Investigating the influence of auditor characteristics on audit budget ratcheting

Abstract

This study examines budget ratcheting in auditing, where the theory posits that budget targets increase more significantly following unfavorable variances than they decrease after favorable ones. Leveraging mandatory disclosures of actual and target audit hours from Korean listed firms (2018–2022), we replicate Ettredge et al. (2008) with a larger sample and an extended longitudinal period while also exploring the influence of audit firm characteristics on budget ratcheting. Our results confirm that budget ratcheting exists in Korea, where changes in budgeted hours are positively associated with prior budget variances. We also find that Big 4 auditors do not significantly adjust budgeted hours in response to past variances, however, they reduce reported hours more aggressively following favorable variances. Industry specialist auditors exhibit a similar pattern, showing no significant changes in budgeted hours but reducing reported hours more aggressively. The degree of audit hour budget ratcheting is greater for large audit teams, with audit partners experiencing increases in budgeted hours, seniors seeing budget reductions, and juniors remaining unaffected. High audit firm workload and longer auditor tenure are associated with further reductions in reported hours following favorable variances, reinforcing budget ratcheting effects. Auditor provided non-audit services contribute to efficiency-driven hour reductions. Our findings highlight the distinct role of auditor characteristics in budget ratcheting, providing insights into audit firms' resource allocation strategies.

Keywords: audit budget ratcheting, auditor characteristics, budgeted audit hours, reported audit hours, audit team.

JEL Classifications: M40, M42

Data availability: All data available from the sources mentioned in the paper.

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1. **Introduction**

Prior research in non-audit settings indicates that managers design budgets based on prior performance relative to established budget targets known as budget "ratcheting" (Ettredge, Bedard, and Johnstone 2008).[1] This process tends to be asymmetrical, meaning budget targets increase more significantly after favorable performance than they decrease following similarly unfavorable outcomes (Ettredge et al. 2008). This perspective reflects a dynamic approach to budgeting, where the budget becomes an endogenous element of the broader business environment (Ettredge et al. 2008). Using budget ratcheting theory introduced by Weitzman (1980) and for a sample of 89 firm-year observations during 2001 to 2003 from two offices of an international audit firm, Ettredge et al. (2008) investigate the dependence of budget targets and organizational performance on prior engagement experience in an audit setting. They find that asymmetric budget ratcheting by audit firm supervisors and also find that engagement teams' reported hours vary asymmetrically with prior budget variance. However, Ettredge et al. (2008) called for further research as they indicated that "while we do report statistically significant results for our ratcheting hypotheses, we acknowledge that experimental investigations or *larger scale archival investigations may yield more powerful tests*". By utilizing mandatory disclosures of actual and budget audit hours in Korea, our primary objective is to replicate Ettredge et al. (2008) on budget ratcheting, using a larger sample and covering an extended longitudinal period.

We also examine how audit firm characteristics influence audit budget ratcheting. Target ratcheting is a common phenomenon in executive annual bonus contracts within managerial

[1] Budget ratcheting refers to the practice of setting future budgets based on past performance (Weitzman 1980).

settings (Murphy, 2000; Leone and Rock 2002). Prior research has identified various factors contributing to this practice, including client-level characteristics (Kim and Shin 2017; Bol and Lill 2015) and individual attributes of executives (Kim and Park 2024). These studies highlighted how organizational and personal dynamics influence the design and adjustment of bonus targets, shedding light on the complexities of performance-based compensation systems. Despite the significant role of staff time as the largest cost component of an audit (O'Keefe et al. 1994), limited research has been conducted on the accuracy of audit time budgets (Gist and Davidson 1999). Given its critical importance in managing audit costs, the accuracy of time estimation warrants greater attention (Gist and Davidson 1999) and further research is needed on how audit firm characteristics influence budget ratcheting.

Audit budgets are useful tools for scheduling various parts of an audit engagement (e.g., manpower assignment, audit fee setting, and performance evaluation) (Kelley and Seiler 1986). The audit time budget is one of the key methods used by auditing firms to estimate and control costs (Gist and Davidson 1999; Kiger and Scheiner 1997). Time budgets are also used to motivate staff to work efficiently and effectively and to evaluate performance (Marxen 1990; McDaniel 1990; Rasch and Harrell 1990; MaNair 1991). The time budget is important due to the increasing competition in the audit market as well as audit fees must be kept as low as possible (Mock and Wright 1993; Pearson and Trompeter 1994). In line with this, the Public Company Accounting Oversight Board (PCAOB 2015) identified the audit hour budget as an indicator of audit quality. Despite this importance, research on how audit firms set their audit hour budget has been limited due to the lack of publicly available data. This data limitation has forced prior studies to rely on information from a single accounting firm (e.g., Ettredge et al., 2008) or a small number of local audit firms (Gist and Davidson, 1999). However, using data from a single firm fails to provide

insights into audit firm characteristics relevant to audit hour budget ratcheting. Gist and Davidson (1999) acknowledge the limitations of their study, noting the scarcity of publicly available data on audit firms' time budgets and actual hours worked. They emphasize the need to replicate their research in broader contexts to test the generalizability of their findings. Such replication would benefit from larger samples and meaningful disaggregation into subsamples based on positive and negative budget variances, allowing for a deeper understanding of the factors influencing audit time allocations.

By investigating the client factors on audit time budget variances, Gist and Davidson (1999) find that differences between audit time budgets and reported audit hours are significantly associated with client size, risk, complexity and profitability Their findings also reveal that the extent to which client factors influence budget variances varies across staff levels. Specifically, variances in achieving audit time budgets for partners, seniors, and juniors are linked to client factors, whereas manager time shows no such association. Despite these insights, the audit firm remains the primary entity responsible for managing audit budget variances. Gist and Davidson (1999) acknowledge that their study has a limitation that they did not attempt to directly measure the effect of changes in factors due to the lack of data and suggest that "a longitudinal approach allows for such an analysis and is thus an important avenue for future research" (p. 113). Gist and Davidson (1999) also suggest that "this study should be replicated with other samples to determine if the results are generalizable to other settings. Largest sample would permit meaningful disaggregation into subsamples with positive and negative budget variances" (p. 114) Thus, a key research question arises: how do audit firms strategically set and adjust their budget targets over time based on their characteristics? A longitudinal analysis is crucial for understanding the dynamic nature of budgeting practices. Therefore, our second objective is to examine several audit

firm characteristics: auditor type, auditor industry specializations, audit team characteristics (size and compositions), audit firm's economic bonding, auditor tenure, and auditor workload and their associations with audit budget ratcheting.

Our study reveals several compelling and insightful findings. First, using data on budgeted and reported audit hours of Korean listed firms from 2018 to 2022, we find consistent results reported by Ettredge et al. (2008), specifically, we find that changes in budgeted hours are positively associated with prior budget variances. The positive association between variance and changes in budgeted hours confirm budget ratcheting exits in Korea, where firms increase budgets in response to unfavorable variances. However, the interaction between variance and changes in budgeted hours is not significant, which is contrary to Ethredge et al. (2008) findings. We also find a negative and significant association between variance and changes in reported hours which are consistent with Ethredge et al.'s (2008) results indicating that as prior budget variance increases, the reported hours tend to decrease, indicating efforts to control or optimize the reporting of hours. We find consistent results to Ethredge et al.'s (2008) indicating that the combination of higher variance and favorable conditions significantly reduces reported hours.

Second, our study examines the impact of auditor type on budget ratcheting. Our results show that Big 4 auditors do not significantly adjust budgeted hours in response to prior variances, suggesting that auditor size is not associated with budget ratcheting. This contradicts expectations that Big 4 firms, with greater resources, would allocate hours more flexibly. However, when examining changes in reported hours, Big 4 auditors adjust actual hours based on past performance. Additionally, they reduce reported hours more aggressively following favorable variances, indicating a stronger emphasis on efficiency compared to non-Big 4 auditors.

Third, with respect to industry specialist auditors (ISAs), we expected greater budget ratcheting for ISAs. However, the coefficient on budget variance and ISA is positive but insignificant, suggesting that ISAs do not significantly adjust budgeted hours based on prior variances. A possible explanation is that, in Korea, most audit work is concentrated in the busy season, making upward budget adjustments based on favorable variances difficult to implement. Additionally, ISAs may face resource constraints due to client portfolio concentration in specific industries, limiting their ability to allocate additional resources during high-risk periods. However, we find a significant and negative coefficient on variance and ISA for changes in reported audit hours suggests that ISAs reduce reported hours more aggressively following past variances, supporting the notion that specialists achieve greater audit efficiencies, leading to tighter hour adjustments when audit work requires fewer hours than originally planned.

Fourth, we examine the effect of audit team composition on budget ratcheting, beginning with the impact of audit team size. Using total auditors within the engagement, our results show a significant and negative coefficient on interaction between variance, favourable and audit team size, indicating that larger audit teams reduce reported hours more aggressively following favourable variances. This suggests that audit teams tighten future budgets after efficiency gains, leading to systematic downward adjustments in reported hours. Next, we analyze audit team composition, distinguishing between partners, seniors, and juniors. The results reveal that the coefficient on variance and partner is positive and significant, meaning that partners experience an increase in budgeted hours following variances, likely due to their role in overseeing complex engagements and ensuring audit quality. Conversely, the coefficient on variance and senior is negative and significant, suggesting that senior auditors face reductions in budgeted hours, possibly due to efficiency expectations or firms adjusting senior workload allocations. Meanwhile,

the coefficient on variance and junior is not significant, indicating that junior auditors' budgeted hours remain unchanged, likely because their tasks are standardized and workload adjustments primarily occur at higher levels. These findings highlight a hierarchical approach to audit budget adjustments, where partners receive increased allocations, seniors face efficiency-driven reductions, and juniors remain unaffected by variance-related changes.

Fifth, with respect to audit team workload, we expected that target ratcheting would be lower in high-workload firms, as auditors may perceive client-imposed targets as difficult to achieve. However, our results show that the coefficient on interaction of variance and auditor workload is insignificant, contradicting our prediction that workload influences budget ratcheting. However, we find a negative and significant coefficient on interaction of variance, favourable and auditor workload for changes in reported hours suggests that when a favorable variance occurs (i.e., reported hours are lower than budgeted hours), firms with higher workloads continue to decrease reported hours in subsequent audits. This implies that high-workload audit teams prioritize efficiency gains, leading to further hour reductions in future engagements. This finding aligns with the budget ratcheting concept, where firms systematically reduce future hour allocations when prior engagements required fewer hours than budgeted, particularly in resource-constrained, high-workload environments.

Sixth, we find that the coefficient on variance and auditor tenure is not significant, suggesting that audit tenure does not directly influence changes in reported hours in response to variance. However, we find a negative and significant coefficient on variance, favorable and auditor tenure for changes in reported hours indicates that when a favorable variance occurs (i.e., reported hours are lower than budgeted hours), longer audit tenure is associated with further reductions in reported hours in future audits. This implies that as auditors gain more experience

with a client, they identify efficiencies and refine audit processes, leading to sustained reductions in reported hours following favorable variances. This finding aligns with the idea that experienced auditors leverage institutional knowledge and past efficiencies to optimize resource allocation, reinforcing budget ratcheting effects over extended engagements.

Seventh, the coefficient on variance and non-audit services fees is not significant which suggests that non-audit services do not have a direct impact on changes in reported audit hours in response to variance. However, we find a negative and significant coefficient on variance, favourable and non-audit fees for changes in reported hours indicates that when a favorable variance occurs (i.e., reported hours are lower than budgeted hours), the provision of non-audit services is associated with a further reduction in reported audit hours in future engagements. This suggests that when audit firms provide both audit and non-audit services, they may leverage efficiencies gained from their broader engagement with the client to streamline the audit process, leading to further reductions in audit hours following favorable variances.

Finally, our cross-sectional analyses show that non-Big 4 and smaller clients exhibit stronger ratcheting effects, while Big 4 auditors and larger clients demonstrate stricter controls in reducing reported hours under favorable conditions. Audit committees enhance oversight, driving stronger adjustments in budgeted and reported hours. Interaction effects between variance and favorable conditions amplify reductions in reported hours, especially for Big 4 auditors, industry specialist auditors, and smaller clients.

Our study contributes to the relevant stream of literature in two folds. First, the findings of our study enhance the generalizability of prior studies' findings by providing large-sample evidence of target-ratcheting in audit contexts using publicly available data. Ettredge et al. (2008) rely on proprietary data from a single accounting firm, which limits the generalizability of their

findings. It is difficult to completely rule out the possibility that the findings shown in their research can reflect the unique characteristics of one accounting firm. On the other hand, our study relies on publicly available large and covering an extended longitudinal period sample data, which provides assurance that target ratcheting is a widely used practice in the audit domain. Second, to the best of our knowledge, this paper is the first paper to show that audit firm characteristics can be an important determinant of audit budget ratcheting. We extend the literature by examining the relevance of various auditor characteristics including auditor types, audit team size and compositions, auditor economic relationship with clients, auditor tenure, and auditor workload to budget ratcheting in auditing. Ettredge et al. (2008) call for future research to investigate whether budget ratcheting persists in the current audit environment and whether ratcheting varies depending on the auditor, client, or other characteristics. Our study directly addresses this call by investigating these dynamics in the context of Korean listed companies.

