경영학석사학위논문

Flexible CPA Staffing: Implications for Audit Fees and Audit Quality

회계법인의 노동유연화 전략이 감사보수와 감사품질에 미치는 영향

2019 년 8 월

서울대학교 대학원

경영학과 회계학전공

김 세 희

Flexible CPA Staffing: Implications for Audit Fees and Audit Quality

Kim, Sehee
College of Business Administration
The Graduate School
Seoul National University

Abstract

The provision of audit services is a highly labor-intensive task. This paper analyzes monthly CPA (certified public accountants) employment data of each audit firm to assess the implications of CPA staffing for audit pricing and audit quality. Consistent with the prevalence of short-term hires of freelance CPAs during busy season, we find that growth in CPA employment peaks before busy season but drops dramatically to below zero afterward. We further document that the standard deviation of changes in monthly CPA numbers within a year is negatively associated with audit fees, implying that flexible staffing enables audit firms to charge lower fees to clients. By contrast, we find no evidence that flexible staffing impairs audit quality. We conclude that audit firms reduce operating leverage via flexible staffing arrangements and share the benefit with clients without compromising audit quality.

Keywords: Human resource management, flexible staffing, audit fees, audit quality, auditor characteristics

Student Number: 2017-20103

Table of Contents

List of Figures and Tables

[Figures]

[Tables]

I. Introduction

Despite the potential disruption of emerging technology in financial reporting and auditing, audit tasks have thus far remained highly labor intensive (Cao et al., 2019), as evidenced by the significant stream in the literature on the role of individual auditors' attributes, incentives, and competence in audit engagement (e.g., Lennox and Wu, 2018). Given the heavy reliance of audit completion on accountant characteristics, the efficient management of skilled labor is indispensable for audit firms to compete and prosper in the audit market (Financial Reporting Council [FRC], 2008; Hanson, 2013; Public Company Accounting Oversight Board [PCAOB], 2015). Surprisingly, however, the literature has paid little attention to staffing practices within audit firms. We aim to fill this void in the literature, with a specific focus on the seasonal staffing pattern of audit firms and its implications for audit outcomes.

A unique feature of audit engagements is their seasonal concentration, that is, the busy season. Concentrated demand for audit tasks in this peak season imposes several challenges for audit firms. First, engaged auditors typically suffer from excessive workloads during the busy season, which affects their turnover intention, as well as job satisfaction (Fogarty et al., 2000; Almer and Kaplan, 2002; Sweeney and Summers, 2002; Buchheit et al., 2016; Hermanson et al., 2016). Survey results confirm that turnover in large certified public accountant (CPA) firms in the United States is indeed high, at 17%, with one in every six firms experiencing an annual

turnover of 20% or greater (Platt Consulting Group, 2015), ultimately provoking legitimate public concerns (Chi et al., 2013).[1] Unexpected turnover can have negative effects on operating performance due to the disruption of routines and the loss of firm-specific knowledge accumulated in human capital (e.g., Ton and Huckman, 2008). Second, labor market trends for professional accountants are indicative of increasing skill scarcity, mainly because of the rapidly increasing demand for qualified accountants. For example, the Bureau of Labor Statistics predicts that the demand for accountants will rise 10% through 2026, faster than the average growth rate for all occupations.[2] The growing industrial demand for professional accountants could leave audit firms more vulnerable to understaffing, in general, and more desperate for qualified accountants, especially during the busy season. Third, audit firms' within-year resource allocation is inherently difficult because of the dramatic demand fluctuation, adversely affecting labor productivity and firm performance (e.g., Williams et al., 2018). Accordingly, from an operational perspective, retaining highly mobile labor throughout the year requires audit firms to face high turnover risk and opportunity costs due to idle capacity in non-busy season.

[1] In our sample, the average number of certified public accountants (CPAs) is about 69 in an audit firm, with 1,138 in Big 4 firms and 31 in non-Big4 firms. For an average audit firm, the number of CPAs increases 7.3% annually (see the Appendix B). Specifically, audit firms hire 22.3% of new staffs (28.6% in Big4 and 22.1% in non-Big4); however, 15.0% of staffs (22.7% in Big4 and 14.7% in non-Big4) exit at the same time. Put differently, average Big 4 audit firms hire 250 and lose 193 CPAs, while average non-Big4 audit firms hire 7 and lose 5 CPAs each year.

[2] See https://www.bls.gov/ooh/business-and-financial/accountants-and-auditors.htm#tab-1.

One way to overcome such challenges in staffing is through flexing employment. By flexible staffing, we mean employment practices to increase labor capacity to meet client demand or to decrease labor capacity to reduce cash outflows due to redundant resources (Goyal and Netessine, 2011).[3] We note that flexible staffing in audit firms through short-term or part-time contracts is prevalent (Lewczyk, 2017; Meyer, 2017), particularly among small audit firms.[4] Large audit firms compete to hire the most talented professional accountants before busy season, and smaller audit firms are left with a limited pool of qualified accountants (Vien, 2018). In Korea, to relieve the lack of professional accountants around busy season, the Korean Institute of Certified Public Accountants (KICPA) runs a website that posts temporary and part-time CPA positions and runs an official campaign to connect small audit firms to freelance accountants (Park, 2019).

Prior studies on temporary staffing state that companies externalize employment to achieve organizational flexibility. Relative to those with more fixed-term staff, organizations with more temporary staff have less rigid cost structures, often without sacrificing service quality (Houseman, 2001; Kalleberg et al., 2003; Altuzarra and Serrano, 2010; Hurst and Smith, 2010; Kesavan et al., 2014). With respect to the audit industry, where market demand for audit services is clearly expected to be congested in the busy season, audit firms can outsource necessary

[3] The human resource management (HRM) literature widely accepts the term *flexible labor resources* for part-time or temporary employment (e.g., Kesavan et al., 2014).
[4] Websites such as Indeed (https://www.indeed.com) and Flexjobs (https://www.flexjobs.com) list many job opportunities for professional accountants to join audit firms under part-time or short-term contracts.

labor when in need and release it otherwise, converting quasi-fixed labor costs into variable costs. In contrast, the hiring and replacement of existing employees require costly coordination (Hiltebeitel and Leauby, 2001). Coordination costs, including training, mentoring, and recovering from mistakes, typically increase with the number of flexible labor resources (Levine and Moreland, 1998; Kesavan et al., 2014). Furthermore, temporarily hired CPAs for busy season can demand wage premiums (Rosen, 1986).[5] These costs will cancel out the economic gains from flexible staffing to some extent. Flexible staffing can therefore benefit audit firms, depending on the relative magnitude of avoided audit production costs and newly incurred ones. We therefore predict that flexible staffing will have an impact on audit production costs and, hence, audit fees (Simunic, 1980; O'Keefe et al., 1994; Dopuch et al., 2003; Akono and Stein, 2014; Gu et al., 2017).

Several recent studies attempt to investigate the effects of audit firm personnel policies on audit quality and audit fees. For instance, Hoopes et al. (2018) and Ernstberger et al. (2019) examine the impacts of audit personnel compensation on audit quality. Given that total labor cost is a function of fixed labor costs and

[5] Theories on compensating wage differentials predict that different working conditions for workers with the same level of competence should result in a wage premium for those workers with less favorable conditions (e.g., Rosen, 1986). Other studies also claim that potential differences in firing costs, replaceability, or productivity between temporary and permanent workers can induce discounts in the former's wages (Sørensen, 1983; Booth et al., 2002). Given that temporarily hired CPAs are equally qualified and, thus, as competent as permanently hired CPAs, we predict they will require wage premiums. In a later section, we report that audit quality is, indeed, not inferior for flexibly staffed audit firms, supporting the comparable competency of CPAs with temporary contracts. We also confirm this finding via interviews with two audit firm partners in two different Big 4 audit firms.

variable labor costs, which is the product of variable labor cost per employee and the number of employees, our study is similar to these studies because we analyze the staffing practices associated with labor cost. However, our study mainly focus on the employment practices, which are related to adjustment of the number of employees, whereas the previous studies focus on the compensation policies.[6] In addition, Aobdia et al. (2018) examine the immigrants hiring practices of the audit firms and find that immigrants serve a specialized role and a gap-filler role in U.S. audit industry. Since their study focuses only on immigrants, our study could complement by examining variation in the total number of employees.

A challenge in the assessment of the net benefits of flexible CPA staffing is the empirical measurement of the degree of staffing flexibility. To address this challenge, we retrieve monthly data on CPA employment in Korea between 2005 and 2017. This unique set of CPA employment data has been being compiled by the KICPA since August 2002; however, we exclude the data disclosed in the early years to avoid the effect of mergers between Big N audit firms on empirical results. Consistent with the short-term hires of freelance CPAs to cope with seasonal demand, which peaks between January and March in Korea due to most firms' fiscal years matching the calendar year, we find that growth in CPA employment peaks in December (right before the busy season) but drops dramatically to below zero in

[6] Furthermore, Ernstberger et al. (2019) use publicly available partner compensation data from transparency reports of German; however, since the data only includes audit partners' compensation details, it is inconclusive whether their findings are applicable to the impacts of the entire level CPAs' compensation on audit quality.

April (right after the busy season; see Baik, 2016). To empirically capture such intertemporal variations of employment and to assess the degree of flexible staffing for each audit firm, we calculate the standard deviation of monthly changes in the number of CPAs over a year for each audit firm and use it as the main proxy for flexible staffing in subsequent analyses.

However, a concern arises that our main proxy for flexible staffing may reflect turnovers of regular staffs in April and subsequent recruitment for replacement. To address this concern, we investigate the association between our proxy for flexible staffing and severance pay borne by audit firms. If the fluctuations in CPA numbers within audit firms reflect turnovers, voluntary or forced, then we expect audit firms with higher fluctuations to recognize greater severance pay. Based on annual reports of audit firms, however, we do not find a relation between the fluctuation in CPA numbers and severance pay, implying that the fluctuation in CPA numbers is more likely to be driven by flexible staffing rather than by the regular staff turnovers.[7]

Merging audit firm characteristic data with clients' financial data, we find that audit firms' flexible CPA staffing is negatively related to clients' audit fees. This

[7] Moreover, employment growth in the fourth quarter does not merely capture the influx of fresh CPAs in the labor market. Typically, audit firms strive to recruit probationary CPAs from September after the CPA exam results are announced in August. However, the monthly CPA data in the analyses reports the number of registered CPAs with at least one-year work experience. As a result, the fresh CPA influx is naturally omitted in the calculation of the main proxy. Note that, due to the lack of the detailed data, we do not systematically assess the impact of the newly hired probationary CPAs. However, because the probationary CPAs will weaken employment demand for freelance CPAs during busy time, we expect that their presence will work against us finding the significant impact of flexible staffing.

finding is consistent with audit firms' lowering of audit fees by saving costs via flexible staffing. However, the results require further analyses. First, the lower audit fees associated with flexible staffing could reflect reduced audit effort rather than cost savings. We address this concern by investigating audit hours and audit fees per hour. We report that flexible staffing is not significantly related to audit hours but is negatively associated with audit fees per hour. This finding suggests that lower audit fees for flexibly staffed audit firms are unlikely to be driven by reduced audit effort (i.e., fewer audit hours) but could be primarily driven by lower hourly fee rates. Second, flexible staffing could also reduce audit costs if temporarily hired CPAs are paid less than full-time CPAs because they are less skilled or less experienced. To address this concern, we examine whether the audit services of flexibly staffed audit firms are of low quality. Based on various empirical proxies for outcome-based audit quality, such as discretionary accruals and restatement likelihood, however, we find no evidence of audit quality impairment for the clients of flexibly staffed audit firms. Collectively, our results support the notion that flexible staffing in audit firms contributes to lowering audit production costs and hence audit fees without compromising the quality of either the input (i.e., audit effort) or output (i.e., audit service quality) in audit production.

Our inferences remain unaffected by several additional analyses. First, we find that our results still hold for both initial and continuing audit engagements, implying that cost savings from flexible staffing are not solely responsible for well-known lowballing upon initial engagement. Second, we show that the relation

between flexible staffing and audit fees is more salient for clients with stronger bargaining power. We interpret this as audit firms' greater willingness to share cost savings from labor flexibility when clients have greater bargaining power (Casterella et al., 2004). Third, although we find evidence that Big 4 audit firms adopt more flexible staffing practices, we do not find a difference in the audit fee impact of flexible staffing between Big 4 and non-Big 4 firms. Lastly, we acknowledge that the degree of flexible staffing could merely capture certain characteristics of auditors and clients that affect audit outcomes. For instance, a specific group of clients could prefer audit firms with more flexible staffing to reduce audit fees, whereas another group of clients could prefer audit firms with no significant changes in staff for the sake of long-term personal relationships. To address such correlated omitted variables problem, we adopt propensity score matching and confirm that our inferences are not affected, even for the matched sample.

This paper makes several contributions to the literature. First, we provide the first large-sample evidence on the monthly variation in audit firm employment to cope with the fluctuation of audit demand. We document that audit firms increase the number of professional accountants around the busy season and then reduce it after satisfying the clustered demand for audit services. While many studies acknowledge the operational problem of the demand concentration in the busy season (Fogarty et al., 2000; Almer and Kaplan, 2002; Sweeney and Summers, 2002; Herda and Lavelle, 2012; Buchheit et al., 2016), they remain silent about how audit

firms cope with such a flux in service demand. Our results clearly depict the presence of flexible staffing practices.

Second, we add to the literature on audit production by presenting fresh evidence that the temporary staffing of audit firms is negatively associated with audit fees. Whereas the employment of more professional accountants could increase the employment costs of audit services (Hossain et al., 2017), audit firms can still suppress increases in audit fees by flexing employment. Furthermore, we report that lower audit fees through temporary staffing do not result in the deterioration of audit quality. Our results are therefore suggestive of remedial staffing whose benefits can be shared between auditors and clients.

Caveats are in order. First, although our results are indicative of positive net benefits of flexible staffing, we do not qualitatively assess the cost savings claimed because audit production costs are not observable. Second and more importantly, our main construct, the standard deviation of monthly CPA employment change within an audit firm, is based on the aggregate employment of CPAs, regardless of their contract types. Put differently, our measure does not rigorously distinguish which types of contracts induce monthly variations. The lack of detailed employment data prevents a completely data-backed validation of our claim.

The remainder of the paper is organized as follows. Section 2 reviews the literature and develops our hypotheses. Section 3 describes the research design. Section 4 describes our sample and provides descriptive statistics. Section 5 reports

the empirical results. Section 6 presents additional analyses. Section 7 summarizes and concludes the study, with its limitations and implications.

II. Literature Review and Hypothesis Development

2.1. Human Resource Management in Audit Firms

Human resource management (HRM) practices in audit firms are important because labor is the primary input in the audit process and employees (professional accountants) are thus the key asset of audit firms (Belkaoui, 1989; FRC, 2008; Hanson, 2013; PCAOB, 2015). Prior literature has investigated the effects of HRM practices on firm performance in various industries (Arthur, 1994; Huselid, 1995; Becker and Gerhart, 1996; Bae and Lawler, 2000; Batt, 2002; Bartel, 2004; Wright et al., 2005; Sun et al., 2007). HRM issues involve recruiting, training, motivating, and retaining high-quality employees. The rationale underlying the linkage between HRM and firm performance is that human resources are important factors in developing a firm's competitive advantage (Wright and McMahan, 1992) and effective HRM practices influence the performance of employees by improving their skills and motivating them to perform better (Huselid, 1995).

The audit work is highly contingent on clients' characteristics and inherently demanding (Brierley and Gwilliam, 2003; Hermanson et al., 2016). The resulting high workload pressure during the busy season has long been a problem for audit firms (Buchheit et al., 2016; Hermanson et al., 2016; Persellin et al., 2018). In particular, the excessive workloads of audit firms results in job burnout and low job

satisfaction (Fogarty et al., 2000; Almer and Kaplan, 2002; Sweeny and Summers, 2002). The experimental and the survey literature provides evidence that CPAs who engage in the audit process work more than 60 hours per week during the busy season (Hermanson et al., 2016; Persellin et al., 2018). Therefore, audit firms experience high turnover rates among professional accountants (American Institute of Certified Public Accountants [AICPA], 2004). Hiltebeitel and Leauby (2001) provide evidence that the number of accounting graduates who leave the public accounting field is larger than that of accounting graduates who enter the field within three years after starting work. This could be a potential threat that deteriorates the overall quality of the services provided by audit firms, because high employee turnover can damage employee morale and thus performance (Shaw et al., 2005; Hancock et al., 2013). Therefore, according to the results of a survey on CPA firms' top issues by the Private Companies Practice Section, recruiting and retaining qualified audit staff is one of the greatest challenges of audit firms (AICPA, 2017). Since inexperienced staffs can impair audit quality, regulators have been greatly concerned about the adverse impact of the turnover of experienced staff on audit quality (FRC, 2006; PCAOB, 2015).

