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Audit Committee Competencies and Audit Effort: Evidence from Materiality and Audit Risk Areas

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ABSTRACT

Audit committees (ACs) carry the responsibility of monitoring external auditors. We provide UK-based evidence on this monitoring role by examining the relations between AC competence characteristics (financial expertise, multiple directorships and tenure) and three measures of external audit effort. Specifically, we use materiality, the number of significant risk areas and audit fees. We regard materiality as an inverse measure of the depth of audit effort, the number of risk areas as a measure of the scope of audit effort, and audit fees as a measure of total effort. We find little evidence that AC competencies are associated with the three measures of audit effort. We also examine the relation between AC effort and the three measures of audit effort and present evidence supporting a complementarity effect between AC effort and audit effort. Finally, we find that AC effort, but not AC competence characteristic, is positively related to reporting quality. Our findings highlight the importance of AC effort as a driver of audit effort while suggesting that in the UK individual AC competencies are much less influential.

Keywords: Materiality, audit risk areas, audit committee, external auditors, audit effort

JEL Classification: M41, M42, G38

1. Introduction

In the US, under the Sarbanes-Oxley Act of 2002 (hereafter, SOX) and Exchange-specific rules, the audit committee (hereafter AC) has an oversight responsibility with respect to the external auditor (e.g., Abbott, Parker, Peters & Raghunandan, 2003; Bruynseels & Cardinals, 2014). *Assuming* that certain individual and committee-wide characteristics should enhance AC oversight role, several studies have examined the link between individual AC competencies and audit effort. Specifically, using audit fees as a measure of audit effort, prior US-based research has found that audit effort is positively related to AC independence, financial expertise, meeting frequency, tenure and the pay to AC members (Abbott, Parker, Peters & Raghunandan, 2003; Engel, Hays & Wang, 2010; Beck & Mauldin, 2014; Bruynseels & Cardinals, 2014). However, an opposing view is that stronger AC competencies have a substitutive effect on audit effort (Krishnan & Visvanathan, 2008).

Prior research has used audit fees as a proxy for audit effort. Although this is a conceptually valid instrument, it is also a coarse measure of audit effort. Specifically, what is not known from this line of US-based research is whether AC characteristics are associated with greater audit effort that is manifested through a greater scope of the audit effort, more extensive investigations of relatively few accounting problems, or both. Nor it is clear if US findings regarding the oversight role of the AC hold in other countries owing to differences in institutions, such as auditor legal liability, communications between the auditor and AC, and regulatory scrutiny and enforcement.[1] Importantly, there is scant evidence on the relations between AC characteristics and AC effort, and whether AC effort and audit effort are complementary or substitutive in nature.

In the UK since 2013, external auditors are required to disclose what they have identified as significant audit risk areas and materiality thresholds used in the planning and execution of the

[1] See next section for a discussion of differences in relevant institutions between the US and UK.

audit plan (FRC, 2012a, 2012b). We posit that a greater number of reported audit risks imply a broader scope of the audit, while reported lower materiality implies a more detailed level of audit inspection. This allows us to examine how audit effort, and hence audit fees, result from different combinations of these channels of audit effort (e.g., low materiality but few risk areas). In other words, by using these newly available disclosures we extend prior research to investigate how AC competencies influence the planning of the external audit process. To the best of our knowledge, we are the first to examine the link between AC competencies and these channels of audit effort.

In particular, we are interested in understanding the effect of AC competence characteristics on external audit effort and whether they similarly affect the depth and scope of the audit plan. This is important because it is a-priory unclear if ACs view audit depth and scope as complementary or substitutive in nature. Our measures of AC competence include financial expertise, governance experience (i.e. multiple directorships in other ACs and Boards) and firm-specific knowledge (i.e. AC member tenure) (Bédard & Gendron, 2010), at the AC Chair, other members and overall AC level.[2] We capture the depth of audit effort by materiality at the financial statements level, the scope of audit effort by the number of significant audit risks and, similar to prior research, overall audit effort by audit fees.

We then go on to examine the effect of AC own effort on these three measures of external audit effort. Prior research has mostly used number of AC meetings as a measure of AC effort and diligence. Here we use a new measure of AC effort, in addition to meeting frequency, by taking advantage of the fact that ACs in the UK have to disclose in their annual report how many risk areas they have reviewed. This new measure of AC effort is based on the number of risk areas reviewed and reported by the AC.

[2] We do not examine AC independence, as there is no variability in our sample; nearly all AC Chairs and more than 94% of members are considered independent.

In addition to our interest in how ACs influence the audit process, we are motivated by increased criticism of the UK corporate governance system, and the ongoing discussion of the effectiveness of the AC in monitoring adequately the external audit function (Shah & Grimstone, 2019). Corporate scandals of the 2000s and the financial crisis of 2008 raised doubt over the effectiveness of UK corporate governance mechanisms (Beattie, Fearnley & Hines, 2014; Church, Davis & McCracken, 2008; Mock, Bédard, Coram, Davis, Espahbodi, & Warne, 2013). While the US was fast to respond to such concerns in 1999 with Securities and Exchange Commission (SEC) rules requiring three independent members of the AC[3] and then with the passage of SOX in 2002, the UK took more time to address perceived shortcomings in AC oversight regulation. As a result, researches have been able to assess the effects of SOX on AC oversight in the US (e.g., Engel et al., 2010, Beck & Mauldin, 2014), but there is scant empirical evidence on the effectiveness of non-US regimes with respect to AC oversight of the audit process.

We start our empirical investigation with a validation test of the argument that materiality (number of risks) is negatively (positively) related to audit effort. Specifically, building on the audit fee model of Choi, Kim, & Zang (2010), we show that lower materiality and a larger number of risk areas are positively related to audit fees. We then find modest evidence in the cross-section that AC competencies are associated with our three measures of audit effort. Specifically, we find ACC tenure and financial expertise are negatively associated with the depth and breadth of audit effort, and AC member tenure is positively associated with breadth of audit effort. However, the evidence we find in this analysis disappears once we conduct a more detailed analysis of the source of AC expertise. Specifically, we test the effect of specific expertise types, including accounting, supervisory and finance expertise (Badolato, Donelson,

[3] Under the SEC rules US stock exchanges were allowed to provide certain exceptions and opt-outs (see Kim and Klein, 2017)

& Ege, 2014), but find practically no evidence that these specific expertise types are associated with audit effort. We also find no evidence that meeting frequency or AC size are associated with audit effort.

Next, we introduce our new measure of AC effort, which is based on the number of risks disclosed by the AC. As with the number of risks disclosed by the external auditor, we posit that AC effort is positively related to the number of risks the AC reports. Note that it is an open question whether external audit effort increases or decreases when AC effort is higher (Engel et al., 2010). Using levels and changes specifications we find that the number of significant accounting issues disclosed by the AC is positively associated with the scope of the external audit effort, as well as overall effort (as captured by audit fees). This suggests that external audit effort compliments AC effort and is indicative of stronger AC oversight when the AC exerts more effort.

Finding that AC effort is strongly related to audit effort we then explore the determinants of AC effort. Here we find no evidence that competencies of individual AC members are associated with AC effort, we find no evidence this is the case. However we find that our measure of AC effort is positively related to meeting frequency, but that this effect is economically small.

In the final set of tests, we examine if AC effort is positively related to reporting quality. This analysis is motivated by the observation that prior research has not examined this relation. Using three popular measures of reporting quality, we find that AC effort is positively related to the three measures reporting quality. However, the economic effect is relatively modest.

We contribute to the literature on audit committees in several ways. First, while prior research has established that certain AC competencies are associated with external audit effort, little is known as to which elements of the audit plan are influenced by these competencies. We extend prior research by focusing on two important elements of audit planning, which were

not explored before: the scope and depth of the investigation conducted by the external auditor. Our evidence speaks more directly as to the relations between the AC and external audit effort, because materiality and significant risk areas are fundamental elements of the external audit plan. In other words, we shed light on a process that has been previously described as a 'black box' by investors (FRC, 2015). Prior research is silent as to the channel through which the AC influences audit effort (Beasley, Carcello, Hermanson & Neal, 2009). Second, we use hand-collected disclosures from AC reports about the number of risk areas reviewed by the AC during the period as a proxy for AC effort. With the exception of Abbott et al. (2003) and Engel et al. (2010),[4] there is little empirical evidence as to whether AC effort is related to the external auditor's effort over and above individual AC competencies. We report novel evidence that AC effort is complemented with a broader scope of the external audit plan and overall audit effort. Third, most archival-empirical evidence on the relation between AC competencies and effort on one hand and audit effort on the other hand is based on US data. The use of a UK setting sheds light on the relations of interest in arguably a weaker corporate governance regime. In light of the on-going criticism of the UK corporate governance system, the evidence reported here is useful to regulators and practitioners who are interested in AC oversight outside the US. Specifically, we contribute to the literature by providing evidence on whether AC competencies and AC effort influence audit effort, in a 'comply-or-explain' environment of corporate governance, which differs substantially from the mandatory requirements of SOX (Beattie et al., 2014; Ghafran & Yasmin, 2018; Wu, Hsu & Haslam, 2016). Finding that individual characteristics of AC members have no effect on audit effort suggests that the selection of AC members by managers may serve a window-dressing purpose. Specifically,

[4] Abbott et al.'s (2003) proxy for AC effort is the number of AC meetings. Engel et al.'s (2010) main proxy for AC effort is total compensation for the AC Chair and other members of the AC, although they also control for the number of AC meetings. The evidence on the relation between audit fees and number of AC meetings is mixed.

although individual AC members exhibit required credentials, the AC only serves a symbolic role (Cohen, Krishnamoorthy & Wright, 2010).

2. Institutional and regulatory background

As we earlier observed, findings from US settings may not extend to other jurisdictions. In particular, one of the main concerns is that, unlike the US, UK regulatory setting lacks sufficient statutory force (CMA, 2019). The Corporate Governance Code (henceforth the Code) of the Financial Reporting Council (FRC) functions on a comply-or-explain basis (FRC 2012b). Boards of directors are not required to follow the FRC's Guidance on AC, and existing regulations do not provide the level of required detail (CMA, 2019). This sharply contrasts with the Securities Exchange Act of 1934, which was amended in 2002 to pass statutory responsibility for the appointment, compensation, and oversight of any listed public company's auditor to a committee of independent directors. Furthermore, in the US the Public Company Accounting Oversight Board (PCAOB) has a statutory mandate to oversee audits of public companies, implying that auditors are subject to greater regulatory scrutiny and hence to a greater enforcement threat. Recent evidence in Florou, Morricone and Pope (2019) casts doubt that enforcement threat is effective in the UK.

In our investigation we use materiality, audit risks and audit fees as measures of audit effort. Materiality and significant audit risks have been publicly disclosed in the auditor's report in the UK since 2013, as part of a broader regulatory audit reform. Under the FRC's revision of the International Standard on Auditing (UK & Ireland) 700 "*The Independent Auditor's Report on Financial Statements*" (hereafter ISA 700), auditors of companies complying with the Code, need to follow enhanced reporting requirements. Specifically, the auditor's report should include an overview of the scope of the audit, describe the risks of material misstatements that had the greatest effect on the audit effort, and disclose the materiality level applied in planning

and performing the audit (FRC, 2013).[5] The primary objective of the expanded auditor reporting model was to increase disclosure and communication between the auditors and the public (Sierra-García, Gambetta, García-Benau & Orta-Pérez, 2019). Standard setters around the world have also engaged in similar projects.[6] Yet, the UK has been at the forefront of international disclosure reforms, as it was the early adopter of the expanded audit report and one of the first countries to apply disclosures of audit risks and materiality thresholds.[7]

Materiality, our measure of the depth of audit effort, is an important component of the financial reporting assurance process. At the planning stage, the auditor sets the overall level of materiality that is used to define the audit plan, i.e. the nature, timing and extent of audit procedures (FRC, 2016a).[8,9] It is the maximum amount of misstatements the auditor is prepared to accept in the financial statements, while still concluding that they provide a fair presentation of the financial position and performance of the reporting entity (Porter, Simon & Hatherly, 2014). The greater the risk of material misstatements, the greater the required extent of audit procedures (i.e. the *depth* of investigation) (FRC, 2017). Lower materiality implies more

[5] In June 2016, the FRC published ISA 701 '*Communicating Key Audit Matters in the Independent Auditor's Report*', which became effective for audits of financial statements for periods ending on or after June 2018. The significant risks of material misstatement or audit risks, as introduced in the 2013 revision of ISA 700, where renamed "key audit matters". For the purpose of this study, we use the former term 'significant audit risks'.

[6] The European Commission (EC) requires that the auditor's report should provide a description of 'significant assessed risks', effective for periods ending on or after June 30, 2017 (EC, 2014). The International Audit and Assurance Standards Board (IAASB) revised ISA 700 and introduced ISA 701 *'Communicating Key Audit Matters in the Independent Auditor's Report'* in January 2015, which requires auditors to communicate information about 'key audit matters' in the audit report, for periods ending on or after December 15, 2016 (IAASB, 2015). In June 2017, the Public Company Accounting Oversight Board (PCAOB) adopted a new standard, "*The Auditor's Report on An Audit of Financial Statements When the Auditor Expresses an Unqualified Opinion*", which requires the auditors to communicate to external stakeholders similar issues, defined instead as 'critical audit matters', and is effective for year ends on or after June 30, 2019 for large accelerated filers and December 15, 2020 for all other companies (PCAOB, 2017).

[7] The UK was first to adopt disclosure of materiality levels in the audit report. The EU requires auditors to disclose the quantitative levels of materiality applied in an additional report to the AC, yet this is not publicly available (EC, 2014). The Netherlands followed the steps of the UK and now requires auditors to disclose materiality information (PwC, 2014). The PCAOB and IAASB decided not to require materiality disclosures (PCAOB, 2017; IAASB 2015).

[8] For example, it helps auditors identify which areas and items need to be audited, which sampling techniques to use, how many items to include in the sample, which compliance and/or substantive procedures to perform (Christensen, Elder & Glover, 2014; ICAEW, 2017).

