paid to both principal (group) auditor and component auditors.

Our paper has potential implications for interpretation of prior audit pricing studies. As noted by Barua et al. (2020, p.1), regulators including the United States Senate, the House of Representatives and the SEC have frequently criticized alleged low-balling in audit fees. The belief of some regulators that low-balling is a real phenomenon to be discouraged has probably been reinforced by the large body of academic empirical research documenting initial engagement year audit fee discounts, and by research providing theoretical models of low-balling. While our study cannot rule out the existence of strategically-motivated initial audit pricing in individual engagements, it does call into question interpretation of prior research as suggesting that *on average* audit firms strategically discount initial audit fees and then subsequently increases fees in later years of an audit engagement.

Our results also have implications for the regulation of mandated audit fee disclosures. They suggest that aggregate audit fees earned by the group auditor convey limited information and are not comparable over time or across companies. In order to interpret changes and trends in consolidated group auditor fees, and differences in audit fees across companies, financial statement users and researchers must be able to understand the scope of the audit work within a corporate group to which reported fees relate, how it changes over time, and how it compares to other corporate groups. Aggregation of audit fees within corporate groups will be uninformative if there is insufficient transparency concerning the identity of subsidiary auditors and their audit fees. In this respect, our paper demonstrates one advantage of the mandated public disclosure of private company financial statements in some countries.

The remainder of our paper is organized as follows. In the next section 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. Finally, we conclude our paper in Section 6.

## 2. Literature Review and Hypothesis Development

The term low-balling in the audit pricing literature refers to the practice of discounting initial year fees in order to attract new clients and recoup initial losses in subsequent years, leveraging on the costs of switching auditors that are incurred by audit clients. Bidding below cost can be considered as a "competitive weapon utilized by audit firms seeking to achieve market dominance" (Chan, 1999, p. 614). Regulators around the world have expressed concern that setting artificially low audit fees might lead to auditors being more susceptible to management pressure (SEC, 1978; AICPA, 1978; NASBA, 2010, PCAOB, 2011, IESBA, 2018). In order not to lose their initial investment, auditors

might be tempted to accommodate their clients' accounting choices and deliver lower quality audits.[4] A theoretical model predicting low-balling was initially proposed by DeAngelo (1981); numerous empirical studies have subsequently found evidence consistent with initial engagement year discounts. The empirical evidence can be traced back as far as the 1980's (e.g., Simon and Francis, 1988; and Ettredge and Greenberg,1990). In their review of 34 more recent US audit fee studies published between 2011 and 2018, Barua et al. (2020) report estimates of initial year discounts ranging from 0.3 percent (Doogar, Sivadasan, and Solomon, 2015) to 54.8 percent (Numan and Willekens, 2012). Contrary to expectations, the low-balling phenomenon appears to persist even after the enactment of the Sarbanes Oxley Act 2002 mandating greater transparency of fees earned by auditors (Desir, Casterella, and Kokina, 2014; Cho, Kwon and Krishanan, 2021). Low-balling effects have also been detected in a number of international studies. In their meta-analysis of international audit fee studies over the period 1976-2003 Hay et al. (2006) find that 8 out of 23 studies report significant initial year discounts, while another four report positive first year premiums. Of specific relevance to this paper, Cameran et al. (2015) find that fees of incoming auditors in Italy are discounted by approximately 16 percent over the sample period 2006-2009. In contrast, empirical evidence consistent with low-balling in Australia is very limited (Carson, Redmayne & Liao, 2014; Francis, 1984; Butterworth and Houghton, 1995; Ferguson and Scott, 2014).[5] Our analysis can potentially help explain differences across countries in the existence and magnitudes of initial fee discounts, because audit fee reporting requirements are sometimes different.

[4] The PCAOB specifically refers to low-balling practices as a threat to audit quality in its 2011 Concept Release (Desir, Casterella, and Kokina, 2014).

[5] The focus of Ferguson and Scott (2014) is not specifically on low-balling, but they control for auditor switches and find that the coefficient on a switch indicator is insignificant in all specifications, suggesting no evidence of low-balling. A limited number of studies find evidence of initial year fee discount in Australia, but only for the subsample of auditor switches from non-Big to Big audit firms (Craswell and Francis, 1999; Carson, Simnett, Soo, and Wright, 2012).

Barua et al. (2020) challenge the interpretation of initial engagement year discounts as evidence of intentional strategic audit pricing aimed at winning new clients. They report empirical evidence suggesting that the initial year discount can arise from audit fee measurement bias. Barua et al. (2020) indicate that audit fee disclosure requirements in different settings (the U.S. included) extend only to fees paid to the auditors who issue the final (group audit) opinion. Since auditor changes in the US often occur after the first fiscal quarter, reported audit fees are often lower compared to non-switch years because they exclude the cost of audit and review work conducted by the predecessor group auditor in the early part of the switch year. Barua et al (2020) control for potential bias in audit fees in two ways: by aggregating audit fees paid to both predecessor and incoming auditors where both are available, or by using estimates of audit fee bias as a function of the incoming auditor appointment date. Their results based on a US sample indicate that the initial year discount can be explained by their proposed bias corrections.

Our study complements Barua et al. (2020) in proposing a different, non-mutually exclusive, channel relating initial year audit fees discounts to the measurement of audit fees. However, while Barua et al. (2020) focus on the sharing of audit work for consolidated financial statements between predecessor auditor and incoming auditor, our focus is on variation over the group audit engagement cycle in the sharing of subsidiary audit work between the group audit firm and other audit firms. The group auditor seldom audits every group subsidiary − some subsidiaries are audited by other independent auditors (component auditors) while others are exempt from the audit requirement (Choi et al., 2018).[6] When the audit fee disclosure mandates disclosure of fees paid to the group auditor,

[6] Prior studies on the role of group and other component auditors' dynamics on audit fees are scarce, and provide mixed evidence (Mao, Ettredge, and Stone, 2020). Carson et al. (2021) and Burke et al. (2020) show that audit firms charge higher fees when component auditors are involved in group audits, while Dee, Gunny, and Lulseged (2018) fail to find evidence of component auditors affecting audit fees. Choi et al. (2018) also show that the number of subsidiaries audited by other auditors affects group audit fees, but the effects depend on the accounting standards regime their sample firms are reporting under (pre- or post IFRS adoption).

fees paid to other component auditors are excluded from total audit fees observed by researchers and therefore depend on the distribution of audit work between different audit firms. We expect that total audit effort supplied by the group auditor firm, and hence reported total group auditor fees, will increase when the amount of subsidiary audit work performed by the group audit firm increases. In our empirical tests we focus on estimated *misalignment* between subsidiary auditors and the group auditor, defining misaligned auditors as the fraction of subsidiary audit firms that are unaffiliated with the group audit firm. Accordingly, we state our first hypothesis as follows:

H1: Group audit fees are negatively related to subsidiary auditor misalignment.

The group audit firm's role in the audit of subsidiaries can change over the course of an audit engagement as new subsidiaries are added to or dropped from the group auditor's portfolio. Consistent with H1 we expect such changes to be reflected in reported group auditor fees. However, we predict that in group auditor rotation years, the role of subsidiary auditor misalignment will be especially important. Assume that group auditors and company management agree on a "normal" level of alignment between subsidiary auditors and group auditor.[7] If subsidiary auditor assignments before group auditor rotation are at this normal level, misalignment will inevitably increase unless all subsidiaries audited in the pre-switch year by the predecessor group auditor simultaneously switch to the incoming group auditor in the initial group audit engagement year. In practice we expect subsidiary auditor switches to occur more gradually. In some cases, subsidiaries might be audited by the incoming group audit firm in the years before the group auditor switch, leading to higher total audit fees for the incoming group auditor than the predecessor auditor after the switch. More likely, other subsidiaries will change their auditor to the incoming group audit firm in the years following

[7] Modelling the optimal or efficient level of group auditor involvement in subsidiary audits is an interesting research question, but beyond the scope of this paper. In our empirical analysis, any cross-sectional variation in the optimal level of auditor misalignment will be captured by firm fixed effects.

the group auditor switch. When they are audited by the predecessor group, such auditor dynamics will show up as an initial fee discount and increases in reported audit fees in later years. Accordingly, we state our second hypothesis as follows:

H2: Group auditor fees are lower in the initial engagement year due to abnormally high subsidiary auditor misalignment.

In summary, when reported audit fees consolidate fees received by the group auditor for all audit work performed within a group, we predict that the level of misalignment of subsidiary audit work between the group auditor and other audit firms will be an important determinant of reported group auditor fees (H1); and when subsidiaries are slow to switch to the incoming group auditor, group auditor fees will appear to be discounted in the initial year due to higher than normal auditor misalignment.

## 3. Institutional Background

We test our predictions using data for Italian public companies. Prior research has documented substantial initial year fee discounts of up to 16 percent for Italian companies (Cameran et al., 2015). We exploit the requirement for private companies to file financial statements in the Italian Business Register (Codice Civile, art. 2435), allowing us to identify group subsidiaries, the extent of misalignment between subsidiary auditors and the group auditor, and the audit fees paid by subsidiaries. The relative transparency of Italian private companies contrasts with the US where private company financial statements and auditor identities are largely unavailable, and hence auditor misalignment would be difficult, if not impossible, to estimate.

Audit fee disclosure requirements in Italy are similar to the United States, from where a majority of the evidence on the initial year audit fee discount originates.[8] They require Italian companies to report the total audit fees earned by the group auditor and its affiliates for all audit work, including subsidiary audits (Regolamento emittenti n.11971/1999, art. 149-duodecies, Par. 2). However, total audit fees exclude the fees paid to other audit firms for work on subsidiary or component audits. Important for our study is the requirement for Italian companies to disclose the total audit fees paid to *both* the predecessor and incoming auditors for group audit work when the group auditor changes during the year (Regolamento emittenti n.11971/1999, art. 149-duodecies, Par. 1).[9] This requirement, together with the normal practice of appointing incoming auditors at the beginning of the year and well before interim reporting dates, suggests the audit fee measurement bias identified by Barua et al. (2020) should be unimportant in the Italian setting, allowing us to focus on intra-group auditor misalignment effects.

Auditor misalignment arises because companies can appoint component auditors different from the group auditor, and because some subsidiaries need not be audited because of size-based audit exemptions.[10] Misalignment will vary cross-sectionally when group auditors are responsible for different proportions of subsidiary audit work. Misalignment will vary over time if group auditor

[8] In the United States, under Schedule14A the SEC clarifies that only the fees paid to the group auditor and its network need to be disclosed. See https://www.sec.gov/info/accountants/audindep/audinfaq.htm.

[9] Italy also requires relatively detailed disclosures that are helpful to researchers and might not be available in other countries. For example, in the UK fees paid to the group auditor and its network for the audit of subsidiaries are not clearly separable from fees paid for other services such as tax, internal audit, and some non-audit services allowed by the regulation (see, Question 19 and Question 23 in https://www.icaew.com/-/media/corporate/files/technical/technical-releases/financial-reporting/tech14-13frf-disclosure-of-auditor-remuneration-updated.ashx).

[10] Until 2016, subsidiaries exemptions were based on relative to the group's size criteria (Consob, regolamento emittenti n.11971, 1999 and subsequent modifications, art. 151, co.1). Specifically, a subsidiary could have been exempted if its assets were less than 2% of group assets, and its revenues were less than 5% of group revenues and, the sum of assets and revenues of exempted subsidiaries were less than 10% and 15% of group assets and revenues, respectively. With the introduction of regulation D.lgs. 17 luglio 2016, n.135, audit exemption rules now follow the Italian Codice Civile art. 2435-bis, which eliminates the role of relative size. The law allows limited liability partnerships and cooperative companies (and subsidiaries with these legal forms) to be exempted if, for at least 2 consecutive years, the following criteria are met: total assets less than 4.4 million euros, revenues less than 8.8 million euros; employees less than 50. See https://www.revisionelegale.mef.gov.it/opencms/export/mef/resources/PDF/Decreto_135_17072016_GU16916.pdf).

switches are not perfectly synchronized with subsidiary auditor switches. Our analysis below confirms that there is significant cross-sectional and time series variation in auditor misalignment in Italian corporate groups. Our research design benefits from the Italian institutional setting because audit firm rotation has been mandatory since 1975, increasing the number of group auditor switches and hence contributing to statistical power. Mandatory audit firm rotation also helps mitigate potential concerns that auditor switches are endogenous.[11]

## 4. Research design and data

### *4.1 Group Auditor Switches and Auditor Misalignment*

To test our predictions, we estimate different empirical specifications based on Equation (1):

$$LN_{AF\,it} = \beta_0 + \beta_1 SWITCH_{it} + \beta_2 MISALIGNMENT_{it} + \beta_3 SWITCH\ x\ MISALIGNMENT_{it} + \sum \beta_j Controls_{it} + \sum \beta_k FIXED\ EFFECTS + \varepsilon_{it} \quad (1)$$

where *LN_AF* is the natural logarithm of group audit fee. Our test variables of interest are as follows. *SWITCH* is an indicator variable with the value of one in the initial year of a group auditor's engagement, and zero otherwise; and *MISALIGNMENT* is a measure of the misalignment between subsidiary auditors and the group auditor detailed below. When we estimate equation (1) we include fixed effects for year and group (i.e., audit client company) or industry, and we cluster standard errors by group.

If the estimated value of the coefficient on *SWITCH* ($\beta_1$) is negative after excluding *MISALIGNMENT* and *SWITCH x MISALIGNMENT* from estimates of equation (1) then an initial year audit fee discount is present in our sample. When we include *MISALIGNMENT* and *SWITCH x*

[11] There are few voluntary audit firm rotations in our sample.

*MISALIGNMENT*, we test whether the initial year discount is explained by *MISALIGNMENT*, allowing for different auditor misalignment effects in the initial engagement year. Different misalignment effects in the initial year can arise if subsidiary auditor switches occur more slowly for subsidiaries requiring high levels of audit effort, perhaps to facilitate learning by the incoming group auditor from the predecessor group audit firm. If misalignment is associated with lower group audit fees, i.e., H1 holds, we expect the coefficient on *MISALIGNMENT* ($\beta_2$) to be negative and statistically significant. If auditor misalignment accounts for the initial year discount, i.e., H2 holds, we expect the coefficient on *SWITCH* ($\beta_1$) to be insignificant.

We measure misalignment in two ways: *MISALIGN* is computed as the percentage of subsidiaries with a different auditor than the group auditor or that are audit exempt, while *MISALIGN_A* is the sum of total assets of misaligned subsidiaries divided by the sum of all the covered subsidiaries' total assets. As an alternative way of capturing auditor misalignment effects, we also estimate a version of equation (1) by decomposing the main *MISALIGNMENT* variable so as to capture subsidiary auditor misalignment dynamics. For those subsidiaries where we can identify the auditor in adjacent years, we can estimate four components of the change in *MISALIGNMENT*: *ALIGN_TO_ALIGN* is the percentage of subsidiaries whose auditor was aligned with the group (principal) auditor in both year t-1 and year t; *ALIGN_TO_MISALIGN* is the percentage of subsidiaries whose auditor was aligned with the group (principal) auditor in year t-1 and misaligned in year t; *MISALIGN_TO_MISALIGN* is the percentage of subsidiaries whose auditor was misaligned with the group (principal) auditor in both year t-1 and year t; *MISALIGN_TO_ALIGN* is percentage of subsidiaries whose auditor was misaligned with the group (principal) auditor in year t-1 and aligned in year t . We predict that the coefficient on *ALIGN_TO_MISALIGN* will be negative because, all other things equal, reported group auditor fees will lose part of fees earned from previously aligned

subsidiaries. In contrast, the coefficient on *MISALIGN_TO_ALIGN* should be positive, *MISALIGN_TO_MISALIGN* cases should not affect changes in reported audit fees and *ALIGN_TO_ALIGN* cases will also not affect reported audit fees, unless the subsidiary audit fees charged by predecessor and incoming audit firms differ systematically.

