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# Are Audit Partners' Compensation and Audit Quality Related to their Consulting Revenues?

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**Abstract**:

Recent accounting scandals have triggered renewed interest in the debate concerning whether audit firms should be banned from providing consulting services. Compared to the voluminous studies on consulting services to audit clients (i.e., non-audit services, hereafter NAS), little has been done to investigate consulting services to non-audit clients (hereafter CS). This study examines whether audit partners' revenues from CS are associated with: i) partners' compensation, and ii) audit quality (AQ), while controlling for revenues from NAS and auditing. We choose the Norwegian setting because of the unique and proprietary data on CS at the *audit partner* level. Our results provide initial evidence that partners' compensation is positively associated with their revenues generated from CS. Regarding AQ, our findings indicate no relation between AQ and partners' revenues from CS. This study contributes to the recent debate on multidisciplinary audit firms and should be of interest to regulators, audit firms, and users of audited financial statements.

## 1. Introduction

Whether or not selling consulting services will impair audit quality has attracted significant attention from audit regulators, practitioners, and academics for a long time. There is also a wider concern of a cultural change in the audit firms due to audit firms' focus on lucrative consulting services. According to former Financial Accounting Standards Board (FASB) and International Accounting Standards Board (IASB) board member Arthur Levitt, "the culture gradually changed from a focus on delivering professional services in a professional manner to an emphasis on growing revenues and profitability" (Wyatt 2004, p. 49), and that greed became a force to contend with in the audit firms.[1] Furthermore, there is also evidence showing the distraction effects of consulting in that resources are being diverted away from auditing towards other businesses (Beardsley et al., 2021; Donelson et al., 2020).

The recent accounting scandals in the UK, which have led to suggestions of a complete separation between the consulting and auditing branches, have given this issue further attention.[2] These concerns with multidisciplinary audit firms, which offer both audit and other services under the same brand name, are a general phenomenon and are not restricted to the UK or the US. As a response to the international criticism of the multidisciplinary audit firm, the IFAC (International Federation of Accountants), the ACCA (Association of Chartered Certified Accountants) and CA ANZ (Chartered Accountants

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[1] Since the 1960s, and with an increased pace throughout the 1980s and 1990s, audit firms have expanded and broadened the range of services provided, allowing consulting to become a growing and larger part of the audit firms' revenue stream (Zeff 2003a; Wyatt 2004). By 1999, revenues from consulting accounted for 66% of revenues and 70% of profits for the major accounting firms (Moore et al. 2006). The view is that consulting services, whether provided to audit or non-audit clients, are more profitable than auditing (Sutton 1997; Jenkins and Lowe 1999; Beattie et al. 1999; Marriage and Ford 2018) and that consulting is a valuable service to sell to clients.

[2] The auditing profession in the UK has recently received criticism from politicians, regulators and academics on the back of a series of accounting scandals at large UK companies including Carillion, Tesco, BT and Patisserie Valerie (Ford and Marriage 2018). Recently, PwC announced that they will split their audit function into two businesses; traditional external audits and a separate unit for internal audits, cyber security and technology risk reviews. KPMG, EY and PwC in the UK have, amongst other things, promised to stop providing consulting services to audit clients over the coming years (Marriage 2019).

Australia and New Zealand) issued a report where they argue that "… the multidisciplinary model is one of the best mechanisms to develop the skills, expertise and consistency needed for quality audits" (IFAC 2019: 5).

Consulting includes both non-audit services to audit clients (henceforth NAS) and consulting services to *non-audit clients* (henceforth CS); thus, consulting = CS + NAS.[3] The growth in consulting revenue following the Sarbanes-Oxley Act (SOX) has primarily been generated from services provided to non-audit clients (Lisic et al., 2019). However, while the association between NAS and audit-quality proxies is well studied (Defond and Zhang 2014), we know very little about CS. This study examines how audit partners' revenues generated from CS are related to auditor compensation and audit quality while controlling for NAS and audit services (henceforth AS). This study is the first to investigate CS using data at the partner level to the best of our knowledge.[4] We believe this study is timely and relevant, and of great interest to regulators, audit firms, audit clients, and users of audited financial statements because it sheds insight into a heavily debated question:  Is audit quality negatively associated with audit firms' consulting activities?

We develop two hypotheses. The first hypothesis analyses the relation between audit partners' compensation and revenues from the sale of CS. There are arguments for both a positive association and no association (see details in Subsection 2.2). A positive relation may exist because audit firms seek to maximise their profitability and, therefore, may reward partners who are good at selling CS. In addition, because there is no regulation on the sale of CS, audit firms may be less concerned about the negative impacts of relating compensation to the sale of CS compared to the sale of NAS (which we expect not to be compensated).

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[3] Consulting to non-audit clients (CS) includes *all* types of consulting services to non-audit clients, including tax, legal, management, bookkeeping, cyber security, assurance services other than auditing, etc.

[4] Note that data on CS are available at the aggregated audit firm level in some countries, for example from transparency reports published by the audit firms. Information about CS at the *partner level* is not typically accessible. Lisic et al. (2019) note that their information is only available at audit firm level in the US.

Rewarding auditors for CS may also be a way to recruit and retain competent people (Dorucher et al., 2016) and keep partners and staff busy when they are not occupied with auditing. The arguments for no association are that audit firms may have responded to the criticisms of a greed culture that threatens professional values and audit quality (Zeff 2003a, Wyatt 2004) by disentangling individual partners' ability to sell CS from partners' compensation. Audit firms may also be reluctant to link partners' compensation to CS because compensation policies and the tone at the top are reviewed when audit firms are inspected by regulatory bodies as the Public Company Accounting Oversight Board (PCAOB) in the U.S. and members of the Committee of European Auditing Oversight Bodies (CEAOB) such as the Financial Supervisory Authority of Norway (FSAN). We expect the benefits to audit firms from encouraging sales of CS to dominate. Our first hypothesis predicts a positive association between audit partners' compensation and the revenues they generate from the sale of CS.

Our second hypothesis examines the association between audit quality and partners' revenue generated from CS. There are three perspectives on how the sales of CS relate to audit quality. The *first* perspective is concerned with the risk that audit firms' strong emphasis on commercialism by encouraging CS comes at the expense of professionalism and the focus on audits (Wyatt 2004; Zeff 2003a), which results in a negative association between selling more CS and audit quality. The *second* perspective suggests no association because audit firms have routines and procedures in place (e.g., internal quality reviews) that ensure sufficient and homogenous audit quality on all engagements (Blokdijk et al. 2006; Ege et al. 2020). The *third* perspective suggests that more consulting activities is positively associated with audit quality due to e.g., spillover effects (Beck and Wu 2006) or because consulting is sold by partners that have higher abilities and competences to deliver both consulting and higher quality audit services (Dorucher et al., 2016). Thus, ex-ante, it is not clear what the association should be. As detailed in Subsection 2.3, we argue that there could be no association, or the association could

be positive or negative. Given the contrasting arguments, our second hypothesis predicts no association between audit quality and audit partners' revenues generated through sales of CS.

We chose a Norwegian setting for our empirical analysis because it enabled us to obtain unique and proprietary data on CS *at the partner level*. The first unique dataset, provided by the FSAN, contains survey data from all auditors in Norway. This survey is mandatory and is conducted every second/third year, and covers the activity of the engagement partners in the previous year. We use the information from the surveys covering the years 2006, 2008, and 2010. The information includes, for example, the revenues obtained from the sale of CS, NAS, and AS. Because the surveys are among the most important mechanisms the FSAN uses in their supervision of the audit market, we regard the surveys as trustworthy.[5] We provide details about our empirical setting in Section 3.

The second unique dataset contains data on audit partners' compensation, such as salaries and wealth from the Norwegian Tax Administration (NTA). From the NTA, we also obtained an identification key for all audit clients' respective engagement partners, information that is not accessible in electronic format from other sources. That information enables us to merge data from the NTA with data from other registers, including the survey data from the FSAN. The data from the FSAN and NTA are highly confidential. We have obtained permission from the relevant governmental bodies in Norway, which has enabled us to use data from 2006, 2008 and 2010 in our analyses.

We focus on audit partners in the "Big Five", which are the partners in the five largest international audit firms operating in Norway: PwC, KPMG, EY, Deloitte, and BDO. The reasons are that these audit firms have international networks that successfully enforce global

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[5] All auditors appointed as statutory auditors are required to respond to the surveys undertaken by the FSAN. Failure to respond to the survey or providing erroneous information may result in loss of the licence as an auditor. Due to the potentially severe consequences of misreporting or no reporting, the surveys are regarded as trustworthy. To the extent that audit firms have partners that are not appointed statutory auditors, we have no information about these partners as they are not covered by the surveys.

auditing standards across their global affiliates (Ege et al., 2020), have similarities in compensation policies (Knechel et al. 2013), and are all subject to PCAOB inspections.[6] The Big Five are also by far the largest audit firms in the Norwegian audit market.

For hypothesis 1, we conduct regression analyses at the individual audit-partner level using a sample of 641 partner-year observations. The results show, as predicted, a positive and significant relationship between partners' compensation and the revenue they generate from providing CS after controlling for sales of AS and NAS as well as partner and audit firm characteristics. These results indicate that audit firms reward partners for selling CS. We also find that compensation is positively related to the sale of AS.

For hypothesis 2, we merge the survey data on audit partners with data on audit clients and use a sample of 48,555 client-year observations. We do not find evidence of a significant relationship between partners' revenues from CS and audit quality, measured by going concern opinions, going concern accuracy, Type I error, Type II error and modified audit opinion, suggesting that partners who sell more CS do not seem to deliver audits of lower or higher quality than other auditors. This result is consistent with Lisic et al. (2019), who use the 100 largest US public audit firms and find no statistically significant association between audit firm consulting revenues and audit quality (measured by misstatements) or investor perceptions of audit quality (using earnings response coefficients).

In robustness tests, we have employed both the Durbin-Wu-Hausman test to address the endogeneity issue and the ITCV (impact threshold for confounding variables) method to

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[6] Ege et al. (2020, p. 154) argue for the similarities among audit firms in the same global network by giving the example of Deloitte: "Deloitte US and Deloitte Norway are member firms of Deloitte Touche Tohmatsu Limited (DTTL)… Member firms have obligations to adopt the network policies and abide by network governance rules and codes of conduct. Each network has a unique audit methodology and a system of quality controls to monitor adherence to it. … As part of their global quality control standards, each network executes internal inspections of affiliates for compliance with global policies and procedures. Through inspection of affiliates, consistent use of technology, and common training, each global network seeks to ensure the consistent application of its global audit methodology."

examine the omitted-variable problem. As no measure of audit quality "paints a complete picture of audit quality" (Defond and Zhang 2014: 276), we also use small positive profit, delayed filings, signed and unsigned discretionary accruals, and the (modified) F-score.[7] In addition, we have conducted various additional tests using subsamples (including only analysing the Big Four) and different sets of control variables. The findings hold.

This study makes the following contributions. First, to the best of our knowledge, this study is the first to examine the impact of selling CS to *non-audit clients* on *audit partners*' compensation and audit quality. While Lisic et al. (2019) also examine CS and audit quality, they use data on CS at the *audit firm* level. In addition, they do not examine partners' compensation. Second, it sheds new light on how the management signals the importance of partners' ability to generate different types of revenues, which speaks to the culture of the audit firm. Jenkins et al. (2008, p. 52) state that "the evidence on culture in professional accounting firms is sparse and all of it was obtained prior to the enactment of SOX.", and there have been concerns that audit firms' focus on revenue and profit is detrimental to audit quality (Wyatt 2004). Thus, our study provides one piece of evidence in an area where research is currently very limited. We contribute to the ongoing debate regarding the multidisciplinary audit firm versus the audit-only firm. Third, we also contribute to the scant literature on auditor compensation (Knechel et al. 2013; Dekeyser et al. 2021) by documenting that partners' compensation is positively associated with their revenues from the sale of CS and the sale of AS, but not the sale of NAS.[8]

We believe our findings should be of interest to politicians, regulatory bodies (as the PCAOB and FSAN), IFAC, audit firms, and users of audited financial statements. We find no

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[7] Misstatements are not available in Norway because private firms make corrections in the following year's financial statement instead. We proxy the likelihood of misstatements by a modified version of the F-score in Dechow et al. (2011).

[8] Dekeyser et al. (2021) examine the association between partners' fee-based compensation, wealth, and audit quality, but data limitations enable them to only analyse fees from auditing. Thus, they do not consider consulting fees from non-audit clients, which is the focus of this current paper.

evidence that partners' provision of consulting services to non-audit clients is a threat to audit quality. As such, the results do not support the view that audit firms should be banned from providing consulting services to non-audit clients.

Section 2 outlines the theory, literature, and hypothesis development. We describe the institutional setting in Section 3. Data, methodology, and descriptive statistics are described in Section 4. Section 5 presents results and robustness tests. Finally, concluding remarks are offered in Section 6.

## 2. Literature and hypotheses

### 2.1 Consulting services and the culture of the multidisciplinary audit firm

Audit firms are unique professional service organisations with a clear mission to serve the welfare of society (Ciconte et al., 2019). According to the classical sociological theory of professions (Parsons 1954; Goode 1957; Hughes 1963), society grants power and prestige to professions, and the society expects that professionals are committed to public service, above and beyond financial incentives (Vollmer & Mills 1966; Moore 1970; Larson 1977).

Audit firms do chase financial performance. An important element in the audit firms' drive toward profitability and growth is the increased pressure placed on partners to generate more revenue (Zeff 2003a). Due to growing concern from regulators to address real and perceived threats to independence from providing NAS, the audit firms increased their consulting revenues by performing CS as there are no direct threats to the independence of non-audit clients (Lisic et al., 2019). As improved profitability became the key focus, it may have affected the behavioural patterns of audit personnel. Zeff (2003a) argues that commercial interest has undermined the core value of the professional audit firms. It may have led to goal or mission displacement (Toepler 2004) as the more focus on CS may have diverted auditors' attention, attitude, investment, etc., away from core audit activities (Lisic et al., 2019).

Beardsley et al. (2021) show that a greater emphasis on providing NAS to audit clients generally (i.e., not to a specific client) can distract auditors from the audit function and impair audit quality.

