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A Tale of Two Outcomes: Non-audit Services and Auditor Independence After the EU Audit Directive and Regulation (EU ADR)

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Abstract

This study evaluates whether the EU's Audit Directive and Regulation (EU ADR) changed the relationship between auditor provided non-audit services (NAS) and auditor independence in the UK. While NAS can create economic bonding that suppresses negative reporting, it may also generate knowledge spillovers that improve the auditor's client-specific knowledge and reporting quality. Using UK-listed, UK-headquartered non-financial firms from 2010-2020, we examine whether EU ADR implementation moderated NAS-related economic incentives across two reporting thresholds; qualified opinions and going-concern comments. Our study finds no evidence that NAS is associated with audit qualifications, nor that EU ADR changed this relationship. In contrast, we document a significant post-EU ADR shift in the NAS-going-concern comment relationship. Prior to the EU ADR, higher NAS was associated with a lower likelihood of going-concern comments; after implementation this negative association is significantly attenuated, that is consistent with reduced economic bonding in discretionary reporting. Similarly, probability-scale effects indicate economically meaningful changes in going-concern comment behaviour, while high-threshold, qualification decisions, remain largely unchanged. Results are robust to alternative specifications and audit firm heterogeneity. Overall, engagement-level NAS restrictions appear to matter primarily where auditors retain reporting discretion, informing debates on structural reforms such as the UK's operational separation policy.

Keywords: non-audit services, auditor independence, qualified audit opinions, going-concern comments, economic bonding, EU Audit Directive and Regulation

JEL Classifications: M40, M42, M48, G38.

1. Introduction

Whether auditor provided non-audit services (NAS) impaired independence remains one of the most contested issues in audit regulation. The fundamental point is around the extent to which economic incentives create conflicts of interest that impair independence. In the UK, concerns became particularly pronounced following high profile corporate failures such as BHS, Thomas Cook and Carillion (UK Parliament, 2018). It resulted in public, political and media

scrutiny driving legislative change in the form of the UK's operational separation policy, an audit firm-level structural reform aimed at Big 4 audit firms. Yet, despite its relevance to the policy debate there was little discussion around the effectiveness of a previous regulatory change, the EU Audit Directive and Regulation (EU ADR), that imposed explicit prohibitions, as well as overall fee caps, with respect to NAS provision. The EU ADR was motivated by independence concerns, reducing the scope for economic pressures to influence the auditor's reporting judgements. As it stands it remains unclear whether, and how much, such engagement level restrictions altered reporting behaviour, with studies focused on perceptions of independence post EU ADR (Van Liempd, Quick & Warming-Rasmussen, 2019; García-Hernández, Duréndez & Rojo-Ramírez, 2022), as opposed to independence of mind.

Two competing mechanisms both underpin the longstanding NAS-independence debate, and the expected effects of the EU ADR. Economic bonding purports that NAS increases client-specific quasi-rents and thus, intensify self-interest and familiarity threats (DeAngelo, 1981). This can therefore create incentives to retain the engagement at the cost of the auditor's willingness to communicate unfavourable information, particularly in high discretion contexts. In contrast, knowledge spillover posits that NAS can enhance client-specific understanding and audit effectiveness (Simunic, 1984). On this basis it would be expected that reduced information asymmetry could strengthen the auditor's ability to communicate uncertainty or disagreement. The EU ADR's prohibitions and fee cap explicitly seek to weaken economic dependence while leaving scope for knowledge spillover from certain NAS. However, these mechanisms are not mutually exclusive but may operate simultaneously with opposing effects on reporting behaviour. The EU ADR's restrictions are designed to weaken economic dependence while leaving scope for knowledge spillovers from certain NAS. It is on this basis that changes in the NAS-reporting outcome relationship post-EU ADR may reflect a rebalancing of these theoretical mechanisms, rather than the dominance of one over the other. Existing literature on NAS and independence provides inconsistent results, with studies documenting negative (Sharma & Sidhu, 2001; Basioudis, Papakonstantinou & Geiger, 2008), null or occasionally positive associations (Beattie & Fearnley, 2002; Tepalagul & Lin, 2015). Part of this inconsistency reflects heterogeneity in how 'independence' itself is measured. Many studies have relied on broad audit 'quality' metrics that are jointly determined by the auditors competence (ability to detect) and incentives to report (willingness to report), that can complicate interpretation when seeking to understand reporting independence (DeFond & Zhang, 2014). In addition, evidence is often taken from extreme and relatively rare outcomes,

such as going-concern audit qualifications where decisions may be dominated by client distress, litigation exposure, as well as institutional constraints that leave limited scope for economic bonding effects to be detected.

Moving past regulatory compliance, auditor reporting outcomes are a fundamental part of the functioning of capital markets, with market participants using such reporting outcomes to assess risk and financial reporting credibility (DeFond & Zhang, 2014; Ferguson, Seow & Young, 2004). Qualified audit opinions represent rare, high-severity markers (Garcia-Blandon & Argiles, 2015) that are typically associated with severe financial distress or fundamental disagreement between auditors and management. In such cases qualifications are likely to result in strong market and creditor responses. In contrast, going concern comments provide more frequent and incremental disclosures that can communicate uncertainty without the severity of the formal qualifications (Ianniello & Galloppo, 2015). On this basis, these lower threshold/higher discretion disclosures are likely to influence investors and analyst perceptions at the margin, and particularly sensitive to subtle shifts in auditor incentives. This distinction is important because it implies that any regulatory effects of NAS restrictions may manifest differently across these reporting thresholds, with economically meaningful consequences for how information is both transmitted to, and interpreted by, the market.

Motivated by these points, we examine whether the EU ADR changed the association between NAS and auditor independence in the UK. In line with DeAngelo (1981) we conceptualise independence as the auditor's willingness to report, rather than simply detect, unfavourable information flowing from their work. We operationalise this using observable audit reporting outcomes that reflect reporting judgements, rather than detection. Another key distinction is that we distinguish between two reporting thresholds; the first is the issuance of a qualified audit opinion (OPINION), and the second being the inclusion of a going-concern, emphasis of matter, comment (COMMENT). OPINION represents a high reporting threshold when unresolved matters are of a sufficient and material nature. COMMENTS reflect a lower, more frequent, reporting threshold and facilitate auditor communication of uncertainty or elevated risk, without necessarily issuing a formal qualification. Using a panel data of UK-listed non-financial firms over 2010-2020, with the sample period ending in 202 to avoid contamination from the COVID-19 period. During this time the Financial Reporting Council (FRC) issued consolidated guidance on 4 December 2020 that could be expected to alter reporting behaviour going forwards. We define the regulatory exposure based on financial periods starting on or after 17 June 2016, the date of EU ADR implementation, and estimate probit models with year

and industry fixed effects and firm clustered standard errors. To better assess any relational changes, we evaluate effects on the probability scale using average marginal effects (AMEs) and predicted probabilities from which we can interpret both economic magnitude and statistical significance.

Our findings provide strong evidence that the EU ADR is associated with a moderation of the NAS-COMMENT relationship. In the pre-EU ADR period, higher NAS is associated with a more negative marginal relationship with respect to going-concern comments, that on its own might support economic bonding arguments. However, following EU ADR implementation the relationship shifts upwards, consistent with attenuation of the negative relationship. Interestingly, this moderation affect occurs alongside an overall reduction in the predicted probability of going-concern comments in the post-EU ADR period; this implies that auditor's issue fewer going concern comments overall, but the extent to which NAS supresses such disclosure is reduced. In contrast, we find no detectable evidence that the EU ADR altered the relationship between NAS and the issuance of qualified audit opinions. This difference appears consistent with the idea that the impacts of fee-related incentives are most observable on the margins, where auditor disclosures can form investor perceptions without the significant consequences of a formal qualification, with the latter more strongly effected by external factors (Ferguson et al., 2004; Ianniello, 2012). Our main inference and conclusions are not impacted by robustness analyses addressing additional liquidity controls, intensive and extensive margins with respect to NAS, and heterogeneity tests by audit firm size.

Our paper makes two primary contributions. Firstly, it provides evidence on a major engagement-level reform in a setting where NAS remained permissible but restricted, with such impacts being observable at a marginal disclosure threshold (going-concern comments) rather than in high-threshold/high-risk audit qualification. In short, the EU ADR acted to reduce independence impairment, at least with respect to less severe disclosures. Secondly, on a conceptual level, it recognises that fee-related incentives are most likely to manifest where auditors retain the most discretion over how and what to communicate, and therefore it is critical to distinguish the severity of reporting outcomes when evaluating auditor independence. A further implication is with respect to subsequent regulatory action given we document the impact the EU ADR's engagement-level restrictions had on reporting outcomes. As such, the results provide an empirical benchmark for assessing the rationale for the UK's subsequent operational separation policy. It may also provide context for other jurisdictions

that might consider a similar audit firm-level reform in the future, given the significant cost and resource issues such structural changes require.

In the remainder of this paper, Section 2 details the conceptual framework, outlining the regulatory context for non-audit services and auditor independence as a construct, before moving on to the competing theoretical perspectives. Section 3 then proceeds to discuss how auditor independence can be measured empirically, motivating our paper's focus on audit reporting outcomes and distinguishing between high and low discretion disclosures. Section 4 reviews the empirical evidence on NAS and auditor independence, with an emphasis on regulatory context and why prior findings remain mixed, leading to section 5 and our hypotheses. Section 6 described the sample, data sources and empirical models. Section 7 reports our results, including baseline tests, probability-scale effects, robustness analyses, and audit-firm heterogeneity through firm size. Section 8 details our conclusions as well as discussing the implications for NAS regulations and the UK policy debate.

2. Conceptual Background and Theoretical Framework

2.1. Non-audit Services and the Regulatory Context

For this paper's purposes non-audit services (NAS) refer to those services provided by an auditor to their client that fall outside the scope of the statutory audit. These often include tax, internal control, and other advisory related services. Academic, political and regulatory debate has focused on whether the provision of such services compromises the auditor's independence.

Regulatory regimes internationally have, often in response to corporate governance failures and apparent conflicts of interest, introduced measures that seek to limit the threat NAS poses to independence. In the US, the Sarbanes-Oxley Act 2002 (S-Ox) enacted restrictions on the types of NAS that auditors could provide to clients. Title II, 'Auditor Independence' prohibits a range of services due to the conflicts of interest they create. In the European Union (EU) Audit Regulation (2014/537/EU) (EU ADR) prohibited statutory auditors from providing certain NAS (Article 5) to public interest entities (PIEs), with fee caps on those NAS remaining (Article 4). In both cases, legislation directly links the threat to independence to both the type and value of NAS.

More recently, the UK supplemented the EU ADR with structural reform, an operational separation policy (OSP) that required the Big 4 accounting firms to be organisationally separate from their non-audit businesses. The Financial Reporting Council (FRC) emphasised that this

separation was intended so that audit practices prioritise audit quality, and most relevant to this paper, ensure that auditors are protected from influences that could divert their focus from said quality (FRC, 2021).

The common theme across these interventions is the intention to mitigate the economic incentives and conflicts of interest arising from NAS provision that threaten auditor independence, specifically independence of mind, rather than technical audit quality alone.

