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The effect of engagement partner workload on audit quality

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Abstract

Purpose – Auditing studies have shifted the research focus from the audit firm level to the individual audit partner level in recent years. Motivated by the call from Lennox and Wu (2018) to explore the effect of audit partners' characteristics on audit quality in the US, this study aims to develop a new measure of engagement partner workload (EPW), which includes both the size and number of clients audited to test the effect of EPW on audit quality. This study also examines the moderating effect of the partner firm size on audit quality.

Design/methodology/approach – To test the effect of the EPW on audit quality, this study runs multivariate regressions of EPW on each specific client's discretionary accruals and audit report delays. This study also runs a logistic regression of EPW on clients' probability of having small profit increases to meet performance benchmarks.

Findings – Results of the hypotheses show that partner workload is positively related to audit quality. The results indicate that partners with larger, but fewer, clients conduct higher quality audits. Further analysis indicates that the relationship between partner workload and audit quality only holds for partners from the non-Big 4 firms.

Originality/value – This study contributes to the literatures of both audit quality and audit partner characteristics, and the results complement initial research aimed at identifying US partner-related characteristics that influence audit quality.

Keywords Audit quality, Engagement partner workload, Audit firm size

Paper type Research paper

1. Introduction

In recent years, auditing studies have shifted the research focus from the audit firm level to the individual audit partner level. Previous surveys indicate that audit committee members (Schroeder *et al.*, 1986) as well as audit partners, preparers and financial statement users (Carcello *et al.*, 1992) are more concerned with audit-team factors than with firm-wide factors when determining audit quality. This suggests that understanding differences among audit engagement partners is an integral part of understanding audit quality. Lennox and Wu (2018) review the existing audit partner literature and call for more research to use the recently available engagement partner data in the US to explore the effect of audit partners' characteristics on audit quality, such as partner tenure, workload, compensation, etc. Motivated by this call, the purpose of this paper is to test whether an individual engagement partner's workload influences audit quality.

Although there are studies focusing on the effect of audit partners' characteristics on the audit quality from the countries outside the US, researchers have not examined partner-related

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factors in the US because of an absence of partner disclosure data. Public Company Accounting Oversight Board (PCAOB) Rule 3211 has removed that barrier. For audit reports issued after January 31, 2017, Rule 3211 requires firms to disclose engagement partner information on Form AP. Rule 3211 represents the PCAOB's response to investors' appeal for increased transparency and accountability of audit engagement partners (PCAOB, 2015). Despite the PCAOB claims that the increased accountability created by Rule 3211 will lead to greater effort and, as a result, higher quality audits (PCAOB, 2015), US audit firms strongly oppose the ruling. The firms argue that current internal quality control mechanisms as well as peer review, potential inspection and legal liability are sufficient motivation for partners to perform high-quality audits (Burke *et al.*, 2019).

One line of research that has emerged since the implementation of Rule 3211 examines whether the partner-related characteristics disclosed in Form AP are useful to decision-makers (Lee *et al.*, 2019; Burke *et al.*, 2019). Burke *et al.* (2019) argue that if audit outcomes vary with partner-related characteristics then "information made available by the disclosure requirement should be informative to various stakeholders" (p. 75). One characteristic of interest has been partner busyness or workload, which most past studies have defined as the number of public audits managed by a partner (Burke *et al.*, 2019; Goodwin and Wu, 2016; Cameran *et al.*, 2017; Wan-Hussin *et al.*, 2018). Although extant evidence indicates that using the number of audits as a proxy for engagement partner workload (EPW) helps to explain audit fees, it does not explain the relationship between workload and audit quality. We develop an alternate measure that we refer to as EPW. EPW is defined as the decile rank of aggregate audit fees of all clients audited by a specific partner. We argue that EPW provides a richer measure of workload because it considers both the number and size of clients a partner manages. Additionally, a client's audit fees are essentially determined by audit hours (busyness), billing rates and client-specific variable costs, such as client size, client risk and client complexity (Hay *et al.*, 2006).

To date, research results concerning the relationship between workload and audit quality have been mixed. Burke *et al.* (2019), using the number of clients audited as a measure of busyness in the USA, find no relationship between workload and audit quality. We agree with Lennox and Wu (2018) that using a simple count of the number of clients audited may be insufficient to measure workload accurately. Consider the case of a partner who manages a large number of small clients has a workload equivalent to a partner who manages a small number of large clients (Zerni, 2012). Given this scenario, audit quality should be the same for both partners; however, using the number of clients as a measure of workload would predict that the auditor with more clients would produce a lower quality audit than the partner with fewer clients. We develop an EPW measure focused on partners' aggregate clients' size to address this problem.

To test the effect of the EPW on audit quality, we run multivariate regressions of EPW on client's discretionary accruals and audit report delays and a logistic regression of EPW on the client's probability of having small profit increases to meet the performance benchmark. Initial fiscal-year Form AP data provide partner-related information. Audit fees and firm data come from the Audit Analytics database while company characteristics come from Compustat.

We find a significant and inverse correlation between the natural log of aggregate audit fees from clients audited by an individual partner during the fiscal year and the number of clients the partner audits, supporting the assertion that partners with larger workloads serve fewer but larger clients. We also find a significant and positive effect of EPW on audit quality measures. Clients audited by partners with larger workloads have smaller discretionary accruals and are less likely to have small earnings increases to meet

performance benchmarks. Moreover, they are less likely to delay the release of an audit report. Furthermore, the results provide evidence that partners with larger workloads (and hence fewer but larger clients) provide higher quality audits for partners from non-Big 4 firms. However, we find no relationship between EPW and audit quality measures for partners from Big 4 firms.

Our study contributes to the existing literature in several ways. First, it adds to the audit quality literature by identifying a new workload measure, EPW. Numerous non-US studies have used a count of the number of clients to measure workload when testing for audit quality effects (Goodwin and Wu, 2016; Lai *et al.*, 2018; Gul *et al.*, 2017; Cameran *et al.*, 2017). However, most found no relationship (see Sundgren and Svanstrom, 2014, as an exception). One study has used Form AP data to test the influence of partner workload (number of clients managed by a partner) on audit quality, again with no result (Burke *et al.*, 2019). By developing EPW, a workload measure that is inversely related to the number of clients audited, we are able to link workload to audit quality. Second, we document why workload influences non-Big 4 audit quality but does not influence Big 4 audit quality. Third, our results complement initial research aimed at identifying US partner-related characteristics that influence audit quality. The PCAOB (2015) notes that accumulating and aggregating partner-related quality information over time will enhance the information available to investors for decision-making purposes. We evaluate partner-related audit quality at the implementation of Rule 3211 (PCAOB, 2015). Accordingly, our results provide a baseline to be used for comparison against future research results.

We have organized the remainder of this paper as follows. Section 2 reviews prior literature and develops the main hypotheses. Section 3 describes the sample selection and research design. Section 4 presents empirical results, whereas Section 5 draws conclusions, acknowledges limitations of the study and offers recommendations for future research.

2. Literature review and hypotheses development

2.1 Partner characteristics and audit quality

For public company audit reports issued after January 31, 2017, PCAOB Rule 3211 (PCAOB, 2015) requires registered accounting firms to disclose engagement partner names using Form AP. Without access to the necessary data, initial audit fee studies assumed that audit quality was homogeneous within audit firms. However, individual partners conduct the actual audit engagement and individual performance likely differs (Lennox and Wu, 2018; Gul *et al.*, 2013). As partner-related information has become available, a large number of studies have evaluated how audit partner-related factors affect audit quality, especially personal experiences and work environment.

An extensive amount of research has provided evidence that audit partners' experience and expertise may influence audit quality. For example, Gul *et al.* (2013) used data from China to examine how an individual audit partner's education and experience affect audit quality. They find that partners differ systematically in their levels of audit quality and that these results can be partially explained by a partner's educational background and Big N experience. Using data from China, Cahan and Sun (2015) report a positive relationship between audit partner experience and audit fees and an inverse relationship between partner experience and discretionary accruals. From these results, they conclude that more experienced partners charge higher fees and provide higher quality audits than less experienced partners. Similarly, Chen *et al.* (2017) also used data from China to hypothesize and find that internationally experienced reviewing partners produce higher quality audits as evidenced by lower accruals, fewer below-the-line items and less audit reporting aggressiveness.

The US audit market differs from others in several ways, including audit standards, governing bodies and legal environment. Thus, it is not clear whether results from studies conducted in other countries will generalize to the US market. Even without readily available US partner-related data, two studies hand collected data from various sources to report how partner-related characteristics influence audit quality. Aobdia *et al.* (2016) used PCAOB data to hypothesize a relationship between industry specialists and audit quality, specifically financial statement restatements. The authors found no association between the two variables, except for the case of high-risk clients. Lee *et al.* (2019) searched SEC comment letters for engagement partner information and found that more experienced audit partners are associated with higher audit quality as measured by discretionary accruals and restatements. Overall, it appears that education and experience positively influence audit quality. However, there are exceptions. Considering a partner's specific past education and experience when assigning audit engagements may be key to ensuring consistently high-quality audits.