[9] The level of materiality set is based on professional judgment and is likely to depend on many factors, such as the complexity of the company, its business and financial structure, the reliability of its internal controls and corporate governance mechanism (FRC, 2016a).

extensive (substantive) audit procedures, which mitigate against audit risk (Porter et al., 2014).[10] Although it is set at the planning stage of the audit, it can be reassessed depending on the audit findings and further demands from the AC (Arens, Elder, Beaslyand & Hogan, 2017). Importantly, ISA (UK) 260 (FRC, 2017) requires the external auditor to communicate and discuss with the AC her materiality choice, as this is an issue which would normally be considered under providing an overview of the planned scope and timing of the audit.[11] In the US auditors normally do not discuss the level of chosen materiality with the AC (Choudhary, Merkley & Schipper, 2019). Therefore, the potential for ACs to influence this aspect of the audit plan is much greater in the UK than in the US.

The second measure of audit effort – capturing the breadth or scope of audit effort - is the number of significant risk areas of material misstatement assessed by the external auditor and reported in the audit report. In the initial stages of the audit, the auditor, as part of the risk assessment process, should determine, based on professional judgment, whether any of the identified risks of material misstatements are 'significant' (FRC, 2016b). A significant audit risk requires special attention in performing the audit and a suitable response through design and performance of audit procedures (Arens et al., 2017). A greater number of significant audit risks identified is likely to involve additional audit effort, because it requires a greater *breadth* or *scope* of audit effort. When the auditor pays attention to a larger numbers of risk areas, holding materiality fixed, there is greater assurance that the financial statements are free of accounting problems. Similar to materiality, the auditors are required to communicate these risks to the AC (FRC, 2017). In the US, AS 2110 does not require auditors to inquire the AC with respect to risks of material misstatements, except for fraud risk. The US Standard also

[10] If materiality is set too high, it may lead to poorer audit quality as more material misstatements would go undetected; in contrast, if the level is too low, audit quality is likely improved, but at a higher cost (Audsabumrungrat, Pornupatham & Tan., 2015).

[11] Earlier versions of ISA 260 had a similar requirement. We held several private conversations with UK auditing professionals and they confirmed these communications are routine.

does not seem to require the auditor to consult with the AC as to her choice of risk areas in the audit planning.[12] Finally, our third measure is audit fees, which has been used regularly in the auditing literature, and reflects auditors' effort costs, litigation risk and normal profits (e.g., Abbott et al., 2003, Hay, Knechel & Wong, 2006, Choi et al., 2010; Engel et al., 2010).

3. Prior Research and Predictions

3.1 Theoretical background

Under the view of agency theory (Jensen & Meckling 1976), ACs can strengthen the effectiveness of the audit process via their monitoring and oversight activities of management and the external auditor (Cohen, Krishnamoorthy, & Wright, 2008, Beasley et al., 2009). This can lead to improved financial reporting quality and better functioning of financial markets (Defond & Zhang, 2014). An alternative perspective is the institutional theory, where the AC's role is primarily symbolic, serving to enhance organisational legitimacy (Scott 1987, Cohen et al., 2008; Beasley et al., 2009; Cohen et al., 2010).[13]

Prior studies provide mixed evidence on the effect of the AC on the external audit with both substantive activities and symbolic rituals (Beasley et al. 2009; Beattie Fearnley & Hines, 2012, 2014; Gendron & Bédard, 2006; Gendron, Bédard & Gosselin, 2004; Turley & Zaman, 2007). In the UK, Beattie et al. (2012) find ACs are not fully engaged with audit-related and financial reporting issues. However, their evidence is survey-based and predates the recent reforms to the Code and the issue of ISA 700. The CMA (2019) report indicates that while some ACs appear effective in overseeing the activities of auditors, there is significant variability among

[12] PCAOB guidance requires disclosures of critical audit matters by the auditor even if the auditor has not communicated these to the AC (see, https://pcaobus.org/Standards/Documents/Implementation-of-Critical-Audit-Matters-The-Basics.pdf).

[13] Prior studies also use the managerial hegemony and resource dependence perspectives to examine corporate governance interactions (Cohen et al., 2008; Beattie et al., 2014). However, Beasley et al. (2009) argue that institutional and agency theories are the most relevant theories for examining the role of AC in the audit process, because the audit is mainly focused on financial reporting and not as much on strategic and operational matters.

ACs within FTSE 350 companies. This report indicates several investors are concerned that ACs do not sufficiently challenge auditors on the depth of work and analysis they undertake. Similarly, in the US, Beasley et al. (2009) interview AC members and report they strive to provide effective monitoring of financial reporting, while avoiding serving on ceremonial ACs. However, in several specific AC processes, they find evidence of both substantive monitoring and ceremonial action. Cohen et al. (2010) provide evidence that ACs are overall more active, diligent, knowledgeable and powerful, in the post-SOX era; yet they also report instances of a symbolic role.

As there is a two-way monitoring relationship between the AC and external auditors, the distinction of the AC role is not always clear (Compernolle, 2018). Following the 2013 revision of the Code in the UK, the AC has assumed a key role in the external audit function. As under SOX, it is now responsible for the selection, appointment and removal of auditors, as well as agreeing the compensation, and making recommendations to the company board regarding these matters (FRC, 2012a). Also, the AC monitors and oversees the audit process and considers whether the auditors' overall plan, including levels of materiality and proposed resources to execute the plan, is consistent with the scope of the audit, and reviews the findings of the auditors' work (FRC, 2012a).[14] Given these enhanced responsibilities, the AC acts as the superiors of the external auditors. Yet external auditors have also to consider the effectiveness of the AC, which informs their audit planning, and the assessment of inherent and internal control risks of the client. This assessment will affect the nature, timing and extent of audit testing and budgeted hours (Cohen et al., 2010). In addition, external auditors are accountable to the AC, as they have a duty to report to them on a timely basis an increasing number of subjects, such as significant risks (Compernolle, 2018). At the same time, the AC

[14] In the EU, as part of a broader audit reform the amended Directive 2014/56/EU and Regulation 537/2014 (EC, 2014) were introduced, and in the US, the Sarbanes Oxley Act of 2002 (SOX) with Section 301 and the Auditing Standard No.16 'Communications with the Audit Committee' in 2012, set out similar provisions regarding the developing role of the AC and its communication with external auditors.

relies on external auditors for information, because it is not involved in the daily activities of the company (Brennan, Kirwan, & Redmond, 2016).

To summarize, since there is a two-way monitoring and reliance on provision of information between the AC and external auditor, it perhaps is not that surprising that prior evidence is mixed as to the ability of the AC to exercise effective oversight of the external auditor. This complex relationship may therefore be manifested in evidence that seems consistent with the symbolic role perspective.

3.2 Audit committee competencies and audit effort

We examine a detailed set of AC competencies, i.e. financial expertise, governance experience (service on other ACs and boards) and company-specific knowledge (tenure) of the AC Chair and members and their relation to audit effort, as measured by materiality, number of risks and audit fees. Higher audit effort is indicated by lower materiality levels, greater number of audit risks and higher audit fees. While the literature offers evidence on the relation between AC performance and audit fees, there is scarce archival evidence on the relation between AC competencies and materiality thresholds or audit risks.[15,16] Blokdijk et al. (2003) study the determinants of materiality in the Netherlands and find that materiality increases with the quality of the client's internal control environment, size and profitability, while decreasing with the complexity of the client. Amiram, Chircop, Landsman & Peasnell (2017) examine the

[15] Previous research on the determinants of materiality has been limited due to lack of data availability. Alternative data sources have been used, such as audit firm manuals, working papers, inferred materiality thresholds from other reporting disclosures and experiments (e.g., Acito, Burks, & Johnson, 2009; Allen & Elder, 2005; Blokdijk, Drieenhuizen, Simunic & Stein, 2003; DeZoort, Harrison & Taylor, 2006; Eilifsen & Messier, 2014; Ng & Tan, 2003; Keune & Johnstone, 2012). For a detailed review of the literature, see Messier, Martinov-Bennie & Eilifsen, (2005).

[16] Recent studies examine the expanded auditor's reporting model in terms of audit quality (Gutierrez, Minutti-Meza, M., Tatum, & Vulcheva., 2018; Reid, Carcello, Li & Neal., 2019), auditors' legal exposure (Backof, Bowlin, & Goodson, 2018; Brasel, Doxey, Grenier, & Reffett, 2016; Gimbar, Hansen, & Ozlanski, 2016; Kachelmeier, Schmidt & Valentine, 2019), market reactions (Lennox, Schmidt & Thomson, 2018), investment decisions (Christensen, Eilifsen, Glover & Messier, 2018; Rapley, Robertson, & Smith, 2018), loan contracting (Porumb, Karaibrahimoglu, Lobo, Hooghiemstra, & De Waard, 2019), communicative value of disclosures (Boolaky and Quick, 2016; Carver & Trinkle, 2017; Sirois, Bédard, & Bera, 2018; Smith, 2019;). However, none of these studies investigates whether AC competence characteristics or AC effort influence audit effort, measured by materiality, audit risks and audit fees.

determinants of materiality in the UK. In their analysis they include four corporate governance control variables, i.e. independence, skills and meetings of the board of directors, and a measure constructed by Thomson Reuters to capture client's ability to have an effective board. They report that board effectiveness is negatively related to materiality. However, they do not examine the possible effect of individual AC competencies on audit effort. Finally, Sierra-García et al. (2019) examine the determinants of significant audit risk matters in the UK, but they do not include any AC characteristics in their analysis, nor do they examine determinants of materiality.

To form our expectations, we review prior literature that examines the relation between AC competence characteristics and auditor or financial reporting quality. The competencies of the AC Chair are examined separately, because they are particularly important. The Chair, as the leader of the AC, has a role, which is often independent of the rest of the committee (Beattie et al., 2012). The Chair must ensure that the committee carries out its responsibilities efficiently, and often takes on much of the responsibility for the monitoring role formally assigned to the AC (Beattie et al., 2012; Tanyi & Smith, 2015). AC Chairs are highly influential in governance processes (Turley & Zaman, 2007) because they serve as a liaison with other internal and external parties, such as external auditors and management. Thus, the AC Chair seems to have a more active role compared to the AC members that could possibly be considered as more passive (Beattie et al., 2015; 2014). Yet, having a "desired" set of competencies need not necessarily mean that the ACC or AC perform an effective oversight role (Beasley et al., 2009; Bratten et al., 2019). One underlying concern is managers may appoint AC Chair and other AC members with a set of required skills to appear "legitimate," although they are not independent in fact (Lisic, Neal, Zhang & Zhang, 2016).

3.2.1 Financial expertise

The revised Code requires ACs to have at least one member with recent and relevant financial experience.[17] The AC has responsibility and performance duties requiring a high level of financial and accounting sophistication (DeFond, Han, & Hu, 2005). ACs with greater financial expertise have a better understanding of the requirements and complexities of the financial reporting and audit process, which allows them to better evaluate subjective accounting choices and ask probing questions to both management and the auditors (DeZoort & Salterio, 2001; Abbott et al., 2003; Pomeroy, 2010). Prior evidence also suggests that expert Chairs perform better than those without financial expertise (Abernathy, Beyer, Masli & Stefaniak, 2014). Gal-Or, Hoitash, & Hoitash (2017) find that shareholders recognise the value of qualified AC Chairs and grant higher votes to those who are financial experts.

With this expertise, the AC may demand more detailed coverage and testing from the external auditors, hence more audit effort. Abbott et al. (2003) find that AC financial expertise is positively associated with audit fees. Evidence on the link between financial expertise and materiality, or audit risks, is lacking because the required disclosures have only recently become available. Without the ability to further explore direct links to audit effort, prior studies examined the relation between expertise and financial reporting quality, generally showing the relation is positive (Abbott, Parker, & Peters, 2004; Anderson, Mansi, & Reeb, 2004; Bédard, Chtourou, & Courteau, 2004; Carcello, Hollingsworth, & Neal, 2006; Carcello, Hermanson, & Ye, 2011; Carcello, Neal, Palmrose, & Scholz, 2011; Dhaliwal, Naiker, & Navissi, 2010; Farber, 2005; Krishnan & Visvanathan, 2008; Sultana, Singh, der Zahn, & Mitchell, 2019).

However, an AC with greater financial expertise may conduct the monitoring of the financial reporting process and internal controls more effectively, so the auditors can exercise less effort. ACs that are experts are more likely to understand and scrutinise deficiencies or misstatements themselves, and make their questioning more powerful to resolve contentious

[17] However, the Code does not provide a precise definition of 'financial experience'.

issues with management before they reach auditors (Lisic, Myers, Seidel & Zhou, 2019; Pomeroy, 2010). Keune & Johnstone (2012) argue that AC members with greater financial expertise are more familiar with the materiality concept and hence do not have to rely as heavily on the opinions of management and auditors to understand financial reporting, auditing or internal control issues. Krishnan & Visvanathan (2008) report that audit fees are negatively associated with AC member expertise, indicating lower demand for audit effort. Given this mixed evidence, we make no directional prediction on the relation between AC Chair and members financial expertise on one hand and the three measures of audit effort (i.e., materiality, number of risk areas and audit fees) on the other hand.[18]

3.2.2 Governance experience - Multiple directorships

Prior studies examined if the 'governance experience' of the AC Chair and members affects financial reporting quality. On the one hand, serving on multiple boards and committees adds to business knowledge and corporate governance experience (Ahn, Jiraporn, & Kim, 2010; Bédard & Gendron, 2010; Tanyi & Smith, 2015). It can also increase directors' sensitivity to their reputation, making them more diligent (the reputation hypothesis) (Fama & Jensen, 1983; Abbott et al., 2003; Yermack, 2004; Dao, Huang & Zhu, 2013). Therefore, a greater number of other AC and board memberships could lead to better monitoring, hence to greater auditor effort. On the other hand, holding numerous directorships results in increased workload, which may compromise AC Chair and members' ability to effectively fulfil their duties, such as monitoring managers and auditors (busyness hypothesis) (Ahn et al., 2010; Tanyi & Smith, 2015; Wu et al., 2016).