2.2. Auditor Independence: Appearance v Mind

The independence of the auditor underpins the basis and integrity of the audit profession; but it consists of two distinct aspects; *independence of mind* and *independence in appearance* (Moore et al., 2006; Church, Jenkins, & Stanley, 2018). *Independence of mind* refers to the auditor's own frame of mind; the ability to exercise professional scepticism, objectivity, and integrity in performing the audit. In contrast, *independence in appearance* reflects the perceptions of external stakeholders, particularly whether a reasonable person would believe the auditor is acting free from conflicts of interest or bias.

The challenge in empirical research lies in the inherent unobservability of independence of mind. Unlike independence in appearance, which can be evaluated through disclosures, fees, and structural relationships, the mind of an auditor is not directly measurable. Accordingly, studies examining independence of mind must rely on observable proxies. Most obviously would be where the auditor exercises judgement in ways that may be unfavourable to management; such as the issuance of a qualified audit opinion (Asthana, Khurana & Raman 2019; Callaghan, Parkash & Singhal, 2009; Hay, 2017), financial restatement, or restraint on earnings management. However, auditors can communicate increased uncertainty/scepticism (European Commission, 2010) and risks through explanatory disclosures (e.g. emphasis of matter or going concern related paragraphs), that do not necessarily result in a qualified opinion (Kend, Leoni, Florio & Gaia, 2021). These disclosures therefore provide an additional channel through which independence of mind may be evidenced.

This paper focuses on independence of mind (hereafter, 'independence') and as such requires proxies that align with an auditor's willingness to report, rather than broader audit quality measures.

2.3. Competing Theoretical Perspectives

2.3.1. Economic Bonding

Economic bonding theory supposes that the financial dependence of an auditor on their client, especially when NAS constitute a significant revenue stream, may compromise objectivity and lead to a weakening of auditor independence. The central concern is that self-interest, in the form of protecting current or future income, may cause auditors to prioritise client retention (quasi-rent seeking) over maintaining their independence (Ahmed, Dhull & Kent, 2022; Alexander & Hay, 2013; Antle, Gordon, Narayanamoorthy & Zhou, 2006; Beattie & Fearnley, 2002). This risk is particularly relevant when auditors are perceived to ‘lowball’ audit fees in competitive tenders, seeking instead to recover lost margin through higher-margin NAS (Patel et al., 2009; Hay, Knechel & Li, 2006). This rationale is what underpins the previously discussed regulatory responses; ranging from service restriction to structural separation.

The theory predicts that where NAS are significant, especially in relation to other fees, auditors may be less inclined to issue adverse opinions, such as qualified opinions or going-concern comments, to preserve the client relationship and the associated revenue stream (Francis & Ke, 2006; Simunic, 1984). On this basis, NAS may introduce an incentive to suppress negative reporting outcomes; particularly in cases of financial distress or heightened audit risk (Basioudis et al., 2008; Ye, Carson & Simnett, 2011).

2.3.2. Knowledge Spillover

On the contrary, knowledge spillover argues that NAS can enhance audit quality, of which independence is part, through improved understanding of the client’s business, and risk environment (Beattie & Fearnley, 2002; Gelter & Gurrea-Martinez, 2020; Ianniello, 2012). It argues that NAS, particularly those closely related to financial reporting, such as tax advisory, can reduce information asymmetries between auditor and client, and so allow more accurate audit judgements without additional audit effort (Meuwissen & Quick, 2019; Krishnan, Su & Zhang, 2011). Importantly, while economic bonding theory predicts a reduction in audit qualifications, knowledge spillover theory suggests a more nuanced understanding; that quality may be improved over and above any independence impairment, especially with respect to certain types of NAS. For example, tax services may uncover underlying risks or provide clarity on contentious issues, that could prompt a qualified opinion or assist in resolving uncertainties that would otherwise lead to one (Huang, Mishra & Raghunandan, 2007).

The spillover argument can help interpret findings where NAS are associated with increased audit modifications or with “emphasis-of-matter” paragraphs such as going concern comments (Ianniello, 2012; Robinson, 2008). As above, it may not indicate compromised independence but rather facilitates the auditor to better communicate financial risk. As such paragraphs can be issued without formal qualification, capturing a lower risk reporting margin (Sharma & Sidhu, 2001) that may react differently to changes in regulations surrounding NAS.

Yet these theories offer contrasting, though not mutually exclusive, predictions on the effect of NAS on auditor independence. Economic bonding and knowledge spillovers may operate simultaneously with opposing influence on reporting behaviour. As such the relative NAS-reporting outcomes therefore reflects the strength of these mechanisms within a changed regulatory setting. This is particularly relevant in jurisdictions such as the UK where NAS provision remained permissible under the EU ADR, and therefore allowing both theoretical mechanisms to remain.

As this paper focuses specifically on audit report outcomes; qualified audit opinions and going-concern comments, these theories provide a conceptual basis for examining whether the provision of NAS influences auditor independence as reflected in these observable audit judgements.

3. Measuring Auditor Independence

3.1. Independence as a dimension of quality

Audit quality is commonly defined as; ‘...*the market assessed joint probability that a given auditor will both (a) discover a breach in the client’s accounting system, and (b) report that breach*’ (DeAngelo, 1981: 186). This definition distinguishes two underlying components of audit performance. The former, to *discover* a breach, is a marker of competence and process. The latter, to *report*, reflects auditor independence, namely a willingness to communicate a detected breach despite potential economic or relationship pressures. In practice, ‘reporting’ may be disclosed to different extents; formal qualification being the most distinct and emphasis of matter paragraphs identifying uncertainty. Both are visible manifestations of the auditor’s willingness to report adverse information.

This distinction is central to our paper. While the broader audit quality literature mainly examines the combined outcome of these two dimensions, the regulatory actions surrounding NAS relate primarily to the willingness to report negatively in the face of economic incentives (Abbott, Parker, Parker & Rama, 2003; DeFond, Raghunandan & Subramanyam, 2002, FRC

2021; Frankel, Johnson & Nelson, 2002, Basioudis et al., 2008). In this context, observed reporting outcomes may reflect competing forces, including economic bonding and knowledge spillovers, rather than a single underlying mechanism. It is on this basis that independence is the focus when identifying the mechanism by which NAS may influence such behaviour (DeFond & Zhang, 2014).

As such, this paper focuses on independence, viewed as the auditor's propensity to report misstatements once identified (Lu, 2006), or to make disclosures that are negative to the client firm such as going-concern comments, rather than on overall audit quality. It is this distinction that underpins the selection and evaluation of variables that we use.

3.1.1. Measuring Independence

Previous research has relied on observable outcomes to infer auditor independence that typically fall within three categories: audit opinions and disclosures/comments (e.g. qualified or unqualified), audit report disclosures (Basioudis et al., 2008; Ettredge, Fuerham, Guo & Li, 2017; Ianniello, 2012), earnings management (typically discretionary accruals) (Krishnan et al., 2011; Frankel et al., 2002; Antle et al., 2006), and financial restatements (Kinney et al., 2004; Raghunandan, Read & Whisenant, 2003). These proxies have value but capture different dimensions of auditor behaviour. Audit opinions and comments reflect the auditor's reporting decision, whereas earnings management and restatements reflect broader audit quality outcomes; both the ability of the auditor to detect and willingness to report (DeFond et al, 2002; Ye et al., 2011; Asthana et al., 2019; DeFond & Zhang, 2014) alongside management actions. Due to these differences in what they conceptually seek to measure it is important to distinguish their characteristics before identifying the proxies most appropriate for our paper.

3.2. Alternative Proxies and their Limitations

3.2.1. Earnings Management

Research has widely used earnings management, typically through discretionary accruals, as an indirect indicator of auditor independence in the NAS literature. The conceptual justification is that where discretionary accruals represent managerial opportunism, independent auditors would seek to constrain such actions, leading to lower abnormal accruals (Frankel et al., 2002; Ferguson et al., 2004; Krishnan et al., 2011). However, discretionary accruals reflect a joint outcome of managerial incentives, internal controls, estimation uncertainty, and auditor behaviour; not auditor independence alone.

On this basis discretionary accruals conflate the auditor's ability to detect with a willingness to report or challenge it, and as such are more aligned with audit quality (DeFond & Zhang, 2014), than with independence as defined earlier. Accrual based measures are subject to substantial measurement error (DeFond & Zhang, 2014) and model sensitivity (Ashbaugh et al, 2003; Larcker & Richardson, 2004; Koh, Rajgopal & Srinivasan, 2013), that may reflect permissible, if aggressive, application of accounting standards (Ferguson et al., 2004, Francis, 2006). This is not a sign of impaired auditor independence and as such variation in earnings management cannot be attributed to changes in the auditor's independence of mind.

While earnings management proxies provide insight into broad audit quality outcomes, they are an indirect and 'noisy' signal of auditor independence, and less suited to assessing an auditor's incentives to report detected breaches.

3.2.2. Financial Restatements

Similarly, financial restatements are widely used as a retrospective indicator of an auditor's independence; more independent auditors should prevent material misstatements that require later restatement (Kinney et al., 2004; Raghunandan et al., 2003; Bloomfield & Shackman, 2008), with statistical significance often absent. However, restatements are ex-post outcomes that can arise for reasons unrelated to auditor independence, indeed Plumlee & Yohn (2010) document that the majority of such restatements were a result of errors by the client firm. While the auditor bears responsibility to detect and act on many of these issues (Eshleman & Guo, 2014), it is again a question of broader audit quality, than specifically independence.

Crucially, restatements do not reflect the auditor's reporting judgement at the time an audit opinion was issued. Rather, it reflects a breakdown (DeFond & Zhang, 2014) or subsequent reassessment (Palmrose & Scholz, 2004) within the wider financial reporting system. As with earnings management, restatements therefore conflate detection, and reporting (Kinney et al., 2004; Paterson & Valencia, 2011), as well as post audit discovery. Rajgopal, Srinivasan & Zheng (2020) find restatements can occur as a result of insufficient audit evidence, poor planning, and a lack of auditor independence; further underlining their role as a broad audit quality indicator rather than a measure of independence.

Finally, while restatements occur infrequently, raising issues of statistical power (DeFond & Zhang; Rajgopal et al., 2020), these concerns are secondary to the fundamental limitations as a proxy of independence.

3.3. Audit Opinion and Disclosures as proxies for Independence

Audit opinions offer several theoretical and methodological advantages over the aforementioned proxies. First, they are highly observable, unambiguous (DeFond et al., 2002), and represent the explicit outcome of the auditor's judgement (Asthana et al., 2019; Castillo-Merino, García-Blandon and Martinez Blasco, 2020), and willingness to communicate unresolved issues in the financial statements. In contrast to earnings management and restatements, audit opinions provide a more direct link to independence of mind.

The decision to issue a qualified opinion represents a point of significant tension in the auditor–client relationship (DeFond et al., 2002), reflecting not only their ability but their willingness to signal that publicly (Basioudis et al., 2008; Ianniello, 2012). As such it reflects the auditor's willingness to resist economic and relational pressures; a behavioural indicator of independence rather than of audit effort/competence, especially given the increased likelihood of auditor dismissal following qualification (Carcello & Neal, 2003; Crasswell 1988).

