Audit Under Pressure: Pandemic-Induced Shifts in Team Dynamics and Resource Allocation

Purpose –The study aims to explore how audit firms allocated audit team resources across different ranks (partner, senior, and junior), days spent on audit planning, and audit reporting delays in response to the unprecedented challenges posed by the global pandemic.

Design/methodology/approach – By utilizing unique data from Korean listed companies, we investigate how audit firms allocated team members by analyzing audit hours per rank, audit planning days, and audit report delays before (2017-2019) and during the pandemic (2020-2022). To enhance comparability between the pre-pandemic ('treated') and pandemic ('control') groups, the study applies the Entropy Balancing (EB) technique to adjust the dataset weights.

Findings – The pandemic led to a significant but disparate increase in audit hours across the ranks, where junior auditors experienced a dramatic 49% surge in their hours, highlighting their disproportionately heavier workload compared to seniors, who saw a 28% increase, and partners, who experienced a 21% increase. We also find a seven percent increase in audit planning days, however, despite the increase in both audit hours and planning days, audits were delayed by 2%.

Originality/value – Our findings highlight how the global pandemic triggered transformative changes in audit team dynamics and resource allocation and these mechanisms underscore the need to re-evaluate team structures, support systems, and resource allocation strategies to ensure resilience and high-quality audits during future crises.

Keywords– global pandemic, audit hours, auditor rank, audit planning, audit delays, audit quality.

Paper type– Research paper

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1. Introduction

The global pandemic has profoundly transformed the operational dynamics of audit teams, influencing how auditors perform their duties, collaborate with colleagues, and manage the financial reporting process (Bauer, Humphreys, and Trotman, 2022). Complex audit engagements demand a blend of diverse skills and perspectives that extend beyond what individual auditors can achieve alone (Cameran, Ditillo, and Pettinicchio, 2018).[1] Effective allocation of workloads among partners, seniors, and juniors is crucial for effective client management, seamless team coordination, and thorough execution of audits (Maister, 1982; Cameran et al. 2018).[2] In terms of workloads[3], inherent resource constraints limit the number of team members that an audit firm can assign to each engagement and restrict the amount of time each team member can devote to a specific client (Christensen, Newton, and Wilkins, 2021). The pandemic accelerated the adoption of remote and hybrid work models globally

[1] Recent audit frameworks recognize audit teams as a key determinant of audit quality (Francis, 2011; Knechel et al., 2013). Given the complexity of audit tasks, effective audits require diverse competencies and perspectives that extend beyond those of an individual (Dittilo, 2012; Cameran et al., 2018). While prior research has examined audit labor allocation and production processes (O'Keefe et al., 1994; Hackenbrack and Knechel, 1997; Dopuch et al., 2003; Bell et al., 2008; Schelleman and Knechel, 2010) and more recently, the relationship between audit team attributes and audit quality (Cameran et al., 2018), further research is essential to deepen our understanding of audit team dynamics and their impact on audit outcomes.

[2] Regulators in the European Union (EU) and the United States (U.S.) have increasingly emphasized the importance of audit team composition and the role of engagement partners in the audit process. While engagement partners collaborate with peers across multiple engagements (Nelson and Tan, 2005), but little is known about how audit team interactions influence audit quality (Huang et al., 2021).

[3] Christensen *et al.* (2021) reported that less than 12 percent of the audit team's total hours on the client (on average) are incurred by lead, review, and other partners in their sample companies. The effect of workload compression on the behavior of individual auditors has received extensive attention from regulators and scholars (Chen, et al. 2020) and the Public Company Accounting Oversight Board (PCAOB) call to monitor workloads for individual auditors. A member of the PCAOB, Jay Hanson, stated that 'an overworked and exhausted audit staff, manager, or partner cannot perform the job investors and audit committees expect' and encouraged firm leaders and audit committees to 'carefully monitor auditors' workloads' and 'keep in mind that audit quality will decrease if staff is forced to work excessive hours' (Bramwell, 2013).

(Farcane et al., 2023), and audit firms have continued to incorporate these practices into their operations (Deloitte and Touche LLP, 2021; McCabe, 2021; PWC, 2021; Li, Goel, and Williams, 2024). This shift underscores the critical need to investigate workload allocation and resource management dynamics during pandemics, not only to safeguard audit quality but also to offer valuable insights for optimizing resource deployment in future crises.

Given the pivotal role of audit teams in the audit process and the limited focus on team dynamics within archival and experimental literature[4] (Knechel et al., 2013; Trotman, Bauer, and Humphreys, 2015), the global pandemic provides a unique opportunity to examine how auditors and clients adapted to shifting roles under extreme pressure. This unprecedented disruption raises critical questions about how effectively audit firms adjusted their resource allocation, as the pandemic has likely affected the workloads of partners, seniors, and juniors in distinct ways, reflecting their varying responsibilities and contributions to audit quality.[5] Even as remote audits have continued to gain popularity (Li et al., 2024), in comparisons of on-site and remote audits, studies have reported variances in audit quality (Gong et al., 2022; Handoko and Sardjono, 2022; Jin et al., 2022), audit efficiency (Farcane et al., 2023; Handoko, Lindawati, and Muljo, 2022), and auditor job satisfaction (Farcane et al., 2023; Handoko and Thomas, 2022) and the results are inconclusive. By utilizing unique hand-collected data from

[4] A recent study by Francis (2023, p. 11) acknowledges that "Partner effects are important in explaining differences in audit quality. The relative importance of audit-related factors in explaining audit outcomes is the opposite of what I previously believed: partner-led engagement teams are an important factor – maybe the most important –in explaining audit outcomes. But we do not know what it is about partners (and their audit teams) that matters and how it affects quality".

[5] The role of junior auditors in today's audit firms is notably different from that of seniors and partners. Junior auditors primarily handle repetitive tasks that require little judgment or discretion (Ramanna, 2019). Their primary focus is on gaining familiarity with accounting and auditing standards and applying them to specific client situations, often following standardized procedures with little variation (Ramanna, 2019). This is in contrast to the more complex and decision-making responsibilities shouldered by senior auditors and partners, who oversee the audit process, provide guidance, and manage higher-level tasks and client relations.

Korean listed companies that provide detailed audit hour information categorized by rank, we investigate how audit firms allocated audit hours per rank, number of days spent on audit planning, and managed audit report delays before (2017–2019) and during (2020–2022) the pandemic.[6]

The global pandemic has necessitated significant role adjustments for auditors and their clients. Partners shifted their focus to strategic oversight to address the heightened risks and uncertainties introduced by the pandemic. This includes reevaluating audit strategies, adapting to remote auditing, and ensuring the robustness of the audit approach in a rapidly changing environment. While senior auditors adapted to remote work, they mastered new technologies, and ensured effective virtual communication. This requires management of audit tasks and coordination with junior auditors and clients from a distance. Alternatively, junior auditors also had to quickly adapt to remote work and learn new technologies for virtual communication and data access. This transition requires proactive task management and communication between senior auditors and clients.

While emerging archival research explores audit team composition and resource allocation (e.g., Bae, Choi, and Rho 2016; Contessotto et al. 2021), the impact of the pandemic on these dynamics has yet to be fully examined. Existing research generally suggests a positive correlation between audit hours and quality, with increased time often leading to better audit outcomes (e.g., Deis and Giroux 1992; Ryu, Kim, and Han 2015; Kim and Jeong 2022). However, these studies often rely on aggregated data, overlooking variations in audit team composition and the pandemic's impact on different ranks within teams. This limitation hinders

[6] This data availability is due to the External Audit Act of 2014, which requires Korean listed firms to disclose their audit hours and fees in their annual reports. These disclosures include comprehensive breakdowns by auditor position.

our understanding of how shifts in team dynamics during the pandemic have affected audit quality and efficiency.[7]

Our study addresses this gap by utilizing unique data from Korean listed companies that provide detailed audit hour information categorized by rank. This data availability is due to the External Audit Act of 2014, which requires Korean listed firms to disclose their audit hours and fees in their annual reports. These disclosures include comprehensive breakdowns by auditor position, allowing us to investigate how audit firms allocated team members by analyzing audit hours per rank, audit planning days, and audit report delays.

To ensure enhanced comparability between the pre-pandemic ('treated') and pandemic ('control') groups, we applied the Entropy Balancing (EB) technique[8] to adjust the weights in our dataset.[9] The EB technique achieves symmetry by minimizing differences in individual characteristics (covariates) between groups, leading to more comparable traits (McMullin and Schonberger 2022). Using this approach, we establish a more consistent baseline for analyzing the impact of the pandemic on audit team resource allocation, mitigating biases from pre-existing disparities, and improving the assessment of changes in audit team dynamics during the pandemic.

[7] A growing body of audit research explores how the global pandemic affects auditing practices, with a particular focus on its effect on audit fees (Harjoto and Laksmana 2023; Harymawan and Putri 2023), audit quality (Albitar, Gerged, and Kikhia 2020; Al-Ansi 2022; Asnaashari, Safarzadeh, Kheirollahi and Hashemi 2023), audit report lag (Bajary, Shafie, and Ali 2023; Harjoto and Laksmana 2023), audit risk (Kend and Nguyen 2022), and remote audits (Baatwah, Al-Ansi, Almoataz, and Salleh 2023; Morris, Hoitash, and Hoitash 2023; Bajary et al. 2023; Sian 2022).

[8] We also report the results of Ordinary Least Square (OLS), including clients' fixed effect, and find consistent results. The details are in the results sections.

[9] When comparing pre-pandemic and pandemic data on audit team resource allocation, traditional matching techniques like propensity score matching can struggle to fully account for all potential differences between the two groups (pre-pandemic and pandemic samples). These differences could be related to factors like industry, size, or complexity, which can influence resource allocation independently of the pandemic. Entropy balancing (EB) is an increasingly popular statistical method for identifying a control sample that is nearly identical to the treated sample with respect to observable covariates (McMullin and Schonberger, 2022).

Our analysis reveals several key findings. First, we find that the pandemic led to a significant[10] but uneven increase in audit hours across ranks. Junior auditors experienced a dramatic 49% surge in their hours, highlighting their disproportionately heavier workload compared to seniors, who saw a 28% increase, and partners, who experienced a 21% increase. Second, our cross-sectional analysis reveals a significant increase in audit hours for non-Big 4 auditors across all levels, highlighting distinct patterns. Juniors faced the most substantial increase (85%), partners saw a moderate increase (35%), and seniors experienced a 31% increase. In contrast, Big 4 auditors experienced a more modest increase in audit hours (partners, 17%; juniors, 13%; and seniors, 8%), suggesting a different impact of the pandemic on the workload distribution in these firms. These results suggest that the pandemic had varying impacts on audit hours, depending on the auditor's rank and type of audit firm. The findings highlight how the global pandemic triggered transformative changes in audit team dynamics and resource allocation and these mechanisms underscore the need to re-evaluate team structures, support systems, and resource allocation strategies to ensure resilience and high-quality audits during future crises.

Third, auditors dedicated approximately seven percent more days to planning audits during the pandemic. Non-Big 4 auditors increased their planning time by eight percent, while Big 4 auditors saw a seven percent rise. This trend reflects a heightened emphasis on audit planning across the board but suggests a slight variation in how different audit firms adapted their planning processes.

[10] Following Craswell, Francis, and Taylor (1995), we estimate the economic magnitude of the average audit hours increase using the indicator variable exp(β1) - 1. We use OLS results to estimate the economic significance and do not report the other measure due to its brevity.

Fourth, overall audit completion was delayed by two percent during the pandemic as auditors across all levels dedicated more hours to their tasks. Non-Big 4 auditors experienced a three percent longer completion time than Big 4 auditors. This discrepancy underscores the disconnect between the increased effort invested in audits and actual completion times.[11]

Finally, our additional analysis reveals a substantial increase in audit fees during the pandemic, with fees rising by approximately 68.37% compared with the pre-pandemic period. We also find a significant and positive association between audit fees and hours, regardless of auditor rank. Furthermore, audit hours by rank (partners, seniors, and juniors) are less likely to be associated with meeting or beating earnings targets. However, the interactions between these audit hours and the pandemic are not significant, indicating that during the pandemic, there was a reduced likelihood of earnings management being influenced by the amount of audit work, even though the pandemic posed substantial challenges for the audit process. We also find that the pandemic is negatively associated with financial statement restatements, whereas audit partner hours are positively associated with restatements. Additionally, the interaction between partner and senior audit hours and the pandemic is positively associated with financial statement restatements.[12] Our results highlight the pandemic's varying impact on audit quality, including a sharp rise in audit costs driven by increased hours, improved financial reporting

[11] This could be the supply chain issues, remote work, or changes in business practices that could have made data collection and verification more challenging.