Furthermore, our findings are important because they provide large-scale empirical evidence of budget ratcheting in the audit industry, confirming that audit firms systematically adjust budgeted hours based on prior variances. Unlike prior studies that relied on proprietary data from a single firm, our research enhances the generalizability of budget ratcheting by leveraging publicly available data across multiple firms and over an extended period. Finally, our study highlights the significant role of audit firm characteristics in budget ratcheting, which offer valuable insights for audit regulators, firm managers, and policymakers seeking to improve audit efficiency and resource allocation.

The structure of this paper is as follows: Section 2 provides an overview of Korean audit hour disclosure requirements and reviews relevant literature, culminating in the development of hypotheses in Section 3. Section 4 outlines the research design and describes the sample selection

process. Section 5 presents the primary findings, with additional analyses detailed in Section 6. Section 7 examines the implications of the findings on audit quality. Finally, Section 8 concludes the paper with a discussion of the results and their broader implications.

2. **Background of the study**

Budgeted and reported audit hours should change over time based on the client's characteristics (Bedard et al. 2008). Audit firm management may occasionally hesitate to increase budgeted hours after an engagement exceeds its budget due to concerns about maintaining long-term profitability (Bedard et al. 2008). Similarly, engagement teams might lower reported hours following an over-budget engagement, driven by worries about the effect of repeated unfavorable variances on their future performance evaluations (Bedard et al. 2008). Effective from June 2020, the Korean Financial Supervisory Service (FSS) revised the annual report disclosure to require public firms to disclose audit hours and fees specified in the audit contract along with actual audit hours and fees. The former are the "contractual" audit hours and audit fees predetermined before the audit, and the latter are the "actual" audit hours and audit fees after the audit is completed. Thus, this new disclosure allows us to examine audit firms' target ratcheting decisions in a large sample covering an extended period.

3. Literature review and hypothesis development

3.1 ***Target ratcheting***

Firms rely on various sources of information when they set targets. Prior research shows that firms incorporate corporate past performance, peer performance, and future-oriented information to set targets (Weitzman 1980; Leone and Rock 2002; Bouwens and Kroos 2011;

Aranda et al. 2014; Bol and Lill 2015; Choi et al. 2021). Information about corporate past performance has received widespread attention because it is readily available and provides information about future performance. Research on target setting has shown that firms exploit past performance to set their target by revising the target upward (downward) after favorable (unfavorable) performance variance, a practice called target ratcheting (Weitzman 1980). Prior research also shows that the magnitude of the upward target revision following a favorable variance is greater than the magnitude of the downward target revision after an unfavorable variance, suggesting that ratcheting is asymmetric (Leone and Rock 2002; Kim and Shin 2017; Ettredge et al. 2008).

Target ratcheting can motivate agents to put in higher effort in the current period to achieve difficult targets (Locke and Latham 2002; Merchant and Van der Stede 2012). On the other hand, target ratcheting can result in an adverse problem. Agents who perform well can deliberately reduce their efforts in the current period to avoid upward target revision in future periods. This adverse cost of ratcheting is known as "the ratchet effect" (Bouwens and Kroos 2011; Indjejikian et al. 2014).

Prior research (e.g., (Leone and Rock 2002; Kim and Shin 2017; Choi et al. 2021; Kim and Park 2024) provides evidence that target ratcheting is pervasive in executive bonus compensation contexts. Recent studies examine the determinant of target ratcheting (e.g., Kim and Shin 2017; Kim and Park 2024). Kim and Shin (2017) show that managers with equity incentives and soon-to-retire managers are less likely to withhold effort in the current period to avoid tighter future targets (i.e., lower ratcheting effect), thus increasing the degree of ratcheting. Kim and Park (2024) provide evidence that one of the executive's individual characteristics, overconfidence, affects ratcheting.

3.2 ***Replication of Ettredge at al.'s (2008) study***

Ettredge et al. (2008) apply ratcheting theory in the context of audit budget using proprietary data and find audit hour budget ratcheting. Specifically, they find that the degree of decrease in audit hour budget following favorable variance (i.e., budget hours exceed actual hours) is greater than the degree of increase in audit hour budget following unfavorable variance (i.e., actual hours exceed budget hours), which is asymmetric budget ratcheting. However, due to limited data availability, there is scarce follow-up research after Ettredge et al. (2008). Our study investigates whether audit budget hour ratcheting documented by Ettredge et al. (2008) holds in our large and longitudinal sample data. Thus, first, we re-test four hypotheses of Ettredge et al.'s (2008) using our context. As mentioned earlier, prior research (e.g., Ettredge et al. 2008; Gist and Davidson 1999) acknowledge the limitations of their study due to use samples from a single audit firms or limited number of observations and encourage to replicate their studies into a different setting using large dataset. We replicate the following four hypotheses (for brevity, we do not replicate the justifications of hypotheses) in our setting:

> **H1a:** *The current year change in budgeted engagement hours is positively associated with prior year budget variance (reported hours minus budgeted hours).*
>
> **H1b:** *The positive association between current year change in budgeted engagement hours and prior year budget variance (reported hours minus budgeted hours) is greater for engagements with prior favorable variances (reported hours _ budgeted hours), than for those with unfavorable variances (reported hours _ budgeted hours).*
>
> **H1c:** *The current year change in reported engagement hours is negatively associated with prior year budget variance (reported hours minus budgeted hours).*
>
> **H1d:** *The negative association between current year change in reported engagement hours and prior year budget variance (reported hours minus budgeted hours) is greater for*

engagements with prior favorable variances (reported hours _ budgeted hours) than for those with unfavorable variance (reported hours _ budgeted hours).

3.3 ***Auditor size and budget ratcheting***

Next, we examine the association between auditor characteristics and audit hour budget ratcheting. The practice of setting future targets based on current performance information (i.e., ratcheting) has the side effect of encouraging the agent to withhold efforts to avoid having to achieve a difficult target in the future (i.e., ratchet effect). Recent studies have shown that the degree of 'target effect' lowers when the reliance on past performance to set future targets is reduced (Bol and Lill 2015; Casas-Arce et al. 2018). In other words, companies that are less concerned about the ratchet effect are more likely to rely on past performance to establish targets. Building on this, we investigate how the degree of ratcheting differs when audit firms have different characteristics.

First, we examine how auditor size (i.e., Big 4 vs non-Big 4 auditors) affects the audit budget ratcheting. The size of audit firms affects the types of clients that firms have the capability to audit and may result in economies of scale, which can be built into the budget (Gist and Davidson 1999). The target ratchet effect arises when an agent reduces efforts in the current period to avoid having to achieve a difficult target in the future. Large audit firms have abundant resources (e.g., sufficient professional staff and accumulated experience and knowledge), thus efficiently allocating resources to each audit engagement. This implies that Big 4 auditors, relative to non-Big 4 auditors, are more likely to perceive targets as achievable or less challenging. Thus, Big 4 auditors are willing to accept upward target revision (i.e., reduction in budget audit hours) without decreasing effort, which increases the likelihood of ratcheting. In addition, attaining an audit hour budget is important to auditor career advancement (Kelly and Seiler 1982; Sweeney and Perce

2004). Given that unfavorable (favorable) variance may imply inefficiency (efficiency) in an audit firm, auditors with a reputation have an incentive to perform audit engagement less than budgeted hours. In this circumstance, the incentive to strategically reduce effort (i.e., the ratchet effect) may be low for Big 4 auditors, therefore, the degree of ratcheting is more pronounced for Big 4 auditors.

Big4 auditors have abundant resources in terms of audit methodology, professional manpower, and staff training, thus efficiently allocating resources to each audit engagement. This implies that Big 4 auditors, relative to non-Big 4 auditors, are more likely to perceive targets proposed by clients as achievable or less challenging. Thus, Big 4 auditors are willing to accept upward target revision (i.e., budget audit hours reduction) following a favorable variance. Moreover, Big 4 auditors have established reputations (Francis and Wilson 1988) and, therefore, have incentives to protect their reputation by suppressing the ratchet effect. When a client firm understands the Big 4 auditor's perception of target difficulty and reputational incentive, they are less concerned about the costly ratchet effect. Therefore, the degree of ratcheting is more pronounced for Big 4 auditors. Following the argument, we propose the following hypothesis:

H2. *The degree of target ratcheting is greater for Big 4 audit firms than for non-Big 4 audit firms.*

3.4 *Auditor specialization and budget ratcheting*

As explained above, Big 4 auditors are expected to have abundant resources and higher expertise than non-Big 4 auditors; this may be especially true for industry-specialized auditors (ISA). Since ISAs have extensive experience in specific industries and invest heavily in employee training (Solomon et al., 1999; Francis, 2011), they are expected to have a comprehensive understanding of the characteristics of the industry and company (Dunn and Mayhew, 2004). With

this expertise, ISAs are likely to perceive that meeting the hourly budget target proposed by the client company will not be difficult. Thus, ISAs may be willing to accept upward target revision following current better performance. In addition, ISAs have established reputations for industry expertise (Reichelt and Wang 2010), and therefore, they have less incentive to damage their reputation by intentionally lowering efforts to avoid achieving difficult targets in the future. In other words, the ratchet effect is, therefore, less of a concern for client companies being audited by the ISAs. Based on this argument, we expect that the degree of ratcheting is more pronounced for ISAs.

Industry specialist auditors are more familiar with key risks, regulatory requirements, and common practices in their specialized industry sectors, which may allow them to better estimate the time and resources required for audits, that may reduce unexpected deviations from the planned audit hours (i.e., lower budget variance). Furthermore, industry specialist auditors often develop efficient, standardized audit approaches tailored to the industry's characteristics, reducing the likelihood of inefficiencies or unforeseen challenges, which may also reduce unexpected deviations from the planned audit hours. Prior research (e.g., Cahan et al. 2022) finds that both the extent and distribution of industry knowledge within a team matter for audit production and that industry knowledge is utilized more effectively when it is spread throughout the team. Industry specialized auditors often have well-defined hierarchies and task allocations (e.g., partners, seniors, and juniors) compared to non-specialist auditors, which can minimize inefficiencies. The training and experience of industry specialist auditors are largely concentrated in a particular industry (Solomon, et al. 1999) and are believed to possess comprehensive understanding of a company's characteristics (Dunn and Mayhew 2004) which may also reduce unexpected deviations from the planned audit hours. Therefore, we test the following hypothesis:

H3. *The degree of target ratcheting is greater for industry specialist auditors than for non-specialist auditors.*

3.5 ***Audit team size and budget ratcheting***

Audit team size refers to the number of auditors assigned to a specific engagement, often stratified by rank (partners, seniors, and juniors). Audit team size depends on factors like client size, complexity, industry, and regulatory requirements. The relationship between audit team size and budget ratcheting reflects the dynamics of resource allocation and financial constraints in audit engagements. A larger audit team may indicate higher engagement complexity compared to smaller teams leading to increased audit budgets. Ratcheted (reduced) budgets may lead to smaller teams, forcing auditors to work longer hours or handle greater workloads and audit teams may skew toward junior staff to control costs, reducing the proportion of higher-paid senior auditors. Lager and well-coordinated teams may complete audits more efficiently, encouraging tighter budgets in subsequent periods (downward ratcheting), alternatively poor coordination in large teams or underutilization of resources may increase budget variance, resulting in upward ratcheting to cover inefficiencies. The interaction between audit team size and budget ratcheting reflects the trade-offs between cost control and resource allocation. While ratcheting can improve efficiency, excessive constraints risk reducing team size to the detriment of audit quality. Therefore, we test the following hypothesis:

H4. *The degree of target ratcheting is greater for larger audit teams than for smaller audit teams.*

3.6 ***Audit team composition and budget ratcheting***

An audit engagement team is formed by comprehensively considering the characteristics of the client company (i.e., size, complexity, risk), the level of knowledge required for specific tasks, and the accounting firm's resource constraints (Eilifsen et al., 2013; Cahan et al. 2022). Within an audit engagement team, partner auditors typically plan the overall audit, oversee the audit process, and communicate with the client firm, and senior auditors perform most of the technical tasks necessary to complete the audit (Maister 1982; Hackenbrack and Knechel 1997; Contessotto et al. 2019). Junior auditors perform most substantive procedures that require less specialized judgment, such as collecting audit evidence (Hackenbrack and Knechel 1997). Lower rank auditors (i.e., junior auditors) have less work experience and skills compared to upper rank auditors (i.e., partner and senior auditors). In this circumstance, the client company faces higher uncertainty in setting future targets based on the past performance of an audit firm with many lower-rank auditors compared to an audit firm with many upper-rank auditors. In other words, client firms are less likely to rely on past performance to establish future targets for audit firms with many lower-ranking auditors.