It is reasonable to assume that an auditor's workload impacts audit quality. However, Lennox and Wu (2018) argue that predicting the relationship between workload and audit quality is difficult; in fact, workload may affect quality positively, negatively or not at all. They contend that a firm's quality control system can balance workload so that the amount of work performed has no effect on quality. Evidence provided by Goodwin and Wu (2016) support this position. Using data from Australia, the authors examine audit quality and find no significant relationship between the workload and quality. The authors conclude that audit partners choose the optimal level of workload and thus, one should not expect partner workload to affect audit quality.

Lennox and Wu (2018) also maintain that a positive relationship between workload and audit quality is possible. First, audit partners with a higher workload usually audit large clients. An audit firm would usually assign the most experienced partners and partners with extensive industry expertise to its most important clients, which are usually larger and more profitable firms. Studies also argue that specialist auditors typically have a larger clientele and hence higher workload (Craswell *et al.*, 1995). Because these senior partners tend to have better skills and experience than junior partners, they provide higher quality audits. Second, a high workload exposes partners to a greater diversity of experience and knowledge and enables partners to build their industry expertise and reputation by performing more audits. On the other hand, a low workload could indicate a lack of practical training and experience. Finally, partners with a larger workload have a stronger incentive to be more independent because of the potential risk of losing quasi-rents from clients (DeAngelo, 1981; Goodwin and Wu, 2016). Although this positive association has not been tested empirically, Lennox and Wu (2018) also claim that reputational effects provide an incentive for partners who serve more clients to provide high-quality audits. Furthermore, they assert that partners with a larger number of clients may be better at multi-tasking and able to maintain high-quality audits despite the heavy workload.

Finally, Lennox and Wu (2018) suggest the relationship between workload and quality may be inverse. A higher workload could distract a partner from giving adequate attention to an audit and could motivate the partner to take shortcuts instead of gathering all the required audit evidence. Most extant empirical research tests this assertion. For example, Lai *et al.* (2018) test the relationship between partner busyness and audit quality in Malaysia. They report a negative relationship between partner busyness and audit quality. Wan-Hussin *et al.* (2018) also test the relationship between EPW and audit reporting lag in Malaysia. They report a positive relationship between busyness and audit reporting lag, with the relationship being more obvious for non-Big 4 clients and a short partner tenure.

Consistent with the busyness effect, Gul *et al.* (2017) report a negative relationship between audit partners with more Chinese public clients in their portfolio and audit quality. Chi *et al.* (2019) find that partner busyness moderates the relationship between past audit partner quality and future audit partner quality in Taiwan, which suggests that small workload increases audit quality. Furthermore, Chen *et al.* (2020) use a set of Chinese data to test the relationship between EPW compression and audit quality and find an inverse relationship between audit partners, workload compression and audit quality. Authors of these studies acknowledge that results come from emerging economies where little litigation against auditors occurs and little protection for shareholders exists. Without a high risk of litigation, auditors have the incentive to sacrifice quality for more revenue. As a result, these papers' findings should be interpreted cautiously.

Stronger evidence comes from developed countries where auditors are motivated to maintain high-quality audits. Cameran *et al.* (2017) find an inverse relation between partner busyness and audit quality in the UK. Sundgren and Svanstrom (2014) find that although Big 4 auditors in Sweden are less likely to manage a large number of clients, those who do have a lower propensity to issue a going concern opinion prior to a client filing for bankruptcy. This suggests that audit quality suffers as busyness increases. Habib *et al.* (2019) use Australian data to examine the effect of audit partner busyness on the cost of equity capital. They hypothesize that busy auditors assume too many tasks, resulting in poor performance. Poor performance increases information risk, which in turn increases the cost of capital. In the US, Burke *et al.* (2019) uses Form AP disclosure data to investigate partner busyness and audit quality. They find that partner busyness is associated with lower audit fees for the Big 4 firms. However, they did not find an association between audit partner busyness and discretionary accruals for either Big 4 firms or non-Big 4 firms.

Taken as a whole, the relationship between auditor workload and audit quality is mixed. Lennox and Wu (2018) maintain that audit partners attend to non-audit related tasks, such as attending networking events, attracting new clients and completing administrative duties. Furthermore, they argue that partners with a larger number of clients may be more skilled at handling multiple clients. Therefore, it is difficult to predict the relationship between partner workload simply by counting the total number of clients in a specific partner's portfolio. In the US, it may be that workload does not influence audit quality or that using the number of clients is not a rich enough measure to capture the relationship between workload and quality. Therefore, based on the mixed results of previous research, we do not predict a direction between EPW and audit quality. Thus, we state our null hypothesis as follows:

H1. There is no relationship between engagement partner workload (EPW) and audit quality.

2.2 Big 4 and non-Big 4 partner engagement partner workload and audit quality

While we do not hypothesize the direct relationships expressed in *H1* for the full sample of firms, we expect the audit quality results may be different between partners from Big 4 firms and partners from non-Big 4 firms. We posit that audit quality among partners from Big 4 firms is relatively consistent for several reasons. First, it is generally acknowledged that the Big 4 firms dominate the audit market. However, recent research provides evidence that competition does exist among the Big 4 firms and, furthermore, that this inter-firm competition may serve to increase Big 4 firm quality (Hallman *et al.*, 2019; Asthana *et al.*, 2019). In addition, the PCAOB has commented that quality control procedures at Big 4 firms are much more formalized and complicated than at smaller firms (PCAOB, 2006). In fact, PCAOB quality control inspection procedures are designed to be more extensive for large

firms, and inspection reports focus on both the firm's audit procedures and business processes that may affect quality control itself. Finally, Big 4 firms have extensive resources. Partners have the ability to maintain the equilibrium conditions observed by Goodwin and Wu (2016) because they can choose their own optimal client portfolio. For these reasons, we do not expect EPW, on average, to impact audit quality for partners from Big 4 firms.

However, we do not expect these conditions to hold for smaller firms. Competition likely exists not only among equivalent size firms but also between different sized firms. The PCAOB acknowledges that due to firm size, inspections of small firms' quality control systems are much less extensive (PCAOB, 2006), leaving more room for differences in audit quality. Fewer opportunities to maintain equilibrium conditions likely exist due to limited partner and staff, creating out-of-balance workloads (Goodwin and Wu, 2016). Habib *et al.* (2019) find that the inverse relationship between audit partner busyness and cost of capital only holds for non-Big 4 auditors but not for Big 4 auditors in Australia. Thus, we anticipate that audit firm size may moderate the relationship between EPW and audit quality. Thus, we develop our second hypothesis as follows:

H2. Audit firm size moderates the relationship between engagement partner workload (EPW) and audit quality.

3. Research design

To test our hypothesis regarding the association between EPW and audit quality, we develop models based on the previous audit quality literature (Francis and Yu, 2009; Choi *et al.*, 2010; Goodwin and Wu, 2016; Burke *et al.*, 2019; Chen *et al.*, 2020). Our primary focus is EPW. We use the decile rank of total audit fees earned by a specific partner during the fiscal year to measure a specific partner's workload. The standard deviation of total audit fees per partner substantially varies in the sample. Therefore, we take the decile ranking value of aggregate audit fees to reduce the effect of the skewed variable. The higher the rank value of the measure, the larger the partner's workload.

We use three different measures as proxies for audit quality. The first measure is the absolute value of discretionary accruals (ABS_ACCRUALS). Discretionary accruals are calculated based on the performance-adjusted model (Kothari *et al.*, 2005; Francis and Yu, 2009). The higher value of discretionary accruals indicates more client discretionary and lower audit quality (Francis and Yu, 2009). To compare with the previous research, we first run the following regression of partner busyness (PAR_BUSYNESS) on the discretionary accruals without EPW. Then to test our hypothesis, we include EPW to run the regression model. Company and time subscripts are omitted for brevity in all models:

$$\begin{aligned}\text{ABS\_ACCRUALS} = {} & \beta_0 + \beta_1\text{EPW} + \beta_2\text{PAR\_BUSYNESS} + \beta_3\text{PAR\_LEADER} \\ & + \beta_4\text{NAT\_LEADER} + \beta_5\text{CITY\_LEADER} + \beta_6\text{BIG4} \\ & + \beta_7\text{POWER} + \beta_8\text{OFFSIZE} + \beta_9\text{NAS} + \beta_{10}\text{TENURE} \\ & + \beta_{11}\text{LNAT} + \beta_{12}\text{CFO} + \beta_{13}\text{CFOVOL} + \beta_{14}\text{DEBT} \\ & + \beta_{15}\text{LOSS} + \beta_{16}\text{AGE} + \beta_{17}\text{ISSUE} + \beta_{18}\text{MTB} \\ & + \beta_{19}\text{SALEGROWTH} + \beta_{20}\text{SALEVOL} + \beta_{21}\text{LAG\_ACCR} \\ & + \beta_{22}\text{INVREC} + \beta_{23}\text{NEWAUD} + \text{Industries} + \text{Years} + \varepsilon \end{aligned} \tag{1}$$