In essence, the culture of the audit firms has gradually changed from a central emphasis on delivering professional services in a professional manner to an emphasis on growing revenues and profitability. Examples show that the culture in audit firms does change and negatively affects the professional behaviours of partners. Gendron and Spira (2010, p. 285) document the comments of a former partner of Arthur Andersen "… *the pressure to make money increased significantly from 1998 in the accounting unit, perhaps in a quite dramatic way ... What is important to understand is that this internal conflict generated lots of turbulence in the accounting division; there was lots of pressure regarding growth, profitability, and the way we operated – in order to generate a compensation unit that was comparable to that of Andersen Consulting.*"

The impact of culture can be pervasive. According to Crémer (1993), culture represents the unspoken code of communication among members of an organisation. The managerial literature considers the notion of culture as "a set of norms and values that are widely shared and strongly held throughout the organization" (O'Reilly and Chatman 1996). Kreps (1990) and O'Reilly (1989) believe that culture matters because employees will face choices that cannot be properly regulated ex ante. The concerns raised by Zeff (2003a, 2003b) and Wyatt (2004) suggest that audit firms are encouraging and promoting sales of CS and NAS at the expense of providing audits of sufficient quality. Politicians also share these concerns, and the House of Commons in the UK recently recommended "... *that the CMA [Competition and Markets Authority] aims for a structural split or at the very least implements its proposed operational split between audit and non-audit. If operational separation does not end cross-subsidies and fails to produce improvements in culture,*

*independence and transparency, we recommend that the CMA implements a full structural break-up of the Big Four into audit and non-audit businesses.*" (House of Commons 2019: 3).

There is also a growing concern in the US that the rise of consulting and advisory services in multidisciplinary audit firms can threaten audit quality (Harris 2016). However, the audit profession argues that audit quality benefits from audit firms being multidisciplinary (IFAC 2019). Our study aims to provide initial evidence regarding (1) to what extent audit firms incentivise partners to sell CS and (2) whether consulting harms audit quality using data at the audit partner level.[9] There is no evidence on these questions despite an intense debate of whether multidisciplinary audit firms should be forced to become pure audit firms to the best of our knowledge.

### 2.2 Consulting services and compensation

Audit firms' core business is auditing, and it is auditing that generates reputation and largely enables the audit firm to sell both NAS and CS. Auditing is the 'springboard to more lucrative consulting services' (Chairman Levitt, SEC, Speech May 10th, 2000, citation from Kinney et al. 2004:562). Thus, audit firms must balance the incentives they implement through their compensation policy such that sufficient resources and commitment are devoted to auditing (2014/56/EU, Article 24a (j)). Knechel et al. (2013) find that attracting new audit clients is compensated, but they do not consider audit firms' sale of CS.

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[9] While the archival-based literature on determinants of auditor compensation in general is scant, there are three exceptions. Knechel et al. (2013) analyse the determinants of engagement partners' compensation (salary and capital income) in Big Four firms in Sweden, and document that compensation is positively related to factors representing revenue-generating opportunities such as the size of audit clients or the number of publicly traded clients, amongst other results. Sundgren and Svanström (2017) find a negative salary effect for sanctioned auditors compared to non-sanctioned auditors by analysing the impact of disciplinary sanctions issued by the Supervisory Board of Public Accountants in Sweden, implying that audit failures (negative reputational attention) have economic consequences for individual auditors. Erntstberger et al. (2020), using German data, find that small profit pool and high variable compensation relate negatively to audit quality. Importantly, none of these studies investigate how partners' revenues from selling CS relates to compensation or audit quality.

Audit firms *may not compensate* partners for selling CS for the following reasons. First, audit firms could be concerned with the potential adverse effects that Zeff (2003a), Gendron and Spira (2010) and others point to, i.e., the risk that promoting CS may negatively affect the overall commitment to delivering high-quality audits (see also Subsection 2.3 below). Second, audit firms may be reluctant to link the sale of CS to compensation because regulatory bodies review changes in partners' compensation over time. They may react negatively to finding such a relation and could suspect sub-standard audit work that subsequently results in more thorough inspections.[10] Third, the quality perceptions of the public and users of financial statements may be negatively impacted if they suspect that audit partners are incentivised by rewarding the sale of CS (Ford and Marriage 2018). Fourth, the allocation of profit among partners may be based on a national profit pool. Prior research shows that the audit pool could be at a local level ('small pool') or a national firm-level ('large pool') (Trompeter 1994). There will be weak or no association between partners' compensation and their sales of CS for audit firms that use a large profit pool.[11]

The arguments suggesting that audit firms *should compensate* partners for the sale of CS are the following. First, it may enable audit firms to attract higher-quality personnel, who can deliver good quality audits and add value to the firm through their ability to generate revenues from selling CS (Dey et al. 2012). Relationship-building skills and salespersons' abilities are important in maintaining and generating new audit clients and non-audit clients. Not being able to reward partners for their consulting abilities may, in fact, drive talented

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[10] In their inspection of audit firms, regulatory bodies evaluate audit firms along several dimensions (CEAOB 2018a). When audit firms perform the audits of clients, they do not know which engagements or partners that will be sampled for further inspections. Since the inspection programme requires the regulatory body to 'Select a sample of partners and evaluate the basis on which changes in their remuneration from one year to the next has been determined.' (Section D no. 6, CEAOB 2018a), audit firms face the risk that the regulatory body may choose to focus on the work of partners that have received a pay increase due to increased sales of CS.

[11] The findings in Carcello et al. (2000) and Ernstberger et al. (2020) suggest that small profit pools may have an adverse effect on audit quality. Ernstberger et al. (2020) document that three of the Big Four firms in Germany use large profit pools. We discuss the relation between sale of CS and audit quality in Subsection 2.3.

partners out of the audit firm (Dorucher et al., 2016). Second, outside the peak seasons of auditing, audit partners and their staff members often have periods of downtime, and consulting activities can provide opportunities to fill this downtime. Third, in terms of regulation and inspection, CS has been much less in focus than NAS. On-site inspections by the PCAOB include evaluations of audit firms' tone at the top, practices for partner evaluation and compensation, and independence implications of NAS (PCAOB 2012). Regulatory bodies that are members of CEAOB also focus on these areas.[12] Because regulators evaluate the audit firms' provision of NAS and the audit firms' compensation policy, it is unlikely that audit firms will compensate partners for their ability to sell NAS. However, there is no specific regulation associated with CS, and there is no regulation that prohibits audit firms from rewarding partners who sell CS.

The arguments above indicate that audit firms face a dilemma regarding whether to compensate partners based on the partner's sales of CS. While there are arguments for compensating and not compensating CS, we expect that the positive effects of compensating partners for the sale of CS dominate. Thus, audit firms reward partners for selling CS. We formulate the following hypothesis:

HYPOTHESIS 1: *There is a positive association between audit partners' compensation and their revenues generated from selling consulting services to non-audit clients.*

Audit firm needs to balance how they incentivize audit partners to engage in AS, NAS, and CS. An unbalanced compensation policy that favours CS could trigger talented audit partners to move partly or completely over to CS, which would subsequently reduce the audit

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[12] Section B of the European Common Audit Inspection Methodology (CAIM) covers test objectives and inspection procedures for ethics and independence (including NAS and caps on fees), while section D covers partner evaluation, compensation and promotion (CEAOB 2018a). CEAOB also have guidelines for evaluation of the cap on fees from NAS (CEAOB 2018b), but no part of the inspection programme is directed towards CS, except that the evaluation should include the basis for changes in remuneration from one year to the next (CEAOB 2018a, section D.6).

firms' ability to deliver high-quality audits. To stay competitive and maintain their reputation, audit firms also should incentive partners to generate revenue through the sale of AS such that they can invest in, e.g., better audit methodologies/technologies, more training and better internal control systems. As a supplementary analysis to testing H1, we analyse how compensation relate to the sale of AS and we predict a positive relation. Due to the adverse effects that NAS may have on independence (both perceived and real), we do not expect to find any relation between compensation and the sale of NAS. The expectations about how AS and NAS relate to compensation align with recent EU regulation that requires audit firms to have remuneration policies that help secure audit quality but ban audit firms from tying the sale of NAS to compensation.[13]

### 2.3 Consulting services and audit quality

Three perspectives can be considered for how the sale of CS is related to audit quality.

The *first* perspective is concerned with the risk that audit firms' strong emphasis on commercialism by encouraging CS comes at the expense of professionalism and the focus on audits (Wyatt 2004; Zeff 2003a), which results in a negative association between selling more CS and audit quality. If auditors invest more time and effort in CS, then, all else being equal, there is less time available for them to audit their existing clients (Ciconte et al., 2019). Furthermore, there is a risk that consulting activities will distract partners from their audit-related responsibilities and that the motivation for delivering high audit quality decreases as the auditor increases his or her focus on generating more consulting revenues (Beardsley et al. 2021; Donelson et al. 2020; Lisic et al. 2019). The distraction effect can occur because audit

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[13] '[A] statutory auditor or an audit firm shall have in place adequate remuneration policies, including profit-sharing policies, providing sufficient performance incentives to secure audit quality. In particular, the amount of revenue that the statutory auditor or the audit firm derives from providing non-audit services to the audited entity shall not form part of the performance evaluation and remuneration of any person involved in, or able to influence the carrying out of, the audit;' (2014/56 EU, Article 24a (j)).

firms and audit offices may shift resources from auditing to other (consulting) business. Furthermore, auditors may perceive that investments in professional development through learning and education are less important than investments in the growing lucrative consulting business (Ciconte et al., 2019).[14] Taken together, the consequence of selling more CS as discussed above suggests a negative association between auditors' revenues from selling CS and audit quality.

The *second* perspective holds that CS is unlikely to have any impact on audit quality. Audit firms are professional organisations with sophisticated structures in place where staff and even audit partners are subordinated to an administrative structure (Scott 1982; Greenwood and Miller 2010). Routines and procedures that are in place at the global audit firms (e.g., internal quality reviews) are supposed to ensure sufficient (and homogenous) audit quality on all engagements (Blokdijk et al. 2006; Bedard et al. 2008; Jenkins et al. 2008; Dowling and Leech 2014; Ege et al. 2020). In addition, audit firms and auditors face litigation and reputation risk, which disciplines auditors' behaviour and motivates auditors to deliver high-quality audits. Furthermore, the inspections undertaken by the regulatory bodies, such as PCAOB, impose pressure on audit firms and auditors to undertake necessary measures to ensure audit quality. These mechanisms serve to ensure a minimum level of good audit quality on all audit engagements.

The *third* perspective suggests that more consulting activities will be positively associated with audit quality. Working as a consultant may enhance many different skills and competencies of relevance in audit work, such as understanding business activities and management incentives, revenue generation, risk and returns in investment opportunities,

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[14] There are several studies which provide evidence that commercialism has become more important over time and receives greater emphasis than professionalism within accounting firms (see Bazerman et al. 1997; Wyatt 2004; Gendron and Spira 2010; Lord and DeZoort 2001; Suddaby and Greenwood 2001; Suddaby et al. 2007; Suddaby et al. 2009).

valuation of assets, etc. (Beck and Wu 2006).[15] Auditors could benefit from the spillover effects by employing skills and knowledge from consulting activities to subsequent audit work.

Furthermore, working with consulting-related tasks may increase the chances of attracting talents to the profession. When aiming to attract the most talented recruits, audit firms stress the opportunity to work in a multidisciplinary field with an array of professional experience opportunities (Doruchar et al., 2016). These opportunities primarily include a wide range of consulting activities such as Financial Advisory Services, Financial Recovery Services, Risk Advisory Services, Greenhouse Gas Advisory Services, and IFRS Consulting. It is also possible that auditors that are motivated to sell CS for promotions can balance their commercial and professional orientation (Ciconte et al. 2019) and preserve their good reputation (related to CS) by delivering high audit quality.[16]

Based on the contrasting perspectives discussed above, we formulate the second hypothesis in a null form:

HYPOTHESIS 2: *There is no association between audit quality and audit partners' revenues generated from selling consulting services to non-audit clients.*

## 3. The Institutional Setting and the Norwegian audit market

Norway is a member of the EEA (European Economic Area). Due to EEA Agreement, EU regulations are directly binding, and Norway implements all EU directives that concern the free movement of capital, labour, goods, and services (except laws regarding agriculture and fisheries), including all accounting and auditing directives. Norwegian auditing standards are

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[15] While the spillover effect is likely to be stronger for NAS (non-audit services to audit clients), we argue that auditors can also learn from consulting activities in other clients in the same industry or even in different industries.
[16] Malsch and Gendron (2013) discuss the idea that the two logics (i.e., commercialism and professionalism) can co-exist and that one can allow for both in the decision-making process.

a translation of the International Standards of Auditing (ISA).[17] The FSAN's inspection of audit firms follows the Common Audit Inspection Methodology (CAIM) developed by the CEAOB, which means that the accounting and auditing regulation in Norway is comparable to that in the EU member states.

The accounting directive in the EU (2013/34/EU) allows simplified reporting rules for smaller firms. Denmark, Finland, Sweden, and Norway were the last EU/EAA countries that used the option to ease the reporting burden for small firms. Starting on May 1, 2011, small limited-liability companies in Norway were allowed not to have their financial statements audited.[18] There are many audits of very small limited-liability firms with no complicated transactions and easy to audit because of the statutory audit requirement.[19]

Listed companies must use International Financial Reporting Standards, IFRS (after 2005). Other companies may choose between IFRS or the Norwegian Accounting Act. The Norwegian Accounting Act is principle-based and is supplemented with accounting standards from the Norsk RegnskapsStiftelse (NRS, the Norwegian accounting standards board). To the

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[17] Norwegian auditing standards have a few adjustments to the ISA's due to national legislation. One that at first glance may seem important is that auditors sign a couple of tax forms that client firms file with the tax authorities. When the auditor signs these forms, "the auditor confirms that the financial statement is audited and that the auditor intends to issue an audit opinion with a positive conclusion without reservations regarding circumstances that impact taxes or duties" (Downing and Langli 2019: 33). It is important to note that the purpose of the signature is to inform the tax authorities of the outcome of the audit, and not to perform a more thorough audit of the financial statements. "When controlling the income statement and the balance sheet in the trading statement, the auditor will normally not perform any additional tasks in addition to those that are performed as part of the statutory audits" (Norwegian Tax Administration 2016, section 1.2.2.1, our translation). Thus, the system with auditors' signatures on client firms' tax forms is not expected to have any noticeable effect on the quality of client firms' financial statements.