[12] The results reveal that, during the pandemic, there was an increase in financial statement restatements despite increased audit efforts. Specifically, while the pandemic is negatively associated with restatements, indicating fewer errors, the positive associations of audit partners and senior audit hours with restatements suggest that greater involvement at these levels could lead to the detection of more issues. However, the negative interaction between senior audit hours and the pandemic indicates that increased senior audit hours during the pandemic were associated with fewer restatements, highlighting the crucial role of senior auditors in maintaining financial reporting accuracy during challenging times.

integrity with reduced earnings manipulation, and a heightened risk of financial statement restatements when partners and senior auditors allocated more hours during the crisis.[13]

Our findings provide significant implications for clients, auditors, and the broader auditing literature, offering insights into improving preparedness and response strategies for future pandemics. First, the findings of a disproportionate increase in audit hours among auditor ranks offer valuable insights into other jurisdictions and future pandemics, given the similarities in global audit practices and challenges faced by auditors in different countries during times of crisis. Our findings on the heavy burden on junior auditors are likely to apply in countries with similar audit firm structures (e.g., the UK, the US, or Australia),[14] as junior auditors may face increased workloads during a pandemic or crisis. Second, the differing impacts on Big 4 versus non-Big 4 auditors highlight systemic differences in how audit firms are structured and how they cope with external challenges. Non-Big 4 firms with fewer resources and potentially less flexible infrastructure may face more strain in other jurisdictions.[15] The results suggest that different types of firms require tailored crisis-management strategies. Third, the finding that dedicating more time to audit planning in response to the pandemic is a practice that can be applicable to other jurisdictions, as audit

[13] Environmental factors affect inherent risk (the prior probability that the financial statements contain material misstatements), which is found by O'Keefe *et al.* (1994) to be associated with more junior and senior hours for substantive testing (Gist and Davidson, 1999).

[14] Korean auditing standards closely align with international practices. Following the 1997 Asian financial crisis, Korea adopted the International Standards on Auditing (ISA) in 1999 to harmonize its standards with global norms. As a result, the current Korean Generally Accepted Auditing Standards (K-GAAS) largely mirror the ISA, with adjustments only for specific local regulatory requirements (Bae *et al.*, 2016). Quality control programs within audit firms are regularly reviewed by the Securities and Futures Commission (FSS), which functions similarly to the Public Company Accounting Oversight Board (PCAOB) in the United States.

[15] The Korean Big 4 audit firms operate as affiliates of the global Big 4 auditors, benefitting from the extensive resources and safeguards provided by their international networks to uphold high audit quality. These global networks implement various measures to ensure that their Korean affiliates adhere to consistent practices across all regions. This includes periodic self-assessments, where Korean firms must report their compliance with global policies related to audit methodology, risk management, and auditor independence, helping maintain uniformity in audit quality standards across international boundaries (Bae *et al.*, 2016).

planning is a critical component of the audit process, and the increased emphasis on it in response to crisis situations is likely to be relevant in any jurisdiction facing similar disruptions. Fourth, the pandemic has led to increased audit completion times despite increased audit hours, suggesting that the complexity and challenges associated with remote audits and increased scrutiny may offset the benefits of additional resources. Finally, our findings suggest that the pandemic has had a complex effect on audit quality. While increased audit fees and hours may indicate heightened scrutiny, the positive association between partner and senior audit hours and financial statement restatements raises concerns regarding the effectiveness of these efforts. Despite these challenges, pandemics may inadvertently reduce earnings management incentives. However, the increased involvement of experienced auditors, particularly during periods of stress, seems linked to a higher likelihood of identifying and rectifying financial reporting issues. These findings underscore the importance of maintaining a balance between rigorous auditing and avoiding excessive scrutiny, which can lead to unintended consequences.

The remainder of this paper is organized as follows. Section 2 provides a background on Korean audit hour disclosures, followed by a review of the relevant literature, leading to the development of the hypotheses in Section 3. Section 4 outlines the research design and details the sample selection specifics. Section 5 presents the primary findings, followed by additional analyses in Section 6. Section 7 focuses on the results related to audit quality, and Section 8 concludes the paper with a discussion and implications of the findings.

2. Background of the Korean Regulations and Pandemic

As a result of the global pandemic, the Financial Services Commission (FSC) in Korea has implemented an exemption policy for administrative sanctions, attributing lapses in the

submission of financial statements and audit reports to pandemic-related disruptions. Concurrently, the Korean Institute of Certified Public Accountants (KICPA) advised external auditors to exercise heightened caution in their accounting and auditing practices, acknowledging the unique challenges posed by the pandemic. Since 2014, Korea has adopted a risk-based approach to international audit standards (Audit Standard 315), requiring audits to be planned and executed considering the broader impact of the audited company's environment.[16] Given the increased audit risk due to the pandemic, auditors have intensified their efforts to maintain a consistent level of audit quality, necessitating a comprehensive assessment of the pandemic's impact throughout the audit process.

Moreover, the Financial Supervisory Service (FSS) requires companies to complete a 'Corona 19-related Sanctions Exemption Application' to address fines related to delays in quarterly and semi-annual reports due to COVID-19, allowing for an extension of submission deadlines. Companies must provide specific reasons, such as business location, when seeking exemption. In Korea, social distancing measures are implemented based on the severity of the COVID-19 outbreak and intensity of quarantine measures, leading to varying protocols across regions with different levels of viral transmission. These regional differences have resulted in diverse distancing steps in each area. Individuals infected with the virus enter self-quarantine and buildings, including workplaces with confirmed cases, are temporarily closed for sanitization. In addition, telecommuting practices vary according to the severity of local

[16] Since 2014, International Audit Standards (ISA 315) have required auditors to consider the risks posed by the external environment of the audited entity during the planning and execution phases of a company's financial statements. This includes evaluating both financial and non-financial information, such as general economic conditions, technological advancements in the company's industry, and new products from competitors (Cohen *et al.*, 2000). In the context of the global pandemic, this standard implies that auditors must exercise heightened vigilance, as the external environment has become significantly more volatile and uncertain.

outbreaks. Given that many organizations have headquarters and business centers, both in Korea and globally, the level of exposure to COVID-19 risk varies among companies. Furthermore, disruptions in the supply chain, factory closures, employee self-quarantine, and remote working increase business risks, consequently increasing audit risks.

Auditors are compelled to increase their overall audit hours and enlist more senior auditors to maintain audit quality in response to the heightened challenges posed by the pandemic. The implementation of the External Audit Act in South Korea on November 28, 2014, required Korean-listed firms to disclose their audit hours and fees in their annual reports, with detailed breakdowns by auditor position, such as junior, senior, and partner positions. This mandate enabled us to analyze how the global pandemic affected resource allocation within audit teams by comparing data from the pre-pandemic period (2017-2019) with the pandemic period (2020-2022).

3. Literature Review and Hypotheses Development

3.1 Extant Research on Audit Team Hours

While audits are traditionally team endeavors, archival research has only recently begun to explore how team composition and audit hours affect the overall audit process (e.g., Lee and Shin, 2017; Christensen et al., 2021; Contessotto et al., 2021; Aobdia et al., 2021; Cahan et al., 2022). Existing research (e.g., O'Keefe et al., 1994; Hackenbrack and Knechel 1997; Blokdijk et al., 2006; Bell, Doogar, and Solomon, 2008; Schelleman and Knechel, 2010) primarily focuses on labor as the predominant input in the audit production process, modeling labor hours, and occasionally hourly rates, contingent on client attributes. Bell et al. (2008) extended this

study by incorporating audit firm technology, particularly in the context of business risk auditing. Dekeyser et al. (2019) document the effect of an audit office on audit production.[17]

Research examining the link between audit hours, audit fees, and audit quality remains scarce because of limited data availability. However, studies suggest a positive relationship between audit hours and audit quality (Deis and Giroux, 1996; Caramanis and Lennox, 2008).[18] Early research by Simunic (1980) indicates that discrepancies in audit fees among different entities could result from variations in either audit hours or hourly audit rates. Deis and Giroux (1992) find that audit quality improves with increased audit hours, as evidenced by internal data from the audit department of the Texas Office of Education from 1984 to 1989. Industry-specialist auditors allocate significantly more audit hours than non-specialists do, potentially maintaining their reputation for providing superior audits in a competitive market (Bae et al., 2016).

Caramanis and Lennox (2008) observe a positive relationship between reduced audit hours and managers' inclination to aggressively report high earnings. Similarly, Sohn et al. (2006) identify a significant negative relationship between audit hours and discretionary accruals, suggesting higher audit quality. Park and Choi (2009) and Ryu et al. (2015) investigate the effects of abnormal audit hours on audit quality and find a decrease in discretionary accruals

[17] Audit team characteristics, such as education and gender, have been linked to audit efficiency (Cameran *et al.*, 2018), while industry specialization and client-specific knowledge within audit teams are associated with higher audit quality (Aobdia, 2019). Additionally, audit teams with industry experience benefit from cost savings, whereas those with client-specific experience may require additional effort (Contessotto *et al.*, 2021). Cahan *et al.* (2022) found that within Big 4 audit teams, the magnitude and distribution of industry knowledge significantly impact audit production. Their findings emphasize that industry knowledge is more effectively utilized when it is distributed across the entire team rather than concentrated among specific team members.

[18] A growing body of audit research explores how the global pandemic affects auditing practices, with a particular focus on its effect on audit fees (Harjoto and Laksmana, 2023; Harymawan and Putri, 2023), audit quality (Albitar, Gerged, and Kikhia, 2020; Al-Ansi, 2022; Asnaashari et al., 2023), audit report lag (Bajary, Shafie, and Ali, 2023; Harjoto and Laksmana, 2023), audit risk (Kend and Nguyen, 2022), and remote audits (Baatwah et al., 2023; Morris, Hoitash, and Hoitash, 2023; Bajary *et al.*, 2023; Sian, 2022).

when audit hours surpass normal levels. However, heavier workloads for audit teams, as identified by Christensen et al. (2021), are associated with a decline in audit quality, particularly when team members struggle (as indicated by lower performance ratings) or work for more than 60 hours per week. Using Korean data, Kim and Jeong (2022) find that the adoption of standardized audit hours leads to improved audit quality.

Despite existing research on the relationship between audit hours, fees, and quality, there is a significant gap in the literature regarding how audit workloads shifted during the global pandemic, a period marked by unprecedented challenges. The pandemic introduced unique pressures on audit teams, from remote work disruptions to increased risk assessments. However, no study has thoroughly examined how these factors alter the distribution and intensity of audit workload. Understanding how auditors adapted to these challenges, particularly in terms of workload allocation and its impact on audit quality, is a critical and timely research issue that can provide valuable insights into the resilience and adaptability of audit practices during future crises.

To investigate the complex interactions and changes within audits prompted by the global pandemic, we employ the following measures: audit hours by auditor rank (partners, seniors, and juniors), number of days spent in audit planning, and audit reporting delays. We also use several measures of audit quality to examine the relationship between audit hours by rank, the global pandemic, and audit quality. These metrics will help us understand how the pandemic has affected audit processes, resource allocation, and ultimately, audit quality.

3.2 Pandemic Exposure and Audit Hours

The role of audit partners and senior auditors differs significantly from that of junior auditors in modern audit firms. Audit partners and senior auditors handle more complex responsibilities, including decision-making, overseeing the audit process, providing guidance, and managing client relationships, reflecting their broader experience and strategic role in audit engagement. In contrast, junior auditors focus on routine tasks requiring minimal judgment, primarily aimed at gaining familiarity with accounting and auditing standards and applying them through structured, standardized procedures (Ramanna, 2019). This distinction highlights the hierarchical nature of audit teams, where responsibilities evolve with experience and expertise.

The audit partner's role within an audit team is pivotal as it provides guidance and feedback on the actions of junior auditors (Otley and Pierce, 1996). Partners also serve as key mentors, facilitating the exchange of information and knowledge that may not be accessible through standard communication channels (Hall and Smith, 2009). Partner presence enhances team dynamics, with auditors benefiting from ongoing performance assessments through subtle cues from more experienced colleagues (Macintosh, 1985). Additionally, face-to-face interactions with partners enable subordinates to probe unexpected changes in their work and offer actionable suggestions (Simons, 2000). Partners also challenge and critically assess data, assumptions, and strategies (Pierce and Sweeney, 2005). The global pandemic has further expanded the responsibilities of audit partners as they play a greater role in strategic decision-making and oversight driven by increased risks and uncertainties. In this more complex audit environment, partners have focused intensively on risk management and adjusting strategies to address new challenges (KPMG, 2020). This shift has resulted in partners dedicating more time

to audit, emphasizing their crucial role in navigating the evolving regulatory and economic landscape to uphold audit quality and relevance.