Given the contradicting predictions, it may be of no surprise that the empirical evidence to-date is inconclusive. Some studies indicate directors who hold many directorships do not

[18] Prior research does not offer guidance as to whether ACs should prefer deeper or broader audit effort. We therefore make same predictions regarding the relations between AC competencies and AC effort with the three measures of audit effort.

perform their monitoring responsibilities effectively (Ahn et al., 2010; Fich & Shivdasani, 2006; Sharma & Iselin, 2012). More recently, Tanyi & Smith (2015) find a significantly negative association between the number of committee positions held by the AC Chair and financial reporting quality. Yet, they argue that the adverse effect of ‘‘busyness’’ does not extend beyond the AC Chair to the AC members. Other studies provide *indirect* evidence that outside directorships lead to higher audit effort (Bédard et al., 2004; Krishnan 2005; Vafeas 2005; Yang & Krishnan, 2005). For example, Bédard et al. (2004) find a negative relation between directors with high additional directorships and earnings management.

Due to the inconclusive evidence of the effect of multiple directorships on audit quality, we make no directional predictions on the relation between other AC and board positions held by both the AC Chair and members, and audit effort.

3.2.3 Company-specific knowledge - Tenure

Long AC tenure is associated with reputation capital development, commitment and willingness to perform better (Sultana et al., 2019; Vafeas, 2005). ACs with longer tenure accumulate firm-specific knowledge and are more informed about the internal and external environment, risk management processes and internal control systems (Sharma & Iselin, 2012; Sultana et al., 2019). ACs with relatively longer tenure than CFOs seem to have greater effect on audit fees (Beck & Mauldin, 2014). This evidence suggests ACs with longer tenure demand more audit effort. However, long-serving AC members are more likely to develop personal ties with managers and become less independent, which could weaken their monitoring effectiveness (Beasley, 1996; Sharma & Iselin, 2012).

Bédard & Gendron (2010) find that complacency does not seem to offset the value of firm-specific knowledge as tenure increases. Similarly, Yang & Krishnan (2005) document a negative relation between tenure of AC directors and earnings management. However, Tanyi & Smith (2015) find no association between AC Chair tenure and financial reporting quality.

In financial institutions, Sun & Liu (2014) find that total and idiosyncratic risk are lower in longer serving ACs. Note, however, that the evidence reported in Yang & Krishnan (2005), Bédard & Gendron (2010), Sun & Liu (2014), and Tanyi & Smith (2015) speaks only indirectly as to the relation between AC tenure and audit effort. In contrast, Chan, Liu, & Sun (2013) find that audit fees are negatively associated with long tenure of AC members, consistent with the notion that AC members with greater firm-specific knowledge demand lower audit effort. We test if the tenure of the AC Chair and the average tenure of the AC members is related to audit effort, but make no directional predictions as to the relations between tenure on one hand, and materiality, number of risks and total audit fees on the other hand.

3.3 AC effort and external audit effort

The direction of the relation between AC effort and audit effort is not readily apparent, as we need to take into consideration both the demand for audit services by the client and the supply of audit services by the auditor (Bratten Causholli & Sulcaj, 2019; Collier & Gregory, 1996; Sultana et al., 2019). From the demand side, reputational and/or litigation concerns in cases of financial reporting failures can lead the AC to demand higher assurance, and therefore higher audit effort (Abbott & Parker, 2000). Auditors may also review a greater number of risks to be seen as hard-working as the AC, or because the AC helps them identify risk areas. Consistent with the latter, Gutierrez et al. (2018) find considerable overlap between the type of risks identified by the AC and those reported by the external auditors. These arguments lead to a prediction of a positive relationship between AC effort and audit effort, where the interaction of the AC and the external auditor is complementary. The supply-side view suggests that high AC effort can signal a stronger financial reporting and internal controls environment. In this case, the external auditor may reduce the assessed level of internal control risk, resulting in more compliance and less substantive testing, and hence lower audit effort (Goodwin-Stewart & Kent, 2006). Thus, the AC can act as a substitute for external auditing. This perspective leads

to a negative relationship between AC effectiveness and audit effort. These theoretical arguments notwithstanding, only Abbott et al. (2003) and Engel et al. (2010) provide direct evidence on the relation between AC effort and audit effort. Abbott et al. (2003) use the number of AC meetings to capture effort but find no relation with audit fees. Engel et al. (2010) use AC fees as a proxy for AC effort and show there is a complementary effect. They also find the number of meetings is positively related to audit fees.[19]

Recall the Code requires the AC to disclose, in a separate section of the annual report, the significant accounting issues that it considered in relation to the financial statements, and the actions taken to address them, having regard to matters communicated to it by the auditors (FRC, 2012b). We proxy for AC effort by the number of AC-disclosed risks assuming that a broader scope of the AC work involves more internal effort.

Our research design features AC competencies, which may be the underlying factors that drive AC effort. Thus, it is not clear if AC effort would exhibit incremental explanatory power. Therefore, from both theoretical and research design perspectives, we do not make directional prediction as to the relations between AC effort on one hand and materiality, number of risks and audit fees on the other hand.

3.4 Other AC activity indicators: Size and meeting frequency

In all our models we control for AC size and number of meetings. Since these may be regarded not as pure controls, but also as possible alternative measures of AC effort, we discuss them below. Large AC size may facilitate a higher level of monitoring of the external auditor owing to broader skill range, better financial expertise and firm/industry-specific knowledge (Sultana et al. 2015; Tanyi & Smith, 2015; Turley & Zaman, 2007). However, AC size as a proxy for effort may be unwarranted, since it may suffer from free-riding by individual

[19] Engel et al. (2010) control for Chairs that are financial experts and AC meetings. They, however, do not examine the explanatory role of AC member competencies, ACC and AC member tenure & service on other boards and ACs, and committee size in addition to several other research design choices. Consequently, our results are not fully comparable to theirs.

members or lack of active participation (Sultana et al., 2015). The empirical evidence on the effect of AC size on its performance is also mixed. For example, Krishnan (2005) does not find that AC size is related to internal control problems; Abbott et al. (2004) find no relation between restatements and AC size, while Vafeas (2005) finds no relation with earnings quality. In contrast, Sharma & Iselin (2012) find that larger ACs are associated with a higher (lower) likelihood of restatements before (after) SOX, while Cohen, Hoitash, Krishnamoorthy, & Wright (2014) find a positive relation to restatements during 2001-2007. Yang & Krishnan (2005) find that AC size is negatively related to earnings management.

We note the FRC (2012a) recommends no fewer than three meetings during the year and the descriptive statistics we report below suggest that more than 75% of ACs in our sample meet at least three times. ACs that meet frequently are more likely to be informed of current auditing issues and more diligent in the discharge of their duties (Abbott et al., 2003). On the other hand, AC meeting frequency may be prompted by the presence of more rampant and/or severe accounting problems, in which case audit fees are also expected to be higher even without a causal effect. Abbott et al. (2003) find that the number of AC meetings is not related to audit fees. Engel et al. (2010), in contrast, find a positive relation between the number of AC meetings and audit fees. More broadly, the empirical evidence on whether a larger number of meetings is associated with greater AC effectiveness is inconclusive (e.g., Beasley, Carcello, Hermanson, & Lapides, 2000; Carcello et al., 2011; Krishnan and Visvanathan, 2007).

4. Research Design

4.1 Sample and data

The sample period spans from 2013, the year the revised UK Code and ISA 700 were mandated, to 2017 and comprises all London Stock Exchange (LSE) premium listed companies (727), excluding finance, insurance and real estate industries (269). After excluding early adopters of the disclosure requirements and firm-years for which we could not obtain all

required data, we end up with a final sample of 1,298 firm-years, as shown in Table 1. Materiality and audit risk data are hand-collected from the audit reports included in the annual reports. We collect financial data of the audited firms from Fame and Datastream and corporate governance data, such as AC Chair and other members' competencies, from Boardex.

[Insert Table 1 about here]

4.2 Regression models

To test our predictions, we use two variants of the following model, for firm *i* and year *t* (omitting the *i* and *t* subscripts):

$$AUDIT\_EFFORT = \alpha_0 + \Sigma\beta_k\, COMPETENCIES_k + \Sigma\gamma_l\, CONTROLS_l + FIXED\ EFEFCTS + \varepsilon \quad (1a)$$

$$AUDIT\_EFFORT = \alpha_0 + \Sigma\beta_k\, COMPETENCIES_k + \delta\, AC\_EFFORT + \Sigma\gamma_l\, CONTROLS_l + FIXED\ EFEFCTS + \varepsilon \quad (1b)$$

The two models feature various AC competencies (*COMPETENCIES*) as the main variables of interest and only differ in that we include a measure of AC effort (*AC_EFFORT*) as an additional variable of interest in equation (1b). We use three alternate dependent variables, which capture aspects of audit planning and effort (*AUDIT_EFFORT*). These are materiality (*MAT*), number of audit risk areas (*RISK*) and audit fees (*LAFEE*). *MAT* is the materiality amount (£) for the financial statements as a whole, scaled by total assets as at year-end, and multiplied by 100. Most audit firms disclose the nominal materiality value as well as the percentage and benchmark applied, but some disclose materiality as a percentage of a company-specific benchmark.[20] We first translate this to a nominal value and then scale it by

[20] For example, in the audit report of Senior plc (2014), Deloitte determines materiality for the Group to be £6.8 million, which is approximately 7.5% of adjusted profit before tax.

total assets (Amiram et al., 2017; Gutierrez et al., 2018). Lower *MAT* implies a more granulated investigation of the financial statements, and so we regard it as a measure of audit depth. Therefore, finding that one of the βs is negative is consistent with a positive association between a competency measure and audit effort. Our second dependent variable is *RISK*, which is the number of significant risk areas reported by the auditor (Lennox et al., 2018; Reid et al., 2019; Sierra-García et al., 2019). A greater number of audit risks reviewed by the auditor implies a broader range of issues falling under the scope of the audit. The third measure is *LAFEE*, which is the natural logarithm of audit-only fees (Abbott et al., 2003; Choi et al., 2010). Higher audit effort indicates lower materiality, greater number of risks and higher audit fees.

We group the various AC competencies, appearing as $COMPETENCIES_K$ in both models, in two sets of variables. The first pertains to the AC Chair and the second encompasses other AC members' competence characteristics. Following Bédard & Gendron (2010), we capture AC Chair competence, i.e. overall financial expertise, governance experience and knowledge of the company, with the following variables. Overall financial expertise (*ACC_EXPERT*) is an indicator variable equal to one if the Chair has prior employment experience in at least one of the accounting, supervisory or finance expertise job categories, defined in Appendix 3 as per Badolato et al. (2014).[21] The governance experience variables include the number of other AC memberships for the Chair (*ACC_AC*) and the other public boards the Chair serves on (*ACC_BOARDS*). We use tenure to measure company-specific knowledge, which is the number of service years as the AC Chair in the company (*ACC_TENURE*).

Similarly, the competencies of the other AC members, excluding the Chair, are: *ACM_EXPERT*, the number of AC members with overall financial expertise, defined as prior employment experience in at least one of the accounting, supervisory or finance expertise job

[21] In additional analysis, we also examine individual accounting, supervisory and finance expertise measures.

categories; *ACM_AC*, the average number of other current AC memberships; *ACM_BOARDS*, the average number of other current public company board directorships; and *ACM_TENURE*, the average number of years serving as AC members in the company. In these specifications, finding that one of the βs is positive is consistent with a positive association between a competency measure and audit effort.

In model (1b) we use the number of risk areas disclosed by the AC in its annual report, as a measure of the AC's effort, based on a similar line of reasoning used for *RISK* as a measure of audit effort. Finding that δ is positive (negative) is consistent with the notion that audit effort complements (substitutes) AC effort.

We control for other AC, audit firm and company-specific characteristics (*CONTROLS*), as derived from the external audit research, that could potentially influence materiality thresholds, audit risks and audit fees (e.g. Abbott et al., 2003; Blokdijk et al. 2003; Choi et al., 2010; Carcello & Li, 2013; Gutierrez et al., 2018; Choudhary et al., 2019; Reid et al., 2019, Sierra-García et al., 2019). We include AC size (*AC_SIZE*) and number of meetings (*MEET*). The audit firm controls are *AO_LAG*, the number of days between the fiscal year-end and the audit report issue; *AF_EXPERT*, an indicator variable equal to one if the audit firm is an industry expert, based on leading size of total clients audited in a particular industry, zero otherwise; *AF_SWITCH*, an indicator variable equal to one if there is an audit firm change in the year, zero otherwise; *AF_TENURE*, the number of consecutive years the audit firm has audited the client; *AP_SWITCH*, an indicator variable equal to one if there is an audit partner change in the year, zero otherwise; *BUSY*, an indicator variable equal to one if the client firm's fiscal year-end is between December and March, zero otherwise. The company-specific controls include *SIZE*, the natural logarithm of market value of equity as at year-end; *INVREC*, the sum of inventories and accounts receivable, scaled by total assets; *CFO*, the cash flow from operations scaled by total assets; *LEV*, total debt scaled by total assets; *ROA*, return on assets, measured

as net income before extraordinary items scaled by total assets; *FORG_SALES*, the percentage of foreign sales scaled by total sales; *EMPLOY*, the squared root of the total number of the company's employees; *CR*, current assets to current liabilities, *LOSS*, indicator variable equal to one if the net income is negative, zero otherwise; and *BTM*, book-to-market, calculated as total assets less total liabilities to market value as at year-end.

In all model specifications we employ firm-level clustering and industry, year and audit firm fixed effects. All continuous variables are winsorized at the top and bottom 1%. The definitions of all variables appear in Appendices 1 and 2.

4.3 Descriptive statistics

Table 2 provides summary statistics of the variables used in our analyses. Financial statements materiality (*MAT*) varies between 0.11% and 5% of total assets. The risks disclosed by the auditors vary from a single risk to ten, with four risk areas reviewed, on average. Average (median) audit fees is £1,465,000 (£500,000). Turning to AC competencies, 77% of AC Chairs are financial experts, and are, on average, members of 2.72 other listed company boards and of 1.84 other ACs. The average Chair has firm board tenure of 3.14 years. The average AC member, excluding the Chair, holds 2.10 (1.47) directorships on other boards (ACs), serves almost three years as AC member. There are almost two members of the AC that are defined as financial expert (*ACM_EXPERT* = 1.83), whereas the average size of ACs is 3.58 members and the average number of meetings is 4.16.