Prior studies find that companies are more likely to manage earnings to meet benchmark targets when their earnings are below the particular benchmark target (Degeorge *et al.*, 1999). Therefore, our second measure of audit quality measures the proportion of companies that just slightly "meet or beat" benchmarks to the proportion of companies that are just below benchmark targets. The small profit increase (SMALL_PROFIT) is coded as "1" if the change in a company's net income deflated by lagged total assets is between 0 and 1.3% and "0" otherwise (Francis and Yu, 2009). The higher value of small profit increases implies a higher probability to manage earnings to systematically meet benchmark targets and lower audit quality (Francis and Yu, 2009; Chen *et al.*, 2020). To test our hypothesis, we run the following logistic model:

$$\begin{aligned}\text{SMALL\_PROFIT} = {} & \beta_0 + \beta_1\text{EPW} + \beta_2\text{PAR\_BUYSNESS} + \beta_3\text{PAR\_LEADER} \\ & + \beta_4\text{NAT\_LEADER} + \beta_5\text{CITY\_LEADER} + \beta_6\,\text{BIG4} \\ & + \beta_7\,\text{POWER} + \beta_8\text{OFFSIZE} + \beta_9\text{NAS} + \beta_{10}\text{TENURE} \\ & + \beta_{11}\text{LNAT} + \beta_{12}\text{CFO} + \beta_{13}\text{CFOVOL} + \beta_{14}\text{DEBT} \\ & + \beta_{15}\text{LOSS} + \beta_{16}\text{AGE} + \beta_{17}\text{ISSUE} + \beta_{18}\text{MTB} \\ & + \beta_{19}\text{SALEGROWTH} + \beta_{20}\text{SALEVOL} + \beta_{21}\text{LAG\_ACCR} \\ & + \beta_{22}\text{INVREC} + \beta_{23}\text{NEWAUD} + \text{Industries} + \text{Years} + \varepsilon \end{aligned} \tag{2}$$

The above two measures focus on financial reporting quality, which is the product of both managers and auditors. Our third measure, audit report delays (AUDELAYS), is more relevant with auditors' characteristics as auditors have more controls regarding when they can complete and release the audit report. AUDELAYS is calculated as the number of days between fiscal year-end date and audit report date. We take the natural log of the number of days to reduce the effect of data skewness. The higher value of audit report delays signifies a longer audit reporting lag and lower audit quality (Burke *et al.*, 2019; Chen *et al.*, 2020; Wan-Hussin *et al.*, 2018). To test our hypothesis, we run the following regression model:

$$\begin{aligned}\text{AUDELAYS} = {} & \beta_0 + \beta_1\text{EPW} + \beta_2\text{PAR\_BUSYNESS} + \beta_3\text{PAR\_LEADER} \\ & + \beta_4\text{NAT\_LEADER} + \beta_5\text{CITY\_LEADER} + \beta_6\text{BIG4} + \beta_7\text{POWER} \\ & + \beta_8\text{OFFSIZE} + \beta_9\text{NAS} + \beta_{10}\text{TENURE} + \beta_{11}\text{LNAT} + \beta_{12}\text{CFO} \\ & + \beta_{13}\text{CFOVOL} + \beta_{14}\text{DEBT} + \beta_{15}\text{LOSS} + \beta_{16}\text{AGE} + \beta_{17}\text{ISSUE} \\ & + \beta_{18}\text{MTB} + \beta_{19}\text{SALEGROWTH} + \beta_{20}\text{SALEVOL} \\ & + \beta_{21}\text{LAG\_ACCR} + \beta_{22}\text{INVREC} + \beta_{23}\text{ACQUISITION} + \beta_{24}\text{ROA} \\ & + \beta_{25}\,\text{NEWAUD} + \beta_{26}\text{OPINION} + \text{Industries} + \text{Years} + \varepsilon \end{aligned} \tag{3}$$

We include variables to control for other factors that may affect audit quality based on prior research. First, we include partner busyness (PAR_BUSYNESS) to control for the effect of the total number of clients in the partners' portfolio on audit quality. More clients in a partner's portfolio may indicate the partner is busier and is not able to spend adequate time

on each individual engagement, which may allow a client to have a higher discretionary and a higher probability to manage earnings to meet benchmark targets. It may also result in a longer audit report delay (Gul *et al.*, 2017; Lai *et al.*, 2018; Wan-Hussin *et al.*, 2018). Therefore, we expect that PAR_BUSYNESS will lower audit quality and the sign will be positively related to audit quality measures. We then include partner industry expertise (PAR_LEADER), firm industry expertise (NAT_LEADER) and office industry expertise (CITY_LEADER) to control for the effect of industry expertise. We include BIG4 and OFFSIZE to control for the effect of firm size and office size. We include bargaining power (POWER) as a control variable to capture the influence of an important client on the audit quality for the firm. NAS is included to control for the effect of non-audit service on audit quality. Audit firm tenure (TENURE) is included to control for the audit firm tenure effect. We include going-concern opinion (OPINION) to control for the effect of opinion on audit report delays. Other control variables are included to control for the effect of a company's characteristics on audit quality. We also include industry and year-fixed effects and estimate robust standard errors clustered by unique audit client to address the potential problem associated with non-independence of panel observations (Petersen, 2009).

4. Sample and descriptive statistics

We begin with all audit partners' disclosure data between fiscal year 2016 and 2017 reported in the PCAOB Auditor Research database as the Rule 3211 is effective for audit reports issued on or after January 31, 2017. We exclude 11,870 observations for employee benefit plans and investment company audit report types. Next, we exclude 278 observations for amendment filing. We keep the earliest filing for firms with dual dates or duplicated filings, which eliminates another 674 observations. We also remove 2,095 observations with missing audit fees, audit opinions and other audit related data in the Audit Analytics database. After we calculate partners' workloads, we remove 37 companies who changed audit partners during the year. Furthermore, we eliminate 4,804 observations for companies with SIC code between 4400–4900 and 6000–6999 as utility companies and financial companies have different regulations. Finally, we eliminate 2,488 observations due to missing Compustat data needed to compute discretionary accruals variable and other control variables in the test model. The final sample consists of 4,955 firm-year observations representing 2,004 specific audit partners for 2,884 companies, as shown in Table 1.

Table 2 presents descriptive statistics of audit quality, EPW and control variables for other determinants of audit quality. The mean (median) absolute value of discretionary accruals is 0.079 (0.041), which is comparable to Burke *et al.* (2019). About 13.9% of companies may try to meet the benchmark through small profit increases. The average number of days of audit report delay is 4.16 (64 days), which is consistent with Goodwin and Wu (2016). The mean (median) of total audit fees included in a partner's workload portfolio is about US$4.38m (US$2.79m). The variation in EPW is very substantial – from US$1.04m in the first quantile to US$5.93m in the third quantile. Therefore, we take the decile ranking value of total audit fees for each specific partner's workload portfolio. The mean (median) of EPW is 5.47(6.00), whereas the mean (median) of the total number of clients (PAR_BUSYNESS) included in a partner's workload portfolio is about 2.57 (2.00). This is consistent with partners in the upper deciles of total audit fees having a relatively lower number of clients in the year. About 66% of clients are audited by one of the Big 4 firms. The average client size is 6.31 (6.41), which is about US$5.50bn (US$6.08bn).

Table 3 presents the results of univariate tests for mean and median differences in discretional accruals, small profit increases and audit report delays based on the engagement partners' workloads. The mean (median) discretionary accruals for partners with a large workload is 0.054 (0.033), whereas the mean (median) discretionary accruals for

Total number of firm-year observations in PCAOB database (2016–2017)	27,201
Less: employee benefit plan and investment company	(11,870)
Amendment previous filings	(278)
Duplicated filings	(674)
Firm-year observations missing data from Audit Analytics	(2,095)
Change of partners during the year	(37)
Utilities and financial companies (SIC codes 4400–4900 and 6000–6999)	(4,804)
Firm-year observations missing data from Compustat	(2,488)
Total number of firm-year observations for audit quality test	4,955

Table 1.
Sample selection

Notes: Our sample consists of 4,955 firm-year observations for all public firms between 2016 and 2017. This table presents our sample selection process