Furthermore, the final number of hours budgeted is controlled by the partner and manager in charge of the audit, who will consider audit firm policies in the setting of budget (Houston 1997). Audit firms' attitudes toward the achievement of budgets and the promotion factors they consider may affect the emphasis that staff place on the importance of achieving time budget (Gist and Davidson 1999). The closeness of supervision, which may also vary by individual auditor, may also affect audit time by ensuring that audit staff do not waste time when they encounter problems or uncertain situations (Gist and Davidson 1999). Environmental factors identified by prior research also affect time budget as they affect inherent risk which was found by O'Keefe et al. (1994) to be associated with more junior and senior hours for substantive testing (Gist and

Davidson 1999). Therefore, we expect that the degree of budget ratcheting is lower for audit firms with many lower-rank auditors compared to audit firms with many upper-rank auditors. Following this argument, we propose the following hypothesis:

H5. *The degree of target ratcheting is lower for lower-rank auditors than for upper-rank auditors.*

3.7 ***Auditor firm workload and budget ratcheting***

Audit firms typically perform multiple audits simultaneously. If an audit firm's workload is heavy, the ability to shift surplus personnel from one audit engagement to another may be limited. Audit firms' heavy workloads are likely to make them perceive it difficult to attain the target level. Thus, they feel more comfortable with withholding effort in the current period to avoid having to meet difficult targets in the future, which incurs the potential cost of ratcheting. Therefore, we expect the degree of ratcheting to be more pronounced for audit firms with low workloads.

If audit firms are involved in multiple engagements, their attention and effort to each engagement could be reduced (Simon 1979). Heavy workloads may prevent the audit team from quickly aligning resources for a specific engagement. Thus, audit firms' heavy workloads are likely to make them perceive it difficult to attain the target proposed by the client firm. In this case, they might feel more comfortable with withholding effort in the current period to avoid having to meet difficult targets in the future, which incurs a ratchet effect. Based on this argument, we expect the degree of ratcheting to be more pronounced for audit firms with low workloads and we propose the following hypothesis:

H6. *The degree of target ratcheting is lower for audit firms with high workloads compared to those with low workloads.*

3.8 ***Auditor economic bonding and budget ratcheting***

The mix of services provided by auditors may affect audit time because of knowledge spillovers and availability of other expertise (Gist and Davidson 1999), however, neither O'Keefe et al. (1994) nor Davis et al. (1993) found evidence of knowledge spillovers. Thus, we re-examine the effect of economic bonding between audit firms and clients on the budget ratcheting. Auditors and clients form economic ties when auditors provide a variety of audit and non-audit services (Ye et al. 2011), and this economic bonding makes auditors financially dependent on their clients. Extant prior research provides evidence that economic bonding undermines the auditor's independence (Frankel et al. 2002). In the context of budget ratcheting, auditors with large economic bonds are incentivized to intentionally withhold their efforts to avoid attaining tight future targets to extend the contracts and receive quasi-economic rents. Thus, we expect that economic bonding is likely to increase the potential cost of target ratcheting, thereby reducing the extent of target ratcheting.

Auditors and clients form economic ties when auditors provide a variety of audit and non-audit services (Ye et al. 2011), and this economic can induce auditors to act with the intention of maintaining relationships with client firms (DeAngelo 1981; Frankel et al. 2002). In the context of budget hour ratcheting, auditors with large economic ties are incentivized to intentionally withhold their efforts to avoid tight future targets to extend the contracts and receive quasi-economic rents. Thus, we expect that economic bonding is likely to increase the potential cost of target ratcheting, thereby reducing the extent of target ratcheting. Following the argument, we propose the following hypothesis:

H7. *The degree of target ratcheting is lower for audit firms with strong economic ties than for audit firms with less economic ties.*

3.9 ***Audit firm tenure and budget ratcheting***

Finally, we examine the effect of audit firms' tenure on budget ratcheting. If audit firms have a longer relationship with a client (Knapp 1991), they will have a greater level of client-specific knowledge and are, therefore, more likely to perceive tight targets as achievable or less challenging. Alternatively, the degree of budget ratcheting can be less pronounced in short-tenure audit firms for the following reasons. Short-tenure auditors have a lower level of client-specific knowledge (Knapp 1991). Therefore, they are more likely to perceive targets proposed by client firms as difficult or more challenging to achieve. Also, since short-tenure auditors have less experience with clients, client firms have higher uncertainty in setting future targets based on past performance. In this circumstance, client firms are less likely to rely on past performance to revise future targets. In other words, the reliance on past performance to set future targets might be decreased. Based on this argument, we expect that the degree of budget ratcheting to be less pronounced for short-tenure auditors. Over time, as an audit firm becomes more familiar with a client's operations, risks, and complexities, it is expected that budget estimates would align more closely with actual engagement hours. However, budget ratcheting, the systematic upward adjustment of budgeted hours in response to prior period variances, can persist due to inherent uncertainties, changes in client circumstances, or organizational inefficiencies within the audit process. Therefore, we expect the degree of ratcheting to be more pronounced for audit firms with longer tenure. Following the argument, we propose the following hypothesis:

H8. *The degree of target ratcheting is lower for short-tenure audit firms than for long-tenure audit firms*.

4. Sample and research design

4.1 *Sample*

Our sample includes Korean-listed firms (KOSPI and KOSDAQ) that disclose information on budget and actual audit hours from 2018 to 2022.[2] We obtain financial data from the KIS-VALUE (equivalent to Compustat). Actual audit hours are downloaded from the Total Solution (TS) 2000 database (equivalent to Audit Analytics), provided by the Korean Listed Companies Association. Budgeted audit hour data are hand-collected from the Data Analysis, Retrieval, and Transfer system (DART) managed by the Financial Supervisory Service in Korea. To investigate whether auditors and clients ratchet future audit budget hours based on corresponding auditors' past performance, we restricted the sample to those in which the current and next year's auditors are the same. We also exclude firm-year observations without audit information including those in the financial industry (e.g., Bae et al. 2021). Upon excluding companies with missing information, our final sample consists of 4,143 firm-year observations from 1,647 unique companies. To minimize the effect of outliers, we winsorize all continuous variables at the 1% and 99% levels. Appendix A provides detailed definitions of all our variables.

<Insert Table 1 about here>

4.2 Research design

4.2.1 Replication of Ettredge et al. (2008)

[2] From 2020, Korean listed firms are required to disclose audit hours and fees specified in their audit contracts. As the 2020 annual report includes two years of comparative information, data on budget audit hours have been available starting from 2018.

First, we replicate the models developed by Ettredge et al. (2008) using the same control variables.[3] We then expand the analysis by incorporating additional client and auditor characteristics to assess whether the results hold after controlling for those variables. Consistent with Ettredge et al. (2008), we estimate Equation (1) to examine changes in budgeted engagement hours as a function of prior-period budget variance, the direction of the variance, and control variables. To validate the findings of Ettredge et al. (2008), we estimate Equation (2), testing changes in reported engagement hours based on prior period budget variance, the direction of the variance, and control variables as follows:

$$CH\_BUDGET_{t+1} = \beta_0 + \beta_1 VARIANCE_t + \beta_2 UNDER_t + \beta_3 VARIANCE_t * UNDER_t + \beta_4 ASSETS_t + \beta_5 CH\_ASSETS_{t+1} + \beta_6 LNSUBS_t + \beta_7 CH\_SUBS_{t+1} + \beta_8 LEV_t + \beta_9 CH\_LEV_{t+1} + \text{Year and industry FE} + \varepsilon \quad (1)$$

$$CH\_REPORT_{t+1} = \beta_0 + \beta_1 VARIANCE_t + \beta_2 UNDER_t + \beta_3 VARIANCE_t * UNDER_t + \beta_4 ASSETS_t + \beta_5 CH\_ASSETS_{t+1} + \beta_6 LNSUBS_t + \beta_7 CH\_SUBS_{t+1} + \beta_8 LEV_t + \beta_9 CH\_LEV_{t+1} + \beta_{10} REV\_BUDGETED\ (RESIDUAL) + \text{Year and industry FE} + \varepsilon \quad (2)$$

Variables are defined in Appendix A.

Where, dependent variable, CH_BUDGET_{t+1}, is audit firms' budget hour revision from year t to year t+1 for firm (i.e., $BUDGET\_HOUR_{t+1} - BUDGET\_HOUR_t$), scaled by $BUDGET\_HOUR_t$. The dependent variable, CH_REPORT_{t+1}, is audit firms' actual hour from year t to year t+1 for firm (i.e., $REPORT\_HOUR_{t+1} - REPORT\_HOUR_t$), scaled by $REPORT\_HOUR_t$. $VARIANCE_t$ refers to deviation between actual hour and budget hour for firm i in year t (i.e.,

[3] Ettredge et al. (2008) measure client's risk using as the engagement team's judgment regarding the level of misstatement risk due to fraud in the prior year engagement, we use leverage and change in leverage as measures of client risk.

$ACTUAL\_HOUR_t - BUDGET\_HOUR_t$), scaled by $BUDGET\_HOUR_t$. Thus, a positive and significant coefficient on $VARIANCE_t$ indicates that the subsequent year's budget hour revisions are positively associated with past performance, that is budget hour ratcheting. $FAVOURABLE_{,t}$ is a dummy variable equal to one if the actual hour is less than budget hour for firm i in year t (i.e., $ACTUAL\_HOUR_t - BUDGET\_HOUR_t$), and zero otherwise. Thus, a negative and significant coefficient on $VARIANCE_t*FAVOURABLE_{,t}$ refers to asymmetric audit hour budget ratcheting.

The factors that impact audit time and budget may be classified into four categories: client, audit firm, environmental, and individual auditor (Gist and Davidson 1999). Client size, complexity and risk factors have been found to have a major effect on the number of hours needed to complete audits, with clients that are larger, more complex and riskier requiring more audit hours (Gist and Davidson 1999; Davidson and Gist 1996; Bell et al. 2008; Hackenbrack and Knechel 1997; O'Keefe et al. 1994). Based on this, Ettredge et al. (2008), we control asset ($SIZE_t$, CH_SIZE_{t+1}) as a proxy for client size, the number of subsidiaries ($LnSUBS_t$, CH_LNSUB_{t+1}) as a proxy for client complexity, and engagement team's judgement regarding level of misstatement risk as a proxy for risk. We use leverage *(LEV)* instead of engagement team's judgement regarding level of misstatement risk as a proxy for risk and replicate Ettredge et al.'s (2008) in Equations (1) and (2). Equation (2) and (4) additionally include the residual term (*RESIDUALS*) obtained from Equations (1) and (3) to control the impact of unexpected budgetary changes due to factors other than prior year variance (Ettredge et al. 2008).

Along with this basic model, we also use the extended model in Equations (3) and (4) below. Extended model includes various client attributes that have been found to affect audit inputs (Simunic 1980; Bae et al. 2016; Gist and Davidson 1999; Davidson and Gist 1996; Bell et al. 2008; Hackenbrack and Knechel 1997; O'Keefe et al. 1994). These attributes include, we use both the

level and change variables, complexity ($INVREC_t$, CH_INVREC_{t+t}, MTB_t, CH_MTB_{t+1}), risk (LEV_t, CH_REV_{t+1}, LIQ_t, CH_LIQ_{t+1}, OCF_t, CH_OCF_{t+1}), profitability ($LOSS_t$ ROA_t, CH_ROA_{t+1}), market (MKT_t), audit characteristics ($BIG4_t$, $TENUURE_t$, OPN_t, ISA_t, WL_t, CH_WL_{t+1}), and ownership (, FOR_t, CH_FOR_{t+1}, $LARGE_t$, CH_LARGE_{t+1}). New audit clients may be more difficult to estimate accurately because of the time needed to learn the client's system (Gist and Davidson 1999) thus we control $INITIAL_t$. We control corporate governance characteristics such as: AC_SIZE_t, AC_EXPERT_t, and AC_MEET_t. We include year and two-digit Standard Industry Classification (K-SIC) based industry fixed effects to control for changing economic conditions over time and to control for the potential effects related to industries.