[Insert Table 2 about here]

Table 3 reports the pairwise correlations between all variables used in our models. Materiality (*MAT*), audit risk areas (*RISK*) and audit fees (*LAFEE*) are not strongly correlated. *LAFEE* is positively correlated with *SIZE* (0.77) *and EMPLOY* (0.71), indicating that the larger the company is, the more audit fees the auditors charge. The other correlation coefficients of the main variables reported in Table 3 are either insignificant or small in magnitude.

[Insert Table 3 about here]

5. Results

5.1 Preliminary test: External validity

Our research design builds on the assumption that materiality and number of risk areas capture dimensions of audit effort that are masked in the use of total audit fees. Nevertheless, greater audit effort along these dimensions is expected to manifest itself in higher audit fees. Abbott et al. (2003) argue that greater audit effort should lead to higher audit fees.[22] Many papers that empirically investigate the determinants of audit fees also assume that greater audit effort translates to higher audit fees (Hay et al., 2006; Engel et al., 2010), and several papers provide evidence consistent with this assumption (e.g., Larcker & Richardson, 2004; Eshleman & Guo, 2013; Bronson, Ghosh, & Hogan, 2017). To validate our assumption, we run an audit fee model that is based on Choi et al. (2010) and modify it chiefly by adding to it our two new audit effort measures, materiality and audit risks. Specifically, we run the following model (for firm *i* in time *t*):

$$LAFEE = \alpha_0 + \beta_1(MAT\ and/or\ RISK) + \beta_2 AO\_LAG + \beta_3 SIZE + \beta_4 EMPLOY + \beta_5 BIG4 + \beta_6 CR + \beta_7 INVREC + \beta_8 LEV + \beta_9 LOSS + \beta_{10} ROA + \beta_{11} BTM + \beta_{12} FORG\_SALES + \varepsilon \quad (2)$$

Table 4 shows the results of the audit fee model. For comparative purpose, column 1 shows the results of Choi et al. (2010), as reported in their US-based study, while in column 2 we include our results of the Choi et al. (2010) model using UK data, before including the two measures of audit effort, *MAT* and *RISK*. A comparison of columns 1 and 2 indicates that our sample behaves qualitatively similar to that used in Choi et al. (2010), although the magnitude of the coefficients varies. Note that our sample is much smaller and that, unlike Choi et al. (2010), we use auditor, industry and year fixed effects. Nonetheless, the explanatory power of

[22] See also Ball, Jayaraman, & Shivakumar (2012).

the regression model is similar in both samples and is about 81%. In columns 3 and 4, where we separately include *MAT* and *RISK*, respectively, we find that both variables are significantly associated with audit fees, as assumed. Specifically, the coefficient on *MAT* in column 3 is negative and significant at the 5% level, consistent with higher fees when materiality is lower (and effort depth is higher). Choudhary et al. (2019) also report in the US that looser materiality, an amount closer to the high end of a normal materiality range, is associated with lower audit fees. The coefficient on *RISK* in column 4 is positive and significant, at the 1% level, suggesting that when the scope of the audit is greater, audit fees are higher.[23] In column 5 we include both *MAT* and *RISK*, but the size and significance of the coefficients is similar to what is reported in columns 3 and 4. Overall, we conclude from Table 4 that it is reasonable to use *MAT* and *RISK* as additional proxies for audit effort.

[Insert Table 4 here]

5.2 Main results

Table 5 presents the cross-section results for the three alternative measures of audit effort: overall materiality of financial statements, *MAT*, number of audit risk areas, *RISK* and audit fees, *LAFEE* (model (1a)). The table reports results separately for AC Chair competencies (columns 1-3), other AC members' competencies (columns 4-6) and for the entire AC (columns 7-9). In all columns we include AC size and number of meetings, as well as other audit firm and company control variables. Recall that we make no directional predictions for the association between AC competence characteristics and audit effort. Accordingly, we use two-tailed test statistics for all variables.

We find in columns 1 and 7 that ACC tenure is positively related to materiality, indicating that a longer tenure of the Chair is associated with a higher materiality level. This suggests that ACC tenure is inversely related to audit effort. ACC expertise is negatively related to the

[23] In the models as shown in columns 3 and 4, we excluded the BIG4 variable, as the respective VIF was 39.5.

number of risks (columns 2 and 8). Both results may be explained by the fact that expert Chairs and Chairs with long tenure accumulate company-specific knowledge and are better informed about the financial reporting process and internal control and risk management systems of the company. Thus, their monitoring and oversight of management can be stronger and more challenging. In this case, the external auditor reduces the assessed level of inherent and internal control risk, resulting in lower audit effort, which supports the substitution effect. However, an alternative explanation for tenure is that longer ACC tenure is associated with loss of independence, complacency and increased familiarity. We believe this is a less plausible explanation, as the mean and median of ACC tenure is rather too short (about three years) to support loss of independence. In addition, consistent with lower audit effort through materiality, the relation between ACC tenure and number of risk is negative, albeit it is insignificant (columns 2 & 8). These relations notwithstanding, we do not find that overall audit effort, as captured by total audit fees, is associated with ACC tenure, or indeed, any other ACC competency.

Regarding the competencies of other AC members, we find that the tenure of the members is positively associated with the breadth audit effort (columns 5 and 8). As with the ACC, we do not find that overall audit effort, as captured by total audit fees, is associated with ACM tenure, or indeed, any other ACM competency.

Among the controls, it is noteworthy that auditor busyness is positively and strongly related to audit fees (i.e., at the 1% level), but exhibits no significant association with *MAT* and *RISK*. This suggests that busy auditors charge more without necessarily performing better audit. The results reported for client-firm size (*SIZE*) in columns 7-9 indicate that all dimensions of audit effort are positively associated with client size. Additionally, foreign sales are associated with a larger number of risk areas, and audit fees, as would be expected.

Although the correlations reported in Table 3 are small in magnitude, we test for potential multicollinearity issues. Using the variance inflation factor (VIF) scores we do not find evidence of multicollinearity effects as the scores are below 10, which is within the generally accepted limits (Gujarati, 2008).

[Insert Table 5 about here]

Overall, these results indicate that in the cross-section the association between individual AC competencies with the depth and breadth of audit effort is limited to two competencies (tenure and Chair expertise). We find no positive association between the various competencies and audit fees. Taken together, this first set of results better supports the view that ACs in the UK perform mostly a symbolic role (Beasley et al., 2009; Beattie et al., 2014; Cohen et al., 2010). An alternative, not mutually exclusive explanation, is that, despite the Code's and ISA (UK) 260's requirements, UK auditors impose on clients their materiality and other audit procedures and are not responsive to the AC. This alternative explanation is consistent with evidence documented in the US (Acito et al., 2009; Chaudhary et al., 2019).

Next, we run model (1b), which includes the number of risk areas reported by the AC (*AC_RISK*) in the annual report, as proxy for AC effort. The results are reported in Table 6. In columns 1-3 we use current year's number of AC risks. The results indicate that cross-sectionally *AC_RISK* is negatively related to *MAT*, and positively related to *RISK* and *LAFEE* at the 1% level in these columns. This indicates that auditors exert more effort when the AC does so too. Yet, we note the AC reports more risks than the auditors; as shown in Table 2, the *AC_RISK* mean is 4.26 while the *RISK* mean is 3.73. This suggests the AC work is broader in scope than that of the external auditor. Although auditors' work is smaller in scope than that of ACs, UK auditors do not scale-back their effort when the AC works harder, but rather enhance it.

One concern in interpreting the results in columns 1-3 is of reversed causality whereby auditor effort determines AC effort, contrary to the underlying assumption implicit in model 1b. We address this concern in two ways. First, we use and instrumental variable approach in columns 4-6 whereby we replace current AC effort with lagged AC effort. Second, we use changes analysis (see Table 7 and the discussion below). The idea behind using lagged AC effort is that it is unlikely to affect current period's auditor effort. At the same time, AC effort is likely serially correlated owing to similar innate characteristics (e.g., AC chair leadership and AC members' commitment). We find that lagged AC effort is positively related to number of risks reported in the auditor's report as well as to total audit fees (columns 5 & 6). However, we find no relation between lagged AC effort and materiality (column 4). Nonetheless, the overall spirit of the findings is similar in that these results support the idea that AC effort drives the external auditor's effort. The relations of the AC competencies and other control variables with audit effort are similar to those reported in Table 5.

[Insert Table 6 about here]

5.3 Additional analyses

5.3.1 Individual measures of financial expertise

Prior studies have examined the effect of different forms of financial expertise on financial reporting outcomes. Badolato et al. (2014) offer a more granulated definition, which includes three categories of expertise: accounting, finance and supervisory. Research findings support the view that accounting expertise is positively associated with financial reporting quality, while the effects of supervisory and finance expertise are mixed, indicating a positive or no association with financial reporting quality (Badolato et al., 2014; Bédard & Gendron, 2010; Dhaliwal et al., 2010; Hoitash, Hoitash, & Bédard, 2009). None of these studies however,

examines how these different measures of expertise are associated with materiality and significant risks.[24]

Using the definitions of Badolato et al. (2014), we distinguish between the various components of overall financial expertise. Specifically, we refer to accounting, finance and supervisory expertise and expect that accounting expertise and, to a lesser degree, supervisory and finance expertise, influence audit effort. Again, we make no directional predictions.

We re-run models (1a) (Table 5) and (1b) (Table 6), by substituting the *ACC_EXPERT* (*ACM_EXPERT*) variable with the three expertise components i.e. *ACC_ACCOUNTING*, *ACC_SUPERVISORY* and *ACC_FINANCE* (*ACM_ACCOUNTING, ACM_SUPERVISORY* and *ACM_FINANCE*). The untabulated results, indicate that none of the AC Chair or members' individual measures of expertise is related to the three measures of audit effort, apart from *ACM_ACCOUNTING*, which is positively related to *MAT*, although at the 10% level. AC effort remains positively associated with the three measures of audit effort in a similar fashion to what we report in Table 6. The relation of the control variables with audit effort is similar to what we report in Tables 5 and 6.

5.3.2 Changes analysis

The aforementioned findings are based on levels specifications, and so caution should be exercised as to whether they can be seen as evidence of causality. We therefore conduct a changes analysis where all variables reported in Table 6 are calculated as the current year minus the previous year's value.[25] This approach has the advantage it controls for time-invariant omitted correlated variables which may also be driving simultaneously AC competencies, AC effort and audit effort. The results are reported in Table 7. We find that an increase in Chair

[24] Ghafran and O'Sullivan (2017) investigate the impact of AC expertise on audit fees paid by FTSE 350 companies. They find greater levels of financial, but not accounting, expertise are associated with higher audit fees.

[25] With audit fees we take the difference between *LAFEE* in the current year and *LAFEE* in the previous year, consistent with Engel et al. (2010).

service on other ACs leads to lower audit fees (columns 3 & 9). Greater Chair's service on other boards (i.e., greater busyness) leads to an increase in the scope of the audit effort, although there is no parallel effect on the audit fees. Increasing the busyness of other AC members with other boards has a conflicting effect on audit effort. While greater busyness reduces the depth of the audit (columns 4 & 7), greater busyness increases the scope of audit effort (column 8 and also column 5 albeit the latter effect is insignificant). Given these two conflicting effects, it is not surprising that the overall effect on audit fees is insignificant.

The findings for changes in AC effort are quite consistent, as can be seen from columns 2 & 3, 5 & 6 and 8 & 9. Specifically, an increase in *AC_RISK* leads to an increase in both the scope of the audit effort and in total audit effort. Additionally, increasing AC meeting frequency leads to a smaller materiality threshold. Both sets of results are consistent with a complementarity effect between AC effort and audit effort.

Among the control variables, the coefficient on *ΔAO_LAG* is positive and significant in the *ΔMAT* and *ΔLAFEE* regressions (i.e., columns 1 & 3, 4 & 6 and 7 & 8). At first glance these findings seem conflicting with respect to audit effort. A likely explanation is that as auditors spend more time on executing the audit plan, they are willing to increase the materiality level. Also, increases in audit firm tenure (i.e., increasing its client-specific knowledge) lead to a smaller scope of the audit and hence lower fees.

[Insert Table 7 about here]

We also rerun Table 7 after replacing changes in *ACC_EXPERT* and *ACM_EXPERT* with corresponding changes in the three individual aspects of expertise (i.e., accounting, supervisory and finance). We do not find that changes in these individual aspects of either ACC expert or AC member expert explain changes in the three measures of audit effort. The other results remain qualitatively the same (untabulated).

5.3.3 Determinants and consequences of AC effort

In our final set of analyses we explore the determinants of AC effort as well as the consequences of AC effort for measures of reporting quality. First, we are interested to find whether and which individual AC competencies drive AC effort. We run model 1a, but now the dependent variable is *AC_EFFORT*. We find that none of the AC competence characteristics influences AC effort (untabulated results). Instead, the number of AC meetings, audit firm tenure, and company characteristics, such as leverage (*LEV*) and profitability (*ROA*), are positively related to AC effort in the cross-section.

Next, we use first-differences specification, as in Table 7. The results are reported in Table 8. While we find no relation between changes in individual AC competencies and changes in AC effort we find that an increase in the number of meeting is positively related to an increase in AC effort. In the full model (column 3) one additional meeting increases the number of risks reported by the AC by 0.123, holding other variables fixed. However, relative to the mean of 4.26 for *AC_RISK*, this effect is small in magnitude (3%). Among the controls, we find that audit firm switch and longer audit firm tenure are associated with greater AC effort. Increases in the book-to-market (*BTM*) ratio are also positively related to AC effort.