Variable	Mean	SD	Q1	Median	Q3
ABS_ACCRUALS	0.079	0.117	0.017	0.041	0.089
SMALL_PROFIT	0.139	0.346	0.000	0.000	0.000
AUDELAY	4.161	0.238	4.007	4.111	4.317
EPW	5.471	2.639	3.000	6.000	8.000
TOTAL_AUDFEE	4.384	4.879	1.040	2.786	5.925
PAR_BUSYNESS	2.574	2.048	1.000	2.000	3.000
PAR_LEADER	0.014	0.116	0.000	0.000	0.000
NAT_LEADER	0.222	0.415	0.000	0.000	0.000
CITY_LEADER	0.568	0.495	0.000	1.000	1.000
BIG4	0.664	0.472	0.000	1.000	1.000
POWER	0.612	0.377	0.248	0.514	1.000
OFFSIZE	16.222	3.471	15.291	17.039	18.297
NAS	9.534	4.950	8.781	11.251	12.855
TENURE	2.317	0.779	1.792	2.398	2.890
LNAT	6.309	2.412	4.543	6.410	8.044
CFO	−0.047	0.398	−0.032	0.068	0.120
CFOVOL	0.095	0.154	0.022	0.044	0.097
DEBT	0.573	0.378	0.333	0.538	0.729
LOSS	0.432	0.495	0.000	0.000	1.000
AGE	2.894	0.813	2.197	2.996	3.497
ISSUE	0.642	0.479	0.000	1.000	1.000
MTB	5.630	11.750	1.490	2.628	4.913
SALEGRO	0.069	0.245	−0.017	0.027	0.119
SALEVOL	0.189	0.244	0.047	0.114	0.234
LAG_ACCR	−0.058	0.141	−0.080	−0.042	−0.013
INVREC	0.237	0.210	0.065	0.188	0.349
ACQUISITION	0.105	0.307	0.000	0.000	0.000
ROA	−0.141	0.506	−0.132	0.017	0.065
NEWAUD	0.060	0.237	0.000	0.000	0.000
OPINION	0.072	0.259	0.000	0.000	0.000

Table 2.
Descriptive statistics ($N = 4,955$)

Notes: This table provides descriptive statistics for our sample. Detailed variable definitions are provided in the Appendix. Each of the continuous variables is winsorized at the 1 and 99 percentile levels by year to mitigate outliers

partners with a small workload is 0.103 (0.054). As shown in the rightmost two columns, both t-statistics and z-statistics indicate that the mean and median values of discretionary accruals are significantly lower for the partners with a large workload than for the partners with a small workload. Moreover, the mean (median) small profit increase for partners with a large workload is 0.099 (0.000), whereas the mean (median) small profit increase for partners with a small workload is 0.179 (0.000). Lastly, the mean (median) audit report delay days for partners with a large workload is 4.055 (4.060) with the mean (median) delay days for partners with a small workload being 4.267 (4.290). Again, the differences between the two subsamples are highly significant. These results suggest that audit quality is significantly higher for the partners with large workloads than for the partners with small workloads before controlling for other variables.

Table 4 presents descriptive statistics of EPW and audit quality based on the partner's audit firm size. The mean (median) ranking of EPW for Big 4 partners is 6.736 (7.00). Whereas the mean (median) ranking of EPW for non-Big 4 partners is 2.975 (3.00). Both t-statistics and z-statistics indicate that the mean and median values of EPW are significantly higher for partners from Big 4 firms than for the partners from non-Big 4 firms. The mean (median) of total audit fees included in the Big 4 partners portfolio is US$5.98m (US$4.53m), whereas the mean (median) of total audit fees included in the non-Big 4 partners portfolio is US$1.23m (US$0.79m). Additionally, the mean (median) total number of clients included in Big 4 partners portfolio is 2.152 (2.00), whereas the mean (median) total number of clients include in the non-Big 4 partners portfolio is 3.408 (3.00). Both statistics indicate that the mean and median values of total audit fees are significantly higher for Big 4 partners than for non-Big 4 partners. However, the mean and median values of total number

	Partner size > Median		Partner size <= Median		Difference	
Variable	Mean	Median	Mean	Median	*t*-value	*z*-value
ABS_ACCRUALS	0.054	0.033	0.103	0.054	14.98***	14.29***
SMALL_PROFIT	0.099	0.000	0.179	0.000	8.15***	–
AUDELAY	4.055	4.060	4.267	4.290	34.98***	33.28***

Notes: This table provides descriptive statistics for the audit quality measure based on engagement partner workload. Detailed variables definitions are provided in the Appendix. *** denotes two-tailed significance at the 1% level

Table 3. Test for differences in audit quality based on engagement partner's workload

	Big 4 partner (N = 3,289)		Non-Big 4 partner (N = 1,666)		Difference	
Variable	Mean	Median	Mean	Median	*t* value	*z* value
TOTAL_AUDFEE	5.982	4.530	1.228	0.786	−47.77***	−46.15***
EPW	6.736	7.000	2.975	3.000	−62.68***	−46.09***
PARTNER_BUSYNESS	2.152	2.000	3.408	3.000	16.56***	14.01***
ABS_ACCRUALS	0.057	0.034	0.122	0.064	15.56***	16.67***
SMALL_PROFIT	0.079	0.000	0.169	0.000	9.68***	–
AUDELAY	4.074	4.078	4.332	4.331	40.08***	37.01***

Notes: This table provides descriptive statistics for partner workloads and the audit quality measure based on the partner firm size. Detailed variables definitions are provided in the Appendix. *** denotes two-tailed significance at the 1% level

Table 4. Test for differences in EPW and audit quality based on partner's audit firm size

of clients are significantly smaller for Big 4 partners than for non-Big 4 partners. This suggests that Big 4 partners audit fewer clients compared with non-Big 4 partners. However, clients' size in the portfolio is bigger for Big 4 partners, which is consistent with Taylor (2011).

The mean (median) discretionary accruals for partners from Big 4 firms is 0.057 (0.034), whereas the mean (median) discretionary accruals for partners from non-Big 4 firms is 0.122 (0.064). Both t-statistics and z-statistics indicate that the mean and median values of discretionary accruals are significantly lower for Big 4 partners than for non-Big 4 partners. Additionally, the mean (median) small profit increase for Big 4 partners is 0.079 (0.000), whereas the mean (median) small profit increase for non-Big 4 partners is 0.169 (0.000). Furthermore, the mean (median) audit report delay days for Big 4 partners is 4.074 (4.078), whereas the mean (median) delay days for non-Big 4 partners is 4.332 (4.331). Again, the differences between the two subsamples are highly significant. These results suggest that Big 4 partners have larger workloads, but fewer clients compared to the non-Big 4 partners. Audit quality is significantly higher for Big 4 partners than for non-Big 4 partners before controlling for other variables.

Table 5 presents a Pearson and Spearman correlation matrix among variables in the model. Discretionary accruals is negatively correlated with EPW (Pearson correlation = −0.247, p-value < 0.001), which suggests that the absolute value of discretionary accruals decreases as a partner's workload increases. However, the correlation between small profit increase and EPW is positive before controlling for other factors. Audit report delay is negatively correlated with EPW (Pearson correlation = −0.527, p-value < 0.001). On the other hand, PAR_BUSYNESS is positively correlated with the discretionary accruals and audit report delays. PAR_BUSYNESS is negatively correlated with EPW (Pearson correlation = −0.022, p-value <0.001), which is consistent with partners with fewer number of clients usually auditing larger and more complicated clients. The correlations between audit quality measures and control variables are largely in line with prior studies. Most significant correlations among the control variables are low, indicating that multicollinearity should not compromise our inferences.

5. Results

5.1 Regression results for audit quality and engagement partner workload

Table 6 presents multiple regression results for the relationship between EPW and audit quality. Model 1 tests the relationship between EPW and absolute value of discretionary accruals. To confirm previous research, we first run the regression of PAR_BUSYNESS on discretionary accruals only. The result shows that PAR_BUSYNESS is positively and significantly related to discretionary accruals with the coefficient = 0.004 and p-value <0.01, which is consistent with previous research in that the total number of clients in the partners' portfolio may impact audit quality and busy partners may perform lower quality audits (Cameran *et al.*, 2017; Sundgren and Svanstrom, 2014).

We then include EPW to run the regression again. The adjusted R^2 for the model is 40.71%, which suggests that the variables included in the model explains a large portion of the variation in audit quality. The result shows that the coefficient of EPW is negative and significant with the coefficient = −0.003 and p-value < 0.01 after controlling for the effect of partner busyness and industry specialist, audit firm size, local office size and other factors that may impact audit quality. When EPW increases from the first quartile to the third quartile, the discretionary accruals will decrease by 0.0015. When partners have an interquartile increase in workload, the clients' discretionary accruals decrease by 2.1%. Thus, clients audited by partners with larger workloads have lower discretionary