While senior auditors play a vital role in ensuring audit quality by managing fieldwork, supervising junior staff, and executing complex audit procedures. They ensure that audits align with both professional standards and client expectations, while maintaining consistency and accuracy throughout the process. Their leadership and oversight are integral to the successful completion of audit engagements, making them key to preserving audit quality (Cameran et al., 2018; Maister, 1982). During the global pandemic, senior auditors were tasked with additional responsibilities including adapting audit procedures for remote work and overseeing virtual audits. They developed new methodologies, integrated technologies, and remote communication tools to maintain audit quality in challenging environments. Senior auditors also played a more prominent role in client communication, addressing concerns about the pandemic's impact on business operations and ensuring that audits were completed on time despite disruptions. Consequently, the expanded role of senior auditors likely led to an increase in their audit hours, as they managed the complexities of remote auditing, navigated new technologies, and ensured effective team coordination in virtual settings.

Junior auditors are the backbone of the audit team and are responsible for executing essential tasks such as transaction testing, data collection, and basic audit procedures. They support senior auditors by implementing audit plans and documenting their findings. During the pandemic, junior auditors faced increased workloads and were required to perform routine tasks remotely, which introduced unique challenges owing to the limited supervision and guidance in virtual environments. Closeness of supervision may affect audit time by ensuring that audit staff do not waste time when they encounter problems or uncertain situations (Gist

and Davidson, 1999), however, the shift away from face-to-face interactions also reduces the opportunity for immediate feedback, a critical component of their training and development, making their role more complex. Adapting to new communication technologies and workflows demands greater independence and resourcefulness (Deloitte, 2020).[19] Their ability to manage routine tasks remotely with less direct oversight demonstrates their growing responsibility and resilience in navigating the challenges of remote auditing during the pandemic. As a result, it is anticipated that junior auditors spent more hours during the pandemic due to the increased volume of work and the necessity of performing tasks remotely with less immediate supervision. The pandemic has undeniably affected audit partners, seniors, and juniors in distinct ways. Building on this observation, we explore how the pandemic has influenced workload distribution among different audit team members, and propose the following hypothesis:

H1: *The pandemic had varying impacts on audit hours based on their ranks due to the nature of their roles within the audit team.*

3.3 Pandemic Exposure and Audit Planning

Audit planning, which is the initial phase of the audit process, involves developing a comprehensive strategy to ensure that an audit is conducted effectively. This process is continuous and iterative, beginning immediately after the completion of the previous audit and extending until the current audit is complete. Partners and other key audit team members are actively involved in this stage to identify and address potential issues in the audit process (ISA

[19]Type and level of audit technology may affect the relative use of staff time by varying the structure of the audit program used (Gist and Davidson, 1999).

300.4, 300.5). Audit planning is typically divided into two stages: establishing an overall audit strategy and developing a detailed audit plan. The overall audit strategy sets the scope, timing, and direction of the audit, while the audit plan outlines specific procedures for each account item and steps to address potential issues (ISA 300.7, 300.9). During the development of the overall audit strategy, resources are allocated based on audit requirements, such as deploying experienced team members to high-risk areas and involving experts in complex matters (ISA 300.7, 300.8).[20]

Audit planning is a critical component of the audit process with each team member playing a distinct role.[21] The global pandemic has significantly impacted audit planning, altering the number of days allocated to planning and the contributions of different team members. During the pandemic, new complexities and uncertainties necessitate more extensive planning. Audit teams must adapt to remote work environments, address heightened risks, and comply with evolving regulations, thereby leading to an increase in the number of days spent on audit planning. Audit planning must account for the logistics of remote audits, including the integration of new communication tools and methods for gathering evidence. This adjustment often requires additional planning time to develop and implement new procedures and to ensure

[20] However, observing the audit planning process externally is challenging because it is an internal activity conducted by the auditors themselves. During follow-up audit procedures, if an auditor encounters new information or evidence that contradicts the initial evaluation, they are required to revise the current review and adjust the planned follow-up procedures accordingly (ISA 315.31).

[21] Audit partners are responsible for setting the strategic direction of an audit. They approve the audit plan, ensuring that it addresses significant risks and complies with the regulations. Partners provide high-level oversight and strategic guidance, aligning the audit approach with a firm's objectives and client needs (Knechel *et al.*, 2015). While senior auditors take high-level audit plans crafted by their partners and translate them into detailed procedures. They oversee the implementation of the plan, coordinate the activities of junior auditors, and ensure that audit work is executed as designed. Seniors continuously review and refine audit procedures to address specific client and industry risks, ensuring that audits remain efficient and effective. By contrast, junior auditors are less involved in the initial planning stages and play a significant role in executing the audit procedures outlined in the plan. They perform routine audit tests, collect data, and document findings, forming the foundation of the audit work. Juniors rely on the guidance and instructions provided by seniors to effectively carry out their responsibilities, contributing significantly to the overall success of the audit.

that all team members are effectively equipped to handle remote tasks. Luo and Malsch (2023) find that traditional audit procedures became unfeasible because of social distancing, travel restrictions, and self-quarantine during the pandemic. Consequently, auditors must modify and develop new procedures to maintain audit quality. Luo and Malsch (2023) argue that these significant adjustments to audit plans during and after the pandemic led to a substantial increase in the audit hours required to establish and implement revised plans compared with pre-pandemic periods. This finding suggests that the pandemic necessitated more extensive planning and additional audit days to ensure the effectiveness and reliability of the audit process.[22] Therefore, we tested the following hypothesis:

H2*: The pandemic has a positive impact on audit planning days*.

3.4 Pandemic Exposure and Audit Report Delays

In response to the global pandemic, Korea's Financial Services Commission (FSC) introduced an exemption policy for administrative sanctions, recognizing delays in submitting financial statements and audit reports as pandemic-related disruptions. Additionally, the Financial Supervisory Service (FSS) requires companies to submit a 'Corona 19-related Sanctions Exemption Application to address penalties for delayed quarterly and semi-annual reports due to COVID-19. This allows for deadline extensions, provided that companies offer specific justifications, such as their business location, when applying for these exemptions.

Prior research has explored the impact of the COVID-19 pandemic on audit report delays, often focusing on changes in working patterns and the effects of social distancing

[22] Notably, the 2014 amendment to the External Audit Act has made it mandatory for organizations to report the audit plan hours in Korea.

measures (e.g., Bajary et al., 2023; Harjoto and Laksmana, 2023). Harjoto and Laksmana (2023) conducted an international study across 52 countries and concluded that audit firms were required to invest more effort in developing new procedures and training staff to adapt to the lockdowns. Heightened audit risks and efforts have resulted in increased audit delays due to the evolving audit and financial landscapes during the pandemic. Similarly, Bajary et al. (2023) find that auditors took longer to complete and deliver audit reports during the pandemic, contributing to significant delays in audit reporting. Given the increasing challenges in audit tasks caused by the global pandemic, as highlighted by prior research, our study contends that auditors are likely to spend more time completing their audits, leading to longer audit reporting lags and we propose the following hypothesis:

H3: *The pandemic has a positive impact on audit report delays.*

4. Sample and Research Method

4.1 Sample Selection

This study comprises firms listed on the Korean Stock Exchange (KSE) and the Korea Securities Dealers Automated Quotations (KOSDAQ) over a six-year period: three years before the pandemic (2017-2019) and three years during the pandemic (2020-2022). After excluding the financial sector, firms with insufficient information on audit hours, and financial data, the final sample consisted of 11,023 firm-year observations. Table 1 outlines the sample selection procedure. Financial data were obtained from the KIS-VALUE database, which is equivalent to Compustat in the U.S. We manually collected data on total audit hours, audit

hours categorized by auditor rank, and the number of audit planning days from each firm's audit reports available on the DART system.[23]

<Insert Table 1 about here>

4.2 Model Specification

To test our hypotheses, we employed three models based on prior research (e.g., Bae et al., 2016; Caramanis and Lennox, 2008). Model 1 examines H1 by investigating the association between pandemic and audit hours by auditor rank. Model 2 assesses H2 by analyzing whether there is a significant difference in the number of audit planning days before and during the pandemic. Model 3 evaluates H3 by exploring the relationship between pandemics and audit delays. The models are:

$$AH_{it}\,(PAH, SAH, JAH_{it}) = \beta_0 + \beta_1 PANDEMIC_{it} + \beta_2 SIZE_{it} + \beta_3 INVREC_{it} + \beta_4 ROA_{it} + \beta_5 LIQ_{it} + \beta_6 LEV_{it} + \beta_7 LOSS_{it} + \beta_8 BTM_{it} + \beta_9 CFO_{it} + \beta_{10} GRW_{it} + \beta_{11} FOR_{it} + \beta_{12} TENURE_{t} + \beta_{13} FIRST_{it} + \beta_{14} ISSUE_{it} + \beta_{15} BIG4_{it} + \beta_{16} OPN_{it} + \beta_{17} NAUDIT_{it} + \beta_{18} LNSUB_{it} + \beta_{19} KSE_{it} + \text{Year and Industry Fixed-effects} + e_{it} \quad (1)$$

$$PLAN_{it} = \beta_0 + \beta_1 PANDEMIC_{it} + \beta_2 SIZE_{it-1} + \beta_3 INVREC_{it-1} + \beta_4 ROA_{it-1} + \beta_5 LIQ_{it-1} + \beta_6 LEV_{it-1} + \beta_7 LOSS_{it-1} + \beta_8 BTM_{it-1} + \beta_9 CFO_{it-1} + \beta_{10} GRW_{it-1} + \beta_{11} FOR_{it-1} + \beta_{12} TENURE_{t-1} + \beta_{13} FIRST_{it} + \beta_{14} ISSUE_{it-1} + \beta_{15} BIG4_{it} + \beta_{16} OPN_{it-1} + \beta_{17} NAUDIT_{it-1} + \beta_{18} LNSUB_{it} + \beta_{19} KSE_{it} + \text{Year and Industry Fixed-effects} + e_{it} \quad (2)$$

$$ARL_{it} = \beta_0 + \beta_1 PANDEMIC_{it} + \beta_2 SIZE_{it} + \beta_3 INVREC_{it} + \beta_4 ROA_{it} + \beta_5 LIQ_{it} + \beta_6 LEV_{it} + \beta_7 LOSS_{it} + \beta_8 BTM_{it} + \beta_9 CFO_{it} + \beta_{10} GRW_{it} + \beta_{11} FOR_{it} + \beta_{12} LARGE_{it} + \beta_{12} TENURE_{t} + \beta_{13} FIRST_{it} + \beta_{14} ISSUE_{it} + \beta_{15} BIG4_{it} + \beta_{16} OPN_{it} + \beta_{17} NAUDIT_{it} + \beta_{18} LNSUB_{it} + \beta_{19} KSE_{it} + \text{Year and Industry Fixed-effects} + e_{it} \quad (3)$$

Appendix A defines all variables. Model 1 examines the impact of the pandemic on audit hours by rank. The dependent variable in equation (1) is an alternative measure of audit

[23] The DART system is administrated by the Korean Financial Supervisory Service (FSS); it is equivalent to the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system in the U.S.

hours. *PAH, SAH,* and *JAH* represent the logarithms of audit hours worked by partners, seniors, and juniors, respectively. *PANDEMIC* is a dummy variable that equals one for the pandemic period (2020-2022) and zero for the pre-pandemic period (2017-2019).

We ran Equation (2) to analyze the association between the pandemic (*PANDEMIC*) and audit planning days. *PLAN* is defined as the logarithm of the number of audit planning days. To account for the timing of the audit plan's execution, the prior year's data were used as control variables, assuming that the audit plan was implemented during the current fiscal period. Equation (3) examines audit reporting delays (*ARL*) as the logarithm of the number of days from a company's book-closing date to the date the auditor signs the report.

Table 2 presents the standard billing rates for each auditor rank.[24] When disclosing external audit details, the audit hours for all auditors, except partners and junior auditors, are combined into the senior auditor category. To accurately reflect the input from different auditor ranks in the actual audit fieldwork, following (Lee and Shin, 2017), we weighed the standard billing rate at a ratio of 1:1:3 for directors, senior managers, and senior associates. This weighting approach ensures that the billing rates align with the contribution of each rank to the audit process.[25]

<Insert Table 2 about here>

In planning and executing audits, the composition of engagement audit teams is meticulously designed, considering various factors such as client characteristics (including size,

[24] The standard billing rate by each rank is private data for the accounting firm. Lee and Shin (2017) obtained standard billing rate information from one of the Big 4 accounting firms and one of the non-Big 4 accounting firms. Although the problem of measurement error may occur by using the data of a representative accounting firm, through interviews with multiple accounting firms, they confirmed that the deviation of the standard billing rate by auditor rank among accounting firms is not significant.