[18] The option to opt out of auditing applies to firms with less than five million Norwegian crowns (NOK) in operating income (roughly $800,000), less than NOK 20 million in total assets, and fewer than 10 employees (the thresholds were increased to 6 million NOK in operating income and 23 million NOK in total assets in 2018). In addition, the firm cannot be a parent company or have a licence from the FSAN.

[19] The EU introduced new rules on statutory audits in 2014, after our sample period. The purpose of the new rules (Directive 2014/56/EU and Regulation (EU) 537/2014) is to improve statutory audits of public-interest entities by e.g., better defining and clarifying the role of the statutory auditor and by reinforcing auditors' independence and their professional scepticism towards the management of the audited company. The new Regulation and Directive contain stricter rules than previously related to for example public oversight, professional ethics and scepticism, independence, auditor reporting and regulatory sanctions as well as introducing caps on fees and forbidding audit firms from providing certain non-audit services etc.

greatest extent possible, the accounting standards are harmonised with the IFRS.[20] Very few non-listed firms use IFRS (less than 0.3% in 2008). Norway introduced deferred taxes in 1992, following a major tax reform, and Norway is a low book-tax alignment country because accounting and taxation are governed by separate rules (Nobes and Schwencke 2006). All companies must file annual financial statements with Brønnøysund Register Centre (BRC). The BRC is a governmental agency that is responsible for numerous public registers.[21] The NTA has the identity of the engagement partners for all taxpayers that file their tax report electronically, but special permission is necessary to obtain data from NTA.

The FSAN is responsible for the supervision of the auditing market in Norway. The FSAN conducts periodic reviews, survey-based inspections, topical inspections (focusing on, e.g., estimates or specific industries), and other inspections (FSAN 2007, 2017). If an audit firm has clients listed on US stock exchanges, the audit firm is inspected at least every third year by the FSAN *and* the PCAOB.[22] In addition to on-site inspections, the FSAN carries out two surveys every second/third year (one for audit firms and one for individual persons with licence as auditors) to gather information about the auditors, the audit firms, and the audit market.

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[20] IFRS is balance sheet oriented with an emphasis on fair value while the traditional Norwegian accounting model (NGAAP, Norwegian Generally Accepted Accounting Principles) is earnings-oriented with an emphasis on historical cost measurement and the matching principle (Beisland and Knivsflå 2011, Gjerde et al. 2008). Except the differences at the conceptual level, the main differences between IFRS and NGAAP relate to fair values (investment properties, biological assets, and financial instruments); revaluation of property, plant, and equipment; goodwill; research and development expenditures; and provisions for e.g., periodic maintenance and deferred taxes (Gjerde et al. 2008). Overall, NGAAP is regarded as being more conservative than IFRS.
[21] All annual reports are electronically available from the BRC upon request (free of charge). The ID of the audit firm is available in public registers, but not the name of the engagement partner. To obtain the name of the engagement partner, one must order and download a PDF file from BRC that consists of the company's annual report, the Board of Directors report, and the signed audit report (one PDF file per firm per year).
[22] Auditors that have clients listed on non-US stock exchanges or clients defined as being of public interest (e.g., non-listed banks and insurance companies) are inspected by the FSAN at least every third year. Other audit firms are inspected at least every sixth year by members of the Norwegian Institute of Public Accountants (DnR) in cooperation with the FSAN. All Big Four firms in Norway, but not BDO, have clients listed in the US. BDO and some non-Big Five firms have clients of public interest (but not clients listed in the US). It is likely that more frequent inspections by the FSAN, and inspections by the FSAN or the PCAOB, create strong incentives for the Big Five firms to ensure that the internal control system and documentation are in order and that the audit quality is sufficiently high for all clients. Ege et al. (2020) provide details regarding how global accounting networks ensure compliance with the audit firm's global policies and procedures.

## 4. Data, methodology, and descriptive statistics

### 4.1 Data

This paper employs unique and proprietary data at the partner level from the Norwegian setting. The first dataset (dataset 1) originates from surveys conducted by the Financial Supervisory Authority of Norway (FSAN) every second/third year. The surveys are mandatory for *all* auditors in Norway. Thus, if an audit firm has partners that do not sign audit reports (for instance, lawyers), we have no information about these partners. In other words, all the partners in our dataset conduct audits, and most of the partners sell consulting services to non-audit clients. The surveys cover information such as whether the auditor is an engagement partner, the identity of the auditor, the revenues obtained from CS, NAS, and AS, and the number of hours related to the consulting and auditing, amongst other information.[23] The FSAN also provides information about the auditors' level of education (bachelor's or master's degree), when the licence as auditor was granted, age, and gender.

A second dataset (dataset 2) contains information on the income and wealth of the auditors provided by the NTA. This dataset starts in 2006 and includes salary and net wealth, amongst others. We merged datasets 1 and 2 for testing hypothesis 1.

To test hypothesis 2, the relation between audit quality and audit partners' revenues from consulting, we first merged dataset 1 with our third dataset (dataset 3), which was also obtained from the NTA. Dataset 3 contains the name of the engagement partners of all clients and the organisational ID of the audit clients. The NTA is the only source that can provide names of the engagement partners in an electronic format because clients registered as

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[23] According to interviews that we have conducted with audit partners and a representative from the FSAN, there are reasons to believe that the information in the survey is trustworthy. First, the survey is mandatory for all parties that have a licence as an auditor or an audit firm and not responding to the survey will result in loss of their licence as an auditor. Second, all audit firms will be inspected at least every third/sixth year where information provided in the surveys will be verified. Providing erroneous information may also result in the loss of licence as an auditor.

limited-liability firms must state the name of their engagement partner when they file their tax returns (Che et al., 2020).[24] We then merged the file that combines datasets 1 and 3 with our fourth dataset (dataset 4), which contains accounting and audit-related information and other firm-specific information such as industry affiliation and addresses. The audit information includes, for example, the type of modified opinions, the identity of audit firms, and how much the client has paid in fees for AS. Dataset 4 was provided by Eniro AS, Experian AS, and the Centre for Corporate Governance Research (CCGR) at BI Norwegian Business School.

The data from FSAN and NTA (i.e., datasets 1, 2, and 3) are subject to strict confidentiality rules, and special permission is necessary to gain access to the data. Our permission enables us to use data from 2006, 2008 and 2010.

**4.2 Sample**

This study focuses on engagement partners in the (current) Big Five audit firms (PwC, EY, KPMG, Deloitte, and BDO) in Norway. There are three main reasons for focusing on these firms. First, all the Big Five firms belong to an international network, and the fundamental drivers of partner compensation in these audit firms may bear some similarities across countries (Knechel et al., 2013). Ege et al. (2020) show that global audit firm networks successfully enforce their unique global auditing methodologies and related standards across their global affiliates. Therefore, local audit firms with global networks can provide similar audit quality to their peers of the same global networks in other countries. Second, these audit

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[24] The names of the engagement partners are public information as this is included in the annual report. However, it is practically impossible for us to obtain the name of the audit partners from public sources as *each report* has to be ordered and downloaded individually from a central register (The Brønnøysund Register Centre).

firms are the largest in Norway. Third, the FSAN considers these five firms to belong to one common group and treats them in the same way.

The sample covers data for 2006, 2008, and 2010 because the information on partners' income starts in 2006. After excluding partners who are non-Big Five partners and combining survey data with the income data, which do not offer information on all partners, the final sample has 641 partner-year observations for 322 engagement partners.

Statistics on the final sample are shown in Table 1, Panel A. The first three columns report the number of engagement partners in each year for the five audit firms. The second-to-last column (Total) shows the aggregated number of partner-year observations for each audit firm, which varies between 52 and 205. The last column (#partners) shows the number of partners in each audit firm.[25] Panel B of Table 1 presents the number of clients for each audit firm in each year. The total number of client-year observations is 45,855 for the five audit firms in the three years.

[Insert Table 1 about here]

## 4.3 The empirical model and variables for hypothesis 1

We conduct the following regression for the first hypothesis (H1):

$LnSalary = a + b_1*LnSalesCS + Controls + FE\_AuditFirms + FE\_Years + e_{ijt}$ (1)

We regress the dependent variable, measured by the natural logarithm of partners' salary, *LnSalary*, on test and control variables.[26] The test variable is the natural logarithm of revenues generated from sales of CS (*LnSalesCS)*. This test uses partner-level data.

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[25] We do not have data for all three years for all partners.
[26] Salary includes regular salary, contributions to pension plans, the value of free/subsidised insurance, bonuses, etc.

While this paper focuses on the revenues generated from CS, it is important to control for revenues obtained from NAS and AS, which may affect partners' compensation (Knechel et al. 2013). We add the natural logarithms of sales of NAS (*LnSalesNAS*) and AS (*LnSalesAS)* as control variables. We do not expect the sale of NAS to be related to compensation due to the negative effect that NAS may have on independence and, hence, audit quality, and because regulators (e.g., PCAOB and FSAN) are very concerned with NAS. As higher fees from the sale of AS enable audit firms to, e.g., invest in better training and audit methodologies, we expect the sale of AS to be positively related to compensation. Knechel et al. (2014) show that compensation increases when partners gain new clients and suggest that compensation correlates positively with audit fees since new clients will generate future audit fees. Partners' respective compensation is likely to be related to their characteristics (Knechel et al., 2013). Incentives for generating revenues might be related to partners' current career situations (Gibbons and Murphy 1992). For example, partners who are nearing retirement may want to slow down (Sundgren and Svanström 2014). Hence, we control the natural logarithm of auditor age (*LnAge)* and expect a negative relation with compensation. As Knechel et al. (2013) suggest that gender might have an impact on partners' income, and there is evidence that females are associated with a lower salary, we include *Female* as a control. We expect compensation to be negatively related to female partners (*Female*). Female equals 1 if the partner is female and 0 otherwise.

In addition, the level of education may affect partners' behaviours and attitudes (Che et al., 2018) and should thus be related to compensation. Evidence shows that both the type and the extent of university education affect how auditors perceive their roles (Monroe and Woodliff 1993; Grambling et al. 1996; Ferguson et al. 2000). Gul et al. (2013) document that auditors with a master's degree demonstrate different audit reporting behaviour to auditors with no such degree. We control for education, measured by master's degree (*Master),* which

is 1 for partners with a master's degree and 0 for those with a bachelor's degree.[27] We expect that partners with higher education are associated with higher compensation.

Audit partners' compensation might also be associated with their professional experience. There is evidence that job performance is positively associated with work experience (e.g., Quiñones et al. 1995). Because job performance might be related to compensation, we control for partners' professional experience, measured by the natural logarithm of the number of years since a partner obtained his/her first licence as an auditor (*LnNumYrExperience*). We expect a positive relationship between compensation and years of experience.

Because compensation might be heterogeneous in different geographies due to factors such as different levels of cost of living, we add an indicator variable for each of the three largest cities in Norway, *Oslo*, *Bergen*, and *Stavanger*, which equals 1 if the partner is located in Oslo, Bergen, or Stavanger, respectively, and 0 otherwise. We expect that partners in these large cities will have a higher salary.

In addition to granting licenses to auditors, FSAN also grants licenses to external accountants, i.e., firms or persons that want to sell accounting services to companies that outsource the bookkeeping function.[28] We include *IsAccountant* to control for whether a partner is licensed as an external accountant in addition to being licensed as an auditor. *IsAccountant* equals 1 for partners who are licensed as external accountants ('bookkeepers') and 0 otherwise. The margins for accounting and bookkeeping services are lower than for auditing, and we expect a negative relation with compensation. Knechel et al. (2013) find that the size of clients and the number of (public) clients represent revenue-generating

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[27] To be licensed as an auditor, one must have either a bachelor's or a master's degree, amongst other requirements.
[28] To be eligible for authorisation as a licensed accountant, one must hold a bachelor's degree in business economics and administration with concentration in specific subjects and two years of relevant job experience.

opportunities and affect compensation. Hence, we include the number of audit clients (*NumClients*) and whether the partner audits large clients (*LargeClients*). *LargeClients* equals 1 if one or more clients of that partner pay audit fees higher than 1 MNOK, and 0 otherwise.[29] We expect a positive relationship between these two variables and compensation.

Since auditors' financial status might affect their behaviour (Dye 1993), we control for auditors' wealth, measured by the natural logarithm of their net wealth, *LnNetWealth*. The expected sign on this variable is positive. Partners with higher wealth are likely to earn a higher salary because wealth might proxy partners' ability. In addition, as a firm's compensation policy may be related to its profitability and size, we add audit firms' profit margin, *ProfitMargin*, and the logarithm of the number of employees, *LnEmployees*, in the audit firm as controls. We expect these two variables have positive coefficients because partners in audit firms that are larger and enjoy higher profit margins are more likely to have higher compensation. All the variables are defined in Appendix A.

Fixed effects on audit firms, *FE_AuditFirms*, and on years, *FE_Years*, are included to account for firm-specific and year-specific effects. We cluster standard errors at the partner level to adjust for within-cluster correlation. Ordinary least squares (OLS) regression is used for the analysis.

**4.4 The empirical model and variables for hypothesis 2**

We conduct the following regression for the second hypothesis (H2), using client firm-level data:

$AQ = a + b_1*LnSalesCS + Controls + FE\_AuditFirms + FE\_Years + FE\_industry + e$ (2)

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[29] The threshold of 1 million NOK corresponds with the cut-off FSAN uses when FSAN identifies the number of clients that pay high audit fees (FSAN 2007, 2009 and 2011). The average exchange rate between the USD and the NOK in the sample period is 1 USD = 6.05 NOK. Therefore, 1 million NOK is 165,289 USD.

The dependent variable is audit quality (*AQ*), which we measure in different ways.[30] First, *AQ* is measured by going-concern modification (*GC*); *GC* equals 1 if the audit report expresses concern over the going-concern assumption and 0 otherwise. GC opinions are based on auditors' judgments on whether there is substantial doubt about the client's ability to continue on a going-concern basis. Even though the responsibility of the auditor is not to predict future bankruptcies (but rather to assess 'the appropriateness of management's use of the going-concern assumption', ISA 570 (6)), a stream of literature analyses the accuracy of GC opinions by observing whether a firm declares bankruptcy after receiving a GC-modified opinion.