4.2.2. Auditor, client characteristics and budget ratcheting

We estimate Equation (3) to examine the association between (i) auditor types (Big4 vs non-Big4 and IS vs non-IS), (ii) audit team size and composition, (iii) audit team characteristics, (iv) auditor tenure, (v) non-audit fees, and (vi) auditor workload, separately. Our control variables are drawn from prior research (e.g., Ettredge et al. 2008; Gist and Davidson 1999; Kim and Shin 2017).

$$
\begin{aligned}
CH\_BUDGETt+1 \quad = \quad & \beta_0 + \beta_1 VARIANCE_t + \beta_2 FAVOURABLE_t + \beta_3 VARIANCE_t * FAVOURABLE_t \\
& + \beta_4 ASSETS_t + \beta_5 CH\text{-}ASSETS_{t+1} + \beta_6 SUBS_t + \beta_7 CH\_SUBS_{t+1} + \beta_8 LEV_t \\
& + \beta_9 CH\_LEV_{t+1} + \beta_{10} INVREC_t + \beta_{12} CH\_INVREC_{t+1} + \beta_{13} LIQ_t + \beta_{14} CH\_LQ_{t+1} \\
& + \beta_{15} MTB_t + \beta_{16} CH\_MTB_{t+1} + \beta_{17} ROA_t + \beta_{18} CH\_ROA_{t+1} + \beta_{19} OCF_t + \beta_{20} CH\_OCF \\
& _{t+1} + \beta_{21} FOREIGN_t + \beta_{22} CH\_FOREIGN_{t+1} + \beta_{23} LARGE_t + \beta_{24} CH\_LARGE_{t+1} \\
& + \beta_{25} OPN + \beta_{26} LOSS + \beta_{27} MKT + \beta_{28} AC\_SIZE + \beta_{29} AC\_EXPERT_t + \beta_{30} AC\_MEET_t \\
& + \text{Year and industry FE} + \varepsilon \qquad (3)
\end{aligned}
$$

4.2.3 Tests of determinants of audit budget ratcheting

To test hypothesis one to four simultaneously, we estimate the following model based on the approach of Kim and Shin (2017):

$$
\begin{aligned}
CH\_BUDGET_{t+1} = {} & \beta_0 + \beta_1 BIG4_t + \beta_2 WL_{i,t} + \beta_3 NAS_t + \beta_4 TENURE_t + \beta_5 VARIANCE_t \\
& + \beta_5 VFAVOURABLE_t + \beta_6 VARIANCE_t * BIG4_t + {}_7 VARIANCE_t * WL_t \\
& + \beta_8 VARIANCE_t * NAF_t + \beta_9 VARIANCE_t * TENURE_t \\
& + \beta_6 VARIANCE_t * BIG4_t * FAVOURABLE_t + \beta_7 VARIANCE_t * WL_t * FAVOURABLE_t \\
& + \beta_8 VARIANCE_t * NAF_t * FAVOURABLE_t \\
& + \beta_9 VARIANCE_t * TENURE_t * FAVOURABLE_t + \text{control} + \text{Year and industry} \\
& \text{FE} + \varepsilon \qquad (4)
\end{aligned}
$$

Where $BIG4_t$ is an indicator variable set to one if a firm is audited by one of the Big 4 auditors; WL_t denotes audit firm workload; NAF_t is the natural logarithm of non-audit service fees; $TENURE_t$ is the natural log of length of the contract between audit firms and its client. The interaction variable, audit firm characteristics ($BIG4_t$, WL_t, NAS_t, and $TENURE_t$)$*VARIANCE_t$, captures the incremental effect of budget effect of audit firm characteristics. Thus, we expect that the coefficients on $VARIANCE_t*BIG4_t*FAVOURABLE_t$, are positive and significant, implying that the degree of budget ratcheting is stronger for Big 4 and audit firms with long relationships. On the other hand, we expect that coefficients on $VARIANCE_t*WL_t*FAVOURABLE_t$, are negative and significant, implying that the degree of budget ratcheting is lower for audit firms with high workloads and strong economic ties. We then test asymmetric ratcheting by including the three-way interaction term $VARIANCE_t$ $*FAVOURABLE_{,t}$ $*BIG4_t$ (WL_t, NAS_t, and $TENURE_t$), whose coefficient captures the impact of audit firm characteristics on asymmetric budget ratcheting.

5. Results

5.1 ***Descriptive statistics***

Table 2 provides the descriptive statistics for the variables used in the empirical analyses. Budged hours and reported hours increase by 16.7 percent, and 18.2 percent, respectively, on average. The mean of *FAVOURABLE* is 0.188, which indicates that the variance is mostly unfavorable (unfavorable=81.2%), which is confirmed by the positive mean value of *VARIANCE* (=0.030). Only 18.8% of audit engagements in our sample are completed within the budgeted audit hours, which is consistent with previous studies (e.g., Ettredge et al. 2008; Hwang and Hong 2022).

With respect to the auditor characteristics, 42.8% of firm-years are audited by big4 auditors and 22.9% audited by industry specialized auditors (*ISA*). Looking at audit team composition, looking at audit team composition, the average number of partner auditors (*PAR*) within an audit team is 1.075. The average number of senior auditors (*SEN*) and junior auditors (*JUN*) within an audit team is 5.880, and 2.178, respectively. It implies that engagement team employs more senior auditors compared to partners and juniors. The average audit team workload (*WL*), measured by dividing the natural logarithm of the total actual audit hour by the total number of auditors, is 4.558, which is consistent with Hwang and Hong (2022). The mean audit tenure (*TENURE*) is 5.837 indicating that the auditor–client relationship lasts for about 5.837 years.

<Insert Table 2 about here>

Table 3 presents the correlation statistics for key variables. The table shows that *VARIANC*E is positively associated with *CH_BUDGET* at the 1% significance level, suggesting the audit hour budgets for the following year increase when audit firm achieves target hour for the current year. *FAVOURABLE* is negatively associated with *CH_BUDGET,* implying that budgeted audit hours for the following year decrease when audit firms achieve the target hour for the current period.

<Insert Table 3 about here>

5.2 ***Empirical Evidence on audit hour budget ratcheting***

This paper begins with replicating the by Ettredge et al. (2008) to examine whether audit hour budget ratcheting exists in Korean market. The results of estimating equations (1) and (2) are provided in columns (1) and (2) of Table 4 which are mostly aligned with their findings. As we discussed earlier, the coefficient of $VARIANCE_t$ captures the effect of variance between the actual and target audit hour in the current period on subsequent year's target hour revision. In Column (1) and (2), the coefficients on $VARIANCE_t$ are both positive and significant at 1% level. This suggests that the subsequent year's target hours are upwardly updated when audit firms achieve the current year's target hour. This also implies that client firms and auditors use past performance in setting future audit hours, which means that audit hour budget ratcheting exists in our sample (Ettredge et al. 2008: Bol and Lill 2015; Kim and Park 2024).

However, the coefficients on $VARIANCE_t$*$UNDER_t$ in column (1) and (2) are insignificant. This implies that the degree of decrease in budget hours in response to favorable variance is not different from the degree of increase in budget hour following unfavorable variance. This result shows that asymmetric audit hour budget ratcheting does not exist in our sample firms. The evidence on asymmetric budget ratcheting is mixed. Leone and Rock (2002), Bouwens and Kroos (2011), and Ettredget et al. (2008) find an asymmetric pattern, while Indjejikian et al. (2014), Bol and Lill (2015), and Fisher et al. (2006) find no evidence that ratcheting is asymmetric.

<Insert Table 4 about here>

Columns (3) and (4) of Table 4 report the result of estimating equations (3) and (4), where the dependent variable is the change in reported hours. In both columns, the coefficients on $VARIANCE_t$ are negative and significant at 1% level, suggesting that actual audit hours are reduced following prior unfavorable variance. Furthermore, the results show that the coefficient on $VARIANCE_t$*$UNDER_t$ is negative and significant at the 1% level. This implies that the degree of increase in reported hours following a prior favorable variance is greater (0.250+0.990=1.250) than the degree of decrease in reported hours following a prior unfavorable variance (0.250) which is consistent with Ettredge et al. (2008).

5.3 ***Auditor size and budget ratcheting***

First, we examine the auditor type on the budget ratcheting (Hypothesis 2). The results of estimating Equation (4), where we compare audit budget ratcheting between Big 4 and non-Big 4 auditor, are provided in Column (1) of Panel A of Table 5. We also provide results of changes in reported hours in Column (2). Contrary to our expectations, the coefficient on $VARIANCE_t$*$BIG4_t$ in Column (1) is insignificant, meaning that auditor size is not associated with the degree of audit hour budget ratcheting. This shows that subsequent year's budget hours are not affected when Big4 auditor achieves the budget hour in the current period, which is inconsistent with the prediction of Hypothesis 2. We expect that Big 4 auditors, with their abundant resources, to be better equipped to allocate resources to each audit engagement. Based on their resources, they are expected to perceive targets as achievable or less challenging. However, the Big 4 auditors might perceive that it is difficult to achieve the target proposed by the client company because most audit work is

concentrated in the busy season[4] and they are generally responsible for many clients. This makes Big4 auditors reluctant to update budget hours upwardly after exceeding the current year's budget hour.

Furthermore, when dependent variable is *CH_REPORTED*, the coefficient on $VARIANCE_t*BIG4_t$ is significant and positive (in column 2). This means that Big 4 auditors change their actual hours in response to previous performance. The coefficient of $VARIANCE_t*FAVOURABLE_t*BIG4_t$ is significant and negative, indicating that Big 4 auditors reduce reported hours more aggressively in response to favorable variances (i.e., when reported hours are lower than budgeted hours) compared to non-Big 4 auditors.

<Insert Table 5 about here>

5.4 ***Auditor specialization and budget ratcheting***

With respect to ISAs (hypothesis 3), we expect that the target ratcheting is greater for ISAs. The coefficient of $VARIANCE_t*ISA_t$, provided in Column (3) of Panel A, is positive, but insignificant. The possible explanation might be that in Korea most audit work is concentrated during the busy season. So, even if the auditor has industry expertise, auditor might perceive an upwardly adjusted target based on favorable variance as difficult to attain. This argument is supported by the findings of Heo et al. (2021) that ISAs do not play a role in preventing busy seasons from compromising audit quality in the Korean market. Furthermore, ISAs might face the problem of lack of available resources. During periods of heightened industry-specific risk, ISAs may have difficulty allocating resources to clients in affected industries because they have client portfolios concentrated in those industries (Cassell et al.2019). The above reasons encourage ISAs

[4] For example, in our sample period of 2021, about 98% of Korean companies have a December fiscal year-end (FSS 2022).

to be reluctant to accept subsequent year's budget being set tight following current year's favorable variance. Alternatively, the coefficient of $VARIANCE_t*ISA_t$, is significant and negative with changes in reported audit hours indicating that industry specialist auditors reduce reported audit hours more aggressively in response to past variances compared to non-specialist auditors. This finding supports the idea that specialists achieve greater audit efficiencies, leading to stronger budget adjustments when audit work requires fewer hours than originally planned.

5.5 ***Audit team size, compositions and budget ratcheting***

We examine the impact of audit team size and composition on budget ratcheting. Before analyzing audit team composition, we first assess whether audit team size influences budget ratcheting. For this analysis, audit team size (*TEAM*) is measured as the total number of auditors within the audit engagement team, as specified in Equation (4). Panel B of Table 4 presents the results. In Column (1), we find a significant and negative coefficient on $VARIANCE_t*FAVOURABLE_t*TEAM_t$, indicating that larger audit teams reduce reported hours more decisively following favorable variances (i.e., when reported hours are lower than budgeted hours). This finding suggests that after experiencing efficiency gains in prior audits, larger audit teams systematically tighten future budgets, leading to a reinforcing ratcheting effect.

Next, we examine the impact of audit team composition on budget adjustments, categorizing auditors into partners (*PAR*), seniors (*SEN*), and juniors (*JUN*). The results, reported in Column (3) of Panel B, reveal that the effect of variance on budgeted audit hours differs across audit team roles. The positive and significant coefficient on $VARIANCE_t*PAR_t$ suggests that when variance occurs, partners experience an increase in budgeted hours. This may be due to their oversight responsibilities in complex engagements and their role in ensuring audit quality, which

may require additional time and resources. This finding aligns with budget ratcheting, where prior inefficiencies lead to upward budget adjustments, particularly at the highest levels of the audit hierarchy. In contrast, the negative and significant coefficient on $VARIANCE_t*SEN_t$ suggests that budgeted hours decrease for senior auditors in response to variance. This may reflect efficiency improvements or firm expectations that seniors can manage workload fluctuations with fewer resources over time. This downward adjustment in budgeted hours for seniors reinforces the ratcheting effect, where efficiency gains are sustained by reducing hour allocations in subsequent engagements. Meanwhile, the non-significant coefficient on $VARIANCE_t*JUN_t$ implies that variance does not lead to meaningful changes in budgeted hours for junior auditors. This is likely because junior auditors' tasks are more standardized, and workload adjustments are managed at higher levels of the audit team rather than at the junior level.

5.6 ***Audit firm workload and budget ratcheting***

With respect to the audit team's workload (Hypothesis 6), we predicted that the degree of target ratcheting would be lower for audit firms with higher workloads, as a heavy workload may lead auditors to perceive audit targets as increasingly difficult to achieve. However, as shown in Column (1) of Panel C, the insignificant coefficient on $VARIANCE_t*WL_t$ contradicts this expectation, indicating that workload alone does not directly influence changes in reported hours in response to prior variance. However, the negative and significant coefficient on $VARIANCE_t*FAVOURABLE_t*WL_t$ provides key insights into audit hour budget ratcheting. Specifically, when a favorable variance occurs—meaning reported hours fall below budgeted hours—high workload is associated with a further reduction in reported hours in future audits. This

suggests that audit teams operating under greater workload pressures reinforce downward adjustments in reported hours following favorable variances.

<Insert Table 5 about here>

5.7 ***Auditor economic bond and budget ratcheting***

The insignificant coefficient on $VARIANCE_t*NAS_t$ suggests that the provision of non-audit services (NAS) does not directly influence adjustments in reported audit hours in response to prior variance, contradicting our prediction in Hypothesis 7. This finding implies that firms do not systematically adjust reported audit hours simply due to the presence of NAS, indicating that the audit planning process remains largely variance-driven and unaffected by additional service offerings. However, the negative and significant coefficient on $VARIANCE_t*FAVOURABLE_t*NAS_t$ for changes in reported audit hours provides important insights into audit hour budget ratcheting. Specifically, when a favorable variance occurs—that is, reported audit hours fall below budgeted hours—the presence of NAS is associated with an additional reduction in reported audit hours in subsequent engagements. This suggests a reinforcing ratcheting effect, where audit firms, particularly those providing NAS, further decrease audit effort following periods of lower-than-expected audit hours.