[25] The standard billing rate was weighted at 1:1:1 for the director, senior manager, and senior associate, and the results remain qualitatively the same.

complexity, and risk), the required seniority levels for specific tasks (partners, seniors, managers, and other team members), necessary expertise, and constraints imposed by audit firms, such as timing, availability, and rotation rules (Eilifsen et al., 2013; Udeh, 2015; Cahan et al., 2022). Given these considerations, we incorporate control variables from prior studies (e.g., Simunic, 1980; Craswell et al., 1995; Caramanis and Lennox, 2008; Bae et al., 2016). We control for several variables in our analysis: the natural logarithm of total assets (*SIZE*); receivables and inventory divided by total assets (*INVREC*); net income divided by total assets (*ROA*); current assets divided by current liabilities (*LIQ*); total liabilities divided by total assets (*LEV*); a dummy variable equal to 1 for negative earnings and 0 otherwise (*LOSS*); book value of equity divided by market value of equity (*BTM*); cash flow from operations divided by total assets (*CFO*); the change in sales between the current and prior year (*GRW*); the number of shares owned by foreign investors divided by total shares outstanding (*FOR*); the length of the auditor-client relationship in years (*TENURE*); a dummy variable equal to 1 if the firm engages a new auditor and 0 otherwise (*FIRST*); an indicator variable equal to 1 if the audit client has issued equity or debt and 0 otherwise (*ISSUE*); an indicator variable equal to 1 if the audit firm is one of the Big 4 audit firms and 0 otherwise (*BIG4*); an indicator variable equal to 1 if the auditor issues a non-unqualified opinion and 0 otherwise (*OPN*); an indicator variable equal to 1 if the audit firm has provided non-audit services and 0 otherwise (*NAUDIT*); the natural log of the number of subsidiaries (*LNSUB*); and an indicator variable equal to 1 if the firm is listed on the KSE market and 0 otherwise (*KSE*). We also include year- and industry-fixed effect dummies. To mitigate the influence of outliers, we cluster the standard errors by firm, and all variables, except the dummy variables, are winsorized at the top and bottom 1 percent.

5. Results

5.1 Descriptive Statistics

Panel A of Table 3 presents descriptive statistics for the main variables used in our primary analyses. For all firm-year, the mean and median values of *AH* (the natural logarithm of total audit hours) are 7.304 and 7.158, corresponding to 2,144 and 1,284 audit hours, respectively. The mean (median) values of *PAH*, *SAH*, and *JAH* are 5.060 (5.130); 6.881 (6.774); and 3.202 (4.290), which are equivalent to 212 (168); 1,375 (874); and 383 (72) audit hours, respectively.

<Insert Table 3 about here>

Panel B reports the descriptive statistics for the pre-pandemic and pandemic periods. The mean total audit hours (*AH*) was 7.149 (equivalent to 1,840 hours) in the pre-pandemic period and increased to 7.440 (2,412 hours) during the pandemic, indicating a notable increase in audit hours post-pandemic onset. The mean audit hours for partners (*PAH*), seniors (*SAH*), and juniors (*JAH*) during the pre-pandemic period were 4.847 (173 hours), 6.723 (1,160 hours), and 3.118 (353 hours), respectively, while during the pandemic, these values increased to 5.247 (246 hours), 7.021 (1,531 hours), and 3.277 (408 hours). These findings highlight a significant increase in audit hours across all levels of auditors during the pandemic compared to the pre-pandemic period.

Panel B of Table 3 provides distinct descriptive statistics for firms before and during the pandemic, offering a univariate analysis of the pandemic's effects on the main variables. Most control variables demonstrated significant associations, indicating substantial differences between the pre- and during the pandemic periods.

To establish more comparable samples, we employed entropy balancing techniques in our analysis, covering the pre-pandemic period (2017-2019) and pandemic period (2020-2022). The entropy balancing (EB) methodology involves adjusting the observation weights in the dataset to enhance comparability between the treated and control groups. Since its introduction by Hainmueller (2012), entropy balancing has become the predominant method for addressing covariate imbalances between treatment and control samples in accounting research (McMullin and Schonberger, 2012). The goal is to achieve balance by minimizing disparities in the distribution of covariates (subject characteristics) between the treated and control groups, thereby ensuring an increased similarity in their observed characteristics (McMullin and Schonberger, 2022). Panels C and D in Table 3 display descriptive statistics before and after weighting, respectively. The results show that none of the variables are significantly associated, justifying the use of the entropy balancing technique to investigate our research hypotheses between the two periods.[26]

5.2 The Effect of Global Pandemic on Audit Hours

Table 4 presents the results of the regression analysis assessing H1, which examines the relationship between audit hours by auditor rank and pandemic. The analysis uses Ordinary Least Squares (OLS) in columns (1-4), the Entropy Balance technique in columns (5-8), and client-fixed effects in columns (9-12).

<Insert Table 4 about here>

[26] The untabulated results of correlation among our main variables and control variables show no evidence of multicollinearity issues. The maximum Variance Inflation Factor (VIF) is 3.530.

Table 4 details how auditors allocated their hours by rank in response to the pandemic. This disaggregated analysis provides a more nuanced view of how audit firms adapted to the pandemic's challenges compared to pre-pandemic periods. The variable *PANDEMIC* is statistically significant at the 0.01 level and shows a positive correlation with partner audit hours (*PAH*), senior audit hours (*SAH*), and junior audit hours (*JAH*) across all estimations.

However, the pandemic has undeniably affected audit partners, seniors, and juniors in distinct ways. The results show that junior auditors experienced a dramatic 48.59%[27] surge in their workload, highlighting a disproportionately heavier burden compared to seniors, a 27.89% increase, and partners a 21.41% increase during the pandemic compared to the pre-pandemic period. Given the sample averages of 212 partner audit hours (*PAH*); 1,357 senior audit hours (*SAH*), and 383 junior audit hours (*JAH*), the differences are substantial: approximately 41 more hours for partners (212 × 0.194), 334 more hours for seniors (1,357 × 0.246), and 152 more hours for juniors (383 × 0.396). This disparity underscores the increased burden faced by junior auditors relative to their senior and partner counterparts during the pandemic, offering important insights into enhancing resource allocation during future crises. The coefficient signs for most control variables align with the findings of previous research (e.g., Caramanis and Lennox, 2008; Bae et al., 2016).

5.3 The Effect Global Pandemic on Audit Planning

[27] Following Craswell *et al.* (1995), we estimate the economic magnitude of the average audit hours increase using the indicator variable exp(β1) - 1. We use OLS results to estimate the economic significance.

Table 5 presents the results for the impact of the pandemic on audit planning.[28] For the full sample, *PANDEMIC* is significant (at the 0.01 level) and positively associated with *PLAN* for each of the alternative estimations. We interpret coefficient β_1 as the average increase (an average planning day increase of 7 percent) in audit planning days during the pandemic period. To isolate the effect of the pandemic on audit planning from pre-pandemic influences, we excluded data from the year 2020[29] in columns (2), (4), and (6). Despite this exclusion, *PANDEMIC* remains significant and positive at the 0.01 level, suggesting a substantial increase in audit planning days during the pandemic. This supports the findings of Luo and Malsch (2023), who argue that the pandemic disrupted both formal audit plans (as per auditing standards) and informal aspects not documented in the plans. The coefficients for most control variables are significant and align in the direction of those found in previous studies (e.g., Bae et al., 2016; Caramanis and Lennox, 2008).

<Insert Table 5 about here>

5.4 The Effect Global Pandemic on Audit Report Delays

According to Tables 4 and 5, audit firms allocated more audit hours per rank and extended the planning days to audit during the pandemic. However, it remains unclear whether this increased effort results in faster or slower audit completion times. Table 6 explores this issue by analyzing the impact of the pandemic on audit report delays.

<Insert Table 6 about here>

[28] Since the audit plan is executed during the current fiscal period, we use data from the previous year for the control variables. For the 2020 audit plan, data from 2019 is used as the control variable.
[29] Audit planning is based on information from the previous year. Therefore, data from 2019 influences the audit plans for 2020. In other words, pre-pandemic information from 2019 affects the audit plans for 2020. To account for this, we exclude the year 2020 from the second column.

The timeliness of an audit is measured by the audit report delay, which is the number of days from a company's book-closing date to the date the auditor signs the report. This metric is crucial for financial statement users, because it can indicate potential delays in receiving reliable financial information. The results show a significant increase (at the 0.01 level) in audit report delays during the pandemic compared to the pre-pandemic period. This finding is consistent across all the alternative estimations, with the economic impact indicating a 2.43 percent increase in audit reporting days. On average, auditors took 1.83 days longer (given that the sample's average audit report lag is 75.32 days) to submit the audit report during the pandemic compared to the pre-pandemic period. These findings suggest that despite allocating more time to planning and auditing during the pandemic, audit firms experienced longer completion times.

6. Additional Analyses

6.1 *The Effect Auditor Type: Big 4 Vs. Non-Big4*

The impact of the pandemic on auditing firms may vary according to firm size.[30] Big 4 and non-Big 4 firms may approach pandemic related audit risk differently.[31] The Big 4 firms likely benefited from their larger budgets, which allowed them to invest in and utilize advanced

[30] Audit firms design and implement testing methodologies, offer technological support for their application, establish incentive systems that include rewards and penalties for auditors, and oversee individual and team performance through internal quality control mechanisms. These practices can contribute to variations in audit quality across different firms (Francis, 2023).

[31] The differences between Big 4 and non-Big 4 auditors in Korea stem from the global Big 4 networks' affiliation with Korean firms, which ensures high audit quality through compliance with international standards. The global networks require periodic self-reports and annual quality reviews by international teams. Despite the growing role of non-Big 4 auditors in Korea, the Big 4's market share continues to rise, justifying separate analysis of these two groups.

technologies, such as remote audit tools and data analytics software. This technological advantage might have enabled them to uphold a higher level of audit quality, despite restrictions on physical access to client sites. Their extensive global networks could provide a resource edge, allowing Big 4 firms to leverage expertise from different regions to address industry-specific challenges arising from the pandemic. Additionally, their establishment of global methodologies might have facilitated more efficient adaptation of their audit approaches during the crisis. Conversely, non-Big 4 firms with limited resources face significant challenges. They may have struggled to acquire and implement new technologies and provide necessary training for remote auditing techniques during the pandemic. We investigate whether the global pandemic has affected Big 4 and non-Big 4 firms differently, focusing on differences in audit team resource allocation, audit planning, and audit delays.

Table 7 presents the results separately for clients of Big 4 and non-Big 4 firms.[32] The findings reveal significant differences between Big 4 and non-Big 4 auditors in terms of audit hours at various levels (Panel A). The comparison between Big 4 and non-Big 4 auditors reveals that non-Big 4 firms experienced significantly larger increases in audit hours across all levels, with junior auditors seeing an 85% rise, followed by partners at 35%, and seniors at 31%. In contrast, Big 4 firms saw moderate increases, with partners' hours rising by 17%, juniors by 13%, and seniors by 8%. This suggests that non-Big 4 firms relied more heavily on junior auditors and required greater involvement from partners to manage workloads, whereas Big 4 firms likely leveraged more efficient processes and support systems, resulting in a more

[32] The global pandemic has affected Big 4 and non-Big 4 firms differently, with prior research (e.g., Safari, Tsahuridu, and Lowe, 2022) suggesting that the Big 4 firms, responded by strongly suppressing moral impulses through interrelated tactics such as distancing, effacement of identity, and reduction to traits. Moreover, the Big 4 accounting firms also reacted swiftly in many regions by reducing staff numbers and abruptly shedding jobs, a move that further damaged their already fragile reputation (Wootton, 2020; Safari et al., 2022).

stable increase in workload. These results suggest that the pandemic had a varied impact on audit hours, depending on the auditor's rank and type of audit firm.

<Insert Table 7 about here>

Panel B of Table 7 shows that non-Big 4 auditors allocated a higher proportion of time to audit planning, with an eight percent increase, compared with Big 4 auditors, who experienced a seven percent increase. This suggests a trend of increased emphasis on audit planning during the pandemic, although there is some variation between Big 4 and non-Big 4 firms. Additionally, non-Big 4 auditors had a three percent longer completion time than Big 4 auditors did. This highlights an interesting disconnect between the increased effort invested in audits and the resulting pandemic completion time. Despite the additional audit hours across all levels (seniors, partners, and juniors), delays persisted, indicating that the complexities introduced by the pandemic outweighed the benefits of increased effort.