It is common to classify GC opinions as correct or incorrect depending on whether the auditee goes bankrupt within 12 months after the issuance of the audit report (Francis 2011; Knechel et al. 2013). However, creditors of the auditee can suffer losses even if the auditee does not declare bankruptcy. Creditors sometimes would rather write off part or all of the existing debts or ask the courts to levy distress rather than incur the cost of ordering the company to be wound up to regain some of their claims eventually. Consistent with the definition of failure as the "inability of a firm to pay its financial obligations as they mature" (Beaver 1966, p. 71), we use another measure, public notification of unpaid debt, as the yardstick for assessing going-concern accuracy (Che et al. 2020). The notification takes the form of a payment remark.[31]

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[30] All frequently used audit quality measures have weaknesses (DeFond and Zhang, 2014). As no measure is perfect, we use a variety of proxies that capture different aspects of audit quality that are available for Norwegian private firms. Measures under the direct control of the auditor (e.g., based on the content of the auditor's report) are used in the main tests, while more indirect measures that also depend on the client (e. g., discretionary accruals) are used in additional analyses. For discussion of pros and cons of different audit quality measures, we refer to DeFond and Zhang (2014).

[31] Any creditor can obtain information about a firm's payment remarks from credit-rating companies that have permission to use such information. For the creditors, the audit report would be useful if it provides a signal of the likelihood of the auditee's subsequent payment remarks, because payment remarks imply that the auditee has defaulted on its payment. Thus, instead of classifying the accuracy of the GC opinions using bankruptcies, we use the occurrence of payment remarks.

Our second measure, going-concern accuracy (*GCaccuracy*), reflects the partners' ability to predict financial distress in the next 12 months. *GCaccuracy* is equal to 0 if there is a Type 1 or a Type 2 error in the audit report and 1 otherwise. The classification of errors is based on whether the company receives a payment remark within 12 months after the publication of the annual report.

The measure of *GCaccuracy* gives equal weight to the two types of errors: A Type 1 error is to issue GC opinions to clients who do not receive a payment remark. A Type 2 error is not to issue GC opinions to clients that receive a payment remark within the next 12 months. There are costs for both Type 1 errors and Type 2 errors (Carson et al., 2013). Usually, Type 2 errors are regarded as costlier since auditors are typically not held liable for overly conservative reports but rather for those reports that were insufficiently conservative (Lennox 1999; Francis 2011). Therefore, we examine Type 1 and Type 2 errors separately. We define *GCAccuracy_Type1* and *GCAccuracy_Type2* for the *GCAccuracy* that reflects Type 1 and Type 2 errors, respectively. These measures are our third and fourth variables of audit quality. The last measure of *AQ* is an indicator variable, *MAO*, which is 1 if the audit client receives a modified audit opinion and 0 otherwise.[32]

The test variable, *LnSalesCS*, is the same as the test variable for H1 in eq. (1). Similarly, we also control for sales of NAS and AS to audit clients (*LnSalesNAS* and *LnSalesAS*).

Based on previous research, we control for client characteristics that may affect audit quality. We measure client size by the natural logarithm of total assets (*LnTA*) and the number

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[32] These measures have all been used in other studies using Norwegian private firms. Hope and Langli (2010) measure audit quality by the likelihood of the auditor issuing audit opinions modified due to going concern uncertainties as well as other types of modified opinion. Che et al. (2020) measure audit quality with going concern opinions, going concern accuracy, modified opinions due to other concerns than going concern uncertainty, and discretionary accruals. Che et al. (2018) measure audit quality by going concern accuracy. We report the results of using discretionary accruals as well as other audit quality measures in Section 5.4.1.

of employees (*LnEmployees*).[33] We include the natural logarithm of firm age (*LnAge*), which

may be related to the firm's life cycle (Dodge and Robbins 1992). We measure business

complexity using the natural logarithm of the number of subsidiaries (*LnNumSub*) and the

number of industries the clients operate in (*NumInd*), inventory and account receivables scaled

by total assets (*InvAccRec*), and intangible assets divided by total assets (*Intang*). We measure

financial risk using the debt ratio (*Leverage*) and the probability of going bankrupt

(*ProbBankruptcy*). Operating risk is measured using return on assets (*ROA*), sales growth

(*SalesGrowth*), cash flow (*CashFlow*), and an indicator variable for loss (*Loss*). We proxy for

liquidity risk with short-term investments scaled by total assets (*ShortInv*) and the ratio of

current assets to current liabilities (*CurrentRatio*). We also control the size of audit fees,

measured by the natural logarithm of audit fees (*LnAF*). Finally, we include fixed effects on

audit firms, years, and industries and adjust standard errors clustered on the partner level.[34]

We use logistic regression models as these dependent variables are indicator variables.

**4.5 Descriptive statistics**

The summary statistics of the dependent, test, and control variables for H1 (H2) are

presented in Panel A (B) of Table 2. In Panel A, the first row reports the statistics of salary

(*Salary*), and the dependent variable, *LnSalary,* is presented in the row below. The average

salary of the engagement partners in the Big Five firms is around 3.172 million NOK, with a

median of 2.306 million NOK. The variation of salary is high, with a standard deviation of

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[33] Our choice of control variables is based on previous studies using samples of private firms (Hope and Langli 2010; Che et al. 2018, 2020). To keep the discussion short, we do not discuss, or report expected signs of the control variables in the test of hypothesis 2. It is important to note that the expected signs vary across the audit quality measures. To illustrate this, we expect a negative relation between firm size (*LnTA*) and the likelihood of the auditor issuing an audit report modified for going concern uncertainty (*GC)* and a positive relation between size and the accuracy of the going concern report (*GCaccuracy*). This is because smaller firms are more often financially troubled and go bankrupt more often than larger firms (*CG* is negatively related to *LnTA*), and because it is easier to predict financial distress in the future for larger firms that usually have a longer history of financial statement and survival (*GCaccuracy* is positively related to *LnTA*). For both *GC* and *GCaccuracy*, we expect a negative relation with firm age (*LnFirmAge*) because younger firms are more often financially troubled and are more difficult to predict. In Subsection 5.4.2 we report the results of using different sets of control variables.

[34] We also clustered the standard errors at the client level and the finding holds.

2.435 million NOK. The third row reports the revenue generated from selling CS to non-audit

clients (*SalesCS*), with a mean value of 2.085 million NOK and a standard deviation of 2.321

million NOK (we return to the skewness of the distribution of sales of CS in Subsection

5.3.3).[35]

The average age of engagement partners (*PartnerAge*) is 48,41 years, 10 % of the

partners are female (*Female*), and 89% of the engagement partners have a master's degree

(*Master*). The mean value of the number of years of work experience is 17.35

(*NumYrExperience*), and 18 % of the partners are licensed as an accountant (*IsAccountant*). In

terms of geography, 25 % of the engagement partners are in Oslo, 13% in Bergen, and 12% in

Stavanger. The average (medium) value of net wealth (*NetWealth*) is 3.261 (1.723) million

NOK. The average number of employees (*NumEmployees*) of the Big Five firms is 829, and

the mean profit margin is 16% in the sample period. The average number of audit clients

(*NumClients*) is 204, and 17% of the partners have large clients (*LargeClients*).[36]

[Insert Table 2 about here]

Panel B of Table 2 presents descriptive statistics for the variables used for hypothesis

2. The first five rows report the statistics for the measures of AQ. There are 8 % of the client

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[35] Sales of CS, NAS, and AS are self-reported by the partners. There are a few observations with very high values of sales of CS, NAS and AS, likely due to partners reporting amounts in NOK instead of thousand NOK as they were instructed to. To mitigate the effect of potential under reporting and over reporting, we tabulate results after winsorizing the top and bottom of sales of CS, NAS, and AS at the 2 and 98 percentiles, respectively. Our inferences are robust to alternative treatment of potential outliers as dropping 2 percent of the observations with the highest/lowest values of sales of CS, NAS, and AS or winsorizing sales of CS, NAS, and AS at the 3 and 97 (5 and 95) percentiles. The effect of excluding partners with the most sale of CS is discussed in Subsection 5.3.3. All observations of salary seem reasonable (i.e., no extreme observations) and the results are invariant to winsorizing salary with 1% (2%) in both tails. The mean of the ratio between sales of AS and salary is 3.12. The mean of the ratio between sales of CS and salary is 0.56 while the mean of the ratio of sales of NAS to salary is 0.58 (the difference is not statistically significant).

[36] Because most private audit clients are relatively small, many audit partners have a high number of audit clients compared to audit partners in the US, which usually focus on large (i.e., public) clients. High numbers of clients per partner can also be found in other countries that share the same tradition of requiring statutory audits in small private companies such as Sweden (e.g., Knechel et al. 2013; Sundgren and Svanström 2014; Sundgren and Svanström 2017). The results (untabulated) hold when we drop 2%, 3%, or 5% percent of the partners with the most clients.

firms that have received going-concern modifications (*GC*), and the going-concern accuracy

(*GCaccuracy*) is 86.4% for the sample, while (*GCaccuracy*) related to Type 1

(*GCaccuracy_Type1*) and Type 2 (*GCaccuracy_Type2*) errors is 93.2% and 20.2%,

respectively. The fifth row shows that, on average, 17.5 % of client firms have received a

modified audit opinion (*MAO*).[37] We briefly mention only a few of the variables for the client

characteristics. The average debt ratio of the client firms (*Leverage*) is 0.752, and the average

return on assets (*ROA*) is 0.022. On average, 31.4% of clients have encountered a loss (*Loss*).

Panel C of Table 2 reports the correlation matrix between the test variable, *LnSalesCS*,

and control variables in eq. (1). The correlations are reasonably low except for the correlation

between *LnNumYrExperience* and *LnPartnerAge*, which is 73%. Panel D of Table 2 provides

the correlation matrix for the test and control variables in eq. (2). There are a few relatively

high correlations, for example, the correlation between *Loss* and *ROA* (0.60), the correlation

between *CashFlow* and *ROA (0.51)*, the correlation between *Loss* and *ProbBankruptcy* (0.48).

Most of the correlations in Panel D are also quite low.


## 5. Results

We provide the main results for hypotheses 1 (H1) and 2 (H2) in Subsections 5.1 and 5.2,

respectively, and discuss the robustness tests and additional analyses for H1 and H2 in

subsequent subsections.

### 5.1 Results for hypothesis 1 (H1)

The main results for H1 are presented in Table 3. The coefficient on revenue from

sales of CS (*LnSalesCS*) is positive, 0.021, and significant at the 5% level, with a t-value of

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[37] For private client firms, more firms receive modified audit opinions compared to publicly listed firms. Since our sample primarily consists of small firms, it is reasonable to expect higher proportions of firms with modified opinion than for a sample of large (public) firms. The explanation is, for example, that small firms are more likely to have going concern problems and lower financial reporting quality (e.g., Burgstahler et al. 2006).

2.29.[38] This result suggests that engagement partners' salaries are positively related to their sales of CS, supporting H1. Specifically, for each 1% increase in the sales revenue from CS, the partner's salary will increase by 2.1%. The positive and significant coefficient on *LnSalesCS* indicates that audit firms compensate partners' revenues obtained from consulting work for non-audit clients, which has not previously been documented to the best of our knowledge.

[Insert Table 3 about here]

We now briefly comment on the results for the control variables. The coefficient on sales of NAS to audit clients (*LnSalesNAS*) is insignificant, indicating that audit firms, as expected, do not reward partners who sell a greater amount of NAS audit clients. The coefficient on revenues from AS (*LnSalesAS*) is 0.05 and is significant at the 10 % level, in line with what we expect, showing that the sale of audit services is also related to compensation.[39] This result suggests that audit firms have a balanced compensation policy that is following EU regulation (2014/56/EU) Article 24a: They reward partners for sales of CS and AS, but not for sales of NAS since NAS may 'jeopardise the independence and objectivity of the statutory auditor who carries out the statutory audit'. The result that the sale of AS is rewarded is supported by the study of Knechel et al. (2013), which shows that audit partners are rewarded for gaining new clients. As new clients will subsequently generate audit fees, it is likely that fees from auditing also are compensated.

As expected, partners with a master's degree (*Master*), partners with more professional experience (*LnNumYrExperience*) and partners located in the largest cities, i.e., Oslo (*Oslo*),

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[38] We have checked the VIF (Variance Inflation Factor) for multicollinearity. All the variables, except *LnEmployees* and *ProfitMargin*, have a VIF well below 3. When dropping these two variables, the coefficient on *LnSalesCS* is still positive and significant, and the VIF is below 3 for all variables.

[39] The p-value for the difference between the coefficient on sales of AS and sales on CS is 0.397, suggesting that the difference is statistically indifferent. In supplementary analyses in Subsection 5.3.3, we show that revenues generated from sales of AS becomes stronger and more positively associated with partner compensation when we exclude audit partners with the highest sales of CS.

Bergen (*Bergen*), and Stavanger (*Stavanger*), have significantly higher salaries. We do not find any significant relation between salary and partners' gender (*Female*) or age (*LnAge*) and whether the partner is a licensed accountant (*IsAccountant*). Partners' wealth (*LnNetWealth*) has a positive and significant coefficient. The reason could be that partners' financial situation may create incentives to earn a high salary or proxy for partners' abilities. Whether partners have large clients (*LargeClients*) is also positively related to salary, while the coefficient on the number of clients (*NumClients*) is insignificant. The control variables at the firm level are related to compensation. Partners in firms with more employees (*LnEmployees*) have higher salaries, and firms' profit margins (*ProfitMargin*) are positively associated with partners' salaries. Overall, all control variables have the expected signs, but *LnAge*, *IsAccountant*, and *NumClients* are not significant. The sample size is 641, and the adjusted $R^2$ is 41.5 %.

## 5.2 Main results for hypothesis 2 (H2)

We report the results for the association between audit quality and audit partners' sales of CS to non-audit clients in Table 4.

[Insert Table 4 about here]

For all five columns, where AQ is measured by *GC*, *GCaccuracy*, *GCaccuracy_Type1*, *GCaccuracy_Type2*, and *MAO*, respectively, the coefficient on *LnSalesCS* is statistically insignificant.[40] Hence, we cannot reject H2.[41] Although not the focus of this paper, the coefficients for the sale of NAS (*LnSalesNAS*) are mostly

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[40] We have checked the VIF (Variance Inflation Factor) for all the analyses and the VIF is well below 3 for all the variables. This indicates that multicollinearity is not a concern to our analyses.