In line with the prior literature, we include in equation (1) a comprehensive set of control variables identified as drivers of audit fees (e.g., Hay et al. 2006; Kim, Liu, and Zheng 2012; Carcello and Li 2013; Cameran et al. 2015; DeFond, Lim, and Zang 2016). We control for the tenure of the group auditor, *TENURE*, as prior literature suggests that group audit fees tend to increase with tenure; *SIZE*, *ROA*, and *LEVERAGE* to control for scale, profitability and capital structure; *INV* and *REC* to control for operational risk; *QUICK* to control for liquidity; *N_SUB* and *FOR_SUB* to account for group complexity and associated audit effort; *CFO* and *LAG_LOSS* to account for recent financial performance; *IND_SPEC* to control for auditor industry specialization and an indicator variable *Q_OPINION* set equal to one if the auditor issues a qualified opinion. Our inability to observe all subsidiary auditors in some firms is potential source of noise in our misalignment proxies. To help control for this problem, we also include *COVERAGE*, equal to the proportion of group subsidiaries for which auditors can be identified in a given firm year. Finally, we include year fixed effects and estimate the equation (1) including, alternatively, firm fixed effects or industry fixed effects.[12] Appendix A contains a detailed description of all variables.

*4.2 The timing of subsidiary auditor alignment*

If low-balling is explained by auditor misalignment, we expect that reported group auditor fees

[12] Industry fixed effects are widely used in the literature when modeling audit fees (Cameran et al., 2015). However, we also estimate the model with firm fixed effects as a more conservative approach to address potential omitted factor bias (Lennox, 2014).

will increase during the group auditor engagement if initially misaligned subsidiaries switch to the group auditor (or affiliated audit firms). Hence, we expect the initial fee "discount" to be eliminated over the course of the group auditor engagement. We test these predictions in two ways. First, we test whether there is transitory misalignment in the switch year that reverses in subsequent years over the group auditor engagement period and whether the reversal of misalignment is associated with elimination of the initial year discount. For each corporate group, we examine the time series of total audit fees paid by initially misaligned subsidiaries which later become aligned. We then compare the additional audit fees paid to the group auditor by switching subsidiaries to the initial year auditor fee discount, defined as group audit fees in the switch year divided by average group audit fees in non-switch years. Second, we replace reported audit fees in estimates based on equation (1) by adjusted audit fees, after adding back the fees paid by late aligning subsidiaries to reported audit fees. In this case, we expect the coefficient on *SWITCH* ($\beta_1$) to be insignificant if the audit fees paid by misaligned subsidiaries explain the initial fee discount.[13]

*4.3 Subsidiary auditor switches and initial fee discounts*

To further corroborate the role of auditor misalignment in explaining the initial fee discount, we also test for the presence of an initial fee discount at the subsidiary level when subsidiary audit rotation occurs. Unlike group audit fees reported by the parent company, the reported fees at the subsidiary level should not be affected by group misalignment dynamics because they comprise only fees paid to subsidiary auditors. Therefore, audit rotations at the subsidiary level provide an opportunity to test for strategic audit pricing in the absence of misalignment-related measurement bias. We take advantage of our hand-collected data on the subsample of Italian subsidiaries, for which we have

[13] To avoid double counting, the group fee adjustment is made only in the years in which late aligning subsidiaries are still misaligned.

access to annual reports, and we estimate the following subsidiary-level panel regression (with standard errors clustered at the level of the subsidiary):

$$SUB\_LN_{AF\,it} = \beta_0 + \beta_1 SUB\_SWITCH_{it} + \sum \beta_j SUB\_Controls_{it} + \sum \beta_k FIXED\ EFFECTS(Year\ and\ Firm\ or\ Industry) + \varepsilon_{it} \quad (2)$$

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 subsidiary *i* switches its auditor and 0 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 three dummies: an indicator for subsidiaries that were misaligned and then align with the group auditor (*MISALIGN_TO_ALIGN_SWITCH);* an indicator for subsidiaries that were aligned and switch to misalign with the group auditor (*ALIGN_TO_MISALIGN_SWITCH)*; and an indicator for subsidiaries that were misaligned and remain misaligned after switching (*MISALIGN_TO_MISALIGN_SWITCH).* Hence, the baseline category is subsidiaries that were aligned with the predecessor auditor and that switch and remain aligned with the incoming group auditor. Subsidiary-level control variables are analogous to those used in group level regressions and are described in the Appendix.

*4.4 Sample and Descriptive Statistics*

The sample construction is summarized in 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.[14] Then, we use historical versions of the Orbis database from Bureau Van Dijk to

[14] Representing approximately 70% of total 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.

identify the subset of 187 companies that are at the apex of corporate groups. These companies, defined as corporate Global Ultimate Owners (GUO), are not controlled by other companies. For each firm-year from 2007 to 2017, we identify in Orbis all subsidiaries (foreign and national) owned either directly or indirectly with at least 50.01% of the voting rights. Use of this control criterion is conservative – it defines a set of subsidiaries where control is unambiguous and hence where the subsidiary is relevant to the group auditor. However, it is possible that subsidiaries controlled with less than 50% voting rights are excluded as a consequence. To the extent that we exclude consolidated subsidiaries we add noise to our measures of misalignment and results will be biased against rejecting the null hypotheses.

The primary data we use is from the Orbis database, supplemented by data hand-collected from annual reports. Orbis provides the group structure of each GUO, including the number of subsidiaries within the group and the name and identifiers for each entity. We then collect subsidiary auditor identities and financial statements data. Our initial sample comprises 1,104 parent-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 parent-year observations, covering 2,551 unique subsidiaries and 9,097 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 size, ownership or materiality criteria. Hence, we are unable to achieve a complete mapping of subsidiaries and their auditors for some corporate groups.

[Insert Table 1 around here]

[Insert Table 2 around here]

Table 2 provides descriptive statistics for the variables included in our regression models. The mean group auditor fee disclosed by listed parents is 1.5 million Euros. To provide a sense of the relative importance of parent/group audit fees relative to total reported group auditor fees, the average value of *PARENT_FEE* is 39 percent of total group auditor fees; the average value of *ALIGN_FEE* indicates that the total audit fees from aligned subsidiaries where audit fees are observable is 28 percent of total group auditor fees. Hence on average we can reconcile approximately 67% of total group auditor fees to detailed fee disclosures at the parent/group and subsidiary levels.

Around 16% of companies switch their group auditor during the sample period. Further analysis reveals that most companies switch just once in our sample period and mean auditor tenure is 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 up to the end of the original contractual term).[15] The mean value of *N_SUB* = Ln(#Subsidiaries) is 2.94, implying that on average there are nineteen subsidiaries in a corporate group. *COVERAGE* indicates that on average we can identify auditors for 46 percent of all subsidiaries - the remaining 54 percent are either exempt from audit or have auditors whose identities cannot be traced in our data sources. Of the subsidiaries with identifiable auditors, on average 19 percent have misaligned auditors (*MISALIGN*), with the average asset-weighted misalignment proxy (*MISALIGN_A*) indicating that 16 percent of aggregate total assets in subsidiaries with identifiable auditors are audited by misaligned auditors. This descriptive evidence suggests that audit fees for subsidiaries with misaligned auditors are an economically significant component of total group audit fees and that changes in misalignment could be important in understanding the dynamics of reported group auditor fees.

[15] D.lgs 303/2006, art. 3 (16.d) and art.8.

## 5. Results

### *5.1 Initial fee discounts and subsidiary auditor misalignment*

Table 3 reports the patterns of change in audit fees and subsidiary auditor misalignment arranged in event time around auditor switch dates. On average audit fees fall by 5.78% in group auditor switch years, consistent with prior studies revealing an initial year fee discount. Note that this change does not control for changes in other audit fee determinants, and it is calculated relative to pre-switch year (while low-balling is usually estimated relative to all non-switch years). Table 3 also contains preliminary analysis suggesting that subsidiary auditor misalignment is also changing around group auditor switches. The percentage of subsidiaries where auditors are identifiable and also misaligned reaches a maximum in the auditor switch year (19.41% based on the number of subsidiaries and 18.40% on a total asset-weighted basis). By the second year of audit engagements the proportions of misaligned subsidiaries have fallen to 16.46% and 13.08% respectively. Over the same period audit fees increase significantly, as would be expected if group auditors are engaged in audits of more subsidiaries.

[Insert Table 3 around here]

Table 4 contains the results of our main analysis based on Equation (1). Results are comparable if we include year- and group (i.e., firm) fixed effects (Columns 1, 3 and 5) or if we replace firm fixed effects by industry fixed effects (Columns 2, 4 and 6). The results for the more conservative firm fixed effects design provide reassurance that we are capturing within-firm variation in audit fees as function of within-firm variation in subsidiary auditor misalignment. Furthermore, results do not change whether we use unweighted misalignment percentage (*MISALIGN*) or asset-weighted misalignment (*MISALIGN_A*).

Columns 1 and 2 in Table 4 show results obtained when we estimate equation (1) before controlling for subsidiary auditor misalignment, i.e., excluding the *MISALIGNMENT* and *SWITCH x MISALIGNMENT* terms. This regression specification replicates many studies documenting an initial engagement year fee discount. The coefficient on *SWITCH* is negative (-0.099) and significant ($p < 0.05$), indicating that after controlling for other audit fee determinants audit fees in the initial year are on average close to ten percent lower than the average in other audit engagement years.

[Insert Table 4 around here]

In Columns 3-6 of Table 4 we control for misalignment of subsidiary auditors by introducing the main *MISALIGNMENT* effect together with an interaction term *SWITCH x MISALIGNMENT* (where misalignment is defined either as *MISALIGN* or as *MISALIGN_A*). The interaction term allows the effect of *MISALIGNMENT* on group audit fees to change in auditor switch years. However, it is insignificant in three specifications and only marginally significant at the ten percent level in Column 3, suggesting that the role of auditor misalignment is not specific to auditor switch years. Consistent with hypothesis H1 the coefficient on *MISALIGNMENT* is consistently negative and significant at the 5% level or better while consistent with the prior literature the coefficient on the number of subsidiaries (*N_SUB*) is positive. The coefficient estimate indicates that for a 1% increase in subsidiary auditor misalignment, group audit fees fall by around 0.5%. These results highlight that the level of misalignment between group auditors and subsidiary auditors is potentially important in explaining reported audit fees, even after controlling for other standard audit fee determinants including the number of subsidiaries.

Columns 3-6 also provide evidence in support of our second hypothesis. The initial fee discount, captured by the coefficients on *SWITCH*, are extremely sensitive to controlling for subsidiary auditor misalignment. Consistent with H2 the coefficients on *SWITCH* are all statistically insignificant once

we control for subsidiary auditor misalignment. Taken together, these results confirm our hypothesis and suggest that in the year of group auditor rotation the initial fee discount observed in our sample is explained by differences in the incoming group auditor's portfolio of audit work within the group compared to the predecessor group auditor.

### *5.2 Misalignment changes*

To further corroborate the auditor misalignment channel as an explanation for the initial year discount, we replace the Misalignment terms in estimates of Equation (1) by the components of changes in misalignment. Results are reported in Table 5. As predicted, the coefficient on *ALIGN_TO_MISALIGN* is negative and statistically significant, indicating that reported group auditor fees fall when a subsidiary is no longer included in the group auditor's portfolio of audit work. Additionally, as predicted, the coefficient on *MISALIGN_TO_ALIGN* is positive, but not statistically significant. The coefficient on *SWITCH* is insignificant after including these components of misalignment change, providing further indication that the initial year discount is explained by abnormal auditor misalignment in the initial year.

[Insert Table 5 around here]

### *5.3 Delayed subsidiary alignments*

If low-balling is explained by higher than normal misalignment levels in the switch year, we expect that this initial fee discount is subsequently recouped as previously misaligned subsidiaries start aligning with the group auditor after a parent auditor switch. To provide evidence on the dynamics of misalignment during audit engagements and the links to reported audit fees, we therefore test whether reductions in misalignment in years after auditor switches are associated with additional fees paid to the group auditor in those years, and whether the incremental fees are comparable to

the initial year discount.

Table 6, Panel A shows that by year 8 of a group auditor's engagement, approximately sixteen percent of initially misaligned subsidiaries have switched to the group auditor or its affiliates.[16] However, the economic magnitude of the asset-weighted late alignments indicates that the late alignments account for around fifty percent of the assets of initially misaligned subsidiaries. Since Table 4 confirms that *SIZE* (i.e., log of total assets) is an important driver of group audit fees, this economically significant increase in the scope of group auditors' portfolios is expected to be associated with economically important increases in total group auditors' fees. Table 6, Panel B confirms that this is the case. The cumulative increase in fees from late aligning subsidiaries reaches an average of seventeen percent by year 7 of the group auditor engagement; and the average of annual late aligner fees of 13.3 percent is of the same order of magnitude as the average 11.89 percent initial year discount.

[Insert Table 6 here]

Table 6, Panel C confirms that the fees from late aligners fully explain the initial year discount. When we adjust group audit fees by adding the fees paid by late aligners in the years before they align, estimates of equation (1) excluding *Misalignment* terms (comparable to models 1 and 2 in Table 4) show that the *SWITCH* variable is no longer statistically significant (Column 1) or becomes only marginally significant (at the 10 percent level in Column 2 when we control for industry fixed effects).[17]

[16] The decrease in cumulative late alignments in year 9 is consistent with some subsidiaries switching auditors in anticipation of future group auditor switches after the mandatory nine-year period.

[17] We acknowledge that we are unable to fully adjust group audit fees for all the potential late aligning subsidiaries in misalignment years because we do not observe auditors for all subsidiaries. Further, for the observed late aligning subsidiaries, we observe fee data only in 55% of the cases, with the availability of data skewed towards aligned years (it is possible that the transparency of subsidiaries' fee disclosure increases after they align with the group auditor as Table 5, Panel B also seems to suggest). These data limitations prevent us from fully adjusting group audit fees and might

*5.4 Subsidiary auditor switch analysis*

Table 7 reports the result for our subsidiary-level analysis. We find no evidence of initial year discounts at the subsidiary level. The coefficient on *SWITCH* is insignificant in both Column 1 (controlling for group fixed effects) and Column 3 (controlling for industry fixed effects). Moreover, no differences are found depending on the "types" of subsidiary switches (except from *MISALIGN_TO_MISALIGN_SWITCH* in Column 4). Overall, the subsidiary level evidence does not suggest within-group strategic pricing behavior by group auditors.

[Insert Table 7 around here]

*5.5 Additional analyses and robustness tests*

We conduct several robustness tests relating to our main group audit fee tests. First, we exclude voluntary rotations from our sample. Even though mandatory audit firm rotation was introduced in Italy before our sample period in 1975, occasionally audit firms switch before the mandatory period is completed (i.e., before the ninth year). We observe only four such voluntary switches (out of 110 switches in total) in our sample. As voluntary rotations could be a source bias in our analyses (voluntary changes might be endogenous), we exclude these cases and re-estimate the models based on mandatory switches only. All our main results are confirmed.

In further tests we also compute misalignment as the sum of total assets of misaligned subsidiaries divided by *group* total assets (replacing total assets for all the covered subsidiaries in the denominator). Our main results are confirmed. Finally, we include audit partner switches as an additional control. Once again, our main results are confirmed.

explain why the coefficient on *SWITCH* in Column 2 using industry fixed effect remains marginally significant at the 10% level.

## 6. Conclusions

In this study we provide a new explanation for the initial fee discount (or low-balling) phenomenon. Regulators and researchers have traditionally interpreted the initial year discount in audit fee models as evidence of strategic audit pricing behavior by newly appointed audit firms. Based on the observation that in many jurisdictions the fees earned by group auditors for subsidiary company audits are included in reported group auditor fees, we predict that the extent to which the group auditor covers audits of subsidiaries within the group should affect reported audit fees. We then test whether the dynamics of auditor rotation within a corporate group lead to a higher than normal level of misalignment between group and subsidiary auditors in group auditor rotation years. We anticipate transitory levels of auditor misalignment around group auditor rotation if subsidiaries do not switch auditors from predecessor auditor to incoming auditor at the same time as group auditor rotation occurs.