[Insert Table 8 about here]

Prior research suggests that AC characteristics are associated with reporting quality. For example, Tanyi and Smith's (2015) results suggest that the busyness of members the audit committee and their financial expertise weakens the monitoring by the AC of the financial reporting process. However, it is not clear from these findings whether this effect on reporting quality is due to weaker oversight of the external audit process or directly to lower AC effort (e.g., through weaker oversight of the internal audit process). The results reported earlier here support the idea that AC effort is complemented by a larger scope of the external audit effort. Yet, Gutierrez et al. (2018) do not find that the number of auditor-reported risks are associated with improved reporting quality. We therefore explore the direct effect of AC effort on

reporting quality. We use three absolute measures of reporting quality drawing on prior research, such as Ashbaugh, Lafond, & Mayhew (2003) and Dechow & Dichev (2002). A higher absolute value suggests poorer reporting quality. Appendix 3 provides the detail of how we construct these measures. Table 9 reports the results of regressing these measures on lagged AC effort and all other variables we have used in Table 6. We use lagged *AC_RISK* because reporting quality and internal control effort can be simultaneously determined. We find that higher AC effort is positively related to reporting quality, as suggested by the negative coefficient on *LAG_AC_RISK* found across the three columns. Although these results provide support for a direct and positive effect of AC effort on reporting quality, the economic magnitude is modest. For example, in column 1 the coefficient on *L_AC_RISK* is -0.003 (*p*-value = -2.133), implying that an increase of one standard deviation in the number AC risks, *ABSREDCA* decreases by 0.0055. This is equivalent to a reduction of about 8.4% in the mean of *ABSREDCA* (0.0055/0.0653).

[Insert Table 9 about here]

6. Conclusion

In this paper we investigate if AC competence characteristics and AC effort influence audit planning and effort, using three measures of external audit effort. More specifically, we examine if overall financial expertise, multiple directorships and tenure of the AC Chair and other members, affect the level of materiality applied, the number of significant risks as disclosed by external auditors, and audit fees. In the cross-section, we find little evidence that stronger AC competencies are associated with lower materiality, a larger number of audited risks and audit fees. We also examine the relation between AC effort and the three measures of audit effort and find that AC effort is positively associated with two measures of audit effort. We further find that AC effort slightly increases with its meeting frequency and that it also modestly improves reporting quality. Overall, given the limited effects we document for the

audit committee on audit effort and reporting quality, our findings lean in the direction of supporting the idea that ACs in the UK serve mostly a symbolic role.

Before we conclude, we acknowledge some limitations. First, our research design may not capture the full richness of the relation between AC and the external audit effort, because of several possible influences, such as societal (rules and norms) and organisational (ACs as part of the governance architecture), are not easily observed and quantified (Whittington, 2011). Second, caution is needed in the generalisability of the results. Although the UK shares similar corporate governance and expanded auditor reporting regulations with other EU countries or the US, there are important differences in culture, law and enforcement powers of their regulatory bodies. Our results should be interpreted considering these limitations. Finally, future research could examine the interaction of the AC with the board of directors or other committees, in affecting audit effort. Future research could also examine if these results are affected by different litigation risk environments or other cultural differences.

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Appendix 1. Variable definitions and data sources

Variables	Definition	Data source
Main dependent variables		
MAT	Materiality amount (£) for the financial statements as a whole, scaled by total assets, and multiplied by 100.	Hand-collection from audit report
RISK	Number of significant audit risks, or areas of focus, reported by the auditor in the audit report.	Hand-collection from audit report
LAFEE	Natural logarithm of audit-only fees.	Fame
Audit Committee Chair		
ACC_EXPERT	Indicator variable equal to 1 if the Chair has overall financial expertise, described as prior employment experience in at least one of the accounting, supervisory or finance expertise job categories, as defined in Appendix 3, zero otherwise.	BoardEx
ACC_ACCOUNTING	Indicator variable equal to 1 if the Chair has accounting expertise, as defined in Appendix 3, zero otherwise.	BoardEx
ACC_SUPERVISORY	Indicator variable equal to 1 if the Chair has supervisory expertise, as defined in Appendix 3, zero otherwise.	BoardEx
ACC_FINANCE	Indicator variable equal to 1 if the Chair has finance expertise, as defined in Appendix 3, zero otherwise.	BoardEx
ACC_AC	Number of other current audit committee directorships.	BoardEx
ACC_BOARDS	Number of other public board directorships.	BoardEx
ACC_TENURE	Number of years serving as the Chair in the audit committee.	BoardEx
Audit Committee members (excluding the Chair)		
ACM_EXPERT	Number of audit committee members with overall financial expertise, defined as prior employment experience in at least one of the accounting, supervisory or finance expertise job categories, as defined in Appendix 2.	BoardEx
ACM_ACCOUNTING	Number of audit committee members with accounting expertise, as defined in Appendix 3.	BoardEx
ACM_SUPERVISORY	Number of audit committee members with supervisory expertise, as defined in Appendix 3.	BoardEx
ACM_FINANCE	Number of audit committee members with finance expertise, as defined in Appendix 3.	BoardEx
ACM_AC	Average number of other current audit committee directorships.	BoardEx
ACM_BOARDS	Average number of other current public company board directorships.	BoardEx
ACM_TENURE	Average number of years serving as audit committee members in the company.	BoardEx
Audit Committee Activity & Effort		
AC_RISK	Number of significant accounting issues and risks reported by the audit committee.	Hand-collection

		from the annual report
AC_SIZE	Total number of audit committee members.	BoardEx
MEET	Number of audit committee meetings held during the year.	Hand-collection from audit report
Audit Firm		
AO_LAG	Number of days between the fiscal year-end and the audit report issue date.	Hand-collection from audit report
BIG4	Indicator variable equal to 1 if the audit firm is one of the big four auditing firms, 0 otherwise.	Fame
AF_EXPERT	Indicator variable equal to 1 if the audit firm is deemed to be an industry expert, based on leading size of total clients audited in a particular industry, 0 otherwise.	Fame
AF_SWITCH	Indicator variable equal to 1 if there is an audit firm change in the year, 0 otherwise.	Fame
AF_TENURE	Number of consecutive years that the audit firm has audited the client.	Fame
AP_SWITCH	Indicator variable equal to 1 if there is an audit partner change in the year, 0 otherwise.	Fame
BUSY	Indicator variable equal to 1 if the firm's year-end is between December and March, 0 otherwise.	Fame
Company		
SIZE	Natural logarithm of the firm's market value of equity as at the year-end.	Fame
INVREC	Inventories and accounts receivable, to total assets.	Fame
CFO	Cash flow from operations to total assets.	Fame
LEV	Total liabilities to total assets.	Fame
ROA	Return on assets; measured as net income before extraordinary items to total assets.	Fame
FORG_SALES	Percentage of foreign sales to total sales.	Fame
EMPLOY	Squared root of the number of employees.	Fame
CR	Current assets to current liabilities.	Fame
LOSS	Indicator variable equal to 1 if net income is negative, 0 otherwise.	Fame
BTM	Book to market, calculated as total assets less total liabilities to market value as at year-end.	Datastream
Note: all continuous variables are winsorised at 1%		

Appendix 2: Accounting-based measures of reporting quality

ABSREDCA

REDCA is the measure taken from Ashbaugh et al. (2003). Specifically for each industry and year, we first estimate the regression coefficients from the following model:

$$CA_t = \beta_1 \frac{1}{TA_{t-1}} + \beta_2 \Delta Sales + \beta_3 ROA_{t-1} + \varepsilon_t$$

where *CA*, current accruals, is net income before extraordinary items plus depreciation and amortization minus operating cash flows, scaled by beginning of year total assets. We then employ the coefficient estimates to measure expected current accruals (*ECA*), controlling for performance:

$$ECA_t = \hat{\beta}_1 \frac{1}{TA_{t-1}} + \hat{\beta}_2 [\Delta Sales - \Delta AR] + \hat{\beta}_3 ROA_{t-1}$$

where *AR* is accounts receivable. *REDCA* is calculated as the difference between *CA* and *ECA*.

ABSREDCA = absolute value of *REDCA*.

ABSRESCFO

Following Dechow and Dichev (2002), for each industry we estimate the model:

$$TACC_t = \alpha + \beta_1 CFO_{t-1} + \beta_2 CFO_t + \beta_3 CFO_{t+1} + \beta_4 \Delta REV_t + \beta_5 PPE_t + \varepsilon_t$$

where: *TACC* = total current accruals is net income before extraordinary items minus operating cash flows; *CFO* is cash flow from operation; *PPE* is property plant and equipment*;* ΔREV is ($Sales_t$-$Sales_{t-1}$) All variables are scaled by beginning total assets. *RESCFO* is the residual from this regression.

ABSRESCFO = absolute value of *RESCFO*

ABSCA

Current accruals, *CA*, (as defined above) scaled by beginning of year total assets.

ABSCA = absolute value of *CA*

Appendix 3. Definition of expertise – Badolato et al. (2014)

Overall financial expertise	Monitoring expertise is defined as prior employment experience in at least one of the accounting, supervisory or finance expertise job categories below.
Accounting expertise	Work experience as public auditor, as a Certified Public Accountant or Chartered Accountant or in an accounting-specific position, such as (Chief) Financial Officer, Treasurer, Controller, Head of Accounting, Chief Accountant, Accounting Officer, zero otherwise.
Supervisory expertise	Work experience that involves supervision of individuals involved in financial reporting, such as President or Chief Executive Officer, zero otherwise.
Finance expertise	Work experience in a financial position, such as Banker, Analyst, Loan Officer, Investment/Asset/Fund Manager, Treasurer, Finance Director, Vice President Finance, zero otherwise.

Table 1. Main analysis sample (2013 – 2017)

LSE premium listed/ordinary shares/GB incorporated companies	727
Excluding finance, insurance and real estate companies	(269)
Excluding early adopters (Vodafone, Sky, Ashmore)	(3)
Number of potential firms	455
Number of potential firm-years	2,275
Excluding firm-years where data is incomplete	(977)
Final Sample of firm-years	**1,298**

Table 2. Descriptive statistics

Variable	Obs	Mean	Std.Dev	Min	25th	Median	75th	Max
MAT	1298	0.62	0.57	0.11	0.32	0.48	0.73	5.00
RISK	1298	3.73	1.43	1.00	3.00	4.00	5.00	10.00
LAFEE	1298	6.32	1.30	3.09	5.34	6.21	7.09	9.67
ACC_EXPERT	1298	0.77	0.42	0.00	1.00	1.00	1.00	1.00
ACC_ACCOUNTING	1298	0.55	0.50	0.00	0.00	1.00	1.00	1.00
ACC_SUPERVISORY	1298	0.41	0.49	0.00	0.00	0.00	1.00	1.00
ACC_FINANCE	1298	0.24	0.43	0.00	0.00	0.00	0.00	1.00
ACC_AC	1298	1.84	1.07	1.00	1.00	1.00	2.00	8.00
ACC_BOARDS	1298	2.72	2.38	1.00	1.00	2.00	3.00	30.00
ACC_TENURE	1298	3.14	2.74	0.00	1.00	3.00	5.00	15.00
ACM_EXPERT	1298	1.83	1.00	0.00	1.00	2.00	2.00	7.00
ACM_ACCOUNTING	1298	0.40	0.62	0.00	0.00	0.00	1.00	4.00
ACM_SUPERVISORY	1298	1.56	0.98	0.00	1.00	2.00	2.00	5.00
ACM_FINANCE	1298	0.39	0.60	0.00	0.00	0.00	1.00	3.00
ACM_AC	1298	1.47	0.61	1.00	1.00	1.33	1.67	5.50
ACM_BOARDS	1298	2.10	1.88	0.00	1.00	1.60	2.75	15.00
ACM_TENURE	1298	2.94	2.12	0.00	1.50	2.67	4.00	16.00
AC_SIZE	1298	3.58	0.93	2.00	3.00	3.00	4.00	8.00
MEET	1298	4.16	1.50	1.00	3.00	4.00	5.00	14.00
AC_RISK	1298	4.26	1.82	1.00	3.00	4.00	5.00	12.00
AO_LAG	1298	64.61	16.13	24.00	54.00	62.00	72.00	136.00
BIG4	1298	0.95	0.21	0.00	1.00	1.00	1.00	1.00
AF_EXPERT	1298	0.30	0.46	0.00	0.00	0.00	1.00	1.00
AF_SWITCH	1298	0.07	0.25	0.00	0.00	0.00	0.00	1.00
AF_TENURE	1298	12.59	7.76	1.00	6.00	13.00	18.00	29.00
AP_SWITCH	1298	0.26	0.44	0.00	0.00	0.00	1.00	1.00
BUSY	1298	0.54	0.50	0.00	0.00	1.00	1.00	1.00
SIZE	1298	13.68	1.92	7.81	12.54	13.79	14.90	18.05
INVREC	1298	0.27	0.19	0.01	0.13	0.25	0.38	0.87
CFO	1298	0.09	0.08	-0.24	0.05	0.09	0.13	0.38
LEV	1298	0.57	0.22	0.10	0.41	0.57	0.72	1.36
ROA	1298	5.65	10.01	-47.83	2.69	5.96	10.07	33.94
FORG_SALES	1298	0.48	0.38	0.00	0.04	0.52	0.86	1.00
EMPLOY	1298	93.85	85.96	2.00	36.61	64.56	117.36	415.93
CR	1298	1.58	1.05	0.29	0.95	1.34	1.87	7.10
LOSS	1298	0.18	0.38	0.00	0.00	0.00	0.00	1.00
BTM	1298	0.55	0.58	-0.89	0.22	0.40	0.69	3.81
ABSREDCA	1194	0.05	0.07	0.00	0.00	0.03	0.06	0.41
ABSRESCFO	760	0.04	0.05	0.00	0.01	0.03	0.05	0.47
ABSCA	1220	0.05	0.10	0.00	0.01	0.03	0.06	1.64

This table provides descriptive statistics of the variables used in our main analyses. All variables are defined in Appendices 1 and 2. Note: the average (median) audit fees is £1,465,000 (£500,000).