[41] We have used the full sample when AQ is measured by *GC*. Some may argue that it is appropriate to use clients who are financially distressed. We define financially distressed firms as in Hope and Langli (2010) and redo the analysis using *GC* as the dependent variable based on the subsample of financially distressed firms. The results (untabulated for brevity) show that the coefficient on *LnSalesCS* is insignificant, consistent with the main finding.

insignificant.[42] These results indicate that we do not find evidence of a significant relationship between audit partners' revenues from sales of CS and audit quality; therefore, these results do not support the concerns raised by, for example, Zeff (2003a) and Wyatt (2004).[43] Our finding is consistent with Lisic et al. (2019) that examines the relationship between consulting revenues at the audit-firm level and audit quality and does not find a statistically significant association between them in the post-SOX period.

**5.3 Robustness tests for H1**

*5.3.1 Endogeneity analysis*

Endogeneity is a concern for most analyses. To examine whether endogeneity is a threat to our finding that partners' compensation is positively associated with sales from CS, we perform a Durbin-Wu-Hausman test to mitigate the endogeneity concerns.

When conducting the Durbin-Wu-Hausman test, we use the (natural logarithm of) partners' hours spent on CS, *LnHoursCS*, as an instrumental variable (IV). In the first stage, we regress the IV on the test and control variables and calculate residuals, *Residuals*. In the second stage, we add the variable *Residuals* into the regression of *LnSalary* on test and control variables. The results are presented in Table 5. In the first stage, the results show that the coefficient on *LnSalesCS* is positive and statistically significant, suggesting a high correlation between *LnSalesCS* and *LnHoursCS*. In the second stage, while the coefficient on *LnSalesCS* is still positive and significant, the coefficient on *Residuals* is insignificant, indicating that endogeneity is not a threat to our analysis.

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[42] The coefficients for sales of AS are significant for three of the five audit quality measures. We interpret that partners with higher revenues from AS are associated with higher audit quality. Please see the detailed discussion about interpretation of these audit quality measures in Che et al. (2020).

[43] As explained in footnote 33, the expected signs of the control variables depend on the audit quality measures. Focusing on *GC*, we see that most of the control variables have signs as expected. For example, we find that the likelihood of receiving a going concern modification decreases with firm size (measured by *LnTA* and *LnEmployee*) and firm age (*LnFirmAge*) and increases with inventories and accounts receivables (*InvAccRec*), debt (*Leverage*) and the probability of going bankrupt (*ProbBankruptcy*).

[Insert Table 5 about here]

### 5.3.2 Analysis for omitted variable bias using ITCV method

Our finding of the positive association between partners' compensation and their sales of CS in H1 may suffer from omitted variable bias. We conduct the ITCV (impact threshold for confounding variables) method, which can help address omitted variable bias issues.

We follow Frank (2000) and Chapman et al. (2019) to estimate the minimum magnitude that an omitted variable would need to have, compared to the most important control variable to overturn the main results in a regression analysis. Table 6 presents the results. The column presents the impact on the coefficient for *LnSalesCS* of each additional independent variable, which is the partial correlation between each independent variable and the dependent variable multiplied by the partial correlation between each independent variable and the test variable (Chapman et al. 2019). The row' Largest impact' lists the control variable that has the most impact (0.08). The row 'ITCV', 0.088, follows the calculation in Frank (2000). The last row shows that a confounding variable would have to be at least 1.1 times larger than the effect of the most impactful control variable to overturn our results, which is not very likely.

[Insert Table 6 about here]

### 5.3.3 Analyses for subsamples

To assess the robustness of our findings, we have performed several analyses on subsamples.

Knechel et al. (2013) find that the size of audit clients affects compensation. To avoid the effect of large clients on our results, we exclude partners who have large clients (defined as clients with more than 1 million NOK in audit fees) from the analysis. The sample size

drops to 530 partner-year observations. When we redo the main analysis for H1 using this subsample, the coefficient on *LnSalesCS* becomes slightly higher at 0.027. It is significant at the 1% level with a t-value of 2.63 (untabulated for brevity). The results are otherwise similar to the main results in Table 3. This test shows that whether partners have large clients or not does not impact our results on the association between partners' salaries and audit quality and revenues from CS.

As the exclusion of large clients based on audit fees may not eliminate the size effect, we also compute the total assets across all the clients per partner in each year and exclude the partners that are among the top 1% and 5%, respectively, in terms of total assets. These results (untabulated) show that the coefficient on *LnSalesCS* is still positive and significant for H1.

To examine whether the findings hold for the Big Four firms (KPMG, PWC, EY, and Deloitte), we conduct analyses for H1 for partners in these four firms only. In addition, while we do not have many observations for each individual audit firm, we analyze the largest audit firm in our sample. The analyses using these two subsamples provide consistent results with the main results (results are not tabulated for brevity).[44]

There are likely differences between offices in terms of sale of AS, CS and NAS, and partners to some offices sell very little CS. The behaviour of partners with low sales of CS may not be representative of the "average" partners. We, therefore, focus on the partners operating in the most important offices, which are proxied by audit partners located in the three largest cities (because we do not have data on audit offices). The assumption is that

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[44] To examine whether the number of clients in the partners' portfolio could affect our results for H1, we split our sample based on partners' client portfolios (e.g., number of clients). However, this comes at the cost of reducing the power of the test. When we examine whether there is a positive association between partners' ability to generate revenue from CS and compensation within the same audit firm, we would like to have variation in CS. If we split the audit partners in the same audit firm into sub-groups based on the number of clients and conduct separate analysis for each sub-group, the variation in CS is reduced. In addition, there will be fewer observations per audit firm and less power in the regression analysis. When we split audit partners into two groups based on the median value of the number of audit clients, we find that this is indeed the case. The coefficients on the test variables are still positive and significant, but only at the 10% level.

those audit partners located in or close to the big cities are likely to work in the offices that are more engaged in CS. We then run the regression with the partners that are in the largest cities (Oslo, Bergen, and Stavanger) for hypothesis 1. The finding remains (results are untabulated for brevity).

The distribution of *LnSalesCS* is skewed due to a few partners that sell a lot of CS (Table 2). To ensure that these partners are not driving our results, we exclude partners with substantial sales of CS and rerun the tests. Specifically, we exclude partners who are among the top 2%, 3%, and 5% in the sale of CS, respectively. The results for the three main sales variables of interest are tabulated in Table 7.

[Insert Table 7 about here]

The results in Table 7 show that the coefficients on *LnSalesCS* are significant at the 5% or 1% level for all of the three columns. These findings suggest that our results are not driven by a few partners that report very high CS levels.[45] Interestingly, the coefficients on *LnSalesAS* are more significant than that in Table 3, and they are now significant at the 5% or 1% level. The coefficients on *LnSalesAS* are significantly higher than the coefficients on *LnSalesCS* in all the three columns (the p-values for the differences between the coefficients are 0.0957, 0.0009, and 0.0016, respectively), indicating that the effect of sales of AS is stronger than the effect of sales of CS when we exclude the partners that sell the most CS. These results indicate that audit firms incentivize auditors to generate revenue by selling audit services and consulting services to non-audit clients but, as expected, refrain from tying the sale of NAS to compensation.

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[45] As an alternative to excluding the partners that sell substantial amounts of CS, we also rerun the test after including an indicator variable that equals 1 for the partners that are top 1% (5%) in sale of CS, and 0 otherwise. Untabulated results show that the coefficient on *LnSalesCS* is still significant.

**5.4 Robustness tests for H2**

*5.4.1 Analyses using alternative audit quality measures*

While we have used measures of audit quality in Table 4 that are under the direct control of the auditor, because the auditor issues the audit report, these measures contain measurement errors and have weaknesses. Noisy measures of audit quality may be a potential explanation for the insignificant findings. To investigate this issue, we use other measures that capture different facets of audit quality. Specifically, we use all measures of audit quality that have been used in previous studies using Norwegian data on private firms (Hope and Langli 2010; Che et al. 2018; Che et al. 2020) and some that have not previously been used.

Che et al. (2020) use an indicator variable on whether the client has delayed the filing of its annual report as a measure of audit quality, arguing that high-quality auditors should be able to plan and execute the audit such that client firms file their financial statements before deadlines. Following Che et al. (2020), we use clients' late filing as an additional measure of audit quality. The rationale for using this measure in this study is that partners focusing on sales of CS may place too little emphasis on audit planning and execution of audit procedures, which may lead to lower monitoring of clients and more audit work that needs to be performed close to the deadline (the deadline is the same for most client firms as most firms close their books on December 31). Thus, partners' sale of CS may increase the risk of delayed filings, either because the partner does not put enough pressure on the client to finish the books in time or because the partner itself is delayed due to busyness. We measure delayed filings by *Late*, which is equal to 1 if the client files its annual report after the deadline and 0 otherwise.

Furthermore, we also define *Late1m* (*Late2m*) as 1 if the client files its annual report one (two) months after the deadline and 0 otherwise. We then regress these three indicator variables (using Logit), respectively, on the test and control variables. The coefficients on the

test variable *LnSalesCS* are insignificant for all three measures of delayed filings. The results

are reported in Panel A of Table 8. For brevity, only the test variable is reported.

[Insert Table 8 about here]

Aobdia (2019) suggests that the propensity to meet or beat the zero earnings threshold

is one promising output measure of audit quality. Burgstahler et al. (2006) and Francis and Yu

(2009) also employ this measure to proxy audit quality. Following the literature, we also use

the small positive profit to measure audit quality. Specifically, we define *ROA0_1* as 1 if the

client's ROA is between 0 and 1% and 0 otherwise. Similarly, we define *ROA0_2*, *ROA_3*,

and *ROA_5* as 1 if the client's ROA is between 0 and 2 %, 3 %, and 5 %, respectively, and 0

otherwise. The coefficients on the test variable are statistically insignificant. The results are

reported in Panel B of Table 8.

As an effort to capture the likelihood of severe accounting errors, we employ a

modified version of the F-score developed by Dechow et al. (2011).[46] We generate three

variables, *Misstate0*, *Misstate1*, and *G1,* based on the modified F-score (i.e., F*-score).  The

variable *Misstate0* (*Misstate1*) is equal to 1 if the firm's F*-score is among the top 10% (5%)

and 0 otherwise. The variable *G1* groups the firms into five equally sized portfolios according

to firms' F*-score, and firms in group 1 (5) have the lowest (highest) F*-scores. We use

logistic models for the first two measures and use an ordered logistic model for the last

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[46] Dechow et al. (2011) compare different characteristics of misstating US firms with non-misstating firms and develop a model that predicts accounting misstatements. The output of their model is a scaled logistic probability, which they call the F-score. An F-score equal to 1 suggests that a firm has the same probability of misstatement as the unconditional expectation of misstatements, and F-scores greater than 1 suggest a greater likelihood of misstatements. Models 1, 2 and 3 in Dechow et al. (2011) correctly classify between 63.7 and 64.1% of the cases. Due to data limitations, we use their model 1 and must drop the variable change in cash sales. The rest of the variables are defined as in Dechow et al. (2011). Since misstatements are not available in Norway, we are unable to calculate the F-score such that values greater than 1 suggest a greater likelihood of misstatements. Instead, we use an unscaled probability. Specifically, we first multiply the coefficients from model 1 in Table 7 in Dechow et al. (2011) with the variables in our sample and obtain a predicted value (predicted) for each firm. We then compute the probability as exp(predicted)/(1+exp(predicted)) and call the term F*-score. We view the F*-score as a proxy for audit quality and higher values of F*-score suggest higher likelihood that there are errors in the financial statements that would potentially have resulted in restatements if firms were required to make restatements. We acknowledge that the F/F*-score has several limitations and that it is not common to approximate audit quality with the F-score.

measure. The coefficients on the test variable using these audit quality measures are not statistically significant. The results are reported in Panel C of Table 8.

Finally, we also use unsigned and signed discretionary accruals based on Kothari et al. (2005) and Stubben (2010). Untabulated results show that only one test variable (for positive accruals based on Kothari et al. 2005) has a significant coefficient while all of the others are insignificant. To summarize, none of our audit quality measures indicate that the sale of consulting services to non-audit clients have adverse effects on audit quality.

### 5.4.2 Robustness tests using different sets of control variables

Variables related to audit partners, audit firms, and corporate governance may affect audit quality. To examine whether these factors may influence the finding, we employ different sets of control variables in the test of H2. For brevity, we do not tabulate these results.

In the first specification, we add the following audit firm variables to equation (2); *ProfitMargin*, *Tenure_AuditFirm*, and firms' market share in different industries, *IndSpec*. The variable *ProfitMargin* is also used to test for H1. The variable *Tenure_AuditFirm* is an approximate measure of the number of years the audit firm has audited the client. At the same time, *IndSpec* is the variable of industry specification measured by the audit firms' market share using the client firms' total assets.

In the second specification, we control for audit partner characteristics: *Female*, *Master*, *LnNumYrExp*, *IsAccountant*, and *Tenure_Partner*. Except for *Tenure_Partner*, which is an approximate measure of the number of the years that the partner has audited the client,[47] the other partner attributes are included in the analysis for H1.

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[47] Our identification keys for the client firm's partner start in 2004. For simplicity, we assume that all partners were engaged for the first time in 2004. This means that *Tenure_Partner* equals 3 in 2006 and 7 in 2010 if the client firm has had the same partner between 2004 and 2010.

In the third specification, we control for variables related to corporate governance, i.e., *BoardSize*, *OwnershipCEO*, and *OwnershipConcentration*. The variable *BoardSize* measures the number of members in the board, *OwnershipCEO* is the proportion of shareholdings of the CEO, and *OwnershipConcentration* is the Herfindahl-Hirschman Index based on the percentage ownership of the ten largest shareholders.

In the fourth specification, we include all the additional control variables mentioned above. In these four additional regressions, the coefficient on *LnSalesCS* remains insignificant.

Next, we drop the three variables, *LnTA*, *LnAge*, and *LnEmployees,* because they are inherent risk factors,[48] and repeat the four regressions discussed above. The findings are consistent. The results also hold when dropping *LnEmployees*.

Finally, we replace *InvAccRec* with *Investments* (defined as long- and short-term investments in financial securities scaled by the average of total assets) as *Investments* may be a better measure of risk. The results hold.