6.3 Client Size Effects

The impact of the pandemic may vary depending on the company size. Smaller companies are often more vulnerable because of their limited financial reserves, restricted access to capital, lower adaptability, and greater susceptibility to supply chain and demand disruptions. By contrast, larger companies generally have stronger financial resilience, diversified revenue streams, and robust operational structures, enabling them to manage challenges more effectively. To examine the influence of client size on our results, we divided the sample into two subsamples based on the median size (total assets). Companies were coded as 1 if their size was at or above the median value for the year, and 0 otherwise. The results (Table 7, Panel C) show that all the key variables remain significant and consistent across both

large and small companies. For large clients, audit hours increased by 23% for partners, 30% for seniors, and 37% for juniors. By contrast, for small clients, the increases were 19% for partners, 25% for seniors, and 62% for juniors. This comparison underscores the disproportionate increase in workload based on client size.

6.4 Client Risk Effects

The global pandemic likely impacted clients differently depending on their risk levels, leading audit firms to adjust their strategies by allocating more experienced team members to higher risk engagements. To investigate this, we divided our sample into low- and high-risk clients, using the median leverage value as a threshold. Clients with leverage above the median were coded as 1 and those below were coded as 0.[33] The findings (Table 7, Panel D) indicate that audit hours for partners, seniors, and juniors rose more substantially for high-risk clients, with increases of 27%, 34%, and 58%, respectively, compared to the increases for lower-risk clients, which were 23%, 34%, and 41%, respectively. This comparison reveals a strategic shift in resource allocation driven by the risk profile of clients during the pandemic.

6.5 *Effect of auditor switches pre-and during the pandemic*

The factors influencing audit time vary depending on whether the client is new or continuing (Gist and Davidson, 1999; Stein et al., 1994; Turpen, 1990). For new audit clients, estimating time can be more challenging because of the need to familiarize themselves with their systems (Gist and Davidson, 1999). The pandemic likely exacerbated these challenges for

[33] We also measure clients' risk based on loss and both loss and negative operation cash flow in the current year. The results remained the same.

new auditors, not only because of the time required to understand the client's systems but also because of the additional complexities introduced by the pandemic. To account for these differences, we divided our sample into continuing and switching auditors and conducted separate analyses for each group. For companies that retained the same auditors before (2019) and during the pandemic (2020), we observe (Table 7, Panel E) an increase in audit hours across all ranks, with partners' hours rising by 3.67%, seniors by 9.31%, and juniors by 129.79%. By contrast, for clients who switched auditors in 2020, the increases were more pronounced for juniors, with audit hours rising by 1.82% for partners, 12.64% for seniors, and a staggering 280.76% for juniors. When comparing the pre-pandemic and pandemic periods, we find (Table 7, Panel F) that audit hours increased by 21.05% pre-pandemic and 22.88% during the pandemic for partners, 26.49% pre-pandemic and 34.04% during the pandemic for seniors, and 41.34% pre-pandemic and 87.57% during the pandemic for juniors. These results highlight the significant strain on audit teams, particularly among junior auditors, and highlight the additional challenges faced by clients who switched auditors during the pandemic.

6.6 Alternative Measure of Audit Hours by Rank

We used alternative measures of audit hours by rank. Specifically, we calculate the proportion of audit hours worked by each rank relative to total audit hours following the approach outlined by Bell et al. (2008). This ratio reflects the share of audit hours attributed to each auditor's rank compared with the total hours spent by all audit team members. The results (not tabulated for brevity) remain robust to this alternative measure, as shown in Table 4.

6.6 Effect of Revised External Audit Act 2019

While our primary analyses show significant disproportionate increases in audit hours during the pandemic (see Table 4), we acknowledge that these findings may have been influenced by the Revised External Audit Act of 2019. This Act introduced several new regulations that could lead to an increase in audit hours, such as the adoption of 'standard audit hours,' changes from reviews to audits for internal control systems, and the introduction of Critical Audit Matters (CAMs).

To assess the impact of the Revised External Audit Act of 2019, we directly compared the periods to identify the trends and changes in audit hours that could be attributed to each major event (the Act and the pandemic). We conducted several analyses: (i) to compare between pre-Act vs. post-ACT (before the pandemic), we coded as 0 for the year 2017-2018 and 1 for the year 2019 to assess changes caused by the External Audit Act; (ii) to compare between pre-Act vs. post-Act (during pandemic), we coded as 0 for 2019 and 1 for 2020-2022 to determine how the pandemic might have further influenced audit hours. We find (not tabulated for brevity) that because of the revised Act, audit partners and seniors experienced a significant increase in their hours (15.70% and 12.10%, respectively), while junior auditors saw a notable decrease (-7.80%) in audit hours. This suggests a shift in workload towards more experienced auditors, potentially due to the complexity or criticality of audit tasks that require higher-level oversight due to the enactment of the new Act. By contrast, during the pandemic, audit hours increased across all levels (partners 19.10%, seniors 24.40%, and juniors 37.00%), indicating that the demands of the pandemic impacted the entire audit team, requiring greater involvement from both experienced and junior auditors. We also use a multiple regression analysis to isolate the effects of the External Audit Act (*ACT*) and the pandemic (*PANDEMIC*) on audit hours. The results (not tabulated for brevity) show that *ACT* is significantly and

positively associated with increases in partner and senior hours but has a negative impact on junior auditor hours. This suggests that *ACT* shifted more responsibility to higher-ranking auditors while reducing reliance on juniors. By contrast, *PANDEMIC* is significantly and positively associated with increased audit hours across all ranks (partners, seniors, and juniors), indicating that the effects of the pandemic require greater involvement from the entire audit team, regardless of rank. Finally, consistent with prior research (e.g., Carcello and Li, 2013; Morris et al., 2023), we employed a balanced panel analysis[34] that required data for the same companies over a six-year period. This approach helps isolate the effects of the pandemic from any regulatory influences. The results (not tabulated for brevity) reported in Tables 4 and 6 remain consistent, thus supporting the robustness of our findings.

7. Pandemic Effect on Audit Quality

Our main results show a substantial increase in audit hours across all audit team levels, irrespective of rank, during the pandemic period. This widespread increase in audit effort underscores the significant shift in resource allocation during this challenging period. Additionally, the number of audit planning days increased, reflecting the need for more extensive preparation to address the complexities introduced by the pandemic. This observation raises the question of whether increased effort is related to audit quality. Aobdia (2019) explores the alignment between 15 audit quality measures commonly used in academia and finds that three of these measures are significantly associated with audit process deficiencies identified by auditors and regulators: (i) financial statement restatements, (ii) propensity to meet or beat the zero earnings threshold, and (iii) audit fees. In line with Aobdia (2019), we

[34] We use balanced panel data, which helps us to isolate the regulatory effects from those caused by the pandemic and ensures that any changes observed are not due to changes in sample composition over time.

use the following measures in our study: (i) audit fees, (ii) financial statement restatements (*Restate*), and (iii) the propensity to meet or beat earnings thresholds, *Small_Profit* which equals 1 if *ROA* is between 0% and 3%, and 0 otherwise.

7.1 Pandemic, Audit Hours and Audit Fee

Table 8, Panel A reports the results of the associations between *PANDEMIC* and audit fees (*AF*).[35] Columns (1), (4), and (7) show that *PANDEMIC* is significantly and positively associated with *AF* at the 0.01 level in each estimation.[36] Economically, audit fees are approximately 68.37% higher during the pandemic compared to the pre-pandemic period. The positive and significant interaction between *PAH*PANDEMIC* (partner audit hours during the pandemic) and *SAH*PANDEMIC* (senior audit hours during the pandemic) with audit fees suggests that during the pandemic, as audit hours for both partners and seniors increased, audit fees also rose. A significant and positive relationship between senior-level audit hours and audit fees during the pandemic suggests that the increased involvement of experienced auditors

[35] In Korea, audit fees are typically negotiated and agreed upon between the auditor and the auditee before the audit begins. According to the New External Audit Act, which came into effect in November 2018, companies subject to external audits are required to appoint an auditor within 45 days of the start of the fiscal year (by February 14). For initial audits, auditors must be appointed within four months of the fiscal year start (by April 30). During the pandemic, auditors and their clients anticipated increased audit risks and higher audit investment requirements. As a result, auditors have sought higher audit fees when negotiating their contracts to account for these anticipated challenges.

[36]Auditors' responses to increased audit risk can be identified by analyzing the total audit hours and realization rate (*RR*). Audit realization rate is the primary measure used to assess engagement-level profitability (Hoang *et al.*, 2019). Regulators (e.g., Public Company Accounting Oversight Board [PCAOB], 2008) and professional bodies (e.g., National Association of State Boards of Accountancy, 2010) express concerns regarding excessively high or low audit engagement profitability. The realization rate is the ratio of the actual audit fee to the standard audit fee (actual audit hours for each position × the standard wage rate). It serves as an indicator of an audit contract's profitability (Lee and Shin, 2017). The realization rate varies depending on how the auditor adjusts the relative ratio of the audit resource input to the audit fee in response to audit risk posed by the pandemic. The results (not tabulated for the brevity) show that *PANDEMIC* is significant and positive (at the 0.01 level) with *RR* indicating that the profitability of audit engagements increased during the pandemic compared to pre-pandemic periods. This finding suggests that audit fees increased in excess of audit hours after the pandemic, resulting in a higher realization rate. This implies that audit firms charged significantly higher audit fees for additional effort during the pandemic.

contributed to higher fees, likely reflecting the added complexities and risks associated with conducting audits during the pandemic. However, the interaction between *JAH*PANDEMIC* is not significant.[37]

<Insert Table 8 about here>

7.2 Pandemic, Audit Hours and Meet/Beat Earnings Targets

Table 8, Panel B indicates that audit hours by rank (*PAH, SAH*, and *JAH*) are less likely to be associated with meeting or beating earnings targets (*Small_Profit*). However, none of the interactions between these audit hours and the *PANDEMIC* variable are significantly associated. This suggests that, while increased audit hours are typically linked to a reduced likelihood of meeting earnings targets, the pandemic did not significantly alter this relationship.

7.3 *Pandemic, audit hours and restatement*

Table 8, Panel C shows that *PANDEMIC* is negatively associated with restatements (*Restate*), while only audit partner hours (*PAH*) are positively associated with restatements. Additionally, *SAH_PANDEMIC* is negatively associated with the restatement. These findings suggest that, while the pandemic generally led to fewer restatements, increased audit hours, especially those by partners, were linked to a higher likelihood of restatements. However, during the pandemic, senior auditors' involvement may have been particularly effective in preventing restatements, indicating strong audit quality under challenging circumstances.

8. Conclusion

[37] We also incorporated lagged audit fees in our analysis and observed consistent results. Further examination reveals that audit fees have increased for both Big 4 and non-Big 4 firms, indicating that the pandemic had a comparable impact on audit fees across various types of audit firms.

Using unique hand-collected data from Korean listed firms disclosed under the External Audit Act of 2014, we analyzed audit hours by rank (partner, senior, and junior), audit planning days, and reporting delays to explore how audit firms allocated resources to navigating the unprecedented challenges of the global pandemic. By comparing data from the pre-pandemic period (2017-2019) with data from the pandemic (2020-2022), our findings provide valuable insights into the evolving dynamics of audit teams and resource management in response to these exceptional circumstances.

We applied the Entropy Balance technique to adjust the weights in our dataset, ensuring enhanced comparability between the pre-pandemic ("treated") and pandemic ("control") groups. Our findings reveal several key insights into the pandemic's impact on audit hours and resource allocation. First, the pandemic resulted in a substantial yet uneven rise in audit hours across ranks, with junior auditors facing a notable surge in their workload, while seniors and partners also experienced increases, albeit to a lesser extent. Second, non-Big 4 auditors experienced a significant overall increase in audit hours, particularly among junior auditors, whereas partners and seniors also saw notable increases. In contrast, the increases for Big 4 auditors were modest across all ranks. Third, auditors allocated more days to audit planning, whereas non-Big 4 firms enhanced their planning time to a greater extent than their Big 4 counterparts. Fourth, the pandemic resulted in overall delays in audit completion, with non-Big 4 auditors facing longer completion times than their Big 4 counterparts did. This discrepancy underscores the disconnect between the increased effort and actual completion times, suggesting that the complexities introduced by the pandemic may have overwhelmed the benefits of the additional effort, posing significant challenges for both Big 4 and non-Big 4 firms in managing audit timelines effectively. Finally, our analysis offers insights into the

relationships among the pandemic, audit hours, and audit quality. We observed a notable increase in audit fees during the pandemic with a robust positive correlation between audit fees and hours across all ranks. While the volume of audit hours at each rank showed a negative association with management's ability to meet or exceed earnings targets, we also found some evidence of an association between the pandemic, audit hours, and financial statement restatements.