In addition to the seasonal busyness of audit work, audit firm–specific characteristics can affect the recruitment and turnover of CPAs in audit firms. Typically, Big 4 auditors are known to have more resources to recruit qualified CPAs than non-Big 4 auditors do. Anecdotal evidence in Korea notes that the Big 4 audit firms hire the majority of entry-level CPAs (Lee, 2018). In contrast, the turnover

rates in the Big 4 are also known to be high, because employees in the Big 4 work more hours than those in smaller audit firms (Anderson-Gough et al., 2001; Hardies et al., 2013). Supporting this argument, there is evidence that turnover rates among Big 4 auditors are 20%, on average, and more than 50% of their employees have less than five years of work experience (Kim and Kim, 2015). Since high turnover rates can be explained by low job satisfaction (Larkin et al., 1999; Armstrong, 2006; Chi et al., 2013; Gertsson et al., 2017), audit firm characteristics associated with job satisfaction, such as the compensation package and firm culture, can have an impact on CPA turnover, which, in turn, influences audit firm recruitment activities.[8]

However, few studies have investigated how audit firms manage human resources and the effects of HRM on audit costs and outcomes, because the HRM practices of audit firms are difficult to observe and measure. A stream of the literature examines the audit work environment by surveying individual auditors (Fogarty et al., 2000; Almer and Kaplan, 2002; Sweeney and Summers, 2002; Buchheit et al., 2016; Hermanson et al., 2016; Persellin et al., 2018). In addition, recent studies investigate the effect of audit personnel compensation on audit quality (Hoopes et al., 2018; Ernstberger et al., 2019). Furthermore, several studies use

[8] Another problem with audit firms' HRM practices is their highly hierarchical staffing structure. Such a pyramid organizational structure can promote excessive competition among employees, which can result in high turnover (Brierley and Gwilliam, 2003). Relatedly, we notice from our sample that our measure of flexible staffing, STD_YEAR, is significantly and positively correlated with the fraction of junior staffs (i.e., CPAs with less than 5 years' work experience) over total CPAs. This result suggests that audit firms tend to flex employment by adjusting relatively inexperienced staffs, ultimately releasing internal competition among juniors and hence mitigating the problem inherent in the hierarchical structure.

employee-reviewed rating scores provided by Glassdoor.com as a proxy for the HRM of audit firms (Khavis and Krishnan, 2017; Truong, 2018). However, as Chi et al. (2013) argue, survey results and Internet review ratings might not gauge HRM practices properly, because there could be disparities between employees' intention to leave the firm and actual turnover. To our knowledge, only Aobdia et al. (2018) directly examines hiring practice audit firms. However, Aobdia et al. (2018) focus on immigrant-employees instead of entire employees and do not investigate the impacts on audit outcomes. Therefore, whether actual changes (recruitment and turnover) in employees are associated with audit costs and audit outcomes still remains an empirical question.

2.2. Consequences of Flexible CPA Staffing

Due to the high turnover of professional accounts and clustered audit service demand in the busy season, satisfying the labor demand of audit firms is a critical issue. As we show in later empirical analyses, typical audit firms increase the employment of professional accountants before the busy season and steeply decrease their staff after completing audit services (Lewczyk, 2017; Meyer, 2017; Vien, 2018). The employment pattern of professional accountants in audit firms is thus quite similar to temporary staffing in the HRM literature. For instance, Kesavan et al. (2014) document the seasonality in sales in retail service industries and find that retailers hire temporary workers more during peak periods.

We link the flexible staffing of audit firms to audit fees in a similar manner as prior HRM studies linking labor flexibility to organizational performance, because labor costs are the most important determinant of audit costs. Simunic (1980) defines audit fees as the product of audit costs per hour and audit hours, and suggests several client characteristics that affect the level of audit effort. In other words, audit services are produced by converting audit labor input into audit assurance (Simunic, 1980; O'Keefe et al., 1994; Dopuch et al., 2003; Akono and Stein, 2014; Gu et al., 2017). Since labor is the primary input in the audit process (Francis, 2011), labor costs account for a significant portion of the total costs borne by audit firms. If an audit engagement team is composed of CPAs with extensive work experience and expertise, the audit firm could transfer the high labor costs to its clients by charging higher audit fees. Hoopes et al. (2018) find that audit personnel salary levels are positively associated with audit quality and audit fees. Hossain et al. (2017) provide the evidence that the number of CPAs and other professional staff in audit team are positively associated with audit fees. Beck et al. (2018) also document that the average educational level in the city where an audit office is located is positively related to audit quality and that the audit fees for the non-Big 4 increase as the average educational level in the city increases.

We hypothesize that staffing practices within audit firm influence audit production costs, thereby affecting audit fees. Ex ante, the relation between flexible staffing and audit fees is unclear. On the one hand, the greater use of flexible CPA staffing can reduce audit fees. Temporary staffing rather than employment through

permanent contracts is useful for organizations with a seasonal demand for services. Valverde et al. (2000, p. 650) define labor flexibility as "a business objective to respond rapidly and effectively to the changing demands of the environment" based on Atkinson's (1984) proposal of a flexible firm. Kalleberg et al. (2003) report that organizations use temporary staffing to achieve greater labor flexibility and to reduce labor uncertainty (see also Houseman, 2001; Altuzarra and Serrano, 2010; Hurst and Smith, 2010). Labor flexibility can reduce operating leverage and thus diminish cash flow risk (Kim et al., 1998; Opler et al., 1999; Almeida et al., 2004; Han and Qiu, 2007). It enables organizations to easily satisfy fluctuating labor demand by recruiting and terminating employees with lower adjustment costs. For instance, Kesavan et al. (2014) show that retail stores use temporary workers to cope with seasonality in sales and provide further evidence that flexible labor resources have a large impact on firm performance and profitability. Therefore, we can formulate the hypothesis that labor flexibility, captured by the volatility in the number of professional accountants in audit firms, can allow audit firms to share cost savings with clients, thus leading to lower audit fees.

On the other hand, flexible staffing can be costly for audit firms. Naturally, the costs incurred by a comprehensive recruitment procedure and coordination costs, such as those of training, mentoring, and correcting the errors of new employees, increase audit firms' operating costs (Kesavan et al., 2014), which in turn affect audit production costs. Additionally, CPAs temporarily hired for the busy season can demand wage premiums to compensate for their lower job stability than CPAs under

permanent contract (Rosen 1986). These costs will cancel out the economic gains from flexible staffing to some extent. Furthermore, the hiring of inexperienced CPAs can decrease audit effort efficiency. Therefore, more audit hours are needed when inexperienced CPAs engage in an audit process to achieve the desired level of planned detection risk. Audit fees can therefore increase due to more audit labor hours.

On the basis on the two opposite expectations, we propose the null hypothesis as follows:

H1: *The flexible staffing of professional accountants in an audit firm is not associated with audit fees.*

A number of studies report that flexible staffing can be associated with better organizational performance (Cunha et al., 2003; Kesavan et al., 2014). This result could be attributable to organizational efforts in searching the labor force for the proper skills for specific jobs. Analogously, if audit firms recruit CPAs with specific knowledge and skills to perform audit services efficiently and effectively, we expect that audit firms' temporary staffing is associated with better audit quality. However, we also note that prior studies document poor service quality by part-time workers (Guillaume et al., 2018) as well as poor organizational performance in workplaces with high turnover (Shaw et al., 2005; Hancock et al., 2013). Furthermore, individual auditors may not have roles to affect audit quality if audit

procedures are highly standardized. Therefore, we present the null hypothesis on the relation between the flexible CPA staffing of audit firms and audit quality as follows:

H2: *The flexible staffing of professional accountants in an audit firm is not associated with audit quality.*

III. Research Design

3.1. Uniqueness of the Audit Data Available in Korea

Korea adopted the International Standards on Auditing (ISA) in 1999 and the Korean International Financial Reporting Standards (K-IFRS) in 2011. All public companies have had to follow K-IFRS since fiscal year 2011, and the new ISA was introduced in 2014 to enhance the consistency of auditing standards with international practices.[9] While most auditing practices in Korea are, by and large, similar to those in the United States, one peculiar observation about Korean audit practices is the high concentration (98%) of public companies with a December fiscal year-end (Financial Supervisory Service [FSS], 2019).[10]

[9] The Korean Big 4 auditors Samil, Samjung, Hanyoung, and Anjin, are affiliated with the international Big 4 auditors PriceWaterhouseCoopers, KPMG, Ernst & Young, and Deloitte Touche Tohmatsu, respectively. To establish and maintain high standards of audit quality and practice for their reputation, the international Big 4 audit firms provide several measures and safeguards for the Korean Big 4 auditors. The Korean Big 4 auditors therefore control for audit quality by following the standard operating procedures of the international Big 4 audit firms.

[10] In the United States, 64% of Compustat companies have a December fiscal year-end in the sample of Lopez and Peters (2012).

The Act on External Audit of Stock Companies was implemented in Korea in January 1981 and amended in 2018 to require that all public companies or companies whose total assets or sales are equal to or greater than KRW 50 billion (around USD 45 million) be audited (Act No. 15514). Since the companies are required to submit audited financial statements to the FSS within 90 days of the fiscal year-end, audit work is highly compressed during the busy season from January to March. The fiscal year-end concentration makes external auditors' workload excessive during the busy season.

Data available in Korea provide a unique research setting that enables us to examine the HRM practices of audit firms. First, monthly data on the number of registered CPAs in each audit firm are publicly disclosed on KICPA's website every month.[11] Second, the FSS publicly discloses audit firms' annual reports on its website.[12] The annual reports of audit firms contain not only financial information but also general information, such as the organizations' history, their number of clients, and the average work experience in years of their CPAs. Such rich data enable us to directly control for audit firms' other characteristics in our analyses. Third, in Korea, data on both audit fees and audit hours are publicly available,

[11] The KICPA discloses the number of registered CPAs on its website (https://www.kicpa.or.kr).

[12] From 2003 to 2014, the FSS disclosed the annual reports of audit firms through their own website (http://acct.fss.or.kr/fss/acc/bbs/list.jsp?bbsid=1295496154647&url=/fss/ac/1295496154647); since 2015, FSS has been releasing them through the Data Analysis, Retrieval and Transfer System (DART, http://dart.fss.or.kr). DART, the Korean equivalent of the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system, is an Internet-based corporate disclosure system operated by the FSS.

because all public companies are required to disclose their audit hours in their annual reports.[13] These institutional backgrounds provide an ideal setting for the analysis of the HRM practices of audit firms.

3.2. Change in the Number of CPAs within an Audit Firm

Analyses of flexible staffing in audit firms are based on monthly data on the number of CPAs in each audit firm. The KICPA publicly discloses the number of registered CPAs within each audit firm every month on its website. Using the monthly data, we first calculate the monthly percentage change in the number of CPAs in each audit firm:

$$CHG\_CPA_{i,m,t} = \frac{(The\ number\ of\ CPAs)_{i,m,t}}{(The\ number\ of\ CPAs)_{i,m-1,t}} - 1, \quad (1)$$

where *i* refers to audit firm, *m* refers to month, and *t* refers to year. We further measure fluctuations of monthly changes in the number of CPAs in each audit firm by calculating the standard deviation of monthly changes from April to March. We thus transform the monthly variable into a yearly variable:

$$STD\_YEAR_{i,t} = \sqrt{\frac{\sum_{m=1}^{12}(CHG\_CPA_{i,m,t} - \overline{CHG\_CPA_{i,t}})^2}{12}}, \quad (2)$$

[13] Data on audit fees and audit hours are available since 2001. However, audit hours in 2001 are often unavailable or unreliable. The limits on audit hour data in 2001 could be driven by errors in first-time disclosures.

where *i* refers to audit firm, *m* refers to month, and *t* refers to year. Specifically, *STD_YEAR* is measured from April to March. We use this variable as a proxy for the flexible staffing of professional accountants in audit firms.

3.3. Model Specifications

Audit Fees

To test whether the volatility of monthly changes in the number of CPAs within an audit firm has effects on audit fees (H1), we estimate the following regression model:

$$\begin{aligned} LAFEES_{i,t} = {} & \beta_0 + \beta_1 STD\_YEAR_{i,t} + \beta_2 BIG4_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 LEV_{i,t} \\ & + \beta_5 MTB_{i,t} + \beta_6 ROA_{i,t} + \beta_7 LOSS_{i,t} + \beta_8 INVREC_{i,t} + \beta_9 SG_{i,t} \\ & + \beta_{10} INITIAL_{i,t} + \beta_{11} FOREIGN_{i,t} + \beta_{12} LBUS\_SEG_{i,t} \\ & + \beta_{13} ABS\_TACC_{i,t} + \beta_{14} CURR\_RATIO_{i,t} + \beta_{15} OPINION_{i,t} \\ & + \beta_{16} HERF\_INDEX_{i,t} + YearFE + IndustryFE + \varepsilon_{i,t}, \end{aligned} \quad (3)$$

where *i* refers to client firm, and *t* refers to year. The dependent variable is *LAFEES*, which equals the natural logarithm of total audit fees. We then replace *LAFEES* with *LAHOURS* and *LAFPH* to examine the relation between monthly changes in CPAs within audit firms and audit hours and audit fees per hour (Bae et al., 2016). *LAHOURS* is the natural logarithm of total audit hours and *LAFPH* is the natural logarithm of the ratio of total audit fees to total audit hours. The variable of interest is *STD_YEAR*. We measure the volatility of monthly changes (*STD_YEAR*) in each audit firm by calculating the standard deviation of monthly changes from April to March. The timeline for matching the volatility of monthly changes (*STD_YEAR*) with audit fees (*LAFEES*) is described in Figure 1.

[Insert Figure 1 about here]

We include control variables based on prior studies (Simunic, 1980; Ghosh and Lustgarten, 2006; Hay et al., 2006). The control variables capture client firm size, client firm complexity, and client firm risk; *BIG4* is an indicator variable set to one if the client firm is audited by a Big 4 audit firm, and zero otherwise; *SIZE* is the natural logarithm of total assets at the year-end; *LEV* is the leverage ratio at the year-end, measured as total liabilities divided by total assets; *MTB* is the market-to-book ratio, calculated as market value of equity divided by book value of equity; *ROA* is net income scaled by total assets at the beginning of the year; *LOSS* is an indicator variable that takes the value of one if the firm reports losses for the period, and zero otherwise; *INVREC* is the sum of inventory and receivables divided by total assets; *SG* is the sales growth for the period; *INITIAL* is an indicator variable coded as one if it is the first year of audit engagement, and zero otherwise; *FOREIGN* is the percentage of foreign sales relative to total sales; *LBUS_SEG* is the natural logarithm of the number of business segments; *ABS_TACC* is the absolute value of total accruals; *CURR_RATIO* is the firm's current ratio, measured as current assets divided by current liabilities; *OPINION* is an indicator variable that equals one if the audit opinion is not an unqualified audit opinion, and zero otherwise; and *HERF_INDEX* is the Herfindahl index, calculated as the sum of the squared market shares of audit firms within the same industry and year. An audit firm's market share is measured by the audit fees it collects divided by the total audit fee paid to all audit firms within the same industry and year. We include *HERF_INDEX* to control for

the effect of audit market concentration on audit fees (Boone et al., 2012; Cho et al., 2014; Choi et al., 2018). Year fixed effects (*YearFE*) and industry fixed effects (*IndsutryFE*) are included in all regressions, and standard errors are clustered by client.