Audit opinions are central to regulatory and professional discourse on independence (EU, 2022; ICAEW, 2016; Crasswell, Stokes & Laughton, 2002). Regulatory and policy responses, both within the UK and internationally, have emphasised the audit report as the primary mechanism through which independence, via transparency, is communicated to the market (Dart, 2011; Kend et al., 2021; EU, 2014). Of particular relevance in the UK context were several high-profile corporate failures, despite unqualified audit opinions (Gwilliam, Marnet & Teng, 2014; Gelter & Gurrea-Martínez, 2020), sparked renewed regulatory focus on independence in exercising their judgement e.g. Brydon review (Kend et al., 2021). This regulatory relevance supports the use of audit opinions as a focal outcome for independence-related research.

Audit opinions are not without limitations. The absence of a qualification does not necessarily imply impaired independence. While erroneous 'clean' opinions can be due to impaired independence and/or competence (DeFond & Zhang, 2014), such opinions may reflect resolution of issues, or improved client reporting (Firth, 2002). Additionally, qualification incidents are low, particularly among listed firms, that restricts their statistical power when used (DeFond & Zhang, 2014), with their binary nature limiting the ability to capture subtle impairments to independence. In seeking to address these concerns prior studies often focus on, primarily in the context of going-concern (GC) opinions, on distressed firms only for their subsample (Singh, Singh, Sultana & Evans, 2019). A related limitation is that audit reports can communicate concern without a formal qualification deemed necessary.

In contrast to many other studies, we capture all audit qualifications, including going-concern, disagreement and limitation of scope modifications. Additionally, in recognising the value of emphasis of matter type disclosures (Ianniello, 2012) we also capture going-concern emphasis of matter comments included in the audit report. By doing so, it captures a broader set of auditor reporting judgements through which independence-of-mind, and auditor discretion, can be exercised. This is important because it allows us to observe willingness to report (independence of mind) in areas over which the auditor retains greater discretion. While no study can capture independence of mind; the discrete and formal disclosure of audit opinions and going concern comments, combined with regulatory and professional significance make them the most appropriate proxies.

The design of our study reflects the scope of the regulatory intervention being examined. The EU ADR applies to all PIEs and restricts the provision of NAS at the engagement level (European Union, 2014), irrespective of the client firm's financial condition. As such, to assess the impact of the regulatory change on auditor independence requires an analysis across the full population rather than a sub-sample defined by financial distress. While many prior audit opinion/independence studies, particularly those examining going-concern opinions, often restrict focus on distressed firms this study focuses on all audit qualifications; including disagreements and limitations of scope, through which independence can be exercised in a broader range of scenarios. The findings will therefore seek to directly assess the impact engagement-level restrictions on NAS have on independence.

4. Empirical Evidence on Non-audit Services and Audit Opinion

4.1. Audit opinion as a reporting decision

The audit opinion is an observable outcome of how competing incentives and constraints are resolved. Prior research shows that this reporting decision varies systematically with client importance, regulatory exposure, litigation, and reputational risk (DeFond et al., 2002; Basioudis, et al., 2008; Antle, 1984). However, it is important to appreciate that audit opinions are not homogeneous, and their interpretation varies accordingly.

Prior studies often distinguish between going concern (GC) and non-going concern (NGC) qualifications (García-Blandón & Argilés-Bosch, 2015; Craswell, 2002), such as disagreements with management or limitation of scope. Importantly, going concern reporting is not limited to qualified audit opinions but may appear as an explanatory emphasis of matter paragraph alongside such 'clean' reports. GC opinions are typically associated with firms in

severe financial distress (Basioudis et al., 2008; DeFond et al, 2002) and therefore firm viability, and samples are commonly restricted to obtain sufficient variation. By contrast, NGC opinions reflect the auditor's verification role and arise from disputes (e.g. accounting treatment or disclosure adequacy). Such modifications are not limited to financially distressed firms and instead capture auditor judgement across a broader range of reporting scenarios, including large, non-distressed clients (Craswell, 2002). García-Blandón & Argilés-Bosch (2015) emphasise that NGC is aligned with the auditor's role in monitoring and enforcing compliance, rather than in signalling financial failure. In this regard, such modifications provide an insight into the willingness of the auditor to challenge management, beyond the narrow context of going concern (Hay et al., 2006a).

As discussed in Section 2, economic bonding theory suggests a reduction in audit qualifications when the cost of losing a client is high (Wang & Hay, 2013; Sharma & Sidhu, 2001), whereas knowledge spillover argues that certain NAS may enhance audit quality, and therefore could increase the likelihood of informative qualifications (Robinson, 2008). Such competing mechanisms are not restricted to distressed firms and can operate across the full population of audit engagements. As such, an exclusive focus on GC opinions risks a focus on only high-risk engagements where financial distress/failure dominates, understating more subtle forms of challenge or restraint (García-Blandón & Argilés-Bosch, 2015; Firth, 2002). Differences in sample selection (full v distressed) and outcome measurement (all qualifications v GC qualifications) may provide one explanation for why prior studies report mixed evidence on the relationship between NAS and audit opinions.

4.2. Economic Bonding and Auditor Reporting

Prior empirical studies that use audit opinions to examine NAS and independence often treat audit qualifications as a means of identifying engagement-level economic bonding. Where a negative relationship between NAS and qualification is present, this has been interpreted as consistent with bonding arguments, influencing marginal auditor judgements.

In the UK, historical studies supported such relationships. Firth (2002) finds that firms paying proportionally higher consultancy fees are less likely to receive a qualified audit report. Similarly, Basioudis et al (2008) when studying financially distressed firms, documents a negative association between NAS and the issuing of qualified going-concern opinions, particularly where audit fees are low relative to the client's size and risk profile. This is consistent with arguments around 'lowballing', whereby auditors may use higher margin NAS

to recover discounted audit fees. Comparable evidence is reported in Australia (Wines, 1994; Sharma & Sidhu, 2001; Singh et al., 2019; Ahmed et al., 2022) where significant NAS fees were associated with fewer qualifications, especially amongst failing or financially distressed firms. Singh et al. (2019) further note that, at least with respect to GC opinions, this pattern is concentrated in audit engagements with short audit partner tenure (≤ 2 years), indicating that fee dependence may be more relevant in early auditor-client relationships.

Evidence from New Zealand is more nuanced. Hay et al. (2006a) do not find a general association between NAS and audit opinion outcomes, whereas Wang & Hay (2013) do report a negative relationship between NAS and qualified audit opinions but, and of interest given UK regulatory action, only for non-Big 4 auditors. This implies that NAS influence on reporting outcomes is contingent on auditor characteristics and institutional context.

4.3. Constraints and Knowledge Spillover

However, the above results are not universal. A substantial strand of literature finds no statistically significant relationship between NAS and qualified audit opinions, with another strand reporting patterns consistent with knowledge spillover effects. Together, these studies suggest that economic bonding is one of a number of aspects shaping audit reporting outcomes, indeed these other aspects may have a stronger constraining effect.

Both DeFond et al. (2002) and Geiger & Rama (2003), in studying US financially distressed firms, find no significant relationship between NAS and the issuance of GC qualified audit opinions, with the latter noting that those receiving such qualifications did have higher audit fees. This has been interpreted as consistent with auditors acting independently in settings where reputational or litigation risk is more relevant e.g. distressed firms (DeFond et al., 2002). Likewise, in Australia, Barkess & Simnett (1994) and Crasswell (1999) find no relationship between NAS and audit qualifications more generally across a broader sample of firms. Ahmed et al., (2022) further suggests that the relationship between NAS and audit opinions vary with macro-conditions, in this case the 2008 financial crisis, consistent with the idea that heightened scrutiny during periods of instability may constrain impairment. In a non-Anglo-Saxon reporting context, Ratzinger-Sakel (2013) also finds no association between NAS and GC qualified audit opinions for a sample of financially distressed German firms, indicating that null results arise even where legal risk is lower, and may reflect wider concerns around professional norms, institutional constraints and reputational concerns.

A smaller, yet valuable strand, documents positive relationships supporting knowledge spillover perspectives (Simunic, 1984). Robinson (2008) in a study of US firms provides evidence that NAS, specifically tax services, are positively associated with qualified audit opinions prior to bankruptcy. This is interpreted as consistent with a reduction in information asymmetries and a better understanding of tax risks leading to more conservative reporting. Similarly, Lennox (1999) finds a slightly positive relationship between NAS and audit qualifications in the UK, with a suggestion that there may be economies of scope, or enhanced client-specific knowledge, from the joint provision of NAS and audit services. Interestingly, Houghton & Jubb (1999) using a sample of Australian firms, propose a reversal in the causal relationship; audit qualification increases audit production costs that are recovered partly through fees, with NAS fees increasing contemporaneously and audit fees increasing with a lag. This implies that a positive relationship may reflect cost recoupment, rather than knowledge spillover.

Overall, the evidence indicates that the relationship between NAS and audit opinions is not uniform across regulatory settings, service types, opinion definitions, and where causal direction is ambiguous. Any effect of NAS on audit reporting is likely to be observed where the qualification decision is marginal, i.e. borderline cases where the auditor must exercise a binary judgement with respect to unresolved matters. Whereas in settings and contexts where external constraints are strong, the opportunity for NAS to affect audit opinions may be limited. This marginal-decision context aids in interpreting the mixed results and motivates empirical design; particularly in the context of regulatory change/shocks e.g S-Ox (Knechel & Sharma, 2012), 2008 financial crisis (Ahmed et al., 2022), and of relevance to our paper, the EU ADR. Such changes allow us to test whether changes in the institutional environment alter the relationship between NAS fees and independence.

4.4. Mixed Evidence and the Role of Regulatory Change

The mixed evidence documented is not simply inconsistency; it reflects the limits of interpreting cross-sectional studies, often in stable institutional settings. In such settings the differing associations can result through multiple channels that potentially offset each other: economic bonding that suppresses qualification (negative) (Sharma & Sidhu, 2001; Wines, 1994), knowledge spillovers that improve detection or support for auditor judgements, especially with respect to certain NAS types (positive) (Kinney et al., 2004; Robinson, 2008), and external constraints such as regulation, reputation and litigation risk that cancel out fee-

related incentives (DeFond et al., 2002; Crasswell, 1999). Additionally, positive associations between NAS and audit qualifications are not just indicative of spillover but could reflect recouping of additional audit costs, because of increased audit production effort, through NAS billing (Houghton & Jubb, 1999). More generally, there is a recognition that audit and non-audit fees are jointly determined, with NAS and qualifications reflecting unobserved engagement risk and complexity; not just independence (Simunic, 1984; Whisenant et al., 2003). Consistent with this, review studies of extant literature emphasise that competing mechanisms and endogeneity concerns make such fee-outcome relationships difficult to interpret, albeit in an audit quality context (DeFond & Zhang, 2014; Tepagul & Lin, 2015). As such, any observed association should be interpreted as an equilibrium outcome reflecting the interaction of the theoretical mechanisms, rather than evidence of a single effect in isolation. Regulatory change can be more informative because it shifts the balance of NAS provision, so changes an auditor's reporting incentives in a way not driven solely by firm/engagement level demand for audit and non-audit services. The EU ADR imposes engagement-level prohibitions and fee caps explicitly motivated by independence concerns and applies irrespective of the client's financial condition (European Commission, 2022). A further reason for mixed findings is that studies operationalise auditor judgement in different ways; some focus on formal qualifications, while others address explanatory disclosures such as going concern emphasis of matter statements. In reflecting differing reporting tolerances/thresholds these aspects may respond differently to changes in NAS restrictions. It is on this basis that we examine both qualification and going concern comments to assess whether the EU ADR altered the auditor's behaviour across these margins. A pre and post-EU ADR study design therefore allows us to test whether there is a change in the relationship between NAS and audit qualifications, and going concern comments, after EU ADR implementation. In doing so, the results provide a benchmark for judging the rationale and need for the UK's subsequent Big 4 operational separation policy.