Table 5.
Correlation coefficient ($N = 4{,}955$)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	ABS_ACCRUALS		**−0.150**	**0.271**	**−0.235**	**0.082**	**−0.035**	**−0.151**	**−0.142**	**−0.237**	−0.016	**−0.169**	**−0.165**	**−0.185**	**−0.334**	**−0.154**
2	SMALL_PROFIT	**−0.110**		**−0.169**	**0.126**	**−0.062**	−0.007	**0.096**	**0.088**	**0.123**	**0.032**	**0.058**	**0.113**	**0.133**	**0.229**	**0.120**
3	AUDELAY	**0.291**	**−0.157**		**−0.544**	**−0.186**	**−0.544**	**−0.056**	**−0.241**	**0.194**	**−0.526**	**0.080**	**−0.430**	**−0.449**	**−0.334**	**−0.703**
4	EPW	**−0.247**	**0.121**	**−0.527**		**−0.131**	**0.149**	**0.351**	**0.229**	**0.655**	**−0.194**	**0.597**	**0.534**	**0.284**	**0.739**	**0.284**
5	PAR_BUSYNESS	**0.242**	**−0.068**	**0.302**	**−0.022**		**−0.064**	**−0.093**	**−0.128**	**−0.199**	**−0.184**	**−0.109**	**−0.257**	**−0.140**	**−0.270**	**−0.197**
6	PAR_LEADER	**−0.031**	−0.007	**−0.048**	**0.135**	**−0.088**		**0.121**	**0.096**	**0.073**	**0.067**	**0.054**	**0.142**	**0.062**	**0.152**	**0.037**
7	NAT_LEADER	**−0.122**	**0.096**	**−0.227**	**0.345**	**−0.050**	**0.121**		**0.236**	**0.377**	**−0.122**	**0.333**	**0.234**	**0.179**	**0.349**	**0.123**
8	CITY_LEADER	**−0.114**	**0.088**	**−0.181**	**0.218**	**−0.111**	**0.096**	**0.236**		**0.269**	**0.062**	**0.076**	**0.190**	**0.179**	**0.279**	**0.137**
9	BIG4	**−0.265**	**0.123**	**−0.514**	**0.673**	**−0.290**	**0.073**	**0.377**	**0.269**		**−0.225**	**0.736**	**0.477**	**0.287**	**0.637**	**0.269**
10	POWER	−0.003	0.024	**0.091**	**−0.209**	**−0.156**	**0.065**	**−0.120**	**0.063**	**−0.218**		**−0.436**	−0.015	**0.076**	**−0.042**	**0.117**
11	OFFSIZE	**−0.125**	**0.033**	**−0.330**	**0.521**	**−0.035**	**0.047**	**0.237**	0.023	**0.558**	**−0.357**		**0.394**	**0.156**	**0.501**	**0.185**
12	NAS	**−0.174**	**0.093**	**−0.357**	**0.398**	**−0.249**	**0.103**	**0.187**	**0.161**	**0.391**	−0.012	**0.215**		**0.316**	**0.638**	**0.302**
13	TENURE	**−0.160**	**0.126**	**−0.318**	**0.266**	**−0.135**	**0.065**	**0.173**	**0.177**	**0.281**	**0.063**	**0.100**	**0.277**		**0.410**	**0.249**
14	LNAT	**−0.350**	**0.225**	**−0.666**	**0.739**	**−0.342**	**0.157**	**0.346**	**0.278**	**0.637**	**−0.067**	**0.391**	**0.494**	**0.388**		**0.457**
15	CFO	**−0.393**	**0.127**	**−0.317**	**0.271**	**−0.242**	**0.042**	**0.114**	**0.119**	**0.237**	**0.094**	**0.101**	**0.212**	**0.223**	**0.458**	

		16	17	18	19	20	21	22	23	24	25	26	27	28	29
16	CFOVOL		**−0.222**	**0.459**	**−0.394**	0.021	**0.201**	0.009	**0.306**	**−0.063**	**−0.052**	**−0.081**	**−0.410**	**0.098**	**0.289**
17	DEBT	**0.216**		**−0.166**	**0.077**	**0.302**	**0.214**	**0.214**	**0.114**	**−0.088**	**0.206**	**0.193**	**0.106**	**−0.037**	**−0.034**
18	LOSS	**0.323**	**−0.071**		**−0.386**	**0.095**	0.021	**−0.173**	0.017	**−0.054**	**−0.249**	**−0.093**	**−0.858**	**0.070**	**0.299**
19	AGE	**−0.309**	−0.019	**−0.388**		**−0.146**	**−0.122**	**−0.105**	**−0.083**	−0.020	**0.198**	0.023	**0.391**	**−0.063**	**−0.211**
20	ISSUE	**0.104**	**0.269**	**0.095**	**−0.145**		**0.127**	**0.126**	**−0.033**	0.000	**−0.067**	**0.120**	**−0.149**	−0.022	**0.080**
21	MTB	**0.233**	**0.250**	**0.114**	**−0.116**	**0.096**		**0.231**	**0.088**	0.002	0.006	0.009	0.021	**−0.029**	**0.076**
22	SALEGRO	**0.140**	**0.327**	**−0.090**	**−0.149**	**0.125**	**0.085**		**0.282**	**0.081**	**0.269**	**0.212**	**0.214**	−0.021	**−0.078**
23	SALEVOL	**0.282**	**0.245**	**0.065**	**−0.117**	−0.005	**0.086**	**0.383**		**−0.077**	**0.473**	**0.109**	**0.095**	**0.047**	**−0.049**
24	LAG_ACCR	**−0.169**	**−0.145**	**−0.082**	**0.087**	−0.012	**−0.087**	−0.027	**−0.083**		**0.043**	0.024	**0.035**	**−0.038**	0.000
25	INVREC	**−0.048**	**0.226**	**−0.194**	**0.121**	**−0.034**	−0.013	**0.318**	**0.362**	**0.039**		**0.149**	**0.316**	0.002	**−0.171**
26	ACQUISITION	**−0.069**	**0.233**	**−0.093**	**0.023**	**0.120**	**−0.044**	**0.189**	**0.073**	0.022	**0.139**		**0.096**	0.008	**−0.057**
27	ROA	**−0.684**	**−0.175**	**−0.501**	**0.353**	**−0.183**	**−0.270**	−0.009	**−0.058**	**0.178**	**0.159**	**0.070**		**−0.073**	**−0.354**
28	NEWAUD	**0.080**	**0.023**	**0.070**	**−0.066**	−0.022	0.026	0.013	**0.068**	**−0.095**	0.017	0.008	**−0.084**		**0.114**
29	OPINION	**0.351**	**0.046**	**0.299**	**−0.214**	**0.080**	**0.172**	**−0.031**	**0.039**	**−0.083**	**−0.115**	**−0.057**	**−0.459**	**0.114**	

Notes: This table provides the correlation matrix for all variables. Pearson (Spearman) correlation coefficients at the bottom (top) diagonal. Detailed variables definitions are provided in the Appendix. Correlation coefficients significant at the 5% level are in bold

accruals than clients audited by partners with smaller workloads, which rejects our null hypothesis. The result also shows the coefficient of PAR_BUSYNESS is positive and significant with the coefficient = 0.005 and p-value < 0.01. When PAR_BUSYNESS increases from the first quartile to the third quartile, the discretionary accruals will increase by 0.01. Therefore, the effect of the total number of clients in a partner's portfolio is negatively related to audit quality, which is opposite to the result of total audit fees in the partner's portfolio. We also review the variance inflation factor (VIF) for each explanatory variable. With the exception of the VIF of company size (LNAT) being above 5, we find no other indication of multicollinearity concerns that would affect our inferences.

Table 7 presents the relationship between EPW and the probability of small profit increases. The regression without EPW shows that partner busyness does not have a significant impact on the client's probability of small profit increases. However, the regression with EPW shows that the coefficient on EPW is negative and significant with the coefficient = −0.05 and p-value < 0.01 after controlling for the effect of all other factors that may affect the probability of small profit increases. Thus, clients audited by partners with large workloads are less likely to report a small profit increase to meet the benchmark

		Model 1 (ABS_ACCRUALS)					
Variable	Pred.	Coeff.	t-Stat.	p-value	Coeff.	t-Stat.	p-value
EPW	H:?				−0.003	−2.610	0.009
PAR_BUSYNESS	+	0.004	3.400	0.001	0.005	3.780	0.000
PAR_LEADER	−	0.000	0.030	0.980	0.002	0.220	0.828
NAT_LEADER	−	0.003	1.230	0.217	0.004	1.410	0.158
CITY_LEADER	−	−0.001	−0.410	0.679	−0.001	−0.390	0.695
BIG4	−	−0.015	−3.450	0.001	−0.010	−2.330	0.020
POWER	+	0.007	1.620	0.105	0.007	1.550	0.122
OFFSIZE	−	0.001	1.140	0.254	0.001	1.580	0.115
NAS	+	0.000	−1.150	0.249	0.000	−1.110	0.267
TENURE	+	0.006	2.370	0.018	0.005	2.090	0.036
LNAT	−	−0.005	−3.970	<0.0001	−0.004	−2.240	0.025
CFO	−	−0.032	−2.570	0.010	−0.032	−2.580	0.010
CFOVOL	+	0.215	6.710	<0.0001	0.216	6.730	<0.0001
DEBT	+	0.067	7.350	<0.0001	0.067	7.350	<0.0001
LOSS	+	−0.007	−2.000	0.045	−0.007	−1.870	0.061
AGE	−	−0.002	−0.650	0.518	−0.001	−0.430	0.664
ISSUE	−	−0.008	−2.770	0.006	−0.007	−2.660	0.008
MTB	+	0.000	−0.500	0.620	0.000	−0.450	0.656
SALEGRO	+	0.011	0.980	0.328	0.011	0.930	0.352
SALEVOL	+	0.043	3.620	0.000	0.043	3.630	0.000
LAG_ACCR	−	−0.040	−1.730	0.083	−0.041	−1.760	0.079
INVREC	+	0.019	1.240	0.216	0.019	1.260	0.207
NEWAUD	+	0.014	1.630	0.104	0.013	1.500	0.133
INTERCEPT	?	0.195	5.670	<0.0001	0.186	5.350	<0.0001
Year fixed effects			Yes			Yes	
Industry fixed effects			Yes			Yes	
N			4,955			4,955	
Adjusted R^2			40.63%			40.71%	

Table 6.
Partner workload and audit quality

Notes: This table presents results from regression of absolute discretionary accruals on audit partner workloads. Detailed variables definitions are provided in the Appendix. Each of the continuous variables is winsorized at the 1 and 99 percentile levels by year to mitigate outliers. We report t-statistics and p-values (two-tailed) based on robust standard errors clustered by firm in all tables

targets than clients audited by partners with small workloads, which rejects our null hypothesis. Furthermore, no significant relationship is found between PAR_BYSUNESS and the probability of small profit increases.