Audit Quality

Following prior literature, we use two different measures of audit quality: discretionary accruals and the likelihood of restatement. To examine the association between the volatility of monthly changes and audit quality (H2), we perform a test by estimating the following model:

$$\begin{aligned} Dependent\ Variable_{i,t} &= \beta_0 + \beta_1 STD\_YEAR_{i,t} + \beta_2 BIG4_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 LEV_{i,t} \\ &+ \beta_5 MTB_{i,t} + \beta_6 ROA_{i,t} + \beta_7 LOSS_{i,t} + \beta_8 LAG\_ABSTACC_{i,t} \\ &+ \beta_9 CFO_{i,t} + \beta_{10} SG_{i,t} + \beta_{11} STD\_ROA_{i,t} + \beta_{12} STD\_CFO_{i,t} \\ &+ YearFE + IndustryFE + \varepsilon_{i,t}, \end{aligned} \quad (4)$$

where *i* refers to client firm, and *t* refers to year. The dependent variable is the absolute value of discretionary accruals or an indicator variable that equals one if a client's annual report or audit report is misstated in year *t*, and zero otherwise (i.e., is subsequently restated). To estimate discretionary accruals, we adopt three different models: 1) modified Jones (1991) model (Dechow et al., 1995), 2) the asymmetric accruals model in Ball and Shivakumar (2006), and 3) the growth-adjusted discretionary accruals model in Collins et al. (2017). These three regression models are estimated cross-sectionally for each industry with at least 10 observations in each year. The industries are classified by two-digit Korea Standard Industrial

Classification (KSIC) codes. The residuals from the models are defined as discretionary accruals. For the incidence of restatements, the Financial Investment Services and Capital Markets Act specifies the restatement of registration statements. This act is amended from the Securities and Exchange Act (Article 11), which states that "[i]f it appears to the Financial Services Commission that a registration statement is incomplete in its form or any material information required to be stated therein is inadequate, the Financial Services Commission may, with presenting the reasons thereof, issue an order to file an amended statement." Annual reports are also subject to this act, such that their restatement indicates a client firm's poor financial reporting quality. Moreover, the restatement of audit reports can also provide direct evidence of poor audit quality. Thus, following the prior literature (e.g., Palmrose and Scholz, 2004; Francis et al., 2013), we use the incidence of restatements as a proxy for low-quality audit.

The dependent variable in equation (4) is *ABS_MJDA*, *ABS_BSDA*, *ABS_CODA*, or *RESTATEMENT*. The variables *ABS_MJDA*, *ABS_BSDA*, and *ABS_CODA* are the absolute value of discretionary accruals estimated following Dechow et al. (1995), Ball and Shivakumar (2006), and Collins et al. (2017), respectively. The variable *RESTATEMENT* is coded as one if a client's annual report or audit report in year *t* is restated in subsequent years, and zero otherwise. We include control variables following previous studies (Reichelt and Wang, 2010; Carcello and Li, 2013). The variable *LAG_ABSTACC* is the absolute value of total accruals in the previous period; *CFO* is cash flows from operations scaled by total

assets at the beginning of the period; *STD_ROA* is the standard deviation of the return on assets over the past three years, including the current year; and *STD_CFO* is the standard deviation of cash flows from operations, divided by total assets for the last three years, including the current year. The other remaining variables are as described above.

IV. Sample and Descriptive Statistics

4.1. Data and Sample Selection

Monthly Changes in the Number of CPAs in Audit Firms

Monthly data on the number of CPAs in each audit firm is hand-collected from the KICPA website. The initial sample consists of 18,758 audit firm–month observations from April 2005 to December 2017. Because the structure of the Korean audit market changed from the Big 6 to the Big 4 in 2005, the sample starts in April 2005 to exclude the merger effects between Big N audit firms.[14] To examine the effects of audit firm characteristics on monthly changes in the number of CPAs, the annual reports of audit firms are also hand-collected from the FSS website.

The sample selection procedure is described in Panel A of Table 1. After excluding audit firm–month observations without audit firm characteristic variables,

[14] Specifically, two large audit firm mergers occurred in Korea in January 2005 and in March 2005: Anjin and Hana accounting firms merged to form Hana-Anjin affiliated with Deloitte Touche Tohmatsu Limited, which is renamed as Anjin later, and Angeon and Hanyoung accounting firms merged to form Hanyoung affiliated with Ernst & Young. Samil affiliated with PriceWaterhouseCoopers and Samjung affiliated with KPMG International as well as two merged audit firms compose the Korean Big 4 auditors.

the final sample comprises 16,709 audit firm–month observations, with 170 unique audit firms.

[Insert Table 1 about here]

Audit Fees and Audit Quality

The sample for the audit fees and audit quality analyses consists of client–year observations between the fiscal years 2005 and 2016. The clients are selected from Korean firms listed on the Korea Stock Exchange (KSE) or Korea Securities Dealers Automated Quotations (KOSDAQ) market. We obtain client financial information data from the DataGuide database provided by FnGuide[15], and auditor information and audit fee data from the Total Solution (TS) 2000 database provided by the Korea Listed Companies Association. In addition, we identify the incidence of restatements from client firm disclosures on DART, operated by the FSS.[16] To match the monthly data of audit firms with client data, only clients with a December fiscal year-end are included. Since most public firms have a December year-end in Korea (e.g., 98% in 2018), this restriction excludes about 2% of the initial sample. We also exclude financial companies, because the accruals of financial companies have different implications from those of non-financial companies. Since discretionary accruals are regressed within the same year and industry, the year-industry groups are excluded if there are less than 10 client–years observations. We

[15] FnGuide is one of the largest providers of financial information about Korean firms.
[16] The restatements of annual, semiannual, and audit reports are publicly disclosed on DART (http://dart.fss.or.kr). Since we analyze client firm–year observations in this paper, we only utilize the restatements of annual and audit reports.

further exclude audit clients whose book value of equity is less than zero. Lastly, client–year observations without auditor information, audit fees information, or control variables are excluded from the sample. The final sample contains 14,812 client–year observations. The sample selection procedure and descriptive statistics are presented in Panel A of Table 2. All continuous variables are winsorized at the 1% and 99% levels each year to mitigate the effects of outliers.

[Insert Table 2 about here]

4.2. Descriptive Statistics

Monthly Changes in the Number of CPAs and Audit Firm Characteristics

Figure 2 presents the monthly trend of changes in the number of CPAs within audit firms. Panel A shows that the percentage change in the number of CPAs is positive for all months except April. Panels B also reveals the different trends in Big 4 and non-Big 4 audit firms. The number of CPAs in Big 4 audit firms continuously decreases from April to August, whereas non-Big 4 audit firms experience a decrease only in April.[17]

[Insert Figure 2 about here]

Panel B of Table 1 presents summary statistics for the monthly changes in the number of CPAs in audit firms. In the sample, the number of CPAs increases by about 0.5% every month, on average. The percentage change in the number of CPAs

[17] We provide further evidence on the monthly variation of CPA employment. The regression results in Table C1, Appendix C, reconfirms the monthly trend reported in Table 1 and Panel A of Figure 2.

is the highest in November (1.4%) and December (1.4%) and the lowest in April (-0.6%). Panel C provides summary statistics of audit firm characteristics. The mean leverage ratio is 52.7%; sales generated from audit services comprise 31.0% of total sales, on average; salary expenses account for about 45.4% of total sales; and the mean profit margin ratio is 3.3%. Registered CPAs with one to five years of work experience account for 22.2% of the total number of CPAs, on average.

Audit Fees and Audit Quality

Panel B of Table 2 presents summary statistics for audit fees, absolute discretionary accruals, restatement, control variables, and the volatility of monthly changes in the number of CPAs. The dependent variables for the audit fees test, which are *LAFEES, LAHOURS,* and *LAFPH,* have mean values of 11.147, 6.742, and 4.405, respectively. The mean value of the variable of interest, *STD_YEAR*, is 0.028. The mean value of *BIG4* indicates that the Big 4 auditors take 54.6% of the clients in the sample. For discretionary accruals, the average levels of *ABS_MJDA*, *ABS_BSDA*, and *ABS_CODA*—the estimated absolute discretionary accruals using the three different models—are 0.064, 0.050, and 0.058, respectively. The percentage of the incidence of restatement is 26.8%, on average. The Pearson correlation coefficients are presented in Table 3. The correlation matrix suggests that the volatility of monthly changes in the number of CPAs is negatively associated with audit fees and the correlation is significantly different from zero at the 1% level. The volatility of monthly changes is negatively correlated with absolute

discretionary accruals and positively correlated with *RESTATMENT*; however, the correlations are not statistically significant.[18]

[Insert Table 3 about here]

Determinants of the Use of Flexible Staffing Arrangement

Before examining the association between the volatility of monthly changes in the number of CPAs and audit characteristics (audit fees and audit quality), we explore whether certain audit firm characteristics affect the use of flexible staffing arrangement, measured by the volatility of monthly changes in CPA numbers. The dependent variable is *STD_YEAR*, the standard deviation of monthly changes in the number of CPAs from April to March. The independent variables include audit firm–specific variables and macroeconomic variables that could have effects on the use of flexible staffing arrangement. We estimate the following equation:

$$\begin{aligned} STD\_YEAR_{i,t} = {} & \beta_0 + \beta_1 LSALES_{i,t-1} + \beta_2 LEV_{i,t-1} + \beta_3 AUDIT\_RATIO_{i,t-1} \\ & + \beta_4 SALARY_{i,t-1} + \beta_5 BENEFIT_{i,t-1} + \beta_6 TRAINING_{i,t-1} \\ & + \beta_7 NET\_INCOME_{i,t-1} + \beta_8 FIRM\_AGE_{i,t-1} \\ & + \beta_9 NCLIENT\_NCPA_{i,t-1} + \beta_{10} CPA\_1\_5_{i,t-1} \\ & + \beta_{11} CLIENT\_LEV_{i,t-1} + \beta_{12} CLIENT\_INVREC_{i,t-1} \\ & + \beta_{13} CLIENT\_LOSS_{i,t-1} + \beta_{14} TOTAL\_CPA\_CHG_{i,t-1} \\ & + \beta_{15} GDP\_GROWTH_{i,t-1} + \beta_{16} UNEMP\_RATE_{i,t-1} + YearFE \\ & + \varepsilon_{i,t}, \end{aligned} \quad (5)$$

where *i* refers to audit firm, and *t* refers to year. The variable *LSALES* is the natural logarithm of total sales; *LEV* is the leverage ratio, calculated as total liabilities

[18] In addition, we compute the variance inflation factor (VIF) to assess multicollinearity among the explanatory variables. The VIF ranges from 1.37 to 1.75 for both equations (3) and (4). Since the VIFs in both equations (3) and (4) are less than 10, the results of our hypothesis testing are relatively free from multicollinearity concerns (Kennedy, 2008).

divided by total assets; *AUDIT_RATIO* is sales generated from audit services, scaled by total sales; *BENEFIT* is fringe benefit expenses divided by total sales; *TRAINING* is training expenses divided by total sales; *NET_INCOME* is net income scaled by total sales; *FIRM_AGE* is the age of the audit firm; *NCLIENT_NCPA* is the number of clients an audit firm audits, divided by the number of its registered CPAs; and *CPA_1_5* is the percentage of registered CPAs who have between one and five years of work experience relative to the total number of registered CPAs in the audit firm. We also include the characteristics of audit firm clients (*CLIENT_LEV*, *CLIENT_INVREC*, and *CLIENT_LOSS*), the number of CPAs in the auditor labor market, and macroeconomic variables (*GDP_GROWTH* and *UNEMP_RATE*). All the variables are defined in Appendix A. Year fixed effects (*YearFE*) are included and standard errors are clustered by audit firm.

The estimation results are shown in Table 4. We find that the natural logarithm of total sales (*LSALES*), the proportion of sales generated from audit services relative to total sales (*AUDIT_RATIO*), and the profit margin ratio (*NET_INCOME*) are negatively associated with the proxy for flexible staffing. Moreover, Big 4 audit firms (*BIG4*), and the ratio of CPAs who have one to five years of work experience to the total number of CPAs (*CPA_1_5*) are positively associated with the variability of CPA employment. The results suggest that certain audit firm characteristics, such as an audit firm's sales, profitability, size, and the composition of its employees, influence the use of flexible staffing arrangement.

[Insert Table 4 about here]

V. Empirical Results

5.1. Effect of Flexible CPA Staffing on Audit Fees

Based on equation (3), Table 5 presents how the volatility of monthly changes in the number of CPAs during the year (*STD_YEAR*) is associated with audit fees, audit hours, and audit fees per hour.

When the dependent variable is audit fees (*LAFEES*), the coefficient on *STD_YEAR* is significantly negative (-0.347, *t*-value = -3.07) at the 1% level. This suggests a strong negative relation between the volatility of monthly changes in CPA numbers and audit fees. The negative relation indicates that audit firms with a larger variability in the number of CPAs can charge lower audit fees to clients, after client size, client complexity, and client risk are controlled for. In terms of economic significance, when *STD_YEAR* increases by one-standard-deviation, audit fees declines by 1.1%.[19] This finding is consistent with the labor flexibility hypothesis, that audit firms with flexible staffing practices can reduce labor costs during non-busy season and share the cost savings with the clients.

However, we cannot discard the possibility that the lower audit fees associated with flexible staffing reflect reduced audit effort rather than cost savings.

[19] The standard deviation of *STD_YEAR* is about 0.030, so we could calculate the effect of an increase in one standard deviation of *STD_YEAR* on natural logarithm of audit fees as -0.011 (= -0.347*0.030). Since the dependent variable is the natural logarithm of audit fees, we estimate the economic significance by calculating e^{z}-1, where the z is the coefficient on the independent variable (Craswell et al., 1995). Thus, the economic significance of an increase in one standard deviation of *STD_YEAR* is calculated as: $e^{(-0.011)}$-1 = - 1.09%.

We address this concern by using audit hours and audit fees per hour as the dependent variables of equation (3) in the second and third columns of Table 5, respectively. When the dependent variable is the natural logarithm of audit hours (*LAHOURS*), we find an insignificant coefficient for *STD_YEAR* (0.142, *t*-value = 1.32). This result rejects the concern that more flexible CPA staffing incurs lower audit effort. When the dependent variable is the natural logarithm of audit fees per hour (*LAFPH*), the coefficient on *STD_YEAR* is significantly negative (-0.500, *t*-value = -4.32), implying that audit firms with flexible staffing can charge lower audit fees because of lower audit costs per hour. In terms of economic significance, when *STD_YEAR* increases by one-standard-deviation, audit fees per hour declines by 1.5%. The overall findings suggest that audit firms can charge lower audit fees without decreasing audit effort.[20]

The coefficients on the other control variables are consistent with prior studies (e.g., Ghosh and Lustgarten, 2006; Boone et al., 2012; Cho et al., 2014; Bills et al., 2015). Big 4 auditors charge a fee premium (*BIG4*); greater labor input is required for large clients (*SIZE*); it is more time-consuming to audit more complex

[20] In our main analysis, we match the volatility of monthly changes in the number of CPAs with contemporaneous audit fees. However, there is the concern that, under fixed-fee contracts, audit fees are largely predetermined at the beginning of the period (Hackenbrack and Hogan, 2005). To address this concern, we additionally examine the association between *STD_YEAR* the previous fiscal year (*LAG_STD_YEAR*) and audit fees, audit hours, and audit fees per hour. We find strong and negative effects of *LAG_STD_YEAR* on audit fees and audit fees per hour, with coefficients on *LAG_STD_YEAR* of -0.226 (*t*-value = -2.42) and -0.450 (*t*-value = -4.52), respectively. We also find a positive relation between flexible staffing and audit hours, with a coefficient on *LAG_STD_YEAR* of 0.219 (*t*-value = 2.35). These results further support our argument that audit firms with flexible CPA staffing can charge lower audit fees without decreasing audit effort.

clients (*LBUS_SEG*); auditors charge higher audit fees to clients with higher inherent risk (*INVREC*, *LOSS*, *ROA*, and *CURR_RATIO*); audit market concentration (*HERF_INDEX*) has a negative effect on audit fees because a higher concentration intensifies the competition among auditors.[21] In addition, when the dependent variable is the natural logarithm of audit fees (*LAFEES*), the coefficient on *INITIAL* is insignificant, indicating that initial fee discounting (i.e., lowballing) is not salient in our sample.[22]

[Insert Table 5 about here]

5.2. Flexible Staffing and Labor Cost Savings

5.2.1. Flexible Staffing and Salary Expenses

In Table 5, we find a negative association between the volatility in the monthly number of CPAs and audit fees. As discussed in the hypothesis development, we expect such a negative relation to be attributable to the saving of labor costs

[21] Inconsistent with the findings of Boone et al. (2012) and Cho et al. (2014), prior studies find mixed results for the association between audit market concentration (*HERF_INDEX*) and audit fees (*LAFEES*). For example, Bandyopadhyay and Kao (2004) find an insignificant association between audit market concentration and audit fees among Canadian firms; however, Huang et al. (2016) use data on Chinese firms and find a positive association between audit market concentration and audit fees. Our negative association between audit market concentration and audit fees is at least consistent with the findings of Cho et al. (2014) using Korean firms.