5. Hypotheses

The EU ADR acted to materially restrict both the scope of permissible NAS services, and the level of such fees via a cap (Campa & Donnelly, 2015; European Commission, 2022). By reducing the scope for quasi rents via joint provision, it is expected that to the extent economic bonding operated in the pre-EU ADR period, the post-EU ADR regime should moderate the negative association between NAS and critical auditor reporting. Yet, consistent with the view

that auditor reporting occurs at more than one level we distinguish between the higher threshold for audit qualification versus the lower threshold for explanatory disclosures such as going-concern comments. We test whether the EU ADR changes the relationship between NAS and (i) qualified audit opinions (OPINION), and (ii) going concern comments (COMMENT).

H1a (OPINION) – Following the implementation of the EU ADR, the association between non-audit services (NAS) and the likelihood of issuing a qualified audit opinion (OPINION) is weaker (less negative) than in the pre-EU ADR period.

H1b (COMMENT) – Following the implementation of the EU ADR, the association between non-audit services (NAS) and the likelihood of issuing a going concern comment (COMMENT) is weaker (less negative) than in the pre-EU ADR period.

Both hypotheses are evaluated using the interaction term between NAS and a post-EU ADR indicator; a positive moderation effect reflected in the interaction term and marginal effects is evidence consistent with *H1a/H1b*.

6. Sample, Data and Method

6.1. Sample and Data Sources

This study examines the association between non-audit services (NAS) and auditor independence, using a panel dataset of UK-listed companies spanning 2010 to 2020. The sample period was selected to enable analysis of auditor behaviour under two distinct regulatory regimes: pre- and post-implementation of the EU ADR. Our start period of 2010 was selected as it provides sufficiently long pre-EU ADR period to establish baseline relationships, alongside consistency in fee disclosures and audit reporting practices across firms. Additionally, the sample period ends in 2020 to avoid the ongoing impact of the COVID-19 pandemic that introduced significant economic disruption alongside updated regulatory guidance. In the UK, the FRC issued specific guidance (FRC, 2020) for auditors that addressed qualification and going concern assessments in the presence of government support and wider market changes. Including post-2020 observations would be expected to confound the effect of the EU ADR with crisis driven shocks to reporting incentives and thresholds. Fiscal years are defined by the accounting period end date and, where firms occasionally extend/shorten their accounting periods or enter/exit the sample, it results in non-annual gaps. These

observations are retained and the post-EU ADR indicator (POSTADR) is defined using the start of the accounting period. This is consistent with the implementation of the EU ADR for accounting periods beginning on or after 17 June 2016.

The baseline panel consisted of all firms listed on the London Stock Exchange over the study period. Consistent with prior research, and to ensure jurisdictional comparability, firms not headquartered in the UK were excluded (Owusu, O’Sullivan, Kwabi & Holmes, 2024). Observations from the financial services and banking sectors, identified with reference to their UK Standard Industry Classification (SIC) code, were also removed due to their unique regulatory and reporting environments (Campa & Donnelly, 2016). This results in 9,141 firm-year observations. In determining the industry classification with respect to the sample, we follow Adegbite, Guney, Kwabi & Tahir (2018), an adapted version of UK SIC system, consolidated into nine categories to facilitate sector-level controls and interpretation, presented per Appendix 1.

Data were sourced from two established databases; Financial Analysis Made Easy (FAME) and Refinitiv DataStream. FAME was used to collect core firm-level information including audit opinions (OPINION), going concern comments (COMMENT), and auditor identity. Refinitiv DataStream provided complementary financial statement data, including total assets, and fee disclosures. Where there were inconsistencies in identifiers, or missing data across sources, these were addressed through targeted manual checks against annual reports or Companies House filings.

As is typical in audit research, estimation samples vary across models due to missing variable data (Eshleman & Guo, 2014; Chan, Luo & Mo, 2015; Ianniello, 2012). Accordingly, baseline panel size and model-specific estimation sample sizes are detailed per Table 1.

6.2 Empirical Models and Estimations

In seeking to test H1a and H1b; whether the negative association between NAS and auditor independence weakens following the implementation of the EU ADR, we estimate probit models for two binary reporting outcomes; audit opinion (OPINION) and going concern comment (COMMENT). OPINION is equal to 1 if the audit report is qualified and 0 otherwise. Likewise, COMMENT is equal to 1 if the audit report includes a going concern comment and 0 otherwise. Given the binary nature of the dependent variables, we estimate probit models with standard errors clustered at the firm level.

We estimate the following model:

$$\begin{aligned}
& \Pr (OPINION_{it} = 1) \\
& = \Phi (\beta_0 + \beta_1 LnNONAUDFEE_{it} \\
& + \beta_2 POSTADR + \beta_3 (LnNONAUDFEE_{it} \times POSTADR) + \gamma X_{it} + \sum Year FE \\
& + \sum Industry FE)
\end{aligned} \tag{1}$$

$$\begin{aligned}
& \Pr (COMMENT_{it} = 1) \\
& = \Phi (\beta_0 + \beta_1 LnNONAUDFEE_{it} \\
& + \beta_2 POSTADR + \beta_3 (LnNONAUDFEE_{it} \times POSTADR) + \gamma X_{it} + \sum Year FE \\
& + \sum Industry FE)
\end{aligned} \tag{2}$$

Where X_{it} represents controls comprising LnAUDFEE, FEEDEP, LnREPLAG, SIZE, ROA, LEVERAGE, INVREC, LOSS, LONDON, BIG4FIRM, LONGTENURE, BUSY, SQRТУKSUB, and SQRТОSUB. Variable definitions are summarised in Appendix 2.

The central explanatory variables are the natural logarithm of 1 plus non-audit fees (LnNONAUDFEE), an indicator for the post-EU ADR period (POSTADR) for financial years starting on or after 17 June 2016, and their interaction (LnNONAUDFEE x POSTADR). This specification allows us to distinguish three effects; (i) the relationship between NAS and reporting outcome pre-ADR (β_1); (ii) any change in the propensity to issue a critical reporting outcome post-ADR, independent of NAS (β_2); (iii) the change in the NAS-reporting outcome relationship post-ADR (β_3). In the probit index function, the slope on LnNONAUDFEE equals β_1 in the pre-EU ADR period, and $\beta_1 + \beta_3$ in the post-EU ADR period (POSTADR = 1). As such, β_3 captures the change in the NAS-reporting outcome relationship following EU ADR implementation. Importantly, this interaction should be interpreted as evidencing a change in the net NAS-reporting outcomes relationship post-EU ADR rather than isolating one theoretical mechanism from another. In line with the conceptual basis of this paper, any estimated moderation may reflect a rebalancing of the two competing mechanisms; including reduced economic bonding, retained knowledge spillovers, and changes in the other external constraints. As probit coefficients are not suited for interpreting changes in probability, we report average marginal effects of LnNONAUDFEE separately for pre (POSTADR = 0) and post-EU ADR (POSTADR = 1) implementation to test whether marginal effects become less negative post-EU ADR.

In terms of unobserved heterogeneity, all specifications include year and industry fixed effects. Firm fixed effects are not included due to the dependent variables being binary and rare, particularly with respect to OPINION, that could result in substantial observation attrition and estimation issues due to limited within-firm variation. Consistent with economic bonding

theory we include (LnAUDFEE) capturing audit effort, and a client fee dependence variable (FEEDEP), which measures the relative importance of each client to the audit firm. Together, these variables reflect both the absolute (DeFond et al, 2002; Basioudis et al., 2008; Castillo-Merino et al., 2020; Hay et al., 2006a; Campa & Donnelly, 2016; Alexander & Hay, 2013; Ashbaugh et al, 2003) and proportional values (Wang & Hay, 2013; Singh et al., 2019).

We also control for audit report lag (LnREPLAG) given prior literature linking this to reporting difficulty, audit complexity and audit qualification (Habib, 2013; Habib, Bhuiyan, Huang & Miah, 2019; Durand, 2019). We include firm-level controls addressing size, profitability, leverage, liquidity, and losses, while engagement level controls include auditor size (BIG4FIRM), office location (LONDON), long tenure (LONGTENURE) and ‘busy’ season (BUSY). These are standard across audit opinion literature and address observable heterogeneity in audit risk (DeFond et al., 2002; Basioudis et al., 2008; Wang & Hay, 2013, Hay, Knechel & Wong, 2006). Additionally, we include subsidiary based complexity measures (SQRTUKSUB and SQRTOSUB). Subsidiary data collected was a single figure captured at the time of data collection, rather than updated annually. On this basis SQRTUKSUB and SQRTOSUB should be interpreted as proxies for persistent complexity rather than time-variant complexity. Their inclusion is intended to absorb cross-sectional differences in client structure that can be related to both fees (audit and non-audit) and reporting outcomes. These subsidiary variables are time-invariant, representing the subsidiaries at the time of data collection, and therefore capture persistent differences in organisational complexity rather than changes over time. Their inclusion is intended to address baseline complexity with both fees and reporting outcomes.

In line with other studies (Campa & Donnelly, 2016; Asthana et al., 2019; Krishnan et al, 2011), and to address extreme outliers, we have winsorised all continuous variables to the 1st and 99th percentiles. Scaled variables (e.g. ROA, LEVERAGE) are calculated using winsorised input variables, and then winsorised in scaled form to reduce distortion arising from small denominators. For variables expressed in logarithmic (or square root form) winsorisation was applied only to the underlying untransformed values. Due to missingness in the working capital measure that materially reduce the estimation sample and complicates comparison with the main results, we exclude WORKINGCAP from the baseline models. However, we do introduce WORKINGCAP as a primary robustness measure, including a same-sample benchmark to separate the effect of adding the variable from effects caused by sample composition. Our

regressions are estimated using listwise deletion resulting in varied estimation sample across specifications, this attrition by model is reported in (Table 1).

Table 1 – Estimation Samples and Model Attrition

	Observations (firm-years)	Attrition vs. baseline (N= 9,141)	% attrition
<i>Baseline panel (UK-headquartered, non-financial firms (2010-2020))</i>	9,141		
Model (1): OPINION baseline probit (Table 5, col. 1)	7,524	1,617	17.7%
Model (2): COMMENT baseline probit (Table 5, col. 2)	8,334	807	8.8%
Model (3): OPINION + WORKINGCAP (Table 7, col. 3)	7,084	2,057	22.5%
Model (4): COMMENT + WORKINGCAP (Table 7, col. 4)	7,804	1,337	14.6%

Note:

The baseline panel comprises UK-listed, UK headquartered, non-financial firms over 2010-2020 (N=9,141). Estimation samples vary across due to complete-case (listwise) deletion from missing values in the dependent variable and controls.

Attrition is larger for OPINION models because: (i) OPINION is available for fewer observations than COMMENT, and (ii) qualified opinions are rare, contributing to reduced usable observations once combined with complete-case requirements.

Including WORKINGCAP reduces sample further due to missing liquidity data and is therefore introduced as a robustness test rather than included in the baseline specification.