### 5.4.3 Other robustness tests

In our sample, not all clients apply the same accounting standards. Listed firms are required to use IFRS. Other firms may use IFRS, but non-listed firms usually report according to Norwegian GAAP. Although only a very low percentage of our sample firms have used IFRS,[49] to examine whether our results will be affected by the use of different accounting standards, we exclude firms that use IFRS. Hence, we have repeated the analysis after

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[48] Theoretically, the auditor should adopt the allowed detection risk to ensure that the tolerable audit risk will not be exceeded. Thus, theoretically, such factors should not impact audit quality.
[49] In 2008, only 0.3% of all firms used IFRS or a simplified version of IFRS (the simplified version of IFRS contains the same measurement rules as IFRS, but the notes must be as required by Norwegian GAAP).

excluding client firms using IFRS. The results are consistent with the main finding (untabulated for brevity).

In the main tests for H2, we cluster standard errors at the partner level. To examine whether the results are robust to the use of different clusters, we re-conduct the analyses for Table 4 but cluster standard errors at the client level instead. The results are reported in Panel A of Table 9 (test variable only). The coefficients on the test variable *LnSalesCS* in the first four columns are statistically significant, and only the last column shows a positive and significant coefficient for the test variable. This panel provides similar results, i.e., that there is no strong evidence of a positive relationship between audit quality and partners' revenues from selling CS to non-audit clients.

[Insert Table 9 about here]

To ensure that our results are not driven by large clients, who are likely to have higher quality than smaller clients due to higher litigation and reputation risks, we exclude all client observations of partners who have large clients (defined as clients with audit fees above 1 million NOK) and redo the main analyses for H2. Thus, the sample consists of firms that expose the engagement partners to less risk if they deliver audits of low quality. The results are presented in Panel B of Table 9 (test variable only). The coefficients on *LnSalesCS* are insignificant for all five columns, similar to those in the main tests reported in Table 4.

## 6. Conclusions

There is a widespread concern that the alleged profit orientation of multidisciplinary audit firms influences firm culture and has a detrimental effect on audit quality (Zeff 2003a, Wyatt 2004, Harris 2016, IFAC 2019). In the U.K., the House of Commons (2019) has suggested that audit firms should be banned from providing consulting services to non-audit clients.

Even though we are unable to specifically analyse whether audit quality would be higher in pure audit-only firms, we provide new insights related to this concern by addressing two questions: First, we examine partner-level data to test whether there is a positive association between partners' compensation and their revenues generated from selling consulting services to non-audit clients. A positive association may suggest an organizational culture that rewards audit partners' ability to sell high-margin consulting services.

It has been argued that audit quality may decrease if partners are distracted from audits by focusing on consulting services (e.g., Beardsley et al., 2021). Hence, and secondly, we use client-level data to examine whether audit quality depends on partners' revenues generated from selling consulting services to non-audit clients while simultaneously controlling for the fees they generate through the provision of audit and non-audit services to auditing clients (as well as variables that capture partner and audit firm characteristics).

We use unique data to provide information on revenues generated from sales of consulting services to both audit clients and non-audit clients by individual *engagement partners* in the Norwegian Big Five audit firms. The study provides the first preliminary evidence on consulting to non-audit clients at the partner level. The results show a positive association between compensation and revenues generated from selling consulting services to non-audit clients. We also document a positive association between the sale of auditing services and compensation. These findings indicate, as expected, that Big Five audit firms incentivize auditors to both generate fee from auditing and from consulting to non-audit clients. In line with expectations, we find no evidence suggesting that audit firms promote non-audit services to audit clients by relating fee from non-audit services to compensation. Thus, the compensation policy seems balanced and is in line with recent EU regulation as the sale of consulting services to non-audit clients and the sale of audit services are rewarded. Firstly, this result is because the revenues generated through these activities can contribute to

audit firms' resources to enhance and secure audit quality. Secondly, audit firms do not reward the sale of non-audit services to auditing clients, which is prohibited in the member states of the EU (2014/56/EU, Article 24a, (j)).

In our test of whether the sale of consulting services affects audit quality, we use a battery of proxies for audit quality and find no evidence of a detrimental effect. These results are timely and should be of interest to policymakers, regulators, audit firms, and users of financial statements, particularly given the current discussion on completely separating the consulting arm from audit activities of the large audit firms and establish pure (stand-alone) audit firms. As such, our findings do not advocate a break-up of multidisciplinary audit firms.

All our sample firms provide both audit services and consulting to non-audit clients. This limitation prevents us from directly addressing the key issue faced by regulators, whether separating the consulting and auditing units of the large global audit firms would enhance audit quality. Our findings suggest that the quality of audit work performed by audit partners is not affected by their consulting activities to non-audit clients. This finding is consistent with Lisic et al. (2019). It is possible that audit partners selling large amounts of consulting are multi-talented and that this can compensate for any negative distraction or motivation effects by drawing upon spillover or learning effects. Alternatively, or as a supplement, the Big Five's internal quality review systems may be able to detect and correct substandard audit work caused by consulting work in non-audit clients. Future research may examine and disentangle these alternative explanations. We also encourage further research to investigate the potential audit consequences of consulting services using data from other institutional settings.

We acknowledge that our study has several limitations that suggest caution in the inferences made. First, our findings may not hold in institutional settings that are very different from the Norwegian setting. Our sample is dominated by small private firms, on

average there is a high number of clients per auditor, and Norway is regarded as a country with low litigation and reputation risk (Hope and Langli 2010). These institutional factors could negatively impact auditors' incentives to deliver high audit quality. Second, all audit quality measures have weaknesses (Defond and Zhang 2014). Third, the findings may not be generalised to non-Big five audit firms because the Big five and non-Big five differ in many aspects (Knechel et al. 2013, DeFond and Zhang 2014, Che et al., 2020), and we only analyse Big Five firms. Fourth, the sample period does not cover more recent developments in the regulation. For instance, in 2014, EU issued both a regulation (Regulation 537/2014) and a directive (Directive 2014/56) that introduced several mechanisms aiming to strengthen auditor independence and increase audit quality. We, therefore, call for more research on this topic using data from other countries and in more recent periods.

# Appendix A: Variable definitions

| Variable | | Definition |
|---|---|---|
| *LnSalary* | = | The natural logarithm of engagement partners' salary (in thousands of NOK) |
| *LnSalesCS* | = | The natural logarithm of engagement partners' sales of consulting services to non-audit clients (in thousands of NOK) |
| *LnSalesNAS* | = | The natural logarithm of partners' sales of non-audit services (NAS) to audit clients (in thousands of NOK) |
| *LnSalesAS* | = | The natural logarithm of partners' sales of audit services (AS) (in thousands of NOK) |
| *GC* | = | 1 if the audit report is modified due to going-concern uncertainty, and 0 otherwise. |
| *GCaccuracy* | = | 1 if the audit report is correct and 0 otherwise. An audit report is considered correct if: (i) the audit report is modified for going-concern uncertainty and the audit client defaults on debt payment, or (ii) the audit report is not modified for going-concern uncertainty, and the audit client does not default on debt payments, in the next 12 months. |
| *GCaccuracy_Type1* | = | 1 if the audit report is not modified for going-concern uncertainty and the audit client does not default on debt payments and 0 if the audit report is modified for going-concern uncertainty but the client does not default on debt payments in the next 12 months. |
| *GCaccuracy_Type2* | = | 1 if the audit report is modified for going-concern uncertainty and the audit client defaults on debt payment and 0 if the audit report is not modified for going-concern uncertainty and the client defaults on debt payment in the next 12 months. |
| *MAO* | = | 1 if the audit client receives a clean audit report and 0 otherwise. |
| *Late* | = | 1 if the client files its annual report after the deadline and 0 otherwise. |
| *Late1m* | = | 1 if the client files its annual report one month after the deadline, and 0 otherwise. |
| *Late2m* | = | 1 if the client files its annual report two months after the deadline, and 0 otherwise. |
| *Misstate0* | = | 1 if the firm's F*-score is among the top 10% and 0 otherwise. |
| *Misstate1* | = | 1 if the firm's F*-score is among the top 5% and 0 otherwise. |
| *G1* | | |
| *ROA0_1* | = | 1 if the client's *ROA* is between 0 and 1% and 0 otherwise. |
| *ROA0_2* | = | 1 if the client's *ROA* is between 0 and 2% and 0 otherwise. |
| *ROA0_3* | = | 1 if the client's *ROA* is between 0 and 3% and 0 otherwise. |
| *ROA0_5* | = | 1 if the client's *ROA* is between 0 and 5% and 0 otherwise. |
| *LnAge* | = | The natural logarithm of partner age |
| *Female* | = | 1 if the partner is female and 0 otherwise |
| *Master* | = | 1 if the partner has a master's degree and 0 if the partner has a bachelor's degree. |
| *LnNumYrExperience* | = | The natural logarithm of a partner's experience measured by the number of years since he/she first obtained his/her licence as an auditor. |
| *IsAccountant* | = | 1 if a partner has a licence as an accountant and 0 otherwise. |
| *Oslo* | = | 1 if the engagement partner is located in the Oslo area, and 0 otherwise. |
| *Bergen* | = | 1 if the engagement partner is located in the Bergen area, and 0 otherwise. |
| *Stavanger* | = | 1 if the engagement partner is located in the Stavanger area, and 0 otherwise. |
| *LnNetWealth* | = | The natural logarithm of a partner's net wealth (in NOK). |
| *LnEmployees* | = | The natural logarithm of the number of employees in one audit firm |
| *ProfitMargin* | = | The profit margin of one audit firm. |
| *LargeClients* | = | 1 if the partner has clients paying audit fees higher than 1 MNOK, and 0 otherwise. |
| *LnTA* | = | The natural logarithm of total assets (in thousands of NOK). |
| *LnFirmAge* | = | The natural logarithm of the firm age of the audit client. |

| | | |
|---|---|---|
| *LnEmployee* | = | The natural logarithm of the number of employees of audit clients |
| *LnNumSub* | = | The natural logarithm of the number of subsidiaries the audit client has |
| *NumClients* | = | The number of audit clients of one engagement partner |
| *NumInd* | = | The number of industries the audit client operates in. |
| *InvAccRec* | = | The inventory and account receivables scaled by total assets |
| *Intang* | = | Intangibles scaled by total assets. |
| *Leverage* | = | The total debt divided by total assets |
| *OwnershipCEO* | = | *OwnershipCEO* is the proportion of shareholdings of the CEO |
| *OwnershipConcentration* | = | *OwnershipConcentration* is the Herfindahl-Hirschman Index based on the percentage of ownership of the ten largest shareholders |
| *ProbBankruptcy* | = | The probability of going bankrupt, estimated using model 1 in Ohlson (1980) |
| *ROA* | = | Return on assets = Net income/average total assets. |
| *SalesGrowth* | = | Sales growth = $Sales_t/Sales_{t-1}$ -1. |
| *CashFlow* | = | Cash flow scaled by total assets. Cash flow = earnings - total accruals. Earnings = net income after taxes before extraordinary items and taxes on extraordinary items. Total accruals = change in current assets - change in cash - change in short-term debt + change in short-term interest-bearing debt + change in dividends + depreciation + amortisation - change in net deferred taxes. |
| *Loss* | = | 1 if a client firm has negative net income, and 0 otherwise. |
| *ShortInv* | = | Short-term investment scaled by total assets. |
| *CurrentRatio* | = | Current ratio = current assets / current liabilities. |
| *LnAF* | = | The natural logarithm of audit fees of audit clients (in thousands of NOK) |

The following variables are winsorized at the 2% and 98% percentiles: *LnSalesCS*, *LnSalesNAS*, *LnSalesCS*, *CashFlow*, *ChgLeverage*, *CurrentRatio*, *InvAccRec*, *Intangibles*, *Leverage*, *SalesGrowth*, and *ROA*.

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**Table 1: Samples**

Panel A: The number of partners in each of the Big Five audit firms in each year

|  | 2006 | 2008 | 2010 | Total | # Partners |
|---|---|---|---|---|---|
| Audit Firm 1 | 67 | 63 | 75 | 205 | 112 |
| Audit Firm 2 | 53 | 68 | 68 | 189 | 84 |
| Audit Firm 3 | 35 | 41 | 46 | 122 | 58 |
| Audit Firm 4 | 18 | 24 | 31 | 73 | 38 |
| Audit Firm 5 | 13 | 16 | 23 | 52 | 30 |
| **Total** | **186** | **212** | **243** | **641** | **322** |

Panel B: The number of audit clients in each audit firm in each year

|  | 2006 | 2008 | 2010 | Total |
|---|---|---|---|---|
| Audit Firm 1 | 4,801 | 5,257 | 7,234 | 17,292 |
| Audit Firm 2 | 2,130 | 4,115 | 4,291 | 10,536 |
| Audit Firm 3 | 2,426 | 2,702 | 3,417 | 8,545 |
| Audit Firm 4 | 1,196 | 2,046 | 3,036 | 6,278 |
| Audit Firm 5 | 338 | 1,088 | 1,778 | 3,204 |
| **Total** | **10,891** | **15,208** | **19,756** | **45,855** |

Panel A presents the number of engagement partners in each of the Big Five audit firms (PwC, EY, KPMG, Deloitte, and BDO) in the years 2006, 2008, and 2010. The second-to-last column (Total) reports the number of partner-year observations for each audit firm in the sample, and the last column (# Partners) reports the number of engagement partners in each audit firm. Panel B reports the number of audit client-year observations for each of the Big Five audit firms each year.