[22] However, depending on the specification, we find some evidence that *INITIAL* is negatively and significantly loaded when we exclude *STD_YEAR* in the fee regression. The results suggest that the fee impact of flexible staffing likely subsumes that of lowballing in Table 5. In Section 6.1, we further examine the effect of an initial audit engagement on the association between the volatility of monthly changes during the year (*STD_YEAR*) and audit fees. The empirical results suggest that an initial audit engagement does not moderate the relation between flexible CPA staffing and audit fees.

through flexible staffing. To empirically validate the claim, we examine whether the proxy for flexible staffing (*STD_YEAR*) is associated with audit firms' wage costs. Specifically, we examine how flexible staffing is associated with salary expenses of an audit firm. We obtain audit firms' cost data from their annual reports as disclosed by the FSS. Using hand-collected data from the FSS website, we estimate the following model to examine the association between flexible staffing and labor costs in audit firms:

$$\begin{aligned} Dependent\ Variable_{i,t} &= \beta_0 + \beta_1 STD\_YEAR_{i,t} + \beta_2 BIG4_{i,t} + \beta_3 LSALE_{i,t} + \beta_4 LEV_{i,t} \\ &+ \beta_5 AUDIT\_RATIO_{i,t} + \beta_6 BENEFIT_{i,t} + \beta_7 TRAINING_{i,t} \\ &+ \beta_8 NET\_INCOME_{i,t} + \beta_9 FIRM\_AGE_{i,t} \\ &+ \beta_{10} NCLIENT\_NCPA_{i,t} + \beta_{11} CPA\_1\_5_{i,t} + YearFE \\ &+ \varepsilon_{i,t}, \end{aligned} \quad (6)$$

where *i* refers to audit firm, and *t* refers to year. The dependent variable is *SALARY*, measured as the salary expenses borne by an audit firm divided by its total sales. The variable of interest is *STD_YEAR*, the volatility of monthly changes in the number of CPAs during the year. We also include several audit firm characteristics variables, explained as for equation (5).

The first column in Table 6 reports the estimation results for equation (6). When the dependent variable is *SALARY*, the coefficient on *STD_YEAR* is significantly negative at the 5% level (-0.255, *t*-value = -2.58). The negative association between *STD_YEAR* and *SALARY* indicates that flexible staffing arrangements indeed reduce labor costs. We thus conclude that the result in Table 5,

lower audit fees associated with flexible CPA staffing, is at least in part attributable to lower audit production cost regarding labor cost savings.[23]

5.2.2. Flexible Staffing and Severance Pay

One underlying premise for our main measure, *STD_YEAR*, is that the monthly variation of CPA employment changes reflects audit firms' flexibility in human resource management. However, one may suspect that the variation would capture voluntary turnovers of regular-term CPAs rather than audit firms' HRM policy. This appears a plausible explanation because the rapid drop of the number of CPAs in April is consistent with heavy workloads in the busy season facilitating voluntary resignation of full-time CPAs (Lopez and Peters, 2011). To resolve this concern on the validity of our measure, we examine whether audit firms' severance pay in a year varies with the monthly variation of CPA employment changes. If voluntary resignations of regular-term CPAs significantly contribute to the monthly variation of employment changes, the severance pay is deemed positively related to our proxy. In contrast, if the volatility in the number of CPAs capture the flexible staffing through temporary or part-time contracts, it will be insignificantly correlated with the severance pay because employers under Korean labor laws are not supposed to incur the severance pay for the labor contracts less than one year.

[23] We also estimate equation (6) using an alternative measure of labor costs, the natural logarithm of the ratio calculated by an audit firm's salary expenses divided by the total number of audit hours. The results are robust to the alternative measure, since we continue to find a significantly negative coefficient on *STD_YEAR* (-2.329, *t*-value = -2.60). However, we note a caveat that the audit hours are unavailable for private companies, overstating the alternative labor cost measure.

We use severance pay scaled by total sales of audit firms as the dependent variable of the equation (6). The second column in Table 6 presents that severance pay is not significantly related to our measure of flexible CPA staffing. The finding adds confidence to our claim that the monthly variation measure does capture audit firms' HRM flexibility rather than the voluntary resignations of CPAs after burnouts in the busy season.[24]

[Insert Table 6 about here]

5.3. Audit Quality Test

In this section, we examine the association between flexible CPA staffing and audit quality. The negative relation between flexible staffing and audit fees may also capture deteriorated audit quality rather than reduced labor costs as we claim. To address this concern, we perform an additional test to determine whether flexible staffing practices affect audit quality. Following prior literature, we use the absolute value of discretionary accruals and the incidence of restatement as proxies for audit quality. Three different models are adopted to estimate discretionary accruals, as explained in the previous section.

Table 7 reports the empirical results for H2 based on equation (4). The results provide weak evidence of the negative relation between the volatility of monthly changes and absolute discretionary accruals. We find significantly negative

[24] It is also worth noting that our measure is not affected by labor market supply of fresh CPAs who just pass the exam, because the KICPA's monthly employment data does not include the probationary CPAs.

coefficients for *STD_YEAR* when the dependent variable is *ABS_MJDA* or *ABS_CODA*, but the coefficients for *STD_YEAR* are insignificant when the dependent variable is *ABS_BSDA* or *RESTATMENT*. More specifically, the coefficients on *STD_YEAR* are -0.032 (*t*-value = -2.90), -0.017 (*t*-value = -1.50), -0.022 (*t*-value = -2.24), or 0.079 (*z*-value = 0.13) when the dependent variable is *ABS_MJDA*, *ABS_BSDA*, *ABS_CODA*, or *RESTATEMENT*, respectively. [25] Consequently, we find that flexible staffing does not damage audit quality. Combining the findings in Tables 5 and 7, we find that audit firms with greater labor flexibility can charge lower audit fees to clients without sacrificing audit quality. A possible explanation for the insignificant association between flexible staffing and audit quality is that flexible labor resources are generally inexperienced auditors, who may not have significant impact on audit quality. Hossain et al. (2017) document that the number of assistant auditors is not associated with audit quality, whereas the number of senior auditors is positively associated with audit quality. As shown in Table 4, we find the positive association between the proportion of CPAs with less than 5 years of work experience (*CPA_1_5*) and the proxy for flexible staffing (*STD_YEAR*), indicating that audit firms tend to adjust CPAs with less than 5 years of work experience for the use of flexible staffing, thereby not significantly affecting audit quality.

[25] We also employ the restatements of audit reports as an alternative measure for *RESTATEMENT*, because they can be more directly related to the quality of auditors' audit services. The alternative for *RESTATEMENT* is coded as one if a client's audit report in year *t* is restated in subsequent years, and zero otherwise. Our finding does not change largely with the alternative *RESTATEMENT* measure.

[Insert Table 7 about here]

VI. Additional Analyses

In this section, we conduct several cross-sectional analyses and check the robustness of our main findings by performing sensitivity tests.

6.1. Effect of Client Bargaining Power

Prior studies argue that the relative bargaining power between client and auditor can influence audit pricing. Mayhew and Wilkins (2003), Casterella et al. (2004), and Fung et al. (2012) provide evidence that industry specialist auditors charge lower audit fees to clients with strong bargaining power. These studies interpret their results that industry specialist auditors have incentives to share costs savings from economies of scale only with the clients with strong bargaining power. For the effects of client bargaining power on audit quality, prior literature notes that the economic bonds between auditors and clients can impair auditor independence and the quality of financial reporting (DeAngelo, 1981). Accordingly, we additionally examine whether the clients' strong bargaining power can influence the association between the volatility of the monthly number of CPAs and audit fees or audit quality.

The client bargaining power variable (*POWER*) is calculated as audit fees paid by a client divided by the audit firm's total audit fees (Casterella et al., 2004; Beck and Mauldin, 2014). Thus, the higher the value of *POWER*, the greater the

client's importance, since the client contributes a large portion of the audit firm's sales generated from audit services.

Panel A of Table 8 reports the results for the effects of client bargaining power on the relation between flexible CPA staffing and audit fees. In the first column, the coefficient for the interaction term between *POWER* and *STD_YEAR* is negative and statistically significant at the 1% level (the coefficient for *STD_YEAR* POWER* = -2.169, *t*-value = -2.38). The negative coefficients suggest that audit firms charge lower audit fees to clients with strong bargaining power. We interpret the results as audit firms share cost savings from flexible staffing to a greater extent when clients have strong bargaining power, which is consistent with the findings of Casterella et al. (2004). However, even in the presence of the interaction term, the coefficient on *STD_YEAR* is significantly negative, indicating that audit fees are lower when there is greater within-year variation in the numbers of CPAs at audit firms. The results in the second and third columns also indicate that, while the audit fees per hour is lower for audited firms with strong bargaining power, greater volatility in the monthly number of CPAs in an audit firm is associated with lower audit fees per hour, enhancing our previous findings.

Panel B of Table 8 shows the results for the effect of client bargaining power on the association between flexible staffing and audit quality. As shown in the table, the coefficients for the interaction term between *POWER* and *STD_YEAR* are not statistically significant for all proxies for audit quality. The results indicate

that the relation between flexible CPA staffing and audit quality does not vary with the client's bargaining power.

[Insert Table 8 about here]

6.2. Sensitivity Test: An Alternative Measure of Flexible Staffing

In Table 9, we use an alternative measure of flexible staffing practice. Instead of using the standard deviation of monthly changes in CPA numbers, we calculate the range of monthly changes in CPA numbers during the year as a proxy for flexible staffing arrangements. More specifically, *RANGE_YEAR* is constructed as the maximum value of the change in the number of CPAs during the year minus the minimum value of the change during the year. The period starts in April and ends in March. The regression results from equations (3) and (4) using the alternative measure of flexible staffing are shown in Panels A and B of Table 9, respectively. In Panel A, we continue to find a negative and statistically significant coefficient on *RANGE_YEAR* in the first column (-0.102, *t*-value = -3.21). We also find that the negative association between flexible staffing and audit fees is driven by lower audit costs per hour rather than by lower audit effort. The coefficient on *RANGE_YEAR* is significant and negative (-0.123, *t*-value = -3.80) when the dependent variable is *LAFPH*, but insignificant (0.018, *t*-value = 0.59) when the dependent variable is *LAHOURS*. In Panel B, we find statistically negative coefficients on *STD_YEAR* when the dependent variable is *ABS_MJDA* or *ABS_CODA* but we find insignificant

coefficients when the dependent variable is *ABS_BSDA* or *RESTATEMENT*. Overall, the results in Table 9 show that our main findings are robust to the alternative measure of flexible staffing.

[Insert Table 9 about here]

6.3. Control for Selection Bias

We recognize the potential endogeneity problem that the choice of auditor is not a random event; that is, we acknowledge that the degree of flexible staffing merely captures certain characteristics of auditors and client firms that affect audit outcomes. To address the endogeneity concern (i.e., correlated omitted variables concern), we rely on a propensity score matching method. In the first stage, we estimate a client's propensity to choose an audit firm with high monthly fluctuations in the number of CPAs by employing the following logit model:

$$\begin{aligned} STD\_HIGH_{i,t} = {} & \beta_0 + \beta_1 SIZE_{i,t} + \beta_2 LEV_{i,t} + \beta_3 MTB_{i,t} + \beta_4 ROA_{i,t} + \beta_5 LOSS_{i,t} \\ & + \beta_6 CURR\_RATIO_{i,t} + YearFE + IndustryFE \\ & + \varepsilon_{i,t}, \end{aligned} \tag{7}$$

where the dependent variable, *STD_HIGH*, is an indicator variable that equals one if the volatility of monthly changes in the number of CPAs is greater than the median value in the year, and zero otherwise. Thus, we first examine how client-specific characteristics are associated with a choice of audit firm that has large temporal fluctuations. A set of independent variables in the logit model is unavoidably *ad hoc*, but based on the auditor selection literature (e.g., Lennox et al., 2012). The determinants include client size (*SIZE*), leverage ratio (*LEV*), market to book (*MTB*),

return on assets (*ROA*), loss indicator (*LOSS*), and current ratio (*CURR_RATIO*). Based on the predicted value obtained from the first-stage logit regression, we match the clients of audit firms with high monthly volatility with the clients of low-volatility audit firms that have the closest predicted value from equation (7) within a maximum distance of 5% without replacement. After a caliper distance matching procedure, the sample size decreases to 13,150 client–year observations for audit fee and discretionary accruals analyses (compared to 14,812 client–year observations).

The first-stage logit regression results are presented in Panel A of Table 10. The results provide evidence that clients of larger size and higher liquidity are less likely to choose audit firms with large temporal fluctuations. The comparison of the mean values between the two groups is reported in Panel B. The differences in mean value become insignificant after the propensity score matching procedure. The regression results for equations (3) and (4) using the propensity score–matched sample are provided in Panel C. In Panel C, we continue to find a strong negative association between flexible staffing and audit fees, where the coefficient on *STD_YEAR* is -0.356, with *t*-value = -3.20. However, the negative relations between flexible staffing and audit quality proxies become weaker. The coefficients on *STD_YEAR* are statistically insignificant for the three audit quality proxies (*ABS_BSDA*, *ABS_CODA*, and *RESTATEMENT*). These findings indicate that the negative association between flexible staffing and discretionary accruals, previously documented in Table 7, are partly attributable to the endogeneity concern, whereas

the main findings in the audit fee tests still hold. Nonetheless, our inferences are not affected, even for the matched sample.

In spite of the benefits of using a propensity score matching procedure, we also recognize the caveats of matching models noted by Lawrence et al. (2011). First, there could be unobservable factors that affect the estimation of the treatment effects. Second, matching models use subsamples of the population, making generalizations difficult. Third, the sample's composition could be altered after the matching procedure, resulting in systematic differences between matched samples and the full sample. Lastly, potential auditor selection effects on matching variables can lead to bias.

[Insert Table 10 about here]

6.4. Differential Effects between Big4 and non-Big4

Previously in Figure 2, we observed different monthly trends in the change in the number of CPAs between Big 4 and non-Big 4 audit firms. It is widely known in Korea that small audit firms have difficulty recruiting professional accountants. To help small audit firms find qualified accountants to cope with busy seasons, the KICPA recently initiated a campaign to connect small audit firms to available accountants (Park, 2019). Therefore, the effects of flexible CPA staffing on audit fees and audit quality could differ between Big 4 and non-Big 4 audit firms. To assess such differences, we add the interaction term between the Big 4 indicator variable and the volatility of monthly changes in CPA numbers in equations (3) and (4). The

untabulated results indicate that the effects of flexible staffing on audit fees and on audit quality are not significantly different between Big 4 and non-Big 4 audit firms.

6.5. Effect of Initial Audit Engagement

An alternative explanation for the negative relation between flexible staffing and audit fees is that audit firms hire CPAs temporarily for new audit engagements and dismiss them in subsequent periods. In particular, since clients can voluntarily choose auditors, auditors could offer low audit fees to gain new clients. Consequently, auditors could competitively bid for audit prices and hire audit staff temporarily to handle new audit engagements. In this view, lower audit fees charged by audit firms could capture lowballing in an initial audit engagement rather than reflect flexible staffing practices.[26] To ensure that our findings are not driven by lowballing, we investigate whether an initial audit engagement affects the negative relation between *STD_YEAR* and audit fees. Although we control for initial audit engagement in the previous test, we further include the interaction term between the indicator variable for the initial audit engagement (*INITIAL*) and *STD_YEAR* in equation (3).

The untabulated results indicate that the coefficient on *STD_YEAR* is negative but statistically insignificant when the dependent variable is the natural logarithm of audit fees. Compared to the result without the interaction term with

[26] Discussions on the audit fee discount for an initial engagement can be found in the works of DeAngelo (1981), Chan (1999), and Ghosh and Lustgarten (2006).

INITIAL in Table 5, the sign of the coefficient on *STD_YEAR* remains negative but its magnitude decreases from -0.347 to -0.239. The coefficient for *STD_YEAR* INITIAL* is negative but statistically insignificant. Collectively, these results suggest that an initial audit engagement could explain part of the negative relation between audit fees and the volatility of the number of CPAs, but the coefficient on *STD_YEAR* remains negative even for continuous audit engagements. More importantly, when we examine audit fees per hour as the dependent variable, we find that the coefficient on *STD_YEAR* is significantly negative, whereas that on *STD_YEAR* INITIAL* is statistically insignificant. If we compare these coefficients with the results in column (3) of Table 5, the magnitude of the negative coefficients on *STD_YEAR* increases from -0.500 to -0.865. These untabulated results suggest that the relation between flexible CPA staffing and audit fees per hour is more pronounced for continuous engagements, confirming our previous conclusion that lower labor costs due to flexible staffing reduce audit fees.

For the effects on audit quality, the coefficients on *STD_YEAR* INITIAL* are statistically insignificant for three different absolute discretionary accruals and the indicator variable for restatements. These results reconfirm that the impact of flexible CPA staffing on audit quality does not differ between initial and continuous engagements.