Using a sample comprising all non-financial Italian public corporate groups over the period 2007-2017 we identify subsidiary and parent auditors using archival and hand-collected data. We then estimate the misalignment between subsidiary auditors and group auditors for each firm-year. Based on the subsidiaries within each group for which auditors are identifiable, we observe that on average only 27% of subsidiaries with identifiable auditors have an auditor from the same audit firm as the group auditor. The percentage of misaligned subsidiaries is at its maximum in the rotation year (19.41 percent based on the number of subsidiaries).

In audit fee regression tests, we first establish that audit fees are significantly negatively related to subsidiary auditor misalignment in the cross-section. Next, we find that subsidiary auditor misalignment fully explains the initial engagement year audit fee discount. Our results suggest that when audit fees are reported as the consolidated fees earned by the group auditor, lower audit fees in

the auditor rotation year are an artifact of lower rotation of subsidiary auditors into the group auditor's portfolio. Our findings complement the recent paper by Barua at el. (2020) which also suggests that a different source of audit fee measurement bias in initial year audit fees can explain the audit fee low-balling phenomenon.

Our paper provides a potential explanation for why initial audit fee discounts are not observed in every country. For example, as noted earlier, evidence of initial fee discounts in Australia is very limited. However, Australian companies are required to publicly disclose fees for *all* audit work within the group, including not only fees paid to the group audit firm and its affiliates, but also to unaffiliated auditors (Carson et al., 2022). Hence reported total audit fees in Australia should not be affected by subsidiary auditor misalignment. Given the different audit fee reporting requirements in Australia, we would not expect to observe initial fee discounts even if there is abnormal subsidiary auditor misalignment around the time of group auditor rotation.

Our paper also contributes to the broader literature modelling audit fees. We show that subsidiary auditor misalignment is an important determinant of audit fees alongside other standard control variables in the literature. Our results suggest that controlling for possible differences in patterns of allocation of audit work across group subsidiaries is potentially important, especially in studies where auditor misalignment could be correlated with variables of interest to the researcher. Finally, our study complements the recent emerging literature on group audits (Carson et al., 2022) by demonstrating that auditor misalignment dynamics around auditor changes have an impact on reported audit fees.

Our findings may also have implications for regulators concerned that setting artificially low audit fees might lead auditors to become more susceptible to management pressure (SEC, 1978; AICPA, 1978; NASBA, 2010; PCAOB, 2011; IESBA, 2018). Concerns about potential low-balling may have

been reinforced by the large body of academic research documenting initial engagement year audit fee discounts and providing theoretical models of low-balling. While our study does not rule out the possibility of strategically-motivated initial audit pricing in individual audit engagements, it suggests an alternative explanation for the average initial fee discount found in prior research.

Our study also reveals that lack of audit fee transparency constrains the ability of users, including researchers, to interpret changes and trends in consolidated group auditor fees, and differences in audit fees across companies. Financial statement users and researchers should be able to understand the scope of the audit work conducted by the group auditor within a corporate group, how it changes over time, and how it compares to other corporate groups. Aggregation of audit fees within groups can be misleading if there is insufficient transparency concerning the identity of subsidiary auditors and their audit fees. In this respect, our paper illustrates one advantage of mandated public transparency of private company financial statements.

**APPENDIX A**

**Variables Description**

**Group-level analysis:**

| Variables | Description |
|---|---|
| AUD_FEE | Total group audit fee (EUR million) (Source: hand collected from the group annual reports); |
| LN_AF | Natural log of group audit fees (Source: hand collected from group annual |
| PARENT_FEE | The audit fee for parent and group audit as a proportion of total disclosed group audit fee; |
| ALIGN_FEE | The aggregate audit fees for aligned subsidiaries as a proportion of total disclosed group audit fee; |
| SWITCH | Indicator variable equal to 1 if there is a change in the group auditor and 0 otherwise (Source: hand collected from group Annual Reports); |
| MISALIGN | Percentage of subsidiaries with a different auditor than the group auditor or that are audit exempted (Source: hand collection of auditors from the Italian subsidiaries' annual reports and Orbis Bureau Van Dijk for foreign subsidiaries); |
| MISALIGN_A | Sum of total assets of misaligned subsidiaries divided by the sum of all the covered subsidiaries' total assets (Source: Orbis Bureau Van Dijk); |
| ALIGN_TO _ALIGN | Percentage of subsidiaries whose auditor was aligned with the group (principal) auditor in both year t-1 and year t; |
| ALIGN_TO _MISALIGN | Percentage of subsidiaries whose auditor was aligned with the group (principal) auditor in year t-1 and misaligned in year t; |
| MISALIGN_TO _ALIGN | Percentage of subsidiaries whose auditor was misaligned with the group (principal) auditor in year t-1 and aligned in year t; |
| MISALIGN_TO _MISALIGN | Percentage of subsidiaries whose auditor was misaligned with the group (principal) auditor in both year t-1 and year t; |
| TENURE | Total number of years the group auditor has audited the group before a switch (Source: hand collected from the Group Annual Reports); |
| SIZE | Natural log of group total assets (Source: Orbis Bureau Van Dijk); |
| LEVERAGE | Group total debt on 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); |
| 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 on group current liabilities (Source: Orbis Bureau Van Dijk); |

| | |
|---|---|
| NSUB | Natural log of the number of subsidiaries owned with more than 50 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); |
| LAG_LOSS | Dummy variable equal to 1 if there is a loss in the previous year and 0 otherwise (Source: Orbis Bureau Van Dijk); |
| COVERAGE | Percentage of subsidiaries over total number of subsidiaries owned with more than 50 percent of voting rights (Source: Orbis) Bureau Van Dijk); |
| IND_SPEC | Indicator variable equal to 1 if the company is audited by an industry specialist and 0 otherwise; |
| Q_OPINION | Indicator variable equal to 1 if the group auditor issues a qualified opinion and 0 otherwise (Source: hand collected from Group Annual Reports); |
| **Subsidiary-level analysis:** | |
| SUB_LN_AF | Natural log of subsidiary audit fees (Source: hand collected from Subsidiaries Annual Reports); |
| SUB_SWITCH | Indicator variable equal to 1 if there is a change in the subsidiary auditor and 0 otherwise (Source: hand collected from Subsidiaries Annual Reports); |
| MISALIGN_TO _ALIGN_SWITCH | Indicator variable equal to 1 if there is a change in the subsidiary auditor to align with the group auditor and the subsidiary was misaligned in the previous year 0 otherwise (Source: hand collected from Subsidiaries Annual Reports); |
| ALIGN_TO_ MISALIGN_SWITCH | Indicator variable equal to 1 if there is a change in the subsidiary auditor to misalign with the group auditor and the subsidiary was aligned in the previous year 0 otherwise (Source: hand collected from Subsidiaries Annual Reports); |
| MISALIGN_TO _MISALIGN_SWITCH | Indicator variable equal to 1 if there is a change in the subsidiary auditor to misalign with the group auditor and the subsidiary was misaligned in the previous year 0 otherwise (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 the Group Annual Reports); |
| SUB_SIZE | Natural log of subsidiary total assets (Source: Orbis Bureau Van Dijk); |
| SUB_LEVERAGE | Subsidiary total debt on subsidiary total assets (Source: Orbis Bureau Van |
| SUB_ROA | Subsidiary operating income before interest and taxes scaled by average 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 on 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 1 if the subsidiary reports a loss in the previous year and 0 otherwise (Source: Orbis Bureau Van Dijk). |

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**Table 1: Sample Selection**

| | Unique GUO | GUO-years | Unique Subs | Sub-years |
|---|---|---|---|---|
| Companies listed in Milan, 2007-2017 *(Source: Compustat)* | 246 | | | |
| Less non-GUO listed companies *(Source: BvD-Bureau VanDijk)* | (59) | | | |
| Initial GUO and subsidiaries sample | 187 | 1,104 | 13,336 | 34,637 |
| of which: | | | | |
| Italian | 187 | 1,104 | 3,086 | 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 | 1,288 | 5,315 |
| Final Sample | 96 | 668 | 2,551 | 9,097 |

**Table 2 - Descriptive Statistics**

| Variables | Obs | Mean | Std. Dev. | p25 | Median | p75 |
|---|---|---|---|---|---|---|
| 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 |
| ALIGN_FEE | 668 | 0.28 | 0.24 | 0.11 | 0.22 | 0.37 |
| SWITCH | 668 | 0.16 | 0.37 | 0 | 0 | 0 |
| MISALIGN | 668 | 0.19 | 0.16 | 0.07 | 0.16 | 0.29 |
| MISALIGN_A | 668 | 0.16 | 0.26 | 0.004 | 0.06 | 0.18 |
| TENURE | 668 | 4.83 | 2.92 | 2 | 5 | 7 |
| SIZE | 668 | 20.29 | 2.17 | 18.64 | 19.84 | 21.53 |
| LEVERAGE | 668 | 0.68 | 0.28 | 0.55 | 0.68 | 0.77 |
| ROA | 668 | 0.02 | 0.10 | -0.004 | 0.04 | 0.07 |
| 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 |
| COVERAGE | 668 | 0.46 | 0.25 | 0.25 | 0.42 | 0.64 |
| IND_SPEC | 668 | 0.38 | 0.49 | 0 | 0 | 1 |
| Q_OPINION | 668 | 0.02 | 0.12 | 0 | 0 | 0 |

See Appendix A for variable definitions.

**Table 3 - Misalignment and Average Change in Audit Fees**

| Year | Change in Fees (%) | Sign of Change in Fees | Misaligned Subsidiaries *MISALIGN* (%) | Sign of Change in *MISALIGN* | Asset-Weighted Misaligned Subsidiaries *MISALIGN_A* (%) | Change in *MISALIGN_A* |
|---|---|---|---|---|---|---|
| -3 | 9.09% | + | 20.83% | | 15.38% | |
| -2 | 9.43% | + | 18.49% | - | 14.80% | - |
| -1 | 1.80% | + | 18.95% | + | 17.91% | + |
| **0** | **-5.78%** | **-** | **19.41%** | **+** | **18.40%** | **+** |
| +1 | 10.98% | + | 18.14% | - | 16.25% | - |
| +2 | 9.89% | + | 16.46% | - | 13.08% | - |

Table 3 reports the patterns of change in audit fees and subsidiary auditor misalignment arranged in event time around group auditor switch dates (from year – 3 to year +2, where year 0 is the switch year). See Appendix A for variable definitions.

**Table 4 - Auditor misalignment and the initial fee discount**

| | Baseline Model | | Misalignment = MISALIGN | | Misalignment = MISALIGN_A | |
|---|---|---|---|---|---|---|
| Dep. variable: LN_AF | (1) | (2) | (3) | (4) | (5) | (6) |
| SWITCH | -0.099** | -0.124** | -0.002 | -0.093 | -0.055 | -0.100* |
| | (0.049) | (0.059) | (0.045) | (0.060) | (0.041) | (0.052) |
| Misalignment | | | -0.005** | -0.013*** | -0.003** | -0.003*** |
| | | | (0.002) | (0.002) | (0.001) | (0.001) |
| SWITCH x Misalignment | | | -0.005* | -0.001 | -0.002 | -0.001 |
| | | | (0.003) | (0.003) | (0.002) | (0.002) |
| TENURE | 0.027*** | 0.017** | 0.028*** | 0.020*** | 0.028*** | 0.017** |
| | (0.005) | (0.007) | (0.005) | (0.007) | (0.005) | (0.007) |
| SIZE | 0.388*** | 0.396*** | 0.390*** | 0.370*** | 0.385*** | 0.391*** |
| | (0.082) | (0.035) | (0.083) | (0.033) | (0.079) | (0.035) |
| LEVERAGE | 0.001 | 0.002 | 0.002 | 0.002* | 0.002 | 0.002 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| ROA | 0.000 | -0.005 | -0.000 | -0.006* | 0.001 | -0.006 |
| | (0.002) | (0.004) | (0.002) | (0.003) | (0.002) | (0.004) |
| INV | -0.002 | -0.002 | -0.002 | -0.003 | -0.002 | -0.003 |
| | (0.004) | (0.004) | (0.005) | (0.004) | (0.004) | (0.004) |
| REC | 0.003 | 0.001 | 0.003 | -0.000 | 0.002 | 0.001 |
| | (0.005) | (0.003) | (0.005) | (0.003) | (0.005) | (0.003) |
| QUICK | -0.000 | -0.001* | -0.000 | -0.001** | -0.000 | -0.001* |
| | (0.001) | (0.000) | (0.001) | (0.000) | (0.001) | (0.000) |
| NSUB | 0.116 | 0.391*** | 0.160* | 0.448*** | 0.128 | 0.383*** |
| | (0.088) | (0.051) | (0.089) | (0.049) | (0.089) | (0.051) |
| CFO | -0.001 | -0.002 | -0.001 | -0.003 | -0.001 | -0.002 |
| | (0.002) | (0.003) | (0.002) | (0.002) | (0.002) | (0.002) |
| LAG_LOSS | 0.045 | 0.134** | 0.047 | 0.108* | 0.047 | 0.132** |
| | (0.038) | (0.057) | (0.038) | (0.056) | (0.038) | (0.058) |
| COVERAGE | -0.000 | -0.003* | 0.003* | 0.002 | 0.000 | -0.003* |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |
| IND_SPEC | 0.075 | 0.132* | 0.075 | 0.138** | 0.074 | 0.139** |
| | (0.051) | (0.070) | (0.050) | (0.064) | (0.051) | (0.068) |
| FOR_SUB | -0.000 | 0.003 | 0.001 | 0.006* | 0.000 | 0.004 |
| | (0.004) | (0.004) | (0.004) | (0.003) | (0.004) | (0.004) |
| Q_OPINION | -0.070 | 0.203 | -0.103 | 0.168 | -0.096 | 0.162 |
| | (0.126) | (0.175) | (0.121) | (0.160) | (0.112) | (0.168) |
| Year FE | YES | YES | YES | YES | YES | YES |
| Group FE | YES | NO | YES | NO | YES | NO |
| Industry FE | NO | YES | NO | YES | NO | YES |
| Observations | 668 | 668 | 668 | 668 | 668 | 668 |
| Adj R-squared | 0.775 | 0.888 | 0.778 | 0.901 | 0.763 | 0.891 |
| Number of Groups | 96 | 96 | 96 | 96 | 96 | 96 |

Table 4 presents the results obtained from estimating Model (1):

$$LN\_AF_{it} = \beta_0 + \beta_1 SWITCH_{it} + \beta_2 MISALIGNMENT_{it} + \beta_3 SWITCH\ x\ MISALIGNMENT_{it} + \sum \beta_j Controls_{it} + \sum \beta_k FIXED\ EFFECTS(Year\ and\ Firm\ or\ Industry) + \varepsilon_{it}$$

In Columns (1) and (2) we exclude variables MISALIGNMENT and SWITCH x MISALIGNMENT. Columns (3) and (4) report results for unweighted misalignment (MISALIGN) while in Columns (5) and (6) we use asset-weighted misalignment (MISALING_A). Columns (1), (3), and (5) show results using group and year fixed effects, while the remaining columns present results obtained using industry and

year fixed effects. Robust standard errors (clustered at the group level) are in parentheses. ***, ** and * represent p<0.01, 0.05 and 0.1, respectively. See Appendix A for variable definitions.