Table 3. Pairwise correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1 *MAT*																																				
2 *RISK*	**-0.21**																																			
3 *LAFEE*	**-0.31**	**0.42**																																		
4 *ACC_EXPERT*	**-0.08**	0.02	**0.13**																																	
5 *ACC_ACCOUNTING*	**-0.10**	0.01	**0.10**	**0.61**																																
6 *ACC_SUPERVISORY*	**-0.07**	0.02	**0.10**	**0.46**	0.04																															
7 *ACC_FINANCE*	-0.04	**0.06**	**0.08**	**0.31**	**0.14**	0.04																														
8 *ACC_AC*	**-0.07**	0.03	**0.09**	0.03	0.02	0.01	-0.02																													
9 *ACC_BOARDS*	0.02	0.04	0.01	-0.03	**-0.10**	**0.11**	0.03	**-0.12**																												
10 *ACC_TENURE*	**0.15**	**-0.05**	-0.04	**-0.08**	**-0.14**	0.00	**-0.09**	0.02	0.03																											
11 *ACM_EXPERT*	**-0.10**	**0.14**	**0.33**	0.03	**0.08**	0.00	0.02	0.04	-0.03	**0.07**																										
12 *ACM_ACCOUNTING*	-0.02	**0.09**	**0.25**	-0.01	**-0.06**	**0.12**	-0.04	0.02	**0.06**	**0.07**	**0.39**																									
13 *ACM_SUPERVISORY*	**-0.11**	**0.11**	**0.29**	0.04	**0.08**	0.01	0.02	**0.06**	-0.02	0.02	**0.88**	**0.19**																								
14 *ACM_FINANCE*	-0.01	0.09	**0.21**	0.01	0.00	0.02	-0.02	-0.01	0.05	0.05	**0.38**	**0.32**	**0.15**																							
15 *ACM_AC*	-0.02	-0.02	**-0.07**	0.03	-0.01	0.04	-0.04	**0.11**	**-0.09**	-0.04	**-0.07**	0.04	**-0.09**	0.00																						
16 *ACM_BOARDS*	**-0.06**	0.02	**0.07**	0.01	-0.03	**0.10**	0.01	0.04	**0.12**	0.00	0.02	**0.07**	0.05	0.03	**0.12**																					
17 *ACM_TENURE*	**0.17**	-0.04	**-0.21**	**-0.12**	**-0.14**	-0.01	**-0.09**	**-0.11**	-0.01	**0.26**	**-0.15**	**-0.14**	**-0.13**	-0.09	-0.05	-0.04																				
18 *AC_SIZE*	**-0.11**	**0.15**	**0.39**	**0.06**	**0.08**	0.02	0.02	0.01	0.00	**0.08**	**0.67**	**0.33**	**0.56**	**0.27**	**-0.10**	-0.03	**-0.10**																			
19 *MEET*	**-0.11**	**0.20**	**0.44**	0.00	0.03	-0.01	0.00	**0.07**	**0.06**	**-0.08**	**0.12**	**0.16**	**0.09**	**0.12**	0.00	**0.13**	**-0.17**	**0.16**																		
20 *AC_RISK*	**-0.24**	**0.56**	**0.43**	**0.08**	**0.07**	0.02	**0.08**	0.00	0.01	**-0.06**	**0.15**	**0.10**	**0.14**	**0.03**	0.00	0.03	**-0.08**	**0.17**	**0.24**																	
21 *AO_LAG*	**0.15**	**-0.14**	**-0.31**	**-0.13**	**-0.21**	-0.04	**-0.07**	-0.05	0.02	-0.01	**-0.22**	**-0.13**	**-0.17**	-0.14	-0.03	-0.03	**0.08**	**-0.21**	**-0.08**	**-0.13**																
22 *BIG4*	**-0.17**	0.05	**0.31**	**0.09**	**0.09**	**0.06**	0.02	**0.13**	**-0.11**	**-0.07**	**0.13**	**0.09**	**0.12**	**0.05**	0.00	**0.08**	**-0.23**	**0.16**	**0.13**	**0.10**	**-0.25**															
23 *AF_EXPERT*	**-0.09**	**0.06**	**0.19**	-0.04	-0.04	0.00	-0.03	**0.06**	0.00	-0.03	**0.16**	0.02	**0.16**	0.04	0.00	**0.07**	**-0.07**	**0.08**	**0.15**	**0.06**	-0.05	**0.15**														
24 *AF_SWITCH*	0.00	0.02	0.02	0.02	0.02	0.00	**0.06**	-0.03	0.04	0.00	**0.07**	**0.07**	**0.06**	0.01	-0.02	0.04	-0.03	0.04	0.02	0.03	0.01	-0.04	-0.01													
25 *AF_TENURE*	-0.03	**0.07**	**0.16**	-0.04	-0.01	0.00	0.00	**0.08**	0.01	0.01	0.02	0.01	0.01	**0.08**	-0.01	-0.04	0.03	0.04	0.02	**0.10**	**-0.16**	**0.07**	**0.09**	**-0.34**												
26 *AP_SWITCH*	0.01	0.02	-0.03	0.01	-0.02	0.00	0.02	-0.05	-0.02	-0.02	0.01	-0.02	0.01	-0.01	-0.03	0.01	0.00	-0.02	-0.01	0.01	0.01	-0.01	0.01	**0.41**	**-0.13**											
27 *BUSY*	0.02	-0.01	**0.19**	-0.03	**-0.06**	-0.01	**-0.10**	**0.09**	-0.02	-0.03	**0.06**	0.00	0.05	**0.06**	-0.02	**0.06**	**-0.12**	0.03	**0.15**	0.04	**0.09**	**0.06**	0.03	-0.03	**0.09**	-0.03										
28 *SIZE*	**-0.20**	**0.29**	**0.77**	**0.17**	**0.16**	**0.11**	**0.09**	**0.08**	0.03	-0.02	**0.36**	**0.28**	**0.29**	**0.26**	-0.04	**0.09**	**-0.21**	0.43	**0.43**	**0.29**	**-0.48**	**0.35**	**0.13**	0.05	**0.12**	-0.03	**0.11**									
29 *INVREC*	**0.22**	**-0.18**	**-0.21**	**-0.07**	-0.01	**-0.09**	-0.03	0.02	0.03	0.05	-0.02	-0.05	0.01	-0.05	-0.04	**-0.13**	**0.06**	**-0.04**	**-0.17**	**-0.11**	**0.10**	**-0.18**	**-0.08**	0.01	0.05	-0.01	-0.02	**-0.23**								
30 *CFO*	**0.24**	-0.04	0.03	-0.01	0.02	-0.02	0.00	0.00	**-0.08**	**0.06**	**0.11**	**0.05**	**0.08**	0.04	0.05	**-0.06**	0.05	0.15	0.04	**-0.08**	**-0.24**	**0.12**	-0.04	-0.01	0.04	-0.03	0.03	**0.29**	-0.05						
31 *LEV*	**-0.10**	**0.26**	**0.28**	0.04	-0.02	**-0.06**	**0.14**	0.01	0.02	**-0.07**	**0.06**	**0.07**	**0.07**	0.03	-0.02	**-0.10**	**-0.11**	**0.09**	**0.14**	**0.25**	**-0.13**	**0.08**	**0.09**	0.01	0.04	0.03	-0.05	**0.14**	0.03	-0.05					
32 *ROA*	**0.18**	**-0.14**	0.01	-0.02	0.01	-0.01	-0.03	0.01	-0.02	**0.06**	**0.13**	**0.08**	**0.12**	**0.08**	0.04	-0.03	**0.06**	**0.14**	-0.03	**-0.14**	**-0.27**	**0.06**	-0.03	0.04	0.01	0.00	**-0.07**	**0.28**	**0.13**	**0.57**	-0.02					
33 *FORG_SALES*	-0.03	**0.13**	**0.41**	**0.05**	-0.02	0.04	**0.08**	0.02	-0.05	0.01	**0.09**	0.02	**0.06**	0.04	**-0.08**	0.05	-0.02	**0.13**	**0.18**	**0.10**	**-0.06**	**0.10**	**0.07**	-0.01	**0.12**	0.02	**0.23**	**0.20**	**-0.16**	0.01	**-0.16**	**-0.10**				
34 *EMPLOY*	**-0.23**	**0.35**	**0.71**	**0.09**	**0.11**	**0.09**	**0.09**	0.01	0.05	**-0.09**	**0.25**	**0.22**	**0.24**	**0.16**	**-0.08**	0.05	**-0.16**	**0.28**	**0.42**	**0.31**	**-0.25**	**0.13**	**0.17**	**0.06**	**0.07**	0.02	0.01	**0.66**	**-0.18**	0.03	**0.29**	0.03	**0.11**			
35 *CR*	**0.21**	**-0.21**	**-0.30**	-0.04	-0.04	-0.04	**-0.06**	-0.01	**0.08**	0.05	**-0.09**	**-0.12**	**-0.10**	-0.02	**-0.06**	-0.02	**0.08**	**-0.08**	**-0.12**	**-0.18**	**0.23**	**-0.12**	**-0.09**	0.00	-0.03	-0.02	**0.06**	**-0.23**	**0.23**	**-0.12**	**-0.50**	-0.03	**0.13**	**-0.32**		
36 *LOSS*	0.05	**0.09**	**-0.07**	0.02	0.00	-0.02	0.02	-0.01	**0.06**	-0.05	**-0.11**	**-0.09**	**-0.11**	**-0.06**	-0.03	0.00	-0.05	**-0.12**	0.05	**0.06**	**0.23**	-0.05	-0.01	-0.04	-0.01	-0.01	**0.06**	**-0.24**	**-0.09**	**-0.33**	0.01	**-0.66**	**0.08**	**-0.08**	**0.09**	
37 *BTM*	**-0.11**	-0.04	**-0.14**	-0.02	-0.02	0.02	**-0.13**	-0.02	**0.08**	0.05	**-0.13**	**-0.09**	**-0.14**	-0.05	**-0.07**	**0.06**	**0.10**	**-0.15**	**-0.06**	**-0.09**	**0.28**	**-0.15**	-0.05	-0.03	-0.03	-0.01	0.01	**-0.33**	**-0.15**	**-0.34**	**-0.32**	**-0.38**	0.05	**-0.10**	**0.19**	**0.34**

This table presents the pairwise correlations between the main variables used in our analyses. Bold values indicate significance at the 5% or less in a two-tailed test. All variables are defined in Appendices 1 and 2.

Table 4: Audit Fee Model - Choi et al. (2010)

Dependent variable: LAFEE	Choi et al. (2010) reported results (1)	Our approximation of Choi et al. (2010) (2)	MAT (3)	RISK (4)	MAT & RISK (5)
MAT			**-0.134****		**-0.117****
			(-2.41)		**(-2.06)**
RISK				**0.087*****	**0.083*****
				(4.36)	**(4.20)**
AO_LAG	**0.004*****	**0.003*****	**0.005*****	**0.005****	**0.005*****
	(8.92)	**(3.27)**	**(2.64)**	**(2.57)**	**(2.69)**
SIZE	**0.413*****	**0.411*****	**0.401*****	**0.397*****	**0.393*****
	(48.09)	**(28.02)**	**(14.12)**	**(14.67)**	**(14.46)**
EMPLOY	**0.002*****	**0.004*****	**0.004*****	**0.004*****	**0.003*****
	(6.82)	**(13.69)**	**(6.34)**	**(5.98)**	**(5.95)**
BIG4	**0.206*****	**0.316*****			
	(8.11)	**(4.31)**			
CR	**-0.019*****	**-0.078*****	**-0.094*****	**-0.104*****	**-0.096*****
	(-9.97)	**(-4.17)**	**(-3.42)**	**(-3.84)**	**(-3.54)**
INVREC	**0.349*****	**0.269*****	**0.380****	**0.339***	**0.389****
	(7.46)	**(2.75)**	**(2.18)**	**(1.94)**	**(2.26)**
LEV	**0.129*****	**1.039*****	**0.945*****	**0.856*****	**0.853*****
	(4.20)	**(11.26)**	**(6.82)**	**(6.06)**	**(6.11)**
LOSS	**0.062*****	**-0.052**	-0.008	-0.068	-0.021
	(4.21)	**(-0.95)**	(-0.12)	(-1.01)	(-0.33)
ROA	**-0.195*****	**-0.011*****	**-0.008*****	**-0.009*****	**-0.007****
	(-7.51)	**(-5.32)**	**(-2.69)**	**(-2.70)**	**(-2.32)**
BTM	**-0.051*****	**0.297*****	**0.296*****	**0.321*****	**0.292*****
	(-5.23)	**(8.93)**	**(5.07)**	**(6.07)**	**(5.20)**
FORG_SALES	**0.227*****	**0.986*****	**1.031*****	**0.973*****	**0.982*****
	(11.25)	**(20.62)**	**(12.21)**	**(11.78)**	**(11.94)**
Industry F.E.	NO	YES	YES	YES	YES
Year F.E.	NO	YES	YES	YES	YES
Audit firm F.E.	NO	NO	YES	YES	YES
Cluster	NONE	NONE	FIRM	FIRM	FIRM
Observations	9,815	1,404	1,298	1,298	1298
Adjusted R^2	0.809	0.815	0.814	0.817	0.819
Max VIF	N/A	3.67	3.57	3.58	3.60

This table presents the effect of *MAT* and *RISK* on the dependent variable *LAFEE,* following Choi et al. (2010).*, **, *** indicate significance at 10%, 5% and 1% levels, respectively. t-values are reported in parentheses. All continuous variables are winsorized at the top and bottom 1%. All variables are defined in Appendix 1. Note: the BIG4 variable is not included in columns 3 and 4, because it generated VIFs above 10.