VII. Conclusion

This study provides empirical evidence regarding HRM practices within audit firms. The HRM practices of audit firms can influence audit fees because they are directly associated with audit firms' operating costs. Using monthly data on the number of CPAs within an audit firm, we find temporal fluctuations in monthly changes during the year. We interpret the observed fluctuations as capturing flexible CPA staffing arrangements because the demand for audit staff increases before the busy season and decreases afterward.

By linking flexible staffing with audit fees, we find that the volatility of the monthly number of CPAs in an audit firm is negatively associated with audit fees and not significantly related to audit hours. These results indicate that audit firms can save costs from flexible staffing arrangements, and they share the cost savings with client through lower audit fees. Furthermore, we find that lower audit fees from audit firms with flexible staffing are not accompanied by deterioration of audit quality. These findings are consistent with prior studies on HRM practices, in that organizations with greater labor flexibility have less rigid cost structure even without sacrificing service quality (Houseman, 2001; Kalleberg et al., 2003; Altuzarra and Serrano, 2010; Hurst and Smith, 2010; Kesavan et al., 2014).

Our findings add to the scarce stream of literature on audit firms' HRM practices. Specifically, analyzing a unique dataset of monthly CPA employment in Korean audit firms, we document seasonal patterns of audit firms' employment and

assess its implication to audit outcomes. However, we ask readers to be cautious in interpreting our findings. First, flexible staffing practices are measured by the percentage change in the number of registered CPAs within an audit firm. As a result, the measurement is unavoidably noisy to the extent that it ignores the presence of probationary CPAs. However, this measurement error might not be critical because the effect of probationary CPAs likely remains minimal in determining audit fees and audit quality. More importantly, the measurement is based on aggregate employment, by which we are unable to distinguish different contract types. To overcome this limitation, we instead infer labor flexibility in staffing from a monthly variation of employment.

Second, we do not establish a strong causal relation between flexible CPA staffing and audit fees because we cannot directly observe the audit production costs. For instance, there is potential reverse causality, in that fluctuations in employees are larger in audit firms that attempt to charge lower audit fees. However, given that the employment fluctuation is not associated with impaired audit quality, our inference may still hold that both auditors and clients share the benefits of flexible CPA staffing.

Lastly, since audit fee data is available only for public companies, we cannot help excluding private companies from the analyses. Given that private companies comprise a nontrivial portion of the audit market, the documented associations in this study may not be generalized in extended samples with limited market scrutiny.

References

Akono, H., and M. T. Stein. 2014. Estimating Audit Fees and Production Models. Chapter 4 of *The Routledge Companion to Auditing*, edited by Hay, Knechel and Willekens, Routledge: 276-286.

Almeida, H., M. Campello, and M. Weisbach. 2004. The cash flow sensitivity of cash. *Journal of Finance* 59 (4): 1777-1804.

Almer, E. D., and S. E. Kaplan. 2002. The effects of flexible work arrangements on stressors, burnout, and behavioral job outcomes in public accounting. *Behavioral Research in Accounting* 14 (1): 1-34.

Altuzarra, A. and F. Serrano. 2010. 'Firms' innovation activity and numerical flexibility. *Industrial & Labor Relations Review* 63 (2): 327-39.

American Institute of Certified Public Accountants (AICPA). 2004. *AICPA Work/Life and Women's Initiatives 2004 Research Decade of Changes in the Accounting Profession: Workforce Trends and Human Capital Practices*. New York, NY: AICPA. Available at: https://www.aicpa.org/career/worklifebalance/downloadabledocuments/researchpaper_v5.pdf

American Institute of Certified Public Accountants (AICPA). 2017. *PCPS CPA Firm Top Issues Survey Commentary*. New York, NY: AICPA. Available at: https://www.aicpa.org/content/dam/aicpa/interestareas/privatecompaniespracticesection/strategyplanning/firmstrategyandplanning/downloadabledocuments/2017-top-issues-commentary.pdf

Anderson-Gough, F., C. Grey, and K. Robson. 1998. *Making up accountants: The organizational and professional socialization of trainee accountants*, Ashgate, Aldershot.

Anderson-Gough, F., C. Grey, and K. Robson. 2001. Tests of time: Organizational time-reckoning and the making of accountants in two multi-national accounting firms. *Accounting, Organizations and Society* 26 (2): 99-122.Appelbaum, E., T. Bailey, P. Berg, and A. Kalleberg. 2000. *Manufacturing Advantage: Why High-performance Work Systems Pay Off*. Ithaca, NY: ILR Press.

Aobdia, D., A. Srivastava, and E. Wang. 2018. Are immigrants complements or substitutes? Evidence from the audit industry. *Management Science* 64 (5): 1997-2012.

Armstrong, M. 2006. *A Handbook of Human Resource Management Practice* (10th ed.), London: Kogan Page.

Arthur, J. 1994. Effects of human resource systems on manufacturing performance and turnover. *Academy of Management Journal* 37 (3): 670-687.

Atkinson, J. G. 1984. Manpower strategies for flexible organizations. *Personnel Management* 16 (8): 28-31.

Bae, J., and J. J. Lawler. 2000. Organizational and HRM strategies in Korea: Impact on firm performance in an emerging economy. *Academy of Management Journal* 43 (3): 502-517.

Bae, G. S., S. U. Choi and J. H. Rho. 2016. Audit hours and unit audit price of industry specialist auditors : Evidence from Korea. *Contemporary Accounting Research* 33 (1): 314-340.

Baik, J. H. 2016. 25 thousands of audited firms have fiscal year-end of December, resulting in audit crisis. *Joseilbo* (Dec 28). [printed in Korean] Available at: http://www.joseilbo.com/news/htmls/2016/12/20161228312563.html

Ball, R., and L. Shivakumar. 2006. The role of accruals in asymmetrically timely gain and loss recognition. *Journal of Accounting Research* 44 (2): 207-242.

Bandyopadhyay, S. P. and J. L. Kao. 2004. Market structure and audit fees: A local analysis. *Contemporary Accounting Research* 21 (3): 529-561.

Bartel, A. P. 2004. Human resource management and organizational performance: Evidence from retail banking. *Industrial and Labor Relations Review* 57 (2): 181-203.

Batt, R. 2002. Managing customer services: Human resource practices, quit rates, and sales growth. *Academy of Management Journal* 45 (3): 587-597.

Beck, M. J., J. R. Francis, and J. L. Gunn. 2018. Public company audits and city-specific labor characteristics. *Contemporary Accounting Research* 35 (1): 394-433.

Beck, M. J. and E. G. Mauldin. 2014. Who's really in charge? Audit committee versus CFO power and audit fees. *The Accounting Review* 89 (6): 2057-2085.

Becker, B. E., and B. Gerhart. 1996. The impact of human resource management on organizational performance: Progress and prospects. *Academy of Management Journal* 39 (4): 779-801.

Belkaoui, A. 1989. *Behavioral Accounting: The Research and Practical Issues*. Westpost, CT: Quorum Books.

Bills, K., D. Jeter, and S. Stein. 2015. Auditor industry specialization and evidence of cost
efficiencies in homogenous industries. *The Accounting Review* 90 (5): 1721-1754.

Boone, J. P., I. K. Khurana, and K. K. Raman. 2012. Audit market concentration and auditor tolerance for earnings management. *Contemporary Accounting Research* 29 (4): 1171-1203.

Booth, A. L., M. Francesconi, and J. Frank. 2002. Temporary jobs: Stepping stones or dead ends? *The Economic Journal* 112: 189-213.

Brierley, J. A., and D. R. Gwilliam. 2003. Human resource management issues in audit firms: A research agenda. *Managerial Auditing Journal* 18 (5): 431-438.

Buchheit, S., D. W. Dalton, and C.W. Hollingsworth. 2016. A contemporary analysis of accounting professionals' work-life balance. *Accounting Horizons* 30 (1): 41-62.

Cao, S., L. W. Cong, and B. Yang. 2019. Financial reporting and blockchains: Audit pricing, misstatements, and regulation. Working Paper, Georgia State University, University of Chicago.

Carcello, J. and C. Li. 2013. Costs and benefits of requiring an engagement partner signature: Recent experience in the United Kingdom. *The Accounting Review* 88 (5): 1511-1546.

Casterella, J. R., J. R. Francis, B. L. Lewis, and P. L. Walker. 2004. Auditor industry specialization, client bargaining power, and audit pricing. *Auditing: A Journal of Practice & Theory* 23 (1): 123-140.

Chan, D. K. 1999. "Low-balling" and efficiency in a two-period specialization model of auditing competition. *Contemporary Accounting Research* 16 (4): 609-642.

Chang, C. J., Y. Luo, and L. Zhou. 2017. Audit deficiency and auditor workload: evidence from PCAOB triennially inspected firms. *Review of Accounting and Finance* 16 (4): 478-496.

Chi, W., L. Hughen, C.-J. Lin, and L. Lisic. 2013. Determinants of audit staff turnover: Evidence from Taiwan, *International Journal of Auditing* 17 (1): 100-112.

Cho, H., B. Song, and J.-H. Choi. 2014. The effect of the level of competition in audit market on audit quality and audit fees. *Korean Management Review* 43 (5): 1529-1556. [printed in Korean]

Choi, J.-H., J. B. Kim, Y. Lee, and H. Y. Sunwoo. 2018. Audit market concentration and audit fees: An international investigation. Working paper, Seoul National University.

Collins, D., R. S. Pungaliya, and A. Vijh. 2017. The effects of firm growth and model specification choices on tests of earnings management. *The Accounting Review* 92 (2): 69-100.

Craswell, A., J. R. Francis, and S. Taylor. 1995. Auditor brand name reputations and industry specializations. *Journal of Accounting and Economics* 20 (3): 297-322.

Cunha, R. C., M. P. Cunha-Kintana, A. Morgado, and C. Brewster. 2003. Market forces, strategic management, human resource management practices and organizational performance: A model based on a European sample. *Management Research: Journal of the Iberoamerican Academy of Management* 1 (1): 79-91.

DeAngelo, L. 1981. Auditor independence, "lowballing" and disclosure regulation. *Journal of Accounting and Economics* 3 (2): 113-127.

Dechow, P. M., R. G. Sloan, and A. P. Sweeney. 1995. Detecting earnings management. *The Accounting Review* 70 (2): 193-225.

Dopuch, N., M. Gupta, D. A. Simunic, and M. Stein. 2003. Production efficiency and the pricing of audit services. *Contemporary Accounting Research* 20 (1): 47-78.

Ernstberger, J., C. Koch, E. M. Schreiber, and G. Trompeter. 2019. Are audit firms' compensation policies associated with audit quality? *Contemporary Accounting Research,* Forthcoming.

Financial Reporting Council (FRC). 2006. *'Promoting Audit Quality', Discussion Paper, London: FRC.* Available at: https://www.frc.org.uk/getattachment/87498b3e-0aec-417c-b804-8b0c461174c8/Discussion-Paper-Promoting-Audit-Quality-Nov-2006.pdf

Financial Reporting Council (FRC). 2008. *The Audit Quality Framework*. Available at:
http://www.frc.org.uk/Our-Work/Publications/FRC- Board/ The-Audit-Quality-Framework-%281%29.aspx

Financial Supervisory Service (FSS). 2019. *2018 Summary of External Audits Companies and Auditor Designation*. [printed in Korean] Available at:
http://www.fss.or.kr/fss/kr/promo/bodobbs_view.jsp?seqno=22025

Fogarty, T., J. Singh, G. Rhoads, and R. Moore. 2000. Antecedents and consequences of burnout in accounting: Beyond the role stress model. *Behavioral Research in Accounting* 12: 31-67.

Francis, J. R. 2011. A framework for understanding and researching audit quality. *Auditing:*
A Journal of Practice & Theory 30 (2): 125-152.

Francis J. P. Michas and M. D. Yu. 2013. Office size of Big 4 auditors and client restatements. *Contemporary Accounting Research* 30 (4) 1626-1661.

Fung, S., F. Gul, and J. Krishnan. 2012. City-level auditor industry specialization, economies of scale, and audit pricing. *The Accounting Review* 87 (4): 1281-1307.

Gertsson, N., J. Sylvander, P. Broberg, and J. Friberg. 2017. Exploring audit assistants' decision to leave the audit profession, *Managerial Auditing Journal* 32 (9): 879-898.

Ghosh, A., and S. Lustgarten. 2006. Pricing of initial audit engagements by large and small audit firms. *Contemporary Accounting Research* 23 (2): 333-368.

Goyal, M., and S. Netessine. 2011. Volume flexibility, product flexibility, or both: The role of demand correlation and product substitution. *Manufacturing & Service Operations Management* 13 (2):180-193.

Gu, T., D. A. Simunic, and M. T. Stein. 2017. Fixed costs, audit production, and audit markets: Theory and evidence. Working paper, Old Dominion University.

Guillaume, P., S. E. Sullivan, H-G. Wolff, and M. L. Forret. 2018. Are there major differences in the attitudes and service quality of standard and seasonal employees? An empirical examination and implications for practice. *Human Resource Management* 58 (1): 45-56.

Gul, F. A., S. Ma, and K. Lai. 2017. Busy auditors, partner-client tenure, and audit quality: evidence from emerging market. *Journal of International Accounting Research* 16 (1): 83-105.

Hackenbrack. K., and C. Hogan. 2005. Client retention and engagement level pricing. *Auditing: A Journal of Theory & Practice* 24 (1): 7-20.

Han, S. and J. Qiu. 2007. Corporate precautionary cash holdings. *Journal of Corporate Finance* 13 (1): 43-57.

Hancock, J. I., D. G. Allen, F. A. Bosco, K. R. McDaniel, and C. A. Pierce. 2013. Meta-analytic review of employee turnover as a predictor of firm performance. *Journal of Management* 39 (3): 573-603.

Hanson, J. *Keynote address to the American Accounting Association 2013 Annual Ohio Region Meeting*. (May 10, 2013). Available at: http://pcaobus.org/News/Speech/Pages/05102013_AAA.aspx

Hardies, K., D. Breesch, and J. Branson. 2013. Gender inequality in small and large audit firms. Working paper, University of Antwerp.

Hay, D., W. R. Knechel, and N. Wong. 2006. Audit fees: A meta-analysis of the effects of supply and demand attributes. *Contemporary Accounting Research* 23 (1): 141-191.

Herda, D. N., and J. J. Lavelle. 2012. The auditor-audit firm relationship and its effect on burnout and turnover intention. *Accounting Horizons* 26 (4): 707-723.

Hermanson, D., R. Houston, C. Stefaniak, and A. Wilkins. 2016. The work environment in large audit firms: Current perceptions and possible improvements. *Current Issues in Auditing* 10 (2): 38-61.

Hiltebeitel, K. and B. Leauby. 2001. Migratory patterns of entry-level accountants. *The CPA Journal* 71 (4): 54-56.

Hoopes, J. L., K. J. Merkley, J. Pacelli, and J. H. Schroeder. 2018. Audit personnel salaries and audit quality. *Review of Accounting Studies* 23 (3): 1096-1136.

Hossain, S., K. Yazawa, and G. S. Monroe. 2017. The relationship between audit team composition, audit fees, and quality. *Auditing: A Journal of Theory & Practice* 36 (3): 115-135.

Houseman, S. N. 2001. Why employers use flexible staffing arrangements: Evidence from an establishment survey. *Industrial and Labor Relations Review* 55 (1): 149-170.

Huang, T. -C., H. Chang, and J. -R. Chiou. 2016. Audit market concentration, audit fees, and audit quality: Evidence from China. *Auditing: A Journal of Practice & Theory* 35 (2): 121-145.

Hurst, K. and A. Smith. 2010. Temporary nursing staff – cost and quality issues. *Journal of Advanced Nursing* 67 (2): 287-296.

Huselid, M. A. 1995. The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal* 38 (3): 635-672.

Jarmon, R., A. Paulson, and D. Rebne. 1998. Contractor performance: How good are contingent workers at the professional level? *IEEE Transactions on Engineering Management* 45 (1): 11-19.

Jones, J. J. 1991. Earnings management during import relief investigations. *Journal of Accounting Research* 29 (2): 193-228.

Kalleberg, A. L., J. Reynolds, and P. V. Mardsen. 2003. Externalizing employment: Flexible staffing arrangements in US organizations. *Social Science Research* 32 (4): 525-552.

Kennedy, P. 2008. *A Guide to Econometrics* (6th ed.). Malden, MA: Blackwell.

Kesavan, S., B. R. Staats, and W. Gilland. 2014. Volume Flexibility in Services: The Costs and Benefits of Flexible Labor Resources. *Management Science* 60 (8): 1884-1906.