**Table 5 – Changes in misalignment and the initial fee discount**

| | Baseline Model | | Misalignment = MISALIGN | | Misalignment = MISALIGN_A | |
|---|---|---|---|---|---|---|
| Dep. variable: LN_AF | (1) | (2) | (3) | (4) | (5) | (6) |
| SWITCH | -0.099** | -0.124** | -0.053 | -0.052 | -0.053 | -0.076 |
| | (0.049) | (0.059) | (0.039) | (0.055) | (0.040) | (0.051) |
| ALIGN_TO_ALIGN | | | 0.001 | 0.007*** | 0.000 | 0.001 |
| | | | (0.001) | (0.002) | (0.001) | (0.001) |
| ALIGN_TO_MISALIGN | | | -0.015** | -0.013 | -0.009*** | -0.009*** |
| | | | (0.007) | (0.008) | (0.003) | (0.003) |
| MISALIGN_TO_ALIGN | | | 0.003 | 0.002 | 0.001 | -0.002 |
| | | | (0.003) | (0.004) | (0.001) | (0.002) |
| MISALIGN_TO_MISALIGN | | | 0.002 | -0.005** | 0.000 | -0.002 |
| | | | (0.002) | (0.002) | (0.001) | (0.001) |
| TENURE | 0.027*** | 0.017** | 0.027*** | 0.020*** | 0.028*** | 0.018** |
| | (0.005) | (0.007) | (0.005) | (0.007) | (0.005) | (0.007) |
| SIZE | 0.388*** | 0.396*** | 0.391*** | 0.384*** | 0.387*** | 0.391*** |
| | (0.082) | (0.035) | (0.081) | (0.033) | (0.081) | (0.035) |
| LEVERAGE | 0.001 | 0.002 | 0.001 | 0.002 | 0.001 | 0.002 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| ROA | 0.000 | -0.005 | -0.000 | -0.005 | -0.001 | -0.006 |
| | (0.002) | (0.004) | (0.002) | (0.004) | (0.002) | (0.004) |
| INV | -0.002 | -0.002 | -0.002 | -0.003 | -0.002 | -0.003 |
| | (0.004) | (0.004) | (0.004) | (0.004) | (0.004) | (0.004) |
| REC | 0.003 | 0.001 | 0.002 | 0.000 | 0.001 | 0.000 |
| | (0.005) | (0.003) | (0.005) | (0.003) | (0.005) | (0.003) |
| QUICK | -0.000 | -0.001* | -0.000 | -0.001 | -0.001 | -0.001 |
| | (0.001) | (0.000) | (0.001) | (0.000) | (0.001) | (0.000) |
| NSUB | 0.116 | 0.391*** | 0.110 | 0.423*** | 0.118 | 0.385*** |
| | (0.088) | (0.051) | (0.087) | (0.049) | (0.088) | (0.051) |
| CFO | -0.001 | -0.002 | -0.002 | -0.004 | -0.001 | -0.003 |
| | (0.002) | (0.003) | (0.002) | (0.002) | (0.002) | (0.002) |
| LAG_LOSS | 0.045 | 0.134** | 0.045 | 0.133** | 0.046 | 0.124** |
| | (0.038) | (0.057) | (0.038) | (0.057) | (0.036) | (0.057) |
| COVERAGE | -0.000 | -0.003* | -0.000 | -0.005*** | -0.000 | -0.003* |
| | (0.002) | (0.002) | (0.001) | (0.002) | (0.001) | (0.002) |
| IND_SPEC | 0.075 | 0.132* | 0.074 | 0.131** | 0.080 | 0.136** |
| | (0.051) | (0.070) | (0.050) | (0.064) | (0.050) | (0.069) |
| FOR_SUB | -0.000 | 0.003 | -0.001 | 0.005 | -0.001 | 0.003 |
| | (0.004) | (0.004) | (0.003) | (0.003) | (0.003) | (0.004) |
| Q_OPINION | -0.070 | 0.203 | -0.090 | 0.161 | -0.085 | 0.181 |
| | (0.126) | (0.175) | (0.114) | (0.180) | (0.109) | (0.171) |
| Year FE | YES | YES | YES | YES | YES | YES |
| Group FE | YES | NO | YES | NO | YES | NO |
| Industry FE | NO | YES | NO | YES | NO | YES |
| Observations | 668 | 668 | 668 | 668 | 668 | 668 |
| Adj R-squared | 0.775 | 0.888 | 0.757 | 0.897 | 0.763 | 0.892 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Number of Groups | 96 | 96 | 96 | 96 | 96 | 96 |

Table 5 presents the results obtained from estimating Model (1) when substituting misalignment terms with the components of changes in misalignment: ALIGN_TO_ALIGN, ALIGN_TO_MISALIGN, MISALIGN_TO_ALIGN and MISALIGN_TO_MISALIGN.
In Columns (1) and (2) we exclude misalignment changes. Columns (3) and (4) report results for unweighted misalignment changes in the spirit of (MISALIGN) while in Columns (5) and (6) we use asset-weighted misalignment changes in the spirit of (MISALING_A). Columns (1), (3), and (5) show results using group and year fixed effects, while the remaining columns present results obtained using industry and year fixed effects. Robust standard errors (clustered at the group level) are in parentheses. ***, ** and * represent $p<0.01$, 0.05 and 0.1, respectively. See Appendix A for variable definitions.

**Table 6 - Late alignments analysis**

**Panel A: Percentage of late alignments**

| | Cumulative percentage | | Cumulative asset-weighted percentage | |
|---|---|---|---|---|
| Group Auditor Tenure | Mean | Median | Mean | Median |
| 1 | - | - | - | - |
| 2 | 3.22% | 0.00% | 14.92% | 3.21% |
| 3 | 4.85% | 2.17% | 28.17% | 22.19% |
| 4 | 7.68% | 4.26% | 27.05% | 18.08% |
| 5 | 10.01% | 6.90% | 25.45% | 17.52% |
| 6 | 10.24% | 5.41% | 35.42% | 21.25% |
| 7 | 14.56% | 10.00% | 43.93% | 38.46% |
| 8 | 16.34% | 16.03% | 49.83% | 40.16% |
| 9 | 14.37% | 10.00% | 54.33% | 54.96% |
| Average | 8.07% | 3.45% | 36.73% | 27.29% |

**Panel B: Fees of late alignments**

| | Mean Percentages | | Median Percentages | |
|---|---|---|---|---|
| Group Auditor Tenure | Cumulative Fees for late alignments | Group initial year discount | Cumulative Fees for late alignments | Group initial year discount |
| 1 | - | | - | |
| 2 | 7.51% | | 5.20% | |
| 3 | 9.24% | | 5.00% | |
| 4 | 8.62% | | 5.00% | |
| 5 | 11.47% | | 6.43% | |
| 6 | 12.76% | | 7.95% | |
| 7 | 17.00% | | 11.92% | |
| 8 | 16.81% | | 10.98% | |
| 9 | 16.54% | | 12.00% | |
| Average | 13.30% | **11.89%** | 8.36% | **11.86%** |

**Panel C: Audit fee regressions with adjustment for late aligners**

| Dependent variable: Adjusted group audit fees | (1) | (2) |
|---|---|---|
| SWITCH | -0.070 | -0.098* |
| | (0.043) | (0.055) |
| Controls | YES | YES |
| Year FE | YES | YES |
| Group FE | YES | NO |
| Industry FE | NO | YES |
| Observations | 668 | 668 |
| Adj R-squared | 0.771 | 0.891 |
| Number of Groups | 96 | 96 |

Table 6 Panel A presents the cumulative mean percentages of late aligners (both unweighted and asset weighted) along years of tenure. Asset-weighted percentages are calculated as the sum of late alignments' assets over the sum of all the observed subsidiaries' assets.

Table 6 Panel B presents the cumulative mean (median) fees percentage for late aligners along the years of tenure.

Table 6 Panel C presents results obtained by running Model (1) where we exclude variables MISALIGNMENT and SWITCH x MISALIGNMENT and adjust group audit fees by adding the fees paid by late aligners in the years before they align. Control variables are included but not reported for space reasons. Column (1) show results using group and year fixed effects, while Column (2) present results obtained using industry and year fixed effects. Robust standard errors (clustered at the group level) are in parentheses. $^{***}$, $^{**}$ and $^{*}$ represent p <0.01, 0.05, and 0.1, respectively. See Appendix A for variable definitions.

**Table 7 - Subsidiary auditor switch analysis**

| Dependent variable: SUB_LN_AF | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| SUB_SWITCH | -0.017 | | -0.006 | |
| | (0.028) | | (0.038) | |
| MISALIGN_TO_ALIGN_SWITCH | | 0.041 | | 0.053 |
| | | (0.043) | | (0.052) |
| ALIGN_TO_MISALIGN_SWITCH | | 0.064 | | 0.161 |
| | | (0.117) | | (0.192) |
| MISALIGN_TO_MISALIGN_SWITCH | | -0.119 | | -0.212** |
| | | (0.077) | | (0.088) |
| SUB_TENURE | 0.042*** | 0.043*** | 0.037*** | 0.037*** |
| | (0.006) | (0.006) | (0.008) | (0.007) |
| SUB_SIZE | 0.165*** | 0.165*** | 0.387*** | 0.384*** |
| | (0.034) | (0.035) | (0.014) | (0.014) |
| SUB_LEVERAGE | 0.001*** | 0.001*** | -0.000 | -0.000 |
| | (0.000) | (0.000) | (0.001) | (0.001) |
| SUB_ROA | -0.002*** | -0.002*** | -0.003** | -0.003** |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| SUB_INV | -0.004*** | -0.004*** | 0.001 | 0.001 |
| | (0.001) | (0.002) | (0.002) | (0.002) |
| SUB_REC | 0.001 | 0.001 | 0.003*** | 0.003*** |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| SUB_QUICK | 0.000 | -0.000 | -0.000 | -0.000* |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| NSUB | 0.018 | 0.019 | -0.036* | -0.030 |
| | (0.036) | (0.035) | (0.021) | (0.020) |
| SUB_CFO | 0.000*** | 0.000*** | -0.000** | -0.000** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| SUB_LAG_LOSS | -0.022 | -0.021 | 0.110** | 0.103** |
| | (0.027) | (0.027) | (0.046) | (0.045) |
| SUB_IND_SPEC | 0.045* | 0.033 | 0.232*** | 0.211*** |
| | (0.025) | (0.025) | (0.041) | (0.041) |
| SUB_Q_OPINION | -0.179*** | -0.193*** | 0.072 | 0.082 |
| | (0.068) | (0.064) | (0.189) | (0.178) |
| Year FE | YES | YES | YES | YES |
| Subsidiary FE | YES | YES | NO | NO |
| Industry FE | NO | NO | YES | YES |
| Observations | 2,998 | 2,998 | 2,998 | 2,998 |
| Adj R-squared | 0.472 | 0.478 | 0.586 | 0.590 |
| Number of Subsidiaries | 805 | 805 | 805 | 805 |

Table 7 reports the results for our subsidiary-level analysis (Model 2):

$$SUB\_LN_{AF\,it} = \beta_0 + \beta_1 SUB\_SWITCH_{it} + \sum \beta_j SUB\_Controls_{it} + \sum \beta_k FIXED\ EFFECTS(Year\ and\ Firm\ or\ Industry) + \varepsilon_{it}$$

In Columns (1) and (3), we do not discriminate switch types. In Columns (2) and (4) we discriminate switch types by substituting *SUB_SWITCH* with three indicator variables for the switch types. Columns (1) and (3) show results using subsidiary and year fixed effects, while the remaining columns present results obtained using industry and year fixed effects. Robust standard errors (clustered at the subsidiary level) are in parentheses. ***, ** and * represent p <0.01, 0.05, and 0.1, respectively. See Appendix A for variable definitions.

**"Out of sight, out of mind: Earnings management location in private subsidiaries of listed domestic groups"**

## 1. Introduction

The aim of this paper is to examine the choice of location of earnings management (EM) "within" listed domestic groups. I investigate whether the listed parents of domestic groups manage earnings through their controlled private subsidiaries, and I model the factors determining the choice of subsidiaries.

Listed domestic groups are economically important. They account for almost 43% of the totality of listed groups around the world, with an average of around US $0.6 billion of market capitalization, US $1.3 billion of total assets and US $0.2 billion of operating revenues.[1]

To date, the literature has mainly focused on the use of subsidiaries for EM by multinational groups. Dyreng et al. (2012) and Beuselinck et al. (2018) suggest that multinational groups arbitrage the risk of EM detection by using foreign subsidiaries in weak rule of law countries and tax havens. Domestic groups do not have such possibilities, as they operate within the same national boundaries and regulatory environment. Still, domestic groups might attempt to use their domestic subsidiaries to manage earnings rather than managing earnings at the parent level.

There is some US-based evidence that domestic firms manage earnings more than multinationals (Prencipe, 2012). Even multinational groups, despite arbitraging the risk of EM detection in foreign subsidiaries, manage domestic earnings more (Dyreng et al., 2012). This means that groups find it convenient to manage earnings also within national boundaries. Yet, what drives the parent company's decision about which domestic subsidiaries to select for EM remains an empirical question.

Listed parent companies may face different incentives to manage earnings. In this paper, I focus on market pressures to avoid reporting losses, to sustain a positive earnings' trend and to meet or beat analysts' forecasts (Burgstahler & Dichev, 1997; Degeorge et al., 1999; Bartov, 1993, Das & Zhang, 2003; Roychowdhury, 2006). I assume that, when listed domestic parents face the above market pressures, they are able to influence EM in individual subsidiaries and

[1] Source: Orbis, Bureau VanDijk (situation at May 14th, 2019). Listed firms that are parents of business groups around the world (global ultimate owners - GUOs at the 50.01% threshold) = 33,243 (14,151 domestic and 19,092 multinational). Financial data collected as of December 2017. For the sake of comparison, multinational groups have, on average, a market capitalization of around US $3 billion, total assets of US $5 billion, and operating revenues of US $2 billion.

select them depending on the opportunities that subsidiaries provide to manage earnings and on the risk of discovery that subsidiaries have compared to the parent company.[2] In terms of opportunities, subsidiaries whose balance sheets have not accumulated the effects of previously aggressive EM (i.e. have un-bloated net assets) and whose size is relatively large (compared to the entire group structure) provide greater opportunities to manage earnings. In terms of risk of discovery, subsidiaries owned through complex pyramidal structures and with different auditors from that of the parent company might be less exposed to market investors and to the parent's auditor scrutiny. Consequently, I hypothesize that the greater the EM opportunities provided by a subsidiary and the lower the risk of discovery of EM in a subsidiary, the higher the expected EM in a subsidiary in response to the parent company's market pressures. Empirically, I expect the observed EM in subsidiaries to be a function of: a) the parent company's incentives to avoid losses/sustain a positive earnings' trend/meet or beat analysts' forecasts; b) the opportunities for EM in a subsidiary; c) the risk of discovery of EM in a subsidiary.

I test my predictions on a sample of private, majority-owned subsidiaries of listed domestic groups located in the UK in the period 2010-2017. Results on preliminary analyses show that UK listed domestic groups respond to the zero-EPS benchmark. Subsidiaries which have greater opportunities to EM in the form of un-bloated net assets and those with lower costs of EM detection in the form of long chains of control respond to the parent incentive and manage earnings upward. Conversely, I do not find any response of the group to the zero-change-in-EPS benchmark. Accordingly, subsidiaries are also insensitive to this benchmark and do not manage earnings more. For the earnings' forecasts benchmark, I still have to collect data and assess the responsiveness of groups and subsidiaries to this EM incentive.

I make the following contributions. First, I add to the literature on EM location in multinational groups (Chin et al., 2009; Dyreng et al., 2012; Durnev et al., 2017; Beuselinck et al., 2018) by broadening the perspective to domestic groups and by shedding light on what drives EM location decisions in these groups. I focus on both the opportunities and risks of discovery of EM in the subsidiaries of domestic groups. The literature on multinational groups mainly focuses on the risk of discovery. However, the opportunities to manage earnings provided by a subsidiary likely also play a role in the multinational context and might be relevant for future studies.

[2] In principle, parent companies of business groups can manage: 1) the parent's unconsolidated earnings; 2) the valuation adjustments at consolidation; 3) the subsidiaries' extra-group earnings. In this paper, I focus on the third possibility. I do not deny that parent companies can leverage on subsidiaries to manage earnings by making valuation adjustments. However, this should bias against finding support to my predictions.