5.8 ***Audit firm tenure and budget ratcheting***

The insignificant coefficient on $VARIANCE_t*TENURE_t$ suggests that audit tenure does not directly influence changes in reported audit hours in response to prior variance, contradicting our prediction in Hypothesis 8. This indicates that simply having a longer engagement with a client does not, on its own, drive adjustments in reported audit hours based on past variances, suggesting that audit planning remains primarily variance-driven rather than tenure-dependent. However, the

negative and significant coefficient on $VARIANCE_t$*$FAVOURABLE_t$*$TENURE_t$ for changes in reported hours provides critical insights into audit hour budget ratcheting. Specifically, when a favorable variance occurs—where reported hours fall below budgeted hours—longer audit tenure is associated with a further reduction in reported hours in subsequent audits. This suggests a reinforcing ratcheting effect, in which audit firms systematically decrease reported hours over time as they gain more familiarity with the client.

6. Additional analyses

6.1 *Budget ratcheting between Big 4 and non-Big 4 auditors*

Table 6, Panel A compares the results of the associations between auditor types and budget ratcheting. For Big 4 firms, a 1% increase in variance leads to a 47.2% increase in budgeted hours for the next period, supporting the concept of budget ratcheting. The interaction between variance and favorable variance does not significantly affect budgeted hours for Big 4 firms. Alternatively, for non-Big 4 firms, a 1% increase in variance leads to a 61.5% increase in budgeted hours, indicating stronger budget ratcheting compared to Big 4 firms. The interaction between variance and favorable variance does not significantly influence budgeted hours in non-Big 4 firms. For Big 4 firms, a 1% increase in variance reduces reported hours by 30.6% in the next period, indicating tighter control over reported hours after periods of inefficiency. When variances are favorable, reported hours decrease further, reflecting efficiency improvements or stricter realignments in Big 4 firms. Similar to Big 4 firms, favorable variances result in a larger reduction in reported hours for non-Big 4 firms, although the magnitude is slightly lower.

<Insert Table 6 about here>

Budget ratcheting is stronger in non-Big 4 firms (61.5%) compared to Big 4 firms (47.2%). This suggests that non-Big 4 firms rely more on prior variances when adjusting their budgets. The reduction in reported hours is more pronounced for Big 4 firms (−0.306) than for non-Big 4 firms (−0.234). Big 4 firms appear to enforce stricter alignment between budgeted and reported hours. Favorable variances amplify reductions in reported hours for both Big 4 and non-Big 4 firms, with a stronger effect observed in Big 4 firms (−1.154) compared to non-Big 4 firms (−0.932).

6.2 *Budget ratcheting between industry specialist and non-specialist auditors*

Table 6, Panel A reports the results of the association between auditor specialization and budget ratcheting. Budget ratcheting is slightly stronger for non-ISA audits (56.7%) compared to ISA audits (55.8%). Both categories exhibit significant upward adjustments in budgeted hours in response to prior variances. A 1% increase in variance leads to a 55.8% increase in budgeted hours for ISA audits, indicating strong budget ratcheting behavior in response to variances. The interaction between variance and favorable variance does not significantly affect budget adjustments for ISA audits. For ISA audits, a 1% increase in variance reduces reported hours by 30.2% in the next period, reflecting adjustments to align closer with budget expectations. The interaction term does not significantly influence reported hours in ISA audits. A 1% increase in variance leads to a 56.7% increase in budgeted hours for non-ISA audits, slightly higher than for ISA audits. This indicates strong reliance on prior variances for budget adjustments. The interaction between variance and favorable variance does not significantly influence budget adjustments for non-ISA audits. For non-ISA audits, a 1% increase in variance reduces reported hours by 25.8% in the next period, slightly less than for ISA audits, suggesting a less aggressive approach to aligning reported hours with budgets. Favorable variances amplify reductions in

reported hours for non-ISA audits. A 1% favorable variance leads to an additional 100.3% reduction in reported hours, reflecting tighter controls compared to ISA audits.

6.3 *Budget ratcheting between large and small audit team size*

Table 6, Panel B compares the association between audit team size and budget ratcheting. Small audit teams demonstrate stronger budget ratcheting and greater responsiveness to favorable variances when planning budgets, suggesting a need for more precise variance management. Large audit teams enforce stricter adjustments to reported hours after favorable variances, reflecting greater capacity for workload optimization. A 1% increase in variance leads to a 49.8% increase in budgeted hours for large audit teams, indicating strong budget ratcheting behavior. The interaction between variance and favorable variance does not significantly influence budget adjustments for large teams. For large teams, a 1% increase in variance reduces reported hours by 0.263% in the next period, reflecting adjustments to align reported hours with budgets. When variances are favorable, reported hours for large teams decrease further, indicating stricter adjustments to realign reported hours after favorable variances. A 1% increase in variance leads to a 0.636% increase in budgeted hours for small audit teams, reflecting a stronger budget ratcheting effect compared to large teams. The interaction between variance and favorable variance does not significantly affect budget adjustments for small teams. A 1% increase in variance reduces reported hours by 0.253% in the next period for small teams, similar to large teams but slightly less strict. Favorable variances amplify reductions in reported hours for small teams, though the effect is less pronounced compared to large teams. Both large and small teams exhibit budget ratcheting, but the effect is stronger for small teams (63.6%) than for large teams (49.8%). Small teams may rely more heavily on prior variances to adjust budgets, possibly due to fewer resources or greater

sensitivity to workload discrepancies. Favorable variances lead to stricter reductions in reported hours for large teams (−110.2%) compared to small teams (87.2%). Large teams enforce stricter realignments after favorable variances, possibly reflecting their capacity for tighter control.

6.4 *Budget ratcheting between large and small clients*

Table 6, Panel C provides regression results exploring how variance ($VARIANCE_t$), and the interaction ($VARIANCE_t$*$FAVOURABLE_t$) influence changes in budgeted hours and reported hours for large and small clients. Large clients show no significant budget ratcheting effect (−0.224, t=−1.275), however, small clients exhibit a strong negative relationship (−2.611, t=−6.453), suggesting a tendency to reduce budgeted hours aggressively in response to prior variances. The interaction is insignificant for large clients for both budgeted and reported hours, however, for small clients, favorable variances amplify increases in budgeted hours (0.033, t=2.167), indicating a stronger compounding effect in their budgeting process. Small clients exhibit more aggressive reductions in budgeted and reported hours in response to variances, potentially reflecting greater sensitivity to resource constraints. Alternatively, large clients, while less responsive to variances in budgeting, enforce stricter reductions in reported hours after favorable variances, indicating tighter controls.

6.5 *Budget ratcheting between clients with (without) audit committees*

Table 6, Pnale C presents the effects of variance ($VARIANCE_t$), and the interaction ($VARIANCE_t$*$FAVOURABLE_t$) on changes in budgeted hours and reported hours for audits conducted with and without audit committees. The results show that both clients with and without an audit committee show significant budget ratcheting. Clients without audit committees (56.2%)

exhibit slightly stronger budget ratcheting compared to with audit committees (50.2%). For example, clients without (with) audit committees show that a 1% increase in variance leads to a 56.2% (50.2%) increase in budgeted hours, suggesting a slightly stronger budget ratcheting effect compared to clients with audit committees. The interaction effects ($VARIANCE_t$*$FAVOURABLE_t$) show that favorable variances lead to significantly larger reductions in reported hours for cleints with audit committees (−141.5%) compared to clients without audit committees (−086.1%). This indicates that audit committees may amplify the effect of favorable variances to enforce tighter controls.

6.7 ***Impacts of partner, senior, and juniors reported hours on budget variances***

Individual auditor characteristics may impact audit time and the budget (Gist and Davidson 1999). The characteristics of an individual auditor may include differences in both the auditors performing the audit and the manager and partner responsible for the audit (Gist and Davidson 1999). Individual factors may include experience and expertise (Bedard 1991), skills level, personality (Kelley and Margheim 1990; Davidson and Dalby 1993), attitude toward risk, level of moral reasoning (Ponemon 1992). Individual auditor factors may affect individuals' efficiency and attitudes toward the importance of achieving time budget (Gist and Davidson 1999). These factors would seem to relate to both supervisors (managers and partners) and staff (Gist and Davidson 1999). For continuing clients, seniors prepare preliminary time budgets after meeting with the partner and manager (Houston 1997). Audit time budgets are based on the previous budget modified by considering the time reported for the last audit and the expectations of the specific events and conditions that are likely to exist at the time of the next audit (Wright 1988; Gist and Davidson 1999). Gist and Davidson (1999) suggest that the achievement of the budget depends on

how close the events and conditions that actually exist during the next audit are to the expectations at the time the budget was set.

<Insert Table 7 about here>

The regression results examine how variance in reported hours at different audit staff levels (partner, senior, and junior) influences changes in budgeted hours for the next period. The relation between audit partners, seniors and juniors reported hour variances and budget variances is positive and significant suggests that higher variance in reported hours among audit team members leads to an increase in budgeted hours for the next period. Based on the coefficients, strong budget ratcheting effects are observed across all levels, but most pronounced for seniors.

7. **Conclusion and discussion**

Prior research in non-audit settings suggests that budgets are adjusted based on prior performance, a process known as budget ratcheting (Ettredge, Bedard, & Johnstone, 2008). This process is asymmetric, meaning budget targets rise more sharply after favorable performance than they decrease after unfavorable outcomes. Ettredge et al. (2008) applied Weitzman's (1980) budget ratcheting theory to an audit and called for larger-scale studies. Leveraging mandatory disclosures of actual and budgeted audit hours in Korea, our study replicates and expands their findings with a larger dataset over an extended period. We also examine how audit firm characteristics influence audit budget ratcheting, a common practice in performance-based settings. Prior research links budget adjustments to client attributes and executive traits, yet little work explores audit time budgets despite staff time being a major audit cost. However, limited public data has constrained research, often relying on single firms. To address this gap, we leverage large-scale audit hour disclosures in Korea, providing broader insights into budget ratcheting and its variations across audit firm characteristics.

This study examines budget ratcheting in auditing, where budget targets increase more significantly following unfavorable variances than they decrease after favorable variances. Using mandatory disclosures of actual and budgeted audit hours from Korean listed firms (2018−2022), we extend Ettredge et al. (2008) with a larger sample and a longer time horizon, while also exploring how audit firm characteristics influence budget ratcheting. Our findings confirm that budgeted audit hours increase in response to prior variances, supporting the existence of budget ratcheting in Korea.

The findings highlight the complex dynamics of audit hour budget ratcheting, revealing that various auditor characteristics influence adjustments in budgeted and reported audit hours. First, contrary to expectations, auditor size does not significantly impact budget ratcheting, as Big 4 auditors do not systematically increase future budget hours after meeting current targets. However, they do adjust reported hours, particularly reducing them more aggressively in response to favorable variances. Second, industry specialist auditors also show reluctance to increase budgeted hours despite past performance, likely due to resource constraints and seasonal workload pressures. Third, audit team size plays a critical role, with larger teams exhibiting a stronger ratcheting effect by reducing budgeted hours following efficiency gains. Within audit teams, partners tend to see increased budgeted hours in response to variances, while senior auditors experience a decline, reinforcing efficiency-driven ratcheting. Fourth, audit firm workload does not directly influence budget ratcheting, but when a favorable variance occurs, high workload leads to further reductions in reported hours. Finally, firms providing non-audit services and those with longer audit tenure further decrease reported hours following efficiency gains, reinforcing downward budget adjustments. These findings indicate that audit hour budget ratcheting is primarily driven by efficiency considerations, workload pressures, and resource constraints rather

than auditor size or tenure, shaping how audit firms strategically manage their audit engagements over time.

While our study provides valuable insights into audit budget ratcheting in Korea, it has several limitations. First, although we leverage mandatory disclosures of actual and budgeted audit hours, data availability remains a constraint, limiting our ability to examine more granular audit team structures (e.g., director and manager-level hours). Second, while Korea's audit market aligns with international auditing standards, differences in regulatory environments and firm structures across countries may affect the generalizability of our findings. Third, while we control for key firm characteristics, unobserved factors such as engagement complexity or auditor workload distribution may influence budget adjustments. Fourth, the study focuses on the association between prior budget variances and changes in budgeted and reported hours, but it does not directly measure the impact on audit quality, leaving room for future research to explore whether ratcheting influences audit effectiveness. Finally, while we examine the role of firm size, specialization, and governance, behavioral factors influencing auditor decision-making remain an area for further exploration. Despite these limitations, our study enhances the understanding of budget ratcheting in auditing and provides a foundation for future research in different regulatory and institutional settings.