7. Results and Analysis

7.1 Descriptive Statistics and Correlations

Table 2 presents descriptive statistics for the variables used in our analysis across the full sample period. As expected, the incidence of qualified audit opinions (OPINION) and going concern comments (COMMENT) is low at 2.4% and 8.4%, respectively, consistent with prior evidence, including in the UK context (Habib, 2013). Mean (median) audit and NAS fees are £500,686 (£102,000) and £197,374 (£28,000), with non-audit fees (NONAUDFEE) being 39% of audit fees (AUDFEE) on average. The significant difference in means and medians highlights skewness caused by a small number of very large companies, a pattern typical of listed company samples (Abbot, Parker, Peters & Rama, 2003; DeFond et al., 2002; Frankel et al., 2003; Whisenant, Sankaraguruswamy & Raghunandan, 2003). The mean audit report lag (REPLAG) of 96 days (median 82 days) reflects a few but very long report lags being present.

Control variables e.g. leverage (LEVERAGE) and ROA exhibit expected distribution, while Big 4 auditors (BIG4FIRM) were used in 55% of engagements.

Table 2 – Descriptive Statistics (available observations)

	N	Mean	SD	Min	Median	Max
OPINION	7833	0.0237	0.152	0.000	0.000	1.000
COMMENT	9133	0.0843	0.278	0.000	0.000	1.000
AUDFEE	9116	500.6861	1309.009	7.950	102.000	9000.000
NONAUDFEE	9114	197.3743	526.520	0.000	28.000	3647.000
REPLAG	9141	96.5775	45.225	39.000	82.000	275.000
LnAUDFEE	9116	4.8508	1.513	2.073	4.625	9.105
LnNONAUDFEE	9114	3.2649	2.208	0.000	3.367	8.202
LnREPLAG	9141	4.4782	0.417	3.664	4.407	5.617
SIZE	8859	11.5365	2.423	6.297	11.321	17.669
ROA	8855	-0.0481	0.259	-1.482	0.028	0.309
LEVERAGE	8634	0.1628	0.175	0.000	0.118	0.999
INVREC	8822	0.2426	0.204	0.001	0.192	0.873
WORKINGCAP	8304	0.1632	0.265	-0.554	0.121	0.893
OSEASSUBS	9140	23.4147	56.283	0.000	4.000	349.000
UKSUBS	9140	39.1639	75.346	0.000	11.000	469.000
FEEDP	9141	0.0667	0.195	0.000	0.007	1.000
LOSS	8860	0.3446	0.475	0.000	0.000	1.000
LONDON	9141	0.5052	0.500	0.000	1.000	1.000
LONGTENURE	8857	0.3616	0.481	0.000	0.000	1.000
BUSY	9141	0.6876	0.464	0.000	1.000	1.000
BIG4FIRM	9141	0.5529	0.497	0.000	1.000	1.000

Note:

This table contains the descriptive statistics for the variables across the whole sample period.

All continuous variables, and scaled variables, are winsorised at the 1% and 99% level.

N varies by variable due to missing data. Regression analyses are estimated on complete-case samples; see Table 1 for model specific estimation samples.

Table 3 compares key variables before and after implementation of the EU ADR. Relative to the full sample patterns, the split highlights a significant reduction in NONAUDFEE (mean fell by £68,933, $p < 0.01$), alongside a significant increase in AUDFEE (mean increased by £163,744, $p < 0.01$). The NONAUDFEE reduction would be consistent with the aims of the EU ADR's fee cap and service type restrictions (Campa & Donnelly, 2016) and mirrors the results of other such regulatory changes e.g. S-Ox (Krishnan et al., 2011; Krishnan & Yu, 2011). REPLAG rises moderately, mean increased by 13 days ($p < 0.01$), possibly a result of increased post-EU ADR audit effort, complexity or loss of 'spillover'. The level of qualified audit opinions and going concern comments remains low and does not differ significantly between the pre and post- EU ADR period. Overall, this suggests that regulatory effects are more likely to act through conditional association between fees and reporting outcomes, rather than through unconditional reporting frequencies.

Table 3 – Tests for differences – Pre vs Post EU ADR Implementation

	Pre-EU ADR (1)						Post-EU ADR (2)						<i>t</i> -test (1)-(2)	<i>z</i> -test (1)-(2)
	<i>N</i>	Mean	SD	Min	Median	Max	<i>N</i>	Mean	SD	Min	Median	Max		
OPINION	5402	0.026	0.158	0.000	0.000	1.000	2431	0.020	0.139	0.000	0.000	1.000	-0.006	1.56
COMMENT	6135	0.085	0.279	0.000	0.000	1.000	3998	0.083	0.276	0.000	0.000	1.000	-0.002	0.38
AUDFEE	6134	447.123	1214.883	7.950	91.000	9000.000	2982	610.867	1477.103	7.950	135.000	9000.000	163.744** *	-9.84***
NONAUDFEE	6135	219.906	555.051	0.000	33.000	3647.000	2979	150.972	458.863	0.000	20.000	3647.000	-68.933***	10.28***
REPLAG	6135	92.284	39.459	39.000	81.000	275.000	3006	105.343	54.113	39.000	87.000	275.000	13.059***	-8.87***
LnAUDFEE	6134	4.744	1.491	2.073	4.511	9.105	2982	5.071	1.533	2.073	4.905	9.105	0.327***	-9.84***
LnNONAUDFEE	6135	3.434	2.195	0.000	3.526	8.202	2979	2.916	2.195	0.000	3.045	8.202	-0.518***	10.28***
LnREPLAG	6135	4.445	0.393	3.664	4.394	5.617	3006	4.547	0.456	3.664	4.466	5.617	0.102***	-8.87***
SIZE	5994	11.397	2.428	6.297	11.183	17.669	2865	11.828	2.388	6.297	11.660	17.669	0.432***	-7.65***
ROA	5990	-0.045	0.260	-1.482	0.031	0.309	2865	-0.055	0.259	-1.482	0.019	0.309	-0.010*	5.34***
LEVERAGE	5870	0.156	0.173	0.000	0.109	0.999	2764	0.177	0.179	0.000	0.135	0.971	0.021***	-6.89***
INVREC	5963	0.246	0.207	0.001	0.196	0.873	2859	0.235	0.198	0.001	0.186	0.873	-0.012**	1.98**
WORKINGCAP	5613	0.166	0.265	-0.554	0.125	0.893	2691	0.157	0.264	-0.554	0.112	0.893	-0.009	1.62*
FEEDP	6135	0.069	0.202	0.000	0.007	1.000	3006	0.061	0.179	0.000	0.007	1.000	-0.008**	-2.01**
LOSS	5993	0.324	0.468	0.000	0.000	1.000	2867	0.388	0.487	0.000	0.000	1.000	0.063***	-5.88***
LONDON	6135	0.489	0.500	0.000	0.000	1.000	3006	0.539	0.499	0.000	1.000	1.000	0.050***	-4.51***
LONGTENURE	5910	0.353	0.478	0.000	0.000	1.000	2947	0.378	0.485	0.000	0.000	1.000	0.025**	-2.27**
BUSY	6135	0.687	0.464	0.000	1.000	1.000	3006	0.690	0.463	0.000	1.000	1.000	0.003	-0.30
BIG4FIRM	6135	0.567	0.496	0.000	1.000	1.000	3006	0.525	0.499	0.000	1.000	1.000	-0.042***	3.81***

Note:

This table contains the descriptive statistics for the variables used in this paper and tests for differences (*t*-test) between means pre-EU ADR and post-EU ADR implementation.

Additionally, this paper tests for differences between medians (*z*-test) pre-EU ADR and post-EU ADR implementation using the Wilcoxon rank-sum test.

All continuous variables, and scaled variables, are winsorised at the 1% and 99% level.

*, **, and *** denote significance at the 10%, 5% and 1% levels respectively.

OSEASSUBS and UKSUBS were omitted due to them being time invariant.

Table 4 reports Pearson correlations for variables included in the main specifications. As expected, audit fees (LnAUDFEE), non-audit fees (LnNONAUDFEE), and firm size (SIZE) display strong positive correlations. This is in line with firm size effects common in audit research (Basioudis et al., 2008; Alexander & Hay, 2013). Similarly, Big 4 firms (BIG4FIRM) and subsidiaries (SQRTUKSUB/SQRTOSUB) are positively correlated with both audit and non-audit fees, particularly for subsidiaries. This is consistent with larger, more complex, client firms likely to engage Big 4 firms and pay higher fees. Beyond size related relationships correlations remain modest. Consistent with correlation patterns variance inflation factors (VIFs) are low on average (mean vif = 2.24/2.28) across both model specifications. The exception to this is the elevated VIF for LnAUDFEE (vif = 9.15/9.49), related to its overlap with SIZE rather than pervasive multicollinearity. In line with Kennedy (2008) we consider the VIF results support our position that the model specifications do not raise multicollinearity concerns.

Table 4 – Pearson Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) OPINION	1.000									
(2) COMMENT	0.307***	1.000								
(3) LnAUDFEE	-0.099***	-0.182***	1.000							
(4) LnNONAUDFEE	-0.079***	-0.172***	0.675***	1.000						
(5) FEEDEP	0.015	0.059***	-0.233***	-0.206***	1.000					
(6) LnREPLAG	0.114***	0.261***	-0.542***	-0.478***	0.233***	1.000				
(7) SIZE	-0.115***	-0.220***	0.887***	0.647***	-0.214***	-0.576***	1.000			
(8) ROA	-0.109***	-0.312***	0.302***	0.237***	-0.056***	-0.333***	0.414***	1.000		
(9) LEVERAGE	0.010	-0.009	0.337***	0.235***	-0.035***	-0.126***	0.369***	0.069***	1.000	
(10) INVREC	-0.043***	-0.114***	0.058***	0.032***	0.037***	-0.067***	-0.027**	0.119***	-0.045***	1.000
(11) WORKINGCAP	-0.037***	-0.111***	-0.221***	-0.113***	0.016	-0.010	-0.197***	-0.034***	-0.398***	0.209***
(12) LOSS	0.126***	0.294***	-0.344***	-0.278***	0.070***	0.403***	-0.414***	-0.616***	-0.119***	-0.195***
(13) LONDON	0.030***	0.076***	0.207***	0.081***	0.029***	-0.018*	0.188***	-0.024**	0.060***	-0.212***
(14) BIG4FIRM	-0.072***	-0.160***	0.627***	0.488***	-0.331***	-0.463***	0.638***	0.229***	0.173***	0.047***
(15) LONGTENURE	-0.056***	-0.079***	0.224***	0.205***	-0.063***	-0.229***	0.236***	0.127***	0.063***	0.063***
(16) BUSY	-0.031**	0.010	0.126***	0.083***	-0.063***	0.004	0.093***	-0.027**	0.049***	-0.040***
(17) SQRTUKSUB	-0.075***	-0.165***	0.714***	0.522***	0.116***	-0.432***	0.718***	0.254***	0.310***	0.089***
(18) SQRTOSUB	-0.045***	-0.085***	0.750***	0.501***	0.106***	-0.355***	0.619***	0.177***	0.206***	-0.032***

Variables	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(12) LOSS	0.045***						
(13) LONDON	-0.100***	0.073***					
(14) BIG4FIRM	-0.074***	-0.286***	-0.050***				
(15) LONGTENURE	-0.011	-0.150***	0.003	0.209***			
(16) BUSY	-0.045***	0.027**	0.089***	0.088***	0.012		
(17) SQRTUKSUB	0.171***	-0.317***	0.162***	0.447***	0.183***	0.076***	
(18) SQRTOSUB	0.180***	-0.208***	0.244***	0.404***	0.146***	0.099***	0.634***

Note:

This table contains the Pearson correlation coefficients among the variables used in the paper.