## Table 2: Descriptive statistics and correlation matrix

Panel A: Descriptive statistics for partner compensation analysis

|  | Mean | SD | P5 | P25 | Median | P75 | P95 |
|---|---|---|---|---|---|---|---|
| *Salary (1,000 NOK)* | 3,172 | 2,435 | 988 | 1,536 | 2,306 | 3,948 | 8,336 |
| *LnSalary* | 7.83 | 0.66 | 6.90 | 7.34 | 7.74 | 8.28 | 9.03 |
| *SalesCS (1,000 NOK)* | 2,085 | 2,321 | 0 | 25 | 207 | 1,885 | 5,427 |
| *LnSalesCS* | 5.03 | 2.93 | 0 | 3.26 | 5.34 | 7.54 | 8.60 |
| *LnSalesNAS* | 6.72 | 1.52 | 4.22 | 6.28 | 7.06 | 7.59 | 8.27 |
| *LnSalesAS_* | 8.75 | 1.02 | 7.04 | 8.11 | 8.87 | 9.17 | 9.90 |
| *PartnerAge* | 48.41 | 8.26 | 36 | 42 | 48 | 55 | 61 |
| *LnPartnerAge* | 3.865 | 0.17 | 3.58 | 3.74 | 3.87 | 4.01 | 4.11 |
| *Female* | 0.1 | 0.3 | 0 | 0 | 0 | 0 | 1 |
| *Master* | 0.892 | 0.31 | 0 | 1 | 1 | 1 | 1 |
| *NumYrExperience* | 17.35 | 8.24 | 5 | 11 | 17 | 24 | 31 |
| *LnNumYrExperience* | 2.79 | 0.54 | 1.79 | 2.48 | 2.89 | 3.22 | 3.47 |
| *IsAccountant* | 0.18 | 0.38 | 0 | 0 | 0 | 0 | 1 |
| *Oslo* | 0.25 | 0.43 | 0 | 0 | 0 | 0 | 1 |
| *Bergen* | 0.13 | 0.34 | 0 | 0 | 0 | 0 | 1 |
| *Stavanger* | 0.12 | 0.32 | 0 | 0 | 0 | 0 | 1 |
| *NetWealth (1,000 NOK)* | 3.261 | 4,516 | 0 | 0 | 1,723 | 4,790 | 12,41 |
| *LnNetWealth* | 10.65 | 6.71 | 0 | 0 | 14.36 | 15.38 | 16.33 |
| *NumEmployees* | 829 | 369 | 373 | 568 | 689 | 1,158 | 1,493 |
| *LnEmployees* | 6.62 | 0.46 | 5.92 | 6.34 | 6.54 | 7.06 | 7.31 |
| *ProfitMargin* | 0.16 | 0.10 | 0.02 | 0.08 | 0.16 | 0.26 | 0.32 |
| *NumClients* | 204 | 142 | 25 | 96 | 170 | 284 | 460 |
| *LargeClients* | 0.17 | 0.38 | 0 | 0 | 0 | 0 | 1 |

Panel B: Descriptive statistics for tests of audit quality

|  | Mean | SD | P5 | P25 | Median | P75 | P95 |
|---|---|---|---|---|---|---|---|
| *GC* | 0.080 | 0.27 | 0 | 0 | 0 | 0 | 1 |
| *GCaccuracyPR* | 0.864 | 0.34 | 0 | 1 | 1 | 1 | 1 |
| *GCaccuracy_Type1* | 0.932 | 0.25 | 0 | 1 | 1 | 1 | 1 |
| *GCaccuracy_Type2* | 0.202 | 0.40 | 0 | 0 | 0 | 0 | 1 |
| *MAO* | 0.175 | 0.38 | 0 | 0 | 0 | 0 | 1 |
| *LnTA* | 8.528 | 1.87 | 5.74 | 7.3 | 8.39 | 9.6 | 11.82 |
| *LnFirmAge* | 2.320 | 0.82 | 1.1 | 1.79 | 2.4 | 2.94 | 3.61 |
| *LnEmployee* | 1.200 | 1.25 | 0 | 0 | 0.93 | 1.89 | 3.63 |
| *LnNumSub* | 0.138 | 0.39 | 0 | 0 | 0 | 0 | 1.1 |
| *NumInd* | 1.115 | 0.40 | 1 | 1 | 1 | 1 | 2 |
| *InvAccRec* | 0.228 | 0.50 | 0 | 0.02 | 0.11 | 0.24 | 0.7 |
| *Intang* | 0.021 | 0.05 | 0 | 0 | 0 | 0.01 | 0.13 |
| *Leverage* | 0.752 | 0.60 | 0.13 | 0.47 | 0.71 | 0.88 | 1.38 |
| *ProbBankruptcy* | 0.382 | 0.33 | 0.01 | 0.08 | 0.3 | 0.65 | 0.99 |
| *ROA* | 0.022 | 0.07 | -0.08 | 0 | 0.02 | 0.05 | 0.13 |
| *SalesGrowth* | 0.433 | 1.92 | -0.56 | -0.07 | 0.04 | 0.23 | 2.12 |
| *CashFlow* | -0.020 | 0.45 | -0.55 | -0.12 | 0 | 0.13 | 0.48 |
| *Loss* | 0.314 | 0.46 | 0 | 0 | 0 | 1 | 1 |
| *ShortInv* | 0.237 | 0.26 | 0 | 0.03 | 0.14 | 0.38 | 0.79 |
| *CurrentRatio* | 3.916 | 9.98 | 0.2 | 0.98 | 1.48 | 2.57 | 13.43 |
| *LnAF* | 3.025 | 0.90 | 1.79 | 2.42 | 2.94 | 3.5 | 4.66 |

Panel C: Correlation matrix for partner compensation analysis

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | *LnSalesCS* | 1 | | | | | | | | | | | | | | | |
| 2 | *LnSalesNAS* | 0.30# | 1 | | | | | | | | | | | | | | |
| 3 | *LnSalesAS* | 0.16# | 0.42# | 1 | | | | | | | | | | | | | |
| 4 | *LnPartnerAge* | -0.02# | 0.06# | 0.02# | 1 | | | | | | | | | | | | |
| 5 | *Female* | 0.01* | -0.09# | -0.13# | -0.10# | 1 | | | | | | | | | | | |
| 6 | *Master* | 0.21# | 0.16# | 0.28# | -0.04# | -0.08# | 1 | | | | | | | | | | |
| 7 | *LnNumYrExperience* | -0.03# | 0.09# | 0.08# | 0.73# | -0.04# | -0.08# | 1 | | | | | | | | | |
| 8 | *IsAccountant* | 0.07# | 0.00 | -0.17# | -0.02# | 0.06# | -0.10# | 0.05# | 1 | | | | | | | | |
| 9 | *Oslo* | -0.14# | -0.11# | 0.04# | -0.03# | 0.14# | 0.06# | -0.06# | 0.02# | 1 | | | | | | | |
| 10 | *Bergen* | 0.06# | 0.13# | 0.15# | 0.07# | -0.02# | 0.04# | 0.13# | -0.12# | -0.18# | 1 | | | | | | |
| 11 | *Stavanger* | -0.10# | 0.07# | -0.01# | -0.15# | 0.03# | -0.08# | -0.09# | 0.13# | -0.15# | -0.15# | 1 | | | | | |
| 12 | *LnNetWealth* | 0.04# | 0.09# | 0.14# | 0.43# | -0.05# | 0.16# | 0.37# | -0.06# | -0.07# | 0.14# | -0.04# | 1 | | | | |
| 13 | *NumClients* | 0.05# | 0.24# | 0.50# | 0.08# | -0.19# | 0.04# | 0.06# | -0.04# | -0.10# | 0.13# | 0.04# | 0.02# | 1 | | | |
| 14 | *HasLargeClients* | 0.06# | 0.09# | 0.35# | -0.12# | 0.01 | 0.14# | -0.02# | -0.10# | 0.15# | 0.04# | 0.00 | 0.01* | 0.00 | 1 | | |
| 15 | *LnEmployees* | 0.23# | 0.04# | 0.42# | -0.13# | -0.08# | 0.11# | -0.14# | -0.04# | -0.08# | -0.06# | -0.03# | 0.13# | 0.09# | 0.22# | 1 | |
| 16 | *ProfitMargin* | -0.32# | -0.17# | 0.13# | -0.29# | 0.01# | 0.11# | -0.22# | -0.02# | 0.16# | -0.22# | 0.13# | -0.15# | -0.09# | 0.10# | 0.20# | 1 |

Panel D: Correlation matrix for audit quality analysis

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | *LnSalesCS* | 1 | | | | | | | | | | | | | | | | | | |
| 2 | *LnSalesNAS* | 0.32# | 1.00 | | | | | | | | | | | | | | | | | |
| 3 | *LnSalesAS* | 0.15# | 0.41# | 1.00 | | | | | | | | | | | | | | | | |
| 4 | *LnTA* | 0.05# | 0.08# | 0.22# | 1.00 | | | | | | | | | | | | | | | |
| 5 | *LnFirmAge* | 0.01# | 0.01# | 0.03# | 0.19# | 1.00 | | | | | | | | | | | | | | |
| 6 | *LnEmployee* | 0.02# | 0.01* | 0.12# | 0.44# | 0.18# | 1.00 | | | | | | | | | | | | | |
| 7 | *LnNumSub* | 0.02# | 0.04# | 0.07# | 0.38# | 0.12# | 0.14# | 1.00 | | | | | | | | | | | | |
| 8 | *NumInd* | 0.01* | 0.01* | 0.03# | 0.10# | 0.17# | 0.08# | 0.14# | 1.00 | | | | | | | | | | | |
| 9 | *InvAccRec* | 0.01 | 0.02# | 0.01 | 0.06# | -0.02# | -0.04# | 0.06# | 0.02# | 1.00 | | | | | | | | | | |
| 10 | *Intang* | 0.00 | 0.02# | 0.05# | 0.02# | -0.04# | 0.14# | -0.02# | 0.00 | 0.00 | 1.00 | | | | | | | | | |

47

| # | Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | Leverage | 0.01 | 0.00 | -0.03# | -0.24# | -0.11# | -0.05# | -0.08# | -0.02# | 0.02# | 0.03# | 1.00 | | | | | | | | |
| 12 | ProbBankruptcy | -0.01# | 0.00 | -0.08# | -0.35# | -0.20# | -0.19# | -0.16# | -0.06# | 0.01* | 0.10# | 0.63# | 1.00 | | | | | | | |
| 13 | ROA | 0.00 | -0.01# | 0.00 | 0.11# | 0.06# | 0.06# | 0.00 | 0.01 | -0.08# | -0.14# | -0.39# | -0.50# | 1.00 | | | | | | |
| 14 | SalesGrowth | 0.01* | 0.01# | 0.00 | 0.01* | -0.17# | -0.06# | 0.01# | 0.00 | 0.01# | 0.01* | 0.02# | 0.00 | 0.07# | 1.00 | | | | | |
| 15 | CashFlow | -0.01* | -0.01* | 0.02# | 0.15# | 0.06# | 0.05# | 0.03# | 0.00 | -0.05# | -0.09# | -0.31# | -0.39# | 0.51# | 0.05# | 1.00 | | | | |
| 16 | Loss | 0.00 | 0.02# | 0.00 | -0.15# | -0.10# | -0.10# | -0.03# | -0.02# | 0.10# | 0.14# | 0.29# | 0.48# | -0.60# | -0.01# | -0.32# | 1.00 | | | |
| 17 | ShortInv | -0.01# | -0.06# | -0.05# | -0.29# | 0.01* | 0.00 | -0.14# | -0.03# | -0.12# | -0.08# | -0.15# | -0.29# | 0.20# | 0.00 | 0.14# | -0.16# | 1.00 | | |
| 18 | CurrentRatio | 0.01 | 0.02# | 0.02# | 0.05# | 0.01 | -0.18# | 0.04# | 0.01* | 0.10# | -0.05# | -0.17# | -0.19# | 0.03# | 0.03# | 0.00 | 0.00 | 0.14# | 1.00 | |
| 19 | LnAF | 0.06# | 0.06# | 0.21# | 0.58# | 0.22# | 0.71# | 0.27# | 0.11# | 0.03# | 0.13# | -0.04# | -0.19# | 0.00 | -0.08# | 0.02# | -0.03# | -0.11# | -0.11# | 1 |

This table presents descriptive statistics and the correlation matrix for the analyses of partner compensation and audit quality. Panel A (B) presents the descriptive statistics for the variables used in the partner compensation (audit quality) analysis: mean (Mean), standard deviation (SD), and the 5 percentile, 25 percentile, median (Median), 75 percentile, and 95 percentile. The number of observations for Panel A is 641. The number of observations for the variables in Panel B is 45,855 except for *GCaccuracy_Type1* (41,563) and *GCaccuracy_Type2* (4,292). Panel C (D) reports the correlation matrix for the variables used in the partner compensation (audit quality) test. * (#) indicates significance at the 5% (1%) levels.

**Table 3: Results of regressing (log of) salary on (log of) sales of consulting services**

|  |  | Coeff. | t-value |
|---|---|---|---|
| LnSalesCS | + | 0.021** | (2.29) |
| LnSalesNAS | 0 | 0.017 | (1.12) |
| LnSalesAS | + | 0.050* | (1.74) |
| LnPartnerAge | + | -0.194 | (-0.87) |
| Female | - | -0.063 | (-0.77) |
| Master | + | 0.181*** | (2.65) |
| LnNumYrExperience | + | 0.175** | (2.45) |
| IsAccountant | - | -0.036 | (-0.69) |
| Oslo | + | 0.257*** | (3.89) |
| Bergen | + | 0.248*** | (3.48) |
| Stavanger | + | 0.214*** | (2.96) |
| LnNetWealth | + | 0.022*** | (6.19) |
| NumClients | + | 0.000* | (1.71) |
| HasLargeClients | + | 0.377*** | (5.58) |
| LnEmployees | + | 1.518*** | (4.82) |
| ProfitMargin | + | 2.450* | (1.93) |
| Fixed effect on: |  |  |  |
|   Audit firm |  | Yes |  |
|   Year |  | Yes |  |
| Constant |  | 2.902 | (1.29) |
| Observations |  | 641 |  |
| Adjusted $R^2$ |  | 0.415 |  |

This table presents the results of regressing the dependent variable, *LnSalary*, on the (winsorized) test variable, the natural logarithm of sales of consulting services to all non-audit clients (*LnSalesCS*) by engagement partners and the control variables, which include sales of all non-audit services to audit clients (*LnSalesNAS*), sales of all audit services (*LnSalesAS*) by the same engagement partners, characteristics of partners and audit firms. The t-values are adjusted for within-cluster correlation at the partner level using the Huber-White Sandwich Estimator and are reported in parenthesis. * (**) [***] indicate significance at the 10 % (5 %) [1 %] levels using two-tailed tests.