Khavis, J., and J. Krishnan. 2017. Employee Satisfaction in Accounting Firms, Work-Life Balance, Turnover, and Audit Quality. Working paper, Temple University.

Kim, C., D. Mauer, and A. Sherman. 1998. The determinants of corporate liquidity. *Journal of Financial and Quantitative Analysis* 33 (3): 335-359.

Kim, P. H., and N. Y. Kim. 2015. Turnover rates of last year in public accounting firms are 20%. *Money Today* (April 23). [printed in Korean] Available at: http://news.mt.co.kr/mtview.php?no=2015042115080589143

Lai, K. M. Y., A. Sasmita, F. A. Gul., Y. B. Foo., and M. Hutchinson. 2018. Busy auditors, ethical behavior, and discretionary accruals quality in Malaysia.

Journal of Business Ethics 150 (4): 1187-1198.

Larkin, J. M., B. A. Leauby, and K. M. Hiltebeitel. 1999. Early employment experiences of accountants: Initial placement, job satisfaction, and migratory patterns, *The Review of Accounting Information Systems* 3 (3): 63-72.

Lawrence, A., M. Minutti-Meza, and P. Zhang. 2011. Can Big 4 versus non-Big 4 differences in audit-quality proxies be attributed to client characteristics? *The Accounting Review* 86 (1): 259–86.

Lee, H. J. 2018. "Join us", the war for recruiting CPAs is fierce among Big 4 accounting firms. *Joseilbo* (Jul 27). [printed in Korean] Available at: http://www.joseilbo.com/news/htmls/2018/07/20180727357873.html

Lennox, C. S., J. R. Francis, and Z. Wang. 2012. Selection models in accounting research. *The Accounting Review* 87 (2): 589-616.

Lennox, C. S., and X. Wu. 2018. A Review of the archival literature on audit partners. *Accounting Horizons* 32 (2): 1-35.

Levine, J. M., and R. Moreland. 1998. Small groups, in *The Handbook of Social Psychology* (4th ed., Vol. 2, 415-469), edited by Gilbert, D. T., Fiske, S. T., Lindzey, G. Boston, MA: McGraw Hill.

Lewczyk, M. 2017. 'Tis the season to hire seasonal CPAs. *Goingconcern*. Available at: https://goingconcern.com/seasonal-cpas-freelance-accountants/

Lopez, D., and G. Peters. 2011. Auditor workload compression and busy season auditor switching. *Accounting Horizons* 25 (2): 357-380.

Lopez, D., and G. Peters. 2012. The effect of workload compression on audit quality. *Auditing: A Journal of Practice & Theory* 31 (4): 139-65.

Mayer, K. and J. Nickerson. 2005. Antecedents and performance implications of contracting for knowledge workers: Evidence from information technology services. *Organizational Science* 16 (3): 225-242.

Meyer, C. 2017. 8 tips for finding, hiring, and retaining the best busy season staff. *Journal of Accountancy* January. Available at: https://www.journalofaccountancy.com/newsletters/2017/jan/hiring-retaining-best-busy-season-staff.html

Mayhew, B., and M. Wilkins. 2003. Audit firm industry specialization as a differentiation strategy: Evidence from fees charged to firms going public. *Auditing: A Journal of Practice & Theory* 22 (2): 33-52.

O'Keefe, T., D. A. Simunic, and M. T. Stein. 1994. The production of audit services: Evidence from a major public accounting firm. *Journal of Accounting Research* 32 (2): 241-261.

Opler, T., L. Pinkowitz, R. Stulz, and R. Williamson. 1999. The determinants and implications of corporate cash holdings. *Journal of Financial Economics* 52 (1): 3-46.

Palmrose, Z., and S. Scholz. 2004. The circumstances and legal consequences of non-GAAP reporting: Evidence from restatements. *Contemporary Accounting Research* 21 (1): 139-80.

Park, E. 2019. Small audit firms which cannot find staffs collaborate with "a reserve army of accounting" *News1*. Available at: http://news1.kr/articles/?3588830

Persellin, J., J. J. Schmidt, S. Vandervelde, and M. S. Wilkins. 2018. Auditor perceptions of audit workloads, audit quality, and job satisfaction. Working paper, Trinity University.

Platt Consulting Group. 2015. *The Inside Public Accounting National Benchmarking Report*. Available at: http://insidepublicaccounting.com/wp-content/uploads/2015/09/INSIDE-Public-Accounting_Executive-Summary-2015-FINAL.pdf

Public Company Accounting Oversight Board (PCAOB). 2015. Concept Release on Audit Quality Indicators. Available at: https://pcaobus.org/Rulemaking/Docket%20041/Release_2015_005.pdf

Reichelt, K. J., and D. Wang. 2010. National and office-specific measures of auditor industry expertise and effects on audit quality. *Journal of Accounting Research* 48 (3): 647-686.

Rosen, S. 1986. The theory of equalizing differences, in *Handbook of Labor Economics,* edited by Ashenfelter and Layard. Amsterdam, North-Holland. 641-692.

Shaw, J., N. Gupta, and J. E. Delery. 2005. Alternative conceptualizations of the relationship between voluntary turnover and organizational performance. *Academy of Management Journal* 48 (1): 50-68.

Simunic, D. A. 1980. The pricing of audit Services: Theory and evidence. *Journal of Accounting Research* 22 (3): 161-190.

Sørensen, A. B. 1983. Processes of allocation to open and closed positions in social structure. *Zeitschrift fuer Soziologie* 12: 203-224.

Sun, L. Y., S. Aryee, and K. S. Law. 2007. High-performance human resource practices, citizenship behavior, and organizational performance: A relational perspective. *The Academy of Management Journal* 50 (3): 558-577.

Sweeney, J., and S. Summers. 2002. The effect of the busy season workload on public accountants' job burnout. *Behavioral Research in Accounting* 14 (1): 224-245.

Ton, Z., and R. S. Huckman. 2008. Managing the impact of employee turnover on performance: The role of process conformance. *Organization Science* 19 (1): 56-68.

Truong, P. 2018. The impact of audit employee job satisfaction on audit quality. Working paper, Carnegie Mellon University.

Valverde, M., O. Tregaskis, and C. Brewster. 2000. Labor flexibility and firm performance. *International Advances in Economic Research* 6 (4): 649-661.

Vien, C. L. 2018. Powerful internship programs for smaller firms. *Journal of Accountancy* December. Available at: https://www.journalofaccountancy.com/issues/2018/dec/internship-programs-at-small-cpa-firms.html

Williams, J. C., S. Kesavan, and L. McCorkell. 2018. When retail workers have stable schedules, sales and productivity go up. *Harvard Business Review*. Available at: https://hbr.org/2018/03/research-when-retail-workers-have-stable-schedules-sales-and-productivity-go-up.

Wright, P. M., and G. C. McMahan. 1992. Theoretical perspectives for strategic management. *Journal of Management* 18 (2): 295-320.

Wright, P. M., Gardner, T. M., Moynihan, L. M., and Allen, M. R. 2005. The relationship between HR practices and firm performance: Examining causal order. *Personnel Psychology* 58 (2): 409-446.

Appendix A. Variable Definitions

Audit Firm Characteristics

Variable	Definition
Dependent variables	
CHG_CPA	The percentage change in the number of registered CPAs within an audit firm, calculated on the monthly basis
STD_YEAR	The standard deviation of the *CHG_CPA* from April to March, where *CHG_CPA* is calculated as (the number of CPA in current month - the number of CPA in the last month)/the number of CPA in the last month
Independent variables	
BIG4	Indicator variable that equals to one if the audit firm is Big 4, zero otherwise
LSALES	Natural logarithm of total sales of audit firm
LEV	Total liabilities divided by total assets
AUDIT_RATIO	Sales generated from audit services divided by total sales
SALARY	Salary expense scaled by total sales
SEVERANCE_PAY	Severance pay scaled by total sales
BENEFIT	Fringe benefits expense scaled by total sales
TRAINING	Training expense scaled by total sales
NET_INCOME	Net income scaled by total sales
FIRM_AGE	Age of audit firms, calculated as the difference between current-year and foundation-year
NCLIENT_NCPA	The number of clients audited by the audit firm divided by the number of registered CPAs in the audit firm
CPA_1_5	The percentage of registered CPAs who have 1-5 year of work experience in audit firm
CLIENT_LEV	The average of industry-adjusted leverage ratio of clients audited by the audit firm
CLIENT_INVREC	The average of industry-adjusted inventory and receivables ratio of clients audited by the audit firm
CLIENT_LOSS	The proportion of clients whose net incomes are below zero
TOTAL_CPA_CHG	The change in the number of total CPAs in the CPA labor market (registered CPA)
GDP_GROWTH	The percentage of real GDP growth
UNEMP_RATE	The unemployment rate

Client Characteristics (Audit Fees and Audit Quality)

Variable	Definition
Dependent variables	
LAFEES	The natural logarithm of the audit fees in thousands of Korean Won
LAHOURS	The natural logarithm of the audit hours
LAFPH	The natural logarithm of the ratio that is calculated as audit fees divided by audit hours
ABS_MJDA	The absolute value of discretionary accruals that are estimated by the modified Jones (1991) model (Dechow et al., 1995)
ABS_BSDA	The absolute value of discretionary accruals that are obtained from the Ball and Shivakumar (2006) model
ABS_CODA	The absolute value of discretionary accruals that are estimated by using the Collin et al. (2017) model
RESTATEMENT	Indicator variable that takes the value of one if a client's annual report or audit report is misstated in the year and thus subsequently restated, zero otherwise
Independent variables	
Variables of interest	
STD_YEAR	The standard deviation of the *CHG_CPA* from April to March, where *CHG_CPA* is the percentage change in the number of registered CPAs within an audit firm, calculated on the monthly basis
Control variables	
BIG4	Indicator variable that equals to one if the firm is audited by Big 4 auditor, zero otherwise
SIZE	The natural logarithm of total assets (at the end of period)
LEV	Leverage ratio, calculated as total liabilities divided by total assets
MTB	Market to book ratio, calculated as market value of equity divided by book value of equity
ROA	Return on assets, calculated as net income divided by lagged total assets
LOSS	Indicator variable that equals to one if the firm's net income is below 0, zero otherwise
INVREC	Sum of inventory and receivables scaled by total assets
SG	Sales growth measured as current year sales minus last year sales divided by last year sales
INITIAL	Indicator variable that equals to one if an initial audit engagement, zero otherwise
FOREIGN	Foreign sales divided by total sales
LBUS_SEG	The natural logarithm of the number of business segments

Appendix A (continued)

ABS_TACC	Absolute value of total accruals scaled by total assets
CURR_RATIO	Current ratio, calculated as current assets divided by current liabilities
OPINION	Indicator variable that equals to one if audit opinion is not unqualified audit opinion, zero otherwise
HERF_INDEX	Industry Herfindahl index, where market share is measured by audit fees. Market share is calculated as audit fees collected by an audit firm divided by total audit fees paid to auditors within same industry.
LAG_ABSTACC	Absolute value of total accruals divided by total assets in the previous year
CFO	Cash flows from operations scaled by total assets
STD_ROA	Standard deviation of return on assets over the recent three years (including current year)
STD_CFO	Standard deviation of cash flows from operations divided by total assets over the recent three years (including current year)
POWER	Client bargaining power, measured as a client's audit fees divided by the sum of total audit fees paid for the auditor
RANGE_YEAR	The range of the *CHG_CPA* from April to March, calculated as the maximum value of *CHG_CPA* minus the minimum value of *CHP_CPA*

Appendix B. Annual Change in the Number of CPAs

Variable	N	Mean	Median	StdDev	Min	p25	p75	Max
Annual_CHG	1,397	0.073	0.046	0.186	-0.474	0.000	0.129	1.348
Annual_Hire	1,397	0.223	0.167	0.221	0.000	0.083	0.300	1.650
Annual_Turn	1,397	0.150	0.111	0.150	0.000	0.042	0.211	0.846

This table presents the summary statistics of annual change in the number of CPAs within an audit firm. *Annual_CHG* is calculated as the number of CPAs at the end of period minus the number of CPAs at the beginning of the period. *Annual_Hire* is constructed as the number of CPAs that audit firms hire scaled by the number of CPAs at the beginning of the period. *Annual_Turn* is measured as the number of CPAs who leave audit firms divided by the number of CPAs at the beginning of the period.

Appendix C. Regression Model for Monthly Trend

To figure out the monthly trend, we further test how changes in the number of CPAs vary with month by estimating following regression model:

$$CHG\_CPA_{i,t,m} = \beta_0 + \gamma Month\_indicators + YearFE + \varepsilon_{i,t,m}, \quad (8)$$

where *CHG_CPA* is the change in the number of CPAs within an audit firm; *Month_indicators* are indicator variables for each month, from January to December. For example, month indicator for January takes the value of one if an audit firm–month observation belongs to January, zero otherwise. The coefficient on a month indicator can be interpreted as the difference between mean value of monthly changes during the year and the change on a certain month. We also include year fixed effects (*YearFE*), and standard errors are clustered by audit firm. The estimated results are presented below in the table C1, and the results are consistent with univariate analysis in Table 1 and the graph in Figure 2.

TABLE C1
Monthly Trend of Change in the Number of CPAs

	Dependent variable = *CHG_CPA*	
	Estimate	t-stat.
January	0.0083***	5.05
February	0.0034***	3.19
March	0.0005	0.25
April	-0.0067***	-3.82
May	0.0017	1.02
June	0.0016	0.97
July	0.0027*	1.72
August	0.0027**	2.22
September	0.0034***	3.06
October	0.0112***	7.31
November	0.0128***	8.19
December	0.0127***	6.26
Observations		16,709
Adj.R^2		0.0212
Year FE		Yes
Cluster		Audit Firm

This table presents the results of regression model used to test how changes in the number of CPAs vary with month. *t*-statistics are shown on the right side of the corresponding coefficient. Year fixed effects and industry fixed effects are included in all regressions. Standard errors are clustered by audit firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level respectively. All variables are defined in Appendix A.

FIGURE 1. Timeline for the Association between Change in the Number of CPAs and Audit Fees

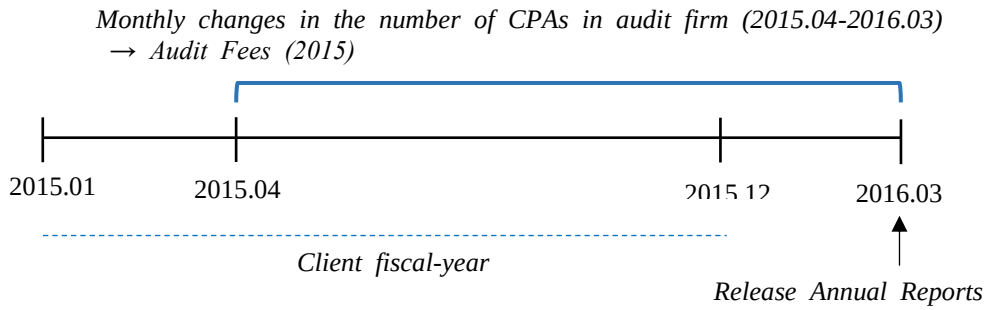
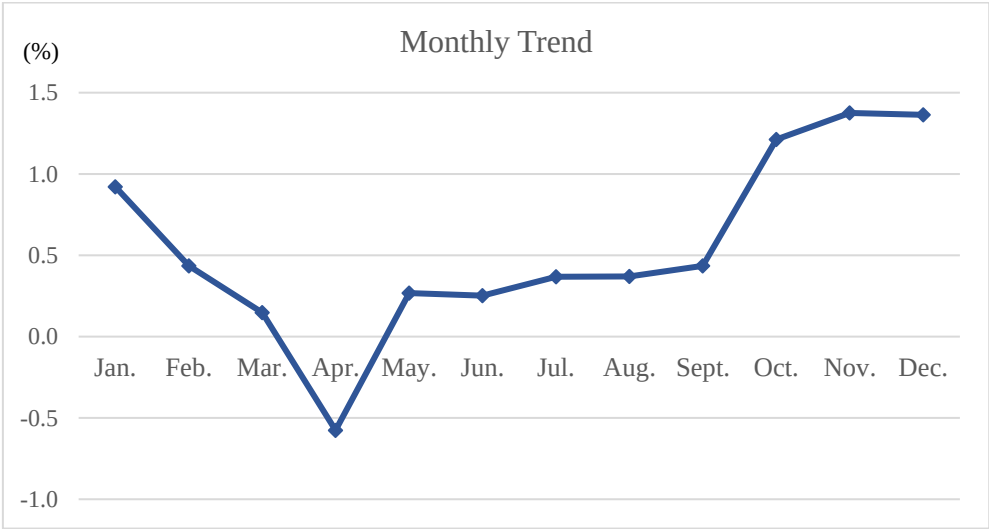


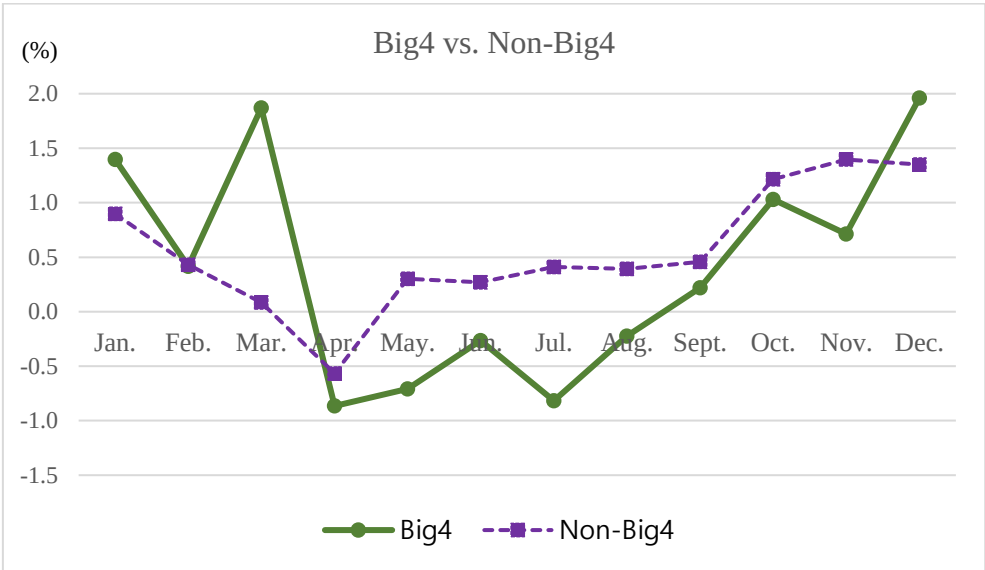
Figure 1 presents the timeline for matching volatility of monthly changes in the number of CPAs in audit firm with audit fees. The volatility of monthly changes is measured from April to March, and is matched with corresponding year's audit fees. We also match last year's volatility with current year audit fees in additional test.