All continuous variables, and scaled variables, are winsorised at the 1% and 99% level.

Variable Inflation factors (VIFs) indicate minimal multicollinearity risk (mean VIF=2.24/2.28 across specifications); highest VIF is for LnAUDFEE (9.15-9.49) consistent with overlap to SIZE, rather than broad multicollinearity.

*, **, and *** denote significance at the 10%, 5% and 1% levels respectively.

7.2 Main Results: Baseline Probit tests

Table 5 reports our probit estimates of qualified audit opinions (OPINION) and going concern comments (COMMENT) on both non-audit fees (LnNONAUDFEE) and the EU ADR regime change (POSTADR). For OPINION (1), both LnNONAUDFEE and the interaction with POSTADR are statistically insignificant, indicative of no detectable association between non-audit fees and audit report qualification in either period. This is consistent with earlier studies by DeFond et al. (2002) and Craswell et al. (2002) in finding no apparent relationship between OPINION and fees. Yet with respect to a regulatory shock i.e. EU ADR, it is counter to studies by Ahmed et al. (2022) and Ettredge et al. (2017), in Australia and the US respectively, that found changes in the relationship, albeit conflicting, as a result of the 2008 financial crisis. For COMMENT (2) the results show that the interaction between LnNONAUDFEE and POSTADR results in a positive and statistically significant association. This relationship is consistent with a moderation of the negative association between non-audit fees and going-concern disclosures post-EU ADR. The control variables generally align with expectations, for example, LOSS and LEVERAGE increase, while ROA decreases the likelihood of a COMMENT. Based on the low frequency of OPINION, and consistent with quasi-separation in that model, we are cautious in interpreting OPINION estimates and place greater emphasis on evidence reported in Table 6 and discussed below.

Table 5 – Baseline Probit Regression Results

<i>Variables</i>	<i>(1) OPINION</i>	<i>(2) COMMENT</i>
LnNONAUDFEE	-0.010 (-0.26)	-0.037 (-1.47)
POSTADR	2.778*** (9.16)	-0.480** (-1.96)
LnNONAUDFEE x POSTADR	0.019 (0.44)	0.078** (2.37)
Controls		
LnAUDFEE	0.053 (0.57)	0.080 (1.06)
FEEDP	-0.427 (-1.34)	-0.078 (-0.42)
LnREPLAG	0.193 (1.31)	0.682*** (6.45)
SIZE	-0.131*** (-2.59)	-0.119*** (-2.60)
ROA	0.021 (0.11)	-0.606*** (-4.89)
LEVERAGE	0.896*** (3.59)	0.889*** (4.35)
INVREC	0.186 (0.60)	-0.057 (-0.23)
LOSS	0.395*** (3.68)	0.447*** (6.17)
LONDON	0.103 (1.01)	0.094 (1.09)
BIG4FIRM	0.072 (0.56)	-0.020 (-0.20)
LONGTENURE	-0.065 (-0.65)	0.087 (1.13)
BUSY	-0.195** (-2.00)	0.019 (0.22)
SQRTUKSUB	-0.018 (-0.77)	-0.002 (-0.11)
SQRTOSUB	0.017 (0.72)	0.018 (0.92)
<i>Year FE</i>	YES	YES
<i>Industry FE</i>	YES	YES
<i>Observations</i>	7,524	8,334
<i>Pseudo R²</i>	0.2139	0.2706

Note:

This table contains the baseline probit estimates for OPINION and COMMENT.

Reported coefficients are on the latent index scale.

z-statistics in parentheses based on robust standard errors clustered at the firm level.

Both specifications include year and industry fixed-effects.

*, **, and *** denote significance at the 10%, 5% and 1% levels respectively (two-tailed tests).

Table 6 – Probability-scale Effects and Economic Magnitude

Panel A: Average Marginal Effects (AME) of LnNONAUDFEE			
<i>Variables</i>	<i>(1) Pre-EU ADR</i>	<i>(2) Post-EU ADR</i>	<i>(3) Difference (Post – Pre)</i>
OPINION	-0.0003 (-0.26)	0.0020 (0.23)	0.0023 (0.27)
COMMENT	-0.0042 (-1.46)	0.0034 (1.24)	0.0077** (2.40)

Panel B: Predicted Probabilities (COMMENT)			
<i>LnNONAUDFEE</i>	<i>(1) Pre-EU ADR</i>	<i>(2) Post-EU ADR</i>	<i>(3) Post - Pre</i>
Low (p25:1.61)	8.82%	5.31%	-3.51%
Median (p50: 3.37)	8.07%	5.90%	-2.17%
High (p75:4.86)	7.46%	6.44%	-1.02%

Note:
Panel A reports average marginal effects of LnNONAUDFEE from probit models with firm clustered standard errors, and year and industry fixed effects.
Panel B reports predicted probabilities for COMMENT by reporting regime at p25, p50 and p75 of LnNONAUDFEE.
Panel B Post-Pre differences are estimated as discrete changes in predicted probabilities using ‘margins, dydx(POSTADR)’ with firm clustered standard errors.
z-statistics are in parentheses.
*, **, and *** denote significance at the 10%, 5% and 1% levels respectively (two-tailed tests).

7.3 Probability-Scale Effects and Economic Magnitude

Table 6 reports the probability-scale effects that explain the estimates in Table 5. *Panel A* shows that for the relationship between LnNONAUDFEE and OPINION the average marginal effect (AME) is both economically small and statistically insignificant in both regulatory periods. Additionally, the difference post-pre is similarly insignificant. This is indicative of no detectable change in the marginal association between NAS and the likelihood of issuing a qualified audit opinion following EU ADR implementation. This would seem to align with points discussed by Ratzinger-Sakel & Schonberger (2015) that NAS restrictions may be ineffective, or unnecessary in the presence of existing local requirements.

For COMMENT, a different pattern is evident. While the within regime AMEs are not individually statistically significant, the difference in AMEs across regimes is both positive and statistically significant (Post-Pre = 0.0077, $p < 0.05$). These results indicate that the marginal relationship between non-audit fees and going concern comments following EU ADR implementation shifts upwards. In other words, the negative association between non-audit fees and going concern comments observed in the pre-EU ADR period is moderated in the post-EU

ADR period and reflects a rebalancing of the underlying incentives rather than the dominance of one (e.g. knowledge spillover) over the other.

Panel B illustrates economic magnitude for COMMENT at the 25th, 50th and 75th percentiles of LnNONAUDFEE, with predicted probabilities for COMMENT lower across all percentiles in the post-EU ADR period, in line with POSTADR in Table 5. Yet the post-pre gap narrows as non-audit fees increase (p25 = -3.51%, p75 = -1.02%). This pattern demonstrates that while overall going concern reporting becomes less frequent post-EU ADR, the extent to which this is associated with non-audit fees is reduced.

Together Panels A and B indicate that the EU ADR is associated with both a level and slope shift in going-concern comment reporting; the level of COMMENT is reduced POSTADR, but the marginal relationship between NONAUDFEE and COMMENT becomes less negative. This evidence supports H1b, in that the EU ADR weakened the negative relationship between NAS and the auditor's willingness to make going-concern comments. On this basis regulatory intervention appears to have reduced the extent to which higher NAS is associated with the suppression of such comments, although it did not increase such disclosures in absolute terms.

7.4 Robustness: Controlling for Working Capital

Working capital (WORKINGCAP) is a standard proxy for short term liquidity and financial resilience, with it being strongly related to going concern reporting decisions (DeFond et al., 2002, Basioudis et al., 2008). Yet, if we included WORKINGCAP in our baseline model it would materially reduce our estimation sample due to missing observations, raising the possibility of selection effects. It is for this reason we excluded it in the baseline models and have instead introduced it as a specific robustness test.

Table 7 reports probit estimates that replicate the baseline specifications (Table 5) save for the inclusion of WORKINGCAP. For OPINION, the results remain unchanged, with neither the level effect of non-audit fees (LnNONAUDFEE) and the interaction with POSTADR being statistically significant. As in the baseline analysis the same issues in terms of rarity and quasi-separation, lead to caution in interpreting OPINION estimates, and we find no support for H1a.

Table 7 – Robustness Test: Inclusion of WORKINGCAP

<i>Variables</i>	<i>(3) OPINION</i>	<i>(4) COMMENT</i>	<i>(5) COMMENT: Baseline on WORKINGCAP</i>
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	<i>sample (no WORKINGCAP)</i>		
LnNONAUDFEE (β_1)	-0.016 (-0.40)	-0.036 (-1.42)	-0.042 (-1.63)
POSTADR (β_2)	2.792*** (8.82)	-0.485** (-1.97)	-0.465* (-1.89)
LnNONAUDFEE x POSTADR (β_3)	0.024 (0.54)	0.076** (2.29)	0.072** (2.19)
Controls			
LnAUDFEE	0.019 (0.20)	0.023 (0.31)	0.063 (0.81)
FEEDP	-0.579 (-1.53)	-0.096 (-0.49)	-0.90 (-0.46)
LnREPLAG	0.146 (0.97)	0.611*** (5.54)	0.679 (6.22)
SIZE	-0.116** (-2.31)	-0.089*** (-1.93)	-0.100** (-2.14)
ROA	0.021 (0.11)	-0.652*** (-5.17)	-0.607*** (-4.79)
LEVERAGE	0.897*** (3.22)	0.668*** (3.03)	0.944*** (4.50)
INVREC	0.081 (0.26)	0.027 (0.11)	-0.090 (-0.36)
LOSS	0.395*** (3.60)	0.446*** (6.04)	0.445*** (6.08)
LONDON	0.106 (1.04)	0.095 (1.08)	0.097 (1.10)
BIG4FIRM	0.069 (0.52)	-0.001 (-0.01)	-0.033 (-0.32)
LONGTENURE	-0.033 (-0.33)	0.110 (1.40)	0.114 (1.45)
BUSY	-0.185* (-1.89)	0.053 (0.62)	0.047 (0.54)
SQRTUKSUB	-0.015 (-0.64)	-0.007 (-0.35)	-0.002 (-0.07)
SQRTOSUB	0.014 (0.56)	0.019 (0.97)	0.0147 (0.73)
WORKINGCAP	-0.175 (-0.98)	-0.499*** (-3.23)	-
<i>Year FE</i>	YES	YES	YES
<i>Industry FE</i>	YES	YES	YES
<i>Observations</i>	7,084	7,804	7,804
<i>Pseudo R²</i>	0.2132	0.2706	0.2653

Note:
This table contains the probit estimates for OPINION and COMMENT. Columns (3) and (4) replicate the baseline specification with WORKINGCAP included.
The sample size is reduced compared to Table 7 due to missing observations for WORKINGCAP.
Column (5) re-estimates the baseline COMMENT specification on the same WORKINGCAP-available sub-sample, excluding WORKINGCAP, to separate the effect of sample composition from the effect of including WORKINGCAP.
Reported coefficients are on the latent index-scale.
z-statistics in parentheses based on robust standard errors clustered at the firm level.
All specifications include year and industry fixed-effects.
*, **, and *** denote significance at the 10%, 5% and 1% levels respectively (two-tailed tests).