Our findings offer key insights for improving audit preparedness during future crises. The findings of a disproportionate increase in audit hours among auditors offers valuable insights into other jurisdictions and future pandemics, given the similarities in global audit practices and the challenges faced by auditors in different countries during times of crisis. The differing impacts on Big 4 versus non-Big 4 auditors highlight the systemic differences in how audit firms are structured and cope with external challenges. The results suggest that different types of firms require tailored crisis management strategies. The finding that dedicating more time to audit planning in response to the pandemic is a practice that can be applicable to other jurisdictions, as audit planning is a critical component of the audit process, and the increased emphasis on it in response to crisis situations is likely to be relevant in any jurisdiction facing similar disruptions. The pandemic has led to increased audit completion times despite increased audit hours, suggesting that the complexity and challenges associated with remote audits and increased scrutiny may have offset the benefits of additional resources. The impact of the pandemic on audit quality is multi-faceted. Increased audit hours and fees signaled heightened scrutiny; however, the link between senior audit involvement and financial restatements raised questions about effectiveness. Although reduced incentives for earnings management have

emerged, greater auditor involvement during crises has improved issue identification. These findings highlight the need to balance audits, while avoiding excessive scrutiny.

Our study focuses on Korea's audit market and acknowledges that results may vary across countries. Despite this, the use of audit team-level hours by rank provides a relevant metric with potential applicability to other jurisdictions given that Korean auditing standards align with international practices. By examining the interplay between resource allocation and audit dynamics in the context of a crisis, our study paves the way for future research to explore similar phenomena in diverse settings, thereby broadening the theoretical and practical understanding of auditing. Due to limitations in the available data from the DART, our analysis could not examine ranks such as director or manager levels, suggesting that future research could further explore whether increased audit efforts during the pandemic positively impacted audit quality. Additionally, while the Revised External Audit Act of 2019 introduced new regulations that potentially affect audit hours, our sensitivity analyses, including balanced panel analyses, confirm that our main results are robust and primarily driven by the pandemic rather than regulatory changes.

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Appendix A. Variable definitions

PANDEMIC	A dummy variable equal to one for the post-COVID period (2020 onward), it equals zero for the pre-COVID period (2017-2019);
PAH	The natural logarithm of partner audit hours+1;
SAH	The natural logarithm of senior audit hours+1;
JAH	The natural logarithm of junior audit hours+1;
AH	The natural logarithm of audit hours;
AF	The natural logarithm of audit fees;
AFAH	Logged audit fees (*AF*) divided by logged audit hours (*AH);*
PLAN	Natural log fog number of audit planning days;
SIZE	The natural logarithm of total assets;
INVREC	Receivables and inventory divided by total assets;
ROA	Net income divided by total assets;
LIQ	Current assets divided by current liabilities;
LEV	Total liabilities divided by total assets;
LOSS	A dummy variable which equal one for negative earnings and zero otherwise;
BTM	Book value of equity divided by market value of equity;
CFO	Cash flow from operations divided by total assets;
GRW	The change in sales between the current and the prior year;
FOR	Number of shares owned by foreign investors divided by total shares outstanding;
TENURE	The length of the auditor–client relationship in years;
FIRST	A dummy variable which equals one if the firm engages a new auditor and zero otherwise;
ISSUE	Indicator variable which equals one if the audit client has issued equity or debt, and zero otherwise;
BIG4	Indicator variable which equals one if the audit firm is one of the Big 4 audit firms, and zero otherwise;
OPN	Indicator variable which equals one if the auditor issues a non-unqualified opinion and zero otherwise;
NAUDIT	Indicator variable which equals one if the audit firm has provided non-audit service, and zero otherwise;
LNSUB	Natural log of number of subsidiaries;
KSE	Indicator variable which equals one if the firm is listed in the KSE market, and zero otherwise;
ARL	The natural logarithm of audit report lag.

Table 1. Sample selection

	Number of firm-year observations
Firms listed on the Korean Stock market in non-financial industries from 2017 to 2022	13,762
Less: Firms with non-December fiscal year-end	(226)
Less: firms with missing financial data to measure the control variables	(2,262)
Less: Firms with missing audit hours and audit hours by auditor rank	(251)
Final sample	**11,023**

Table 2. Standard billing rate by rank and position

Rank	Position	Standard Billing rate	
		Big4	Non-big4
Partner	Partner	450,000	500,000
Senior auditor	Director	350,000	300,000
	Senior Manager/Manager	300,000	250,000
	Senior Associate	200,000	150,000
Junior auditor	Associate	150,000	100,000

Source: Lee and Shin (2017)

Table 3. Descriptive statistics

Panel A: All firm-years

Variables	Mean	Median	STD	Q25	Q75
Partner hours	211.715	168.000	177.676	86.000	282.000
Senior hours	1,357.415	874.000	1,824.684	616.000	1,355.000
Junior hours	382.706	72.000	841.967	0.000	441.000
Total hours	2,143.945	1,284.000	3,204.888	912.000	2,044.000
PAH	5.060	5.130	0.788	4.466	5.645
SAH	6.881	6.774	0.691	6.425	7.212
JAH	3.202	4.290	3.088	0.000	6.091
AH	7.304	7.158	0.706	6.816	7.623
AF	11.756	11.653	0.800	11.156	12.206
AFAH	1.614	1.617	0.069	1.569	1.661
PLAN	1.330	1.099	0.619	0.693	1.792
ARL	4.312	4.331	0.089	4.277	4.369
SIZE	26.041	25.808	1.321	25.133	26.695
INVREC	0.205	0.184	0.147	0.087	0.299
ROA	-0.001	0.021	0.118	-0.023	0.057
LIQ	3.128	1.693	4.280	1.030	3.280
LEV	0.362	0.356	0.199	0.197	0.504
LOSS	0.325	0.000	0.468	0.000	1.000
BTM	0.912	0.734	0.665	0.421	1.225
CFO	0.037	0.037	0.096	-0.008	0.088
GRW	0.106	0.048	0.417	-0.075	0.192
FOR	0.066	0.026	0.098	0.011	0.076
TENURE	1.461	1.386	0.658	0.693	1.946
FIRST	0.255	0.000	0.436	0.000	1.000
ISSUE	0.289	0.000	0.453	0.000	1.000
BIG4	0.379	0.000	0.485	0.000	1.000
OPN	0.006	0.000	0.075	0.000	0.000
NAUDIT	0.284	0.000	0.451	0.000	1.000
LNSUB	1.393	1.386	1.019	0.693	2.079
KSE	0.366	0.000	0.482	0.000	1.000

Panel B: Pre-pandemic vs. pandemic

Variables	Pre-pandemic (N=5,164)		Pandemic (N=5,859)		t-stats for Mean difference
	Mean	Median	Mean	Median	
Partner hours	172.919	128.00	245.909	204	72.99***
Senior hours	1,159.94	741.00	1,531.46	1,003.00	371.52***
Junior hours	353.491	50.00	408.457	82.00	54.97***
Total hours	1,840.32	1,072.00	2,411.55	1,464.00	571.23***
PAH	4.847	4.860	5.247	5.325	27.51***
SAH	6.723	6.609	7.021	6.912	23.11***
JAH	3.118	3.932	3.277	4.419	2.69***
AH	7.149	6.977	7.440	7.289	22.11***
AF	11.469	11.290	12.008	11.932	37.52***
AFAH	1.609	1.612	1.618	1.622	6.58***
PLAN	3.679	2.000	4.177	3.000	4.19***
ARL	4.293	4.263	4.323	4.331	20.99***
SIZE	25.996	25.763	26.081	25.852	3.36***
INVREC	0.214	0.192	0.198	0.176	5.94***
ROA	-0.001	0.020	0.000	0.022	0.25
LIQ	3.163	1.672	3.097	1.710	0.81
LEV	0.362	0.358	0.362	0.353	0.05
LOSS	0.319	0.000	0.330	0.000	1.28
BTM	0.924	0.780	0.901	0.697	1.86*
CFO	0.039	0.037	0.036	0.036	1.75*
GRW	0.073	0.029	0.135	0.074	7.81***
FOR	0.073	0.030	0.061	0.023	6.53***
TENURE	5.308	4.000	3.700	2.000	20.93***
FIRST	0.199	0.000	0.305	0.000	12.79***
ISSUE	0.282	0.000	0.295	0.000	1.47
BIG4	0.435	0.000	0.329	0.000	11.51***
OPN	0.003	0.000	0.008	0.000	3.68***
NAUDIT	0.317	0.000	0.255	0.000	7.18***
LNSUB	1.379	1.386	1.405	1.386	2.62***
KSE	0.383	0.000	0.351	0.000	3.40***

All continuous variables are winsorized at the top and bottom percent. The t-statistics are for the mean difference test and the z-statistics are for the median difference test. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively (based on two-tailed tests). See the Appendix for the variable definitions.

Panel C: Descriptive before: Without weighting						
Variables	Treat			Control		
	mean	variance	skewness	mean	variance	skewness
SIZE	26.080	1.737	1.014	26.000	1.751	1.071
INVREC	0.198	0.021	0.703	0.214	0.022	0.652
ROA	0.000	0.015	-1.884	-0.001	0.013	-1.976
LIQ	3.097	17.360	3.811	3.163	19.410	3.711
LEV	0.362	0.039	0.333	0.362	0.040	0.258
LOSS	0.330	0.221	0.721	0.319	0.217	0.777
BTM	0.901	0.480	1.388	0.924	0.400	1.217
CFO	0.036	0.010	-0.209	0.039	0.008	-0.071
GRW	0.135	0.202	2.833	0.073	0.139	3.288
FOR	0.061	0.009	2.845	0.073	0.011	2.436
TENURE	1.325	0.372	0.890	1.615	0.458	0.121
FIRST	0.305	0.212	0.848	0.199	0.160	1.506
ISSUE	0.295	0.208	0.899	0.282	0.203	0.967
BIG4	0.329	0.221	0.728	0.435	0.246	0.262
OPN	0.008	0.008	10.910	0.003	0.003	18.470
NAUDIT	0.255	0.190	1.123	0.317	0.217	0.787
LNSUB	1.405	1.052	0.544	1.379	1.025	0.569
KSE	0.351	0.228	0.622	0.383	0.236	0.483

Panel D: Descriptive After Weighting Variables						
Variables	Treat			Control		
	mean	variance	skewness	mean	variance	skewness
SIZE	26.080	1.737	1.014	26.080	1.737	1.014
INVREC	0.198	0.021	0.703	0.198	0.021	0.703
ROA	0.000	0.015	-1.884	0.000	0.015	-1.884
LIQ	3.097	17.360	3.811	3.097	17.360	3.811
LEV	0.362	0.039	0.333	0.362	0.039	0.333
LOSS	0.330	0.221	0.721	0.330	0.221	0.721
BTM	0.901	0.480	1.388	0.901	0.480	1.388
CFO	0.036	0.010	-0.209	0.036	0.010	-0.209
GRW	0.135	0.202	2.833	0.135	0.202	2.833
FOR	0.061	0.009	2.845	0.061	0.009	2.845
TENURE	1.325	0.372	0.890	1.325	0.372	0.890
FIRST	0.305	0.212	0.848	0.305	0.212	0.848
ISSUE	0.295	0.208	0.899	0.295	0.208	0.899
BIG4	0.329	0.221	0.728	0.329	0.221	0.728
OPN	0.008	0.008	10.910	0.008	0.008	10.900
NAUDIT	0.255	0.190	1.123	0.255	0.190	1.123
LNSUB	1.405	1.052	0.544	1.405	1.052	0.544
KSE	0.351	0.228	0.622	0.351	0.228	0.623

Table 4. Results testing the effect of global pandemic on total and rank-specific audit hour