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APPENDIX

Variable definitions

Variables	Variables definition
$BHOUR_t$	Total budget hours in year t
CH_BUDGET_{t+1}	[(Budgeted hours$_{t+1}$ – Budgeted hours$_t$) / Budgeted hours$_t$]
$RHOUR_t$	Total reported hours in year t
CH_REPORT_{t+1}	[(Reported hours$_{t+1}$ – Reported hours$_t$) / Reported hours$_t$]
$VARIANCE_t$	[(Reported hours$_t$ – Budgeted hours$_t$) / Budgeted hours$_t$]
$FAVORABLE_t$	1 if variance is favorable (=reported hours are less than budgeted), 0 otherwise
$SIZE_t$	Ln(total asset)
CH_SIZE_{t+1}	ASSET$_{t+1}$ – ASSET$_t$
REV_t	Total liabilities divided by total asset
CH_REV_{t+1}	LEV$_{t+1}$ – LEV$_t$
$INVREC_t$	Receivables and inventory divided by total assets;
CH_INVREC_{t+1}	INVREC$_{t+1}$ – INVREC$_t$
LIQ_t	Current assets divided by current liabilities
CH_LIQ_{t+1}	LIQ$_{t+1}$ – LIQ$_t$
MTB_t	Market to book ratio
CH_MTB_{t+1}	MTB$_{t+1}$ – MTB$_t$
ROA_t	Net income divided by total asset
CH_ROA_{t+1}	ROA$_{t+1}$ – ROA$_t$
OCF_t	Operating cash flow divided by total assets
CH_OCF_{t+1}	OCF$_{t+1}$ – OCF$_t$
FOR_t	The number of shares owned by foreign investors divided by total shares outstanding
CH_FOR_{t+1}	FOR$_{t+1}$ – FOR$_t$
$LARGE_t$	The number of shares owned by largest investors divided by total shares outstanding
CH_LARGE_{t+1}	LARGE$_{t+1}$ – LARGE$_t$
$LNSUB_t$	Ln (number of subsidiaries)
CH_LNSUB_{t+1}	Change in number of subsidiaries
$LOSS_t$	1 if firm report loss, 0 otherwise
$BIG4_t$	1 if the firm is audited by one of the Big4 accounting firms, 0 otherwise
OPN_t	1 if the firm receives a modified audit opinion, and 0 otherwise
ISA_t	1 if firm is audited by auditor industry specialization, and 0 otherwise
$FIRST_t$	1 if it is the first year of an audit engagement, and 0 otherwise
$TENURE_t$	The length of the auditor-client relationship in years
AC_t	1 if the firms have audit committee, 0 otherwise.
MKT_t	1 if the firm is listed in KSE, 0 otherwise.
$TEAM$	The number of total auditors within audit engagement team
PAR_t	The number of partner auditors within engagement team
SEN_t	The number of senior auditors within engagement team
JUN_t	The number of junior auditors within engagement team
WL_t	The natural logarithm of the audit team workload measured by the total actual audit hours divided by the number of total auditors (Hwang and Hong 2022)
$LNNAF_t$	Natural logarithm of non-audit fees

Table 1
Sample selection

	Number of firm-year observations
Firms listed on the Korean Stock market in non-financial industries from 2018 to 2022	11,368
Less: Firms didn't have the same auditor for at least two consecutive years	3,851
Less: firms with missing financial data to measure the control variables	3,123
Less: Firms with missing audit hours and audit hours by auditor rank	251
Final sample	**4,143**

Table 2
Descriptive Statistics

Variables	N	Mean	Median	STD	Q25	Q75	Min	Max
BUDGETED HOURS	4,143	2,348.283	1,236.000	3,816.837	900.000	2,018.000	201.000	76,741.000
REPORTED HOURS	4,143	2,404.238	1,264.000	3,837.640	913.000	2,117.000	160.000	76,999.000
HOUR_PARTNERS	4,143	202.569	156.000	182.148	81.000	271.000	0.000	3,896.000
HOUR_SENIORS	4,143	1,478.173	859.500	2,178.928	602.000	1,331.000	0.000	41,895.000
HOUR_JUNIORS	4,143	472.435	123.500	990.331	0.000	519.000	0.000	17,030.000
PAR_t	4,143	1.075	1.000	0.282	1.000	1.000	0.000	5.000
SEN_t	4,143	5.880	5.000	4.025	3.000	7.000	0.000	44.000
JUN_t	4,143	2.178	1.000	2.772	0.000	4.000	0.000	29.000
$VARIANCE_t$	4,143	0.030	0.000	0.114	0.000	0.034	-0.333	0.631
CH_BUDGET_{t+1}	4,143	0.167	0.091	0.262	0.000	0.281	-0.407	1.858
CH_REPORT_{t+1}	4,143	0.182	0.311	0.001	0.099	0.293	-0.404	2.156
$FAVORABLE_t$	4,143	0.188	0.000	0.391	0.000	0.000	0.000	1.000
$SIZE_t$	4,143	26.211	25.967	1.379	25.244	26.852	22.867	30.409
CH_SIZE_{t+1}	4,143	0.088	0.047	0.242	-0.017	0.136	-0.401	2.395
$LNSUB_t$	4,143	1.400	1.386	1.046	0.693	2.079	0.000	4.394
CH_LNSUB_{t+1}	4,143	0.055	0.000	0.346	0.000	0.000	-1.000	2.000
LEV_t	4,143	0.372	0.371	0.193	0.211	0.510	0.026	0.980
CH_LEV_{t+1}	4,143	0.061	0.000	0.406	-0.098	0.125	-0.786	3.676
$INVREC_t$	4,143	0.223	0.201	0.140	0.114	0.305	0.005	0.643
CH_INVREC_{t+1}	4,143	-0.003	-0.002	0.059	-0.029	0.023	-0.225	0.191
LIQ_t	4,143	3.024	1.703	4.397	1.058	3.220	0.164	58.480
CH_LIQ_{t+1}	4,143	0.071	-0.017	0.629	-0.191	0.169	-0.915	6.739
MTB_t	4,143	1.968	1.310	2.149	0.775	2.296	0.275	15.897
CH_MTB_{t+1}	4,143	-0.106	-0.079	1.398	-0.337	0.170	-8.726	7.731
ROA_t	4,143	0.005	0.023	0.116	-0.013	0.058	-0.800	0.264
CH_ROA_{t+1}	4,143	-0.217	-0.225	4.663	-0.910	0.426	-23.463	22.620
OCF_t	4,143	0.040	0.043	0.085	-0.002	0.087	-0.385	0.298
CH_OCF_{t+1}	4,143	0.000	0.000	0.096	-0.044	0.043	-0.350	0.387
FOR_t	4,143	7.571	3.280	10.612	1.380	8.630	0.000	52.950
CH_FOR_{t+1}	4,143	-0.326	-0.180	2.600	-1.300	0.710	-9.570	8.960
$LARGE_t$	4,143	0.404	0.400	0.165	0.282	0.519	0.061	0.784
CH_LARGE_{t+1}	4,143	-0.003	0.000	0.039	-0.004	0.000	-0.176	0.257
$BIG4_t$	4,143	0.428	0.000	0.495	0.000	1.000	0.000	1.000
$TENURE_t$	4,143	1.741	1.609	0.580	1.099	2.303	0.693	2.890
CH_TENURE_{t+1}	4,143	-0.648	1.000	3.442	-1.000	1.000	-13.000	1.000
OPN_t	4,143	0.003	0.000	0.056	0.000	0.000	0.000	1.000
ISA_t	4,143	0.229	0.000	0.420	0.000	0.000	0.000	1.000
LOSS	4,143	0.298	0.000	0.457	0.000	1.000	0.000	1.000
$FIRST_t$	4,143	0.287	0.000	0.453	0.000	1.000	0.000	1.000
MKT_t	4,143	0.412	0.000	0.492	0.000	1.000	0.000	1.000

AC_SZE_t	4,143	0.435	0.000	0.652	0.000	1.386	0.000	1.609
AC_EXPERT_t	4,143	0.118	0.000	0.198	0.000	0.333	0.000	1.000
AC_MEET_t	4,143	0.485	0.000	0.834	0.000	1.099	0.000	3.434
WL_t	4,143	4.558	4.956	1.132	3.738	5.438	1.099	5.858
$CH\_CH\_WR_{t+1}$	4,143	0.045	0.030	0.749	-0.136	0.197	-2.561	3.314
LNAS	4,143	3.070	0.000	4.553	0.000	8.700	0.000	12.600

Table 3

Pearson correlation matrix

	$VARIANCE_t$	CH_BUDGET_{t+1}	CH_REPORT_{t+1}	$FAVORABLE_t$
$VARIANCE_t$	1.000			
CH_BUDGET_{t+1}	0.194***	1.000		
	(0.000)			
CH_REPORT_{t+1}	-0.165***	0.753***	1.000	
	(0.000)	(0.000)		
$FAVORABLE_t$	-0.423***	-0.081***	0.097***	1.000
	(0.000)	(0.000)	(0.000)	

This table presents the Pearson correlation coefficients. See Appendix A for variable definitions. *, **, *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively (based on two-tailed tests).

Table 4

Change in budgeted and reported hours and budget ratcheting

Variables	*(1) CH_BUDGETD*	*(2) CH_BUDGETD*	*(3) CH-REPORTED*	*(4) CH-REPORTED*
	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)
Intercept	-0.379*** (-3.724)	-0.915*** (-6.791)	-0.319*** (-3.554)	-0.864*** (-7.583)
$VARIANCE_t$	**0.466***** **(9.015)**	**0.538***** **(10.70)**	**-0.263***** **(-7.455)**	**-0.202***** **(-5.539)**
$VARIANCE_t$*****$FAVOURABLE_t$	0.009 (0.088)	-0.104 (-1.087)	**-0.903***** **(-4.371)**	**-0.997***** **(-4.955)**
$SIZE_t$	0.019*** (4.639)	0.040*** (7.640)	0.023*** (8.221)	0.044*** (11.54)
CH_SIZE_{t+1}	0.045** (2.016)	0.052** (2.215)	0.057*** (3.891)	0.074*** (4.780)
$LNSUB_t$	-0.015*** (-2.842)	-0.013*** (-2.580)	-0.021*** (-5.798)	-0.020*** (-5.432)
CH_LNSUB_{t+1}	0.021 (1.547)	0.021 (1.582)	0.033*** (2.879)	0.033*** (2.788)
LEV_t	-0.010 (-0.473)	-0.046* (-1.756)	-0.014 (-0.981)	-0.027 (-1.407)
CH_LEV_{t+1}	0.008 (0.857)	0.004 (0.362)	0.018** (2.319)	0.010 (1.206)
$INVREC_t$		0.058* (1.873)		-0.019 (-0.775)
CH_INVREC_{t+1}		-0.032 (-0.356)		-0.179*** (-3.250)
LIQ_t		-0.002 (-1.604)		-0.000 (-0.412)
CH_LIQ_{t+1}		-0.001 (-0.204)		0.002 (0.467)
MTB_t		0.005** (2.012)		0.007*** (4.199)
CH_MTB_{t+1}		0.001 (0.150)		0.006** (1.972)
ROA_t		0.096* (1.675)		0.154*** (3.572)
CH_ROA_{t+1}		0.002* (1.784)		0.001* (1.767)
OCF_t		-0.101 (-1.283)		-0.176*** (-3.268)
CH_OCF_{t+1}		-0.179*** (-2.746)		-0.276*** (-5.851)
FOR_t		-0.000 (-0.0993)		-0.001** (-2.505)
CH_FOR_{t+1}		0.002 (1.029)		0.001 (0.893)
$LARGE_t$		0.018 (0.697)		-0.002 (-0.112)
CH_LARGE_{t+1}		-0.085 (-0.604)		-0.074 (-0.961)
$BIG4_t$		-0.093*** (-7.569)		-0.085*** (-9.886)
$TENURE_t$		-0.039*** (-4.462)		-0.047*** (-7.325)

CH_TENURE_{t+1}		-0.016***		-0.020***
		(-10.90)		(-18.27)
OPN_t		0.234		0.257***
		(1.486)		(5.360)
ISA_t		0.007		-0.029***
		(0.621)		(-3.391)
$LOSS$		0.015		0.018**
		(1.317)		(2.217)
$FIRST_t$		-0.031**		-0.042***
		(-2.526)		(-5.158)
MKT_t		0.007		0.007
		(0.785)		(1.026)
AC_SZE_t		0.004		0.032***
		(0.294)		(2.695)
AC_EXPERT_t		-0.034		-0.085***
		(-0.915)		(-2.836)
AC_MEET_t		-0.011		-0.015**
		(-1.333)		(-2.320)
WL_t		0.020***		0.032***
		(4.116)		(8.328)
$CH\_CH\_WR_{t+1}$		0.047***		0.064***
		(5.477)		(10.37)
$RESIDUALS$			1.013***	1.017***
			(48.69)	(49.07)
Industry FE	Included	Included	Included	Included
Year FE	Included	Included	Included	Included
Adj.R^2	0.0720	0.1419	0.6825	0.6871
Obs.	4,143	4,143	4,143	4,143