FIGURE 2. Monthly Trend of the Change in the Number of CPAs in Audit Firms

Panel A. Monthly Trend of the Change in the Number of CPAs in Whole Audit Firms



Panel B. Monthly Trend of the Change in the Number of CPAs in Big 4 and Non-Big4 Audit Firms



In figure 2, panel A presents the monthly trend of the change in the number of CPAs for whole audit firms (16,709 audit firm–month observations). Panel B provides the monthly trend of the change in the number of CPAs for Big 4 (573 audit firm–month observations) and non-Big 4 audit firms (16,133 audit firm–month observations).

TABLE 1
Monthly Change in the Number of CPAs in Audit Firms

Panel A: Sample Selection

	Observations
Sample period: 2005.04-2017.12	
Initial sample of audit firms	18,758
Less:	
Audit firms without controls in the regression model	2,049
Final sample (170 unique audit firms)	16,709

Panel B: Descriptive Statistics of Monthly Change in the Number of CPAs

Variable	N	Mean	Median	Std Dev	Min	p25	p75	Max
CHG_CPA	16,709	0.005	0.000	0.053	-0.600	0.000	0.000	1.200
JANUARY	1,396	0.009	0.000	0.054	-0.367	0.000	0.008	0.667
FEBRUARY	1,397	0.004	0.000	0.034	-0.400	0.000	0.000	0.333
MARCH	1,396	0.001	0.000	0.068	-0.600	0.000	0.000	0.667
APRIL	1,394	-0.006	0.000	0.065	-0.571	-0.012	0.000	0.455
MAY	1,395	0.003	0.000	0.056	-0.545	0.000	0.000	0.667
JUNE	1,394	0.003	0.000	0.047	-0.500	0.000	0.000	0.571
JULY	1,393	0.004	0.000	0.060	-0.400	0.000	0.000	1.200
AUGUST	1,391	0.004	0.000	0.041	-0.350	0.000	0.000	0.294
SEPTEMBER	1,391	0.004	0.000	0.043	-0.333	0.000	0.000	0.429
OCTOBER	1,390	0.012	0.000	0.055	-0.250	0.000	0.024	0.500
NOVEMBER	1,386	0.014	0.000	0.046	-0.143	0.000	0.022	0.609
DECEMBER	1,386	0.014	0.000	0.052	-0.200	0.000	0.017	0.579
MEAN_YEAR	1,397	0.006	0.004	0.014	-0.039	0.000	0.011	0.084
STD_YEAR	1,397	0.043	0.036	0.034	0.000	0.023	0.055	0.307

TABLE 1 (continued)

Panel C: Descriptive Statistics of Audit Firm Characteristics

Variable	N	Mean	Median	Std Dev	Min	p25	p75	Max
BIG4	1,397	0.034	0.000	0.182	0.000	0.000	0.000	1.000
LSALE	1,397	22.514	22.420	0.996	19.515	21.957	22.826	26.608
LEV	1,397	0.527	0.538	0.149	0.058	0.425	0.646	0.836
AUDIT_RATIO	1,397	0.310	0.302	0.131	0.000	0.218	0.393	0.831
SALARY	1,397	0.454	0.441	0.107	0.202	0.375	0.528	1.174
SEVERANCE_PAY	1,397	0.041	0.034	0.031	0.000	0.020	0.051	0.211
BENEFIT	1,397	0.076	0.076	0.025	0.018	0.059	0.090	0.509
TRAINING	1,397	0.004	0.003	0.004	0.000	0.001	0.005	0.074
NET_INCOME	1,397	0.033	0.033	0.033	-0.315	0.017	0.048	0.161
FIRM_AGE	1,397	9.295	8.000	7.282	1.000	4.000	12.000	47.000
NCLIENT_NCPA	1,397	3.422	3.286	1.642	0.200	2.300	4.270	13.000
CPA_1_5	1,397	0.222	0.182	0.187	0.000	0.071	0.333	0.846
CLIENT_LEV	1,397	0.028	0.024	0.090	-0.383	-0.024	0.077	0.423
CLEINT_INVREC	1,397	-0.005	-0.004	0.059	-0.296	-0.030	0.024	0.343
CLIENT_LOSS	1,397	0.330	0.314	0.121	0.000	0.255	0.383	1.000
TOTAL_CPA_CHG	1,397	0.067	0.064	0.021	0.043	0.050	0.094	0.108
GDP_GROWTH	1,397	3.448	2.900	1.455	0.700	2.800	3.900	6.500
UNEMP_RATE	1,397	3.390	3.500	0.187	3.100	3.200	3.600	3.600

Panel A presents sample selection procedure for audit firm–month observations. Panel B presents descriptive statistics for the change in the number of CPAs by month. Panel C reports descriptive statistics for 1,397 audit firm–year observations. In panel C, all continuous variables are winsorized at 1% and 99% each year to mitigate the influence of outliers. All variables are defined in Appendix A.

TABLE 2
Descriptive Statistics for Audit Fees and Audit Quality Model

Panel A: Sample Selection

Sample period: fiscal years from 2005 to 2016	
Firms listed in KSE or KOSDAQ (DataGuide database)	26,640
Less:	
Firms without auditor information (TS 2000 database)	(5,698)
Financial-industry firms	(757)
Firms with book-value of equity is less than zero	(111)
Observations in industries with less than 10 industry-year observations	(1,605)
Missing firm-specific control variables	(3,125)
Firms with non-December year-end	(494)
Final sample	14,812

Panel B: Descriptive Statistics

Variables	N	Mean	Median	Std Dev	Min	p25	p75	Max
LAFEES	14,812	11.147	11.027	0.665	9.616	10.714	11.408	13.629
LAHOURS	14,812	6.742	6.653	0.732	4.382	6.277	7.090	9.291
LNFPH	14,812	4.405	4.384	0.412	3.296	4.152	4.627	6.256
ABS_MJDA	14,812	0.064	0.044	0.065	0.000	0.020	0.086	0.358
ABS_BSDA	14,812	0.050	0.033	0.054	0.000	0.015	0.065	0.332
ABS_CODA	14,812	0.058	0.042	0.055	0.001	0.019	0.079	0.319
RESTATEMENT	14,812	0.268	0.000	0.443	0.000	0.000	1.000	1.000
STD_YEAR	14,812	0.028	0.022	0.030	0.000	0.016	0.031	0.662
BIG4	14,812	0.546	1.000	0.498	0.000	0.000	1.000	1.000
SIZE	14,812	18.971	18.660	1.472	16.320	17.955	19.678	24.079
LEV	14,812	0.436	0.439	0.202	0.048	0.272	0.590	0.926
MTB	14,812	1.479	1.010	1.480	0.115	0.626	1.747	13.479
ROA	14,812	0.024	0.033	0.107	-0.611	-0.003	0.075	0.395
LOSS	14,812	0.260	0.000	0.439	0.000	0.000	1.000	1.000
INVREC	14,812	0.286	0.275	0.147	0.011	0.177	0.385	0.708
SG	14,812	0.101	0.058	0.334	-0.791	-0.055	0.195	2.415
INITIAL	14,812	0.170	0.000	0.375	0.000	0.000	0.000	1.000

TABLE 2 (continued)

FOREIGN	14,812	0.252	0.096	0.303	0.000	0.000	0.474	0.991
LBUS_SEG	14,812	1.150	1.099	0.425	0.693	0.693	1.386	2.565
ABS_TACC	14,812	0.076	0.052	0.081	0.001	0.023	0.098	0.604
CURR_RATIO	14,812	2.392	1.544	2.510	0.293	1.039	2.638	20.254
OPINION	14,812	0.001	0.000	0.038	0.000	0.000	0.000	1.000
HERF_INDEX	14,812	0.185	0.171	0.069	0.081	0.140	0.221	0.859
LAG_ABSTACC	14,812	0.080	0.054	0.088	0.001	0.024	0.102	0.721
CFO	14,812	0.053	0.051	0.106	-0.298	-0.002	0.108	0.468
STD_ROA	14,812	0.060	0.034	0.075	0.002	0.017	0.071	0.606
STD_CFO	14,812	0.074	0.054	0.067	0.004	0.030	0.093	0.508

Panel A presents sample selection procedure for audit fee and audit quality tests. Panel B reports descriptive statistics for 14,812 client firm–year observations. All continuous variables are winsorized at 1% and 99% each year to mitigate the influence of outliers. All variables are defined in Appendix A.

TABLE 3
Pearson Correlation Coefficients

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1)	*LAFEES*	1.00													
(2)	*LAHOURS*	**0.82**	1.00												
(3)	*LAFPH*	**0.14**	**-0.44**	1.00											
(4)	*ABS_MJDA*	**-0.11**	**-0.12**	**0.03**	1.00										
(5)	*ABS_BSDA*	**-0.11**	**-0.11**	**0.03**	**0.74**	1.00									
(6)	*ABS_CODA*	**-0.11**	**-0.12**	**0.03**	**0.81**	**0.51**	1.00								
(7)	*RESTATEMENT*	**0.04**	**0.03**	0.01	**0.03**	**0.03**	**0.03**	1.00							
(8)	*STD_YEAR*	**-0.07**	**-0.05**	-0.01	-0.00	-0.00	-0.00	0.00	1.00						
(9)	*BIG4*	**0.38**	**0.42**	**-0.12**	**-0.06**	**-0.07**	**-0.05**	**-0.02**	**-0.11**	1.00					
(10)	*SIZE*	**0.79**	**0.75**	**-0.06**	**-0.19**	**-0.21**	**-0.17**	**0.02**	**-0.04**	**0.36**	1.00				
(11)	*LEV*	**0.31**	**0.25**	**0.04**	**0.07**	**0.02**	**0.05**	**0.10**	-0.00	**0.07**	**0.32**	1.00			
(12)	*MTB*	-0.00	**-0.03**	**0.04**	**0.17**	**0.20**	**0.16**	**0.04**	-0.01	**-0.04**	**-0.18**	**0.03**	1.00		
(13)	*ROA*	0.01	**0.03**	**-0.03**	**-0.22**	**-0.31**	**-0.14**	**-0.09**	-0.00	**0.10**	**0.14**	**-0.30**	**-0.03**	1.00	
(14)	*LOSS*	**-0.03**	**-0.04**	0.02	**0.17**	**0.29**	**0.11**	**0.08**	0.00	**-0.09**	**-0.15**	**0.24**	**0.08**	**-0.70**	1.00
(15)	*INVREC*	**-0.09**	**-0.10**	**0.03**	**0.02**	**-0.05**	**0.03**	**-0.02**	0.01	**-0.05**	**-0.09**	**0.19**	**-0.13**	**0.08**	**-0.10**
(16)	*SG*	**-0.04**	**-0.05**	**0.03**	**0.10**	**0.03**	**0.11**	-0.01	0.01	-0.01	-0.00	**0.03**	**0.10**	**0.20**	**-0.16**
(17)	*INITIAL*	**-0.06**	**-0.03**	**-0.03**	**0.06**	**0.06**	**0.05**	0.01	**0.10**	**-0.07**	**-0.06**	0.02	**0.03**	**-0.03**	**0.04**
(18)	*FOREIGN*	**0.06**	**0.06**	-0.00	0.02	**0.04**	**0.03**	-0.01	0.01	0.01	**0.06**	**0.07**	-0.01	0.00	**0.05**
(19)	*LBUS_SEG*	**0.21**	**0.22**	**-0.04**	**-0.03**	**-0.03**	**-0.04**	**0.03**	-0.00	**0.05**	**0.23**	**0.11**	**-0.03**	**-0.07**	**0.04**
(20)	*ABS_TACC*	**-0.07**	**-0.09**	**0.04**	**0.82**	**0.62**	**0.67**	**0.03**	-0.00	**-0.05**	**-0.16**	**0.12**	**0.14**	**-0.31**	**0.24**
(21)	*CURR_RATIO*	**-0.24**	**-0.21**	-0.02	0.01	**0.05**	0.02	**-0.05**	-0.01	**-0.07**	**-0.26**	**-0.66**	**0.17**	**0.15**	**-0.10**
(22)	*OPINION*	0.02	0.01	0.02	**0.08**	**0.08**	**0.08**	0.02	-0.01	-0.01	-0.02	**0.03**	**0.03**	**-0.09**	**0.05**
(23)	*HERF_INDEX*	**0.12**	**0.13**	**-0.02**	**-0.03**	**-0.07**	**-0.03**	**0.03**	-0.00	**0.14**	**0.18**	**0.08**	**-0.07**	**0.04**	**-0.04**
(24)	*LAG_ABSTACC*	**-0.07**	**-0.10**	**0.06**	**0.25**	**0.21**	**0.23**	**0.03**	0.01	**-0.05**	**-0.16**	**0.07**	**0.14**	**-0.17**	**0.15**
(25)	*CFO*	**0.05**	**0.05**	-0.01	**-0.17**	**-0.13**	**-0.14**	**-0.05**	-0.01	**0.09**	**0.09**	**-0.18**	0.00	**0.53**	**-0.37**
(26)	*STD_ROA*	**-0.13**	**-0.15**	**0.05**	**0.37**	**0.42**	**0.31**	**0.04**	0.01	**-0.09**	**-0.27**	**-0.03**	**0.24**	**-0.28**	**0.27**
(27)	*STD_CFO*	**-0.16**	**-0.17**	**0.05**	**0.36**	**0.22**	**0.37**	0.01	0.00	**-0.06**	**-0.21**	-0.02	**0.18**	**-0.03**	**0.06**

TABLE 3 (continued)

		(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
(15)	*INVREC*	1.00												
(16)	*SG*	**0.05**	1.00											
(17)	*INITIAL*	-0.02	**0.02**	1.00										
(18)	*FOREIGN*	**0.06**	0.00	-0.02	1.00									
(19)	*LBUS_SEG*	**-0.11**	0.00	-0.02	**-0.08**	1.00								
(20)	*ABS_TACC*	**-0.03**	**0.09**	**0.06**	0.02	**-0.02**	1.00							
(21)	*CURR_RATIO*	**-0.16**	**-0.03**	0.02	-0.01	**-0.11**	**-0.04**	1.00						
(22)	*OPINION*	-0.02	**-0.04**	0.00	-0.01	-0.01	**0.09**	-0.01	1.00					
(23)	*HERF_INDEX*	**-0.12**	0.00	-0.02	**-0.04**	**0.06**	**0.03**	**-0.07**	-0.01	1.00				
(24)	*LAG_ABSTACC*	**-0.03**	**0.04**	**0.08**	0.02	-0.02	**0.29**	-0.01	**0.04**	**0.03**	1.00			
(25)	*CFO*	**-0.13**	**0.10**	-0.02	**0.03**	**-0.06**	**-0.07**	**0.07**	**-0.06**	**0.06**	**-0.09**	1.00		
(26)	*STD_ROA*	**-0.14**	**0.06**	**0.10**	**0.04**	**-0.03**	**0.41**	**0.12**	**0.07**	-0.01	**0.46**	**-0.15**	1.00	
(27)	*STD_CFO*	**0.03**	**0.11**	**0.07**	**0.04**	**-0.08**	**0.37**	**0.11**	**0.04**	0.02	**0.43**	**-0.06**	**0.47**	1.00

This table presents the Pearson correlation coefficients among the variables included in the regression models. Correlation coefficients in bold are significantly different from zero at 1% level. All variables are defined in Appendix A.