Second, I contribute to that stream of literature that examines the different incentives and earnings quality of private and public firms (Ball & Shivakumar, 2005; Burgstahler et al., 2006; Givoly et al., 2010, Hope et al., 2013). This literature focuses on the absence of market pressures for private firms, but largely neglects the role of private subsidiaries of listed groups. I add to that literature by showing that private subsidiaries might respond to market pressures due to their control ties with a listed parent[3]. Third, I contribute to the literature on group audit dynamics and quality (Glover et al., 2008; Doty, 2011; Stewart & Kinney, 2013; Sunderland & Trompeter, 2017). This literature mainly focuses on the difficulties in the audit of multinational groups due to legal and cultural differences, lack of familiarity with other countries' specific auditing standards and language barriers between auditors in different countries. These dynamics are not at play in a domestic context, and it is interesting to investigate whether and how only differences in procedures, responsibilities and incentives between different auditors in a group can affect EM location choices. Lastly, I contribute to the work of national regulatory bodies. Unlike multinational companies, where constraining EM in foreign subsidiaries might prove difficult without global policy coordination (Beuselinck et al., 2018), understanding where domestic groups manage earnings can suggest actionable changes for national regulators, both in terms of external scrutiny and disclosure requirements.

## 2. Literature review and hypotheses development

Previous literature highlights how the incentives to EM differ between public and private firms (Burgstahler et al., 2006; Ball & Shivakumar, 2005). Among others, the exposure to market pressures, absent in private firms, is one of the distinctive traits that characterize listed firms (Burgstahler & Dichev, 1997; Degeorge et al., 1999, Givoly et al., 2010; Hope et al., 2013). Listed firms face greater "demand" for high quality earnings from investors in the market but may still engage in "opportunistic behaviors" to meet some earnings' targets (Graham et al, 2005). Unsophisticated retail investors likely rely on simple heuristics when assessing the value of a firm and may penalize the firm in terms of a reduced demand of stocks or an increased cost of capital if targets are missed (Beatty et al., 2002). Analysts' forecasts also play a role in creating pressures for listed firms. Listed firms are incentivized to avoid missing analysts'

[3] Bonacchi et al. (2018) also show that private subsidiaries manage earnings in response to listed parents' market pressures. However, the authors confine the analysis to directly-owned subsidiaries. I consider the entire spectrum of the parents' possibilities to EM through subsidiaries and I show that the "position" of a subsidiary along the chain of control affects the magnitude of the subsidiary's EM response.

forecasts and enjoy a market premium (discount) when meeting or beating (missing) the target (Bartov et al., 2002), even when the target has been likely achieved through EM.

The majority of studies on EM in listed firms restrict the investigations to the level of consolidated earnings, without digging into the origins of such practices within the group. The fact that listed firms prepare consolidated financial statements means that they consolidate other firms over which they exert control.[4] This control enables the parent company to direct and monitor the relevant activities of the subsidiaries, their investment and financing decisions, and to set the rules in terms of reporting objectives (Prencipe, 2012). Consequently, control could also allow the parent company to shift its earnings' target to the subsidiaries of the group.

The studies of Kim & Yi (2006) and Sarkar et al. (2012) provide preliminary evidence of the possible use of subsidiaries to manage earnings in business groups. The authors find that group-affiliated firms manage earnings more than unaffiliated ones. They argue that business groups, unlike stand-alone firms, have more opportunities and means to manage earnings due to their control over consolidated entities. However, the authors do not investigate where, within a group, EM takes place.

Subsequent research has moved to directly investigate the location of EM within groups, albeit confining the analysis to the multinational groups' context. Specifically, Dyreng et al. (2012) and Beuselinck et al. (2018) provide evidence of the use of foreign subsidiaries by multinational groups. Dyreng et al. (2012) examine EM at the multinational-consolidated level (US-based multinational groups) and find that EM is most pronounced in foreign subsidiaries located in weak rule of law countries and tax havens. However, the authors do not test whether these findings are attributable to the subsidiaries' response to the parent's incentives or to the specific subsidiaries' incentives and lower risk of EM detection. Beuselinck et al. (2018) take the opposite perspective. They compare EM at the subsidiary level when the parent faces (does not face) incentives to manage earnings. They find that EM in subsidiaries is more pronounced when the parent faces some income-increasing incentives (e.g., loss avoidance, new equity/debt financing, financial constraints), suggesting a link to the parent's incentives, and that the strength of this link depends on the parent and subsidiaries' characteristics. They consider whether the parent has opportunities to manage its own unconsolidated earnings (un-bloated net assets and large size compared to the entire group) and find that EM in subsidiaries is more pronounced when the parent has few opportunities to manage its own earnings. They also consider whether

[4] International Financial Reporting Standards (IFRS) n.10 – Consolidated Financial Statement.

subsidiaries' attributes may reduce the risk of discovery of EM for the parent company (e.g., foreign subsidiaries, private subsidiaries, subsidiaries with a greater GAAP distance compared to the parent company and subsidiaries located in weak rule of law countries) and find that EM in subsidiaries is more pronounced when their attributes reduce the risk of discovery for the parent company.

The studies outlined above highlight some of the "opportunities" and "risks" that potentially drive the choice of EM location within multinational groups. However, these results do not generalize to domestic groups. Domestic groups do not have foreign subsidiaries, do not enjoy arbitrage opportunities from different rules of law or tax haven locations, and do not have large GAAP differences with their national subsidiaries.[5]

To fill the gap in the extant literature about the EM location within domestic groups, I identify specific location drivers that might be at work in the domestic groups' context. These drivers could explain in "which" subsidiaries domestic groups manage earnings when facing market pressures and consist of: a) the opportunities for EM that subsidiaries provide to the parent company; b) the risk of discovery of EM that subsidiaries have compared to the parent company.

### 2.1 The "opportunity" drivers of the location decision

In terms of "opportunity" drivers, Beuselinck et al. (2018) consider parent company's characteristics and, specifically, whether the parent has bloated net assets or is relatively small compared to the entire group. On the one hand, a parent company might wish to divert EM to its subsidiaries when it has few opportunities to manage its own earnings. On the other hand, this might not be a necessary pre-condition to expect manipulation in the earnings of subsidiaries. The parent might divert EM to its subsidiaries even when it has room to manage its unconsolidated earnings if subsidiaries provide an EM opportunity and are less exposed to external scrutiny. Moreover, if the subsidiaries of the group do not provide EM opportunities, it might be hard for the parent to implement EM in the subsidiaries, even if its own opportunities to EM are low. Consequently, I assume that the subsidiaries' characteristics play a major role in driving the EM location decisions in the presence of parent company's incentives to EM.

[5] All listed companies in the EU are mandated to adopt IFRS as of January 1st, 2005. Private companies, instead, are generally not mandated to adopt IFRS (unless Member States mandate so) and usually follow national GAAP. Hence, the only distance in accounting principles that can be found in domestic groups is in terms of national GAAP (in private subsidiaries that do not voluntarily adopt IFRS) and IFRS (mandatory for the listed parents).

I follow Beuselinck et al. (2018) and consider two subsidiaries' characteristics capturing the "opportunities" for EM in a subsidiary. The first is the level of un-bloated net assets of a private subsidiary; the second is the relative size of a private subsidiary to the group. In other words, I use the opportunity drivers of Beuselinck et al. (2018), but at the subsidiary-level, not at the parent-level. Larger subsidiaries and subsidiaries with un-bloated net assets provide more scope for upward EM in response to income-increasing market pressures (Barton & Simko, 2002). However, these two characteristics cannot entirely capture the opportunity for the parent company. Only the earnings over which the parent has an ownership right (net of intragroup earnings) affect the consolidated earnings attributable to the parent company. The consolidated earnings attributable to the parent company are used to compute the EPS of the group, while the portion that is not owned by the parent company affects minority interests and is not included in the EPS.[6] Making this distinction is important as the EPS of the group is the measure used for stock valuation and scrutinized by the market (Chen et al., 2004; Ohlson & Juettner-Nauroth, 2005; Taboga, 2011; de Wet, 2013), and which managers may seek to manage to reach earnings' targets (Graham et al., 2005; Stewart, 2002; Mauboussin, 2009). In order to capture the effective opportunities that subsidiaries provide to manage the group EPS, subsidiaries' opportunities (un-bloated net assets and relatively large size) should be weighted by the cash flow rights owned by the parent company in the subsidiaries. This translates into the following two hypotheses:

***H1: The effect of the parent company's market pressures on the EM of a private subsidiary is increasing in the level of un-bloated net assets of the subsidiary, weighted by the cash flow rights owned by the parent company.***

***H2: The effect of the parent company's market pressures on the EM of a private subsidiary is increasing in the relative size of the subsidiary over the group structure, weighted by the cash flow rights owned by the parent company.***

### 2.2 The "risk" drivers of the location decision

[6] IAS 33 – Earnings Per Share: "Basic EPS is calculated by dividing profit or loss attributable to ordinary equity holders of the parent entity (the numerator) by the weighted average number of ordinary shares outstanding (the denominator) during the period (IAS 33.10). The **earnings numerators** (profit or loss from continuing operations and net profit or loss) used for the calculation should be **after deducting** all expenses including taxes, **minority interests**, and preference dividends (IAS 33.12).

Previous literature shows that firms try to manage earnings far away from "external" scrutiny (Kedia & Rajgopal, 2011; Beuselinck et al., 2018, Bonacchi et al., 2018) and consider the expected costs of EM, including the likelihood of being discovered (Doty, 2011; Dyreng at al., 2012; Stewart & Kinney, 2013). Unlike multinational groups, domestic groups cannot exploit regulatory arbitrage across foreign subsidiaries to reduce the risk of discovery. However, they might still arbitrage the risk of discovery among their domestic subsidiaries if there is variation in the level of scrutiny across subsidiaries. Such variation can be expected because private firms are not directly exposed to investors in the market and usually face lower regulatory scrutiny (Ball & Shivakumar, 2005; Burgstahler et al., 2006; Bonacchi et al., 2018). On the one hand, this creates EM opportunities in private subsidiaries for the parent company. On the other hand, not all private subsidiaries of the group might provide the same "shield" from external scrutiny, as their affiliation to a listed parent might increase the external scrutiny over these firms.

I argue that private subsidiaries that are more distant from the parent "along the chain of control" (subsidiaries owned by means of several sub-holdings) provide a greater shield for the parent company and might be preferred to manage consolidated earnings. I base this argument on three main reasons. First, private subsidiaries owned by means of several sub-holdings are less exposed to the parent's investors in the market. Second, in the case of discovery of misreporting, the parent may face lower reputational costs, as it is easier for the parent company to deny any involvement in or knowledge of misreporting in an indirectly owned subsidiary. Third, as prior literature suggests, it is not always easy to distinguish accruals manipulation from accounting fraud (Marai & Pavlovic, 2013) and repeated accruals manipulation might lead firms to commit fraud in order to offset reversals (Lee et al., 1999; Perols & Lougee, 2011). I do not consider accounting fraud in this paper, but parent companies might worry about a possible allegation of fraudulent misreporting in their subsidiaries. In such case, the costs for the parent company might be lower if the misreporting comes from an indirectly owned subsidiary. In the case of Europe (but this also largely applies to other settings like the US), the court generally considers whether there is a "decisive influence" or a "duty of care" over the subsidiary before holding the parent liable for a subsidiary's misconduct (Burrows & Eberhardt, 2014; McCann FitzGerald, 2018). A "decisive influence" is presumed ex-ante by the court when the subsidiary is wholly owned (it is up to the parent company to prove the opposite), while it is not presumed when smaller holdings are involved (Burrows & Eberhardt, 2014). A "duty of care" arises when the control exerted over the subsidiary is substantial and pretty much "direct" (McCann FitzGerald, 2018). Specifically,

the court distinguishes between cases in which the parent company directs the relevant operations of the subsidiary and cases in which the parent merely issues group-wide guidelines on how operations "should" be carried, with a duty of care arising only in the first case. Subsidiaries owned by means of sub-holdings are more likely to fall under the second category of cases, with a "duty of care" and "decisive influence" being adjudged to be less likely for the parent company (DeMott, 1999; Dearborn, 2009).

These arguments lead me to assume that more distant subsidiaries "along the chain of control" might be preferred by the parent company to manage consolidated earnings.

***H3: The effect of the parent company's market pressures on the EM of a private subsidiary is increasing in the level of distance of the subsidiary along the chain of control.***

Within a business group, subsidiaries might be audited by a different audit firm from that of the parent company, hereafter "divergent" auditor. I argue that parent companies might prefer subsidiaries with divergent auditors to manage earnings for the following reasons.

First, the International Standards on Auditing - ISA 600 (Par. 11 - Responsibilities)[7] states that only the parent auditor is responsible for the audit of the entire group, while subsidiaries auditors are only responsible for the audit of the subsidiaries. As a result, the parent auditor should not refer to a subsidiary auditor in its audit opinion, even if another auditor conducts part of the audit.[8] These differential responsibilities and reputational imbalances between parent and subsidiary auditors might create coordination costs for the parent auditor in assessing the fairness and truthfulness of the consolidated financial statements of the group (Glover et al., 2008; Doty, 2011; Stewart & Kinney, 2013; Sunderland & Trompeter, 2017; Burke et al., 2020; Carson et al., 2021). Moreover, differences in audit skills and audit procedures affecting audit quality might constrain the ability of the parent auditor to monitor the subsidiaries' auditors.

[7] The 2014 EU audit reform (European Directive 2014/56, that amended the Directive 2006/43, and the European Regulation No 537/2014) empowered the European Commission to mandate the use of ISAs for all statutory audits in the EU. As the Commission has not adopted the ISAs yet, the 28 Member States had the choice to continue to apply national auditing standards (in line with the previous Directive 2006/43) or to voluntarily adopt ISA. All Member States (except for France and Germany) voluntarily adopted ISA by the end of 2015 (IFAC website). Germany adopted ISA in 2016. France has not directly endorsed ISA, but its national auditing principles are drawn in accordance to ISA. In terms of responsibilities over the group audit, the new Directive has not changed the prescriptions of the Directive 2006/43 (the parent's auditor bears full responsibility for the audit of the group).

[8] Unless such reference is required by law or regulation. If the reference is required by law or regulation, the auditor's report shall indicate that the reference does not diminish the group auditor's responsibility for the group audit.

Second, ISA 600, Par. 21 (Materiality) acknowledges that there might be the risk of an "aggregated" undetected misstatement at the group level if the materiality thresholds of the subsidiaries are not correctly set. In other words, a misstatement can be immaterial at the subsidiary level but can become material when aggregated to the group level. For this reason, the standard suggests reducing the materiality thresholds of subsidiaries but does not provide guidelines on what should be a reasonable "lower" level of materiality. In practice, a variety of methods are applied by group auditors when defining materiality thresholds, but these methods often lack theoretical support and might fail to meet the audit objective (Stewart & Kinney, 2003). An "undetected" aggregated misstatement can also arise when the same audit firm audits the entire group. However, the risk of non-detection could be even higher when there is a divergent subsidiary auditor because divergent auditors are not involved in the group audit and might have a limited understanding of the group as a whole and of the potential impact of a subsidiary's misstatement over the group.

Finally, as suggested by Langli & Svanstrom (2014), Vanstraelen & Schelleman (2017) and Hardies et al. (2018), potential litigation and reputational costs incentivize auditors to conduct high quality audits (Krishnan & Krishnan, 1996; Matsumura et al., 1997). These incentives are usually lower in the private audit market. The lower litigation and reputation risks might impair audit quality and increase acquiescence to the client in the private audit market (Hope & Langli, 2010). Consequently, for divergent auditors in private subsidiaries, reputational concerns and incentives to perform high quality audit might be lower than those of listed parent auditors.

All the above considerations highlight how having divergent auditors in private subsidiaries might impair the ability of the parent auditor to monitor subsidiaries and might also reduce the incentives of divergent auditors to constrain EM in subsidiaries. Parent companies might take advantage of these dynamics and prefer managing the earnings of subsidiaries with divergent auditors.

***H4: The effect of the parent company's market pressures on the EM of a private subsidiary increases in the presence of a "divergent" auditor in the subsidiary.***

## 3. Research methodology

### 3.1 The setting and sample selection

I use the UK setting to test my predictions. Unlike other European countries or the US, the UK publicly discloses financial statements for all companies incorporated in the country, both public and private. Moreover, most of the parent and subsidiaries' financial information and ownership links are accessible, at each year end, through the historical versions of the Orbis – Bureau Van Dijk database. Finally, unlike other EU countries, the number of listed domestic groups for which I have financial data is substantial in UK and allows me to test my predictions on a representative sample. This is clear when inspecting the sample selection output reported in Table 1, Panel A and B.