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

Table 5
Cross-sectional analyses

Panel A: Auditor types and budget ratcheting

Variable	***Big4 vs non-Big4***		***ISA vs non-ISA***	
	(1) CH_BUDGETD	*(2) CH-REPORTED*	*(3) CH_BUDGETD*	*(4) CH-REPORTED*
	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)
Intercept	-0.905*** (-6.684)	-0.864*** (-7.155)	-0.912*** (-6.755)	-0.844*** (-6.975)
VARIANCE$_t$	**0.567*** (9.205)**	**-0.433*** (-5.660)**	**0.517*** (11.07)**	**-0.414*** (-7.527)**
BIG4	**-0.094*** (-7.078)**	**-0.104*** (-9.650)**		
VARIANCE$_t$_BIG4	-0.060 (-0.676)	**0.214** (2.320)**		
*VARIANCE$_t$*FAVOURABLE$_t$*BIG4*	-0.192 (-1.187)	**-1.101*** (-2.919)**		
ISA			0.003 (0.219)	**-0.051*** (-3.879)**
VARIANCE$_t$_ISA			0.031 (0.266)	**0.219** (2.030)**
*VARIANCE$_t$*FAVOURABLE$_t$*ISA*			-0.187 (-0.597)	-0.822 (-1.231)
SIZE$_t$	0.039*** (7.538)	0.044*** (11.27)	0.039*** (7.618)	0.043*** (10.88)
CH_SIZE$_{t+1}$	0.052** (2.223)	0.070*** (4.446)	0.052** (2.206)	0.070*** (4.444)
LNSUB$_t$	-0.013** (-2.543)	-0.019*** (-5.171)	-0.013** (-2.562)	-0.019*** (-4.928)
CH_LNSUB$_{t+1}$	0.021 (1.556)	0.033*** (2.813)	0.021 (1.577)	0.032*** (2.734)
LEV$_t$	-0.046* (-1.761)	-0.028 (-1.471)	-0.046* (-1.768)	-0.030 (-1.604)
CH_LEV$_{t+1}$	0.004 (0.348)	0.012 (1.443)	0.004 (0.383)	0.012 (1.480)
INVREC$_t$	0.057* (1.839)	-0.023 (-0.941)	0.057* (1.837)	-0.029 (-1.122)

CH_INVREC_{t+1}	-0.034	-0.190***	-0.034	-0.198***
	(-0.377)	(-3.349)	(-0.380)	(-3.442)
LIQ_t	-0.002	-0.000	-0.002	-0.000
	(-1.594)	(-0.622)	(-1.640)	(-0.758)
CH_LIQ_{t+1}	-0.001	0.002	-0.001	0.002
	(-0.191)	(0.456)	(-0.206)	(0.475)
MTB_t	0.005**	0.008***	0.005**	0.008***
	(2.020)	(3.839)	(2.039)	(3.792)
CH_MTB_{t+1}	0.001	0.006**	0.001	0.006**
	(0.139)	(2.002)	(0.155)	(1.987)
ROA_t	0.096*	0.148***	0.096*	0.150***
	(1.672)	(3.376)	(1.665)	(3.426)
CH_ROA_{t+1}	0.001*	0.001*	0.002*	0.001
	(1.717)	(1.663)	(1.782)	(1.640)
OCF_t	-0.101	-0.177***	-0.102	-0.184***
	(-1.276)	(-3.258)	(-1.293)	(-3.375)
CH_OCF_{t+1}	-0.177***	-0.276***	-0.179***	-0.280***
	(-2.730)	(-5.663)	(-2.751)	(-5.735)
FOR_t	-0.000	-0.001**	-0.000	-0.001**
	(-0.111)	(-2.557)	(-0.0955)	(-2.428)
CH_FOR_{t+1}	0.002	0.001	0.002	0.001
	(1.023)	(0.839)	(1.017)	(0.747)
$LARGE_t$	0.019	0.004	0.019	0.002
	(0.729)	(0.203)	(0.717)	(0.121)
CH_LARGE_{t+1}	-0.084	-0.065	-0.083	-0.051
	(-0.601)	(-0.847)	(-0.588)	(-0.655)
$BIG4_t$	0.000	0.000	-0.092***	-0.077***
	(.)	(.)	(-7.509)	(-8.552)
$TENURE_t$	-0.039***	-0.047***	-0.039***	-0.047***
	(-4.474)	(-7.286)	(-4.464)	(-7.050)
CH_TENURE_{t+1}	-0.016***	-0.020***	-0.016***	-0.020***
	(-10.86)	(-18.02)	(-10.89)	(-18.09)
OPN_t	0.234	0.249***	0.233	0.251***
	(1.487)	(5.198)	(1.480)	(5.400)
ISA_t	0.006	-0.030***	0.000	0.000
	(0.526)	(-3.430)	(.)	(.)
$LOSS$	0.016	0.017**	0.015	0.016*
	(1.346)	(2.107)	(1.305)	(1.930)

$FIRST_t$	-0.030**	-0.039***	-0.031**	-0.039***
	(-2.495)	(-4.799)	(-2.499)	(-4.742)
MKT_t	0.008	0.007	0.008	0.008
	(0.891)	(1.060)	(0.796)	(1.172)
AC_SZE_t	0.003	0.033***	0.004	0.034***
	(0.248)	(2.767)	(0.319)	(2.720)
AC_EXPERT_t	-0.033	-0.087***	-0.035	-0.088***
	(-0.889)	(-2.873)	(-0.933)	(-2.899)
AC_MEET_t	-0.011	-0.016**	-0.011	-0.015**
	(-1.303)	(-2.247)	(-1.346)	(-2.196)
WL_t	0.020***	0.034***	0.020***	0.034***
	(4.143)	(8.312)	(4.147)	(8.199)
$CH\_CH\_WR_{t+1}$	0.047***	0.063***	0.047***	0.063***
	(5.476)	(10.22)	(5.457)	(10.16)
RESIDUALS		1.016***		1.017***
		(49.29)		(48.85)
Industry FE	Included	Included	Included	Included
Year FE	Included	Included	Included	Included
Adj.R^2	0.1423	0.6794	0.1417	0.6742
Obs.	1,773	1,773	2,370	2,370

Panel B: Auditor team composition and budget ratcheting

Variable	***Audit team size***		***Audit team composition***	
	(1) *CH_BUDGETD*	*(2)* *CH-REPORTED*	*(3)* *CH_BUDGETD*	*(4)* *CH-REPORTED*
	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)
Intercept	-0.921*** (-6.929)	-0.776*** (-7.809)	-0.991*** (-7.331)	-0.781*** (-7.758)
$VARIANCE_t$	**0.546*** (10.58)**	**-0.226*** (-6.155)**	**0.543*** (10.51)**	**-0.217*** (-6.010)**
$TEAM_t$	**-0.066*** (-4.130)**	-0.014 (-1.334)		
$VARIANCE_t*TEAM_t$	-0.005 (-1.020)	-0.015** (-2.477)		
$VARIANCE_t*FAVOURABLE_t*TEAM_t$	**-0.078* (-1.717)**	**-0.497*** (-4.672)**		
PAR_t			0.020 (0.430)	0.013 (0.490)
SEN_t			**-0.039*** (-2.782)**	-0.010 (-1.094)
JUN_t			-0.013 (-1.410)	0.006 (0.961)
$VARIANCE_t*PAR_t$			**0.183*** (3.658)**	-0.087 (-1.245)
$VARIANCE_t*SEN_t$			**-0.060*** (-2.768)**	0.012 (0.497)
$VARIANCE_t*JUN_t$			-0.018 (-1.113)	0.006 (0.312)
$VARIANCE_t*FAVOURABLE_t*PAR_t$			0.402 (0.964)	**-2.442* (-1.843)**
$VARIANCE_t*FAVOURABLE_t*SEN_t$			-0.058 (-0.302)	0.286 (0.599)
$VARIANCE_t*FAVOURABLE_t*JUN_t$			**-0.318** (-2.547)**	0.101 (0.347)
$SIZE_t$	0.045*** (8.248)	0.044*** (10.76)	0.045*** (8.354)	0.044*** (10.88)
CH_SIZE_{t+1}	0.055** (2.283)	0.069*** (4.621)	0.055** (2.302)	0.069*** (4.617)

$LNSUB_t$	-0.010**	-0.019***	-0.010**	-0.019***
	(-2.032)	(-4.984)	(-2.010)	(-5.186)
CH_LNSUB_{t+1}	0.019	0.028**	0.019	0.028**
	(1.407)	(2.518)	(1.440)	(2.443)
LEV_t	-0.034	-0.022	-0.034	-0.022
	(-1.361)	(-1.167)	(-1.335)	(-1.184)
CH_LEV_{t+1}	0.004	0.013	0.006	0.013
	(0.424)	(1.626)	(0.565)	(1.556)
$INVREC_t$	0.071**	-0.019	0.071**	-0.019
	(2.311)	(-0.778)	(2.298)	(-0.800)
CH_INVREC_{t+1}	-0.005	-0.161***	-0.006	-0.159***
	(-0.0554)	(-2.896)	(-0.0642)	(-2.885)
LIQ_t	-0.002*	-0.000	-0.002*	-0.000
	(-1.662)	(-0.573)	(-1.672)	(-0.441)
CH_LIQ_{t+1}	-0.000	0.004	-0.000	0.004
	(-0.047)	(0.753)	(-0.029)	(0.768)
MTB_t	0.004	0.007***	0.004	0.007***
	(1.591)	(3.934)	(1.603)	(4.061)
CH_MTB_{t+1}	-0.000	0.005*	-0.000	0.005*
	(-0.119)	(1.857)	(-0.104)	(1.811)
ROA_t	0.083	0.149***	0.080	0.146***
	(1.464)	(3.396)	(1.391)	(3.325)
CH_ROA_{t+1}	0.002*	0.001*	0.001*	0.001*
	(1.808)	(1.709)	(1.700)	(1.829)
OCF_t	-0.059	-0.153***	-0.057	-0.150***
	(-0.839)	(-2.924)	(-0.811)	(-2.865)
CH_OCF_{t+1}	-0.141**	-0.255***	-0.141**	-0.251***
	(-2.402)	(-5.455)	(-2.391)	(-5.500)
FOR_t	0.000	-0.001**	0.000	-0.001**
	(0.537)	(-2.211)	(0.554)	(-2.151)
CH_FOR_{t+1}	0.001	0.001	0.001	0.001
	(0.754)	(0.473)	(0.893)	(0.661)
$LARGE_t$	0.013	-0.003	0.012	-0.007
	(0.502)	(-0.178)	(0.465)	(-0.387)
CH_LARGE_{t+1}	-0.081	-0.073	-0.092	-0.077
	(-0.566)	(-0.938)	(-0.647)	(-0.974)
$BIG4_t$	-0.053***	-0.078***	-0.073***	-0.092***
	(-3.472)	(-7.344)	(-4.422)	(-7.605)

$TENURE_t$	-0.040***	-0.048***	-0.040***	-0.047***
	(-4.500)	(-7.386)	(-4.458)	(-7.385)
CH_TENURE_{t+1}	-0.016***	-0.020***	-0.016***	-0.020***
	(-10.86)	(-17.95)	(-10.89)	(-17.72)
OPN_t	0.120	0.212***	0.114	0.213***
	(1.087)	(7.624)	(1.008)	(7.453)
ISA_t	0.025**	-0.023**	0.029**	-0.021**
	(2.120)	(-2.556)	(2.377)	(-2.320)
$LOSS$	0.018	0.017**	0.018	0.017**
	(1.506)	(2.130)	(1.560)	(2.047)
$FIRST_t$	-0.030**	-0.043***	-0.030**	-0.044***
	(-2.437)	(-5.210)	(-2.488)	(-5.358)
MKT_t	0.009	0.009	0.010	0.009
	(0.971)	(1.295)	(1.095)	(1.247)
AC_SZE_t	0.003	0.034***	0.004	0.033***
	(0.246)	(2.820)	(0.268)	(2.770)
AC_EXPERT_t	-0.046	-0.099***	-0.046	-0.097***
	(-1.242)	(-3.452)	(-1.249)	(-3.367)
AC_MEET_t	-0.008	-0.013**	-0.007	-0.013**
	(-0.933)	(-2.141)	(-0.875)	(-2.158)
WL_t	0.022***	0.032***	0.021***	0.032***
	(4.458)	(8.238)	(4.308)	(8.186)
$CH\_CH\_WR_{t+1}$	0.047***	0.064***	0.048***	0.064***
	(5.445)	(10.20)	(5.538)	(10.26)
$RESIDUALS$		1.010***		1.011***
		(48.90)		(48.83)
Industry FE	Included	Included	Included	Included
Year FE	Included	Included	Included	Included
Adj.R^2	0.1473	0.6864	0.1501	0.6893
Obs.	1,773	1,773	2,370	2,370

Panel C: Auditor workload, tenure and non-audit fees and audit budgeted variances