Table 8 presents the relationship between EPW and audit report delays. The regression run without EPW shows that PAR_BUSYNESS is positively and significantly related to audit report delays with the coefficient = 0.008 and p-value <0.001, which suggests that partner busyness is more likely to delay the release of the audit report. However, the regression run with EPW shows the coefficient is negative and significant with the coefficient = −0.006 and p-value < 0.01 after we control for the effect of other factors that may affect audit report delays. When EPW increases from the first quartile to the third quartile, the audit report delay will decrease by 0.3%. This is contrary to Chen *et al.* (2020), which shows a positive relationship between partner workload compression and audit delays in China. Our result suggests that clients audited by partners with a large workload are less likely to delay the release of the audit report compared to clients audited by partners with a small workload, which rejects the null hypothesis again. Again, PAR_BUSYNESS is positively and significantly related to audit report delays with the coefficient = 0.010 and

					Model 2 (SMALL_PROFIT)		
Variable	Pred.	Coeff.	t-Stat.	p-value	Coeff.	t-Stat.	p-value
EPW	H:?				−0.050	7.027	0.008
PAR_BUSYNESS	+	−0.013	0.570	0.450	0.010	0.302	0.583
PAR_LEADER	−	−0.472	4.720	0.030	−0.446	4.202	0.040
NAT_LEADER	−	−0.014	0.049	0.826	−0.004	0.004	0.949
CITY_LEADER	−	0.043	0.590	0.443	0.045	0.641	0.424
BIG4	−	0.088	1.030	0.310	0.169	3.353	0.067
POWER	+	−0.018	0.044	0.833	−0.023	0.076	0.783
OFFSIZE	−	−0.017	3.542	0.060	−0.014	2.314	0.128
NAS	+	0.001	0.022	0.883	0.002	0.102	0.749
TENURE	+	−0.003	0.004	0.953	−0.011	0.058	0.809
LNAT	−	0.053	5.809	0.016	0.091	11.966	0.001
CFO	−	−0.228	1.185	0.276	−0.238	1.303	0.254
CFOVOL	+	−3.809	28.817	<0.0001	−3.759	28.121	<0.0001
DEBT	+	−0.160	2.043	0.153	−0.161	2.082	0.149
LOSS	+	−0.469	41.591	<0.0001	−0.459	39.693	<0.0001
AGE	−	0.057	1.546	0.214	0.065	1.962	0.161
ISSUE	−	−0.051	0.810	0.368	−0.045	0.631	0.427
MTB	+	0.002	0.343	0.558	0.002	0.440	0.507
SALEGRO	+	0.415	6.683	0.010	0.396	6.090	0.014
SALEVOL	+	−0.460	5.962	0.015	−0.442	5.524	0.019
LAG_ACCR	−	1.047	7.917	0.005	1.010	7.466	0.006
INVREC	+	0.315	2.929	0.087	0.336	3.321	0.068
NEWAUD	+	0.263	4.892	0.027	0.246	4.258	0.039
INTERCEPT	?	−0.557	2.438	0.118	−0.773	4.430	0.035
Year fixed effects			Yes			Yes	
Industry fixed effects			Yes			Yes	
N			4,955			4,955	
Pseudo R^2			13.33%			13.45%	

Notes: This table presents results from logistic regression of probability of small profit increases on audit partner workloads. Detailed variables definitions are provided in the Appendix. Each of the continuous variables is winsorized at the 1 and 99 percentile levels by year to mitigate outliers. We report t-statistics and p-values (two-tailed) based on robust standard errors clustered by firm in all tables

Table 7. Partner workload and audit quality

p-value < 0.001. The adjusted R^2 for the model is 51.00%. We also review the VIF for each explanatory variable. With the exception of the VIF of company size (LNAT) and CFO being above 5, we find no other indication of multicollinearity concerns that would affect our inferences.

Regarding control variables, the coefficient of partner industry specialist is not significant in the discretionary accruals model. However, it is negatively and significantly related to the probability of having small profit increases. The industry specialist is positively and significantly related to the audit report delays, which suggests that industry specialists provide a better quality audit, but they are more likely to delay the release of the audit report. Our results are different from the results of Lee *et al.* (2019) and Aobdia *et al.* (2016). In their study, they find a positive relationship between audit fees and more experienced audit partners or partner industry specialists. However, they did not find any significant relationship between audit quality and more experienced audit partners or

					Model 3 (AUDELAY)		
Variable	Pred.	Coeff.	t-Stat.	p-value	Coeff.	t-Stat.	p-value
EPW	H:?				−0.006	−2.620	0.009
PAR_BUSYNESS	+	0.008	4.670	<0.0001	0.010	5.230	<0.0001
PAR_LEADER	−	0.098	3.610	0.000	0.102	3.720	0.000
NAT_LEADER	−	0.011	1.540	0.124	0.012	1.690	0.092
CITY_LEADER	−	0.005	0.770	0.443	0.005	0.790	0.430
BIG4	−	−0.048	−4.790	<0.0001	−0.039	−3.700	0.000
POWER	+	0.023	2.410	0.016	0.022	2.330	0.020
OFFSIZE	−	−0.002	−2.030	0.043	−0.002	−1.580	0.115
NAS	+	0.000	0.040	0.967	0.000	0.090	0.926
TENURE	−	−0.001	−0.240	0.808	−0.003	−0.490	0.625
LNAT	−	−0.058	−24.240	<0.0001	−0.054	−19.230	<0.0001
CFO	−	−0.019	−1.080	0.281	−0.019	−1.060	0.288
CFOVOL	+	−0.104	−3.280	0.001	−0.103	−3.260	0.001
DEBT	+	0.073	7.130	<0.0001	0.073	7.170	<0.0001
LOSS	+	0.024	3.490	0.001	0.025	3.630	0.000
AGE	−	−0.020	−3.820	0.000	−0.019	−3.590	0.000
ISSUE	+	0.000	−0.010	0.993	0.001	0.120	0.901
MTB	−	−0.002	−6.870	<0.0001	−0.002	−6.820	<0.0001
SALEGRO	?	−0.015	−1.160	0.248	−0.016	−1.250	0.212
SALEVOL	+	0.015	1.110	0.268	0.015	1.110	0.268
LAG_ACCR	+	−0.027	−1.250	0.211	−0.028	−1.320	0.188
INVREC	+	0.039	1.910	0.056	0.040	1.970	0.049
ACQUISITION	+	0.008	1.040	0.299	0.008	0.990	0.320
ROA	−	0.023	1.770	0.077	0.022	1.750	0.081
NEWAUD	+	0.034	2.790	0.005	0.032	2.600	0.009
OPINION	+	0.053	3.750	0.000	0.053	3.770	0.000
INTERCEPT		4.587	108.880	<0.0001	4.567	106.100	<0.0001
Year fixed effects			Yes			Yes	
Industry fixed effects			Yes			Yes	
N			4,955			4,955	
Adjusted R^2			50.90%			51.00%	

Table 8.
Partner workload and audit quality

Notes: This table presents results from regression of audit report delays on audit partner workloads. Detailed variables definitions are provided in the Appendix. Each of the continuous variables is winsorized at the 1 and 99 percentile levels by year to mitigate outliers. We report t-statistics and p-values (two-tailed) based on robust standard errors clustered by firm in all tables

partner industry specialists. The authors explain this finding using agency theory. That is, partners may perform some unnecessary extra work to earn a fee premium. At the same time, they are not motivated to improve audit quality because partners' names are not identified in the audit report. In our study, partner names have been disclosed on Form AP since 2017; it may take more time to determine the effectiveness of Rule AP. Regarding other control variables, results are consistent with our predictions.