	OLS				*Entropy Balance*				*Client FE*			
	(1)PAH	*(2)SAH*	*(3)JAH*	*(4)AH*	*(5)PAH*	*(6)SAH*	*(7)JAH*	*(8)AH*	*(9)PAH*	*(10)SAH*	*(11)JAH*	*(12)AH*
Variable	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)
Intercept	-2.657***	-2.289***	-7.648***	-2.022***	-2.244***	-2.625***	-7.507***	-2.091***	2.038**	3.029***	-4.686	3.592***
	(-9.198)	(-11.55)	(-10.12)	(-11.19)	(-4.905)	(-9.790)	(-5.611)	(-8.824)	(2.129)	(5.203)	(-1.580)	(7.477)
PANDEMIC	0.194***	0.246***	0.396***	0.277***	0.213***	0.264***	0.702***	0.310***	0.230***	0.293***	0.404***	0.327***
	(10.29)	(21.80)	(8.192)	(32.51)	(6.961)	(14.39)	(7.369)	(20.66)	(10.17)	(22.51)	(6.792)	(33.71)
SIZE	0.285***	0.337***	0.322***	0.339***	0.268***	0.345***	0.319***	0.343***	0.131***	0.142***	0.227*	0.133***
	(24.50)	(41.92)	(10.53)	(46.52)	(14.45)	(31.69)	(5.887)	(36.02)	(3.508)	(6.312)	(1.955)	(7.182)
INVREC	0.040	0.176***	0.448**	0.175***	0.103	0.127*	0.632*	0.160***	0.001	0.164**	0.683	0.160***
	(0.578)	(4.020)	(2.160)	(4.773)	(0.984)	(1.809)	(1.738)	(2.753)	(0.00984)	(2.129)	(1.537)	(2.673)
ROA	-0.572***	-0.474***	0.298	-0.453***	-0.435***	-0.582***	0.050	-0.518***	-0.309***	-0.255***	0.416	-0.157***
	(-6.859)	(-8.801)	(1.345)	(-10.05)	(-2.718)	(-5.601)	(0.106)	(-6.516)	(-3.160)	(-4.420)	(1.499)	(-3.624)
LIQ	-0.005**	-0.006***	-0.009	-0.006***	-0.003	-0.005**	-0.002	-0.006***	0.002	-0.003**	-0.017**	-0.001
	(-2.502)	(-3.684)	(-1.498)	(-4.495)	(-0.902)	(-2.417)	(-0.184)	(-3.145)	(0.580)	(-2.048)	(-2.208)	(-1.167)
LEV	0.047	0.110***	-0.072	0.108***	0.028	0.164***	-0.209	0.149***	-0.070	-0.021	-0.187	0.040
	(0.838)	(3.009)	(-0.440)	(3.496)	(0.311)	(2.634)	(-0.754)	(3.128)	(-0.768)	(-0.396)	(-0.672)	(0.939)
LOSS	0.053***	0.048***	0.138**	0.047***	0.081**	0.039	0.090	0.036**	-0.024	0.018*	0.102*	0.010
	(2.832)	(4.346)	(2.494)	(5.031)	(2.180)	(1.620)	(0.791)	(1.995)	(-1.190)	(1.726)	(1.669)	(1.190)
BTM	-0.058***	-0.015	0.007	-0.023***	-0.046*	-0.021	0.051	-0.017	-0.006	0.002	-0.113	0.008
	(-3.898)	(-1.491)	(0.160)	(-2.687)	(-1.795)	(-0.873)	(0.538)	(-0.993)	(-0.224)	(0.120)	(-1.407)	(0.675)
CFO	-0.054	-0.009	-0.160	-0.027	-0.104	-0.178**	0.739*	-0.168**	0.081	-0.035	0.134	0.016
	(-0.695)	(-0.190)	(-0.707)	(-0.673)	(-0.643)	(-2.103)	(1.746)	(-2.373)	(0.928)	(-0.718)	(0.491)	(0.457)
GRW	-0.009	-0.015	-0.023	-0.021***	-0.029	0.018	-0.049	-0.012	-0.008	-0.002	-0.019	-0.014*
	(-0.657)	(-1.630)	(-0.542)	(-2.684)	(-1.040)	(0.608)	(-0.488)	(-0.488)	(-0.475)	(-0.205)	(-0.382)	(-1.892)
FOR	0.222**	0.174**	0.147	0.165***	0.341**	0.143	0.019	0.178**	-0.315	0.065	-0.573	-0.092
	(2.299)	(2.357)	(0.602)	(2.668)	(2.244)	(1.331)	(0.0475)	(1.984)	(-1.197)	(0.465)	(-0.803)	(-0.812)
TENURE	-0.039**	-0.058***	-0.186***	-0.063***	-0.030	-0.052***	-0.253***	-0.070***	-0.048**	-0.070***	-0.166**	-0.071***
	(-2.370)	(-5.691)	(-4.666)	(-7.622)	(-1.114)	(-3.341)	(-3.669)	(-5.503)	(-2.117)	(-5.947)	(-2.553)	(-7.908)
FIRST	0.085***	0.100***	-0.044	0.090***	0.089**	0.115***	-0.202*	0.079***	0.035*	0.052***	-0.066	0.043***
	(4.495)	(8.639)	(-0.840)	(9.381)	(2.383)	(5.046)	(-1.883)	(4.455)	(1.664)	(4.468)	(-1.031)	(4.972)

ISSUE	0.045***	0.030***	-0.060	0.027***	0.037	-0.000	-0.098	0.002	0.021	0.000	-0.039	0.004
	(2.951)	(3.064)	(-1.281)	(3.167)	(1.342)	(-0.00179)	(-1.226)	(0.117)	(1.212)	(0.0384)	(-0.698)	(0.483)
BIG4	-0.848***	0.138***	4.783***	0.358***	-0.863***	0.132***	4.505***	0.336***	-0.870***	0.057***	4.711***	0.270***
	(-47.43)	(11.26)	(99.69)	(33.39)	(-33.03)	(7.299)	(54.80)	(21.63)	(-27.97)	(3.205)	(47.61)	(17.74)
OPN	0.202**	0.153***	0.398	0.168***	0.460***	-0.178	1.680***	0.038	0.243**	0.140**	0.343	0.179***
	(2.489)	(2.732)	(1.352)	(3.151)	(3.131)	(-0.941)	(2.721)	(0.415)	(2.535)	(2.285)	(1.043)	(3.447)
NAUDIT	0.013	0.021**	-0.058	-0.001	-0.011	0.018	-0.045	-0.023*	-0.040*	0.014	-0.015	-0.009
	(0.761)	(1.990)	(-1.235)	(-0.088)	(-0.429)	(1.170)	(-0.561)	(-1.744)	(-1.802)	(1.095)	(-0.223)	(-0.906)
LNSUB	0.095***	0.141***	0.087***	0.131***	0.103***	0.141***	0.128***	0.133***	0.037	0.095***	0.079	0.085***
	(8.532)	(19.56)	(2.993)	(20.27)	(6.004)	(14.07)	(2.633)	(15.74)	(1.579)	(6.406)	(1.077)	(6.424)
KSE	0.048**	0.018	-0.002	0.032***	0.068**	0.025	-0.067	0.032*				
	(2.097)	(1.276)	(-0.034)	(2.618)	(1.983)	(1.167)	(-0.614)	(1.888)				
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
Client FE									Yes	Yes	Yes	Yes
Adj.R^2	0.4395	0.7468	0.6813	0.8414	0.4120	0.7445	0.6126	0.8396	0.6774	0.8729	0.8010	0.9354
Obs.	11,023	11,023	11,023	11,023	11,023	11,023	11,023	11,023	11,023	11,023	11,023	11,023

All continuous variables were winsorized at the top and bottom one percent. The t-statistics are presented in parentheses. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively (based on two-tailed tests). See the Appendix for the variable definitions.

Table 5. Results testing the effect of global pandemic on audit planning

	OLS		*Entropy Balance*		*Client FE*	
	(1) Full sample	*(2) Excluding 2020*	(3) Full sample	*(4) Excluding 2020*	(5) Full sample	*(6) Excluding 2020*
Variable	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)
Intercept	-2.324***	-2.596***	-3.096***	-3.479***	0.118	0.065
	(-5.643)	(-6.401)	(-6.575)	(-7.208)	(0.125)	(0.062)
$PANDEMIC_t$	0.068***	0.070***	0.068***	0.069***	0.104***	0.102***
	(3.823)	(3.982)	(3.564)	(3.588)	(5.018)	(4.721)
$SIZE_{t-1}$	0.140***	0.139***	0.168***	0.172***	0.038	0.040
	(8.506)	(8.561)	(8.848)	(8.836)	(1.020)	(0.956)
$INVREC_{t-1}$	-0.088	-0.086	-0.067	-0.063	0.158	0.087
	(-1.125)	(-1.107)	(-0.788)	(-0.723)	(1.225)	(0.575)
ROA_{t-1}	-0.185**	-0.168*	-0.133	-0.113	-0.012	-0.037
	(-2.123)	(-1.731)	(-1.256)	(-0.947)	(-0.130)	(-0.333)
LIQ_{t-1}	0.004*	0.005**	0.005*	0.006**	0.002	0.004
	(1.811)	(2.363)	(1.871)	(2.171)	(0.822)	(1.382)
LEV_{t-1}	0.135**	0.157**	0.137*	0.154*	0.122	0.154
	(2.090)	(2.413)	(1.815)	(1.957)	(1.411)	(1.453)
$LOSS_{t-1}$	0.057***	0.055**	0.085***	0.089***	0.019	0.019
	(2.777)	(2.476)	(3.122)	(2.918)	(1.060)	(0.804)
BTM_{t-1}	-0.036*	-0.034*	-0.049**	-0.051**	0.012	0.020
	(-1.847)	(-1.771)	(-2.179)	(-2.165)	(0.533)	(0.781)
CFO_{t-1}	-0.078	-0.032	-0.113	-0.081	0.006	0.041
	(-0.984)	(-0.357)	(-1.006)	(-0.632)	(0.0812)	(0.421)
GRW_{t-1}	0.005	-0.007	0.012	0.005	-0.007	0.005
	(0.325)	(-0.401)	(0.561)	(0.179)	(-0.487)	(0.285)
FOR_{t-1}	0.338**	0.348**	0.286	0.285	0.272	0.392
	(2.173)	(2.270)	(1.570)	(1.520)	(1.158)	(1.426)
$TENURE_t$	-0.026	-0.024	-0.031	-0.030	-0.004	-0.022
	(-1.363)	(-1.208)	(-1.362)	(-1.225)	(-0.195)	(-0.849)
$FIRST_t$	0.042**	0.044**	0.052*	0.054*	0.023	0.013
	(2.136)	(2.084)	(1.848)	(1.718)	(1.201)	(0.535)
$ISSUE_{t-1}$	-0.007	-0.007	-0.010	-0.010	-0.002	0.004
	(-0.382)	(-0.334)	(-0.411)	(-0.377)	(-0.115)	(0.168)
$BIG4_t$	0.181***	0.191***	0.177***	0.184***	0.104***	0.128***
	(8.350)	(8.711)	(6.872)	(6.798)	(3.614)	(3.589)
OPN_{t-1}	0.131	0.068	0.122	0.081	0.273**	0.184
	(1.333)	(0.756)	(1.085)	(0.699)	(2.150)	(1.572)
$NAUDIT_{t-1}$	0.058***	0.065***	0.058**	0.063**	0.021	0.039
	(2.939)	(3.189)	(2.477)	(2.502)	(0.948)	(1.402)
$LNSUB_t$	0.040***	0.036***	0.015	0.007	0.038	0.032
	(3.016)	(2.703)	(0.968)	(0.431)	(1.529)	(1.079)
KSE_t	-0.055**	-0.066***	-0.062**	-0.073**	-0.069***	-0.082***
	(-2.137)	(-2.617)	(-2.114)	(-2.383)	(-2.588)	(-2.874)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes		
Client FE					Yes	Yes
Adj.R^2	0.1985	0.1978	0.2089	0.2115	0.6830	0.6795
Obs.	8,908	7,093	8,908	7,093	8,908	7,093

All continuous variables were winsorized at the top and bottom one percent. The t-statistics are presented in parentheses. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively (based on two-tailed tests). See the Appendix for the variable definitions.

Table 6. Results testing the effect of global pandemic on audit report lag (*ARL*)

Variable	*(1)OLS*	*(2)Entropy Balance*	*(3)Client FE*
	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)
Intercept	4.619*** (87.340)	4.605*** (67.820)	4.095*** (32.720)
PANDEMIC	0.024*** (11.14)	0.023*** (7.250)	0.023*** (8.907)
SIZE	-0.013*** (-6.192)	-0.012*** (-4.364)	0.007 (1.519)
INVREC	-0.028** (-2.524)	-0.045*** (-2.740)	-0.021 (-1.166)
ROA	-0.034*** (-2.933)	0.024 (0.844)	-0.040*** (-3.042)
LIQ	-0.001** (-2.389)	-0.001 (-1.113)	-0.000 (-1.087)
LEV	0.045*** (4.830)	0.069*** (4.808)	0.033*** (2.740)
LOSS	0.009*** (3.612)	0.021*** (4.327)	0.004 (1.293)
BTM	0.005** (2.010)	0.005 (1.248)	0.001 (0.139)
CFO	-0.006 (-0.592)	-0.009 (-0.302)	-0.001 (-0.056)
GRW	0.001 (0.559)	0.003 (0.385)	-0.001 (-0.212)
FOR	-0.061*** (-2.949)	-0.091*** (-3.676)	-0.010 (-0.361)
TENURE	-0.008*** (-3.356)	-0.008** (-2.277)	-0.009*** (-3.226)
FIRST	0.006** (2.514)	0.010** (2.011)	0.003 (0.917)
ISSUE	0.008*** (3.798)	0.009** (2.107)	0.004 (1.505)
BIG4	0.027*** (9.352)	0.024*** (5.633)	0.033*** (9.094)
OPN	0.073*** (8.499)	0.077*** (6.721)	0.076*** (5.703)
NAUDIT	-0.008*** (-2.902)	-0.013*** (-3.057)	-0.006** (-2.080)
LNSUB	0.019*** (10.42)	0.023*** (8.734)	0.012*** (3.021)
KSE	-0.018*** (-4.461)	-0.022*** (-4.310)	0.000 (.)
Year FE	Yes	Yes	Yes
Ind FE	Yes	Yes	
Client FX			Yes
Adj.R2	0.2024	0.2353	0.6700
Obs.	11,023	11,023	11,023

All continuous variables were winsorized at the top and bottom one percent. The t-statistics are presented in parentheses. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively (based on two-tailed tests). See the Appendix for the variable definitions.