[Insert Table 1 around here]

I start by collecting a sample of private, non-financial, EU subsidiaries owned by a listed, non-financial, EU-GUO (at the 50.01% threshold), in the period 2010-2017.[9,10] In Orbis, GUOs (Global Ultimate Owners) are defined as entities at the top of the corporate ownership structure. The 50.01% threshold means that the Ultimate Owner has no corporate shareholders with more than 50.01% of ownership and ensures that the parent company itself is not controlled and consolidated by other entities. Moreover, the 50.01% threshold avoids potential misclassification of subsidiaries as majority-owned when they are not.[11] In fact, a company is defined as the GUO of another company if and only if it holds at least 50.01% of voting rights at each path or "level" along the chain of control.[12] From this initial sample of EU subsidiaries of EU GUOs I remove cases of GUOs with foreign subsidiaries (at any percentage of ownership). This brings an initial sample of 55,476 subsidiary-year observations from listed domestic EU groups. I then remove observations with missing key financial variables in Orbis, observations from groups with only 1

[9] Non-financial subsidiaries are those subsidiaries whose 4-digit Sic Codes do not belong to the financial industry (SIC codes 6000-6999), utilities (SIC codes 4800-4999), or quasi-regulated industries (SIC codes 4000-4499).

[10] Using the 50.01% GUO threshold is common to other papers that "map" groups of firms (Shroff et al., 2014; Beuselinck et al., 2018), although these papers use a less stringent threshold (25%).

[11] A subsidiary is controlled and consolidated when the parent has the power over the subsidiary, it owns rights over the variable returns of the subsidiary and if it can use its power to affect the amount of the subsidiary's returns (IFRS 10). This means that, even when the parent owns less than 50.01% of voting rights, a subsidiary might be controlled if all the above conditions are satisfied. Consequently, I look at the list of consolidated subsidiaries reported in the notes to the consolidated financial statements of the parent company. If this selection criterion leaves out some subsidiaries that are consolidated, I will search for the missed subsidiaries in Orbis and add them to the sample.

[12] For example, in the case of a listed company A that owns 30% of voting rights in a private company B, which in turn owns 50.01% of voting rights in a private company C, the listed company A is not a Global Ultimate Owner (only B is the GUO of C) and these companies do not enter my sample. In contrast, if the listed company A owns at least 50.01% of B, the listed company A is the GUO of both B and C, which are majority-owned private subsidiaries included in the sample.

subsidiary (for which a within-group strategic EM location cannot be estimated) and observations in not-yet-listed/delisted parent years. The final sample of EU listed, non-financial, domestic groups is then made by 6,411 subsidiary-year observations and 2,091 GUO-year observations, corresponding to 2,463 unique subsidiaries and 563 unique GUOs. Table 1, Panel B reports the composition by EU-country. Given the concentration of domestic groups in UK, I decide to restrict my analyses to the UK subsample (Table 1, Panel C), which comprises 2,985 subsidiary-year observations and 858 GUO-year observations, corresponding to 957 unique subsidiaries and 220 unique GUOs.

### 3.2 Variable measurement

Before describing the variables employed in this paper, it is necessary to clarify that the analysis is conducted at the subsidiary level. All the subsidiaries' financial variables collected through the Orbis database refer to the subsidiaries' individual financial statements or, if the subsidiaries prepare consolidated financial statements, to their "separate" financial statements.[13] This is because I am interested in understanding how an individual subsidiary responds to the parent's incentives depending on the opportunities and risk of discovery that the subsidiary provides to the parent. Looking at the subsidiary's consolidated financial statements would bias the results, as the consolidated figures would incorporate the potential response of other subsidiaries within the group according to "their own" opportunities and risks.

Since I model the observed EM of the subsidiary as a function of the parent company's incentives and of the opportunities and risks of discovery of EM in the subsidiary, I describe below how I measure each of these factors.

#### *3.2.1 Subsidiary's earnings management (dependent variable)*

To estimate the amount of EM at the private subsidiary level, I employ the DeFond & Park (2001) abnormal working capital accruals model. Unlike the commonly used Jones (1991) and modified Jones models, the DeFond & Park model of abnormal accruals is independent from potential measurement errors (Cameran et al., 2014). The subsidiary AWCA are estimated, for each year, through the following equation:

$$\mathbf{AWCA_{it} = WC_{it} - (WC_{i,t-1} / REV_{i,t-1}) \times REV_{it}}$$

[13] Separate financial statements are available for the majority of subsidiaries. Majority-owned subsidiaries of business groups usually report only separate financial statements, even if they control other subsidiaries, as the consolidation process is performed by the parent company.

where $WC_{it}$ is the working capital, calculated as (current assets - cash and short-term investments) – (current liabilities – short-term debt[14]) and $REV_{it}$ represents sales.[15] In this model, the abnormal working capital accruals represent the portion of the working capital accruals of a subsidiary in a year that does not respect the historical proportionality with respect to sales. I scale $\boldsymbol{AWCA_{it}}$ by lagged total assets, $\boldsymbol{A_{i,t-1}}$[16] and use this ratio as dependent variable.

*3.2.2 Parent company's incentives*

I focus on the incentives of the parent company to meet or beat three market benchmarks, namely the zero earnings benchmark, the zero-change-in earnings benchmark and the zero-analysts' forecasts error benchmark. To identify the listed parents that face these incentives, I use the distributional approach proposed by Burgstahler & Dichev (1997) and Degeorge et al. (1999). Empirically, this literature has investigated the distributions of EPS, change in EPS and analysts' forecast error of listed companies.[17] All these distributions present a discontinuity around "zero", with an exceptionally high number of firms falling in the interval of the distribution to the immediate right of zero and an exceptionally low number of firms falling in the interval to the immediate left of zero. Those firms that beat the "zero" benchmarks for just a few cents, i.e., which are in the interval to the immediate right of zero, are suspected of having managed earnings in response to market pressures. Consequently, I investigate the distributions of annual EPS and change in annual EPS of listed parent companies (in the future, I will do the same with analysts' forecasts errors).[18] I choose an interval width of $2(IQR)n^{-1/3}$, where IQR is the sample interquartile range of the variable and $n$ is the number of observations. This rule combines the need for a precise density estimate and the need for a fine resolution, with the interval width being positively related to the variability of the data and negatively related to the number of observations (Silverman, 1986; Scott, 1992).[19] My measure of interest, the parent's incentive (**PARENT_INC$_{it}$**), is then an indicator variable taking the value of one when:

[14] Loans in the Orbis Global Format classification.

[15] I use operating revenues/turnover (sales plus other operating revenues, net of discounts) instead of sales because Orbis does not provide sales for most of the EU countries.

[16] I subtract other fixed assets as these comprise financial investments in other subsidiaries. See section 3.2.3 for clarifications about this choice.

[17] Actual EPS minus final analysts' consensus forecast of EPS.

[18] Listed firms might face market pressures also on quarter/semi-annual results. In the future, I might think to enlarge the investigation to quarter/semi-annual pressures.

[19] As Degeorge et al. (1999) discuss, it is common to normalize EPS by deflators such as price per share or assets per share to homogenize the distribution from which different observations are drawn. However, this normalization might distort the allocation of observations around the zero thresholds due to the "rounding" to the closest penny (or cent) applied by prepares

a) A parent-year observation falls in the interval of the annual EPS distribution to the immediate right of zero, or
b) A parent-year observation falls in the interval of the change in annual EPS distribution to the immediate right of zero, or
c) A parent-year observation falls in the interval of the analysts' forecast error distribution to the immediate right of zero.[20]

*3.2.3 Opportunity location drivers*

The two subsidiary's opportunities considered in this paper are the level of un-bloated net assets and the relative size of the subsidiary over the group structure, both weighted by the cash flow rights owned by the parent company in the subsidiary.

To measure un-bloated net assets, I follow the approach by Barton & Simko (2002). The authors show that, as "*the balance sheet accumulates the effects of previous accounting choices, the level of net operating assets partly reflects the extent of previous earning management*". Accordingly, they use the beginning of the year's net operating assets (NOA) over sales to capture the overstatement of assets (a constraint on EM). Since I am interested in capturing the opportunity for EM, I use the inverse of the ratio: $Sales_{i,t-1}/NOA_{i,t-1}$. The authors measure NOA as shareholders' equity less cash and marketable securities, plus total debt. This means that NOA includes working capital and fixed assets (tangible, intangible and other fixed assets). Other fixed assets are mainly composed of financial assets (investments in other firms in which the company has a significant influence, control or a joint venture, measured with the equity method, the cost method or at fair value).[21] Since I am interested in the opportunities and risks provided by the individual subsidiary and not by other subsidiaries within the group that that subsidiary might consolidate, I use a different approach. I calculate NOA as shareholders' equity less cash and marketable securities, plus total debt less other fixed assets.[22] I apply the same reasoning when

when reporting EPS. Except for the case where EPS (or change in EPS or analysts' forecast error) is exactly zero before the deflation (and, thus, also after), "a 1-penny EPS (or change in EPS or analysts' forecast error) can remap into a relatively large or small number depending on the deflator". Degeorge et al (1999) show that the deflation is unnecessary if the firms with extreme prices are excluded (without these firms, the distributions are pretty much homogenous in terms of medians and interquartile ranges across different centiles of price). I check that this condition is met in my sample, otherwise I might use a price per share deflator.

[20] I will collect the analysts' consensus forecast for the annual EPS from I/B/E/S.

[21] See IAS 27 – Separate financial statements.

[22] I acknowledge that other items might be included in this group (e.g. long-term trade debts and other investments held as fixed assets), although their weight is usually marginal compared to the financial investments in affiliated undertakings. Unfortunately, Orbis does not provide further disaggregation of the other fixed assets that would allow me to subtract only the part represented by financial investments in affiliated undertakings.

measuring the relative size of a subsidiary over the group structure, measured as the beginning-of-the-year subsidiary's total assets less other fixed assets, scaled by the group total assets.

Finally, I measure the cash flow rights owned by the parent company in the subsidiary. The European legislation requires listed firms to disclose information about the controlled subsidiaries in the notes to the consolidated financial statements. This information includes the names and registered offices of the consolidated subsidiaries, the indication of the "proportion of the capital held" and, if different, the proportion of voting rights held.[23] The proportion of the capital held in a subsidiary is nothing but the cash flow rights owned by the parent company (no matter the type of ownership, direct or indirect). The screening of the consolidated financial statements of the parent companies to collect the cash flow rights is a time-consuming task. An alternative measurement criterion would be the multiplication of the "voting rights" along the chain of control, as proposed by Claessens et al. (2000) and largely used in other influential studies (La Porta et al., 2002; Faccio & Lang, 2002; Chin et al., 2009). However, this method might lead to a noisy measure of cash flow rights when business structures are complex (e.g., cross-shareholdings, multiple links, loops etc.) or when the percentage of voting rights owned along the chain of control is reported with error. On the one hand, complex business structures might not be a problem in my setting. Faccio & Lang (2002) show that, in Europe, cross-shareholdings and multiple links are not very prevalent and do not lead to great measurement errors. On the other hand, voting rights are not always provided with precision by Orbis. In some instances, the database tracks a relationship of control, but does not provide the percentage of voting rights. Moreover, the database provides the following information about the voting rights owned over a company by another company: direct ownership (the voting rights directly owned) and total ownership (the sum of the direct and indirect ownership). In the case of a firm controlled through indirect ownership, Orbis does not provide further clarifications about the indirect ownership and one could only retrieve the voting rights at each link by surfing the database.[24] There are also cases in which some links are missed, and the database only reports the total ownership.[25] For all these reasons, I preferred to collect data on the cash flow rights,

[23] Directive 83/349 EEC of June 13th, 1983, art. 34, 2(a), replaced by the Directive 2013/34 EU of June 16th, 2013 art.28, 2(a)(ii) and 2(a)(iii).

[24] This procedure can be as time-consuming as screening the consolidated financial statements of the parent, with the difference that it provides a less precise measurement of cash flow rights compared to the information included in the consolidated financial statements.

[25] This happens when the information source used by Orbis (Annual reports or Stock Exchanges) only specifies that an entity has a total stake in another entity without specifying the path through which the ownership is held.

hereafter *CFR*, manually from the consolidated financial statements of the parent companies available in the UK public business register (Companies House).[26]

In conclusion, I define the two subsidiaries' opportunities as follows:

***UN_BLOATED*$_{it}$** = $CFR_{it}$ *x* $Sales_{i,t-1}/NOA_{i,t-1}$

***RELATIVE_SIZE*$_{it}$** = $CFR_{it}$ *x (subsidiary's total assets less other fixed assets)*$_{t-1}$*/Group total assets*$_{t-1}$.

*3.2.4 Risk location drivers*

The two risk location drivers considered in this paper are the level of distance of a subsidiary from the parent company along the chain of control and the presence of a divergent auditor. The level of distance, ***DIST*$_{it}$**, is collected from Orbis and ranges from 1 (directly-owned subsidiaries) to *k* (number of intermediate sub-holdings along the chain of control plus 1).[27] The presence of a divergent auditor is captured by ***DIV_AUD*$_{it}$**, an indicator variable equal to one when the subsidiary's auditor is different from that of the parent company and zero otherwise.

### 3.3 The Model

To test my predictions, I employ the following subsidiary-level OLS regression, with robust standard errors (clustered by subsidiary):

$$\boldsymbol{AWCA_{it}/A_{i,t-1}} = \beta_0 + \beta_1 \text{PARENT\_INC}_{it} + \beta_2 \text{UN\_BLOATED}_{it} + \beta_3 \text{RELATIVE\_SIZE}_{it} + \beta_4 \text{DIST}_{it} + \beta_5 \text{DIV\_AUD}_{it} + \boldsymbol{\beta_6 (\text{PARENT\_INC}_{it} \text{ x UN\_BLOATED}_{it}) + \beta_7 (\text{PARENT\_INC}_{it} \text{ x RELATIVE\_SIZE}_{it}) + \beta_8 (\text{PARENT\_INC}_{it} \text{ x DIST}_{it}) + \beta_9 (\text{PARENT\_INC}_{it} \text{ x DIV\_AUD}_{it})} + \sum \beta_j \text{Sub\_Controls}_{it} + \sum \beta_k \text{Fixed effects (Year, Industry, Group)} + \varepsilon_{it}$$

**(1)**

where $AWCA_{it}/A_{i,t-1}$ *is* defined as described in section 3.2.1. To support the hypotheses, I expect the coefficients **$\beta_6$**, **$\beta_7$**, **$\beta_8$** and **$\beta_9$** to be all positive and statistically significant.

I include a set of subsidiary-level controls to account for other factors that might affect the level of accruals. Specifically, I control for: $SIZE_{it}$ (natural logarithm of total assets); $ROA_{it}$ (operating income over lagged total assets); $GROWTH_{it}$ (percentage change in sales); $CFO_{it}$ (cash

[26] https://www.gov.uk/government/organisations/companies-house

[27] In this way, a subsidiary that is directly owned by the parent has a distance of 1, a subsidiary that is owned by means of one sub-holding has a distance of 2 (the sub-holding plus the parent) and so on.

flow from operations over lagged total assets)[28]; $LEV_{it}$ (the sum of long-term and short-term debt over lagged total assets); $LOSSES_{it}$ (an indicator variable equal to one if the subsidiary reports a loss in both the current and previous year and zero otherwise); $IFRS_{it}$ (an indicator variable equal to one if the subsidiary adopts IFRS and zero otherwise); $BIG4_{it}$ (an indicator variable equal to one if the subsidiary is audited by a Big4 audit firm and zero otherwise); $Tax\_avoidance_{it}$ (subsidiary's spread in reported vs estimated net income before taxes, scaled by lagged total assets).[29]

I control for SIZE as prior literature shows that bigger firms usually manage earnings less due to a greater exposure to regulatory scrutiny (Warfield et al., 1995; Bédard et al., 2004;). CFO, ROA and GROWTH control for extreme performances of the firm that may affect accruals (Kothari et al., 2005; Carey & Simnett, 2006). LEV is included as subsidiaries with higher levels of debt may be more prone to manipulate earnings to avoid debt covenant violations (McNichols & Wilson, 1988; DeFond & Jiambalvo, 1994; Burgstahler et al., 2006). LOSSES captures the potential financial distress of a subsidiary, which might affect the level of accruals (DeFond & Jiambalvo, 1994; Sweeney; 1994; DeAngelo et al., 1994).[30] IFRS accounts for the effect of adopting IFRS instead of national GAAP (Cameran et al., 2014).[31] BIG4 controls for the quality of the auditor at the subsidiary level and for its ability to constrain EM (Francis, 2004; Van Tandeloo & Vanstraelen, 2008). Tax-avoidance is included to control for income-decreasing incentives of private companies to save taxes (Coppens & Peek, 2005; Ball & Shivakumar, 2005; Burgsthaler et al., 2006; Goncharov & Zimmermann, 2006; Watrin et al., 2014).