**Table 4: Results for audit quality**

| | GC | GCaccuracy | GCaccuracy_Type1 | GCaccuracy_Type2 | MAO |
|---|---|---|---|---|---|
| LnSalesCS | -0.005 | 0.002 | 0.001 | -0.018 | 0.015 |
| | (-0.25) | (0.21) | (0.03) | (-0.66) | (0.94) |
| LnSalesNAS | -0.008 | 0.036* | 0.001 | -0.015 | -0.037 |
| | (-0.20) | (1.78) | (0.02) | (-0.31) | (-1.56) |
| LnSalesAS | -0.159** | 0.021 | 0.199** | -0.056 | -0.114** |
| | (-1.98) | (0.56) | (2.19) | (-0.62) | (-2.25) |
| LnTA | -0.276*** | 0.130*** | 0.286*** | -0.198*** | -0.367*** |
| | (-9.13) | (6.82) | (9.66) | (-2.98) | (-19.23) |
| LnFirmAge | -0.221*** | 0.080*** | 0.224*** | -0.203*** | -0.118*** |
| | (-6.62) | (3.38) | (6.11) | (-2.98) | (-5.44) |
| LnEmployee | -0.104** | -0.262*** | 0.123** | -0.155** | -0.215*** |
| | (-2.39) | (-10.04) | (2.51) | (-2.06) | (-7.85) |
| LnNumSub | 0.161* | -0.231*** | -0.152 | 0.105 | 0.259*** |
| | (1.93) | (-5.36) | (-1.47) | (0.69) | (5.01) |
| NumInd | 0.054 | -0.112*** | -0.088 | -0.080 | -0.002 |
| | (0.68) | (-2.62) | (-0.93) | (-0.56) | (-0.04) |
| InvAccRec | 0.181*** | -0.163*** | -0.158*** | 0.170 | 0.146*** |
| | (4.12) | (-5.56) | (-3.23) | (1.55) | (4.99) |
| Intang | 0.508 | -0.873*** | -0.808* | -0.185 | 0.136 |
| | (1.13) | (-3.03) | (-1.72) | (-0.19) | (0.45) |
| Leverage | 0.574*** | -0.485*** | -0.576*** | 0.446*** | 0.514*** |
| | (10.94) | (-14.69) | (-10.44) | (4.35) | (10.60) |
| ProbBankruptcy | 4.182*** | -1.768*** | -4.102*** | 4.121*** | 1.315*** |
| | (25.67) | (-17.93) | (-21.94) | (11.42) | (15.88) |
| ROA | 0.404 | -0.317 | -0.283 | 0.967 | -0.211 |
| | (0.92) | (-0.90) | (-0.55) | (1.01) | (-0.68) |
| SalesGrowth | 0.035*** | -0.032*** | -0.040*** | 0.008 | 0.033*** |
| | (3.17) | (-3.94) | (-3.42) | (0.31) | (4.57) |
| CashFlow | 0.270*** | -0.119*** | -0.294*** | 0.135 | 0.209*** |
| | (5.96) | (-3.15) | (-5.54) | (1.31) | (5.41) |
| Loss | 0.939*** | -0.436*** | -0.915*** | 1.038*** | 0.530*** |
| | (14.59) | (-9.81) | (-11.70) | (7.14) | (13.78) |
| ShortInv | -1.161*** | 0.918*** | 0.965*** | -1.512*** | -1.138*** |
| | (-6.45) | (8.04) | (5.28) | (-3.48) | (-11.74) |
| CurrentRatio | 0.000 | 0.002 | -0.003 | -0.026 | 0.001 |
| | (0.05) | (0.64) | (-0.77) | (-0.93) | (0.42) |
| LnAF | 0.465*** | -0.459*** | -0.421*** | 0.322*** | 0.543*** |
| | (7.41) | (-11.91) | (-6.22) | (3.14) | (13.47) |
| *Fixed effect on:* | | | | | |
| Audit firm | Yes | Yes | Yes | Yes | Yes |
| Industry | Yes | Yes | Yes | Yes | Yes |
| Year | Yes | Yes | Yes | Yes | Yes |
| Constant | -2.879*** | 3.601*** | 2.578*** | -2.124** | 0.755* |
| | (-4.64) | (11.48) | (3.75) | (-2.24) | (1.86) |
| Observations | 45,849 | 45,855 | 41,559 | 4,290 | 45,849 |
| Pseudo $R^2$ | 0.414 | 0.175 | 0.406 | 0.403 | 0.209 |

This table presents the logistic regression results of regressing different measures of audit quality (*GC*, *GCaccuracy*, *GCaccurracy_Type1, GCaccuracy_Type2*, and *MAO*) of the client firms, on the (winsorized) test variable, the natural logarithm of sales of consulting services to all non-audit clients (*LnSalesCS*) by engagement partners, and the control variables, which include sales of all non-audit services to audit clients (*LnSalesNAS*), sales of all audit services (*LnSalesAS*) by the same engagement partners, and audit client characteristics. The t-values are adjusted for within-cluster correlation at the partner level using the Huber-White Sandwich Estimator and are reported in parenthesis. * (**) [***] indicate significance at the 10% (5%) [1%] levels using two-tailed tests.

**Table 5: Results for H1 using the Durbin-Wu-Hausman test**

| | (1) LnHoursCS | (2) LnSalary |
|---|---|---|
| LnSalesCS | 0.858*** | 0.024** |
| | (43.63) | (2.55) |
| Residuals | | 0.015 |
| | | (1.02) |
| LnSalesNAS | 0.142** | -0.002 |
| | (2.00) | (-0.05) |
| LnSalesAS | -0.669*** | 0.074* |
| | (-5.99) | (1.79) |
| LnAge | 0.563 | -0.188 |
| | (0.91) | (-0.85) |
| Female | 0.044 | -0.095 |
| | (0.25) | (-1.14) |
| Master | -0.076 | 0.184*** |
| | (-0.54) | (2.67) |
| LnNumYrExperience | -0.130 | 0.175** |
| | (-0.63) | (2.47) |
| IsAccountant | -0.116 | -0.035 |
| | (-0.64) | (-0.66) |
| Oslo | -0.303* | 0.256*** |
| | (-1.74) | (3.82) |
| Bergen | -0.040 | 0.260*** |
| | (-0.21) | (3.47) |
| Stavanger | -0.341 | 0.212*** |
| | (-1.60) | (2.82) |
| LnNetWealth | 0.009 | 0.022*** |
| | (0.91) | (6.03) |
| NumClients | 0.003*** | 0.000* |
| | (4.43) | (1.87) |
| HasLargeClients | 0.588** | 0.383*** |
| | (2.53) | (5.54) |
| LnEmployees | 1.539 | 1.350*** |
| | (1.27) | (4.24) |
| ProfitMargin | -1.659 | 2.659** |
| | (-0.44) | (2.03) |
| *Fixed effects* | | |
| Audit firm | Yes | Yes |
| Industry | Yes | Yes |
| Year | Yes | Yes |
| Constant | -8.768 | 3.954* |
| | (-0.97) | (1.74) |
| Observations | 619 | 619 |
| Adjusted $R^2$ | 0.710 | 0.425 |

This table presents results for hypothesis 1 when using the Durbin-Wu-Hausman test to address the endogeneity concern. We use the natural logarithm of partners' hours spent on consulting services, *LnHoursCS,* as an instrumental variable (IV). In the first stage, we regress *LnHoursCS,* on the (winsorized) test variable, the natural logarithm of sales of consulting services to all non-audit clients (*LnSalesCS*) by engagement partners, and the control variables. We calculate the residuals and use the variable, *Residuals*, in the second stage, which regresses *LnSalary* on the test variable *LnSalesCS*, *Residuals*, and the control variables. The t-values are adjusted for within-cluster correlation at the partner level using the Huber-White Sandwich Estimator and are reported in parenthesis. * (**) [***] indicate significance at the 10% (5%) [1%] levels using two-tailed tests.

## Table 6: Results for hypothesis 1 based on ITCV

|  | Impact on the coefficient for IET Y=*LnSalary* |
|---|---|
| *LnSalesNAS* | 0.0405 |
| *LnSalesAS* | 0.0800 |
| *LnAge* | -0.0035 |
| *Female* | -0.0009 |
| *Master* | 0.0339 |
| *LnNumYrExperience* | 0.0009 |
| *IsAccountant* | -0.0040 |
| *Oslo* | -0.0156 |
| *Bergen* | 0.0113 |
| *Stavanger* | -0.0005 |
| *LnNetWealth* | 0.0162 |
| *NumClients* | 0.0011 |
| *HasLargeClients* | 0.0185 |
| *LnEmployees* | 0.0794 |
| *ProfitMargin* | 0.0007 |
|  |  |
| Largest impact | 0.080 |
| Impact threshold of confounding variable | 0.088 |
| The minimum magnitude of confounding variable relative to the largest impact included variable required to overturn IET | 1.104 |

This table reports the results for the ITCV analysis. Industry fixed effects are included for all analyses. The *t*-statistics are reported in parentheses. *, **, and *** represent significance levels of 10%, 5%, and 1%, respectively, based on a two-tailed test (one-tailed) test when a non-directional (directional) relation is predicted.

**Table 7: Results of regressing (log of) salary on (log of) sales of consulting services after excluding partners that have substantial sales of consulting services**

|  | (1) LnSalary | (2) LnSalary | (3) LnSalary |
|---|---|---|---|
| *LnSalesCS* | 0.026*** | 0.023*** | 0.020** |
|  | (2.65) | (2.63) | (2.25) |
| *LnSalesNAS* | 0.004 | -0.001 | 0.001 |
|  | (0.26) | (-0.06) | (0.05) |
| *LnSalesAS* | 0.107** | 0.165*** | 0.160*** |
|  | (2.31) | (4.16) | (3.87) |
| Observations | 628 | 621 | 603 |
| Adjusted R2 | 0.420 | 0.435 | 0.420 |

This table presents abbreviated OLS regression results of the test tabulated in Table 3 after excluding partners that are top 2% (column 1), 3% (column 2), and 5% (column 3) in the sale of CS respectively. A full set of control variables, including fixed effects on audit firms and years, are included but not tabulated. The t-values are adjusted for within-cluster correlation at the partner level using the Huber-White Sandwich Estimator and are reported in parenthesis. * (**) [***] indicate significance at the 10 % (5 %) [1 %] levels using two-tailed tests.

**Table 8: Results for H2 using alternative audit quality measures**

Panel A: Delayed filings as a measure of audit quality

|  | (1) | (2) | (3) |
|---|---|---|---|
|  | *Late* | *Late1m* | *Late2m* |
| *LnSalesCS* | -0.018 | 0.004 | 0.006 |
|  | (-1.24) | (0.21) | (0.19) |
| Observations | 45,846 | 45,846 | 45,846 |
| Pseudo $R^2$ | 0.036 | 0.052 | 0.068 |

Panel B: Small profits as a measure of audit quality

|  | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
|  | *ROA0_1* | *ROA0_2* | *ROA0_3* | *ROA0_5* |
| *LnSalesCS* | 0.001 | -0.006 | -0.006 | 0.000 |
|  | (0.15) | (-0.79) | (-0.76) | (0.07) |
| Observations | 45,855 | 45,849 | 45,849 | 45,849 |
| Pseudo $R^2$ | 0.071 | 0.147 | 0.239 | 0.331 |

Panel C: Results for using F*-scores to measure audit quality

|  | (1) | (2) | (3) |
|---|---|---|---|
|  | *Misstate0* | *Misstate1* | *G1* |
| *LnSalesCS* | 0.006 | -0.001 | 0.001 |
|  | (0.64) | (-0.05) | (0.09) |
| Observations | 45,855 | 45,855 | 34,027 |
| Pseudo R2 | 0.196 | 0.200 | 0.128 |

This table presents the results for logistic regression analyses for hypothesis 2 using alternative measures of audit quality (AQ). Panel A uses the three measures of AQ: *Late*, *Late1m*, and *Late2m*. We measure delayed filings by *Late*, which is equal to 1 if the client files its annual report after the deadline and 0 otherwise. The variable *Late1m* (*Late2m*) is equal to 1 if the client files its annual report one (two) months after the deadline, and 0 otherwise. Panel B uses small positive profit to measure audit quality. We define *ROA0_1* as 1 if the client's ROA is between 0 and 1% and 0 otherwise. Similarly, we define *ROA0_2*, *ROA0_3*, and *ROA0_5* as 1 if the client's ROA is between 0 and 2 %, 3 %, and 5 %, respectively, and 0 otherwise. Panel C uses a modified version of the F-score (F*-score) developed by Dechow, Ge, Larson, and Sloan (2011). We generate three variables, *Misstate0*, *Misstate1*, and *G1* based on F*-score. The variable *Misstate0* (*Misstate1*) is equal to 1 if the firm's F*-score is among the top 10 % (5%) and 0 otherwise. The variable *G1* groups the firms into five equally sized portfolios according to firms' F*-score and firms in group 1 (5) have the lowest (highest) F*-scores. Fixed effects on audit firms, industry, and years are used. The t-values are adjusted for within-cluster correlation at the partner level using the Huber-White Sandwich Estimator and are reported in parenthesis. * (**) [***] indicate significance at the 10 % (5 %) [1%] levels using two-tailed tests.

**Table 9: Robustness tests for audit quality**

Panel A: Clustering standard errors on clients

|             | GC      | GCaccuracy | GC_Type1 | GC_Type2 | MAO        |
|-------------|---------|------------|----------|----------|------------|
| *LnSalesCS* | -0.005  | 0.002      | 0.001    | -0.018   | 0.015**    |
|             | (-0.51) | (0.33)     | (0.06)   | (-0.78)  | (2.30)     |
| Observations | 45,849 | 45,855     | 41,559   | 4,290    | 45,849     |
| Pseudo R2   | 0.414   | 0.175      | 0.406    | 0.403    | 0.209      |

Panel B: Results when excluding large clients

|             | GC      | GCaccuracy | GCaccuracy_Type1 | GCaccuracy_Type2 | MAO    |
|-------------|---------|------------|------------------|------------------|--------|
| *LnSalesCS* | -0.000  | 0.001      | -0.001           | -0.005           | 0.023  |
|             | (-0.00) | (0.12)     | (-0.06)          | (-0.18)          | (1.35) |
| Observations | 40,646 | 40,652     | 36,978           | 3,668            | 40,646 |
| Pseudo R2   | 0.413   | 0.179      | 0.405            | 0.392            | 0.211  |

This table presents various robustness tests for the logistic regressions of measures of audit quality on the test variable, sales of consulting services to non-audit clients, and control variables. Results for only the test variable are reported for brevity. Panel A re-conducts the analyses in Table 4 with clustered standard errors at the client level. Panel B reports the results when excluding partners who have audited very large audit clients. Fixed effects on audit firms and years are used for all the regressions. The t-values, reported in parentheses, are adjusted for within-cluster correlation at the partner level using the Huber-White Sandwich Estimator. * (**) [***] indicate significance at the 10 % (5 %) [1 %] levels using two-tailed tests.