For COMMENT, the results remain consistent with our baseline findings. The interaction between LnNONAUDFEE and POSTADR remaining both positive and statistically significant, with the coefficients remaining very similar (0.076 v 0.078, $p < 0.05$). WORKINGCAP itself is negatively and statistically associated with COMMENT, consistent with expectations that firms with stronger liquidity are less likely to face such going concern risks (Ahmed et al., 2022; Garcia-Blandon & Argiles, 2015), and thus less likely to need such a disclosure. Critically, the inclusion of WORKINGCAP does not materially change the interpretation of the NAS-POSTADR interaction. To ensure we distinguish the effect of adding WORKINGCAP from changes in sample composition, we re-estimate the baseline specification on the sub-sample that have WORKINGCAP observations (column 5). The interaction between LnNONADUFEE and POSTADR remains similar in magnitude and

significance (0.072, $p < 0.05$), similar to the full sample (0.078, $p < 0.05$), and WORKINGCAP (0.076, $p < 0.05$). This indicates that the main findings are not driven by missingness in WORKINGCAP or omission of this liquidity control.

Table 8 presents the probability scale of the above results. *Panel A* shows that the difference in AMEs of LnNONAUDFEE across both regulatory periods remains positive and statistically significant (Post-Pre = 0.0076, $p < 0.05$), virtually identical to our baseline results (Table 6). Panel B, using predicted probabilities with respect to COMMENT, further confirms that while the level of such going concern comments decreases at all fee levels post-EU ADR, the post-pre gap narrows as non-audit fees increase, mirroring our baseline results again.

Table 8 – Robustness: Probability-scale Effects and Economic Magnitude (including WORKINGCAP)

Panel A: Average Marginal Effects (AME) of LnNONAUDFEE (controlling for WORKINGCAP)			
<i>Variables</i>	<i>(1) Pre-EU ADR</i>	<i>(2) Post-EU ADR</i>	<i>(3) Difference (Post – Pre)</i>
OPINION	-0.0005 (-0.40)	0.0017 (0.19)	0.0022 (0.26)
COMMENT	-0.0042 (-1.42)	0.0034 (1.22)	0.0076** (2.32)

Panel B: Predicted Probabilities (COMMENT)			
<i>LnNONAUDFEE</i>	<i>(4) Pre-EU ADR</i>	<i>(5) Post-EU ADR</i>	<i>(6) Post - Pre</i>
Low (p25:1.61)	9.13%	5.46%	-3.67%
Median (p50: 3.37)	8.38%	6.05%	-2.33%
High (p75:4.86)	7.77%	6.59%	-1.18%

Note:
Panel A reports average marginal effects of LnNONAUDFEE from probit models with firm clustered standard errors, and year and industry fixed effects.
Panel B reports predicted probabilities for COMMENT by reporting regime at p25, p50 and p75 of LnNONAUDFEE.
z-statistics are in parentheses.
*, **, and *** denote significance at the 10%, 5% and 1% levels respectively (two-tailed tests).

When combined these results indicate that the moderation of the NAS-COMMENT relationship following EU ADR implementation is not driven by omitted liquidity effects or

sample construction driven by WORKINGCAP availability. Despite WORKINGCAP reducing sample size, the stability of the marginal effects and predicted probability patterns provide support for our baseline inference. On this basis, the evidence continues to support H1b (COMMENT), while analysis of OPINION (H1a) remains unchanged.

7.5 Robustness: Extensive vs Intensive Margins of Non-audit Services

Our baseline specification treats NAS as a continuous exposure. However, possible impairment of independence may act through two distinct channels; whether any NAS are provided (ANYNAS) and the level of NAS once present (LnNAF), being the extensive and intensive margin respectively. This distinction was considered relevant in prior studies by Basioudis et al, (2008) and Wang & Hay (2013). To address this, we estimate a two-part specification separating these channels.

Table 9 – Robustness: Extensive v Intensive Margins of Non-audit fees

Panel A: OPINION			
	<i>(1) Pre-EU ADR</i>	<i>(2) Post-EU ADR</i>	<i>(3) Difference (Post – Pre)</i>
Extensive Margin <i>(ANYNAS)</i>	-0.0065 (-0.90)	0.0329 (0.64)	0.0394 (0.64)
Intensive Margin <i>(LnNAF)</i>	0.0006 (0.42)	-0.0024 (-0.19)	-0.0030 (-0.24)
Panel B: COMMENT			
	<i>(1) Pre-EU ADR</i>	<i>(2) Post-EU ADR</i>	<i>(3) Difference (Post – Pre)</i>
Extensive Margin <i>(ANYNAS)</i>	0.0117 (0.83)	0.0234* (1.83)	0.0118 (0.71)
Intensive Margin <i>(LnNAF)</i>	-0.0067* (-1.77)	-0.0014 (-0.37)	0.0053 (1.23)
Note: This table reports probability-scale effects decomposing the association between non-audit services (NAS) and auditor reporting outcomes into extensive and intensive margins. Extensive margin represents the binary change from 0 to 1 for the <i>ANYNAS</i> variable. Intensive margin represents the average marginal effect of the log of non-audit fees (NONAUDFEE) for firms with NAS expenditure (<i>LnNAF</i>). *, **, and *** denote significance at the 10%, 5% and 1% levels respectively (two-tailed tests).			

Table 9 presents probability-scale effects for both margins, across both regulatory periods. For OPINION (*Panel A*), neither margin is statistically significant in either period, with no Post-

Pre differences observed. This reinforces the baseline conclusion that NAS provision does not have a measurable effect on audit report qualification.

Panel B reports results for COMMENT and they are directionally consistent with our baseline findings, albeit weaker. In the pre-EU ADR period the intensive margin, that being the level of fees, is negatively associated, and marginally statistically significant, with the likelihood of issuing a going-concern comment. This association attenuates toward zero in the post-EU ADR period with a positive Post-Pre difference, although not statistically significant. By contrast, the extensive margin, being a binary distinction between zero or any non-audit services, does not display a shift across regulatory periods. This suggests that moderation operates through the level of NAS among client firms, rather than simply through the presence of NAS, although the evidence is not conclusive.

Overall, the two-part analysis provides supportive, though not decisive, evidence that the EU ADR's effects operate through changes in the level of non-audit services, as opposed to a binary transition into the presence or absence of NAS provision.

7.6 Audit Firm Heterogeneity

Prior research as suggested that the effect of non-audit services on auditor independence may depend on audit firm characteristics and other external constraints. Wang & Hay (2013), with evidence from New Zealand, indicate that any independence impairment associated with NAS may be concentrated among non-Big 4 audit firms, with no corresponding effect observed for Big 4 firms. It is suggested that this may be due to smaller firms being subject to stronger economic bonding threats (Wang & Hay, 2013). Similarly, Campa & Donnelly (2015) and Eshelman & Guo (2014), found lower audit quality (of which independence is part) with non-Big4 firms proxied by discretionary accruals and restatements, respectively. Yet, this is not unanimous, Ratzinger-Sakel (2013) shows that in a German context Big 4 firms were less likely to issue going concern qualifications where NAS fees were particularly high. These contradictions motivate our study to test whether the EU ADR moderation effect documented previously differs by audit firm size.

To test such heterogeneity, we estimate a triple-difference specification interacting non-audit fees (LnNONAUDFEE), POSTADR, and the indicator for Big 4 audit firms (BIG4FIRMS). For consistency, and to aid with interpretation, our results are evaluated on a probability scale.

Table 10 – Audit Firm Heterogeneity: Triple Difference Results

Panel A: OPINION				
<i>AMEs of LnNONAUDFEE</i>	<i>(1) Pre-EU ADR</i>	<i>(2) Post-EU ADR</i>	<i>(3) Difference (Post – Pre)</i>	<i>(4) Triple-Diff (Interaction)</i>
Non-Big 4	-0.0003 (-0.21)	0.0122 (0.98)	0.0125 (1.41)	-
Big 4	0.0001 (0.02)	-0.0061 (-0.58)	-0.0061 (-1.17)	-0.0186 (-1.18)
Panel B: COMMENT				
<i>AME of LnNONAUDFEE</i>	<i>(1) Pre-EU ADR</i>	<i>(2) Post-EU ADR</i>	<i>(3) Difference (Post – Pre)</i>	<i>(4) Triple-Diff (Interaction)</i>
Non-Big 4	-0.0007 (-0.16)	0.0069 (1.62)	0.0076 (1.41)	-
Big 4	-0.0061 (-1.54)	0.0001 (0.04)	0.0063 (1.17)	0.0013 (0.17)
Note: Panels report average marginal effects (AMEs) of LnNONAUDFEE on the probability of (A) OPINION and (B) COMMENT, estimated separately for Big 4 and non-Big 4 audits. Column (3) evaluates the change in marginal relationship across regulatory regimes (Post-Pre). Column (4) reports the triple interaction (LnNONAUDFEE x POSTADR x BIG4FIRM) evaluated on the probability scale to test for differential shifts between Big 4 and Non-Big 4 cohorts. Non-Big 4 is the reference classification (BIG4FIRM=0); therefore the triple-difference term is reported only for Big 4, capturing the incremental Post-Pre shift relative to non-Big 4. z-statistics are in parentheses. *, **, and *** denote significance at the 10%, 5% and 1% levels respectively (two-tailed tests).				

Table 10 reports our results. For OPINION (*Panel A*) marginal effects are economically small and statistically insignificant for both firm size cohorts, in both regulatory periods, with no distinguishable heterogeneity observed. For COMMENT (*Panel B*) marginal effects show a small upward shift in the NAS-COMMENT relationship POSTADR for both size cohorts. Yet, we do not find evidence that the post-EU ADR moderation in the NAS-COMMENT relationship differs between Big 4 and non-Big 4 engagements.

Overall, the heterogeneity analysis provides no evidence that the EU ADR effect is driven by, or confined to, particular types of audit firm. Instead, the results suggest that engagement level restrictions on NAS operate similarly across firm size cohorts within the UK context.

7.7 Non-audit services, independence and the EU ADR

Taken as a whole, the results provide clear support for H1b but not H1a. Across the baseline, probability-scale, and robustness specifications, the post-EU ADR is associated with a statistically significant moderation of the NAS-COMMENT relationship. This does not imply

going-concern comments became more common overall, rather it indicates that the conditional relationship between NAS-COMMENT became less negative post-EU ADR implementation. Viewed alongside our paper's theoretical framework our results are consistent with a rebalancing of the two competing mechanisms at the high discretionary reporting margin, indicative of a weakening of economic bonding. In contrast, no comparable shift is observed for OPINION, where a higher threshold/lower discretion, alongside external constraints, may limit the extent of any observable fee-related incentives.

8. Conclusion

Our paper examines whether the EU Audit Directive and Regulation (EU ADR) altered the relationship between non-audit services (NAS) and auditor independence in the UK. Using audit reporting outcomes as our proxies for independence of mind, our analysis distinguishes between two reporting thresholds; audit qualification (OPINION) and going-concern comments (COMMENT). The results show that the EU ADR is associated with a moderation of the NAS-COMMENT relationship; the negative association observed pre-EU ADR is attenuated in the post implementation period (POSTADR). In contrast, no evidence is found that the EU ADR altered the relationship between NAS and the likelihood of issuing a qualified audit opinion. Further to this our results are robust to alternative specifications, controls for liquidity, and audit firm size heterogeneity. Collectively, they suggest that regulatory intervention affected auditor behaviour where their discretion is greatest, emphasis of matter or explanatory comments, while leaving high-threshold outcomes i.e. report qualification largely unchanged.