TABLE 4
Determinants of Flexible CPA Staffing

	Dependent Variable = *STD_YEAR*	
	Estimate	t-stat.
BIG4	0.012*	1.85
LSALES	-0.010***	-5.28
LEV	0.001	0.19
AUDIT_RATIO	-0.018*	-1.86
SALARY	-0.010	-1.00
BENEFIT	-0.042	-1.34
TRAINING	0.307	1.32
NET_INCOME	-0.110***	-3.62
FIRM_AGE	0.000	-1.29
NCLIENT_NCPA	0.000	0.27
CPA_1_5	0.040***	6.16
CLIENT_LEV	0.010	0.96
CLIENT_INVREC	-0.024	-1.56
CLIENT_LOSS	0.011	1.12
TOTAL_CPA_CHG	-1.561	-0.24
GDP_GROWTH	-0.008	-0.20
UNEMP_RATE	-0.050	-0.25
Constant	0.547	0.48
Observations		1,293
Adj.R^2		0.178
Year FE		Yes
Cluster		Audit Firm

This table presents the determinants of the volatility of monthly changes of the number of CPAs in audit firms. We regress the standard deviation of monthly change in the number of CPAs during the year on several audit firm and macro-economic variables. *T*-statistics are shown on the right side of the corresponding coefficient. Year fixed effects and industry fixed effects are included in the regression model. Standard errors are clustered by audit firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level respectively. All variables are defined in Appendix A.

TABLE 5

Association between Flexible CPA Staffing and Audit Fees

Dependent Variable =	*LAFEES*		*LAHOURS*		*LAFPH*	
	Estimate	t-stat.	Estimate	t-stat.	Estimate	t-stat.
STD_YEAR	-0.347***	-3.07	0.142	1.32	-0.500***	-4.32
BIG4	0.168***	12.12	0.287***	17.89	-0.116***	-7.47
SIZE	0.360***	44.71	0.350***	40.78	0.008	1.36
LEV	0.048	0.93	-0.034	-0.60	0.092*	1.92
MTB	0.048***	10.49	0.033***	6.89	0.015***	3.86
ROA	-0.280***	-4.68	-0.224***	-3.11	-0.050	-0.76
LOSS	0.042***	3.07	0.050***	3.44	-0.008	-0.57
INVREC	0.133**	2.48	0.161**	2.43	-0.023	-0.40
SG	-0.060***	-6.18	-0.063***	-5.73	0.003	0.28
INITIAL	-0.005	-0.56	0.052***	5.85	-0.057***	-6.66
FOREIGN	0.013	0.52	0.036	1.37	-0.027	-1.15
LBUS_SEG	0.041**	2.46	0.070***	3.69	-0.027*	-1.68
ABS_TACC	0.006	0.11	0.003	0.04	0.002	0.03
CURR_RATIO	-0.006**	-2.09	-0.005	-1.57	-0.000	-0.11
OPINION	0.291***	2.76	0.170*	1.86	0.132	1.47
HERF_INDEX	-0.265***	-3.21	0.028	0.26	-0.288***	-2.72
Constant	3.979***	25.91	-0.433***	-2.63	4.434***	37.04
Observations		14,812		14,812		14,812
Adj. R^2		0.693		0.652		0.077
Year FE		Yes		Yes		Yes
Industry FE		Yes		Yes		Yes
Cluster		Client		Client		Client

This table presents the regression results for the relation between volatility of monthly changes and audit fees, audit hours, and audit fees per hour. *T*-statistics are shown on the right side of the corresponding coefficient. Year fixed effects and industry fixed effects are included in all regressions. Standard errors are clustered by client firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level respectively. All variables are defined in Appendix A.

TABLE 6
Association between Flexible CPA Staffing and Labor Costs

Dependent Variable =	*SALARY*		*SEVERANCE_PAY*	
	Estimate	t-stat.	Estimate	t-stat.
STD_YEAR	-0.255**	-2.58	-0.019	-0.62
BIG4	-0.015	-0.29	-0.029**	-2.61
LSALES	-0.016	-1.22	0.007**	2.40
LEV	-0.048	-1.18	-0.030***	-2.79
AUDIT_RATIO	0.083	1.29	-0.019	-1.62
BENEFIT	-0.776***	-3.07	-0.248***	-3.52
TRAINING	-1.499	-1.11	-0.107	-0.57
NET_INCOME	-0.495***	-3.68	-0.149**	-2.56
FIRM_AGE	0.004***	3.30	0.000	1.61
NCLIENT_NCPA	0.002	0.49	0.005***	4.40
CPA_1_5	0.038	1.16	0.014*	1.94
Constant	0.857***	3.14	-0.083	-1.43
Observations		1,397		1,397
Adj.R^2		0.198		0.138
Year FE		Yes		Yes
Cluster		Audit Firm		Audit Firm

This table presents the regression results for the association between the volatility of monthly changes in the number of CPAs and salary expenses and severance pay borne by audit firm. *T*-statistics are shown on the right side of the corresponding coefficient. Year fixed effects and industry fixed effects are included in the regression model. Standard errors are clustered by audit firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level respectively. All variables are defined in Appendix A.

TABLE 7
Audit Quality Test

Dependent Variable =	*ABS_MJDA*		*ABS_BSDA*		*ABS_CODA*		*RESTATEMENT*	
	Estimate	t-stat.	Estimate	t-stat.	Estimate	t-stat.	Estimate	z-stat.
STD_YEAR	-0.032***	-2.90	-0.017	-1.50	-0.022**	-2.24	0.079	0.13
BIG4	0.001	0.67	0.001	1.24	0.000	0.27	-0.142***	-2.97
SIZE	-0.003***	-6.36	-0.002***	-5.08	-0.002***	-4.85	0.024	1.14
LEV	0.016***	4.60	-0.005	-1.41	0.012***	4.19	0.849***	6.47
MTB	0.002***	4.61	0.003***	7.14	0.003***	5.74	0.028*	1.68
ROA	-0.063***	-3.96	-0.074***	-4.70	-0.019	-1.59	-0.525*	-1.79
LOSS	-0.002	-1.02	0.013***	7.93	-0.002	-1.20	0.104	1.64
LAG_ABSTACC	0.018	1.58	0.012	1.37	0.012	1.29	0.420	1.37
CFO	-0.038***	-3.17	0.013	1.55	-0.039***	-3.95	-0.235	-1.03
SG	0.015***	6.87	0.006***	3.40	0.013***	6.98	0.110*	1.75
STD_ROA	0.160***	10.64	0.204***	16.50	0.082***	6.51	1.349***	4.17
STD_CFO	0.205***	13.82	0.014	1.30	0.206***	16.75	-0.021	-0.06
Constant	0.077***	9.24	0.059***	8.32	0.060***	8.05	-1.416***	-3.60
Observations		14,812		14,812		14,812		14,812
Adj. (Pseudo) R^2		0.236		0.257		0.205		0.074
Year FE		Yes		Yes		Yes		Yes
Industry FE		Yes		Yes		Yes		Yes
Cluster		Client		Client		Client		Client

This table presents the regression results for the association between volatility of monthly changes in the number of CPAs and audit quality, which is measured by absolute value of discretionary accruals and the likelihood of restating annual or audit reports. Three different models are used to estimate discretionary accruals. *T*-statistics and z-statistics are shown on the right side of the corresponding coefficient. Year fixed effects and industry fixed effects are included in all regressions. Standard errors are clustered by client firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level respectively. All variables are defined in Appendix A

TABLE 8
Effects of Client Bargaining Power

Panel A: Audit Fees

Dependent Variable =	*LAFEES*		*LAHOURS*		*LAFPH*	
	Estimate	t-stat.	Estimate	t-stat.	Estimate	t-stat.
STD_YEAR	-0.289**	-2.25	0.145	1.19	-0.441***	-3.39
POWER	0.276***	3.97	0.001	0.02	0.282***	3.78
STD_YEAR×POWER	-2.169**	-2.38	-0.049	-0.04	-2.211**	-2.26
Controls		Yes		Yes		Yes
Observations		14,812		14,812		14,812
Adj. R^2		0.694		0.652		0.080
Year FE		Yes		Yes		Yes
Industry FE		Yes		Yes		Yes
Cluster		Client		Client		Client

Panel B: Audit Quality

Dependent Variable =	*ABS_MJDA*		*ABS_BSDA*		*ABS_CODA*		*RESTATEMENT*	
	Estimate	t-stat.	Estimate	t-stat.	Estimate	t-stat.	Estimate	z-stat.
STD_YEAR	-0.030**	-2.50	-0.020	-1.58	-0.020*	-1.81	-0.356	-0.52
POWER	-0.007	-1.30	-0.006	-1.09	-0.005	-0.89	-0.204	-0.82
STD_YEAR×POWER	0.021	0.20	0.072	0.70	0.003	0.04	5.964	1.30
Controls		Yes		Yes		Yes		Yes
Observations		14,812		14,812		14,812		14,812
Adj. (Pseudo) R^2		0.236		0.257		0.205		0.074
Year FE		Yes		Yes		Yes		Yes
Industry FE		Yes		Yes		Yes		Yes
Cluster		Client		Client		Client		Client

This table presents the results of regression model used to test the effects of client bargaining power. *T*-statistics and z-statistics are shown on the right side of the corresponding coefficient. Year fixed effects and industry fixed effects are included in all regressions. Standard errors are clustered by client firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level respectively. All variables are defined in Appendix

TABLE 9
Alternative Measure of Flexible Staffing

Panel A: Audit Fees

Dependent Variable =	*LAFEES*		*LAHOURS*		*LAFPH*	
	Estimate	t-stat.	Estimate	t-stat.	Estimate	t-stat.
RANGE_YEAR	-0.102***	-3.21	0.018	0.59	-0.123***	-3.80
Controls		Yes		Yes		Yes
Observations		14,812		14,812		14,812
Adj. R^2		0.693		0.652		0.077
Year FE		Yes		Yes		Yes
Industry FE		Yes		Yes		Yes
Cluster		Client		Client		Client

Panel B: Audit Quality

Dependent Variable =	*ABS_MJDA*		*ABS_BSDA*		*ABS_CODA*		*RESTATEMENT*	
	Estimate	t-stat.	Estimate	t-stat.	Estimate	t-stat.	Estimate	z-stat.
RANGE_YEAR	-0.008**	-2.52	-0.004	-1.37	-0.005*	-1.92	0.031	0.18
Controls		Yes		Yes		Yes		Yes
Observations		14,812		14,812		14,812		14,812
Adj. (Pseudo) R^2		0.236		0.257		0.205		0.074
Year FE		Yes		Yes		Yes		Yes
Industry FE		Yes		Yes		Yes		Yes
Cluster		Client		Client		Client		Client

This table presents the regression results using alternative measures of flexible staffing. *T*-statistics and z-statistics are shown on the right side of the corresponding coefficient. Year fixed effects and industry fixed effects are included in all regressions. Standard errors are clustered by client firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level respectively. All variables are defined in Appendix A.

TABLE 10
Propensity-Score Matching

Panel A: First-Stage Logit Regression

	Dependent Variable = *STD_HIGH*	
	Estimate	z-stat.
SIZE	-0.102***	-3.73
LEV	-0.262	-1.27
MTB	0.019	1.00
ROA	-0.075	-0.28
LOSS	0.029	0.46
CURR_RATIO	-0.037***	-2.78
Constant	2.023***	3.67
Observations		14,812
Pseudo R^2		0.0132
Year FE		Yes
Industry FE		Yes
Cluster		Client

Panel B: Descriptive Statistics of Full and Propensity-Score Matched Samples

	Full Sample				**Propensity-Score Matched Sample**			
	STD_LOW	*STD_HIGH*	Difference		*STD_LOW*	*STD_HIGH*	Difference	
			mean	t-stat.			mean	t-stat.
SIZE	19.071	18.848	0.223	9.21***	18.861	18.863	-0.002	-0.07
LEV	0.438	0.434	0.005	1.43	0.433	0.434	-0.001	-0.39
MTB	1.452	1.512	-0.060	-2.46***	1.483	1.495	-0.012	-0.46
ROA	0.026	0.021	0.005	2.63***	0.023	0.022	0.001	0.40
LOSS	0.251	0.271	-0.020	-2.77***	0.267	0.268	-0.001	-0.16
CURR_RATIO	2.416	2.363	0.053	1.28	2.389	2.364	0.024	0.57
Observations	8,151	6,661			6,575	6,575		

(continued on next page)

TABLE 10 (continued)

Panel C: Regression of Propensity-Score Matching Sample

Dependent Variable =	*LAFEES*		*LAHOURS*		*LAFPH*	
	Estimate	t-stat.	Estimate	t-stat.	Estimate	t-stat.
STD_YEAR	-0.356***	-3.20	0.129	1.23	-0.489***	-4.29
Controls		Yes		Yes		Yes
Observations		13,150		13,150		13,150
Adj. R^2		0.666		0.629		0.078
Year FE		Yes		Yes		Yes
Industry FE		Yes		Yes		Yes
Cluster		Client		Client		Client

Dependent Variable =	*ABS_MJDA*		*ABS_BSDA*		*ABS_CODA*		*RESTATEMENT*	
	Estimate	t-stat.	Estimate	t-stat.	Estimate	t-stat.	Estimate	z-stat.
STD_YEAR	-0.020*	-1.83	-0.008	-0.78	-0.012	-1.17	0.156	0.26
Controls		Yes		Yes		Yes		Yes
Observations		13,150		13,150		13,150		13,145
Adj. (Pseudo) R^2		0.235		0.263		0.201		0.077
Year FE		Yes		Yes		Yes		Yes
Industry FE		Yes		Yes		Yes		Yes
Cluster		Client		Client		Client		Client

This table presents the regression results using propensity-score matched sample. Panel A provides the first-stage logit regression result. Panel B shows the mean values of determinants in the first-stage regression for the clients audited by low-volatility auditor (*STD_LOW*) and those audited by high-volatility auditors (*STD_HIGH)* in the full sample and propensity-score matched sample. Panel C presents the regression results for audit fees and audit quality tests using propensity-score matched sample. *T*-statistics and z-statistics are shown on the right side of the corresponding coefficient. Year fixed effects and industry fixed effects are included in all regressions. Standard errors are clustered by client firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level respectively. All variables are defined in Appendix A.

국문초록

회계법인의 노동유연화 전략이 감사보수와 감사품질에 미치는 영향

김세희
경영학과 회계학 전공
서울대학교 대학원

본 연구는 회계법인의 노동유연화 전략이 감사보수와 감사품질에 미치는 영향을 분석한다. 본 연구는 한국공인회계사회에서 제공하는 회계법인별 월별 회계사 수 데이터를 활용하여 회계법인이 감사시즌에 대비하여 어떻게 인력을 운영하고 있는지 파악하고, 이러한 회계법인의 인력운영결과가 감사보수와 감사품질에 미치는 영향을 분석하였다. 본 연구는 감사시즌 직전에 회계사 수가 가장 많이 증가하고, 감사시즌이 끝난 직후에 회계사 수가 급감하는 현상을 발견함으로써 회계법인들이 감사시즌에 단기적으로 회계사들을 채용하는 노동유연화 전략을 사용함을 발견하였다. 더 나아가, 본 연구는 회계사 수의 월별변동성으로 측정된 노동유연화의 정도가 감사보수와 음(-)의 상관관계가 있음을 발견하였으나, 감사품질과는 유의한 상관관계를 발견하지 못하였다. 이는 회계법인이 노동유연화 전략을 통해 절감한 비용을 감사품질을 손상시키지 않으면서 피감법인들에게 공유함을 시사한다.

주요어: 인적자원관리, 노동유연화, 감사보수, 감사품질, 회계법인 특성
학 번: 2017-20103