Overall, the negative relationship between EPW and our three measures of audit quality rejects our null hypothesis and suggests that audit quality varies across audit partners and that partners with large workloads provide higher quality audit services than partners with small workloads. On the other hand, PAR_BUSYNESS is inversely related to audit quality, which confirms previous studies that partner business has a negative impact on audit quality (Cameran *et al.*, 2017; Gul *et al.*, 2017).

5.2 Regression results for audit quality and engagement partner workload based on partner firm size

To test whether partners' firm size moderates the effect of partners' EPW on audit quality, we divide the partner sample into Big 4 partners and non-Big 4 partners according to the partner's firm size. We re-rank total audit fees in each partner's portfolio and run the same regressions. In Table 9, the regression result shows that EPW is negatively and significantly related to discretionary accruals for non-Big 4 partners with a coefficient = −0.004 and p-value < 0.05 after controlling for the effect of other factors that may affect discretionary accruals. PAR_BUSYNESS is positively and significantly related to the discretionary accruals for non-Big 4 partners with a coefficient = 0.005 and p-value < 0.01. However, for Big 4 partners, there is no significant relationship between EPW and discretionary accruals. Therefore, the main result only holds for partners from non-Big 4 firms but not for partners from Big 4 firms. This supports *H2* and provides evidence that partners' firm size moderates the effect of partners' workload on audit quality. Clients audited by non-Big 4 partners with large workloads have less discretionary accruals compared to non-Big 4 partners with small workloads. However, for Big 4 partners, the result confirms Goodwin and Wu (2016) that Big 4 firms have more resources to support partners and that partners are more capable to balance their workload and the number of clients in their portfolios.

In Table 10, the result shows the coefficient for EPW is negatively and significantly related to the client's probability of having small profit increases to meet the performance benchmark for non-Big 4 partners (coefficient = −0.107; p-value < 0.01). Conversely, there is no significant relationship between EPW and probability of small profit increases for Big 4 partners. Therefore, the result is consistent with the result of the discretionary accruals measure and supports *H2*. The result suggests that clients audited by non-Big 4 partners with large workloads are less likely to increase a small profit amount to meet the performance benchmark compared to the clients audited by non-Big 4 partners with small workloads. Again, for Big 4 partners, partners are more capable of balancing their workload and portfolio size to maintain high-quality services.

In Table 11, the result shows that the coefficient for EPW is negatively and significantly related to the audit report delays for non-Big 4 partners with coefficient = −0.012 and p-value < 0.001, which suggests that non-Big 4 partners with large workloads are less likely to delay the release of the audit report than non-Big 4 partners with smaller workloads. However, for Big 4 partners, there is a positive and significant relationship between EPW and audit report delays with a coefficient = 0.006 and p-value < 0.01, which suggests that Big 4 partners with large workloads are more likely to delay the release of an audit report than Big 4 partners with small workloads. The result may be explained by the reputation effect. As partners' names have been disclosed on Form AP and information is more

transparent, partners assigned to large workloads in Big 4 firms may have a better reputation. These reputable partners have a stronger incentive to spend more time on the client engagement to maintain good quality services and their reputation.

Overall, the significant and negative relationship between partner's workloads and audit quality only for non-Big 4 partners supports *H2* and suggests that audit quality varies across non-Big4 partners, and non-Big 4 partners with large workloads provide higher quality services than non-Big 4 partners with small workloads. However, the workload may not impact Big 4 partners because of more resources in Big 4 firms supporting partners to balance their workloads.

5.3 Additional analysis

We also have some additional analyses. First, because total audit fees in a partner's portfolio include specific client audit fees, which may be correlated with the client's audit quality measures, we exclude specific client audit fees from the partner's portfolio and re-rank the portfolio. Consistent with our main results, the coefficient of EPW is negative and significant with a coefficient = −0.001 and p-value < 0.01. The result of the audit report delay measure supports the main result with a coefficient = −0.004 and p-value < 0.01. The result for partner

		Model 1 (BIG4)			Model 1 (NON-BIG4)		
Variable	Pred.	Coeff.	t-Stat.	p-value	Coeff.	t-Stat.	p-value
EPW	H:?	0.000	−0.030	0.979	−0.004	−2.390	0.017
PAR_BUSYNESS	+	0.001	0.630	0.528	0.005	2.920	0.004
PAR_LEADER	−	−0.002	−0.200	0.842	0.006	0.380	0.708
NAT_LEADER	−	0.001	0.600	0.549	−0.021	−1.380	0.169
CITY_LEADER	−	0.004	1.370	0.172	−0.013	−1.800	0.072
POWER	+	0.002	0.390	0.695	0.018	1.480	0.139
OFFSIZE	−	0.001	1.810	0.070	0.001	1.470	0.141
NAS	+	0.000	−1.190	0.234	−0.001	−1.220	0.224
TENURE	+	0.001	0.700	0.486	0.005	0.890	0.375
LNAT	−	−0.002	−1.340	0.179	−0.007	−1.960	0.050
CFO	−	0.014	0.790	0.428	−0.058	−3.560	0.000
CFOVOL	+	0.231	4.950	<0.0001	0.177	4.220	<0.0001
DEBT	+	0.033	3.920	<0.0001	0.099	6.680	<0.0001
LOSS	+	0.006	1.500	0.133	−0.023	−3.020	0.003
AGE	−	−0.002	−1.120	0.265	0.001	0.150	0.879
ISSUE	−	−0.001	−0.550	0.579	−0.016	−2.310	0.021
MTB	+	0.000	−1.510	0.131	0.000	−0.560	0.572
SALEGRO	+	0.021	1.920	0.055	0.002	0.080	0.933
SALEVOL	+	0.039	3.290	0.001	0.037	1.970	0.049
LAG_ACCR	−	−0.039	−1.430	0.154	−0.040	−1.370	0.170
INVREC	+	0.023	1.710	0.088	0.029	1.090	0.277
NEWAUD	+	0.000	−0.050	0.963	0.020	1.540	0.125
INTERCEPT	?	0.117	3.930	<0.0001	0.215	4.110	<0.0001
Year fixed effects			Yes			Yes	
Industry fixed effects			Yes			Yes	
N			3,289			1,666	
Adjusted R^2			26.74%			42.97%	

Table 9.
Partner workload and audit quality (ABS_ACCRUALS)

Notes: This table presents results from regression of absolute discretionary accruals on audit partner workloads based on the partner firm size. Detailed variables definitions are provided in the Appendix. Each of the continuous variables is winsorized at the 1 and 99 percentile levels by year to mitigate outliers. We report t-statistics and p-values (two-tailed) based on robust standard errors clustered by firm in all tables

firm size subsamples is also consistent with the previous analysis. Partner's firm size moderates the effect of EPW on audit quality and the negative relationship between EPW and audit quality measures only holds for non-Big 4 partners. Second, we calculate the weighted average of total audit fees in the partner's portfolio to proxy for the partner's workload, with all results consistent with our main analysis. Third, we use the total assets included in the partner's portfolio to proxy for the partner's workload with the result partially supporting our main analysis. Finally, for the discretionary accruals measure, we also calculate discretionary accruals based on the modified Jones model. Again, the results are consistent with our main analysis. For the probability of small profit increase, our results are also robust to different cutoff levels.

6. Conclusions

This study investigates the impact of EPW on audit quality. While other studies focus on the number of clients audited, our workload measure focuses on the size of the clients audited. Findings indicate that clients audited by partners with a larger EPW

		Model 2 (BIG4)			Model 2 (NON-BIG4)		
Variable	Pred.	Coeff.	t-Stat.	*p*-value	Coeff.	t-Stat.	*p*-value
EPW	H:?	−0.031	1.616	0.204	−0.107	7.650	0.006
PAR_BUSYNESS	+	0.004	0.011	0.917	0.022	0.795	0.373
PAR_LEADER	−	−0.436	3.680	0.055	−4.248	0.000	0.995
NAT_LEADER	−	−0.017	0.070	0.792	−3.302	0.000	0.996
CITY_LEADER	−	0.020	0.091	0.763	0.212	3.307	0.069
POWER	+	0.040	0.169	0.681	−0.250	1.450	0.229
OFFSIZE	−	0.008	0.276	0.600	−0.023	2.867	0.090
NAS	+	0.005	0.303	0.582	0.001	0.003	0.954
TENURE	+	0.019	0.115	0.735	−0.049	0.281	0.596
LNAT	−	0.059	3.218	0.073	0.232	17.746	<0.0001
CFO	−	0.004	0.000	0.989	−0.713	5.462	0.019
CFOVOL	+	−4.506	20.839	<0.0001	−2.980	8.669	0.003
DEBT	+	−0.198	2.126	0.145	−0.139	0.454	0.501
LOSS	+	−0.513	31.439	<0.0001	−0.285	4.457	0.035
AGE	−	0.019	0.106	0.745	0.193	4.110	0.043
ISSUE	−	0.052	0.619	0.432	−0.423	11.195	0.001
MTB	+	0.003	0.934	0.334	−0.003	0.117	0.732
SALEGRO	+	0.521	6.487	0.011	0.351	1.396	0.237
SALEVOL	+	−0.273	1.349	0.246	−0.831	5.122	0.024
LAG_ACCR	−	1.865	11.136	0.001	0.306	0.364	0.546
INVREC	+	0.318	1.711	0.191	0.555	2.987	0.084
NEWAUD	+	0.261	2.226	0.136	0.334	3.483	0.062
INTERCEPT	?	−1.491	5.814	0.016	−0.945	2.462	0.117
Year fixed effects			Yes			Yes	
Industry fixed effects			Yes			Yes	
N			3,289			1,666	
Pseudo R^2			14.11%			12.62%	