Table 5. Determinants of Materiality, Risks and Audit Fees - model 1a

	AC Chair			AC Members			AC		
	MAT	**RISK**	**LAFEE**	**MAT**	**RISK**	**LAFEE**	**MAT**	**RISK**	**LAFEE**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
ACC_EXPERT	-0.005	**-0.247****	-0.028				-0.004	**-0.227****	-0.026
	(-0.10)	**(-2.30)**	(-0.50)				(-0.07)	**(-2.12)**	(-0.45)
ACC_AC	-0.028	0.003	0.026				-0.027	0.009	0.027
	(-1.43)	(0.07)	(1.33)				(-1.34)	(0.20)	(1.35)
ACC_BOARDS	0.004	0.0145	-0.000				0.004	0.017	0.000
	(0.48)	(0.74)	(-0.00)				(0.44)	(0.89)	(0.04)
ACC_TENURE	**0.027*****	-0.012	0.002				**0.026*****	-0.021	0.001
	(2.87)	(-0.90)	(0.34)				**(2.88)**	(-1.47)	(0.20)
ACM_EXPERT				0.001	0.096	0.018	-0.003	0.100	0.016
				(0.03)	(1.54)	(0.49)	(-0.12)	(1.59)	(0.43)
ACM_AC				-0.013	-0.034	-0.003	-0.005	-0.024	-0.006
				(-0.44)	(-0.53)	(-0.11)	(-0.18)	(-0.37)	(-0.21)
ACM_BOARDS				0.005	-0.008	-0.003	0.004	-0.011	-0.003
				(0.66)	(-0.31)	(-0.21)	(0.53)	(-0.40)	(-0.22)
ACM_TENURE				0.013	**0.046****	0.005	0.005	**0.049****	0.005
				(1.45)	**(2.09)**	(0.41)	(0.55)	**(2.15)**	(0.40)
AC_SIZE	-0.026	0.049	**0.063****	-0.017	-0.020	0.050	-0.024	-0.017	0.052
	(-1.07)	(0.78)	**(2.22)**	(-0.52)	(-0.25)	(1.22)	(-0.70)	(-0.21)	(1.24)
MEET	0.005	0.037	0.013	0.002	0.052	0.016	0.004	0.043	0.014
	(0.31)	(0.90)	(0.61)	(0.14)	(1.28)	(0.75)	(0.30)	(1.05)	(0.64)
AO_LAG	**0.003***	-0.005	**0.004***	**0.003***	-0.004	**0.004***	**0.003***	-0.005	**0.004***
	(1.77)	(-1.18)	**(1.92)**	**(1.72)**	(-1.00)	**(1.95)**	**(1.75)**	(-1.08)	**(1.95)**
AF_EXPERT	-0.038	**0.207***	**0.089***	-0.039	**0.196***	**0.087***	-0.038	**0.188***	**0.086***
	(-0.83)	**(1.80)**	**(1.81)**	(-0.80)	**(1.73)**	**(1.76)**	(-0.81)	**(1.68)**	**(1.76)**
AF_SWITCH	0.005	0.093	-0.009	0.006	0.108	-0.007	0.006	0.093	-0.009
	(0.08)	(0.68)	(-0.14)	(0.09)	(0.78)	(-0.10)	(0.08)	(0.67)	(-0.14)
AF_TENURE	0.001	0.005	0.004	0.000	0.005	0.004	0.000	0.004	0.004
	(0.22)	(0.66)	(1.15)	(0.12)	(0.68)	(1.19)	(0.19)	(0.56)	(1.12)
AP_SWITCH	0.016	0.011	-0.051	0.015	0.000	-0.055	0.015	0.006	-0.052
	(0.61)	(0.17)	(-1.46)	(0.59)	(0.00)	(-1.55)	(0.60)	(0.08)	(-1.48)
BUSY	0.041	-0.063	**0.157*****	0.034	-0.040	**0.163*****	0.042	-0.050	**0.158*****
	(0.85)	(-0.58)	**(2.86)**	(0.76)	(-0.37)	**(2.97)**	(0.90)	(-0.46)	**(2.88)**
SIZE	**-0.050***	**0.100***	**0.380*****	-0.046	**0.092***	**0.381*****	**-0.049***	**0.104***	**0.381*****
	(-1.80)	**(1.80)**	**(13.06)**	(-1.63)	**(1.66)**	**(13.09)**	**(-1.77)**	**(1.90)**	**(12.96)**

INVREC	**0.451****	-0.132	0.249	**0.458****	-0.168	0.249	**0.454****	-0.154	0.244
	(2.09)	(-0.41)	(1.46)	**(2.07)**	(-0.51)	(1.46)	**(2.10)**	(-0.47)	(1.43)
CFO	1.398**	0.868	**-1.286*****	**1.434****	0.766	**-1.304*****	**1.398****	0.790	**-1.294*****
	(2.39)	(1.30)	**(-3.95)**	**(2.36)**	(1.14)	**(-3.85)**	**(2.39)**	(1.18)	**(-3.86)**
LEV	0.020	**1.107*****	**0.822*****	0.029	**1.104*****	**0.821*****	0.023	**1.103*****	**0.820*****
	(0.11)	**(3.49)**	**(5.62)**	(0.16)	**(3.40)**	**(5.64)**	(0.12)	**(3.39)**	**(5.63)**
ROA	**0.013***	**-0.023*****	-0.005	**0.013***	**-0.023*****	-0.005	**0.013***	**-0.023*****	-0.005
	(1.86)	**(-3.57)**	(-1.62)	**(1.86)**	**(-3.50)**	(-1.61)	**(1.86)**	**(-3.63)**	(-1.63)
FORG_SALES	0.050	**0.568*****	**0.977*****	0.049	**0.544*****	**0.973*****	0.049	**0.562*****	**0.976*****
	(0.73)	**(3.37)**	**(11.51)**	(0.73)	**(3.19)**	**(11.58)**	(0.71)	**(3.33)**	**(11.52)**
EMPLOY	-0.000	**0.003****	**0.004*****	-0.000	**0.003****	**0.004*****	-0.0003	**0.002****	**0.004*****
	(-0.11)	**(2.23)**	**(6.53)**	(-0.30)	**(2.30)**	**(6.54)**	(-0.11)	**(2.17)**	**(6.53)**
CR	**0.082*****	0.021	**-0.114*****	**0.082*****	0.024	**-0.114*****	**0.082*****	0.021	**-0.115*****
	(2.84)	(0.31)	**(-4.16)**	**(2.78)**	(0.36)	**(-4.14)**	**(2.83)**	(0.30)	**(-4.15)**
LOSS	**0.360*****	0.057	-0.031	**0.363*****	0.066	-0.03	**0.362*****	0.062	-0.031
	(3.74)	(0.43)	(-0.49)	**(3.70)**	(0.49)	(-0.56)	**(3.76)**	(0.47)	(-0.50)
BTM	**-0.217*****	0.125	**0.273*****	**-0.207*****	0.106	**0.273*****	**-0.218*****	0.117	**0.272*****
	(-3.54)	(1.22)	**(5.07)**	**(-3.32)**	(1.02)	**(5.01)**	**(-3.51)**	(1.15)	**(5.00)**
Observations	1,298	1,298	1,298	1,298	1,298	1,298	1,298	1,298	1,298
Adjusted R^2	0.314	0.335	0.821	0.298	0.335	0.821	0.312	0.339	0.821
Max VIF	4.28	4.28	4.28	4.18	4.18	4.18	4.31	4.31	4.31

This table presents the OLS results of the determinants of *MAT, RISK, and LAFEE*. *,**,*** denotes significances at 10%, 5% and 1% levels respectively. t-values are reported in parentheses (two-tailed tests). All continuous variables are winsorised at the top and bottom 1%. We use year, audit firm and industry fixed effects and cluster by company. All variables are defined in Appendices 1 & 3.

Table 6. Determinants of Materiality, Risks and Audit Fees: Controlling for AC Risk – model 1b

	MAT (1)	RISK (2)	AFEE (3)	MAT (4)	RISK (5)	AFEE (6)
ACC_EXPERT	-0.004	**-0.230****	-0.026	-0.032	**-0.234****	-0.042
	(-0.07)	**(-2.48)**	(-0.47)	(-0.575)	**(-2.184)**	(-0.690)
ACC_AC	-0.026	0.025	0.030	-0.015	-0.002	0.028
	(-1.40)	(0.67)	(1.61)	(-0.681)	(-0.051)	(1.358)
ACC_BOARDS	0.004	0.019	0.001	0.001	0.027	0.001
	(0.43)	(1.22)	(0.08)	(0.081)	(1.401)	(0.087)
ACC_TENURE	**0.026*****	-0.016	0.003	**0.028*****	**-0.033****	0.007
	(2.86)	(-1.22)	(0.37)	**(2.805)**	**(-2.108)**	(0.842)
ACM_EXPERT	-0.001	0.079	0.011	0.005	**0.116***	-0.001
	(-0.04)	(1.45)	(0.32)	(0.216)	**(1.821)**	(-0.031)
ACM_AC	-0.004	-0.043	-0.011	0.017	-0.048	-0.029
	(-0.12)	(-0.83)	(-0.36)	(0.507)	(-0.669)	(-0.823)
ACM_BOARDS	0.004	-0.011	-0.003	0.010	-0.016	-0.010
	(0.54)	(-0.46)	(-0.22)	(1.169)	(-0.541)	(-0.703)
ACM_TENURE	0.006	**0.037***	0.003	-0.001	**0.041***	-0.001
	(0.70)	**(1.85)**	(0.19)	(-0.075)	**(1.722)**	(-0.051)
AC_SIZE	-0.022	-0.035	0.048	-0.031	-0.002	0.057
	(-0.66)	(-0.51)	(1.20)	(-0.915)	(-0.031)	(1.327)
MEET	0.008	0.004	0.006	0.008	0.025	0.001
	(0.53)	(0.12)	(0.27)	(0.492)	(0.577)	(0.053)
AC_RISK	**-0.029*****	**0.311*****	**0.068*****			
	(-2.79)	**(9.41)**	**(4.09)**			
L_AC_RISK				-0.016	**0.249*****	**0.080*****
				(-1.218)	**(6.688)**	**(4.008)**
AO LAG	**0.003***	-0.004	**0.004****	**0.003****	-0.005	**0.004****
	(1.74)	(-0.94)	**(2.08)**	**(1.985)**	(-0.979)	**(2.068)**
AF_EXPERT	-0.033	0.132	0.074	-0.064	0.118	**0.109****
	(-0.72)	(1.43)	(1.50)	(-1.310)	(1.024)	**(2.018)**
AF_SWITCH	0.015	-0.011	-0.032	0.020	0.042	0.030
	(0.23)	(-0.08)	(-0.51)	(0.264)	(0.260)	(0.425)
AF_TENURE	0.001	-0.003	0.003	-0.001	0.001	0.004
	(0.43)	(-0.41)	(0.72)	(-0.609)	(0.107)	(1.067)
AP_SWITCH	0.015	0.016	-0.049	-0.012	-0.101	**-0.082***
	(0.56)	(0.25)	(-1.45)	(-0.359)	(-1.076)	**(-1.834)**

BUSY	0.043	-0.063	**0.156*****	0.038	-0.095	**0.155*****
	(0.92)	(-0.67)	**(2.91)**	(0.834)	(-0.924)	**(2.643)**
SIZE	-0.045	0.060	**0.371*****	-0.042	0.077	**0.376*****
	(-1.62)	(1.28)	**(13.34)**	(-1.612)	(1.541)	**(12.309)**
INVREC	**0.452****	-0.130	0.249	0.446**	-0.338	0.261
	(2.11)	(-0.45)	(1.52)	(2.103)	(-1.051)	(1.573)
CFO	**1.380****	**0.986***	**-1.251*****	**1.655*****	0.911	**-1.226*****
	(2.39)	**(1.72)**	**(-3.92)**	**(2.681)**	(1.337)	**(-3.581)**
LEV	0.055	**0.754*****	**0.743*****	0.189	**0.849*****	**0.688*****
	(0.30)	**(2.69)**	**(5.07)**	(0.908)	**(2.736)**	**(4.291)**
ROA	**0.012***	**-0.013****	-0.002	**0.012****	**-0.016****	-0.002
	(1.76)	**(-2.14)**	(-0.84)	**(2.046)**	**(-2.115)**	(-0.521)
FORG_SALES	0.059	**0.459*****	**0.954*****	0.069	**0.456*****	**0.939*****
	(0.86)	**(3.08)**	**(11.58)**	(1.029)	**(2.637)**	**(10.755)**
EMPLOY	-0.000	**0.002****	**0.004*****	-0.000	**0.002***	**0.003*****
	(-0.01)	**(2.02)**	**(6.53)**	(-0.405)	**(1.912)**	**(5.691)**
CR	**0.082*****	0.022	**-0.114*****	**0.068****	0.070	**-0.116*****
	(2.85)	(0.40)	**(-4.36)**	**(2.207)**	(1.118)	**(-4.381)**
LOSS	**0.360*****	0.084	-0.026	**0.385*****	0.107	0.023
	(3.78)	(0.68)	(-0.45)	**(3.768)**	(0.742)	(0.350)
BTM	**-0.220*****	0.129	**0.275*****	**-0.219*****	0.155	**0.268*****
	(-3.57)	(1.47)	**(5.33)**	**(-3.059)**	(1.495)	**(4.266)**
Observations	1,298	1,298	1,298	979	979	979
Adjusted R^2	0.317	0.457	0.827	0.330	0.404	0.816
Max VIF	4.38	4.38	4.38	4.44	4.44	4.44

This table presents the OLS results of the determinants of *MAT, RISK, and LAFEE*, while controlling for *AC_RISK*. *, **, *** denote significances at 10%, 5% and 1% levels respectively. t-values are reported in parentheses (two-tailed tests). All continuous variables are winsorised at the top and bottom 1%. We use year, audit firm and industry fixed effects and cluster by company. All variables are defined in Appendices 1 & 3.