Table 7. Effect of audit hours by auditor type

Panel A: Results testing the effect of global pandemic on total and rank-specific audit hour of auditor types

	(1)PAH		*(2)SAH*		*(3)JAH*		***(4)****AH*	
	BIG4 sample	Non-BIG4 sample	BIG4 sample	Non-BIG4 sample	BIG4 sample	Non-BIG4 sample	BIG4 sample	Non-BIG4 sample
Variable	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)
Intercept	-2.824*** (-10.16)	-0.482 (-1.613)	-4.810*** (-15.44)	0.083 (0.167)	-2.607*** (-9.680)	-0.045 (-0.180)	-3.512*** (-7.899)	-6.483*** (-3.787)
PANDEMIC	0.153*** (7.761)	0.300*** (21.42)	0.076*** (3.511)	0.269*** (9.843)	0.187*** (11.67)	0.335*** (32.86)	0.123*** (2.639)	0.615*** (8.643)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.8051	0.5807	0.7136	0.1913	0.8476	0.7032	0.4736	0.1032
Obs.	4,175	6,848	4,175	6,848	4,175	6,848	4,175	6,848

Panel B: Results testing the effect of global pandemic on audit planning and audit report lag of auditor types

	PLAN		*PLAN Excluding 2020*		*ARL*	
	BIG4 sample	Non-BIG4 sample	BIG4 sample	Non-BIG4 sample	BIG4 sample	Non-BIG4 sample
Variable	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)
Intercept	-2.766*** (-3.999)	-0.145 (-0.242)	-3.066*** (-4.545)	-0.105 (-0.174)	4.776*** (63.16)	4.382*** (59.22)
PANDEMIC	0.064* (1.893)	0.074*** (3.623)	0.062* (1.817)	0.075*** (3.704)	0.005 (1.582)	0.033*** (11.28)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.2385	0.0743	0.2313	0.0741	0.2517	0.2129
Obs.	3,264	5,644	2,673	4,420	4,175	6,848

Panel C: Client size effect

	Large clients				*Small clients*			
	(1)PAH	*(2)SAH*	*(3)JAH*	*(4)AH*	*(5)PAH*	*(6)SAH*	*(7)JAH*	*(8)AH*
Variable	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)
Intercept	-5.306***	-4.974***	-9.473***	-4.686***	1.079*	1.814***	-1.640	2.120***
	(-13.74)	(-18.91)	(-8.912)	(-20.63)	(1.677)	(5.092)	(-0.897)	(7.052)
PANDEMIC	0.205***	0.265***	0.314***	0.300***	0.177***	0.225***	0.483***	0.253***
	(8.300)	(16.39)	(4.391)	(25.74)	(6.130)	(14.76)	(7.188)	(21.57)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.5283	0.7758	0.6896	0.8647	0.5656	0.3997	0.5939	0.8222
Obs.	5,512	5,512	5,512	5,512	5,511	5,511	5,511	5,511

Panel D: Client risk effect

	High risk clients				*Low risk clients*			
	(1)PAH	*(2)SAH*	*(3)JAH*	*(4)AH*	*(5)PAH*	*(6)SAH*	*(7)JAH*	*(8)AH*
Variable	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)
Intercept	-2.509***	-2.478***	-9.259***	-2.351***	-2.021***	-1.790***	-6.524***	-1.426***
	(-7.118)	(-9.704)	(-7.990)	(-10.12)	(-4.815)	(-6.436)	(-5.935)	(-5.643)
PANDEMIC	0.169***	0.234***	0.423***	0.272***	0.220***	0.255***	0.399***	0.282***
	(6.232)	(13.54)	(5.747)	(21.18)	(8.302)	(17.14)	(5.982)	(23.70)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.4433	0.7582	0.6945	0.8534	0.4381	0.7231	0.6743	0.8222
Obs.	5,512	5,512	5,512	5,512	5,511	5,511	5,511	5,511

Panel E: The effect of global pandemic on total and rank-specific audit hour for the same and auditor change samples (2019-2020)

	Same Auditors 2019-2020				*Auditor Change 2019-2020*			
	(1)PAH	*(2)SAH*	*(3)JAH*	*(4)AH*	*(5)PAH*	*(6)SAH*	*(7)JAH*	*(8)AH*
Variable	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)
Intercept	-4.453*** (-10.02)	-2.517*** (-8.637)	-8.655*** (-8.628)	-2.662*** (-10.76)	-1.319* (-1.829)	-1.435*** (-2.806)	-5.999*** (-2.730)	-1.073** (-2.414)
PANDEMIC (2019-20)	0.036* (1.867)	0.089*** (8.520)	0.832*** (13.25)	0.108*** (12.87)	0.018 (0.432)	0.119*** (5.602)	1.337*** (11.75)	0.133*** (7.294)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.4493	0.8017	0.7759	0.8822	0.2759	0.7066	0.5136	0.7884
Obs.	2,448	2,448	2,448	2,448	1,247	1,247	1,247	1,247

Panel F: The effect of global pandemic on total and rank-specific audit hour for the same and auditor change samples (2017-2022)

	Same Auditors 2017-2022				*Auditor Change 2017-2022*			
	(1)PAH	*(2)SAH*	*(3)JAH*	*(4)AH*	*(5)PAH*	*(6)SAH*	*(7)JAH*	*(8)AH*
Variable	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)
Intercept	-3.085*** (-9.518)	-2.470*** (-11.81)	-8.689*** (-10.58)	-2.466*** (-13.25)	-1.355*** (-2.911)	-1.547*** (-4.594)	-5.964*** (-4.386)	-0.856*** (-2.838)
PANDEMIC (2017-2022)	0.191*** (8.820)	0.235*** (18.29)	0.346*** (6.320)	0.276*** (29.18)	0.206*** (4.641)	0.293*** (11.10)	0.629*** (5.296)	0.295*** (12.90)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.4601	0.7661	0.7148	0.8637	0.3784	0.6925	0.5863	0.7759
Obs.	8,058	8,058	8,058	8,058	2,879	2,879	2,879	2,879

All continuous variables were winsorized at the top and bottom one percent. The t-statistics are presented in parentheses. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively (based on two-tailed tests). See the Appendix for the variable definitions.

Table 8. Global pandemic and audit quality

Panel A: Results testing the effect of global pandemic on audit fee

Variable	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)
Intercept	2.375*** (10.54)	2.847*** (13.57)	3.588*** (20.21)	2.474*** (11.01)	4.058*** (26.66)	2.927*** (13.61)	3.775*** (20.02)	2.470*** (10.99)	4.323*** (27.03)	4.439*** (23.89)
PANDEMIC	0.521*** (47.21)	0.487*** (44.34)	0.391*** (34.78)	0.516*** (46.53)	0.290*** (27.12)	0.333*** (5.760)	0.058 (0.737)	0.524*** (36.18)	-0.170** (-2.466)	-0.052 (-0.561)
PAH		0.177*** (19.60)				0.163*** (14.98)				0.171*** (18.37)
SAH			0.530*** (32.36)				0.505*** (28.81)			0.489*** (27.63)
JAH				0.013*** (4.664)				0.015*** (4.664)		0.029*** (9.228)
AH					0.833*** (46.71)				0.801*** (42.73)	
*PAH*PANDEMIC*						0.030*** (2.619)				-0.012 (-1.044)
*SAH*PANDEMIC*							0.048*** (4.334)			0.069*** (4.977)
*JAH*PANDEMIC*								-0.003 (-1.057)		-0.006** (-2.049)
*AH*PANDEMIC*									0.062*** (6.814)	
Year FE	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes
Ind FE	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.7779	0.7950	0.8309	0.7786	0.8636	0.7952	0.8313	0.7787	0.8643	0.8485
Obs.	11,023	11,023	11,023	11,023	11,023	11,023	11,023	11,023	11,023	11,023

Panel B: Results testing the effect of global pandemic on meet/beat earnings targets

Variable	Coeff. (z-value)	Coeff. (z-value)	Coeff. (z-value)	Coeff. (z-value)	Coeff. (z-value)	Coeff. (z-value)	Coeff. (z-value)	Coeff. (z-value)	Coeff. (z-value)	Coeff. (z-value)
Intercept	-4.340*** (-4.141)	-4.613*** (-4.386)	-4.817*** (-4.621)	-4.532*** (-4.333)	-4.959*** (-4.748)	-4.815*** (-4.507)	-5.030*** (-4.657)	-4.506*** (-4.306)	-5.077*** (-4.679)	-5.765*** (-5.260)
PANDEMIC	-0.262*** (-3.363)	-0.240*** (-3.078)	-0.210*** (-2.628)	-0.253*** (-3.233)	-0.174** (-2.114)	0.165 (0.474)	0.199 (0.404)	-0.307*** (-3.416)	0.044 (0.0854)	0.657 (1.191)
PAH		-0.112*** (-2.737)				-0.076 (-1.455)				-0.102* (-1.894)
SAH			-0.212*** (-2.943)				-0.183** (-2.258)			-0.147* (-1.709)
JAH				-0.024* (-1.685)				-0.036** (-2.036)		-0.049** (-2.519)
AH					-0.312*** (-3.339)				-0.298*** (-2.971)	
*PAH*PANDEMIC*						-0.078 (-1.198)				-0.012 (-0.159)
*SAH*PANDEMIC*							-0.058 (-0.835)			-0.122 (-1.386)
*JAH*PANDEMIC*								0.018 (1.167)		0.029 (1.521)
*AH*PANDEMIC*									-0.029 (-0.427)	
Pseudo R^2	0.0736	0.0743	0.0744	0.0739	0.0748	0.0744	0.0745	0.0740	0.0748	0.0758
Obs.	10,995	10,995	10,995	10,995	10,995	10,995	10,995	10,995	10,995	10,995

Panel C: Results testing the effect of global pandemic on financial statement restatement

Variable	Coeff. (z-value)	Coeff. (z-value)	Coeff. (z-value)	Coeff. (z-value)	Coeff. (z-value)	Coeff. (z-value)	Coeff. (z-value)	Coeff. (z-value)	Coeff. (z-value)	Coeff. (z-value)
Intercept	-7.202***	-6.572***	-6.814***	-7.177***	-6.942***	-6.455***	-7.756***	-7.110***	-7.659***	-6.807***
	(-2.997)	(-2.761)	(-2.885)	(-2.978)	(-2.930)	(-2.700)	(-3.303)	(-2.941)	(-3.268)	(-2.856)
PANDEMIC	-1.200***	-1.260***	-1.267***	-1.202***	-1.256***	-1.560*	1.493	-1.095***	0.784	0.724
	(-6.713)	(-7.048)	(-6.755)	(-6.686)	(-6.684)	(-1.793)	(1.208)	(-5.649)	(0.604)	(0.534)
PAH		0.305***				0.287***				0.259**
		(3.137)				(2.614)				(2.330)
SAH			0.253				0.396**			0.392**
			(1.440)				(2.106)			(2.145)
JAH				0.004				0.034		0.016
				(0.135)				(1.053)		(0.429)
AH					0.193				0.287	
					(0.923)				(1.311)	
*PAH*PANDEMIC*						0.055				0.136
						(0.349)				(0.795)
*SAH*PANDEMIC*							-0.395**			-0.397**
							(-2.260)			(-2.250)
*JAH*PANDEMIC*								-0.056		-0.013
								(-1.506)		(-0.318)
*AH*PANDEMIC*									-0.276	
									(-1.578)	
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.0904	0.0944	0.0913	0.0904	0.0907	0.0944	0.0931	0.0911	0.0916	0.0974
Obs.	10,995	10,995	10,995	10,995	10,995	10,995	10,995	10,995	10,995	10,995

All continuous variables were winsorized at the top and bottom one percent. The t-statistics are presented in parentheses. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively (based on two-tailed tests). See the Appendix for the variable definitions.