I include year and industry fixed effects to account for potential unobservable sources of heterogeneity. Finally, I include parent fixed effects to control for time-invariant parent specific factors and to obtain a "within" group estimation of the effect of parent's incentives on the subsidiaries' EM.

[28] Private firms generally do not include cash flow statements in their annual reports. Consequently, I compute the cash flow from operations by using the balance-sheet approach (Dechow et al., 1995; Burgstahler et al., 2006), where $CFO_{it}$= Operating $income_{it}$ – $TA_{it,}$ where $TA_{it} = (\Delta CA_{it} - \Delta Cash_{it}) – (\Delta CL_{it} - \Delta D_{it}) - Dep_{it}$ (see Section 3.2.1.2).

[29] The ratio is then multiplied by minus 1 (so that the higher the difference, the higher the tax avoidance, and the more negative AWCA should be). Estimated Net Income=reported tax expense/corporate tax rate. Corporate tax rates taken from GOV.UK

[30] A better measure of financial distress may be the Altman (1968) Z-score, which is computed as: 3.3 × Pretax Income + Sales + 0.25 × Retained Earnings + 0.5 × (Current Assets-Current liabilities)/Total Assets. However, Orbis does not provide disaggregated information about Retained Earnings and I am not able to compute the measure.

[31] The EU legislation does not mandate private companies to adopt IFRS, even if they are subsidiaries of listed groups. Cameran et al. (2014), on a sample of Italian private companies, find that the earnings quality of private firms worsens when they switch to IFRS, especially if they are subsidiaries of listed groups. Subsidiaries of listed groups might switch to IFRS for different purposes compared to stand-alone private firms, as they may be forced to use international accounting standards on the basis of parent company requirements and/or for simplifying the financial reporting process.

## 4. Results

### 4.1 Descriptive results

Table 2 reports descriptive statistics on the sample. Groups are not small, with an average of UK £0.58 (0.53) billion total assets (sales). The average subsidiary accounts for 21 percent (24 percent) of the group assets (sales) before possible intragroup elisions. Groups have an average EPS of UK £0.18 and an average positive change in EPS of UK £0.03. The average number of subsidiaries is 7. Table 3 reports descriptive statistics on the variables used in the analyses. Subsidiaries manage earnings upward on average (mean AWCA is 1.4 percent of subsidiary lagged total assets). In terms of subsidiaries' potential parent pressures to manage earnings, 14.9 percent of the sample might face a beating-the-zero-EPS pressure, while 21.1 percent of the sample might face a beating-the-zero-change-in-EPS pressure.

[Insert Table 2 and 3 around here]

### 4.2 Regression Results

In Table 4, I report the results of estimating Model 1 when assessing the responsiveness of subsidiaries to the parent zero-EPS benchmark, i.e. when PARENT_INC=SUSPECT_EPS incentive.

[Insert Table 4 around here]

I find that subsidiaries whose assets are not bloated, and which are owned through longer chains of control manage earnings upward more in years when the parent faces incentives to beat the zero-EPS benchmark. This is consistent with hypotheses *H1* and *H3*. However, I do not find that the relative size plays a role (*H2* is not supported), and I find a marginally significant negative coefficient on the *SUSPECT_EPS x DIV_AUD* variable, in contrast with *H4*. One explanation for the lack of support to H2 can be that bigger subsidiaries, although providing more opportunities, might be more scrutinized and have a higher risk of discovery, which might disincentivize the parent to locate EM in those subsidiaries. The opposite results on *H4*, instead, might be consistent with that stream of literature which shows that the "mere" use of component subsidiary auditors might benefit audit quality in business groups (Burke et al, 2020; Carson et al., 2021).[32]

[32] This literature, however, is conducted at the multinational group level and takes into account potential coordination problems coming from differences in audit standards, procedures and language barriers in foreign countries. Moreover, this literature shows

Despite the lack of support to some of the hypotheses, the general evidence suggests that subsidiaries can be strategically used for EM purposes by the parent company. The Shapley test for the R2 contribution of group fixed effects shows that withing group coordination is an important determinant of subsidiaries' earnings management activity.[33]

In Table 5, I report the results of estimating Model 1 when assessing the responsiveness of subsidiaries to the parent zero-change-in EPS benchmark, i.e. when PARENT_INC=SUSPECT_changeEPS incentive.

[Insert Table 5 around here]

In this case, I do not find any responsiveness of subsidiaries to the parent incentive, and none of my opportunity and risk drivers load significantly in the regression.

In order to get a better understanding of the above results, I turn to the group-level analysis, assessing the responsiveness of groups' abnormal working capital accruals to group incentives to EM. Table 6 and 7 report the results when assessing the zero EPS and the zero-change-in EPS benchmarks, respectively.

[Insert Table 6 and 7 around here]

I find that groups respond to the zero EPS benchmark by managing earnings upward. However, I do not find the same result when looking at the zero-change-in EPS benchmark. Groups, in fact, do not seem to manage earnings upward when facing this incentive, which can explain why I do not find any responsiveness of subsidiaries to this incentive.

Although being very preliminary, I interpret the above evidence as being collectively consistent with my predictions and with a strategic location of EM in the subsidiaries of domestic groups depending on their opportunities and risk factors.

that, although the mere use of component auditors does not impair audit quality, their increasing involvement instead impairs audit quality.

[33] In terms of relative importance of domestic group fixed effects in contributing to the R2, the results are also pretty much comparable to the relative importance of MNC groups fixed effects found by Beuselinck et al. (2018).

## 5. Additional Analyses

### 5.1 Is the subsidiaries' earnings management within the group a zero-sum game?

It might be argued that, despite some subsidiaries may perform income-increasing EM in response to the parent's market pressures, some subsidiaries within the group may perform income-decreasing EM (for example, subsidiaries with low opportunities for the parent that only look for tax-minimization EM). This might lead the effect of the subsidiaries' EM to cancel-out upon consolidation, with no ultimate benefit for the parent company.

In order to assess this possibility, I follow the approach by Beuselinck et al. (2018). I analyze the distribution of the $AWCA_{it}$ correlations calculated across all the subsidiaries within the same group and the $AWCA_{it}$ correlations calculated across all the subsidiaries in the same country and industry, excluding the ones within the same group. If the subsidiaries EM is not a "zero-sum" game for the parent and if there is at least some form of coordination among the subsidiaries within the same group, I should find the average correlation within the group being positive and larger than the average correlation across subsidiaries in the same country and industry. Table 8 reports the results of the correlation analysis, which shows that the correlation within the same group is positive and statistically higher than that calculated across the same industry and year.

[Insert Table 8 around here]

**TO IMPLEMENT**

### 5.2 Parent's opportunities to manage earnings

Beuselinck et al. (2018) show that parent's opportunities to manage earnings play a role in the tendency to use subsidiaries for EM. I assert that parent's opportunities might not be a necessary pre-condition to expect an induced manipulation in the subsidiaries if the subsidiaries provide an opportunity and at a lower risk of discovery compared to the parent company.

However, the parent's opportunities might shape the importance that subsidiaries' characteristics have in driving the location decision by the parent company. In order to test whether there is cross-sectional variation in the parameters' estimates depending on the parent's opportunities to manage its own earnings, I will split the sample in a similar vein of Beuselinck et al (2018). Specifically, I will re-estimate Model 1 separately for:

a) Subsidiaries of parent companies that have bloated unconsolidated net assets (net assets above the sample median) and subsidiaries of parent companies that have un-bloated unconsolidated net assets (net assets below the sample median).
b) Subsidiaries of parent companies that have a small weight over the group structure (ratio of the parent's unconsolidated total assets to consolidated total assets below the sample median) and subsidiaries of parent companies that have a high weight over the group structure (ratio of the parent's unconsolidated total assets to the consolidated total assets above the sample median).

**TO IMPLEMENT**

**6. Robustness Tests**

**6.1 Accruals reliability and subsidiary EM in response to parent's pressures**

The DeFond and Park (2001) model of accruals consider working capital accruals instead of total accruals. These accruals entail a good level of subjectivity and can be used for EM. However, Richardson et al. (2005) show that other categories of accruals entail discretionality and subjectivity in their measurement and show low reliability and persistence. These other categories of accruals can be used for EM, while other categories that do not allow discretionality might be hard to manage. If it is true that parent companies use their subsidiaries to reach their earnings' targets, I should expect an induced manipulation on the subsidiary accruals that show high discretionality/low reliability and a lower or no induced manipulation on the subsidiary accruals that show low dicretionality/high reliability. In order to discern between these two categories of accruals, I will follow the approach by Richardson et al. (2005). The authors break down the composition of total accruals as follows:

$$TA = \Delta WC + \Delta NCO + \Delta FIN$$

where

$\Delta WC = \Delta COA - \Delta COL$

$\Delta NCO = \Delta NCOA - \Delta NCOL$

$\Delta FIN = \Delta STI + \Delta LTI - \Delta FINL$

The following tables, extracted from Richardson et al. (2005), explain the composition (Table 1) and reliability assessment (Table 2) of each of the above categories of accruals.

Table 1
Illustration of balance sheet categorization of accruals

| Non-cash assets | | | | Liabilities | | | |
|---|---|---|---|---|---|---|---|
| | Data item | Initial | Extended | | Data item | Initial | Extended |
| Short term investments | #193 | ΔFIN | ΔSTI | Debt in current liabilities | #34 | ΔFIN | ΔFINL |
| Receivables | #2 | ΔWC | ΔCOA | Accounts payable | #70 | ΔWC | ΔCOL |
| Inventory | #3 | ΔWC | ΔCOA | Income taxes payable | #71 | ΔWC | ΔCOL |
| Other current assets | #68 | ΔWC | ΔCOA | Other current liabilities | #72 | ΔWC | ΔCOL |
| Property, plant and equipment, net | #8 | ΔNCO | ΔNCOA | Long term debt | #9 | ΔFIN | ΔFINL |
| Investments—equity method | #31 | ΔNCO | ΔNCOA | Other liabilities | #75 | ΔNCO | ΔNCOL |
| Investments—other | #32 | ΔFIN | ΔLTI | Deferred taxes | #35 | ΔNCO | ΔNCOL |
| Intangibles | #33 | ΔNCO | ΔNCOA | Minority interest | #38 | ΔNCO | ΔNCOL |
| Other assets | #69 | ΔNCO | ΔNCOA | Preferred stock | #130 | ΔFIN | ΔFINL |

Table 2
Summary of reliability assessments by accrual category

| Accrual category | Decomposition level | Reliability assessment | Summary of reasoning behind reliability assessment |
|---|---|---|---|
| ΔCOA | Extended | Low | Category is dominated by receivables and inventory. Receivables require the estimation of uncollectibles and are a common earnings management tool (e.g., channel stuffing). Inventory accruals entail various cost flow assumptions/allocations and subjective write-downs. |
| ΔCOL | Extended | High | Category is dominated by payables, which represent financial obligations of the firm that can be measured with a high degree of reliability. |
| ΔWC | Initial | Medium | Combination of ΔCOA (low reliability) and ΔCOL (high reliability) suggests medium reliability. |
| ΔNCOA | Extended | Low | Category is dominated by PP&E and intangibles. Both PP&E and internally generated intangibles (e.g., capitalized software development costs) involve subjective capitalization decisions. Moreover, PP&E and intangibles involve subjective amortization and write-down decisions. |
| ΔNCOL | Extended | Medium | Category includes long-term payables, deferred taxes and postretirement benefit obligations. Best characterized as a mixture of accruals with varying degrees of reliability, so classify as medium reliability. |
| ΔNCO | Initial | Low/Medium | Combination of ΔNCOA (low reliability) and ΔNCOL (medium reliability) suggests low/medium reliability. |
| ΔSTI | Extended | High | Represents marketable financial securities that are expected to be sold within 12 months. Market values of marketable financial securities can be measured with a high degree of reliability. |
| ΔLTI | Extended | Medium | Category includes long-term receivables and investments in marketable securities that are expected to be held for more than a year. Best characterized as a mixture of accruals with varying degrees of reliability, so classify as medium reliability. |
| ΔFINL | Extended | High | Category contains interest-bearing financial obligations. Typically measured with a high degree of reliability using effective interest rate at origination. |
| ΔFIN | Initial | High | Combination of ΔSTI (high reliability), ΔLTI (medium reliability) and ΔFINL (high reliability) suggests high reliability. |

I will follow the same approach and break down the subsidiary total accruals in each of the above categories. I will sum the categories with high/medium reliability and the categories with low reliability, scale them by lagged total assets and use them alternatively as dependent variables in Model 1. I expect to find (not find) support to my hypotheses when low (high/medium) reliable accruals are used as dependent variables.

As a note, Richardson et al. (2005) use the Compustat classification. I will have to trace the corresponding classification in Orbis. In general, I have data to measures most of the total accruals' components, except from ΔSTI (high reliability) and ΔLTI (medium reliability). Specifically, STI are grouped with cash in the Orbis classification (cash and cash equivalents) and LTI are grouped within other fixed assets (investment measured at cost or equity method, long-term trade debts and other investments held as fixed assets). In other words, the category of "other fixed assets" includes both elements of NCOA (low reliability) and LTI (medium reliability). Consistently with the rest of the paper, I will choose to not consider accruals relative

to other fixed assets (I do not want to capture accruals from investments in other subsidiaries of the group).[34] I will also disregard ΔSTI, as I cannot separate them from cash, and ΔLTI (comprised in other fixed assets). I acknowledge that this could bias my estimates. However, as I am disregarding accruals with heterogenous levels of reliability (low/medium/high), I am more comfortable that this choice should not significantly bias the comparison between the two subsamples of low and high/medium aggregated accruals.[35]

## 7. Future steps

I plan to collect analysts' EPS forecasts using I/B/E/S and do the same analyses described above on the zero-EPS-forecast error benchmark.

This paper is in a data-analysis and writing-up stage.

[34] In other words, I want to consider accruals in the financial statement of the controlled subsidiary, not in the financial statement of the "controlling" subsidiary. I want to clarify that the other fixed assets accruals are not disregarded or "lost". I am going to still observe them, but at the level of the subsidiary that generates them.

[35] Richardson et al. (2005) note that a lower reliability/persistence of some accruals' components might not necessarily arise from discretionality/subjectivity. A lower persistence might arise from exceptional/temporary growth or conservative accounting. I already control for sales growth. With regard to the effect of conservatism, I might, in the future, control for the level of conditional conservatism of subsidiaries by employing the Ball & Shivakumar (2005) methodology. I would focus on conditional conservatism as it is the form of conservatism that more likely affect earnings and accruals persistence. Alternatively, to assess the potential effect of unconditional conservatism, I might estimate subsidiary-level unconditional conservatism following the approach by Cano-Rodriguez (2010).