Notes: This table presents results from logistic regression of probability of small profit increases on audit partner workloads based on the partner firm size. Detailed variables definitions are provided in the Appendix. Each of the continuous variables is winsorized at the 1 and 99 percentile levels by year to mitigate outliers. We report *t*-statistics and *p*-values (two-tailed) based on robust standard errors clustered by firm in all tables

Table 10. Partner workload and audit quality (SMALL_PROFIT)

Variable	Pred.	Model 3 (BIG4) Coeff.	t-Stat.	*p*-value	Model 3 (NON-BIG4) Coeff.	t-Stat.	*p*-value
EPW	H:?	0.006	3.110	0.002	−0.012	−4.480	<0.0001
PAR_BUSYNESS	+	−0.010	−2.410	0.016	0.014	6.240	<0.0001
PAR_LEADER	−	0.075	2.770	0.006	0.067	2.290	0.022
NAT_LEADER	−	0.009	1.290	0.199	0.074	0.610	0.542
CITY_LEADER	−	0.000	−0.010	0.991	−0.005	−0.380	0.701
POWER	+	−0.003	1.420	0.155	0.039	1.990	0.046
OFFSIZE	−	0.001	−1.510	0.130	0.001	0.420	0.674
NAS	+	−0.012	0.950	0.342	−0.001	−0.600	0.551
TENURE	−	−0.060	−1.850	0.064	0.007	0.750	0.453
LNAT	−	−0.109	−15.630	<0.0001	−0.055	−11.330	<0.0001
CFO	−	−0.056	−4.120	<0.0001	0.021	0.910	0.364
CFOVOL	+	0.082	−1.030	0.304	−0.123	−3.300	0.001
DEBT	+	0.031	5.690	<0.0001	0.062	4.510	<0.0001
LOSS	+	−0.016	3.580	0.000	0.005	0.390	0.696
AGE	−	0.002	−2.470	0.013	−0.020	−2.220	0.027
ISSUE	+	−0.002	0.300	0.766	0.004	0.350	0.729
MTB	−	0.004	−6.630	<0.0001	−0.001	−3.070	0.002
SALEGRO	?	0.002	0.240	0.813	−0.027	−1.560	0.119
SALEVOL	+	−0.023	0.090	0.929	0.019	1.100	0.273
LAG_ACCR	+	0.013	−0.540	0.586	−0.024	−1.020	0.310
INVREC	+	0.014	0.450	0.654	0.046	1.610	0.108
ACQUISITION	+	0.073	1.530	0.127	−0.007	−0.440	0.658
ROA	−	0.000	2.640	0.008	0.005	0.330	0.743
NEWAUD	+	0.062	0.000	0.998	0.047	3.010	0.003
OPINION	+	0.053	2.220	0.027	0.052	3.290	0.001
INTERCEPT		4.606	63.600	<0.0001	4.543	70.740	<0.0001
Year fixed effects			Yes			Yes	
Industry fixed effects			Yes			Yes	
N			3,289			1,666	
Adjusted R^2			36.00%			36.01%	

Table 11.
Partner workload and audit quality (AUDELAY)

Notes: This table presents results from regression of audit report delays on audit partner workloads based on the partner firm size. Detailed variables definitions are provided in the Appendix. Each of the continuous variables is winsorized at the 1 and 99 percentile levels by year to mitigate outliers. We report *t*-statistics and *p*-values (two-tailed) based on robust standard errors clustered by firm in all tables

report smaller discretionary accruals and less likelihood of a small profit increase to meet performance benchmarks than clients audited by partners with a low EPW. Partners with larger EPW are also less likely to delay the release of audit reports. However, this result only holds for non-Big 4 firms, suggesting workload only has a positive impact on non-Big 4 audit quality. It is important to note that this latter result does not suggest that Big 4 quality cannot be improved. Data used in this study are from a single point in time; specifically, at the time Rule 3211 went into effect. One of the reasons the PCAOB implemented Rule 3211 was to accumulate and aggregate partner-related data over time, thereby providing financial statement users more information for decision-making purposes (PCAOB, 2015). Burke *et al.* (2019) and Cunningham *et al.* (2019) offer evidence that the PCAOB's goal may be realized; however, they only had access to the initial year of Form AP data to demonstrate a

change in audit quality. Future research should continue to investigate the impact Rule 3211 has had on improvements in audit quality over time.

Measuring workload (also called busyness) as the number of clients a partner audits, prior studies have found mixed results between workload and audit quality overall and no results for US partners. Consistent with Lennox and Wu (2018), we believe that counting the number of clients is too simplistic to capture the essential elements of workload. In this study, we measure workload using client size and the number of clients audited. By incorporating both factors into workload, we are able to detect differences in audit quality. However, we do not claim that these factors fully define workload. Accordingly, future research should continue to refine measures of workload as well as other partner-related characteristics in an effort to better understand the important role individual partners play during an audit.

As is true with any research, there are limitations to our study. First, only public companies are included in our study as we did not have access to private company information. Accordingly, our results cannot be generalized beyond the sample used. Second, our measure of workload includes client size and the number of clients. Other factors that may influence workload are not included. Next, we did not include all of partners' personal characteristics in our analyses, such as tenure with the client. This may impact our results, although we run the additional regression clustered by both clients and partners to mitigate the impact from unobservable variables. Also, our data only cover the initial year of Form AP data. As a result, we cannot analyze some of the common proxies for audit quality, such as going concern accuracy and restatements (Burke *et al.*, 2019). Again, as future data become available, our workload measure can be used to test for improvements in audit quality over time.

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Appendix. Variable definition

ABS_ACCRUALS = absolute value of abnormal accruals derived from the performance adjusted accruals model;

SMALL_PROFIT = dummy variable, and coded as "1" if a client's net income deflated by lagged total assets is between 0 and 1.3%, and "0" otherwise;

AUDELAYS = natural log of the number of days between fiscal year-end date and audit report date.;

EPW = audit partner's workload measured by the decile rank of total audit fees in a specific partner's client portfolio in the fiscal year;

TOTAL_AUDFEE = total audit fees in millions dollars included in a specific partner's portfolio during the year;

PAR_BUSYNESS = total number of clients in a specific partner's portfolio in the fiscal year;

PAR_LEADER = dummy variable coded 1 if a partner is the number one auditor in terms of aggregated client audit fees in an industry in a specific fiscal year, and 0 otherwise;

NAT_LEADER = dummy variable coded 1 if an audit firm is the number one firm in an industry in terms of aggregated audit fees in a specific fiscal year, and 0 otherwise;

CITY_LEADER = dummy variable coded 1 if an office is the number one auditor in terms of aggregated client audit fees in an industry within that city in a specific fiscal year, and 0 otherwise;

BIG4 = an indicator variable for Big 4 firms, which takes a "1" if the company is audited by one of Big 4 firms, and "0" otherwise;

POWER = natural log of the company's sales divided by the sum of industry sales for all companies in the industry audited by the firm;

OFFSIZE = natural log of the total audit fees paid to the audit office during the year;

NAS = the relative importance of non-audit service, measured as the ratio of the natural log of non-audit fees over natural log of total fees;

TENURE = the number of years the client has been continuously audited by the same firm;

LNAT = natural log of the company's total assets;

CFO = operating cash flows deflated by the lagged total assets;

CFOVOL = standard deviation of CFO, calculated by a rolling window with three years of operating cash flows data;

DEBT = total liabilities divided by total assets;

LOSS = dummy variable which takes "1" if operating income after depreciation is negative and "0" otherwise;

AGE = natural log of the number of years since the company was incorporated.;

ISSUE = dummy variable which takes "1" if the sum of new long-term debt plus new equity exceeds 2% of lagged total assets and "0" otherwise;

MTB = natural log of the company's market value of equity to its book value of equity;

SALEGRO = one-year growth rate of the company's sales revenue;

SALEVOL = standard deviation of sales revenue, calculated by a rolling window with three years of sales revenue data;

LAG_ACCR = one-year lagged total accruals deflated by the lagged total assets;

INVREC = inventory and receivables divided by total assets;

ACQUISITION	= dummy variable which takes "1" if the company has a recent acquisition, 0 otherwise;
ROA	= earnings before interest and tax divided by total assets;
NEWAUD	= an indicator variable which is coded as "1" if the audit firm in the current year is different from the audit firm in the previous year for the company; and
OPINION	= dummy variable which takes "1" if the company receives going-concern opinion in the prior year and "0" otherwise.

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