Variable	*(1)* *CH_BUDGETD*	*(2)* *CH-REPORTED*	*(3)* *CH_BUDGETD*	*(4)* *CH-REPORTED*	*(5)* *CH_BUDGETD*	*(6)* *CH-REPORTED*
	Workload		*Auditor tenure*		*Economic tie*	
	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)
Intercept	-0.911*** (-6.752)	-0.849*** (-7.450)	-0.913*** (-6.784)	-0.851*** (-7.321)	-0.932*** (-6.865)	-0.888*** (-7.810)
$VARIANCE_t$	**0.593*** (2.716)**	**-0.386* (-1.767)**	**0.687*** (5.182)**	-0.103 (-0.841)	**0.503*** (9.666)**	**-0.386*** (-6.400)**
WL_t	**0.020*** (4.086)**	**0.029*** (7.092)**				
$VARIANCE_t*WL_t$	-0.010 (-0.243)	0.038 (0.873)				
$VARIANCE_t*WL_t*FAVOURABLE_t$	-0.027 (-1.318)	**-0.213*** (-4.809)**				
$TENURE_t$			**-0.037*** (-4.083)**	**-0.053*** (-7.487)**		
$VARIANCE_t*TENURE_t$			-0.089 (-1.352)	-0.062 (-0.959)		
$VARIANCE_t*TENURE_t*FAVOURABLE_t$			-0.055 (-1.075)	**-0.569*** (-4.946)**		
$LnNAS_t$					-0.001 (-1.405)	**-0.004*** (-4.508)**
$VARIANCE_t*NAS_t$					0.006 (0.570)	0.012 (1.392)
$VARIANCE_t*NAS_t*FAVOURABLE_t$					-0.005 (-0.250)	**-0.090** (-2.475)**
$SIZE_t$	0.039*** (7.609)	0.044*** (11.53)	0.039*** (7.605)	0.044*** (11.37)	0.040*** (7.653)	0.045*** (11.38)
CH_SIZE_{t+1}	0.052** (2.228)	0.073*** (4.744)	0.053** (2.241)	0.073*** (4.672)	0.051** (2.184)	0.071*** (4.504)
$LNSUB_t$	-0.013** (-2.570)	-0.020*** (-5.324)	-0.013*** (-2.595)	-0.021*** (-5.502)	-0.013** (-2.542)	-0.019*** (-4.938)
CH_LNSUB_{t+1}	0.021 (1.573)	0.033*** (2.827)	0.021 (1.574)	0.032*** (2.764)	0.021 (1.592)	0.032*** (2.725)
LEV_t	-0.046* (-1.752)	-0.025 (-1.342)	-0.046* (-1.764)	-0.027 (-1.450)	-0.047* (-1.798)	-0.030 (-1.613)
CH_LEV_{t+1}	0.004 (0.350)	0.010 (1.181)	0.003 (0.327)	0.010 (1.181)	0.004 (0.401)	0.011 (1.321)
$INVREC_t$	0.058* (1.862)	-0.020 (-0.820)	0.057* (1.856)	-0.021 (-0.862)	0.058* (1.886)	-0.027 (-1.057)

CH_INVREC_{t+1}	-0.032	-0.186***	-0.030	-0.172***	-0.035	-0.193***
	(-0.361)	(-3.325)	(-0.329)	(-3.164)	(-0.389)	(-3.372)
LIQ_t	-0.002	-0.000	-0.002	-0.000	-0.002	-0.000
	(-1.588)	(-0.381)	(-1.528)	(-0.332)	(-1.593)	(-0.438)
CH_LIQ_{t+1}	-0.001	0.002	-0.002	0.002	-0.001	0.003
	(-0.203)	(0.443)	(-0.230)	(0.364)	(-0.184)	(0.501)
MTB_t	0.005**	0.007***	0.005**	0.007***	0.006**	0.008***
	(1.998)	(4.197)	(1.970)	(4.280)	(2.110)	(3.994)
CH_MTB_{t+1}	0.001	0.006**	0.000	0.005*	0.001	0.006**
	(0.153)	(2.010)	(0.0966)	(1.729)	(0.163)	(2.001)
ROA_t	0.096*	0.150***	0.097*	0.152***	0.094	0.150***
	(1.669)	(3.474)	(1.683)	(3.520)	(1.639)	(3.407)
CH_ROA_{t+1}	0.002*	0.001*	0.001*	0.001*	0.001*	0.001*
	(1.776)	(1.738)	(1.763)	(1.767)	(1.745)	(1.651)
OCF_t	-0.102	-0.176***	-0.098	-0.168***	-0.103	-0.180***
	(-1.288)	(-3.278)	(-1.244)	(-3.128)	(-1.300)	(-3.295)
CH_OCF_{t+1}	-0.180***	-0.281***	-0.178***	-0.274***	-0.179***	-0.276***
	(-2.763)	(-5.906)	(-2.729)	(-5.765)	(-2.748)	(-5.674)
FOR_t	-0.000	-0.001**	-0.000	-0.001**	-0.000	-0.001***
	(-0.091)	(-2.465)	(-0.092)	(-2.555)	(-0.119)	(-2.665)
CH_FOR_{t+1}	0.002	0.001	0.001	0.001	0.002	0.001
	(1.037)	(0.915)	(0.989)	(0.708)	(1.065)	(0.871)
$LARGE_t$	0.019	-0.000	0.018	-0.003	0.019	-0.000
	(0.699)	(-0.022)	(0.669)	(-0.143)	(0.700)	(-0.021)
CH_LARGE_{t+1}	-0.086	-0.079	-0.084	-0.068	-0.079	-0.047
	(-0.612)	(-1.017)	(-0.597)	(-0.887)	(-0.564)	(-0.613)
$BIG4_t$	-0.093***	-0.086***	-0.093***	-0.085***	-0.092***	-0.078***
	(-7.568)	(-9.895)	(-7.520)	(-9.888)	(-7.478)	(-8.639)
$TENURE_t$	-0.039***	-0.047***			-0.039***	-0.047***
	(-4.467)	(-7.310)			(-4.460)	(-7.018)
CH_TENURE_{t+1}	-0.016***	-0.020***	-0.016***	-0.020***	-0.016***	-0.020***
	(-10.89)	(-18.26)	(-10.85)	(-18.45)	(-10.87)	(-18.16)
OPN_t	0.234	0.256***	0.232	0.255***	0.234	0.254***
	(1.488)	(5.342)	(1.474)	(5.258)	(1.489)	(5.419)
ISA_t	0.007	-0.029***	0.006	-0.030***	0.009	-0.027***
	(0.619)	(-3.405)	(0.569)	(-3.532)	(0.814)	(-3.066)
$LOSS$	0.015	0.017**	0.016	0.018**	0.015	0.017**
	(1.308)	(2.125)	(1.362)	(2.253)	(1.295)	(1.963)
$FIRST_t$	-0.031**	-0.042***	-0.031**	-0.041***	-0.031**	-0.041***
	(-2.529)	(-5.133)	(-2.504)	(-5.000)	(-2.559)	(-4.933)
MKT_t	0.008	0.007	0.008	0.008	0.007	0.007
	(0.800)	(0.976)	(0.829)	(1.145)	(0.781)	(1.081)
AC_SZE_t	0.004	0.033***	0.003	0.031***	0.004	0.033***
	(0.280)	(2.780)	(0.255)	(2.585)	(0.280)	(2.678)

AC_EXPERT$_t$	-0.033	-0.086***	-0.033	-0.085***	-0.034	-0.086***
	(-0.896)	(-2.843)	(-0.900)	(-2.830)	(-0.906)	(-2.837)
AC_MEET$_t$	-0.011	-0.016**	-0.011	-0.015**	-0.011	-0.014**
	(-1.337)	(-2.453)	(-1.285)	(-2.123)	(-1.285)	(-2.048)
WL$_t$			0.020***	0.032***	0.020***	0.033***
			(4.087)	(8.367)	(4.027)	(8.129)
CH_CH_WL$_{t+1}$	0.047***	0.064***	0.047***	0.064***	0.047***	0.063***
	(5.462)	(10.38)	(5.472)	(10.40)	(5.458)	(10.25)
RESIDUALS		1.016***		1.015***		1.017***
		(49.14)		(49.05)		(48.99)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.1420	0.6873	0.1425	0.6890	0.1420	0.6767
Obs.	4,143	4,143	4,143	4,143	4,143	4,143

Table 6

Sensitivity analyses

Panel A: Auditor types and budget ratcheting

Variable	***Big4***		***Non-big4***		***IAS***		***Non-IAS***	
	(1) *CH_BUDGETD*	*(2)* *CH-REPORTED*	*(3)* *CH_BUDGETD*	*(4)* *CH-REPORTED*	*(5)* *CH_BUDGETD*	*(6)* *CH-REPORTED*	*(7)* *CH_BUDGETD*	*(8)* *CH-REPORTED*
	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	-0.983*** (-4.716)	-0.708*** (-4.442)	-1.371*** (-6.551)	-1.214*** (-7.930)	0.304 (0.295)	-2.042** (-2.492)	-1.058*** (-7.420)	-0.977*** (-8.977)
$VARIANCE_t$	**0.486*** (7.198)**	**-0.240*** (-4.957)**	**0.581*** (6.731)**	**-0.213*** (-3.745)**	**0.578*** (5.161)**	**-0.232*** (-2.622)**	**0.538*** (9.518)**	**-0.225*** (-5.724)**
$FAVOURABLE_t$	-0.019 (-1.060)	-0.032 (-1.252)	**0.029* (1.861)**	**-0.036* (-1.731)**	-0.016 (-0.546)	-0.028 (-0.648)	0.003 (0.215)	**-0.032* (-1.865)**
$VARIANCE_t$*$FAVOURABLE_t$	**-0.305* (-1.667)**	**-1.330*** (-2.713)**	0.082 (0.603)	**-1.098*** (-3.703)**	-0.357 (-0.943)	-1.069 (-1.187)	-0.066 (-0.588)	**-1.156*** (-4.330)**
Industry FE	Included	Included	Included	Included	Included	Included	Included	Included
Year FE	Included	Included	Included	Included	Included	Included	Included	Included
Adj.R^2	0.1768	0.7531	0.2131	0.6551	0.2320	0.7963	0.1514	0.6789
Obs.	1,773	1,773	2,370	2,370	611	611	3,532	3,532

Panel B: Audit team size and budget ratcheting				
Variable	***Large audit teams***		***Small audit teams***	
	(1) *CH_BUDGETD*	*(2)* *CH-REPORTED*	*(3)* *CH_BUDGETD*	*(4)* *CH-REPORTED*
	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)
Intercept	-0.566*** (-3.146)	-0.871*** (-6.266)	-1.929*** (-7.138)	-1.204*** (-5.911)
$VARIANCE_t$	**0.507*** (7.816)**	**-0.227*** (-5.164)**	**0.564*** (5.715)**	**-0.220*** (-3.023)**
$FAVOURABLE_t$	-0.015 (-0.975)	**-0.039** (-2.095)**	**0.044** (2.556)**	-0.025 (-0.980)
$VARIANCE_t$*$FAVOURABLE_t$	-0.219 (-1.522)	**-1.307*** (-3.898)**	0.177 (1.095)	**-1.002*** (-2.626)**
Industry FE	Included	Included	Included	Included
Year FE	Included	Included	Included	Included
Adj.R^2	0.1414	0.7293	0.2250	0.6609
Obs.	2,304	2,304	1,839	1,839

Panel C: Client size and budget ratcheting

Variable	***Large clients***		***Small clients***		***AC***		***Non_AC***	
	(1) *CH_BUDGETD*	*(2)* *CH-REPORTED*	*(1)* *CH_BUDGETD*	*(2)* *CH-REPORTED*	*(1)* *CH_BUDGETD*	*(2)* *CH-REPORTED*	*(1)* *CH_BUDGETD*	*(2)* *CH-REPORTED*
	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	-0.250 (-1.427)	-0.559*** (-4.119)	-2.562*** (-6.295)	-1.225*** (-4.426)	-0.271 (-1.322)	-0.579*** (-3.579)	-1.413*** (-6.531)	-1.224*** (-9.781)
$VARIANCE_t$	**0.514*** (8.352)**	**-0.228*** (-5.053)**	**0.515*** (5.919)**	**-0.216*** (-3.599)**	**0.510*** (6.473)**	**-0.287*** (-3.981)**	**0.528*** (8.059)**	**-0.193*** (-4.836)**
$FAVOURABLE_t$	-0.022 (-1.548)	-0.030 (-1.495)	**0.048** (2.232)**	**-0.051** (-2.159)**	-0.023 (-1.074)	-0.025 (-1.000)	0.016 (1.079)	**-0.047** (-2.508)**
$VARIANCE_t$*$FAVOURABLE_t$	**-0.294** (-2.132)**	**-1.340*** (-3.840)**	0.258 (1.532)	**-0.980*** (-2.825)**	-0.122 (-0.483)	**-1.521*** (-3.016)**	-0.037 (-0.303)	-1.096*** (-3.974)
Industry FE	Included	Included	Included	Included	Included	Included	Included	Included
Year FE	Included	Included	Included	Included	Included	Included	Included	Included
Adj.R^2	0.1539	0.7091	0.2038	0.6645	0.1930	0.7202	0.1662	0.6900
Obs.	2,521	2,521	1,622	1,622	1,282	1,282	2,861	2,861

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

Table 7

Impacts of partner, senior, and juniors reported hours on budget variances

Variable	*PAR_VARIANCE*$_{t+1}$	*SEN_VARIANCE*$_{t+1}$	*JUN_VARIANCE*$_{t+1}$
	Coeff. (t-value)	Coeff. (t-value)	Coeff. (t-value)
Intercept	2.335*** (3.492)	0.121 (0.679)	-0.759* (-1.818)
CH_BUDGETD$_{T+1}$	**0.493***** **(5.168)**	**0.688***** **(18.43)**	**0.492***** **(8.161)**
Ind, Year FE	Included	Included	Included
Adj.R^2	0.1358	0.2560	0.0814
Obs.	3,971	3,971	3,971

The e result of estimating equation (1). All continuous variables are winsorized at the top and bottom one percentile. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively (based on two-tailed tests). T-statistics are shown in parentheses. See the Appendix for the variable definitions.