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# TABLES

**Table 1 - Panel A. Initial sample 2010-2017**

| | | |
|---|---|---|
| Industrial Susbidiaries of Listed Domestic GUOs (>50,01% ownership) located in the 28EU countries | | 55,476 |
| Without missing values in key subsidiaries financial data | | 46,801 |
| | | 8,675 |
| Drop Parents with only 1 subsidiary | | 1,131 |
| | | 7,544 |
| Without delisted/unlisted Parent years | | 1,133 |
| **Final 28 EU subsidiary-year observations** | | **6,411** |
| | *Unique Subsidiaries* | *2,463* |
| | *Unique Parents* | *563* |
| | *Guo-Years* | *2,091* |

**Table 1 Panel B - Country Composition**

| Country | N | % | % Cum | Unique GUO | Unique subs |
|---|---|---|---|---|---|
| BE | 33 | 0.51% | 0.51% | 3 | 11 |
| BG | 110 | 1.72% | 2.23% | 6 | 45 |
| DE | 170 | 2.65% | 4.88% | 13 | 85 |
| DK | 9 | 0.14% | 5.02% | 3 | 7 |
| ES | 173 | 2.70% | 7.72% | 11 | 91 |
| FI | 249 | 3.88% | 11.61% | 12 | 96 |
| FR | 734 | 11.45% | 23.05% | 58 | 259 |
| **UK** | **2,985** | **46.56%** | **69.61%** | **243** | **1,081** |
| GR | 251 | 3.92% | 73.53% | 25 | 74 |
| HR | 186 | 2.90% | 76.43% | 18 | 69 |
| HU | 30 | 0.47% | 76.90% | 5 | 15 |
| IE | 2 | 0.03% | 76.93% | 1 | 2 |
| IT | 303 | 4.73% | 81.66% | 26 | 110 |
| LV | 30 | 0.47% | 82.12% | 1 | 12 |
| PL | 511 | 7.97% | 90.10% | 67 | 235 |
| PT | 21 | 0.33% | 90.42% | 3 | 10 |
| RO | 7 | 0.11% | 90.53% | 2 | 5 |
| SE | 579 | 9.03% | 99.56% | 61 | 244 |
| SI | 8 | 0.12% | 99.69% | 2 | 4 |
| SK | 20 | 0.31% | 100.00% | 3 | 8 |
| | **6,411** | **100%** | | **563** | **2,463** |

**Table 1 - Panel C: UK final Sample**

| | | |
|---|---|---|
| **UK subsample subsidiary-years** | | **2,985** |
| Of which: With **EPS data** | | **2,621** |
| Of which: With **Change in EPS data** | | **2,580** |
| | *Unique subs* | *957* |
| | *GUO-years* | *858* |
| | *Unique GUOs* | *220* |

**Table 2 - General Descriptives**

| | N | Mean | St.Dev | Min | P25 | Median | P75 | Max |
|---|---|---|---|---|---|---|---|---|
| Sub Total Assets (M/$) | 2,621 | 64 | 253 | - | 2 | 6 | 22 | 2.095 |
| Group Total Assets (M/$) | 2,621 | 584 | 1,458 | 1 | 26 | 97 | 328 | 8,564 |
| Sub Operating Revenues (M/$) | 2,621 | 59 | 182 | - | 2 | 7 | 27 | 1,385 |
| Group Operating Revenues (M/$) | 2,617 | 529 | 1,110 | - | 25 | 83 | 404 | 6,035 |
| Sub relative size (%) | 2,621 | 0.21 | 0.29 | - | 0.02 | 0.08 | 0.27 | 1.47 |
| Sub relative sales (%) | 2,617 | 0.24 | 0.29 | - | 0.02 | 0.11 | 0.34 | 1.00 |
| Group EPS ($) | 2,621 | 0.18 | 0.46 | -0.93 | -0.00 | 0.08 | 0.23 | 2.59 |
| Group Change in EPS ($) | 2,580 | 0.03 | 0.31 | -1.34 | -0.03 | 0.01 | 0.06 | 1.15 |
| No of subs by group | 2,621 | 7 | 6 | 2 | 3 | 5 | 10 | 26 |

**Table 3 - Variables descriptive statistics**

| | N | Mean | St.Dev | P25 | Median | P75 |
|---|---|---|---|---|---|---|
| AWCA | 2,621 | 0.014 | 0.548 | -0.099 | 0.012 | 0.147 |
| SUSPECT EPS | 2,621 | 0.149 | 0.356 | 0 | 0 | 0 |
| SUSPECT changeEPS | 2,580 | 0.211 | 0.408 | 0 | 0 | 0 |
| CFR | 2,621 | 0.991 | 0.058 | 1 | 1 | 1 |
| lagged Sales/lagged NOA | 2,621 | 2.615 | 4.036 | 0.807 | 1.712 | 3.074 |
| UN_BLOATED | 2,621 | 0.4155 | 0.493 | 0 | 0 | 1 |
| lagged assets/group assets | 2,621 | 0.195 | 0.277 | 0.024 | 0.077 | 0.246 |
| RELATIVE_SIZE | 2,621 | 0.417 | 0.493 | 0 | 0 | 1 |
| DISTANCE | 2,621 | 1.62 | 1.05 | 1 | 1 | 2 |
| DIV_AUDITOR | 2,621 | 0.066 | 0.249 | 0 | 0 | 0 |
| SIZE | 2,621 | 15.62 | 2.201 | 14.38 | 15.58 | 16.92 |
| ROA | 2,621 | 0.023 | 0.521 | -0.006 | 0.065 | 0.159 |
| Sales GROWTH | 2,621 | 0.187 | 1.108 | -0.152 | 0.004 | 0.189 |
| CFO | 2,621 | 0.01 | 0.613 | -0.056 | 0.073 | 0.22 |
| LEVERAGE | 2,621 | 0.922 | 2.529 | 0.0269 | 0.273 | 0.722 |
| LOSSES | 2,621 | 0.195 | 0.396 | 0 | 0 | 0 |
| IFRS | 2,621 | 0.161 | 0.367 | 0 | 0 | 0 |
| BIG4 | 2,621 | 0.485 | 0.499 | 0 | 0 | 1 |
| Tax-avoidance | 2,621 | 0.017 | 0.418 | -0.049 | -0.00001 | 0.02 |

**Table 4 - Meet/Beat zero EPS benchmark**

| VARIABLES | **AWCA** |
|---|---|
| SUSPECT_EPS | -0.209*** |
| | (0.070) |
| UN_BLOATED | -0.025 |
| | (0.017) |
| RELATIVE_SIZE | -0.007 |
| | (0.019) |
| LEVEL | -0.024 |
| | (0.017) |
| DIV_AUDITOR | 0.087* |
| | (0.051) |
| **SUSPECT_EPS*UN_BLOATED** | **0.124*** ** |
| | **(0.042)** |
| **SUSPECT_EPS*RELATIVE_SIZE** | **-0.035** |
| | **(0.042)** |
| **SUSPECT_EPS*LEVEL** | **0.083*** ** |
| | **(0.027)** |
| **SUSPECT_EPS*DIV_AUDITOR** | **-0.131*** |
| | **(0.072)** |
| SIZE | 0.004 |
| | (0.009) |
| ROA | 0.882*** |
| | (0.102) |
| Sales GROWTH | -0.156*** |
| | (0.040) |
| CFO | -0.755*** |
| | (0.054) |
| LEVERAGE | 0.013 |
| | (0.010) |
| LOSSES | 0.042* |
| | (0.024) |
| IFRS | -0.043 |
| | (0.047) |
| BIG4 | 0.028 |
| | (0.041) |
| Tax-avoidance | 0.040 |
| | (0.107) |
| Constant | -0.017 |
| | (0.151) |
| Year FE | Yes |
| Industry FE | Yes |
| Group FE | Yes |
| Observations | 2,621 |
| R-squared | 0.485 |
| Robust standard errors in parentheses | |
| *** p<0.01, ** p<0.05, * p<0.1 | |
| **Explained R2 (Shapley test)** | |
| Controls | 71.71% |

| | |
|---|---|
| **SUSPECT VARIABLES** | **1.33%** |
| Year FE | 0.45% |
| Industry FE | 0.32% |
| **Parent FE** | **26.19%** |
| **Test all suspect coefficients (β1-β9)==0** | |
| **F(9,956)** | 2.68 |
| **Prob>F** | 0.0045 |

**Table 5 - Meet/Beat zero change in EPS benchmark**

| VARIABLES | **AWCA** |
|---|---|
| SUSPECT_changeEPS | 0.027 |
| | (0.058) |
| UN_BLOATED | 0.004 |
| | (0.018) |
| RELATIVE_SIZE | -0.012 |
| | (0.022) |
| LEVEL | -0.004 |
| | (0.019) |
| DIV_AUDITOR | 0.043 |
| | (0.042) |
| **SUSPECT_changeEPS*UN_BLOATED** | -0.039 |
| | (0.041) |
| **SUSPECT_changeEPS*RELATIVE_SIZE** | 0.015 |
| | (0.042) |
| **SUSPECT_changeEPS*LEVEL** | -0.023 |
| | (0.021) |
| **SUSPECT_changeEPS*DIV_AUDITOR** | 0.028 |
| | (0.150) |
| SIZE | 0.004 |
| | (0.009) |
| ROA | 0.861*** |
| | (0.104) |
| Sales GROWTH | -0.153*** |
| | (0.040) |
| CFO | -0.752*** |
| | (0.053) |
| LEVERAGE | 0.013 |
| | (0.009) |
| LOSSES | 0.039 |
| | (0.025) |
| IFRS | -0.045 |
| | (0.047) |
| BIG4 | 0.017 |
| | (0.042) |

| | |
|---|---|
| Tax-avoidance | 0.033 |
| | (0.107) |
| Constant | -0.042 |
| | (0.148) |
| Year FE | Yes |
| Industry FE | Yes |
| Parent FE | Yes |
| Observations | 2,580 |
| R-squared | 0.477 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

| **Expained R2 (Shapley test)** | |
|---|---|
| Controls | 73.14% |
| **SUSPECT VARIABLES** | 0.81% |
| Year FE | 0.40% |
| Industry FE | 0.28% |
| **Parent FE** | 25.38% |

| **Test all suspect coefficients (β1-β9)==0** | |
|---|---|
| **F(9,956)** | 0.59 |
| **Prob>F** | 0.8029 |

**Table 6 - Group Meet/Beat zero EPS benchmark**

| VARIABLES | **AWCA** |
|---|---|
| SUSPECT EPS | 0.018** |
| | (0.009) |
| Group Controls | Yes |
| Year FE | Yes |
| Industry FE | Yes |
| Parent FE | Yes |
| Observations | 820 |
| R-squared | 0.364 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

| **T-test difference group AWCA** | Mean AWCA |
|---|---|
| SUSPECT _EPS=1 (N=159) | 0.0110 |
| SUSPECT _EPS=0 (N=663) | -0.013 |
| Difference | 0.0240** |
| **P-value** | **0.0122** |

**Table 7 - Group Meet/Beat zero change in EPS benchmark**

| VARIABLES | **AWCA** |
|---|---|
| SUSPECT_changeEPS | -0,011 |
| | (0.009) |
| Group Controls | Yes |
| Year FE | Yes |
| Industry FE | Yes |
| Parent FE | Yes |
| Observations | 803 |
| R-squared | 0.384 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

| **T-test difference group AWCA** | Mean AWCA |
|---|---|
| SUSPECT _EPS=1 (N=159) | -0.013 |
| SUSPECT _EPS=0 (N=663) | -0.007 |
| Difference | -0.006 |
| **P-value** | **0.7341** |

**Table 8 - Within vs Across Group Correlation**

| **AWCA** | Within Group Correlation | Across Group Correlation | Difference |
|---|---|---|---|
| Mean | 0,0810 | -0,018 | 0,099*** |
| Median | 0,0730 | -0,004 | 0,077*** |

# APPENDIX

**A1. Variable Definition**

| | |
|---|---|
| **AWCA** | DeFond and Park (2001). AWCA=WCt-(WCt-1/Salest-1)*Salest. AWCA is then scaled by lagged total assets |
| **SUSPECT EPS** | Dummy equal to 1 if the Parent-Year falls in the interval of the EPS distribution [0;0.04] and 0 otherwise. Interval width chosen following the method by Scott (1992): 2*(IQR)*n^(-1/3) |
| **SUSPECT change EPS** | Dummy equal to 1 if the Parent-Year falls in the interval of the change in EPS distribution [0;0.02] and 0 otherwise. Interval width chosen following the method by Scott (1992): 2*(IQR)*n^(-1/3) |
| CFR | Hand-collected Cash Flow Rights own by the Parent company in the subsidiary from the Parent Annual Report Disclosure in accordance with s409 and s410 of the Companies Act 2006 |
| Lagged Sales/lagged NOA | Measure of unbloated assets (Barton and Simko, 2002). NOA is calculated as = shareholders' equity less cash and cash equivalents + total debt - other fixed assets |
| **UN_BLOATED** | Dummy equal to 1 if the product of CFR*laggedSales/lagged NOA is above the group median and 0 otherwise |
| lagged assets/lagged group assets | Ratio of a subsidiary's (lagged totals assets minus lagged other fixed assets)/lagged consolidated total assets |
| **RELATIVE_SIZE** | Dummy equal to 1 if the product of CFR*lagged assets/lagged group assets is above the group median and 0 otherwise |
| **DISTANCE** | Level of distance of a subsidiary from the parent along the chain of control. It is equal to the n° of companies (sub-holdings) between a subsidiary and the parent plus 1. |
| **DIV_AUDITOR** | Dummy equal to 1 if the subsidiary's auditor is different from the Parent auditor and 0 otherwise. Subsidiaries and parent auditors are hand collected from the annual reports of companies. Source: Companieshouse.gov.uk |
| *Sub_Controls* | |
| **SIZE** | Natural logarithm of total assets |
| **ROA** | EBIT/lagged total assets |
| **Sales GROWTH** | Percentage change in operating revenues |
| **CFO** | Cash flow from operation/lagged total assets. Cash flow=EBIT-Total Accruals. Total Accruals=(Δcurrent assets-Δcash and cash equivalents)-(Δcurrent liabilities - ΔS/Tdebt)-Depreciation expense |
| **LEVERAGE** | (L/T+S/T debt)/lagged total assets |
| **LOSSES** | Dummy equal to 1 if net income<0 and 0 otherwise. |
| **IFRS** | Dummy equal to 1 if the subsidiary adopts IFRS and 0 otherwise |
| **BIG4** | Dummy equal to 1 if the subsidiary is audited by a BIG4 firm and 0 otherwise |
| **Tax-avoidance** | Susbidiary's spread in reported vs estimated net income before taxes, scaled by lagged total assets (Manzon and Plesko,2002). The ratio is multiplied by minus 1 (so that the higher the difference, the higher the tax avoidance, and the more negative AWCA should be). Estimated Net Income=reported tax expense/corporate tax rate. Corporate tax rates taken from GOV.UK |

**A2 - Industry distribution**

| Industry Fama and French 12 | Subsidiaries | % | Parent | % |
|---|---|---|---|---|
| 1 | 265 | 10.11% | 397 | 15.15% |
| 2 | 74 | 2.82% | 34 | 1.30% |
| 3 | 240 | 9.16% | 286 | 10.91% |
| 4 | 41 | 1.56% | 59 | 2.25% |
| 5 | 6 | 0.23% | 18 | 0.69% |
| 6 | 263 | 10.03% | 317 | 12.09% |
| 7 | - | 0.00% | - | 0.00% |
| 8 | - | 0.00% | - | 0.00% |
| 9 | 396 | 15.11% | 359 | 13.70% |
| 10 | 85 | 3.24% | 134 | 5.11% |
| 11 | - | 0.00% | - | 0.00% |
| 12 | 1,251 | 47.73% | 1,017 | 38.80% |
| | 2,621 | | 2,621 | |

**A3 - Year Distribution**

| Year | N | % |
|---|---|---|
| 2010 | 396 | 15.11% |
| 2011 | 375 | 14.31% |
| 2012 | 347 | 13.24% |
| 2013 | 331 | 12.63% |
| 2014 | 351 | 13.39% |
| 2015 | 305 | 11.64% |
| 2016 | 280 | 10.68% |
| 2017 | 236 | 9.00% |
| | 2,621 | |