Table 7: Changes analysis

	AC Chair			AC Members			AC		
	ΔMAT	***ΔRISK***	***ΔLAFEE***	***ΔMAT***	***ΔRISK***	***ΔLAFEE***	***ΔMAT***	***ΔRISK***	***ΔLAFEE***
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
ΔACC_EXPERT	0.025	-0.158	-0.014				0.042	-0.125	-0.018
	(0.77)	(-1.47)	(-0.56)				(1.18)	(-1.09)	(-0.59)
ΔACC_AC	0.003	0.007	**-0.029*****				0.004	0.007	**-0.029*****
	(0.18)	(0.15)	**(-3.15)**				(0.23)	(0.14)	**(-3.19)**
ΔACC_BOARDS	0.004	**0.048****	0.000				**0.007***	**0.058*****	0.001
	(1.04)	**(2.41)**	(0.04)				**(1.67)**	**(3.14)**	(0.13)
ΔACC_TENURE	0.001	0.007	-0.002				-0.000	0.002	-0.002
	(0.41)	(0.56)	(-0.53)				(-0.13)	(0.19)	(-0.50)
ΔACM_EXPERT				0.031	0.060	0.003	0.036	0.039	0.000
				(1.19)	(0.89)	(0.12)	(1.36)	(0.54)	(0.02)
ΔACM_AC				-0.008	-0.074	-0.028	-0.008	-0.062	-0.030
				(-0.67)	(-1.10)	(-1.45)	(-0.68)	(-0.93)	(-1.50)
ΔACM_BOARDS				0.015*	0.039	0.002	**0.018****	**0.058*****	0.003
				(1.87)	(1.59)	(0.21)	**(2.04)**	**(2.59)**	(0.28)
ΔACM_TENURE				0.008	0.023	0.000	0.008	0.021	0.001
				(1.41)	(1.08)	(0.06)	(1.40)	(1.01)	(0.19)
ΔAC_SIZE	0.005	0.022	0.001	-0.015	-0.008	-0.000	-0.018	0.008	0.001
	(0.62)	(0.46)	(0.04)	(-0.77)	(-0.11)	(-0.01)	(-0.87)	(0.11)	(0.02)
ΔMEET	**-0.027****	-0.003	0.019	**-0.027****	0.003	0.019	**-0.026****	0.000	0.020
	(-2.52)	(-0.08)	(0.96)	**(-2.47)**	(0.07)	(0.95)	**(-2.39)**	(0.00)	(0.99)
ΔAC_RISK	-0.011	**0.186*****	**0.016****	-0.010	**0.186*****	**0.016*****	-0.011	**0.187*****	**0.016*****
	(-1.03)	**(4.95)**	**(2.58)**	(-0.98)	**(4.96)**	**(2.64)**	(-1.02)	**(4.98)**	**(2.66)**
ΔAO LAG	**0.004***	0.005	**0.004****	**0.004***	0.004	**0.004****	**0.004***	0.005	**0.004****
	(1.87)	(0.87)	**(2.12)**	**(1.90)**	(0.68)	**(2.29)**	**(1.95)**	(0.89)	**(2.20)**
ΔAF_EXPERT	**0.071***	0.026	0.033	**0.069***	0.011	0.028	0.065	0.007	0.031
	(1.69)	(0.26)	(1.27)	**(1.67)**	(0.11)	(1.03)	(1.59)	(0.07)	(1.16)
ΔAF_SWITCH	-0.006	-0.185	-0.029	-0.008	-0.180	-0.026	-0.013	-0.205	-0.031
	(-0.24)	(-1.22)	(-0.91)	(-0.33)	(-1.20)	(-0.85)	(-0.57)	(-1.35)	(-1.00)
ΔAF_TENURE	-0.006	**-0.019****	**-0.005****	-0.006	**-0.019****	**-0.005****	-0.007	**-0.020****	**-0.005****
	(-1.48)	**(-2.09)**	**(-2.02)**	(-1.50)	**(-2.08)**	**(-2.02)**	(-1.53)	**(-2.21)**	**(-2.11)**
ΔAP_SWITCH	-0.029	0.017	**-0.048***	-0.031	0.004	**-0.050***	-0.030	0.011	**-0.049***
	(-1.41)	(0.28)	**(-1.81)**	(-1.45)	(0.07)	**(-1.85)**	(-1.46)	(0.19)	**(-1.81)**
ΔBUSY	-0.031	-0.175	**0.233***	-0.010	-0.151	**0.219***	-0.006	-0.089	**0.232***
	(-0.55)	(-0.26)	**(1.78)**	(-0.13)	(-0.20)	**(1.77)**	(-0.07)	(-0.12)	**(1.83)**

ΔSIZE	**-0.195****	-0.201	0.027	**-0.191****	-0.200	0.029	**-0.192****	-0.192	0.024
	(-2.13)	(-1.17)	(0.35)	**(-2.11)**	(-1.16)	(0.39)	**(-2.10)**	(-1.09)	(0.32)
ΔINVREC	**1.318*****	**-2.453*****	-0.364	**1.344*****	**-2.449*****	-0.379	**1.318*****	**-2.487*****	-0.358
	(4.71)	**(-3.21)**	(-1.54)	**(4.74)**	**(-3.12)**	(-1.60)	**(4.74)**	**(-3.17)**	(-1.57)
ΔCFO	**0.856*****	-0.360	**-0.527****	**0.903*****	-0.402	**-0.538****	**0.901*****	-0.304	**-0.529****
	(2.85)	(-0.43)	**(-2.20)**	**(2.94)**	(-0.48)	**(-2.14)**	**(2.97)**	(-0.36)	**(-2.19)**
ΔLEV	-0.302	0.771	0.158	-0.295	0.743	0.122	-0.298	0.800	0.145
	(-1.31)	(1.28)	(0.78)	(-1.29)	(1.23)	(0.58)	(-1.32)	(1.31)	(0.72)
ΔROA	0.001	-0.005	-0.001	0.001	-0.005	-0.000	0.001	-0.005	-0.001
	(0.94)	(-0.84)	(-0.44)	(0.88)	(-0.71)	(-0.21)	(1.01)	(-0.81)	(-0.38)
ΔFORG_SALES	0.005	-0.418	**0.126***	0.009	-0.396	**0.133***	0.015	-0.395	**0.130***
	(0.05)	(-1.58)	**(1.81)**	(0.10)	(-1.49)	**(1.88)**	(0.18)	(-1.48)	**(1.85)**
ΔEMPLOY	-0.003	-0.003	**0.003****	-0.003	-0.002	**0.004****	-0.004	-0.003	**0.003****
	(-0.95)	(-1.14)	**(2.04)**	(-0.96)	(-1.01)	**(2.07)**	(-0.96)	(-1.18)	**(2.03)**
ΔCR	-0.007	-0.036	**-0.045***	-0.004	-0.029	**-0.048****	-0.004	-0.032	**-0.046****
	(-0.41)	(-0.37)	**(-1.95)**	(-0.26)	(-0.29)	**(-2.07)**	(-0.24)	(-0.33)	**(-1.99)**
ΔLOSS	0.004	0.147	0.037	0.006	0.161	0.044	0.007	0.153	0.041
	(0.20)	(1.28)	(0.82)	(0.30)	(1.42)	(0.97)	(0.36)	(1.34)	(0.90)
ΔBTM	**-0.311****	-0.166	0.040	**-0.312****	-0.203	0.041	**-0.312****	-0.175	0.038
	(-2.17)	(-0.61)	(0.67)	**(-2.17)**	(-0.75)	(0.69)	**(-2.15)**	(-0.63)	(0.65)
Observations	933	933	933	932	932	932	932	932	932
Adjusted R^2	0.175	0.082	0.042	0.183	0.080	0.040	0.182	0.085	0.040
Max VIF	2.09	2.09	2.10	2.36	2.36	2.36	2.54	2.54	2.54

This table presents the OLS results of the determinants of *MAT, RISK, and LAFEE* using change analysis and where the constant is suppressed. All variables are calculated as the current year minus the previous year's value. *, **, *** denotes significances at 10%, 5% and 1% levels respectively. t-values are reported in parentheses (two-tailed tests). All continuous variables are winsorised at the top and bottom 1%. All variables are defined in Appendices 1 & 3.

Table 8: Determinant of AC effort (changes analysis)

	ΔAC_RISK		
	AC Chair	**AC Members**	**AC**
	(1)	**(2)**	**(3)**
ΔACC_EXPERT	0.196		0.201
	(1.09)		(1.10)
ΔACC_AC	0.002		0.007
	(0.04)		(0.12)
ΔACC_BOARDS	-0.004		-0.004
	(-0.18)		(-0.17)
ΔACC_TENURE	-0.017		-0.016
	(-0.95)		(-0.88)
ΔACM_EXPERT		-0.004	0.034
		(-0.05)	(0.37)
ΔACM_AC		0.129	0.121
		(1.57)	(1.47)
ΔACM_BOARDS		-0.006	-0.006
		(-0.24)	(-0.22)
ΔACM_TENURE		-0.017	-0.013
		(-0.63)	(-0.48)
ΔAC_SIZE	**0.112***	0.092	0.075
	(1.85)	(1.07)	(0.84)
ΔMEET	**0.125****	**0.120***	**0.123****
	(2.02)	**(1.94)**	**(2.01)**
ΔAO LAG	0.010	0.010	0.010
	(1.19)	(1.11)	(1.12)
ΔAF_EXPERT	-0.085	-0.068	-0.076
	(-0.71)	(-0.58)	(-0.65)
ΔAF_SWITCH	**0.378****	**0.398****	**0.384****
	(2.26)	**(2.38)**	**(2.30)**
ΔAF_TENURE	**0.028*****	**0.029*****	**0.029*****
	(2.75)	**(2.82)**	**(2.84)**
ΔAP_SWITCH	**-0.156***	**-0.150***	**-0.152***
	(-1.94)	**(-1.86)**	**(-1.89)**
ΔBUSY	0.709	0.711	0.707
	(0.96)	(0.99)	(0.98)
ΔSIZE	0.126	0.147	0.136
	(0.79)	(0.91)	(0.86)
ΔINVREC	-1.070	-0.959	-1.049
	(-0.91)	(-0.81)	(-0.89)
ΔCFO	-0.436	-0.343	-0.385
	(-0.54)	(-0.41)	(-0.47)
ΔLEV	0.869	0.906	0.892
	(1.00)	(1.03)	(1.02)
ΔROA	0.000	-0.001	0.000
	(0.06)	(-0.10)	(0.03)
ΔFORG_SALES	0.143	0.118	0.141
	(0.59)	(0.48)	(0.58)
ΔEMPLOY	0.002	0.002	0.002
	(0.46)	(0.41)	(0.45)
ΔCR	-0.012	-0.015	-0.009
	(-0.10)	(-0.12)	(-0.08)
ΔLOSS	0.180	0.173	0.176
	(1.33)	(1.27)	(1.28)
ΔBTM	**0.463*****	**0.495*****	**0.481*****
	(2.91)	**(2.99)**	**(2.90)**
Observations	933	933	933
Adjusted R^2	0.027	0.027	0.025

Max VIF	2.09	2.36	2.54

This table presents the OLS results of the determinants of *AC_RISK* using change analysis and where the constant is suppressed. All variables are calculated as the current year minus the previous year's value. *, **, *** denotes significances at 10%, 5% and 1% levels respectively. t-values are reported in parentheses (two-tailed tests). All continuous variables are winsorised at the top and bottom 1%. All variables are defined in Appendices 1 & 3.

Table 9: Consequences of AC for reporting quality

	ABSREDCA	ABSCA	ABSRESCFO
	(4)	(5)	(6)
ACC_EXPERT	-0.007	**-0.009****	-0.010
	(-1.366)	**(-2.113)**	(-1.542)
ACC_AC	0.002	-0.001	0.001
	(0.964)	(-0.860)	(0.554)
ACC_BOARDS	0.001	-0.001	0.000
	(0.711)	(-0.613)	(0.289)
ACC_TENURE	-0.001	0.000	-0.000
	(-0.782)	(0.235)	(-0.580)
ACM_EXPERT	**0.004***	0.001	0.005
	(1.718)	(0.468)	(1.519)
ACM_AC	-0.004	-0.002	**-0.007***
	(-0.950)	(-0.661)	**(-1.742)**
ACM_BOARDS	0.001	-0.000	0.001
	(0.467)	(-0.399)	(0.897)
ACM_TENURE	-0.001	-0.001	-0.001
	(-0.473)	(-0.644)	(-0.802)
AC_SIZE	**-0.005***	-0.001	-0.003
	(-1.710)	(-0.380)	(-0.942)
MEET	0.004	0.001	0.007
	(1.511)	(0.833)	(1.458)
LAG_AC_RISK	**-0.003****	**-0.002***	**-0.004****
	(-2.133)	**(-1.702)**	**(-2.110)**
AO LAG	0.000	0.000	0.000
	(0.932)	(1.260)	(0.054)
AF_EXPERT	-0.004	-0.007	0.002
	(-1.035)	(-1.645)	(0.207)
AF_SWITCH	0.003	0.007	0.016
	(0.491)	(1.279)	(0.805)
AF_TENURE	0.000	0.000	0.000
	(0.329)	(1.270)	(0.816)
AP_SWITCH	**-0.007***	-0.005	-0.002
	(-1.703)	(-1.432)	(-0.455)
BUSY	0.006	0.004	0.004
	(1.265)	(0.952)	(0.725)
SIZE	-0.006	-0.002	-0.012
	(-1.534)	(-0.748)	(-1.368)
INVREC	**-0.035***	**-0.025***	-0.052
	(-1.891)	**(-1.796)**	(-1.623)
CFO	0.047	0.042	-0.097
	(0.504)	(0.757)	(-0.644)
LEV	0.022	0.018	0.013
	(1.446)	(1.366)	(0.604)
ROA	-0.001	-0.001	-0.000
	(-0.864)	(-1.635)	(-0.183)
FORG_SALES	0.002	-0.005	-0.005
	(0.244)	(-0.742)	(-0.470)
EMPLOY	0.000	-0.000	0.000
	(0.429)	(-0.292)	(0.448)
CR	0.004	0.006**	0.006
	(1.274)	(2.341)	(1.126)
LOSS	**0.047*****	**0.030*****	**0.050*****
	(4.048)	**(3.378)**	**(4.029)**
BTM	**-0.020*****	**-0.023*****	**-0.029*****
	(-3.161)	**(-5.009)**	**(-3.167)**
Observations	934	728	953
Adjusted R^2	0.226	0.239	0.156

Max VIF	4.49	4.52	4.46

This table presents the OLS results of the determinants of reporting quality measures *ABSREDCA, ABSCATA,* and *ABSRESCFO* - while controlling for *LAG_AC_RISK*. *, **, *** denote significances at 10%, 5% and 1% levels respectively. t-values are reported in parentheses (two-tailed tests). All continuous variables are winsorised at the top and bottom 1%. We use year, audit firm and industry fixed effects and cluster by company. All variables are defined in Appendices 1 & 2.