A key implication is that the effect of NAS on auditor independence is not uniform across reporting outcomes but rather an interaction of other wider matters. Audit qualifications represent a high-cost reporting action, typically exercised under conditions of higher litigation, reputational, and regulatory risk. In such settings these external constraints, and the severe consequences of getting such a decision wrong, are likely to dominate economic bonding risks from NAS fees. The absence of an effect on qualifications from the EU ADR may also reflect that where the high threshold for qualification is met auditors act independently regardless of economic incentives. This finding is consistent with the view that such high-cost decisions are governed primarily by existing professional and regulatory constraints or litigation risk (DeFond et al., 2002). However, going-concern comments reflect a lower and more frequent reporting margin by which auditors can communicate uncertainty without the elevated risks of

a formal qualification (Ianniello, 2012). This margin provides greater scope for discretion, and by extension, a greater sensitivity to changes in regulatory environment. The shift suggests that the pre-EU ADR auditors behaved similarly to the way Ferguson et al. (2004) described; to compromise their independence in the ‘grey zone’ where there are different interpretations and flexibility. The observed moderation with respect to such comments following the EU ADR would seem consistent with a reduction in economic bonding at the engagement level, affecting the auditors’ willingness/unwillingness to issue disclosures rather than more extreme and binary qualified audit opinions.

Our evidence further indicates that the EU ADR acted as a moderating, rather than eliminating, intervention with respect to NAS which is consistent with the nature of the legislation that did not prohibit NAS generally but restricted specific services and capped the relative value of such fees. Our results show a decline in the overall issuance of going concern comments POSTADR, alongside a less negative marginal association between NAS and going-concern comments. The combined level and slope effect suggests that the EU ADR attenuated the scope for economic bonding to impair independence, as proxied by COMMENT, without inducing a reversal in auditor behaviour by simply issuing more going-concern comments overall. This supports the idea that economic bonding was weakened, similar to findings post S-Ox by Krishnan et al. (2011) albeit in the context of NAS and earnings management. On this basis, the EU ADR appears to have reduced the sensitivity of reporting decisions to NAS fee-based incentives, without encouraging a more aggressive reporting approach more broadly. As such, this pattern is consistent with constraining NAS based quasi-rents while auditors’ reporting obligations remain unchanged.

These findings are therefore helpful in reconciling the mixed evidence across prior literature on the NAS-reporting outcomes relationship. Studies documenting a negative association between NAS and reporting outcomes, particularly in ‘light touch’ (Basioudis et al., 2008; Ferguson et al; 2004; Sharma & Sidhu, 2001) or pre-regulatory change settings (Krishnan et al., 2011 – Pre S-OX), are consistent with patterns identified in our data. However, counter to this those studies reporting null effects frequently focus on audit qualifications or operate in environments characterised by strong litigation, reputational, or regulatory constraints (DeFond et al, 2002; Geiger & Rama, 2003; Ahmed et al., 2022). In these instances, discretion is limited and economic incentives are less likely to manifest in observable reporting outcomes. Our study’s distinction between these two reporting outcomes; audit qualification (OPINION) and going-concern comments (COMMENTS) perhaps provides a unifying explanation for this

divergence in extant literature and highlights the importance of reporting thresholds in identifying the relationship with independence-related incentives. Our findings are consistent with a rebalancing, of economic bonding and spillover mechanisms, where regulatory constraints reduce the relative influence of the former while the latter remains but dominating reporting behaviour. Viewed through this lens the variation in previous studies can reflect differences in reporting margins, markets, and regulatory systems, as opposed to contradictory evidence on independence.

Our paper additionally contributes to this area by examining if there are differential effects of the EU ADR based on audit firm size. Some prior studies have suggested that where there is a NAS related independence impairment it is likely to be among non-Big 4 firms owing to greater economic reliance on any one client. In this regard we find no statistically distinguishable difference between Big 4 (BIG4FIRM) and non-Big 4 audit firms in the moderation of the NAS-COMMENT relationship POSTADR. The null result therefore indicates that engagement-level NAS restrictions operate consistently across audit firm types in the UK context. While we must be clear that our findings do not imply all audit firms are identical in all respects, it does illustrate that the EU ADR constrained NAS related incentives in a way that did not depend on audit firm size or category. The absence of a difference is informative in so far as it indicates that the regulatory effect is driven not by audit firm-level/reputational characteristics, but rather by engagement-level actions.

We also consider our findings to have relevance to the ongoing debate surrounding the UK's, implemented through the Financial Reporting Council (FRC), subsequent operational separation policy (OSP). Whereas the EU ADR targeted engagement-level independence risks across all audit providers, the OSP is a firm-level, structural, and asymmetric intervention focused on Big 4 firms. Our results would seem to suggest that engagement-level regulation was sufficient to moderate NAS-related incentives across different audit firm size cohorts. Therefore, it is appropriate to question whether the costly and disruptive firm-level structural reforms were necessary if targeting the same objective. We acknowledge there may be broader governance, cultural or market concentration related objectives surrounding such a policy but these would appear secondary to what was emphasised by the FRC on announcement, and subsequent implementation, that it 'protects auditors from influences from the rest of the firm...' such as through introductory fees and cross subsidisation (FRC, 2021). Our evidence may provide a reference point from which other jurisdictions may assess the expected benefits

of audit firm-level separation and so aid in informing, and evaluating, future regulatory interventions.

We acknowledge several limitations with respect to our findings. Firstly, although we use audit reporting outcomes as direct and observable manifestations of the auditor's judgement, they remain proxies for independence of mind; we accept that the auditor's state of mind is inherently unobservable. Secondly, our study relates specifically to the UK over a period spanning two regulatory regimes, some of which happened alongside Brexit's economic and political shocks, as well as the high-profile corporate failures that instigated the UK's OSP with respect to the Big 4. On this basis to generalise our findings to other institutional settings depends on their baseline litigation, enforcement mechanisms and market discipline. Thirdly, our study measures regulatory effects through changes in the conditional relationship between NAS (LnNONAUDFEE) and reporting outcomes (OPINION and COMMENT) across two different regimes. While this is aligned with the objectives of the EU ADR, we accept that any claims must be tempered regarding causal mechanisms, beyond those implied by the regulatory shift and those changes in the observed reporting outcomes. Finally, given the rare nature of qualified audit opinions (OPINION) in our sample, we accept limited precision for inference on this measure, yet we feel it reinforces the value of examining lower threshold/lower risk reporting outcomes as we used in this paper with respect to going-concern comments (COMMENT).

Our paper advances auditor independence literature through two distinct contributions. Empirically, we demonstrate that engagement-level regulation serves as a disciplining mechanism in decoupling non-audit fee incentives from reporting decisions. However, it operates differently, operating effectively at the marginal disclosure level (COMMENT), yet remains undetectable at an explicitly high reporting threshold (OPINION). Conceptually, we demonstrate the importance of distinguishing between reporting outcomes and their severity when assessing auditor independence. By including discretionary going-concern comments and opinions we can isolate the reporting dimension (willingness to report) from simply the technical aspect (audit quality). Economic bonding would seem to have manifested in disclosures over which auditors retained discretion in communicating uncertainty, rather than where reporting is constrained by high thresholds or existing external discipline; namely reputational and litigation risk. It is this discretionary auditor reporting space over which future research, and regulatory reform, would appear best focused.

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Appendices

Appendix 1 – Industry Classifications (adapted from Adegbite et al, 2018)

Industry code	Group	SIC Industry Groups	SIC Code
1	Mining and Quarrying	Mining and Quarrying	05101 – 09900
2	Manufacturing	Manufacturing	10110 – 33200
3	Electricity, gas, steam and air conditioning supply Water supply; sewerage, waste management	Electricity, gas, steam and air conditioning supply Water supply, sewerage, waste management and remediation activities	35110 – 35300 36000 – 39000
4	Construction	Construction	41100 – 43999
5	Wholesale and retail trade; repair of motor vehicles and motorcycles	Wholesale and retail trade; repair of motor vehicles and motorcycles	45111 – 47990
6	Leisure and accommodation and food service activities	Accommodation and food service activities Arts, entertainment and recreation	55100 – 56302 90010 – 93290
7	Transport and storage; Information and communication	Transportation and storage Information and communication	49100 – 53202 58110 – 63990
8	Real estate activities; Professional, scientific and technical activities; Administrative and support service	Real estate activities Professional, scientific and technical activities Administrative and support service activities	68100 – 68320 69101 – 75000 77110 – 82990
9	Others	Agriculture, forestry and fishing Public administration and defence' compulsory social security Education Human health and social work activities Other service activities	01110 – 03220 84110 – 84300 85100 – 85600 86101 – 88990 94110 – 96090

Appendix 2 – Variable Definitions

Variable	Definitions
OPINION	Binary variable coded 1 if company is issued with a qualified audit opinion, 0 if otherwise
COMMENT	Binary variable coded 1 if company receives a going concern comment within the audit report, 0 if otherwise
POSTADR	Binary variable coded 1 for financial years starting on or after 17 June 2016, 0 otherwise
AUDFEE	Audit fees in £000s
NONAUDFEE	Non-audit fees in £000s
LnAUDFEE	Natural logarithm of audit fees (£000s)
LnNONAUDFEE	Natural logarithm of 1 + non-audit fees (£000s)
REPLAG	Number of days between a company's financial year end and the audit report issue date
LnREPLAG	Natural logarithm of days between company's financial year end and audit report issue date
FEEDEP	Total audit and non-audit fees per company scaled by total fees of the audit firm across all firms in the sample in the same year.
SIZE	Natural logarithm of total assets
INVREC	Ratio of total inventory and accounts receivable scaled to total assets
ROA	Net income scaled to total assets
LEVERAGE	Total debt scaled by total assets
WORKINGCAP	Current assets <i>less</i> current liabilities, scaled to total assets
OSEASSUBS	Number of overseas subsidiaries
UKSUBS	Number of UK subsidiaries
SQRTOSUB	Square root of the number of overseas subsidiaries
SQRTUKSUB	Square root of the number of UK subsidiaries
LOSS	Binary variable coded 1 if the company reported an accounting loss, 0 if otherwise
LONDON	Binary variable coded 1 if company is audited from an audit firm office based in London, 0 if otherwise
BIG4FIRM	Binary variable coded 1 if company is audited by a Big4 audit firm, 0 if otherwise
LONGTENURE	Binary variable coded 1 if company has been audited by the same audit firm for 10 years or more, 0 if otherwise
BUSY	Binary variable coded 1 if company's financial year end is between 31 December and the following 31 March, 0 if otherwise
ANYNAS	Binary variable coded 1 if company reports non-audit fees paid to its auditor, 0 if otherwise
LnNAF	Natural Logarithm of non-audit fees (£000s) conditional on NONAUDFEE > 0.

Note:

This table provides definitions of variables used for the regressions.

All continuous variables, and scaled variables, are winsorised at the 1% and 99% level.